Instruction Manual
Betriebsanleitung

Desiccant Compressed Air Dryer/
Adsorptionstrockner

DC2.0 - DC11.3 (HF)

KAESER KOMPRESSOREN

96410 Coburg • PO Box 2143 • GERMANY • Tel. -49-(0)9561-6400 • Fax +49-(0)9561-640130

http://www.kaeser.com

gültig ab 2020

A	überarbeitet	06.11.2020	SK
	Änd. Mittlg.	Datum	Bearb.

USE D

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

A7151 01 USE D

Contents

Inhaltsverzeichnis

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

Contents

Inhaltsverzeichnis

We have examined the contents of the operating instructions for conformity with the appliance described.
However inconsistencies cannot be ruled out with the result that we do not guarantee complete conformity

We reserve the right to alter the specifications without prior notice

Wir haben den Inhalt der Bedienungsanleitung auf Übereinstimmung mit dem beschriebenen Gerät geprüft.
Dennoch können Abweichungen nicht ausgeschlossen werden, so dass wir für die vollständige Übereinstimmung keine Gewähr übernehmen.

Technische Änderungen vorbehalten.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

1. Introduction

1.1 General remarks

Read the operating instructions prior to starting the machine
to ensure correct transport handling, operation and maintenance from the outset.
The maintenance plan summarizes all the measures which are required to maintain the dryer in good condition. The maintenance work is simple, but must be carried out on a regular basis.
Correct maintenance will also help you to avoid accidents and to ensure that the manufacturer`s guarantee coverage is maintained.

Please state the type and complete serial number of the dryer as specified on the nameplate in all correspondence.

1.2 Explanation of the symbols in the operating instructions

Warnings

Warning notices indicate three levels of danger signified by the signal word.

- DANGER
- WARNING
- CAUTION

Always read and comply with warning instructions.

Signal word Signalwort	Meaning Bedeutung	Consequences of non-observance Folgen bei Nichtbeachtung
DANGER GEFAHR	Warns of an imminent threat or danger warnt vor unmittelbar drohender Gefahr	Death or serious injury may result Tot oder schwere Körperverletzung sind wahrscheinlich
WARNING WARNUNG	Warns of possible danger warnt vor möglicher drohender Gefahr	Death or serious injury are possible Tot oder schwere Körperverletzung sind möglich
CAUTION VORSICHT	Warns of a possibly dangerous situation warnt vor möglicher gefährlicher Situation	Light injuries or material damage are possible Leichte Körperverletzung oder Sachschäden sind möglich

These symbols refer to particularly important information.

1. Einleitung

1.1 Allgemeines

Lesen Sie die Bedienungsanleitung vor Inbetriebnahme der Maschine durch,
um eine von Anfang an sachgemäße Handhabung, Bedienung und Wartung zu gewährleisten.
Im Wartungsplan sind alle Maßnahmen zusammengestellt, die den Trockner in gutem Zustand erhalten. Die Wartung ist einfach, muss jedoch regelmäßig vorgenommen werden.
Sie hilft Ihnen auch Unfälle zu vermeiden und die Garantie des Herstellers zu erhalten.

Nennen Sie bei jedem Schriftverkehr immer den Typ und die vollständige Seriennummer des Trockners, die auf dem Typenschild angegeben sind.

1.2 Erklärung der Symbole in der Bedienungsanleitung

Warnhinweise

Warnhinweise gibt es in drei Gefahrenstufen, die Sie an dem Signalwort erkennen:

- GEFAHR
- WARNUNG
- VORSICHT

Warnhinweise immer sorgfältig lesen und gewissenhaft befolgen.

Dieses Zeichen weist auf besonders wichtige Informationen hin.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

2. Safety rules, warnings

2.1 Use of dryer

Warning!

- The dryer/system must only be used for the purpose as designated in the operating instructions and only in combination with any device or components recommended or approved by the manufacturer.
- The max. inlet concentration should be according to DIN ISO 8573-1
  Moisture: Class 7
  Particle: [1] Class 7
  Oil content: Class 3
- To obtain maximum efficiency and operation of the dryer ensure all sections of the manual are read carefully.
- The dryer may not operate in a corrosive atmosphere!

[1] Particle according to ISO8573-1: 2010

Warning!
The manufacturer of the complete compressed air installation shall provide the air dryer with an appropriate safety valve (Ps=15bar/ 217,5psi) in order to protect it against overpressure (see P&I-Diagram) and follow local regulations.

Warning!
No aggressive components are allowed (e.g. acid, ammonia)

2.2 Safety rules

Warning!

- The device must only be used by properly trained personnel.
- Suitable personnel are experts who, by virtue of their training, knowledge and experience as well as their knowledge of relevant regulations can assess the work to be done and recognize the possible dangers involved.

* Ensure that personnel entrusted with installation, operation and maintenance are qualified and authorized to carry out their tasks.

2. Sicherheitsregeln, Warnhinweise

2.1 Bestimmungsgemäßer Gebrauch

Warnung!

- Das Gerät/System darf nur für die in dieser Betriebsanleitung vorgesehenen Einsatzfälle und nur in Verbindung mit vom Hersteller empfohlenen bzw. zugelassenen Geräten und Komponenten verwendet werden.
- Die maximale Eintrittskonzentration der Druckluft muss den nachfolgend aufgeführten Klassen der DIN ISO 8573-1 entsprechen
  Feuchtigkeit: Klasse 7
  Feststoffe: [1] Klasse 7
  Ölgehalt: Klasse 3
- Der einwandfreie und sichere Betrieb des Produktes erfordert sachgerechten Transport, Lagerung, Aufstellung und Montage, sowie sorgfältige Bedienung und Instandhaltung.
- Der Trockner darf nicht in korrosiver Atmosphäre betrieben werden!

[1] Feststoffbeladung nach ISO8573-1: 2010

Warnung!
Der Errichter der kompletten Druckluftstation sollte das Gerät mit einem geeigneten Sicherheitsventil (Ps=15bar/ 217,5psi) gegen Überdruck absichern (siehe R&I-Schema)

Warnung!
Die Bestandteile der Druckluft dürfen nicht aggressiv oder säurebildend sein (z.B. säurehaltige Dämpfe, Ammoniak)!

2.2 Sicherheitsregeln

Warnung!

- Das Gerät darf nur von qualifiziertem Personal genutzt werden.
- Qualifiziertes Personal sind Fachkräfte, die aufgrund ihrer fachlichen Ausbildung, Kenntnisse und Erfahrungen sowie Kenntnisse der einschlägigen Bestimmungen die übertragenen Arbeiten beurteilen und mögliche Gefahren erkennen können.

* Sicherstellen, dass das mit der Installation, Bedienung und Wartung betraute Personal die für die jeweilige Tätigkeit erforderliche Qualifikation und Berechtigung besitzt.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

2. Safety rules, warnings

2.3 Security-Warnings

Warning!
The dryer contains components under high pressure.
Before starting any service work turn off the compressed air supply to the dryer and depressurize the system.

Danger of fatal injury from electric shock!
Before starting any work on electrical equipment: Switch off and lock out the power supply - disconnect device and check that no voltage is present.

Warning!
The storage temperature t_0 = 0°C/ 32°F ... +55°C/ 131°F !

ATTENTION!!

IMPORTANT NOTICE!!

Check the registration and monitoring obligation of compressed air units.

2. Sicherheitsregeln, Warnhinweise

2.3 Warnhinweise

Warnung!
Das Gerät beinhaltet unter erhöhtem Luftdruck stehende Systeme.
Vor Servicearbeiten ist es drucklos zu machen.

Lebensgefahr durch elektrische Spannung!
Vor allen Arbeiten an der elektrischen Ausrüstung: Stromversorgung allpolig abschalten, gegen Wiedereinschalten sichern und Spannungsfreiheit prüfen.

Warnung!
Die Lagertemperatur t_0=0°C/ 32°F ... +55°C/ 131°F!

ACHTUNG!!

WICHTIGER HINWEIS!!

Überprüfen Sie die Anmelde- und Überwachungspflicht von druckluftführenden Geräten.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

3. Conditions of Guarantee

3.1 General

The guarantee covers the delivered device with regard to our general terms of delivery.

3.2 Exclusion from guarantee coverage

No guarantee claims shall be assertible,

- if the device is damaged or destroyed due to force majeure or environmental effects (humidity, electric shocks, etc.).
- for damage resulting from incorrect handling, in particular failure to comply with the operating and maintenance instructions (regular inspection of the pre- and after filter and the condensate drain, etc.).
- if the device has not been used in accordance with its specifications (see Section 11. "Technical Data“).
- if the device has been opened or repaired by workshops or other persons unauthorized for this purpose and/or reveals any type of mechanical damage.

3. Garantiebedingungen

3.1 Allgemeines

Die Garantie erstreckt sich, im Rahmen unserer allgemeinen Lieferbedingungen, auf das gelieferte Gerät.

3.2 Garantieausschluss

Garantieansprüche bestehen nicht,

- wenn das Gerät durch Einfluss höherer Gewalt oder durch Umwelteinflüsse (Feuchtigkeit, Stromschläge, etc.) beschädigt oder zerstört wird.
- bei Schäden, die durch unsachgemäße Behandlung, insbesondere Nichtbeachtung der Betriebs- und Wartungsanleitung aufgetreten sind (regelmäßige Kontrolle des Vor- und Nachfilters, sowie des Kondensatableiter, etc.).
- falls das Gerät nicht seinen Bestimmungen entsprechend eingesetzt war (siehe Kapitel 11. "Technische Daten").
- falls das Gerät durch nicht hierfür autorisierte Werkstätten oder andere Personen unsachgemäß geöffnet oder repariert wurde und/oder mechanische Beschädigung irgendwelcher Art aufweist.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

4. Transport, delivery, Checking of goods received

4.1 Transport

The desiccant compressed air dryer must by no means be lifted at the compressed air inlet- or outlet connections. Severe damage may result from such handling.

Allow transportation only by personnel trained in the safe movement of loads.

4.2 Delivery

The desiccant compressed air dryer is thoroughly checked and properly packed before it leaves the factory. It has been handed over to the forwarding agent in perfect condition.

4.3 Checking on Receipt

Upon receipt please immediately check the packing for visible damage. In case of visible damage of the package, please insist upon a respective note on the delivery sheet of the forwarding agent.
Please also check the dryer for hidden damages. If a desiccant compressed air dryer is delivered with apparently undamaged packing but with hidden damage, be sure to inform the forwarding agent once you have inspected the dryer.

The manufacturer is not responsible for any damage which occurred during transport.

4.4 Storage

The dryer/filter should be stored in its original packaging or equivalent in a clean and dry atmosphere.

The storage temperature should be between 0°C/ 32°F and 55°C/ 131°F. Frost or higher temperatures can cause damage.

For long storage/commissioning periods (>6 months), the manufacturer should also be contacted.

4. Transport, Anlieferung Wareneingangskontrolle

4.1 Transport

Der Adsorptionstrockner darf auf keinen Fall an den Druckluft-Eintritts- und Austrittsstutzen angehoben werden. Ernsthafte Beschädigungen können hieraus resultieren.

Transport nur durch Personen, die aufgrund ihrer Ausbildung zum sicherheitsgerechten Umgang mit Transportgut berechtigt sind.

4.2 Anlieferung

Der Adsorptionstrockner ist sorgfältig geprüft und verpackt worden, bevor er das Herstellerwerk verlassen hat. Er ist im einwandfreien Zustand dem Spediteur übergeben worden.

4.3 Wareneingangskontrolle

Überprüfen Sie die Verpackung auf sichtbare Beschädigungen. Bestehen Sie im Falle einer sichtbaren Beschädigung darauf, dass auf dem Ablieferungsnachweis des Spediteurs ein entsprechender Vermerk gemacht wird.
Überprüfen Sie das Gerät auf verdeckte Beschädigungen. Wurde der Adsorptionstrockner mit augenscheinlich unbeschädigter Verpackung aber verdeckten Beschädigungen angeliefert, so verständigen Sie unverzüglich den Spediteur und veranlassen eine Begutachtung des Adsorptionstrockners.

Für Beschädigungen während des Transportes ist der Hersteller nicht verantwortlich.

4.4 Lagerung

Der Trockner/Filter sollte in der Originalverpackung oder einer gleichwertigen Verpackung in einem möglichst sauberen und trockenen Innenraum gelagert werden.

Die Lagertemperatur muss zwischen 0°C/ 32°F und 55°C/ 131°F sein. Frost oder höhere Temperaturen können zu Schäden führen.

Bei langen Lagerungen/Außerbetriebnahmen (>6Monate) sollte zusätzlich der Hersteller kontaktiert werden.

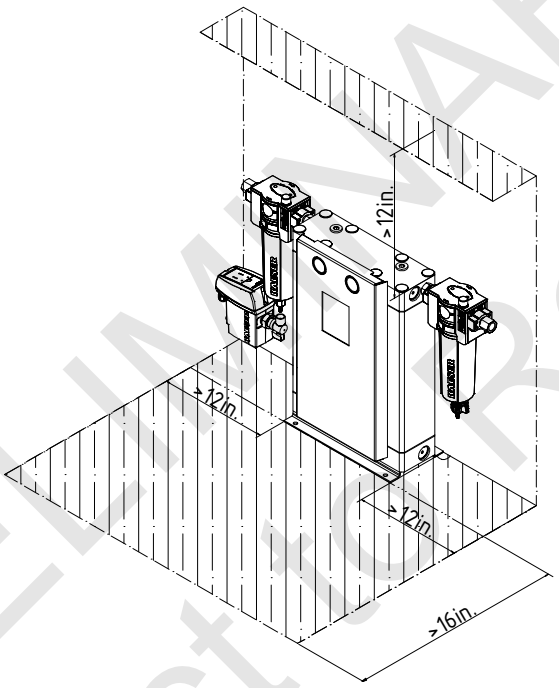
A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

5. Installation and mounting

5.1 Location of Installation

The desiccant compressed air dryer should be installed in a dry room indoors. Ample free space should be allowed for the maintenance of the device.
The dryer is furnished in a cabinet for ground mounting.
The dryer is suitable for floor or wall mounting with a bracket (see chapter "Dimensional drawing") (OPTION).
If supplied, install pre- and after- filter, which are packed separately, in the pipe-system (see chapter 15).
Please use the connector adapters.

5.2 Service clearance



5.3 Mounting

Warning!
When a valve is installed after the dryer an appropriate safety relief valve should be installed to prevent over pressurization of the dryer due to external causes (fire) (see local regulations).

CAUTION!
When installing the dryer ensure all connections are even and no pressure is placed on inlet and outlet connections.

Caution!
Check all compressed-air connections to ensure that they are firm and free of leaks.

5. Aufstellung und Montage

5.1 Aufstellungsort

Der Adsorptionstrockner sollte in einem trockenen und staubfreien Innenraum aufgestellt werden. Zur Wartung der Anlage ist es dringend erforderlich, dass genügend Freiraum vorhanden ist.
Der Adsorptionstrockner ist betriebsbereit in einem Gehäuse aufgebaut.
Der Trockner ist per Halterung für die Boden- oder Wandmontage geeignet (siehe Kapitel „Maßzeichnung“) (OPTION).
Vor- und Nachfilter werden lose mitgeliefert und sind bauseits in die Rohrleitungen einzubinden (siehe Kapitel 15).
Die mitgelieferten Anschlussadapter sind zu nutzen.

5.2 Service Freiraum

5.3 Montage

Warnung!
Ist ein Absperrorgan im Druckluftausgang des Trockners installiert, sollte ein Sicherheitsventil installiert werden, welches einen durch äußere Einflüsse (z.B. Feuer) hervorgerufenen Überdruck ableiten kann.

Vorsicht!
Achten Sie bei der Montage darauf, dass keine Zug- und Druckkräfte auf die Geräteanschlüsse übertragen werden.

Vorsicht!
Überprüfen Sie alle druckluftführenden Verbindungen auf Festigkeit und Dichtigkeit.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

5. Installation and mounting

5.4 Connection to the compressed air system

The compressed air inlet and outlet line should be equipped with shut off valves and a bypass system.

When installing a bypass, its function and influence on the compressed air quality, must be known when used.

Pre- and after-filters are supplied loose and must be mounted directly on the desiccant compressed air dryer by using the connector adapters. If not possible e.g. due to lack of space the interconnecting piping must be high quality (corrosion free)!

For the sizing of the connections please see chapter 11. "Technical Data".

5.5 Connection to the dryer

The dryer is shipped complete with desiccant and ready to operate after compressed air piping, condensate piping and electrical connections are completed.

5.6 Pre- and after- filter

In order to ensure correct functioning of the desiccant dryer, an oil removal filter (series KE) with a max. residual oil of 0,01 ppm must be installed.
To protect the down-line system from desiccant dust, a dust filter (series KD) must be installed (see chapter 17 "Filter").

For direct connection of the filter, connector adapters are preassembled.

5.7 Piping

The piping between the preliminary filter and the dryer must be short and corrosion-resistant.
For direct connection of the filter, connector adapters are preassembled (see chapter 5.4).

5.8 Electrical connection

Power supply must be connected in the electrical box (see chapter "Wiring diagram" and "Dimensional drawing").
The electro-technical connection data are to be taken from chapter 11. Technical data".
The connection conditions are based on the respective national regulations.
For direct electrical connection (without plug), all-pole disconnection must be provided!

5. Aufstellung und Montage

5.4 Anschluss an das Druckluftnetz

Die Druckluftein- und -austrittsleitung sollte mit Absperrorganen (Kugelhähne, Ventile), sowie mit einem Bypass versehen werden versehen werden.

Bei einer Installation eines Bypass muss dessen Funktion und Einflussnahme auf die Druckluftqualität bei Betätigung bekannt sein.

Vor-und Nachfilter werden lose mitgeliefert und sind unter Verwendung der mitgelieferten Adapter direkt an den Adsorptionstrockner zu montieren. Kann dies z.B. aufgrund räumlicher Gegebenheiten nicht umgesetzt werden, muss darauf geachtet werden die Rohrleitung in einer hochwertigen (korrosionsfreien) Ausführung zu wählen.

Die Dimensionierung der Anschlüsse entnehmen Sie bitte dem Kapitel 11. „Technische Daten“.

5.5 Anschluss des Trockners

Der Trockner wird betriebsbereit mit Trockenmittelfüllung geliefert und kann nach Montage der Filter, sowie nach Anschluss der Druckluftleitungen, Kondensatleitungen und der Stromversorgung in Betrieb genommen werden.

5.6 Vor- und Nachfilter

Um eine einwandfreie Funktion des Gerätes zu gewährleisten, ist in der Zuleitung ein Ölfeinfilter (Serie KE) mit max. zulässigem Restölgehalt von 0,01 ppm zu installieren.
Zum Schutz der nachfolgenden Rohrleitungssysteme vor Adsorptionsmittelabrieb ist ein Staubfeinfilter (Serie KD) zu installieren (siehe Kapitel 17 „Filter).

Zum direkten Anschluss der Filter sind Anschlussadapter vormontiert.

5.7 Rohrleitung

Die Verrohrung zwischen Vorfilter und Trockner muss kurz und zwingend korrosionsfrei ausgeführt sein!
Zum direkten Anschluss der Filter sind Anschlussadapter vormontiert (siehe Kapitel 5.4).

5.8 Elektroanschluss

Die Zuleitung wird in der Elektrobox angeschlossen (siehe Kapitel „Schaltplan“ und „Maßzeichnung“).
Die elektrotechnischen Anschlussdaten entnehmen Sie bitte dem Kapitel 11. „Technische Daten“.
Die Anschlussbedingungen richten sich nach den jeweiligen nationalen Vorschriften.
Bei direktem elektrischen Anschluss (ohne Stecker), muss bauseits eine allpolige Abschaltung vorgesehen werden!

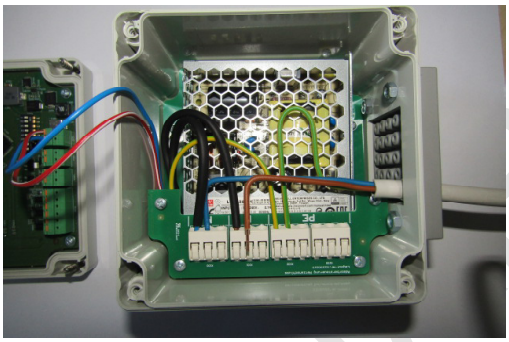
A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

5. Installation and mounting

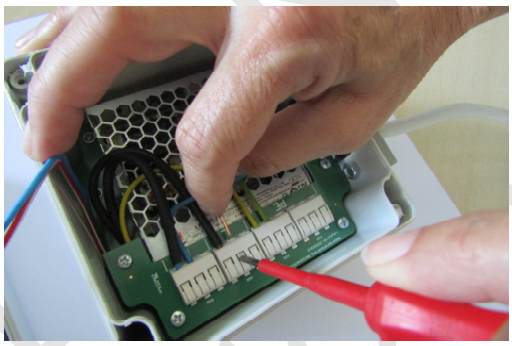
5.8.1 Power supply connection

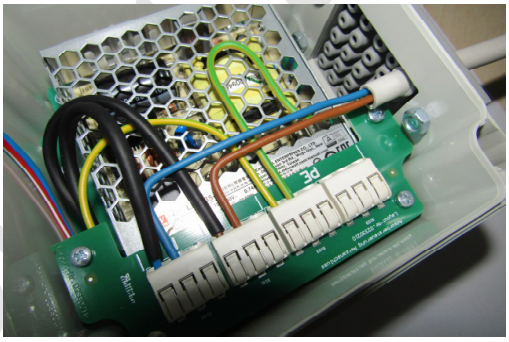
**Danger of fatal injury from electric shock!
fore starting any work on electrical equipment:
Switch off and lock out the power supply, disconnect device and check that no voltage is present.**

Strip the individual wires approx. 10mm (no use of wire end ferrule).



Press the tongue of the connection terminal carefully down with a suitable screwdriver and insert the cable into the terminal.
For removing the connecting cable carefully press down the terminal and pull out the cable.





