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# Refrigeration Dryers TAH – TBH – TCH Series

Flow rate 0.35 - 3.5 m³/min

KAESER COMPRESSORS

## Why is it necessary to dry compressed air?

The atmospheric air drawn into a compressor is a mixture of gases that always contains water vapour. The amount of water vapour air can carry varies and is mostly dependent on temperature.

As air temperature rises – which occurs during compression – the air's capability to hold moisture increases also. When the air is cooled its capacity to hold moisture reduces, which causes the water vapour to condense.

This condensate is then removed in the downstream centrifugal separator or the air receiver. Even then, the air is often still totally saturated with water vapour. This is why significant amounts of condensate can accumulate in the air distribution piping and at take-off points as the air cools further.

Therefore, additional drying is essential to avoid production downtime and interruptions, as well as reduce costly maintenance and repair work. Refrigeration drying is usually the most efficient solution for the majority of compressed air applications.

# TAH – TCH – Outstanding Quality

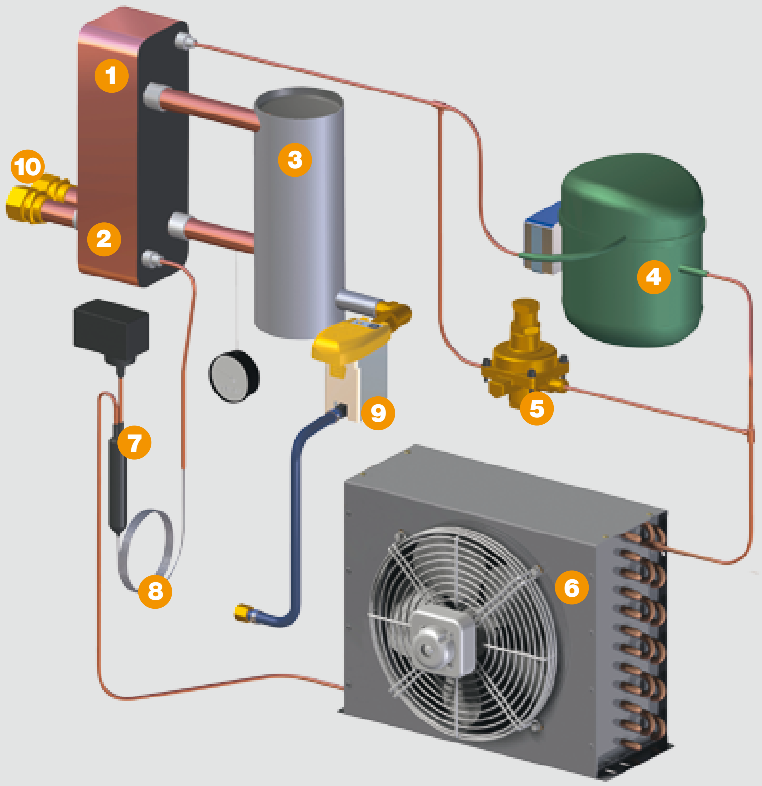
## TAH – TCH series refrigeration dryers from KAESER

As a leading compressed air systems provider, KAESER understands that each component plays an integral role in efficient production of clean, quality compressed air. Therefore, all TAH-TCH series refrigeration dryers are manufactured in KAESER's own dedicated production centre in Gera, Germany, to ensure the very highest standards in system reliability and performance. With KAESER knowledge and expertise, these units can then be seamlessly integrated into carefully designed compressed air systems to provide outstanding drying results.

Made by Kaeser

Made in Germany!


## Refrigeration dryer layout (Shown: TCH 32)

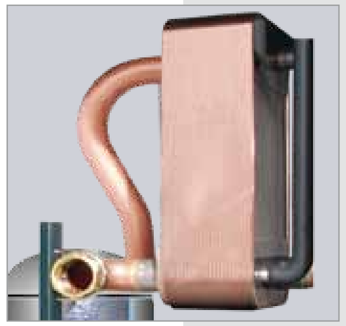


1. Air / air heat exchanger
2. Air / coolant heat exchanger
3. Condensate separator
4. Refrigerant compressor
5. Hot gas bypass controller
6. Refrigerant condenser (Air-cooled)
7. Filter dryer
8. Capillary tube (refrigerant injection)
9. ECO DRAIN condensate drain
10. Air inlet/outlet

## KAESER quality


With KAESER-developed hot-gas bypass systems, highly efficient refrigerant circuits and electronic condensate drains that operate without pressure loss, every aspect of KAESER's TAH-TCH series refrigeration dryers is designed to provide outstanding quality and performance.

## Stainless steel plate heat exchanger



The stainless steel plate heat exchanger in the refrigeration dryer is corrosion resistant and safe from contamination. All dryer components and piping meet the highest standards in quality and reliability.

