KAESER COMPRESSORS

KRYOSEC Refrigeration Dryers

TAH / TBH / TCH Series

Flow rate 0.35 to 4.50 m³/min

KRYOSEC

Exceptionally reliable and ultra compact

KRYOSEC refrigeration dryers exemplify Made in Germany quality. They provide dependable drying in ambient temperatures up to +50 °C and ensure high efficiency performance through their low maintenance design and the minimal pressure loss heat exchanger system. With their compact footprint they are exceptionally versatile and are perfect for installation in locations where space is at a premium.

Why is it necessary to dry compressed air?

Ambient air always also contains water. When this air is used by a compressor to produce compressed air and is cooled back down to the applicable temperature for use, it is no longer able to retain all of the original volume of water it previously held. As a result, condensate accumulates and flows through with the compressed air into the air distribution network, which can lead to costly maintenance and repair work. This is where compressed air refrigeration dryers come into play, as they can dry the compressed air down to a pressure dew point of +3 °C.

Dependable protection from moisture

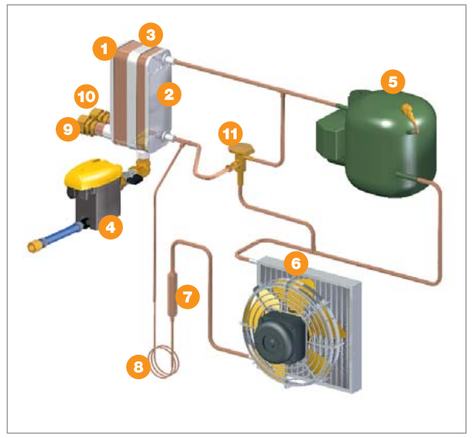
KRYOSEC dryers use a high quality heat exchanger system with stainless steel plates to dry the moist compressed air. Accumulating condensate is efficiently separated at all operating phases via the integrated separator, whilst the electronic ECO-DRAIN condensate drain ensures dependable condensate removal without pressure loss.

Also for high ambient temperatures

KRYOSEC dryers ensure dependable drying even under the most demanding of operating conditions. Together with defined cooling air flow, the combination of generously dimensioned heat exchanger and refrigerant condenser surfaces further helps to enhance performance.

Standards-compliant industrial quality

KRYOSEC dryers fulfil machine safety requirements in accordance with EN 60204-1. Safety features include a lockable ON/OFF switch as well as an integrated power supply isolating device. Featuring first-class workmanship, compact design and exceptional dependability, KRYOSEC dryers are the ideal choice for decentralised installations – such as use with production and processing equipment – which rely on high quality compressed air.



Design

1. Air / air heat exchanger
2. Air / refrigerant heat exchanger
3. Condensate separator
4. Condensate drain
5. Refrigerant compressor
6. Refrigerant condenser with fan (air-cooled)
7. Filter / dryer
8. Capillary tube (refrigerant vaporisation and cooling)
9. Compressed air inlet
10. Compressed air outlet
11. Hot-gas bypass controller

Compact design

Image: TAH 7

Image:
Wall-mounted TAH 7; mounting points are located on the rear of the dryer (TAH series only)

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Dependable moisture protection at all operating phases

Low pressure differential

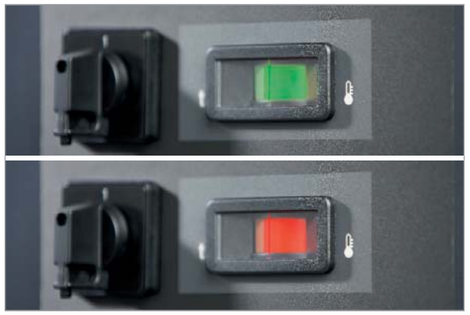
The dryer's stainless steel plate heat exchanger is complemented by an air-air heat exchanger. Low pressure differential and high quality insulation ensure energy-efficient operation at all times. The integrated condensate separator provides dependable performance even under conditions with fluctuating compressed air flow.