5. Aufstellung und Montage

5.8.1 Netzanschluss

**Lebensgefahr durch elektrische Spannung!
Vor allen Arbeiten an der elektrischen Ausrüstung:
Stromversorgung allpolig abschalten, gegen Wiedereinschalten sichern und Spannungsfreiheit prüfen.**

Die einzelnen Adern ca. 10mm abisolieren
(keine Aderendhülsen nutzen).

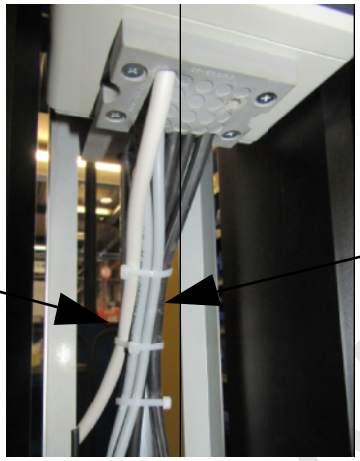
Zunge der Anschlussklemme vorsichtig
mit einem geeignetem Schraubendreher herunterdrücken und die Leitung in die Klemme einführen. Zum Entfernen der
Anschlussleitung Klemme vorsichtig herunterdrücken und die
Leitung herausziehen.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

5. Installation and mounting

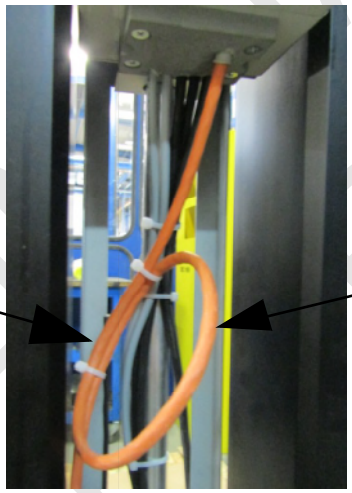
5.8.2 Power supply connection and potential free contacts

The externally connected cables (power cable ,...) should be fixed by means of cable ties as shown in the picture.

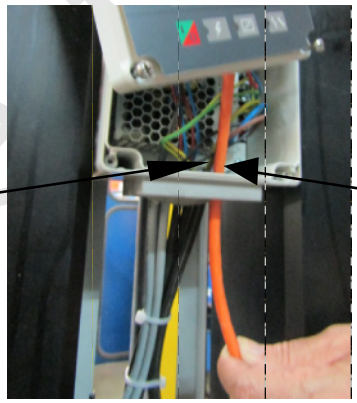


5.7.3 Network connection

The network cable should be provided with a loop, be fixed under the control using cable ties (see picture).



When opening the controller, the network cable must be pushed carefully to avoid mechanical stress on the network socket.



5.9 Ambient conditions

The desiccant compressed air dryer must not be operated in abnormal ambient conditions. Abnormal environmental conditions include: high ambient temperatures, high humidity, strong sunlight, vibrations, etc., (see also chapter 2.1).

5. Aufstellung und Montage

5.8.2 Netzanschluss und potentiale Kontakte

Die extern angeschlossenen Kabel (Netzanschlusskabel, ...) sollen wie im Bild zu sehen mittels Kabelbinder fixiert werden.

5.7.3 Netzwerkanschluss

Das Netzwerkkabel soll mit einer Schlaufe versehen, mittels Kabelbinder unter der Steuerung fixiert werden (siehe Bild).

Beim Öffnen der Steuerung muss das Netzwerkkabel vorsichtig nachgeschoben werden, um eine mechanische Belastung der Netzwerkbuchse zu vermeiden.

5.9 Umgebungsbedingungen

Der Adsorptionstrockner darf nicht in abnormen Umgebungsbedingungen betrieben werden.Unter abnormale Umgebungsbedingungen sind z.B. von der BA abweichende Umgebungstemperaturen, hohe Luftfeuchtigkeit, starke Sonneneinstrahlung, Vibrationen usw. zu verstehen, siehe dazu auch Kapitel 2.1.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

6. Initial start-up Start-up after prolonged inoperative periods

6.1 Preconditions

The desiccant compressed air-dryer is ready for operation when:

- The device has been installed in accordance with section 5. “Assembly, installation“.
- All inlet and outlet lines have been correctly connected.
- The required forms of energy (electricity, compressed-air) are available.
- A stable power supply must be available.
- The shut-off devices (e.g. ball valve) on the compressed-air inlet line are opened and in the outlet line is closed (if installed).
- The compressed-air bypass is open (if installed).
- The appropriate operating voltage is supplied to the dryer.
- Filters are mounted.
- Condensate piping mounted.

The dryer is preset at the factory, see chapter 7.6.4.

6.2 Switching on the dryer

The device should be switched on only when all the conditions specified in section 6.1 have been fulfilled.

Dryer is under operating pressure.

Press the “I/0“ button.

The dryer must regenerate for approx. 6 hours without compressed-air being supplied to the network.

Open the shut-off device in the compressed-air outlet line (if installed).

Close the compressed-air bypass (if installed).

6.3 Operation

Please note the information provided in section 9. “Service and maintenance“.

6.4 Switching off the dryer

Press the “I/0“ button.

- Dryer is switched off.

Caution!
The dryer contains high pressure!
To unpressurize see chapter 9. “Service and maintenance“.

6. Erste Inbetriebnahme Inbetriebnahme nach längerem Stillstand

6.1 Bedingungen

Der Trockner ist einschaltbereit wenn:

- Das Gerät entsprechend Kapitel 5. „Aufstellung, Montage“ installiert wurde.
- Alle Zu- und Ableitungen sachgerecht angeschlossen sind.
- Die erforderlichen Energien (Elektro; Druckluft) verfügbar sind.
- Eine stabile Spannungsversorgung muss vorhanden sein.
- Absperrorgane (z.B. Ventil, Kugelhahn) in der Druckluft-eintrittsleitung geöffnet sind und in der Austrittsleitung geschlossen sind (wenn vorhanden).
- Der Druckluft-Bypass geöffnet ist (wenn vorhanden).
- Das Gerät mit der entsprechenden Betriebsspannung versorgt wird
- Filter montiert sind.
- Kondensatableitung montiert ist.

Der Trockner ist werksseitig voreingestellt, siehe Kapitel 7.6.4.

6.2 Einschalten

Gerät nur einschalten, wenn alle Bedingungen des Abschnittes 6.1 erfüllt sind.

Trockner steht unter Betriebsdruck.

Taster „I/0“ betätigen.

Der Trockner muss ca. 6 Stunden regenerieren, ohne das Druckluft dem Druckluftnetz zugeführt wird.

Absperrorgan in der Druckluftaustrittsleitung öffnen (wenn vorhanden)

Druckluft-Bypass schließen (wenn vorhanden).

6.3 Betrieb

Beachten Sie bitte die Hinweise im Kapitel 9. „Wartung, Instandhaltung“.

6.4 Ausschalten

Taster „I/0“ betätigen.

- Gerät ist ausgeschaltet.

Vorsicht!
Anlage steht immer noch unter Druck!
Entlüften siehe Kapitel 9. „Wartung, Instandhaltung“.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

7.1 Preconditions for operation

The dryer is ready for operation only when the following conditions have been fulfilled:

- Installation of the dryer in accordance with section 5. ‘Installation, assembly“.
- Dryer has been commissioned in accordance with section 6. “Initial start-up“.
- All inlet and outlet lines have been correctly connected.
- The required forms of energy (electricity, compressed-air) are available.
- The compressed-air inlet and outlet line is pressurized.
- Shut-off devices (ball valve) in the compressed-air inlet and outlet lines are open.
- Bypass (if installed) in the compressed-air line up-line of the desiccant compressed-air dryer is closed.
- The appropriate operating voltage is supplied to the dryer.
- Slowly pressurize the system up to working pressure.

7.2 Switching on the dryer

The dryer is to be switched on only when all the requirements specified in section 7.1 “Preconditions“ have been fulfilled.

☞ Press the „I / 0“ button.

- The dryer is now in operation.

If "remote on/off" is selected (see Section 7.6.4), the dryer can be stopped via contact REM/GND (see wiring diagram).
No connection means "Remote On".

Or if selected via Modbus:
When remotely controlled via Modbus, the dryer will remain in its state (on / off) if the Modbus connection is disconnected.

7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

7.1 Betriebsbereitschaft

Das Gerät ist betriebsbereit, wenn folgende Bedingungen erfüllt sind:

- Aufstellung des Gerätes gemäß Kapitel 5. „Aufstellung, Montage“.
- Gerät wurde entsprechend Kapitel 6. „Erste Inbetriebnahme“ in Betrieb genommen.
- Alle Zu- und Ableitungen sind sachgerecht angeschlossen.
- Die erforderlichen Energien (Elektro; Druckluft) sind verfügbar.
- Die Druckluftein- und -austrittsleitung ist mit Druck beaufschlagt.
- Absperrorgane (Ventil, Kugelhahn) in der Drucklufteinund austrittsleitung sind geöffnet.
- Ein eventuell vorhandener Bypass in der Druckluftleitung vor dem Adsorptionstrockner ist geschlossen.
- Das Gerät wird mit der entsprechenden Betriebsspannung versorgt
- Drucklose Anlagen müssen langsam mit Druck beaufschlagt werden, bis der Systemdruck erreicht ist.

7.2 Einschalten

Gerät nur einschalten, wenn alle Bedingungen des Abschnittes 7.1 "Betriebsbereitschaft" erfüllt sind.

☞ Taster „I/0“ betätigen.

- Gerät ist in Betrieb.

Falls „Fern Ein/Aus“ gewählt wurde (siehe Abschnitt 7.6.4), kann der Trockner über Kontakt REM/GND gestoppt werden (siehe Schaltplan).
Keine Verbindung bedeutet „Fern Ein“.

Oder falls angewählt über Modbus:
Bei Fernsteuerung über Modbus, verbleibt der Trockner in dem jeweiligen Zustand (Ein/Aus), falls die Modbus Verbindung getrennt wird.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

7.3 Operation

Please note the information provided in section 9. "Service and maintenance".

7.4 Switching off the dryer

Close the shut-off devices in the compressed air line before and after the desiccant dryer is used, to avoid a flow through the dryer when it is switched off. Close the condensate line to the condensate drain to avoid flooding the desiccant dryer with condensate in the event of loss of internal pressure.

Press the „I / 0" button.
(Only possible on local operation.
De-energize at remote operation).

- Dryer is switched off.

Caution!
The dryer contains high pressure!
To depressurize see chapter 9. "Service and maintenance".

The dryer is designed for continuous operation. After prolonged inoperative periods, the desiccant compressed air dryer is to be restarted as specified in section 6.2 „Switching on the dryer".

7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

7.3 Betrieb

Beachten Sie bitte die Hinweise im Kapitel 9. „Wartung, Instandhaltung".

7.4 Ausschalten

Absperrorgane in der Druckluftleitung vor und nach dem Adsorptionstrockner schließen um eine Durchströmung im ausgeschalteten Zustand zu vermeiden.
Kondensatleitung zum Kondensatableiter schließen um eine Flutung des Adsorptionstrockners mit Kondensat bei internen Druckverlust zu vermeiden.

Taster „I/0" betätigen
(Nur im Vor Ort Betrieb möglich.
Bei Fern Betrieb spannungsfrei schalten).

- Gerät ist ausgeschaltet.

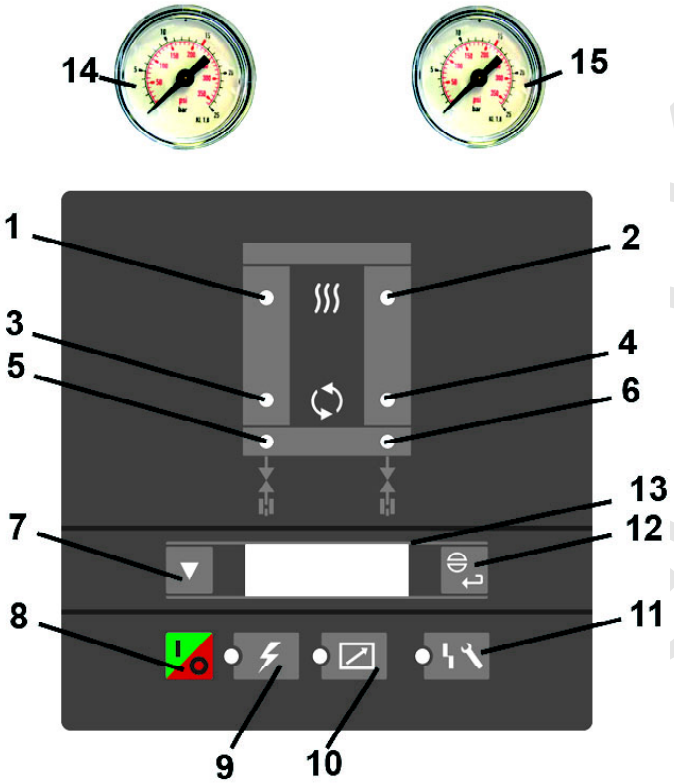
Vorsicht!
Anlage steht immer noch unter Druck!
Entlüften siehe Kapitel 9. „Wartung, Instandhaltung".

Das Gerät ist für Dauerbetrieb ausgelegt. Nach längerem Betriebsstillstand ist der Adsorptionstrockner entsprechend dem Kapitel 6.2 „Einschalten" wieder in Betrieb zu nehmen.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

7.5 Controls (Panel)



1. Left cartridge drying LED (green)
2. Right cartridge drying LED (green)
3. Left cartridge regenerating LED (yellow)
4. Right cartridge regenerating LED (yellow)
5. Left purge valve LED (green)
6. Right purge valve LED (green)
7. Mark / Scroll
8. Power On/ Off
9. Power On LED
10. LED Remote ON/OFF
11. LED Service/ Warning/ Alarm
12. Enter / Quit
13. Graphic display
14. Pressure gauge left cartridge
15. Pressure gauge right cartridge

Power On	white: Voltage applied green: Dryer on green flashes: Dryer (Remote) off
Dryer in remote On/Off	green: at terminal green flashing: at Modbus
Warning/ Service/ Alarm	yellow for service, for warning yellow flashing, flashing has priority! for alarm red, flashing has priority! red by wire break PDP-Sensor for PDP-Alarm red flashing

7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

7.5 Bedienungselemente (Panel)

1. LED linke Kartusche trocknet (grün)
2. LED rechte Kartusche trocknet (grün)
3. LED linke Kartusche regeneriert (gelb)
4. LED rechte Kartusche regeneriert (gelb)
5. LED Regenerationsventil links (grün)
6. LED Regenerationsventil rechts (grün)
7. Markieren / Scrollen
8. Ein/Aus-Schalter
9. LED Spannung Ein
10. LED Fern EIN/AUS
11. LED Service/ Warnung/ Alarm
12. Enter / Quittieren
13. Grafikdisplay
14. Manometer linke Kartusche
15. Manometer rechte Kartusche

Spannung liegt an	weiß: Spannung liegt an grün: Trockner Ein grün blinkend: Trockner (Fern) Aus
Trockner im Fern Ein/Aus	grün: bei Klemme grün blinkend: bei Modbus
Warnung/ Service/ Alarm	gelb bei Service, bei Warnung gelb blinken, blinken geht vor! bei Alarm rot, blinken geht vor! rot bei Drahtbruch DTP-Sensor rot blinken bei DTP-Alarm

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

7.5.1 Start screen

Basic menu
If there is a PDP sensor, the first line indicates the temperature symbol; if there is no sensor, the first line is empty!

Dryer On, without PDP-Sensor

Dryer On, with PDP-Sensor (Optional)

Dryer Off, without PDP-Sensor

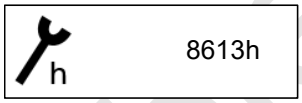
Dryer Off, with PDP-Sensor (Option)

Press ▼ to move to:

Shows hours with operating voltage

Press ▼ to move to:

Shows hours until the next service



Press ▼ to move to:

Shows the software version

Press ▼ to move to:

Dryer On, without PDP-Sensor

or after approx. 1 minute without input.

7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

7.5.1 Startbildschirm

Grundmenue
Die erste Zeile zeigt bei vorhandenem DTP-Sensor das Temperatursymbol, ist kein Sensor vorhanden, ist die erste Zeile leer!

Trockner Ein, ohne DTP-Sensor

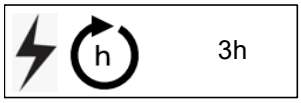
Trockner Ein, mit DTP-Sensor (Option)

Trockner Aus, ohne DTP-Sensor

Trockner Aus, mit DTP-Sensor (Option)

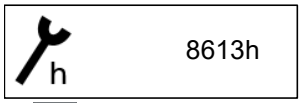
Durch Drücken von ▼, gelangt man zu:

Zeigt die Netzstunden an



Durch Drücken von ▼, gelangt man zu:

Zeigt die Stunden bis zum nächsten Service an



Durch Drücken von ▼, gelangt man zu:

Zeigt die Softwareversion an

Durch Drücken von ▼, gelangt man zu:

Trockner Ein, ohne DTP-Sensor

oder nach ca. 1 Minute ohne Eingabe

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

7.5.2 Message history

By briefly pressing , you get to the message display.
Press to move to the next message.
Press again briefly to return to "Basic menu", or after 2m 30s.

Top right are the messages numbered (1 is the latest, maximum 20 messages, FIFO system)
Press to scroll through the messages .:
- Warnings cause the warning / service relay to drop.
- Alarms cause the alarm relay to drop.

Possible messages:

202 Drain Warning (deactivates the Relay warning / service) yellow LED flashes

310 Service time expired Relay warning / service) yellow LED glows

204 DTP alarm (deactivates the Relay Alarm) red LED flashes

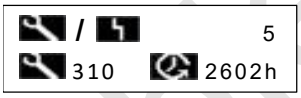
210 DTP sensor cable break deactivates the Relay Alarm) red LED lights

After a power failure message 204 is suppressed for 10 minutes. While this message is suppressed, message 202 is also suppressed.

Examples:

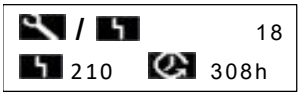
1st Message (newest)
Message 202, at 2891 hours with operating voltage

5. Message (5 newest)
Message 310, at 2602 hours with operating voltage



12. Message (12 newest)
Message 204, at 2001 hours with operating voltage

18. Message (18 newest)
Message 210, at 308 hours with operating voltage



7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

7.5.2 Meldungshistorie

Durch kurzes Drücken von , gelangt man in die Meldungsanzeige.
Durch Drücken von , gelangt man zur nächsten Meldung.
Durch erneutes kurzes Drücken von , gelangt man zurück zum „Grundmenue“, oder nach Ablauf von 2m 30s.

Rechts oben sind die Meldungen nummeriert (1 ist die Neueste, maximal 20 Meldungen, FIFO System)
Mit der Taste , wird durch die Meldungen gescrollt.:
- Warnungen führen zum Abfall des Warnung/Service Relais.
- Alarme führen zum Abfall des Alarm Relais.

Mögliche Meldungen:

202 Ableiter Warnung (führt zur Deaktivierung des Relais Warnung/Service) gelbe LED blinkt

310 Service Zeit abgelaufen (führt zur Deaktivierung des Relais Warnung/Service) gelbe LED leuchtet

204 DTP Alarm (führt zur Deaktivierung des Relais Alarm) rote LED blinkt

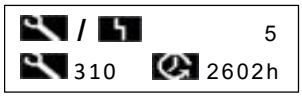
210 DTP Sensor Kabelbruch (führt zur Deaktivierung des Relais Alarm) rote LED leuchtet

Nach einem Spannungsausfall ist die Meldung 204 für 10 Minuten unterdrückt. Während diese Meldung unterdrückt wird, ist auch die Meldung 202 unterdrückt.

Beispiele:

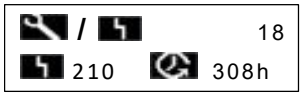
1. Meldung (Neueste)
Meldung 202, bei 2891 Netzstunden

5. Meldung (5 Neueste)
Meldung 310, bei 2602 Netzstunden



12. Meldung (12 Neueste)
Meldung 204, bei 2001 Netzstunden

18. Meldung (18 Neueste)
Meldung 210, bei 308 Netzstunden



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

7.5.3 Remote on/off settings (see 7.6.4)

Mode A:

With Remote Off, the cycle is stopped, the solenoid valves are switched off.
With Remote On, the cycle continues at the same point.

Optimized for reciprocating compressors!
Dip switch 6 on OFF.

Mode B:

With Remote Off, the half-cycle is stopped at the end, the solenoid valves are switched off.
With Remote On, the cycle continues at the same point.

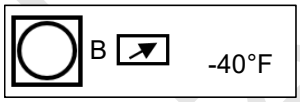
Optimal for the desicant dryer!
Dip switch 6 ON.

Remote On Mode A

Remote On Mode B

Remote Off Mode A

Remote Off Mode B



7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

7.5.3 Fern Ein/Aus Einstellungen (siehe 7.6.4)

Modus A:

Bei Fern Aus wird der Zyklus gestoppt, die Magnetventile ausgeschaltet.
Bei Fern Ein läuft der Zyklus an gleicher Stelle weiter.

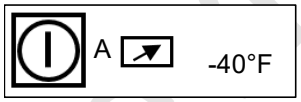
Optimiert für Kolbenkompressoren!
Dip Schalter 6 auf OFF.

Modus B:

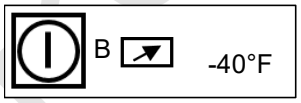
Bei Fern Aus wird der Halb-Zyklus am Ende gestoppt, die Magnetventile werden ausgeschaltet.
Bei Fern Ein läuft der Zyklus an gleicher Stelle weiter.

Optimal für den Adsorber!
Dip Schalter 6 auf ON.

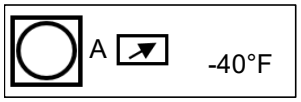
Fern Ein Modus A



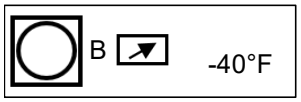
Fern Ein Modus B



Fern Aus Modus A



Fern Aus Modus B



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

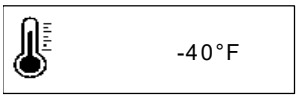
7.5.4 Setting menu

Approximately 3s keep the button ↵ pressed.