## Condensate separator

As with all KAESER products, H-Series refrigeration dryers are designed for maximum reliability. They are equipped with a specially tailored condensate separator made from corrosion-resistant stainless steel (die-cast zinc up to TBH 9) that reliably removes condensate from the air even under fluctuating airflow conditions.

## Dependable Performance Even at High Ambient Temperatures

The quality of a refrigeration dryer is best judged by how effectively and reliably it can separate condensate, particularly at high ambient temperatures. With this in mind, the developers at KAESER Kompressoren created the TAH-TCH refrigeration dryer series. Featuring highly efficient refrigeration circuits and KAESER-developed hot gas bypass regulators, these dryers are designed for optimum performance. The air circulating system for the corrosion resistant stainless steel plate heat exchanger further illustrates this, as it is made from stainless steel and copper piping. The key aim of any refrigeration dryer is to provide reliable condensate separation, which is why KAESER uses a separate stainless steel condensate separator. This configuration is far superior to systems using integrated solutions, as it achieves better condensate separation and is more reliable. KAESER refrigeration dryers combine all of these features within a robust powder-coated metal casing to provide exceptional air treatment in accordance with EN 60204-1, which means dependable, sustained pressure dew point performance of +3 °C even at high ambient temperatures up to +45 °C.

# TAH – TCH Series Refrigeration Dryer Specifications

| Model | Flow capacity in m³/min at 7 bar ► working pressure | Differential pressure bar | Max. working pressure bar | Effective power consumption kW | Power supply | Refrigerant | Air connection (female thread) | Condensate outlet | Condensate drain | Dimensions in mm Height | Width | Depth | Weight kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TAH 4** | 0.35 | 0.05 | 16 | 0.22 | 230 V 50 Hz 1 PH | R 134 a | G ¾ | G ¼ | Pilot controlled, contamination-proof, no air loss | 639 | 381 | 484 | 36 |
| **TAH 6** | 0.60 | 0.05 | | 0.28 | | | | | | | | | 40 |
| **TBH 9** | 0.80 | 0.22 | | 0.28 | | | | | | 750 | 360 | 522 | 45 |
| **TBH 13** | 1.20 | 0.22 | | 0.30 | | | | | | | | | 47 |
| **TCH 22** | 2.20 | 0.2 | | 0.46 | | | G 1 | | ECO DRAIN - No pressure loss | 879 | 427 | 608 | 55 |
| **TCH 26** | 2.60 | 0.25 | | 0.48 | | | | | | | | | 56 |
| **TCH 32** | 3.15 | 0.3 | | 0.64 | | | | | | | | | 59 |
| **TCH 35** | 3.50 | 0.3 | | 0.66 | | | | | | | | | 64 |

► Performance data for reference conditions to ISO 7183, option A1; ambient temperature +25 °C, air inlet temperature +35 °C, pressure dew point +3 °C.
The flow rate changes for other operating conditions.

Supplied with connection cable (plug not included)

## Correction factors for deviating operating conditions (flow rates in m³/min x c...)

**Deviating working pressure p at dryer inlet**

| p bar (g) | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $c_p$ | 0.75 | 0.84 | 0.9 | 0.95 | 1 | 1.04 | 1.07 | 1.1 | 1.12 | 1.15 | 1.17 | 1.19 | 1.21 | 1.23 |

**Air inlet temperature $T_i$**

| $T_i$ (°C) | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|
| $c_{Ti}$ | 1.2 | 1 | 0.83 | 0.72 | 0.6 |

**Ambient temperature $T_a$**

| $T_a$ (°C) | 25 | 30 | 35 | 40 |
|---|---|---|---|---|
| $c_{Ta}$ | 1 | 0.99 | 0.97 | 0.94 |

### Calculation of dryer flow rate under deviating conditions:

**Example:**

| | | | | |
|---|---|---|---|---|
| Working pressure: | 10 bar (g) | ► | Table | ► $c_p = 1.1$ |
| Compressed air inlet temperature: | 40 °C | ► | Table | ► $c_{Ti} = 0.83$ |
| Ambient temperature: | 30 °C | ► | Table | ► $c_{Ta} = 0.985$ |

**Selected dryer is a TCH 22 with 2.2 m³/min ($V_{Reference}$)**

Max. possible flow rate under operating conditions

$V_{max}$ operation = $V_{Reference}$ x $c_p$ x $c_{Ti}$ x $c_{Ta}$

$V_{max}$ operation = 2.2 m³/min x 1.1 x 0.83 x 0.985 = 1.98 m³/min

LGA InterCert
Certified QM/EM System
ISO 9001:2008 / ISO 14001:2004

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