Dependable condensate drainage

The electronic ECO-DRAIN condensate drain provides dependable condensate drainage without pressure loss. Cold surfaces are insulated to prevent condensate formation and corrosion from occurring on the inside of the system. A ball valve installed at the condensate inlet enables quick and simple maintenance.

Optimum performance matching

The hot-gas bypass control ensures optimised compressed air cooling and prevents harmful ice formation. Moreover, KRYOSEC dryers can also take the influence of ambient pressure into account (TAH and TBH series automatically, TCH series manually).



Simple function controls

KRYOSEC dryers feature a dew point trend indicator. The practical colour scale allows the user to check system status at-a-glance.

KRYOSEC

Keeps on drying even when the going gets hot

High performance refrigerant condenser

The dryer's generously dimensioned heat exchanger surfaces enable effective heat transfer even at high ambient temperatures. Robust fins with barrier-free flow can be easily cleaned as required.

Optimised cooling-air flow

The cleverly designed cooling air flow system in KRYOSEC dryers plays a significant role in ensuring operational reliability. For example, installation of the fan wheel within its own enclosure directly on the refrigerant condenser prevents bypass flows from occurring that can negatively impact performance.

Premium quality refrigerant compressor

The premium quality reciprocating compressors used in KRYOSEC dryers are designed to provide reliable operation in ambient temperatures of up to +50 °C.

Strain-relieved condensate line

In the KRYOSEC dryer, accumulating condensate is discharged from the condensate drain via a strain-relieved condensate line attached to the enclosure by a bulkhead pipe fitting.

Image:
Installation beneath a web press

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KRYOSEC

Optimum process protection through standards-compliant industrial quality

Standards-compliant design

KRYOSEC dryers fulfil machine safety requirements in accordance with EN 60204-1. The high quality lockable on / off switch clearly indicates the switch position. They are also equipped as standard with an integrated power supply isolating device.

Meticulous workmanship

All components in KRYOSEC dryers are logically arranged and are securely fixed in place with great care and attention to ensure maximum durability. The electrical wiring, for example, is not only bundled in plastic sheathing, but is also strain-relieved. Details like this contribute significantly to dryer dependability.

Low profile, high ground clearance

With their low profile design, KRYOSEC dryers fit easily beneath machinery and work platforms. Moreover, machine feet increase ground clearance and therefore help to protect the unit`s internal components.

Ready-to-run

KRYOSEC dryers are delivered ready-to-run with a power supply cable; the cable is strain-relieved via a PG screw connection. Commissioning couldn't be easier in fact, as there's no need to even open the unit!

Equipment

Refrigerant circuit

Hermetically-sealed refrigeration circuit comprising a reciprocating compressor, fan / condenser assembly, filter / dryer, capillary tube, insulated air / air and air / refrigerant heat exchanger with integrated copper brazed, stainless steel condensate separator and hot-gas bypass regulator.

Condensate drainage

Electronically controlled ECO-DRAIN 30 condensate drain with ball valve at the condensate inlet, cold surfaces insulated.

Electrical equipment and displays

Mechanical dew point trend indicator. Electrical equipment compliant with EN 60204-1: lockable main switch with integrated power supply disconnecting device.

Enclosure

Powder-coated enclosure with removable hood and machine mountings. Wall-mount ready (TAH series only).

Connections

Delivered with strain-relieved power supply cable (without plug), internally wired. Bulkhead pipe fitting to connect the external condensate line.

Documentation

Includes operating instructions and CE declaration of conformity (EU version).

Optional extras

Floating “Pressure dew point warning” contact

Additional equipment comprising electronic thermostat with floating output. Mounted inside the unit ready to take measurements. The signal can be read directly at the output. The respective upper and lower switching limits are adjustable.

Condensate drain incl. floating contact

Alternative configuration with electronic ECO-DRAIN 31 condensate drain featuring a floating alarm contact. Signal can be viewed directly on the drain.