Target pressure dewpoint

Now appears (Set pressure dewpoint):

PDP sensor installed and activated



or

PDP sensor disabled

Pressing ▼ marks the number (if activated).

By further pressing the ▼ button, the scrolling will continue:

-80°C/-112°F; -79°C/-110°F; …; -21°C/-5,8°F; -20°C/-4°F, the selection takes place after 6s or by pressing the "Enter" button.

Meanings:

PDP control switched off (see chapter 7.6.4)

e.g. -40°C/-40°F Target PDP is -40 ° C/-40°F

Pressure dewpoint alarm (if PDP sensor installed and activated)

By pressing ↵ , you move to (pressure dewpoint alarm):

Pressing ▼ marks the number.

Press the button ▼ again to scroll through, the selection takes place after 6s or by pressing the "Enter" button.

The setting range is between (target pressure dewpoint + 5°C/ 41°F) and 0°C/32°F.

Example:
Target pressure dewpoint: -37°C/-34,6°F
Pressure dewpoint alarm setting range: -32°C/-25,6°F bis 0°C/ 32°F

The following options are available:
(-32°C/-25,6°F; -31°C/-23,8°F; …; -1°C/30,2°F; 0°C/32°F; -32°C/-25,6°F)

7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

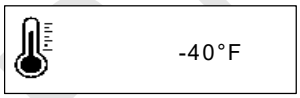
7.5.4 Einstellmenü

Ca. 3s die Taste ↵ gedrückt halten.

Solldrucktaupunkt

Jetzt erscheint (Solldrucktaupunkt):

DTP Sensor installiert und aktiviert



oder

DTP Sensor deaktiviert

Durch Drücken von ▼ , wird die Zahl (falls aktiviert) markiert.

Durch weiteres Drücken der ▼ Taste, wird durchgescrollt:

-80°C/-112°F; -79°C/-110°F; …; -21°C/-5,8°F; -20°C/-4°F, die Auswahl erfolgt nach 6s oder durch Betätigen der Taste „Enter“

Bedeutungen:

DTP Steuerung ausgeschaltet (siehe Kap. 7.6.4)

z.B. -40°C/-40°F Soll DTP ist -40°C/-40°F

Drucktaupunktalarm (falls DTP Sensor installiert und aktiviert)

Durch Drücken von ↵ , gelangt man zu (Drucktaupunktalarm):

Durch Drücken von ▼ , wird die Zahl markiert.

Durch weiteres Drücken der ▼ Taste, wird durchgescrollt, die Auswahl erfolgt nach 6s oder durch Betätigen der Taste „Enter“

Der Einstellbereich liegt zwischen (Solldrucktaupunkt + 5°C/41°F) und 0°C/32°F.

Beispiel:
Solldrucktaupunkt: -37°C/-34,6°F
Einstellbereich Drucktaupunktalarm: -32°C/-25,6°F bis 0°C/32°F

Folgende Auswahlmöglichkeit:
(-32°C/-25,6°F; -31°C/-23,8°F; …; -1°C/30,2°F; 0°C/32°F; -32°C/-25,6°F)

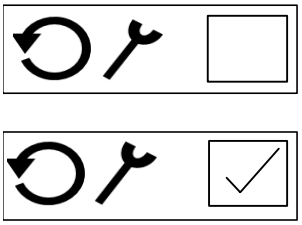
A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

Service Counter

Press ↵ to move to (Reset Service Counter):

Pressing ▼ , the confirmation icon turns on or off.



If the confirmation icon is selected with ↵, the service time counter is set to the default value or after 2m30s.

IP-Address

Press ↵ to move to (Enter IP address):

IP-Address
169.254.100.095

Pressing ▼ marks number/symbol in the second line.
By further pressing the ▼ button the numbered block is incremented:

IP-Address
169.254.100.095

By pressing ↵, you move to the next number block:

IP-Address
169.254.100.095

If the mark disappears after a few seconds, the value is accepted.

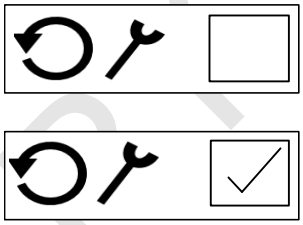
The final transfer to the control memory only takes place when the setting menu is exited via the ↵ button or via a cold start.

7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

Service Counter

Durch Drücken von ↵ , gelangt man zu (Rücksetzen Service Counter):

Durch Drücken von ▼ , wird das Bestätigungssymbol ein oder ausgeblendet.



Wenn das Bestätigungssymbol mit ↵ gewählt wird, wird der Servicezeit-Counter auf den Default Wert gesetzt oder nach 2m30s..

IP-Adresse

Durch Drücken von ↵ , gelangt man zu (Eingabe IP Adresse):

IP-Address
169.254.100.095

Durch Drücken von ▼ , wird die Zahl/das Symbol in der zweiten Zeile markiert.
Durch weiteres Drücken der ▼ Taste, wird im markierten Zahlenblock hochgezählt:

IP-Address
169.254.100.095

Durch Drücken von ↵ , gelangt man jeweils zum nächsten Zahlenblock:

IP-Address
169.254.100.095

Wenn die Markierung nach wenigen Sekunden erlischt, ist der Wert übernommen.

Die endgültige Übernahme in den Steuerungsspeicher findet erst statt, wenn das Einstellmenue über die ↵ Taste verlassen wird, oder über einen Kaltstart.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

Subnet-Address

Press ↵ to move to (Enter Subnet Address):

Subnet
255.255.000.000

Pressing ▼ marks number/symbol in the second line.

By further pressing the ▼ button the numbered block is incremented:

Subnet
255.255.000.000

By pressing ↵, you move to the next number block:

Subnet
255.255.000.000

If the mark disappears after a few seconds, the value is accepted.

The final transfer to the control memory only takes place when the setting menu is exited via the ↵ button or via a cold start.

Gateway-Address

Press ↵ to move to (Enter Gateway Adress):

Gateway
169.254. 100.100

Pressing ▼ marks number/symbol in the second line.
By further pressing the ▼ button the numbered block is incremented:

Gateway
169.254. 100.100

By pressing ↵, you move to the next number block:

Gateway
169.254. 100.100

If the mark disappears after a few seconds, the value is accepted.

Press again briefly ↵ to return to "Basic menu", or after 2m 30s.

The final transfer to the control memory only takes place when the setting menu is exited via the ↵ button or via a cold start.

7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

Subnet-Adresse

Durch Drücken von ↵, gelangt man zu (Eingabe Subnet Adresse):

Subnet
255.255.000.000

Durch Drücken von ▼, wird die Zahl/das Symbol in der zweiten Zeile markiert.
Durch weiteres Drücken der ▼ Taste, wird im markierten Zahlenblock hochgezählt:

Subnet
255.255.000.000

Durch Drücken von ↵, gelangt man jeweils zum nächsten Zahlenblock:

Subnet
255.255.000.000

Wenn die Markierung nach wenigen Sekunden erlischt, ist der Wert übernommen.

Die endgültige Übernahme in den Steuerungsspeicher findet erst statt, wenn das Einstellmenue über die ↵ Taste verlassen wird, oder über einen Kaltstart.

Gateway-Adresse

Durch Drücken von ↵, gelangt man zu (Eingabe Gateway Adresse):

Gateway
169.254.100.100

Durch Drücken von ▼, wird die Zahl/das Symbol in der zweiten Zeile markiert.
Durch weiteres Drücken der ▼ Taste, wird im markierten Zahlenblock hochgezählt:

Gateway
169.254. 100.100

Durch Drücken von ↵, gelangt man jeweils zum nächsten Zahlenblock:

Gateway
169.254. 100.100

Wenn die Markierung nach wenigen Sekunden erlischt, ist der Wert übernommen.

Durch erneutes kurzes Drücken von ↵, gelangt man zurück zum „Grundmenue“, oder nach Ablauf von 2m 30s.

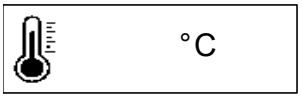
Die endgültige Übernahme in den Steuerungsspeicher findet erst statt, wenn das Einstellmenue über die ↵ Taste verlassen wird, oder über einen Kaltstart.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

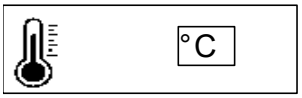
7. Operation (switching on, switching off, controls)

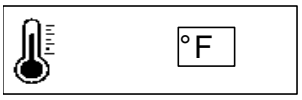
Setting from °C to °F

Press ↵ to move to (Setting from °C to °F):



Pressing ▼ , turns °C or °F on or off.





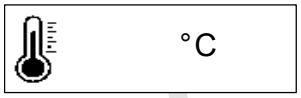
Press ↵ to select ° C or ° F or after 6s.

Press again briefly ↵ to return to "Basic menu", or after 2m 30s.

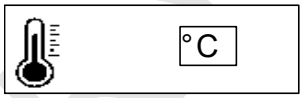
7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

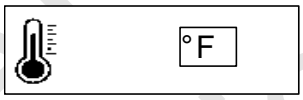
Einstellung von °C zu °F

Durch Drücken von ↵ , gelangt man zu (Einstellung von °C zu °F):



Durch Drücken von ▼ , wird °C oder °F ein oder ausgeblendet.





Durch Drücken von ↵ wählt man °C oder °F aus oder nach 6s.

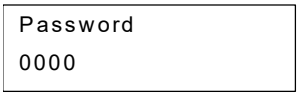
Durch erneutes kurzes Drücken von ↵ , gelangt man zurück zum „Grundmenue“, oder nach Ablauf von 2m 30s.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

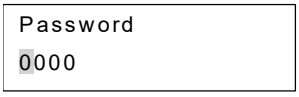
7.5.5 Service Technician Menu

Approximately 5s keep the button pressed.

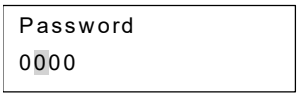


By pressing , the 1st digit of the second line is marked.

By pressing the key further, the marked digit is incremented:

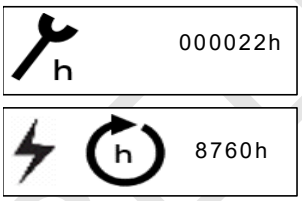


Press to move to the next digit.



If the marking disappears after a few seconds, the password entered in this way is accepted.

If entered correctly, the default value of the Service Counter and the operating hours can also be set in the Settings menu.

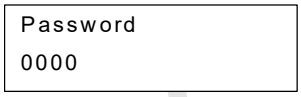


Press again briefly to return to "Basic menu", or after 2m 30s.

7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

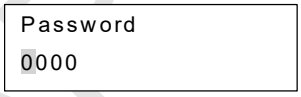
7.5.5 Service Techniker Menue

Ca. 5s die Taste gedrückt halten.

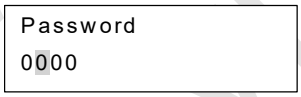


Durch Drücken von , wird die 1, Ziffer der zweiten Zeile markiert.

Durch weiteres Drücken der Taste, wird die markierte Ziffer hochgezählt:

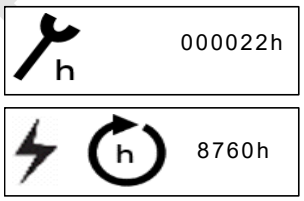


Durch Drücken von , gelangt man jeweils zur nächsten Ziffer.



Wenn die Markierung nach wenigen Sekunden erlischt, wird das so eingegebene Passwort übernommen.

Bei richtiger Eingabe kann im Einstellmenü zusätzlich der Default Wert des Service Counter und die Betriebsstunden gesetzt werden.



Durch erneutes kurzes Drücken von , gelangt man zurück zum „Grundmenue“, oder nach Ablauf von 2m 30s.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

7. Operation (switching on, switching off, controls)

7.6 Purge air consumption

Dryer is designed to operate either in 8 minute (-40°C/-40°F) or 4 minute (-70°C/-94°F) cycles.

7.6.1 Maximum purge flow

Maximum purge flow is the amount of purge flowing through the off-stream tube when the purge/re-pressurization valve is open. After the purge/re-pressurization valve closes the purge flow will gradually decrease as the off-stream tube re-pressurizes to line pressure.

7.6.2 Average purge flow

The average purge flow is the actual amount of flow averaged over the entire purge/re-pressurization cycle. It includes the maximum purge flow for a set amount of the purge/re-pressurization time and the volume of air used for re-pressurization.

7.6.3 Minimum outlet flow

Determine minimum outlet flow available from dryer by subtracting maximum purge flow from inlet flow to dryer (specification by authorized dealer).

Air compressor should be adequately sized to handle air system demands as well as purge loss. Failure to do so could result in overloading air compressors and/or insufficient air supply downstream.

7.6.4 Timer board setting & Remote On/Off

With the dryer de-energized (disconnect plug), verify position of the cycle time DIP switches. The DIP switches are located on the timer board in the cabinet.

7. Betrieb (Einschalten, Ausschalten, Bedienungselemente)

7.6 Regenerationsluftbedarf

Der Trockner kann wahlweise mit einem 8 Minuten (-40°C/-40°F) oder 4 Minuten (-70°C/-94°F) Umschaltzyklus betrieben werden.

7.6.1 Maximaler Regenerationsluftbedarf

Der maximale Regenerationsluftbedarf ist die Regenerationsluftmenge, die durch das zu regenerierende Rohr strömt, wenn das Regenerationsluft-Ventil geöffnet ist. Nachdem das Regenerationsluft-Ventil zum Druckaufbau des Rohrs schließt, nimmt die Regenerationsluftmenge kontinuierlich ab, bis in dem zu regenerierendem Rohr Systemdruck erreicht ist.

7.6.2 Durchschnittlicher Regenerationsluftbedarf

Der durchschnittliche Regenerationsluftbedarf ist die tatsächliche Luftmenge gemittelt über den gesamten Regenerations- und Druckaufbau-Halbzyklus. Er enthält den maximalen Regenerationsluftbedarf für den festgelegten Regenerationszeitraum, sowie die für den Druckaufbau benötigte Luftmenge.

7.6.3 Austritts Luftmenge

Um die Mindest-Luftmenge am Trockneraustritt zu bestimmen, ist der Volumenstrom am Eintritt des Trockners um die maximale Regenerationsluftmenge zu reduzieren (Auslegung durch Händler).

Der Luftkompressor sollte so groß bemessen sein, dass der Druckluftverbrauch und der Regenerationsluftbedarf abgedeckt werden kann. Ein zu kleiner Kompressor hätte eine nicht ausreichende Druckluftversorgung zur Folge.

7.6.4 Einstellung der Zykluszeit & Fern Ein/Aus

Die Zykluszeit kann bei spannungsfreiem Trockner (Netzstecker gezogen) eingestellt werden. Hierzu müssen DIP Schalter auf der Elektronikplatine umgesetzt werden.

Dip-switches Dip-Schalter	Meaning Bedeutung	Dip-switch * Dip-Schalter * OFF	Dip-switch Dip-Schalter ON
1	Selection of cycles Auswahl der Zyklen	siehe Tabelle see table	see table siehe Tabelle
2	Selection of cycles Auswahl der Zyklen	OFF	
3	Selection of cycles Auswahl der Zyklen	OFF	
4	Local / Remote On/Off Vor Ort / Fern Ein/Aus	Vor Ort	Fern Ein/Aus Remote On/Off
5	Remote Off Fern Aus	over terminal über Klemme	über Modbus over Modbus
6	Remote Off Mode A / B Fern-Aus Modus A / B	Mode A Modus A	Mode B Modus B
7	PDP sensor installed DTP-Sensor installiert	No sensor Kein Senor	Sensor Sensor
8	Reserve	OFF	

* Factory setting: All DIP switches "OFF"

* Werksseinstellung: Alle DIP-Schalter „OFF“

Schema	Dip 1	Dip 2	Dip 3
-40°C / -40°F ↔ <10bar/ 145psig	OFF	OFF	OFF
-70°C / -94°F ↔ <10bar/ 145psig	ON	OFF	OFF
-40°C / -40°F ↔ >10bar/ 145psig	OFF	ON	ON
-70°C / -94°F ↔ >10bar/ 145psig	ON	OFF	ON

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

8. Description of operation

Cold-regenerating desiccant dryers utilize the natural tendency of the desiccant to establish a balance from the water vapor partial pressure with the ambient air.
In the course of the drying process, the desiccant adsorbs water vapor from the incoming compressed air. Part of the incoming flow of compressed air, which has been dried and reduced in pressure, is then passed over the desiccant. It discharges the previously adsorbed water to the purge air.

The component specified in parentheses (e.g. B007) refer to the R&I schematic diagram.

8.1 Operation

- The incoming compressed air passes through the shuttle valve (V011) via flow distributor (F005) to desiccant tube (B007), where it is dried by the desiccant (desiccant cartridge).
- The compressed air then flows through the flow distributor (F009) and the shuttle valve (V013) to the compressed air outlet.
- A portion of air flowing due to the orifice (X013) and through flow distributor (F008) to the right desiccant tube (B006).
- Here, the water vapor adsorbed during the drying process is extracted from the desiccant.
- The wet purge air is passed through flow distributor (F004), the purge air valve (V015) and purge air muffler (F004) into the atmosphere.
- The dryer operates according to this sequence for 3 1/3 (3´20´´) minutes, after which the purge air valve (V015) closes.
- The system pressure is built up in the right tube (B006).
- After app. 40 seconds the shuttle valve (V011) moves into position 2. The incoming air now passes the shuttle valve (V011) via flow distributor (F004) to the right desiccant tube (B006), where it is dried by the desiccant.
- Then flows the dried compressed air through flow distributor (F008) and shuttle valve (V015) from the right tube to the compressed air outlet.

8. Funktionsbeschreibung

Kaltregenerierende Adsorptionstrockner nutzen die natürliche Tendenz des Trockenmittels ein Gleichgewicht des Wasserdampfpartialdruckes mit der umgebenden Luft zu erreichen.
Während des Trockenvorgangs adsorbiert das Trockenmittel den Wasserdampf von der eintretenden Druckluft. Ein Teilstrom getrockneter, im Druck reduzierter Druckluft wird anschließend über das Trockenmittel geführt. Dabei gibt das Trockenmittel die aufgenommene Feuchtigkeit an die durchströmende Regenerationsluft ab.

Die in Klammern näher bezeichneten Bauteile (z.B. B007) beziehen sich auf das R&I-Schema.

8.1 Wirkungsweise

- Die eintretende Druckluft wird durch das Wechselventil (V011) über den Strömungsverteiler (F005) zum linken Adsorptionsmittelrohr (B007) geleitet und hier durch das Adsorptionsmittel (Adsorptionsmittel-Kartusche) getrocknet.
- Anschließend strömt die trockene Druckluft durch den Strömungsverteiler (F009) am oberen Behälterrohr und durch das Wechselventil (V013) zum Druckluftausgang.
- Gleichzeitig fließt ein Teilstrom der getrockneten Druckluft durch die Blende (X013) und den Strömungsverteiler (F008) am oberen Ende des Adsorptionsmittelrohrs (B006) in das rechte Rohr.
- Dort wird dem Adsorptionsmittel der Wasserdampf entzogen, den es beim vorherigen Trocknungszyklus aufgenommen hat.
- Die mit Feuchtigkeit gesättigte Regenerationsluft strömt durch den unteren Strömungsverteiler (F004) des rechten Rohrs, das Regenerationsluftventil (V015) und den Austrittsschalldämpfer (F017) ins Freie.
- In dieser Anordnung arbeitet der Trockner 3 1/3 (3´20´´) Minuten. Dann schließt das Regenerationsluftventil (V015).
- Im rechten Rohr (B006) wir der Systemdruck aufgebaut.
- Nach ca. 40 Sekunden bewegt sich das Wechselventil (V011) in Position 2. Die eintretende Druckluft wird nun durch das Wechselventil (V011) über den Strömungsverteiler (F004) zum rechten Adsorptionsmittelrohr (B006) geleitet und hier durch das Adsorptionsmittel getrocknet.
- Anschließend wird die getrocknete Druckluft über den Strömungsverteiler (F008) am oberen Ende des rechten Rohrs über das Wechselventil (V015) zum Druckluftaustritt geleitet.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

8. Description of operation

- A portion of the dried air flows through the orifice (X013) and the flow distributor (F009) into the left tube (B007).
- Here, the water vapor adsorbed during the drying process is extracted from the desiccant.
- The wet purge air is passed through flow distributor (F005), the purge air valve (V014) and purge air muffler (F016) into the atmosphere.
- At 3 1/3 (3´20´´) minutes again the purge air valve (V014) closes.
- The system pressure is built up in the regenerated tube.
- After app. 40 seconds the shuttle valve (V011) moves into position 1.
- The purge air valve (V015) opens.
- The dryer has finished the cycle.

8. Funktionsbeschreibung

- Ein Teilstrom der getrockneten Druckluft wird über die Blende (X013) und den Strömungsverteiler (F009) in das linke Rohr (B007) geführt.
- Dort wird dem Adsorptionsmittel der Wasserdampf entzogen, den es beim vorherigen Trocknungszyklus aufgenommen hat.
- Die mit Feuchtigkeit gesättigte Regenerationsluft strömt durch den Strömungsverteiler (F005) am unteren Ende des Rohrs, das Regenerationsluftventil (V014) und den Austrittsschalldämpfer (F016) ins Freie.
- Nach wiederum 3 1/3 (3´20´´) Minuten schließt das Regenerationsluftventil (V014).
- In dem regenerierten Rohr wird der Systemdruck aufgebaut.
- Nach weiteren ca. 40 Sekunden bewegt sich das Wechselventil (V011) in Position 1.
- Das Regenerationsluftventil (V015) öffnet.
- Der Trockner hat einen Zyklus durchlaufen.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

9. Service and maintenance

The components specified in parentheses (e.g. B006) refer to the R&I-schematic diagram.

Warning!
The desiccant dryer contains under high pressure. Depressurize the dryer before servicing or repairing.

Attention!
Before starting any service work ensure all power is isolated from the dryer, mains plug if fitted to be removed.

9.1 Note the nameplate

The nameplate contains all information to identify your machine. This information is essential to us in order to provide you with optimal service.

- Please provide the information from the nameplate with every enquiry and when ordering replacement parts.

9.2 Ordering consumable parts and operating fluids/materials

KAESER consumable parts and operating fluids/materials are all genuine KAESER parts. They are specifically selected for use in KAESER machines.

WARNING
There is risk of personal injury or damage to the machine resulting from the use of unsuitable spares or operating fluids/materials. Unsuitable or poor quality consumable parts and operating fluids/materials may damage the machine or impair its proper function.
Personal injury may result from damage.

- Use only original KAESER parts and operating fluids/ materials.
- Have an authorized KAESER service technician carry out regular maintenance.

9. Wartung und Instandhaltung

Die in Klammern näher bezeichneten Bauteile (z.B. B006) beziehen sich auf das R&I-Schema.

Warnung!
Der Adsorptionstrockner steht unter erhöhtem Druck.
Vor Service- oder Reparaturarbeiten ist das Gerät drucklos zu machen.

Warnung!
Vor Service- oder Reparaturarbeiten ist das Gerät allpolig vom elektrischen Spannungsversorgungsnetz zu trennen (Netzstecker ziehen).

9.1 Typenschild beachten

Das Typenschild enthält alle Informationen, um Ihre Maschine zu identifizieren. Diese Informationen sind erforderlich, um Ihnen optimalen Service bieten zu können.

- Daten des Typenschilds bei allen Fragen zum Produkt und bei der Bestellung von Ersatzteilen angeben.

9.2 Wartungsteile und Betriebsstoffe bestellen

KAESER Wartungsteile und Betriebsstoffe entsprechen in ihren Eigenschaften dem Original. Sie sind auf die Verwendung in unseren Maschinen abgestimmt.

WARNUNG
Personen- oder Maschinenschäden durch ungeeignete Ersatzteile und Betriebsstoffe!
Wartungsteile und Betriebsstoffe ungeeigneter oder minderer Qualität können die Maschine beschädigen oder deren Funktion erheblich beeinträchtigen.
Im Schadensfall können Personen verletzt werden.

- Nur Originalteile und angegebene Betriebsstoffe verwenden.
- Wartung regelmäßig durch autorisierten KAESER Service durchführen lassen.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

9. Service and maintenance

The components specified in parentheses (e.g. B006) refer to the R&I-schematic diagram.

9.3 Maintenance schedule Desiccant dryer

Interval/ Intervall	Maintenance task / Wartungsarbeit	See chapter/ Siehe Kapitel
Weekly/ Wöchentlich	Check the residual pressure in the tubes (B007 and B008) during the regeneration / Kontrolle des Restdrucks der Adsorptionsmittelrohre (B007 und B008) während der Regenerationsphase.	
	Check the differential pressure gauge from the pre- and after filter (F001, F012). / Kontrolle des Differenzdrucks vom Vor-. bzw. Nachfilters (F001 und F012).	
	Check the automatically condensate drain at the pre-filter (X001). / Funktionskontrolle des automatischen Kondensatableiters am Vorfilter (X001)	
Annually/ jährlich	Change the filter cartridges from the pre- and after filter. (see P&I diagram: F001 & F012) / Filterelemente des Vor- und Nachfilters wechseln. (siehe R&I-Schema: F001 & F012)	**Service manual Filter / Betriebsanleitung Filter**
	Replace silencer or silencer element. (see P&I diagram: F016 & F017) / Schalldämpfer bzw. Schalldämpferelement wechseln. (siehe R&I-Schema: F016 & F017)	-
	Replace condensate drain. (not for .1 version) / Kondensatableiter wechseln. (nicht bei .1-Ausführung)	-
every two years/ alle zwei Jahre	Change the filter cartridges from the pre- and after filter. (see P&I diagram: F001 & F012) / Filterelemente des Vor- und Nachfilters wechseln. (siehe R&I-Schema: F001 & F012)	**Service manual Filter / Betriebsanleitung Filter**
	Replace silencer or silencer element. (see P&I diagram: F016 & F017) / Schalldämpfer bzw. Schalldämpferelement wechseln. (siehe R&I-Schema: F016 & F017)	-
	Replace Desiccant cartridge kit / Trockenmittel-Kartuschen-Kit wechseln	**9.9**
	Replace condensate drain. (not for .1 version) / Kondensatableiter wechseln. (nicht bei .1-Ausführung)	-
	Replace service unit condensate drain. (for .1 version) (see P&I diagram: X001) / Service-Unit am Kondensatableiter wechseln. (bei .1-Ausführung) (siehe R&I-Schema: X001)	**Service manual Filter / Betriebsanleitung Filter**

9. Wartung und Instandhaltung

Die in Klammern näher bezeichneten Bauteile (z.B. B006) beziehen sich auf das R&I-Schema.

9.3 Wartungsplan Adsorptionstrockner

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

9. Service and maintenance

The components specified in parentheses (e.g. B006) refer to the R&I-schematic diagram.

9. Wartung und Instandhaltung

Die in Klammern näher bezeichneten Bauteile (z.B. B006) beziehen sich auf das R&I-Schema.

Interval / Intervall	Maintenance task / Wartungsarbeit	See chapter / Siehe Kapitel
every tfive years / alle fünf Jahre	Change the filter cartridges from the pre- and after filter. (see P&I diagram: F001 & F012) / Filterelemente des Vor- und Nachfilters wechseln. (siehe R&I-Schema: F001 & F012)	**Service manual Filter / Betriebsanleitung Filter**
	Replace silencer or silencer element. (see P&I diagram: F015 & F016) / Schalldämpfer bzw. Schalldämpferelement wechseln. (siehe R&I-Schema: F015 & F016)	-
	Change the Solenoid valves. (see P&I diagram: V014, V015) / Magnetventile wechseln. (siehe R&I-Schema: V014, V015)	-
	Replace condensate drain. (not for .1 version) / Kondensatableiter wechseln. (nicht bei .1-Ausführung)	-
	Replace service unit condensate drain. (for .1 version) (see P&I diagram: X001) / Service-Unit am Kondensatableiter wechseln. (bei .1-Ausführung) (siehe R&I-Schema: X001)	**Service manual Filter / Betriebsanleitung Filter**

9.4 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

- Authorized service technicians with KAESER factory training,
- Increased operational reliability ensured by preventive maintenance,
- Energy savings achieved by avoidance of pressure losses,
- Optimum conditions for operation of the compressed air system,
- Reliability due to genuine KAESER replacement parts,
- Increased legal certainty as all regulations are met.

➢ It makes sense to sign a KAESER AIR SERVICE maintenance agreement.
The advantages:
Lower costs and higher compressed air availability.

9.4 KAESER AIR SERVICE

KAESER AIR SERVICE bietet Ihnen:

- Autorisierte Service-Techniker durch KAESER Werksausbildung,
- Gesteigerte Betriebssicherheit, da Schäden vorgebeugt wird,
- Energieeinsparung, da Druckverluste vermieden werden,
- optimierte Bedingungen für den Betrieb der Druckluftstation,
- Sicherheit durch original KAESER Ersatzteile,
- Erhöhte Rechtssicherheit, da Vorschriften eingehalten werden.

➢ Schließen Sie eine KAESER AIR SERVICE Wartungsvereinbarung ab.
Ihr Vorteil:
Niedrigere Kosten und höhere Verfügbarkeit der Druck luft.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

9. Service and maintenance

The components specified in parentheses (e.g. B006) refer to the R&I-schematic diagram.

9.5 Replacement parts for service and repair

Use this parts list to plan your material requirement according to operating conditions and to order the required spare parts.

➢ Make sure that any service or repair tasks not described in this manual are carried out only by an authorized KAESER Service Technician.

9.6 Weekly maintenance

- Check the residual pressure in the tubes (B006 and B007) during the regeneration with the manometer (PI018 and PI019).
- If the residual pressure level rises above 0,3 bar/ 4,4psi, the purge mufflers must be removed.
  * Switch off the dryer (see chapter 7. "Switching off the dryer").
  * Replace the purge mufflers.
  * Switch on the dryer.
- Check the differential pressure gauge from the pre- and after filter (F001, F012) (see annex filter). Replacement filter elements (see section 9.7 "Annual maintenance").
- Check the automatic condensate drain at the pre-filter.

9.7 Annual maintenance/ 6000 Compressor working hours

- Replace the filter cartridges from the pre- and after filter (F001 and F012).
  * Depressurized the dryer (see chapter 9.8 " Depressurizing the desiccant dryer").
  * Switch off the dryer (see chapter 7. "Switching off the dryer").
  * Replacing the filter cartridges see annex filter.
- Replace condensate drain (not for .1 version).
- Replace service unit condensate drain. (for .1 version/ every 2 years).
- Replace the purge mufflers (see section 9.6 "Weekly maintenance").

9. Wartung und Instandhaltung

Die in Klammern näher bezeichneten Bauteile (z.B. B006) beziehen sich auf das R&I-Schema.

9.5 Ersatzteile für Instandhaltung und Reparatur

Mit Hilfe dieser Ersatzteilliste können Sie den Materialbedarf in Abhängigkeit der Betriebsbedingungen planen und erforderliche Ersatzteile bestellen.

➢ Arbeiten zur Prüfung, Instandhaltung (vorbeugende Wartung) und Reparatur der Maschine, die nicht in dieser Betriebsanleitung beschrieben sind, nur vom autorisierten KAESER Service ausführen lassen.

9.6 Wöchentliche Wartungsarbeiten

- Kontrolle des Restdrucks der Adsorptionsmittelrohre (B006 und B007) während der Regenerationsphase anhand der Manometer (PI018 und PI019).
- Sollte der Restdruck über 0.3 bar/ 4,4psi ansteigen, sind die Schalldämpfer auszutauschen.
  * Gerät ausschalten (siehe Abschnitt 7. "Ausschalten").
  * Schalldämpfer austauschen.
  * Gerät einschalten.
- Kontrolle des Differenzdrucks vom Vor-. bzw. Nachfilters (F001 und F012) (siehe Anhang Filter). Austausch Filterelemente (siehe Abschnitt 9.7 "Jährliche Wartungsarbeiten").
- Kontrolle des automatischen Kondensatableiters am Vorfilter.

9.7 Jährliche Wartungsarbeiten/ 6000 Kompressorbetriebsstunden

- Filterelemente des Vor- und Nachfilters (F001 und F012) austauschen.
  * Gerät wie in Abschnitt 9.8 „Entlüftung des Adsorptionstrockners“ beschrieben entlüften.
  * Gerät ausschalten (siehe Kapitel 7. „Ausschalten“).
  * Austausch der Filterelemente siehe Anhang Filter.
- Kondensatableiter tauschen (nicht bei .1-Ausführung).
- Service-Unit am Kondensatableiter wechseln. (bei .1-Ausführung/ alle 2 Jahre).
- Schalldämpfer austauschen (siehe Abschnitt 9.6 "Wöchentliche Wartungsarbeiten").

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

9. Service and maintenance

The components specified in parentheses (e.g. B006) refer to the R&I-schematic diagram.

9.8 Depressurize the desiccant dryer

- Close the shut-off devices in the compressed-air inlet- and outlet line.
- Let the desiccant dryer run. After the regeneration cycle the dryer is depressurized.
- Check the residual pressure in the tubes (PI018 and PI019).

9.9 Replacement of desiccant

For the rated working conditions of the desiccant dryer, the desiccant material has a lifetime of approx. 2 years, before its receptivity is exhausted.

- Depressurize and switch off the dryer as described in chapter 9.8.
- Remove the front panel of the dryer.
- Loosen the nuts / washers of the upper manifold and remove it.
- Remove the gasket and metal mesh. Remove the threaded rods.
- Remove the aluminum profiles and remove the cartridge with the aid (maintenance package) of the attached knurled screw.
- Replace the lower metal mesh and gaskets and reassemble the new threaded rods and profiles back.
- Insert the cartridges and replace the upper metal mesh and gaskets.
- Mount the distributor block and the front plate of the dryer.
- Torque:
  DC2.0 - DC5.9: 15Nm (nuts/ threaded rods)
  DC7.6 - DC11.3: 20Nm (nuts/ threaded rods)
- After replacing the desiccant carry out the complete commissioning procedure as described in chapter 6.

Remark!
Keep the desiccant cartridges with the new desiccant closed until they are used, to prevent the adsorption of moisture from the ambient air.

9.9.1 Replacement of purge solenoid valves

- Change solenoid purge valves (V014/V015) after 5 years of full operation.

9. Wartung und Instandhaltung

Die in Klammern näher bezeichneten Bauteile (z.B. B006) beziehen sich auf das R&I-Schema.

9.8 Entlüftung des Adsorptionstrockners

- Schließen Sie die Absperrorgane in der Druckluftein- und -austrittsleitung des Trockners.
- Lassen Sie den Adsorptionstrockner in Betrieb. Nach Ablauf eines Regenerationszyklus ist der Trockner drucklos.
- Prüfen Sie den Restdruck in den Rohren (PI018 und PI019).

9.9 Austausch von Trockenmittel

Unter den Betriebsbedingungen für die der Adsorptionstrockner ausgelegt ist, hat das Trockenmittel eine Lebensdauer von ca. 2 Jahren, bevor seine Aufnahmefähigkeit erschöpft ist.

- Bevor Sie das Trockenmittel wechseln, entlüften Sie den Trockner wie im Kapitel 9.8 beschrieben und trennen den Trockner von der Spannungsversorgung.
- Entfernen Sie das Vorderblech des Trockners.
- Lösen Sie die Muttern/ Scheiben des oberen Verteilerblocks und enfernen diesen.
- Entnehmen Sie die Dichtung und das Metallsieb. Entfernen Sie die Gewindestangen.
- Entfernen Sie die Aluminiumprofile und entnehmen Sie mit Hilfe der beigelegten Rändelschraube (Wartungspaket) die Kartusche.
- Tauschen Sie die unteren Metallsiebe und Dichtungen aus und montieren Sie die neuen Gewindestangen und die Profile wieder.
- Setzen Sie die Kartuschen ein und erneuern die oberen Metallsiebe und Dichtungen.
- Montieren Sie den Verteilerblock und das Vorderblech des Trockners.
- Anzugsmoment:
  DC2.0 - DC5.9: 15Nm (Muttern/ Gewindestangen)
  DC7.6 - DC11.3: 20Nm (Muttern/ Gewindestangen)
- Nach dem Adsorptionsmittelwechsel ist eine erste Inbetriebnahme, wie im Kapitel 6 beschrieben durchzuführen.

Hinweis!
Halten Sie die Trockenmittelkartuschen mit dem neuen Adsorptionsmittel bis zum Gebrauch verschlossen, um die Aufnahme von Feuchtigkeit aus der Umgebungsluft zu vermeiden.

9.9.1 Austausch vom Regenerationsluftventilen

- Regenerationsluftventile (V014/V015) sollten nach 5 Betriebsjahren getauscht werden.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

10. Malfunctions, troubleshooting

The component specified in parentheses (e.g. B007) refer to the R&I schematic diagram. Please see also section 14. “Dimensional drawing“.

10.1 Malfunctions without fault messages

Water in the compressed-air system		Wasser im Druckluftnetz	
Possible Cause	**Remedy**	**Mögliche Ursache**	**Störungsbeseitigung**
Condensate residues which formed prior to starting up the dryer are in the compressed-air system.	Blow out compressed-air system with dry air until no more moisture is condensed out. Open collection point at most remote position, if possible.	Kondensatrückstände im Druckluftnetz, die sich bereits vor der Inbetrieb-nahme gebildet hatten.	Druckluftnetz mit trockener Luft ausblasen, bis keine Feuchtigkeit mehr auskondensiert. Entnahmestelle mög-lichst am entferntesten Punkt öffnen.
Bypass open.	Close bypass.	Umgehungsleitung Bypass geöffnet.	Bypass schließen.
Condensate from the pre-filter not separated.	Carry out check by trained staff and repair, if necessary.	Kondensat des Vorfilters wird nicht abgeschieden.	Durch Fachpersonal überprüfen und ggf Instandsetzen lassen.
The operating parameters altered since the desiccant dryer was installed.	Correct to the original operating parameters as the dryer was designed.	Die Betriebsbedingungen haben sich seit der Installation des Trockners geändert.	Betriebsbedingungen für die der Trockner ausge- legt wurde wieder herstellen.

High pressure loss through the desiccant compressed air dryer		Hoher Druckverlust über den Adsorptionstrockner	
Possible Cause	**Remedy**	**Mögliche Ursache**	**Störungsbeseitigung**
The capacity of the pre- and/or -after filter cartridge are overload.	Replace the filter cartridge (see annex filter).	Vor- und/oder Nachfilter-elemente sind am Ende ihrer Aufnahmekapazität.	Austausch der Filter-elemente (siehe Anhang Filter).
The operating parame-ters altered since the desiccant dryer was installed.	Restore the operating conditions for which the dryer was designed	Die Betriebsbeding-ungen haben sich seit der Installation des Trockners geändert.	Betriebsbedingungen für die der Trockner ausge- legt wurde wieder herstellen.

10. Störungen, Störungsbeseitigung

Die in Klammern näher bezeichneten Bauteile (z.B. B007) beziehen sich auf das R&I-Schema. Beachten Sie dazu auch Kapitel 14. "Maßzeichnung".

10.1 Störungen ohne Störmeldung

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

10. Malfunctions, troubleshooting

The component specified in parentheses (e.g. B007) refer to the R&I schematic diagram. Please see also section 14. "Dimensional drawing".

10.1 Warnings/ malfunctions with fault messages

Display: 310

(LED Warning/ Service/ Alarm glows yellow)
(Service time expired, leads to deactivation of the relay warning / service)

Possible Cause	Remedy
Service time expired	Carry out maintenance and reset service counter.

Display: 202

(LED Warning/ Service/ Alarm flashes yellow)
(Drain warning, leads to deactivation of the relay warning / service)

Possible Cause	Remedy
Condensate not separated.	Press TEST-button on the condenaste discharger (X001/ see chapter 12). Condensate is not discharged: - Check power supply to solenoid coil. In case of power on this terminal replace printed circuit board. - Check if dryer and condensate discharger are pressurized (min. 0,8bar/11,6psi). If they are pressurized check if outlet pipe behind the condensate discharger is blocked. **Yes:** Clean pipe and remove any obstruction. **No:** Disconnect dryer and condensate discharger from power supply (main switch / fuse) and ensure that device is in a pressure-less state. Dismantle solenoid diaphragm, remove any obstruction and examine diaphragm. If diaphragm is damaged replace with new one. During this procedure, it is possible to replace also all seals and the coil core. Housing and sensors should be thoroughly cleaned at the same time. Condensate and air are discharged, but ALARM -signal continues - Disconnect dryer and condensate discharger from power supply (main switch / fuse) and ensure that device is in pressureless state. Open condensate discharger and clean sensor thoroughly.

10. Störungen, Störungsbeseitigung

Die in Klammern näher bezeichneten Bauteile (z.B. B007) beziehen sich auf das R&I-Schema. Beachten Sie dazu auch Kapitel 14. "Maßzeichnung".

10.2 Warnungen/ Störungen mit Störmeldung

Anzeige: 310

(LED Warnung/ Service/ Alarm leuchtet gelb)
(Servicezeit abgelaufen, führt zur Deaktivierung des Relais Warnung/ Service)

Störungsbeseitigung	Störungsbeseitigung
Wartung durchführen und Service Counter zurücksetzen.	Wartung durchführen und Service Counter zurücksetzen.

Anzeige: 202

(LED Warnung/ Service/ Alarm blinkt gelb)
(Ableiter Warnung, führt zur Deaktivierung des Relais Warnung/ Service)

Mögliche Ursache	Störungsbeseitigung
Kondensat fließt nicht ab	TEST-Schalter am Kondensatableiter (X001/ siehe Kapitel 12) betätigen. Kondensat fließt nicht ab: - Überprüfen ob an der Magnetspule des Kondensatableiters Spannung anliegt. Ist dies der Fall, ist die Steuerungsplatine des Kondensatableiters defekt und muss ausgetauscht werden. - Prüfen ob der Trockner und der Kondensatableiter unter Druck stehen (min. 0,8 bar/ 11,6psi). Ist das System mit Druck beaufschlagt, prüfen Sie bitte, ob die Ablaufleitung hinter dem Kondensatableiter verstopft ist. **Ja:** Leitung reinigen. **Nein:** Trockner (und Kondensatableiter) drucklos machen und Netzspannung abschal-ten (Hauptschalter, Sicherungen). Magnetmembranventil demontieren und evtl. Verstopfung beseitigen. Membrane überprüfen und evtl. austauschen. Es wird empfohlen, gleichzeitig alle Dichtungen und den Spulenkern zu ersetzen. Gehäuse und Fühler gründlich reinigen. Kondensat und Luft strömt ab; Leuchtmelder Alarm blinkt weiterhin. - Trockner und Kondensatableiter drucklos machen und Netzspannung abschalten (Hauptschalter, Sicherung). Kondensatableitergehäuse öffnen und Fühler gründlich reinigen.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

10. Malfunctions, troubleshooting

The component specified in parentheses (e.g. B007) refer to the R&I schematic diagram. Please see also section 14. "Dimensional drawing".

Display: 204

(LED Warning/ Service/ Alarm flashes red)
(PDP Alarm, leads to deactivation of the relay alarm)

Possible Cause	Remedy
Desiccant dryer only switched on briefly.	Operate desiccant dryer for some time with low load.
Desiccant dryer overload.	Adapt the operating conditions to the permitted parameters.
Ambient temperature too high.	
Air inlet temperature high.	
Volumetric flow rate too high.	
Operation pressure too low.	
PDP sensor defective (PT029)	Check the PDP sensor and replace, if necessary.

Display: 210

(LED Warning/ Service/ Alarm glows red)
(PDP Sensor cable break, leads to deactivation of the relay alarm)

Possible Cause	Remedy
PDP Sensor cable break	Check the electrical connection, replace if necessary.
PDP sensor not connected	PDP-control switch off (see chapter 7.5.4)

10. Störungen, Störungsbeseitigung

Die in Klammern näher bezeichneten Bauteile (z.B. B007) beziehen sich auf das R&I-Schema. Beachten Sie dazu auch Kapitel 14. "Maßzeichnung".