Views - TAH series

Front view | Left view | Right view | Rear view

Technical specifications

Model	Flow rate m³/min	Dryer pressure loss bar	Electrical power consumption at 100 % vol. kW	Gauge pressure bar	Weight kg	Dimensions W x D x H mm	Compressed air connection	Condensate drain connection	Electrical supply	Mass of R 134a refrigerant kg	Mass of R 134a refrigerant as CO_2 equivalent t	hermetic refrigerant circuit
TAH 5	0,35	0,05	0,12	3 to 16	24	386 x 473 x 440	G ½	G ¼	230 V / 1 Ph / 50 Hz	0,11	0,2	•
TAH 7	0,60	0,13	0,16		24					0,16	0,2	•
TAH 10	0,80	0,15	0,19		26					0,18	0,3	•
TBH 14	1,20	0,18	0,28	3 to 16	33	462 x 525 x 548	G ½	G ¼	230 V / 1 Ph / 50 Hz	0,29	0,4	•
TBH 16	1,60	0,19	0,33		38					0,41	0,6	•
TBH 23	2,20	0,23	0,41		46		G 1			0,48	0,7	•
TCH 27	2,60	0,21	0,47	3 to 16	56	640 x 663 x 609	G 1	G ¼	230 V / 1 Ph / 50 Hz	0,57	0,8	–
TCH 33	3,15	0,23	0,65		66		G 1¼			0,83	1,2	–
TCH 36	3,50	0,25	0,73		69					0,87	1,2	–
TCH 45	4,50	0,23	0,89		75					1,15	1,6	–

*) Suitable for ambient temperatures from +3 °C to 50 °C. Max. compressed air inlet temperature + 60 °C
Performance data with reference conditions as per ISO 7183 Option A1: ambient temperature + 25 °C, compressed air inlet temperature + 35 °C, pressure dew point + 3 °C
Flow rate changes with deviating operating conditions. Contains fluorinated greenhouse gas R 134a (GWP = 1.430)

Calculation of dryer flow rate

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

Deviating working pressure p at dryer inlet

p $bar_{(g)}$	3	4	5	6	7	8	9	10	11	12	13	14	15	16
k_p	0.64	0.75	0.84	0.92	1.00	1.05	1.09	1.12	1.16	1.19	1.22	1.24	1.26	1.27

Compressed air inlet temperature T_i

T_i (°C)	30	35	40	45	50	55	60
k_{Ti}	1.19	1.00	0.80	0.66	0.51	0.43	0.35

Ambient temperature T_a

T_a (°C)	25	30	35	40	45	50
k_{Ta}	1.00	0.96	0.92	0.88	0.85	0.80

Example:

Working pressure:	10 bar(g)	(See table)	k_p = 1.12
Compressed air inlet temperature:	40 °C	(See table)	k_{Ti} = 0.80
Ambient temperature:	30 °C	(See table)	K_{Ta} = 0.96

Chosen refrigeration dryer TAH 10 with 0.8 m³/min ($V_{Reference}$)

Max. possible flow rate under operating conditions

V_{max} operation = $V_{Reference}$ x k_p x k_{Ti} x k_{Ta}

V_{max} operation = 0.8 m³/min x 1.12 x 0.80 x 0.96 = 0.69 m³/min

KAESER – The world is our home

As one of the world's largest manufacturers of rotary screw compressors, KAESER KOMPRESSOREN is represented throughout the world by a comprehensive network of branches, subsidiary companies and authorised partners in over 100 countries.

With innovative products and services, KAESER KOMPRESSOREN's experienced consultants and engineers help customers to enhance their competitive edge by working in close partnership to develop progressive system concepts that continuously push the boundaries of performance and compressed air efficiency. Moreover, the decades of knowledge and expertise from this industry-leading system provider are made available to each and every customer via the KAESER group's global computer network.

These advantages, coupled with KAESER's worldwide service organisation, ensure that all products operate at the peak of their performance at all times and provide maximum availability.

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

KAESER KOMPRESSOREN SE
P.O. Box 2143 – 96410 Coburg – GERMANY – Tel +49 9561 640-0 – Fax +49 9561 640130
e-mail: productinfo@kaeser.com – www.kaeser.com