Anzeige: 204

(LED Warnung/ Service/ Alarm blinkt rot)
(DTP Alarm, führt zur Deakivierung des Relais Alarm)

Mögliche Ursache	Störungsbeseitigung
Adsorber erst kurz eingeschaltet.	Adsorber einige Zeit mit geringer Last betreiben.
Adsorber überlastet.	Die Betriebsbedingungen an die erlaubten Parameter anpassen.
Umgebungstemperatur zu hoch.	
Druckluft-Eintrittstem-peratur zu hoch.	
Volumenstrom zu hoch.	
Betriebsdruck zu niedrig.	
DTP-Sensor defekt (PT029)	DTP-Sensor prüfen, gegebenenfalls ersetzen

Anzeige: 210

(LED Warnung/ Service/ Alarm leuchtet rot)
(DTP Sensor Kabelbruch, führt zur Deaktivierung des Relais Alarm)

Mögliche Ursache	Störungsbeseitigung
DTP Sensor Kabelbruch	Die elektrische Verbindung prüfen, gegebenenfalls erneuern.
DTP Sensor nicht angeschlossen	DTP-Steuerung ausschalten (siehe Kapitel 7.5.4)

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

11. Technical data

Specification according to DIN ISO 7183 Option A2

Should any data change which is marked with a * all other data in that section may also change.

11.1 Compressed air system

Serie HF		DC 2.0	DC 3.7	DC 5.0	DC 5.9	DC 7.6	DC 11.3
Min. inlet temperature Min. Eintrittstemperatur	°C / °F	+ 2 / + 36					
* Inlet temperature * Eintrittstemperatur OPT A2	°C / °F	+ 38 / + 100					
Max. inlet temperature Max. Eintrittstemperatur	°C / °F	+ 50 / + 122					
* Oulet temperature * Austrittstemperatur OPT A2	°C / °F	+ 38 / + 100					
* Air flow (relating to +20°C compressed air induction temperature and 1 bar absolute) * Volumenstrom (bezogen auf +20°C Druckluftansaug-temperatur und 1 bar absolut)	m^3/h scfm	12 7	22 13	31 18	36 21	46 27	68 40
* Pressure dewpoint at working pressure * Drucktaupunkt bei Betriebsüberdruck	°C / °F	- 40 / - 40					
Min. working pressure Min. Betriebsüberdruck	bar/psi	4 / 58					
* Working pressure [P0] * Betriebsüberdruck [P0] OPT A2	bar/psi	7 / 100					
Allowable presssure [PS] Zul. Betriebsüberdruck [PS]	bar/psi	15 / 218					
* Differential pressure inlet / outlet (without filter) * Differenzdruck Eintritt / Austritt (ohne Filter)	bar/psi	</= 0,15 / </= 2,18					
Compressed air connection Druckluftanschluss	NPT	1/2“ – 14NPT				3/4“ – 14NPT	

11.2 Ambient temperature

Serie HF		DC 2.0	DC 3.7	DC 5.0	DC 5.9	DC 7.6	DC 11.3
Ambient temperature Umgebungstemperatur OPT A2	°C / °F	+ 38 / + 100					
Min. ambient temperature Min. Umgebungstemperatur	°C / °F	+ 2 / + 36					
Max. ambient temperature Max. Umgebungstemperatur	°C / °F	+ 40 / + 104					

11. Technische Daten

Angaben nach DIN ISO 7183 Option A2

Bei Veränderungen eines Wertes (*) auf aktuelle Betriebsbedingungen ergeben sich Veränderungen bei allen mit * gekennzeichneten Werten.

11.1 Druckluft-System

Serie HF		DC 2.0	DC 3.7	DC 5.0	DC 5.9	DC 7.6	DC 11.3
Min. inlet temperature Min. Eintrittstemperatur	°C / °F	+ 2 / + 36					
* Inlet temperature * Eintrittstemperatur OPT A2	°C / °F	+ 38 / + 100					
Max. inlet temperature Max. Eintrittstemperatur	°C / °F	+ 50 / + 122					
* Oulet temperature * Austrittstemperatur OPT A2	°C / °F	+ 38 / + 100					
* Air flow (relating to +20°C compressed air induction temperature and 1 bar absolute) * Volumenstrom (bezogen auf +20°C Druckluftansaug-temperatur und 1 bar absolut)	m^3/h scfm	12 7	22 13	31 18	36 21	46 27	68 40
* Pressure dewpoint at working pressure * Drucktaupunkt bei Betriebsüberdruck	°C / °F	- 40 / - 40					
Min. working pressure Min. Betriebsüberdruck	bar/psi	4 / 58					
* Working pressure [P0] * Betriebsüberdruck [P0] OPT A2	bar/psi	7 / 100					
Allowable presssure [PS] Zul. Betriebsüberdruck [PS]	bar/psi	15 / 218					
* Differential pressure inlet / outlet (without filter) * Differenzdruck Eintritt / Austritt (ohne Filter)	bar/psi	</= 0,15 / </= 2,18					
Compressed air connection Druckluftanschluss	NPT	1/2“ – 14NPT				3/4“ – 14NPT	

11.2 Umgebungstemperatur

Serie HF		DC 2.0	DC 3.7	DC 5.0	DC 5.9	DC 7.6	DC 11.3
Ambient temperature Umgebungstemperatur OPT A2	°C / °F	+ 38 / + 100					
Min. ambient temperature Min. Umgebungstemperatur	°C / °F	+ 2 / + 36					
Max. ambient temperature Max. Umgebungstemperatur	°C / °F	+ 40 / + 104					

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

11. Technical data

Specification according to DIN ISO 7183 Option A2

Should any data change which is marked with a * all other data in that section may also change.

11. Technische Daten

Angaben nach DIN ISO 7183 Option A2

Bei Veränderungen eines Wertes (*) auf aktuelle Betriebsbedingungen ergeben sich Veränderungen bei allen mit * gekennzeichneten Werten.

11.3 Electrical data

11.3 Elektrotechnik

Serie HF		DC 2.0	DC 3.7	DC 5.0	DC 5.9	DC 7.6	DC 11.3
Voltage Netzspannung	V	120 ±10% / 1 Ph					
Frequency Frequenz	Hz	50 - 60					
Nominal power Nennleistung	W BTU/hour	50 / 171					
Nominal current Nennstrom	A	0,7					
Max. pre-protection Max. Vorsicherung	A	16					
Max. connection cross section Max. Anschlussquerschnitt	mm²	3 x 1,5					
Kind of protection Schutzart	IP	54					
* Noise level chart (Equivalent level of continuous acoustic pressure in the distance of 1m in a free field (Leq)) * Schalldruckpegel (Äquivalenter Dauerschallpegel in 1m Abstand Frei Feld (Leq))	dB (A)	60	62	62	62	62	63
* Noise level chart (The level of short-term sound pressure at the distance of 1m in open space (LpA)) * Schalldruckpegel (Kurzzeitig auftretender Schallpegel in 1m Frei Feld (LpA))	dB (A)	74	74	75	76	77	78

11.4 Desiccant

11.4 Adsorptionsmittel

Serie HF		DC 2.0	DC 3.7	DC 5.0	DC 5.9	DC 7.6	DC 11.3
Desiccant Adsorptionsmittel		Activated aluminia Al2O3 Aktiviertes Aluminiumoxid Al2O3					
Volume profile Rohrinhalt	gal	0,68	0,99	1,37	1,75	2,32	2,97
Charge per tower (Cartridge) Füllgewicht je Druckbehälter (Kartusche)	lb	4,10	6,12	8,71	11,35	14,88	19,29

11.5 Condensate

11.5 Kondensat

Serie HF	DC 2.0	DC 3.7	DC 5.0	DC 5.9	DC 7.6	DC 11.3
Condensate separator connection (pre-filter) Kondensatableitungsanschluss (Vorfilter)	See annex filter Siehe Anhang Filter					

11.6 Measurements, Weights

11.6 Maße, Gewicht

Serie HF		DC 2.0	DC 3.7	DC 5.0	DC 5.9	DC 7.6	DC 11.3
Height / Width / Depth Höhe / Breite / Tiefe	inch	See dimensional drawing Siehe Maßzeichnung					
Weight (incl. Filter) Gewicht (inkl. Filter)	lb	77,16	92,59	112,44	132,28	154,32	180,78

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

11. Technical data

Specification according to DIN ISO 7183 Option A2

11.7 DC Nominal air flow

Model Modell	DTP [°C/°F]	Max. air flow inlet [scfm] 1 Max. Volumenstrom Eintritt [scfm] 1
DC 2.0	- 40 / -40°F	7
DC 3.7	- 40 / -40°F	13
DC 5.0	- 40 / -40°F	18
DC 5.9	- 40 / -40°F	21
DC 7.6	- 40 / -40°F	27
DC 11.3	- 40 / -40°F	40
DC 2.0	- 70 / -94°F	5
DC 3.7	- 70 / -94°F	9
DC 5.0	- 70 / -94°F	12
DC 5.9	- 70 / -94°F	14
DC 7.6	- 70 / -94°F	18
DC 11.3	- 70 / -94°F	27

1) According to ISO 7183 option A2 (based on 1 bar (abs.), 20°C 0%rf at 7 bar(ü) working pressure and inlet temperature 38°C)

11.8 Correction factors

Correction factor for working pressure Korrekturfaktoren Betriebsüberdruck												
Working pressure (bar) Betriebsüberdruck (bar)	4	5	6	7	8	9	10	11	12	13	14	15
Working pressure (psi) Betriebsüberdruck (psi)	58	72	87	100	116	131	145	160	174	189	203	218
$K_{p(ü)}$	0,40	0,57	0,77	1,00	1,13	1,25	1,38	1,38	1,50	1,56	1,61	1,67

Correction factor for compressed air inlet temperature Korrekturfaktoren Drucklufteintrittstemperatur						
Compressed air inlet temperature (°C / °F) Drucklufteintrittstemperatur (°C / °F)	30 / 86	35 / 95	38/ 100	40 / 104	45 / 113	50 / 122
$k_{Tin\ (DTP = -40°C/ -40°F)}$	1,07	1,07	1	0,93	0,82	0,72
$k_{Tin\ (DTP = -70°C/ -94°F)}$	1,20	1,00	-	-	-	-

11. Technische Daten

Angaben nach DIN ISO 7183 Option A2

11.7 DC Nennvolumenströme

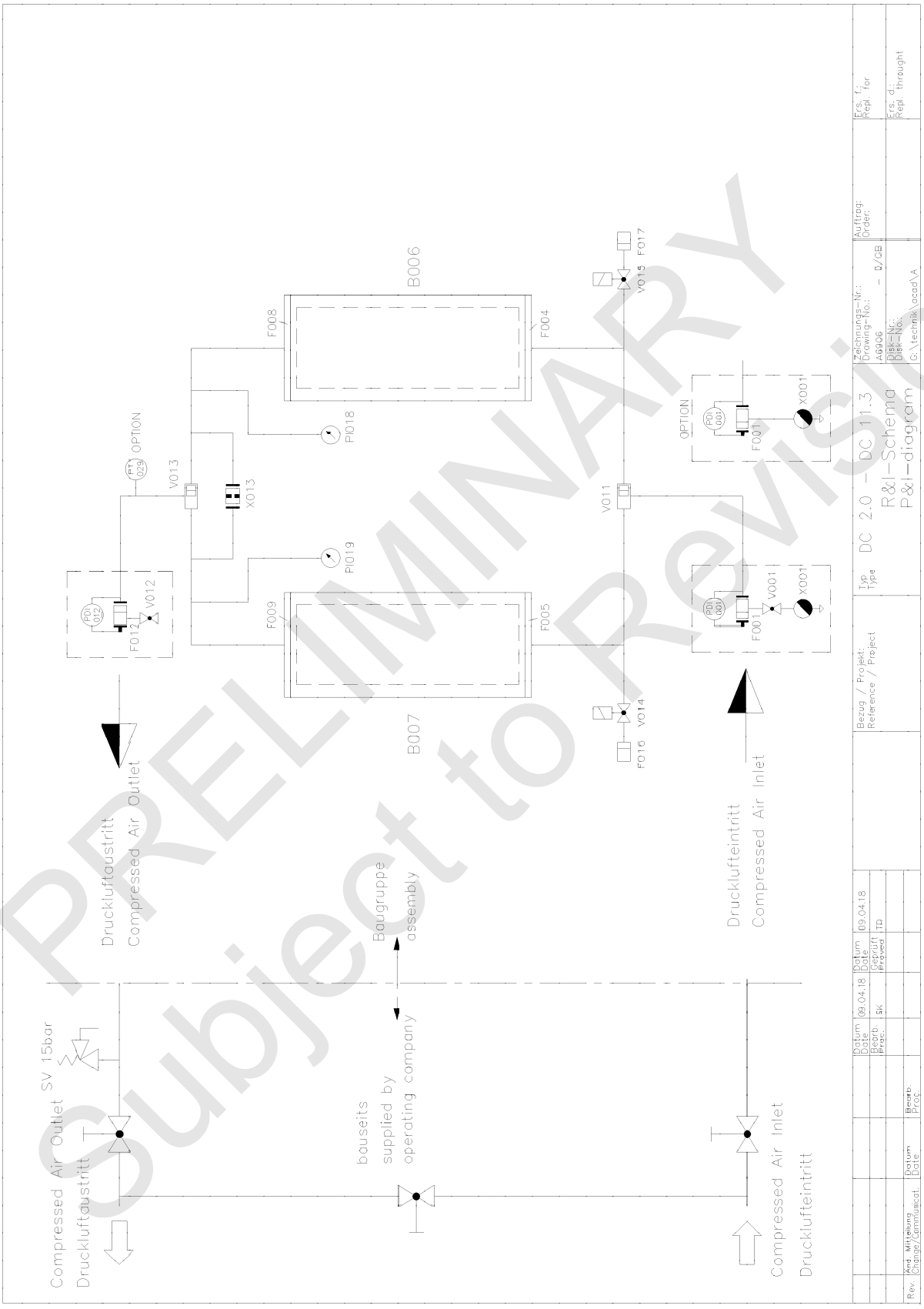
1) Nach ISO 7183 Option A2 (bezogen auf 1 bar (abs.), 20°C 0%rF bei 7 bar(ü) Betriebsdruck und Eintrittstemperatur 38°C).

11.8 Korrekturfaktoren

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

12. P&I - Diagram

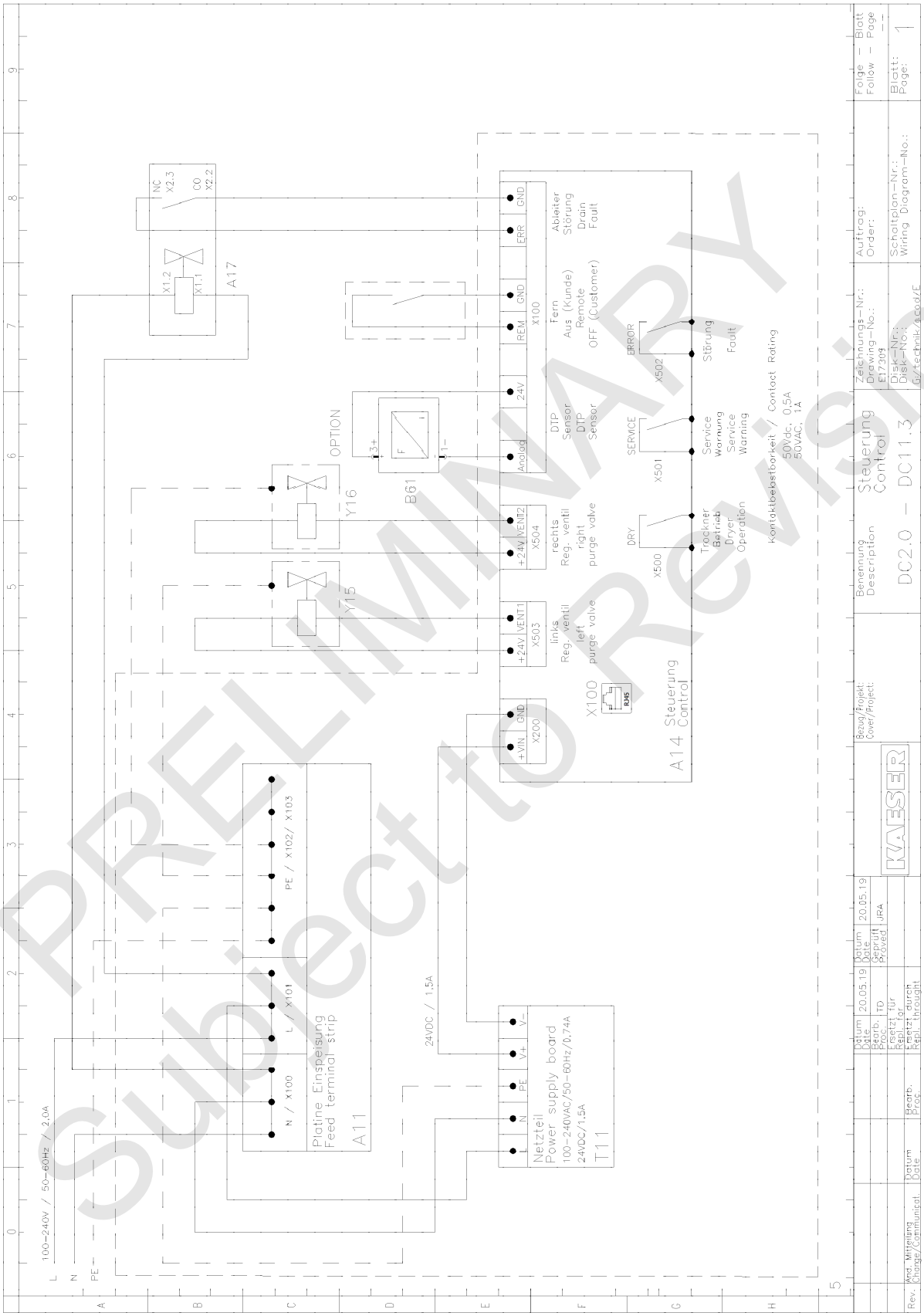
12. R&I - Schema



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

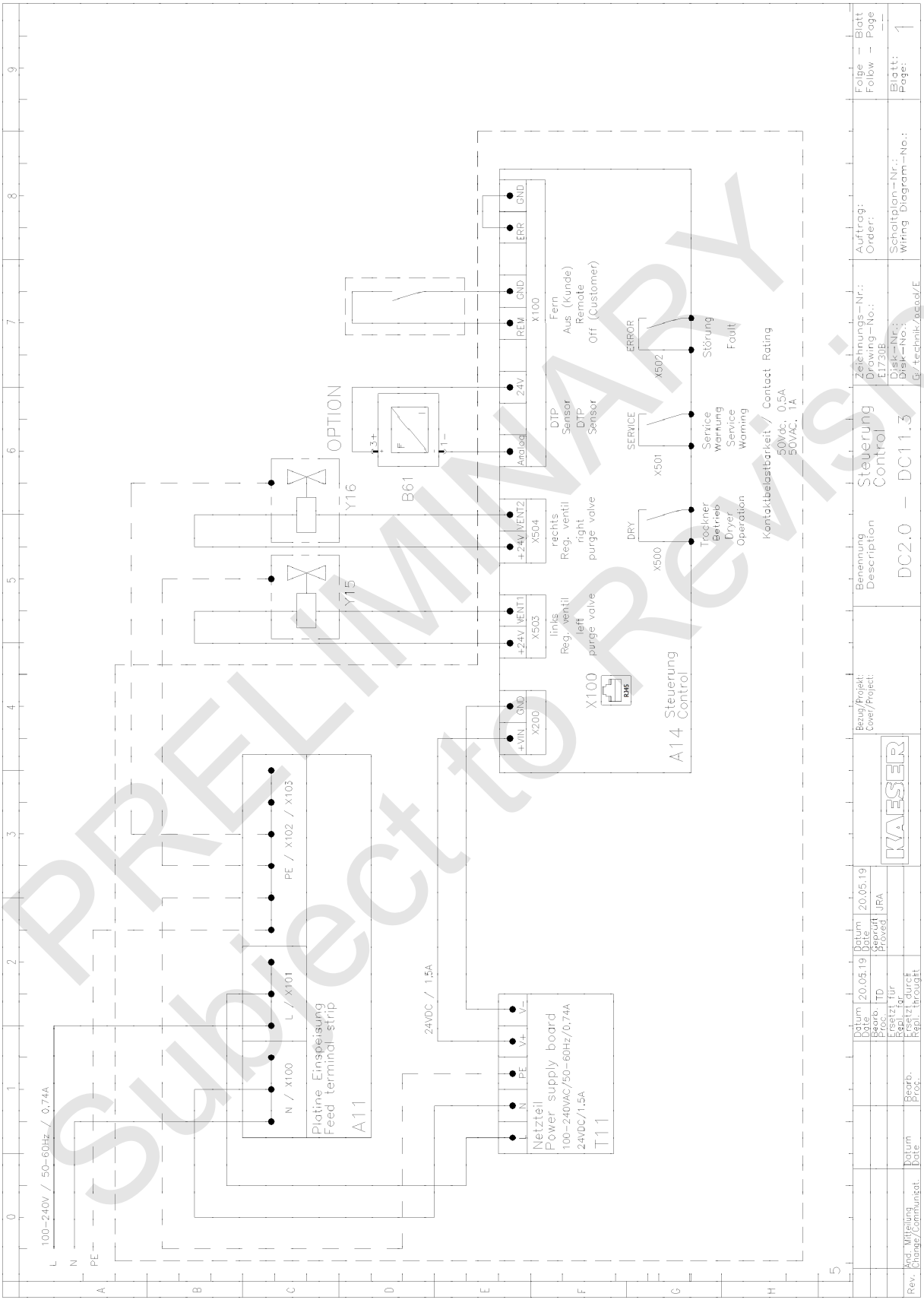
13. Wiring Diagram

13. Schaltplan



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

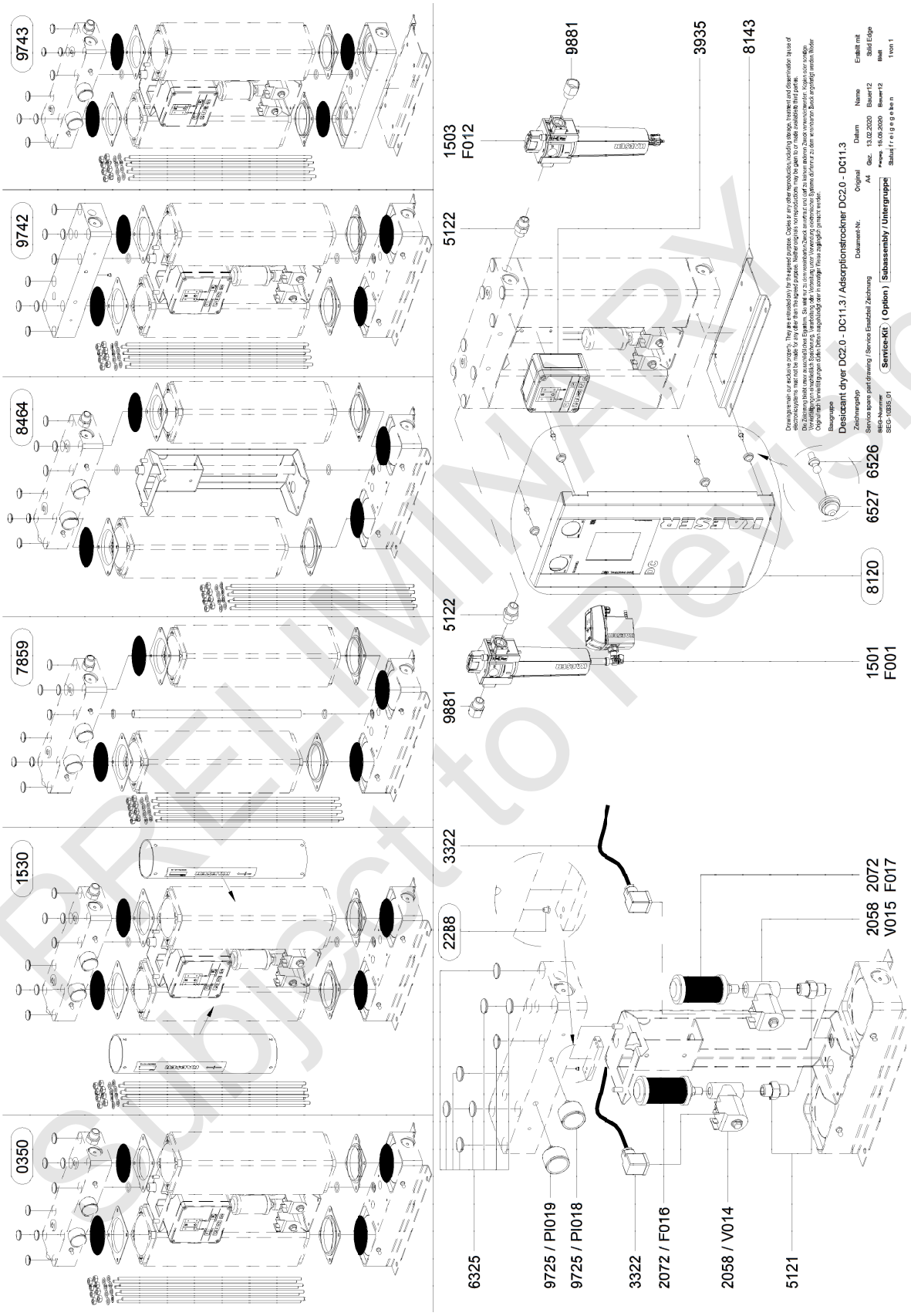
13. Wiring Diagram (without ECD) 13. Schaltplan (ohne ECD)



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

14. Part-List

14. Stückliste



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

14. Part-List

14. Stückliste

Legend		KAESER KOMPRESSOREN
	Desiccant dryer	SEL-4408_01 E

Item	Description	Option
0350	Gasket kit cpl.	
1501	Inlet filter	
1503	Particulate filter	
1530	Desiccant charge	
2058	Outlet control valve	
2072	Outlet silencer	
2288	Throttle nozzle	
3322	Control cable	
3935	Control unit	
5121	Double nipple	
5122	Double nipple	
6260	Gasket kit	
6325	Closing plug	
6526	Plug-in connection plug	
6527	Plug-in connection ball	
7859	Pressure pipe	
8120	Front cover	
8143	Floor panel	
8464	Holding plate	
9725	Adsorber tank pressure gauge	
9742	Distributor plate top	
9743	Distributor plate bottom	
9881	Adapter	

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual!

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

14. Part-List

14. Stückliste

Legende		KAESER KOMPRESSOREN
	Adsorptionstrockner	SEL-4408_01 D

Pos. Nr.	Benennung	Option
0350	Dichtungssatz kpl.	
1501	Eintrittsfilter	
1503	Nachfilter	
1530	Adsorptionsmittel	
2058	Steuerventil Austritt	
2072	Austrittsschalldämpfer	
2288	Drosseldüse	
3322	Steuerkabel	
3935	Steuereinheit	
5121	Doppelnippel	
5122	Doppelnippel	
6260	Dichtungssatz	
6325	Verschlussstopfen	
6526	Steckverbindung Stopfen	
6527	Steckverbindung Kugel	
7859	Druckrohr	
8120	Frontverkleidung	
8143	Bodenblech	
8464	Halteblech	
9725	Manometer Adsorberbehälter	
9742	Verteilerplatte oben	
9743	Verteilerplatte unten	
9881	Übergangsstück	

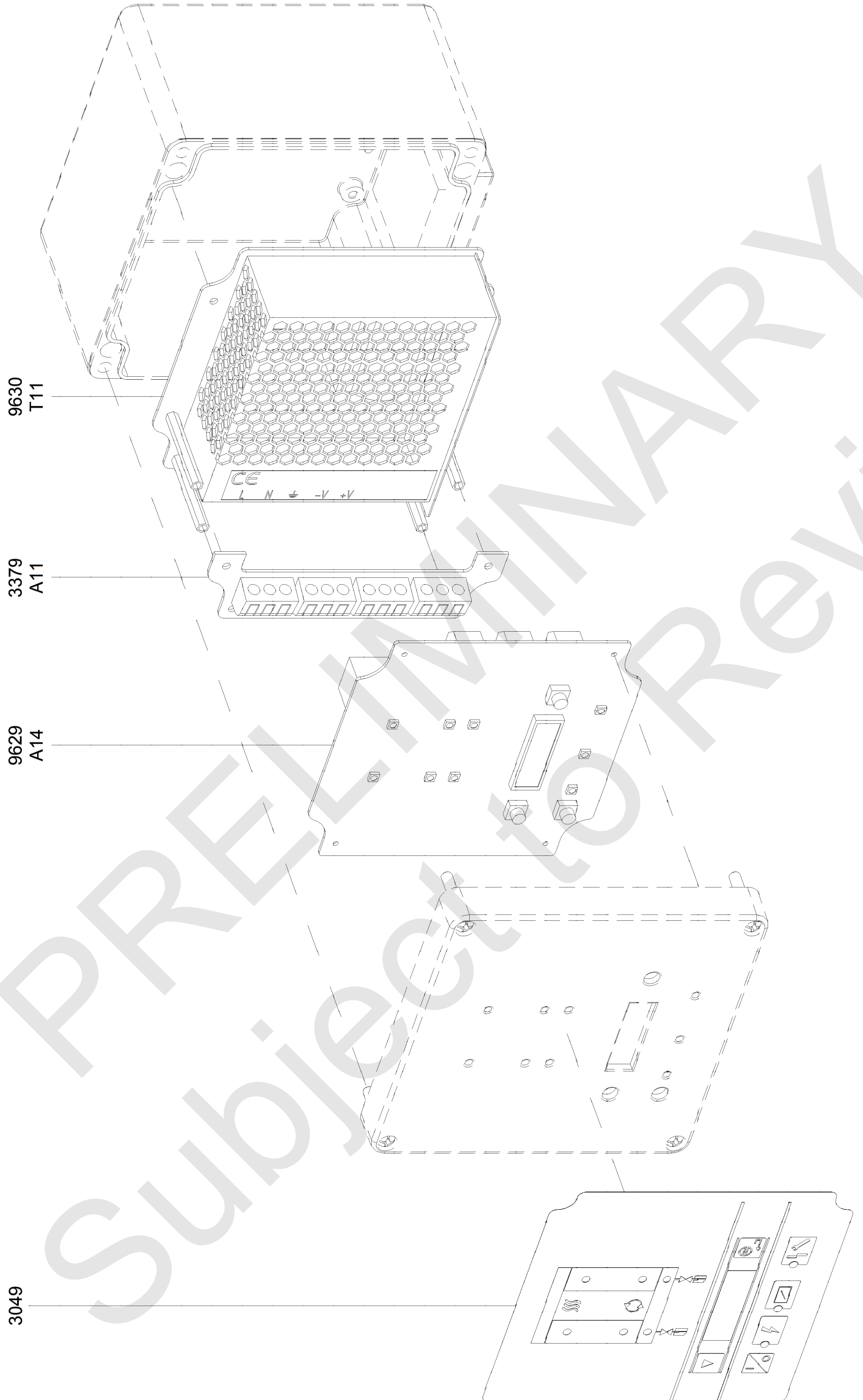
Bitte geben Sie bei der Ersatzteilbestellung Material- und Serialnummer der Anlage sowie Positionsnummer und Bezeichnung der Ersatzteile an.

Vor und bei Ausführung aller Arbeiten sind die Sicherheits- und Servicehinweise in der Betriebsanleitung der Maschine zu beachten!

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

14. Part-List

14. Stückliste



Drawings remain our exclusive property. They are entrusted only for the agreed purpose. Copies or any other reproduction, including storage, treatment and dissemination by use of electronic systems must not be made for any other than the agreed purpose. Neither originals nor reproductions may be given to or made available to third parties.

Die Zeichnung bleibt unser ausschließliches Eigentum. Sie wird nur zu dem vereinbarten Zweck anvertraut und darf zu keinem anderen Zweck verwendet werden. Kopien oder sonstige Vervielfältigungen einschließlich Speicherung, Verarbeitung oder Verbreitung unter Verwendung elektronischer Systeme dürfen nur zu dem vereinbarten Zweck angefertigt werden. Weder Original noch Vervielfältigungen dürfen Dritten ausgehändigt oder in sonstiger Weise zugänglich gemacht werden.

Baugruppe 3935 - Control unit / Steuereinheit					
Zeichnungstyp Service spare part drawing / Service Ersatzteil Zeichnung	Dokument-Nr.	Original A4		Datum	Name	Erstellt mit Solid Edge
SEG-Nummer <DOCNR>	Service-Kit (Option) Subassembly / Untergruppe		Gez.	<IA-DATE>	<IA-NAME>	
			Freigeg.	<FR-DATE>	<FR-NAME>	Blatt
			Status	<STATUS>		1 von 1

14. Part-List

14. Stückliste

Legend		KAESER KOMPRESSOREN
3935	**Control unit**	SEL-4409_01 E

Item	Description	Option
3049	Control label	
3379	Terminal plate	
9629	Control board	
9630	Control board power unit	

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual!

Legende		KAESER KOMPRESSOREN
3935	**Steuereinheit**	SEL-4409_01 D

Pos. Nr.	Benennung	Option
3049	Folienschild Steuerung	
3379	Anschlussklemmplatte	
9629	Steuerplatine	
9630	Netzteil Steuerplatine	

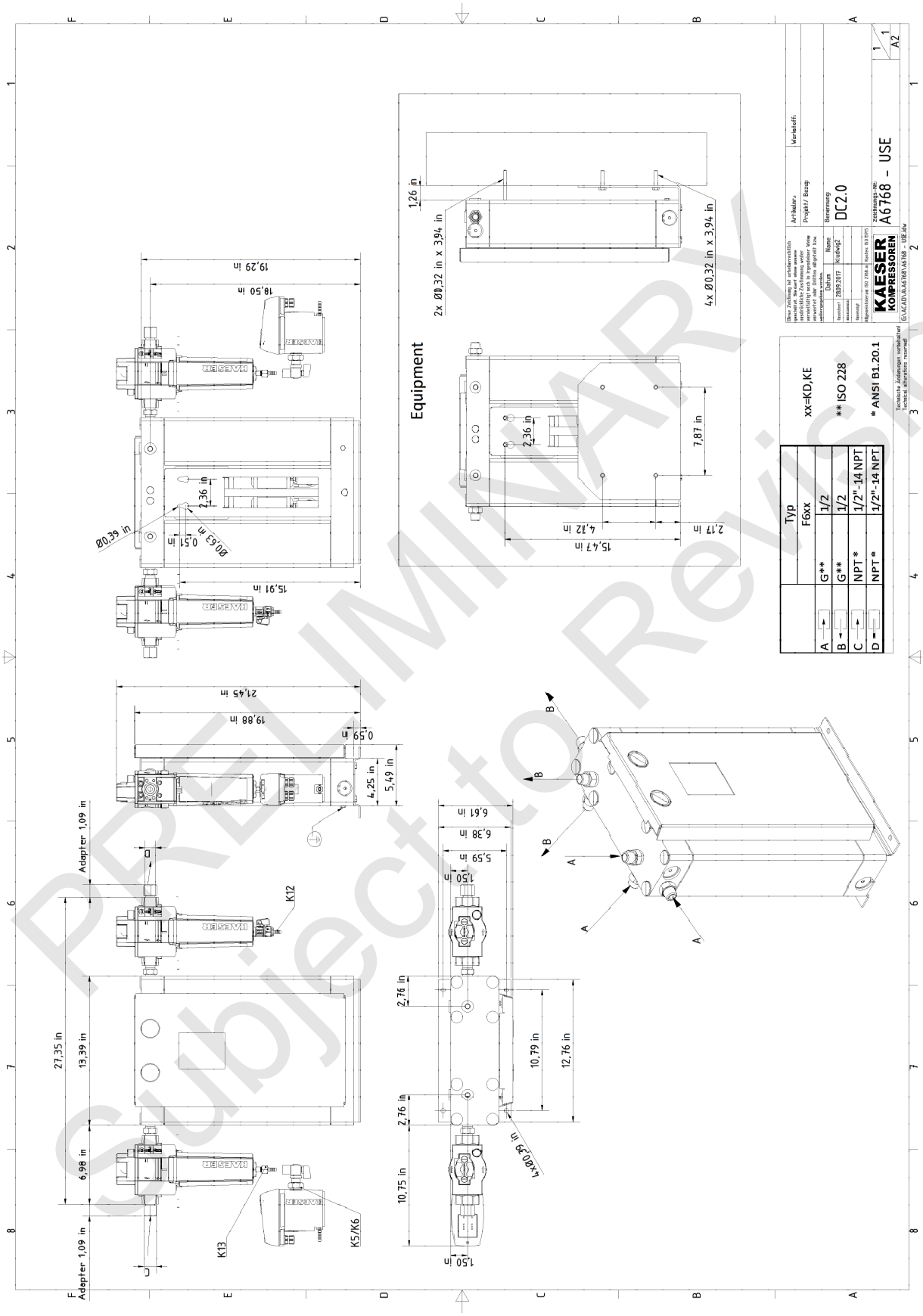
Bitte geben Sie bei der Ersatzteilbestellung Material- und Serialnummer der Anlage sowie Positionsnummer und Bezeichnung der Ersatzteile an.

Vor und bei Ausführung aller Arbeiten sind die Sicherheits- und Servicehinweise in der Betriebsanleitung der Maschine zu beachten!

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

15. Dimensional Drawing

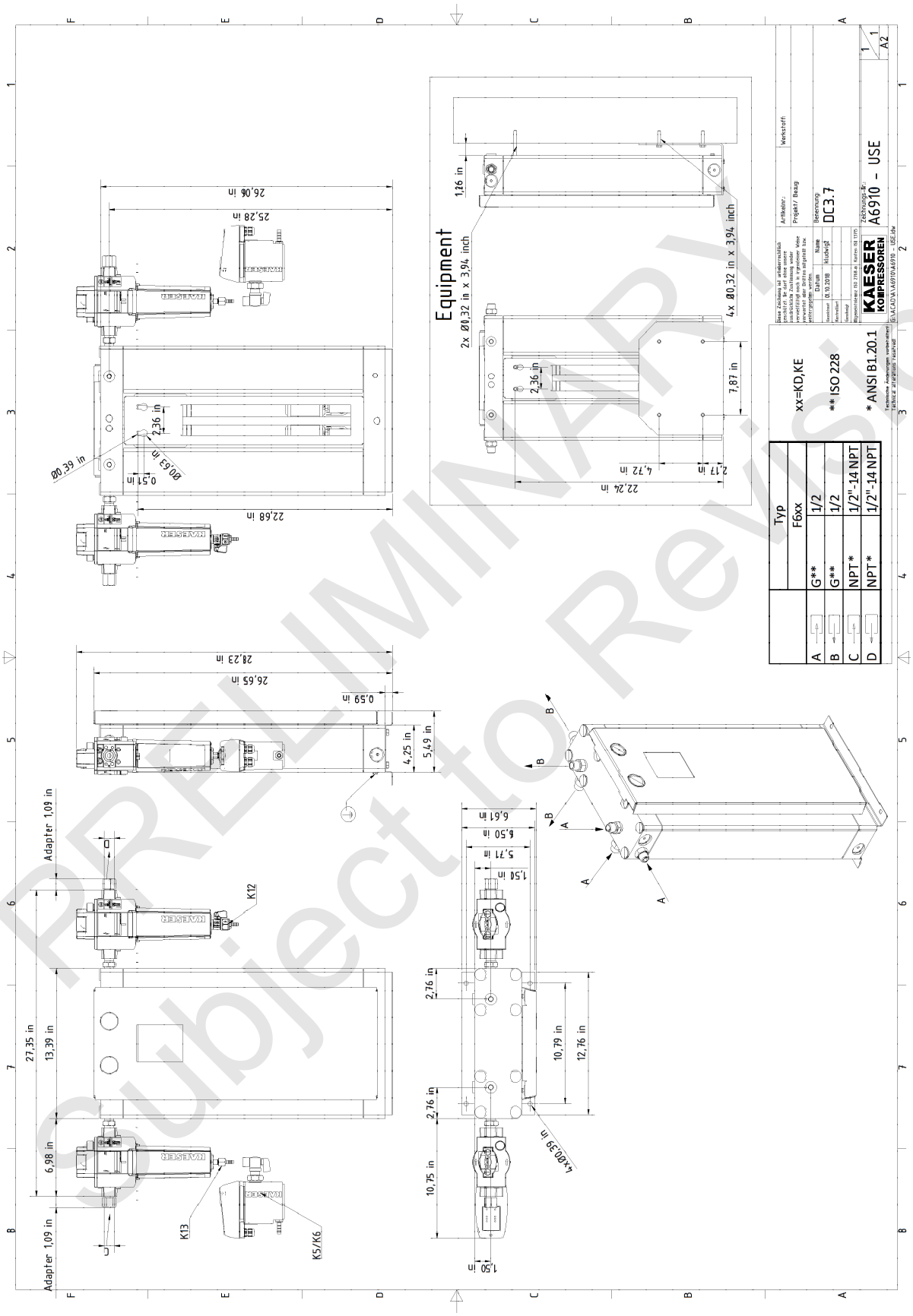
15. Maßzeichnung



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

15. Dimensional Drawing

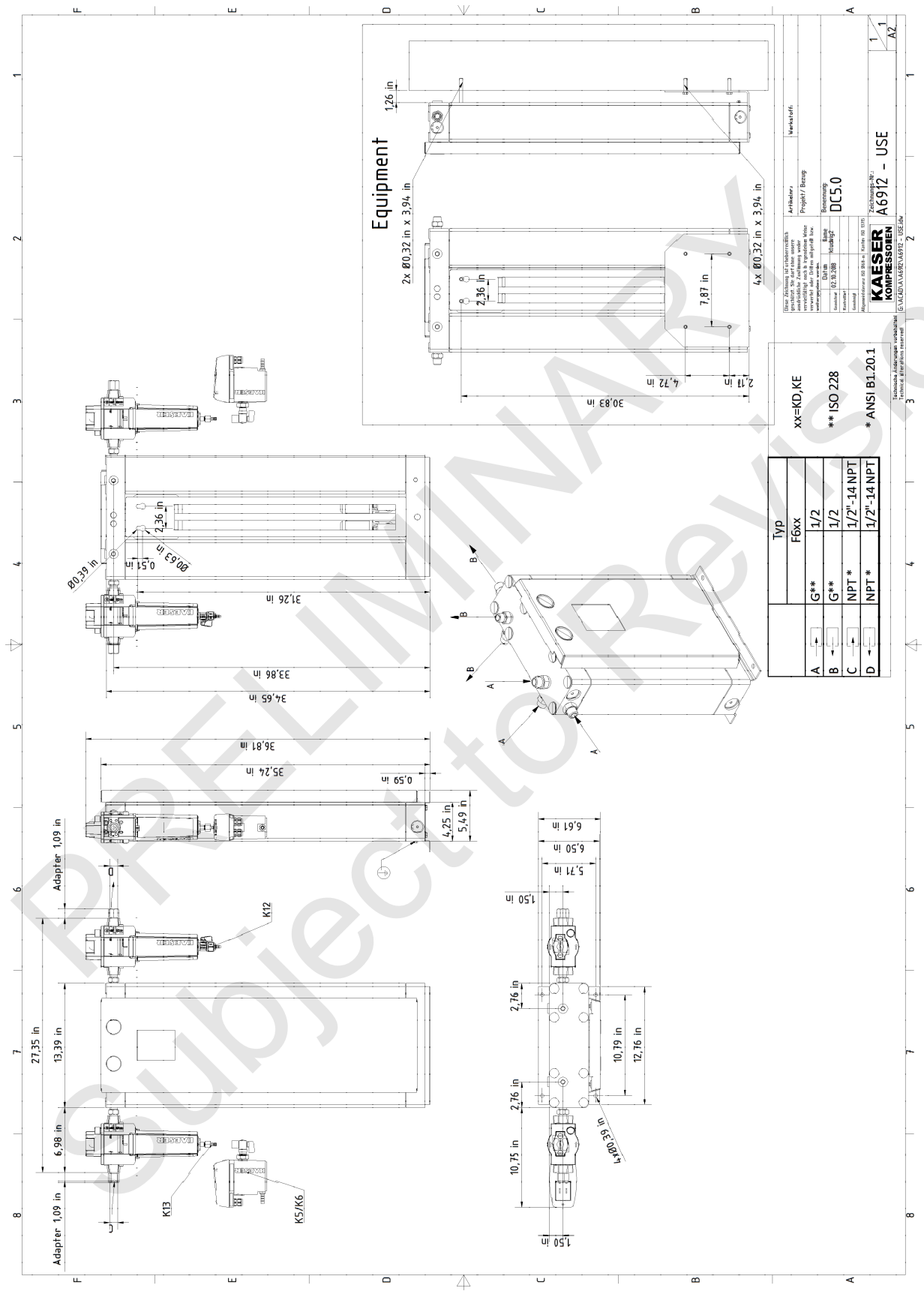
15. Maßzeichnung



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

15. Dimensional Drawing

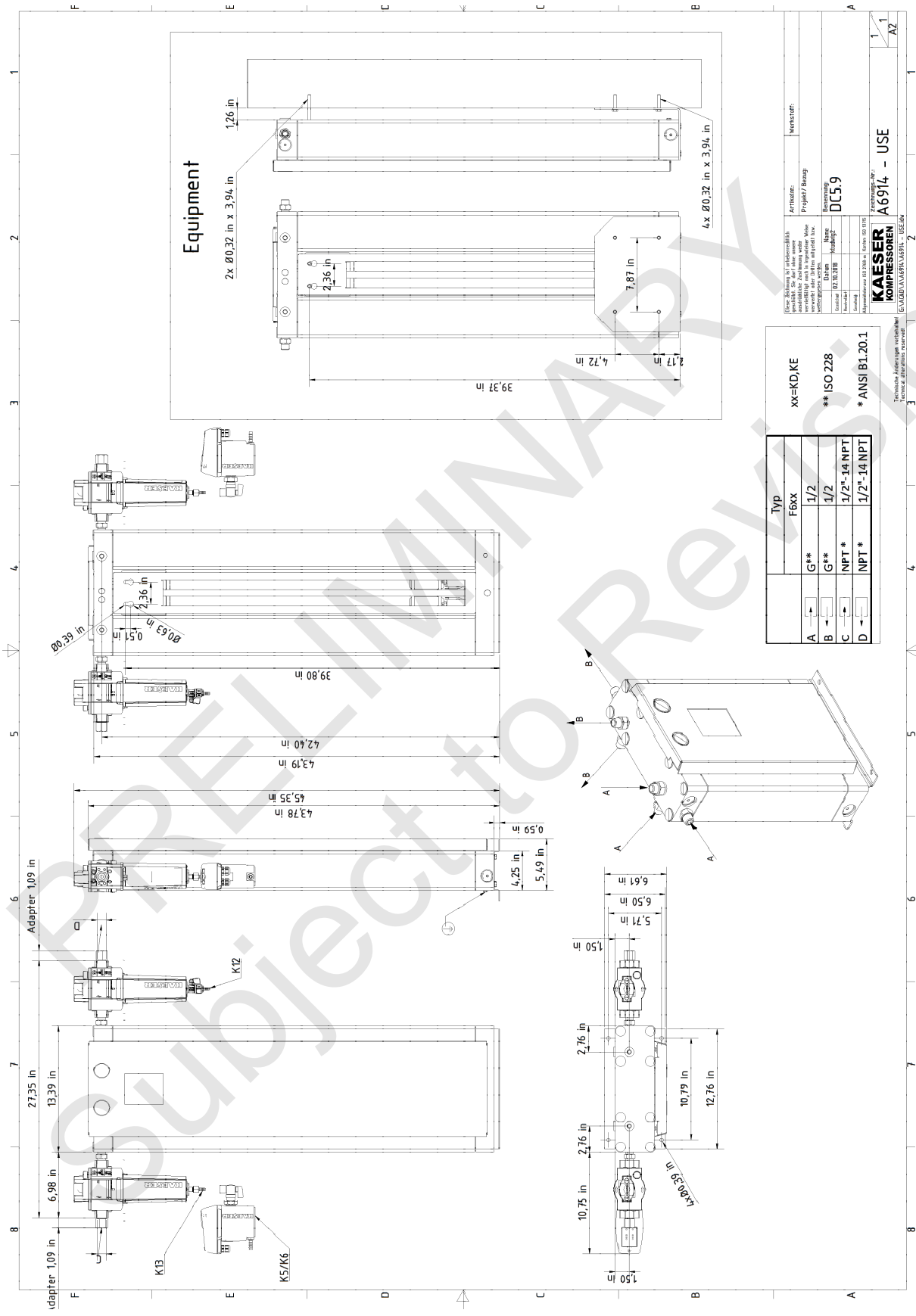
15. Maßzeichnung



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

15. Dimensional Drawing

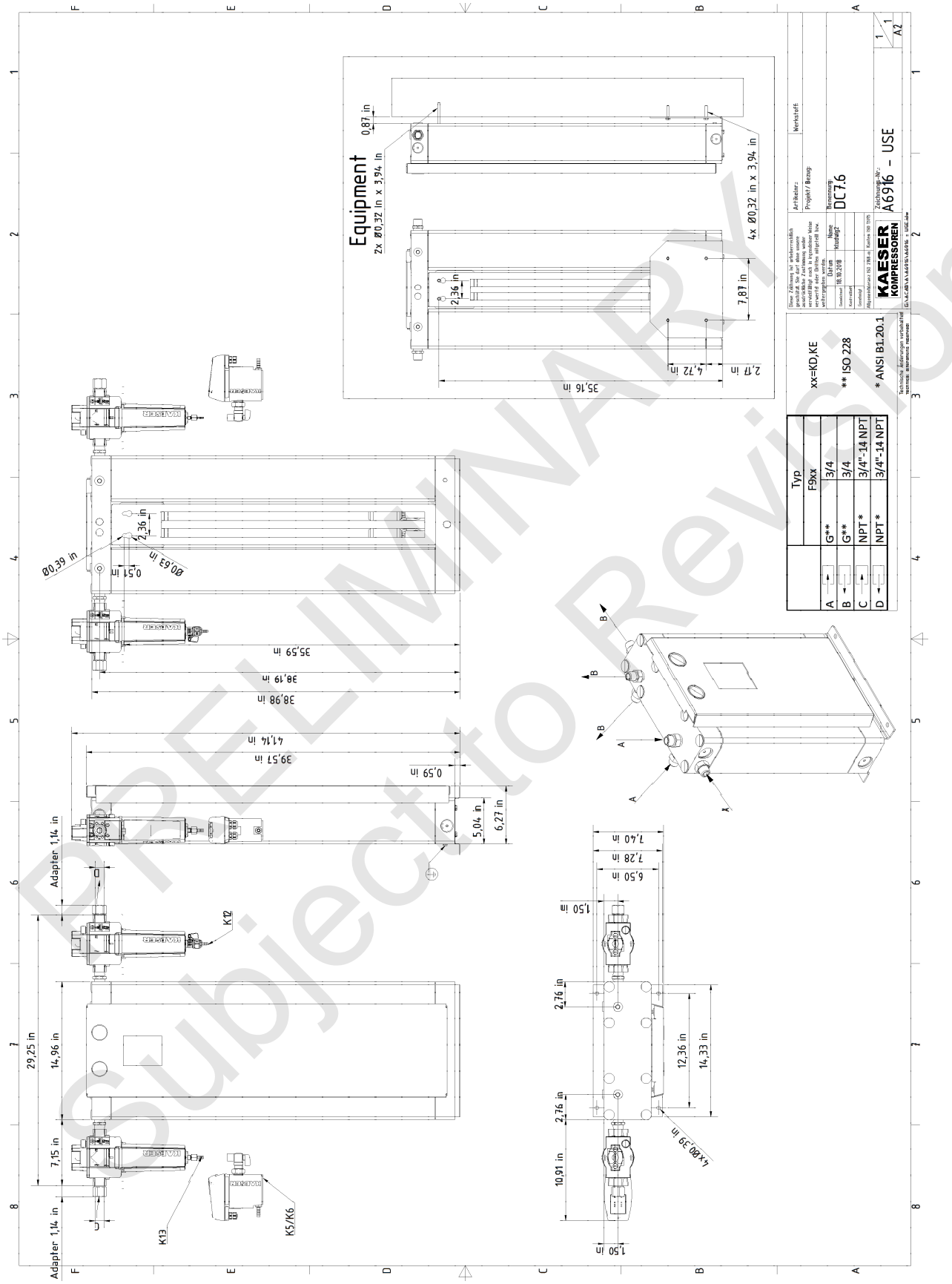
15. Maßzeichnung



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

15. Dimensional Drawing

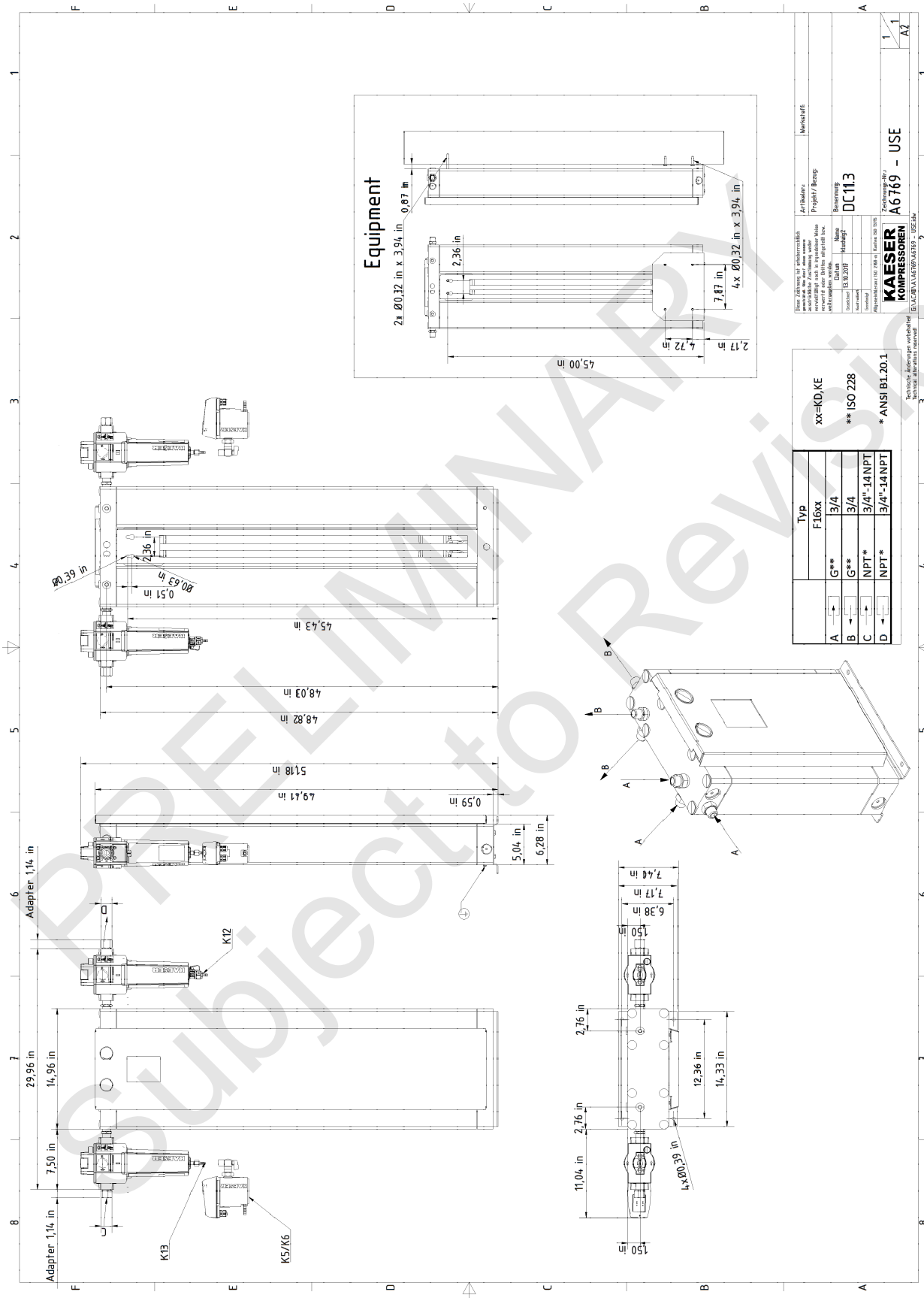
15. Maßzeichnung



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

15. Dimensional Drawing

15. Maßzeichnung



A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

16. Disassembly and disposal

Disassembly:

WARNING!
Risk of injury in case of insufficient qualification!
Improper handling may cause serious harm to persons and things.
Therefore:
- The disassembly may be executed only by specialized personnel.

Risk of injury in case of improper disassembly!
Stored rest energy, filling of the device, sharp elements, sharp tops and edges on and in the device may cause injuries.
Therefore:
- Before starting works, sufficient space should be provided.
- Open sharp elements should be handled with care.
- Keep the working area clean and tidy! Loose elements and tools may cause accidents.
- Elements should be disassembled professionally and the staff should be wearing appropriate safety working garments.

Before the disassembly:

- Switch the device off and secure from switching on again.
- Total energy supply should be physically cut off from the device. The system of compressed air should be partly displaced and the pressure removed from the dryer.

Disposal:

Protect the environment!
Handling and disposal of elements are subject to provisions regulating handling and utilization of wastes applied in every country.

To observe:
- In case of refrigerants, adsorption agents or similar elements, the agents are to be utilized properly.
- In case of refrigerating compressors, they have to be removed from the refrigeration circuit and the refrigerator oil is to be disposed of in a proper way.
- Remove filter and dispose according to regulations.
- Keep records according to regulations.

Local authorities or specialized disposal companies shall inform you about environment-friendly utilization.
Please note the waste code in the service kit.

16. Demontage und Entsorgung

Demontage:

WARNUNG!
Verletzungsgefahr bei unzureichender Qualifikation!
Unsachgemäßer Umgang kann zu erheblichen Personen- und Sachschäden führen.
Deshalb:
- Die Demontage darf nur von Fachpersonal ausgeführt werden.

Verletzungsgefahr bei unsachgemäßer Demontage!
Gespeicherte Restenergien, Füllungen des Gerätes, kantige Bauteile, Spitzen und Ecken am und im Gerät können Verletzungen verursachen.
Deshalb:
- Vor Beginn der Arbeiten für ausreichenden Platz sorgen.
- Mit offenen scharfkantigen Bauteilen vorsichtig umgehen.
- Auf Ordnung und Sauberkeit am Arbeitsplatz achten! Lose umher liegende Bauteile und Werkzeuge sind Unfallquellen.
- Bauteile fachgerecht demontieren und Arbeitsschutzkleidung tragen.

Vor Beginn der Demontage:

- Gerät ausschalten und gegen Wiedereinschalten sichern.
- Gesamte Energieversorgung vom Gerät physisch trennen. Druckluftsystem abschieben und Trockner drucklos machen.

Entsorgung:

Schützen Sie die Umwelt!
Handhabung und Entsorgung von Altbauteilen unterliegen gesetzlichen landesspezifischen Abfallbehandlungs- und Entsorgungsvorschriften.

Bitte beachten:
- Bei vorhandenen Kältemittel, Adsorptionsmittel oder ähnlichem, Mittel der fachgerechten Entsorgung zuführen.
- Bei vorhandenen Kältemittelverdichter, Kältemittelverdichter aus Kältekreislauf ausbauen und das Kältemaschinenöl der fachgerechten Entsorgung zuführen.
- Filter ausbauen und nach Vorschriften entsorgen.
- Den gesetzlichen Vorschriften nach dokumentieren.

Die örtlichen Kommunalbehörden oder spezielle Entsorgungsfachbetriebe geben Auskunft zur umweltgerechten Entsorgung.
Bitte Abfallschlüssel im Servicekit beachten.

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

17. Annex Filter

17. Anhang Filter

A7151	08.08.19	SK	08.08.19	TD		
D-Name	erstellt	Name	gepr.	Name	ersetzt f.	ersetzt d.

Operator Manual

Compressed air filter

KAESER FILTER F6 – F142; ECO-DRAIN 31

No.: 901769 15 USE

Manufacturer:

KAESER KOMPRESSOREN SE

96410 Coburg • PO Box 2143 • GERMANY • Tel. +49-(0)9561-6400 • Fax +49-(0)9561-640130

www.kaeser.com

/KKW/AFILT 2.15 en Z1 SBA-FILTER-SPX

20200113 143005

Contents

Contents

List of Illustrations

List of Illustrations

List of Tables

List of Tables

1 Technical Data

1.1 Options

The table contains a list of possible options.

➢ Enter options here as a reference.

Option	Option code	Available?
silicone-free (free of silicone)	F8	
Pressure differential gauge (mechanical)	F9	✓
Electronic condensate drain, floating contact	K6	
Manual condensate drain	K12	
Automatic condensate drain	K13	
Already available: ✓ not available: —		

Tab. 1 Options

1.2 Understanding the type designation

Compressed air filters

Product	Filter size	Degree of filtration
F: Air filter	6 9 16 22 26 46 83 110 142	KB: Coalescence filterBasic KD: Particulate filterDust KE: Coalescence filterExtra
Example:		
F	22	KD
My compressed air filter:		

Tab. 2 Understanding the type designation of the compressed air filter

Filter element

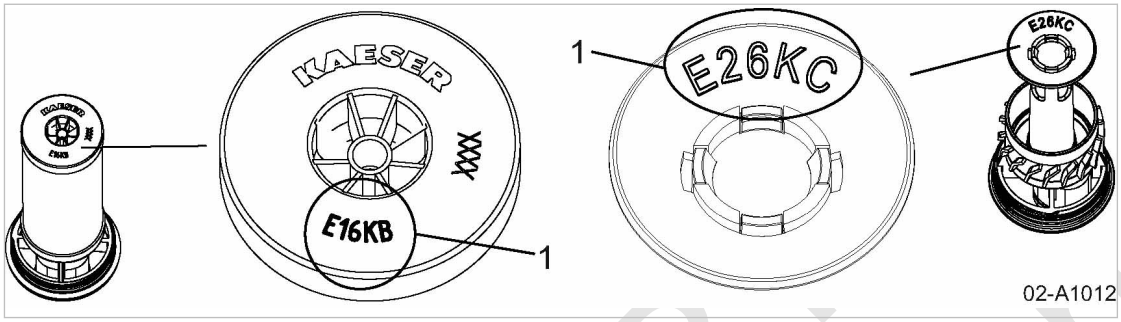


Fig. 1 Type designation of the filter element (example)
[1] Type designation (example)

Product	Filter size	Degree of filtration
E: Filter element	6 9 16 22 26 46 83 110 142	KB: Coalescence filterBasic KD: Particulate filterDust KE: Coalescence filterExtra
Example:		
E	16	KB
My filter element:		

Tab. 3 Understanding the type designation of the filter element

1.3 Operating limits

Application

Degree of filtration	KB	KD	KE
Short description	Basic	Dust	Extra
Suitable fluids	Air Nitrogen		
Fluid properties	non-corrosive non-combustible non-toxic non-explosive stable		

Degree of filtration	KB	KD	KE
Short description	Basic	Dust	Extra
Application	Simultaneous filtration of solid and liquid aerosols and solid particles	Exclusively for the filtration of solid particles	Same application as KB, but for higher compressed air quality
Fluid quality at the inlet	Mostly free of condensate	Free of condensate	
Typical application near the consumers	Compressed air filter for simple air quality	Compressed air filter downstream of desiccant dryer and activated carbon adsorber	Compressed air filter for higher air quality Micro-particle filter according to degree of filtration KD
Air flow direction	from inside to outside		

Tab. 4 Operating limits: Application

Pressure and temperature

Degree of filtration	KB	KD	KE
Short description	Basic	Dust	Extra
Permissible working pressure [psi] at the inlet	30 – 232		
Permissible fluid temperature [°F] at the inlet	40 – 150		
Permissible ambient temperature [°F]	40 – 120		
Compression stress	static		

Tab. 5 Operating limits: Pressure and temperature

1.4 Separation efficiency

The separation efficiency is often highly dependent on individual circumstances in the compressed air network (composition of the fluid, pressure and flow situation).

➢ Consult KAESER for advice on this subject.

Aerosol separation according to ISO 12500-1

Degree of filtration	KB	KD	KE
Short description	Basic	Dust	Extra
Differential pressure[1)] in new state [psi]	<0.44	<0.58	<1.02
Initial differential pressure at saturation [psi]	<2.03	—	<2.90

[1)] at maximum volumetric flow

Degree of filtration	KB	KD	KE
Short description	Basic	Dust	Extra
Residual aerosol content [mg/m³]	<0.1	—	<0.01

[1)] at maximum volumetric flow

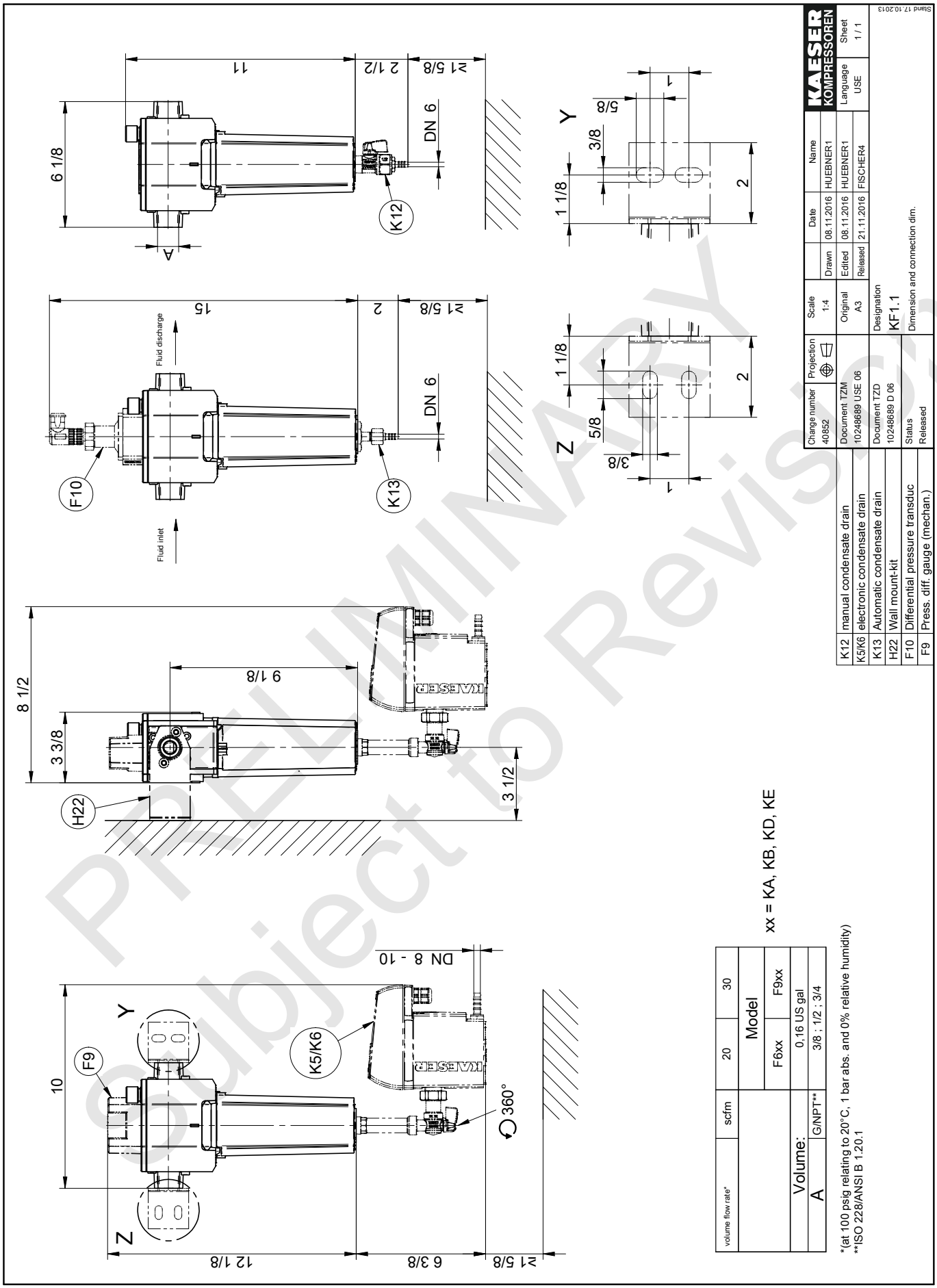
Tab. 6 Aerosol separation at 10mg/m³ oil aerosol test concentration

Recommendation for suitable particle separation

We recommend degree of filtration KD in order to attain purity class 2 (acc. to ISO 8573-1).

In the case of more stringent requirements, we also recommend the degree of filtration KE as particulate filter.

1.5 Dimensions and type-dependent data



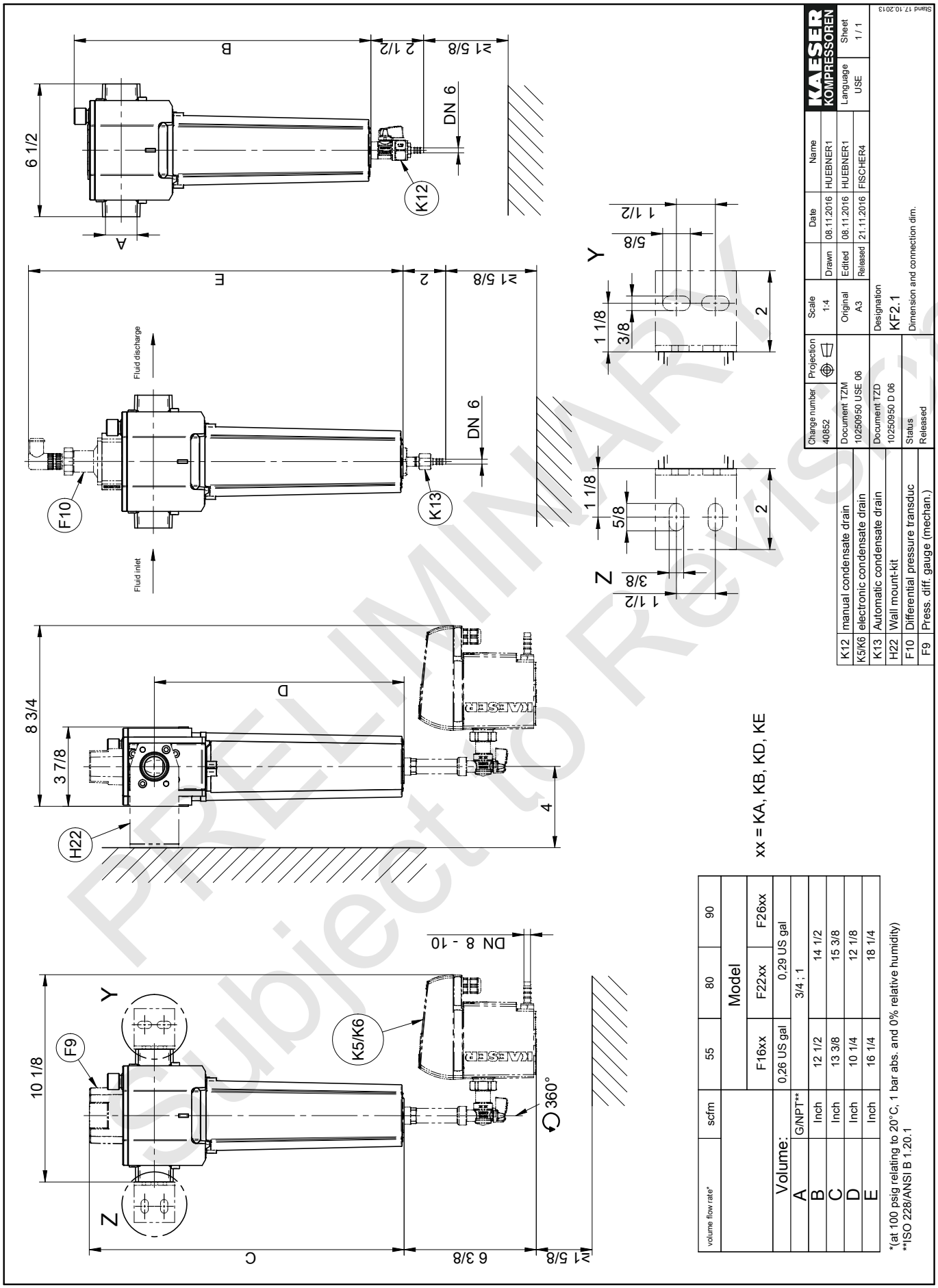
volume flow rate*	scfm	20	30
		Model	
		F6xx	F9xx
Volume:		0,16 US gal	
A	G/NPT**	3/8 ; 1/2 ; 3/4	

*(at 100 psig relating to 20°C, 1 bar abs. and 0% relative humidity)
**ISO 228/ANSI B 1.20.1

Change number 40852	Projection	Scale 1:4		Date	Name	KAESER KOMPRESSOREN		
Document TZM 10248689 USE 06		Original A3	Drawn	08.11.2016	HUEBNER1	Language USE	Sheet 1 / 1	
Document TZD 10248689 D 06		Designation KF1.1	Edited	08.11.2016	HUEBNER1			
Status Released		Dimension and connection dim.	Released	21.11.2016	FISCHER4			

K12	manual condensate drain
K5/K6	electronic condensate drain
K13	Automatic condensate drain
H22	Wall mount-kit
F10	Differential pressure transduc
F9	Press. diff. gauge (mechan.)

Stand 17.10.2013



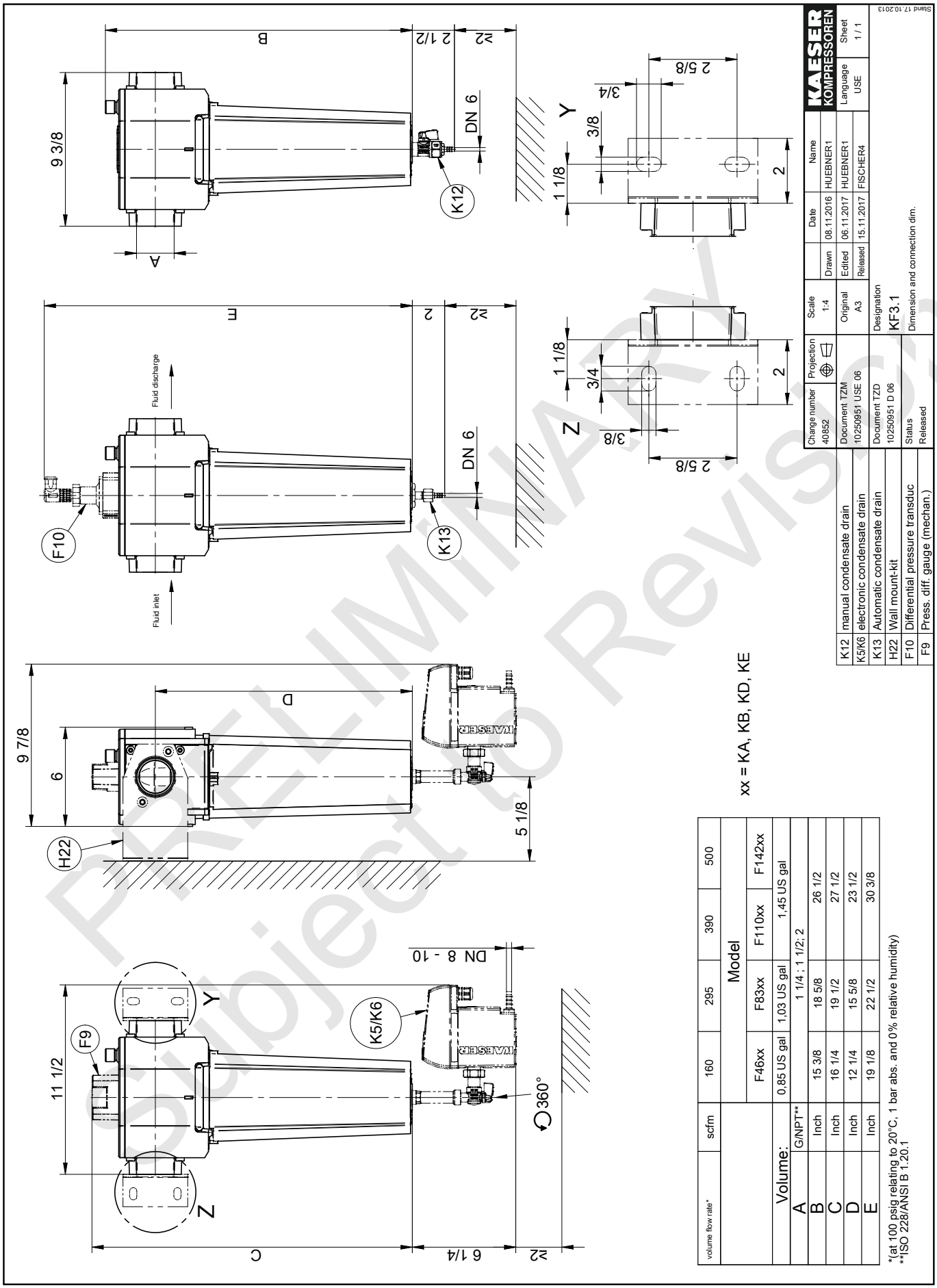
K12	manual condensate drain
K5/K6	electronic condensate drain
K13	Automatic condensate drain
H22	Wall mount-kit
F10	Differential pressure transduc
F9	Press. diff. gauge (mechan.)

Change number	Projection	Scale		Date	Name	KAESER KOMPRESSOREN	
40852		1:4	Drawn	08.11.2016	HUEBNER1	Language	Sheet
Document TZM		Original	Edited	08.11.2016	HUEBNER1	USE	1 / 1
10250950 USE 06		A3	Released	21.11.2016	FISCHER4		
Document TZD		Designation					
10250950 D 06		KF2.1					
Status		Dimension and connection dim.					
Released							

Stand 17.10.2013

volume flow rate*		scfm	55	80	90
			Model		
			F16xx	F22xx	F26xx
Volume:			0,26 US gal	0,29 US gal	
A	G/NPT**		3/4 ; 1		
B	Inch		12 1/2	14 1/2	
C	Inch		13 3/8	15 3/8	
D	Inch		10 1/4	12 1/8	
E	Inch		16 1/4	18 1/4	

*(at 100 psig relating to 20°C, 1 bar abs. and 0% relative humidity)
**ISO 228/ANSI B 1.20.1



volume flow rate*	scfm	160	295	390	500		
		Model					
		F46xx	F83xx	F110xx	F142xx		
Volume:		0,85 US gal	1,03 US gal	1,45 US gal			
A	G/NPT**	1 1/4 ; 1 1/2; 2					
B	Inch	15 3/8	18 5/8	26 1/2			
C	Inch	16 1/4	19 1/2	27 1/2			
D	Inch	12 1/4	15 5/8	23 1/2			
E	Inch	19 1/8	22 1/2	30 3/8			

*(at 100 psig relating to 20°C, 1 bar abs. and 0% relative humidity)
**ISO 228/ANSI B 1.20.1

K12	manual condensate drain
K5/K6	electronic condensate drain
K13	Automatic condensate drain
H22	Wall mount-kit
F10	Differential pressure transduc
F9	Press. diff. gauge (mechan.)

Charge number	Projection	Scale		Date	Name
40852		1:4	Drawn	08.11.2016	HUEBNER1
Document TZM		Original	Edited	06.11.2017	HUEBNER1
10250951 USE 06		A3	Released	15.11.2017	FISCHER4
Document TZD		Designation			
10250951 D 06		KF3.1			
Status		Dimension and connection dim.			
Released					

KAESER KOMPRESSOREN — Language USE — Sheet 1 / 1

Stand 17.10.2013

2 Safety and Responsibility

2.1 Intended use

The compressed air filter is suited for the following gaseous fluids:

- Air
- Nitrogen

The compressed air filter is designed solely for the cleaning of the aforementioned fluids in an industrial environment. Any other use is considered incorrect. The manufacturer is not liable for any damage that may result from incorrect use. The operator alone is liable for any risks incurred.

➢ Comply with the instructions in this Operating Manual.

➢ Use the compressed air filter only within its performance limits and under the permitted operating conditions.

This compressed air filter is designed for a stationary use only. Accelerating forces can result in damage. This applies particularly to transportation in a depressurized condition.

➢ The compressed air filter is to be used in a stationary environment only.

2.2 Improper use

Improper usage can cause damage to property and/or (severe) injuries.

➢ Only use the filter as intended.

➢ Do not operate the compressed air filter in air networks with temperatures potentially exceeding 122°F. This may be the case downstream of heat-regenerated desiccant dryers.

➢ Do not operate the compressed air filter in areas in which specific requirements with regard to explosion protection are in force.

➢ Do not use the compressed air as breathing air.

➢ Do not modify the compressed air filter and/or its components.

2.3 Option F8 Ensuring silicon-free operation

Silicones are substances that interfere with paint adhesion and are the main causes for sporadic, funnel-shaped indentations in the paint coat. To avoid such defects, the surfaces of parts through which compressed air flows must be silicone-free.

Only correct and responsible machine operation will ensure that the components in contact with compressed air will be free from substances interfering with paint adhesion.

Installation, commissioning and maintenance

Commission the machine only when proper installation is ensured and it is impossible for substances interfering with paint adhesion to enter components containing compressed air.

➢ Do not allow anyone but an authorized KAESER service representative to perform installation, commissioning and maintenance.

➢ Use only compressed air filters and filter elements identified as "silicone-free", with undamaged packaging, and less than three months in storage.

➢ Wear only work clothes, gloves and shoes that do not emit any substances that interfere with paint wetting.
➢ For the installation and connection to the compressed air system, use only components not emitting substances interfering with paint adhesion.

The following materials must be free of substances interfering with paint adhesion:
- Cleaning agent
- Installation accessories (for example: adhesives, grease)
- Tools

Operation

➢ Ensure that the compressed air filter through which compressed air flows remains free of any substances that would interfere with paint wetting.

Packing and storing

➢ Wear work clothes, gloves and shoes that do not emit any substances that interfere with paint wetting.
➢ If necessary, clean the compressed air filter contaminated with substances that may interfere with paint wetting.
(e.g., Rivolta M.T.X. 60; 9.6808.00020)
➢ Tightly close the compressed air filter with silicone-free film and label with "silicone-free" (add date).
➢ Dispose of used filter elements as per environmental regulations. Do not reuse any filter element.
➢ Do not store longer than three months.

2.4 User's responsibilities

2.4.1 Observe statutory and universally accepted regulations

This is, for example, nationally applied European directives and/or valid national legislation, safety and accident prevention regulations.

➢ Observe relevant statutory and accepted regulations during installation, operation and maintenance of the compressed air filter.

2.4.2 Qualified personnel

These are people who, by virtue of their training, knowledge and experience as well as their knowledge of relevant regulations can assess the work to be done and recognize the possible dangers involved.

➢ Ensure that operating, installation and maintenance personnel are qualified and authorized to carry out their tasks.

2.4.3 Safely dealing with sources of danger

The following describes the various forms of danger that can arise during the operation of the compressed air filter.

Forces of compression

Compressed air/fluid is contained energy. Uncontrolled release of this energy can cause serious injury or death. The following information concerns work on components that could be under pressure.

- ➢ Close shut-off valves or otherwise isolate the compressed air filter from the air distribution network to ensure that no compressed fluid can flow back into the compressed air filter.
- ➢ Depressurize all pressurized components and enclosures.
- ➢ Do not carry out welding, heat treatment or mechanical modifications on pressurized components, as this adversely affects the components' resistance to pressure.
  The safety of the compressed air filter is then no longer ensured.

Compressed air quality

The composition of the fluid must be suitable for the actual application in order to preclude health and life-threatening dangers.

- ➢ Use appropriate systems for air treatment before using the compressed air as breathing air or for the processing of food products.

Temperature

High temperatures are generated during compression. Touching hot components may cause injuries.

- ➢ Allow the surfaces to cool down.
- ➢ Avoid contact with hot surfaces.
- ➢ Wear protective clothing.

Unsuitable spare parts

Unsuitable spare parts compromise the safety of the compressed air filter.

- ➢ Use only spare parts approved by the manufacturer for use in this machine.
- ➢ Use only genuine KAESER replacement parts on pressure bearing parts.

Conversion or modification of the filter

Modifications, additions to, and conversions of the filter or machine can result in unpredictable dangers.

- ➢ Do not convert or modify the compressed air filter!
- ➢ Obtain written approval by the manufacturer prior to any technical modification or expansion of the machine, the controller, or the control programs.

2.4.4 Safe operation of the compressed air filter

The following is information supporting you in the safe handling of the filter during individual product life phases.

Personal protective equipment

When working on the compressed air filter, you may be exposed to dangers that can result in accidents with severe adverse health effects.

- ➢ Wear protective clothing as necessary.

Suitable protective clothing (examples):

- Safety workwear
- Protective gloves
- Safety boots
- Eye protection

Transport

Depending on the weight and size, specific safety measures must be taken during transport, in order to prevent accidents.

- ➢ Use suitable lifting gear that conforms to local safety regulations.
- ➢ Allow transportation only by personnel trained in the safe movement of loads.
- ➢ Attach lifting gear only to suitable lifting points.
- ➢ Make sure the danger zone is clear of personnel.

Assembly

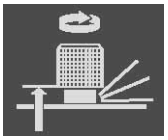
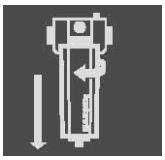
- ➢ Use only electrical cables that are suitable and approved for the surroundings and electrical loads applied.
- ➢ Never dismantle compressed air pipes until they are fully vented.
- ➢ Use compressed air conduits suited and approved for the maximum working pressure.
- ➢ Do not allow connection pipes to be placed under mechanical stress.
- ➢ Do not induce any forces into the compressed air filter via the connections, so that the compressive forces must be balanced by bracing.
- ➢ Ensure accessibility to the compressed air filter so that all work can be carried out without danger or hindrance.
- ➢ Ensure frost protection if the compressed air filter is to be installed in open air.
- ➢ Do not operate in areas in which specific requirements with regard to explosion protection are in force.
- ➢ Ensure sufficient and suitable lighting such that the display can be read and work carried out comfortably and safely.
- ➢ The lower the temperature of the fluid in the filter, the higher its degree of efficiency.
- ➢ In the event of a surface temperature of the compressed air filter expected to exceed 122°F: Shield the compressed air filter and/or use suitable labelling to warn against hot surfaces.

Commissioning, operation and maintenance

During commissioning, operation and maintenance you may be exposed to dangers resulting from, e.g., electricity, pressure and temperature. Careless actions can cause accidents with severe adverse effects for your health.

- ➢ Refer to the quick installation guide:

	Symbol	Meaning
1.		➢ Read and understand the operating manual and all safety instructions prior to use.

	Symbol	Meaning
2.		➢ Only loosen the locking screw manually! ➢ Wait until the compressed air filter is fully depressurized.
3.		➢ Carefully remove the filter bowl

Tab. 7 Quick installation guide

- ➢ Allow maintenance work to be carried out only by authorized personnel.
- ➢ Wear tightly fitting clothing. Wear protective clothing as necessary.
- ➢ Check that there is no voltage on floating relay contacts.
- ➢ Depressurize all pressurized components and enclosures.
- ➢ Allow the compressed air filter to cool down.
- ➢ Use the compressed air filter only with a suitable condensate drain.
- ➢ Use only spare parts approved by KAESER for use in this compressed air filter.
- ➢ Carry out regular inspections:
  for visible damages,
  of the safety installations,
  of the components requiring monitoring.
- ➢ Pay particular attention to cleanliness during all maintenance and repair work. Cover components and openings with clean cloths, paper or tape to keep them clean.

Decommissioning, storage and disposal

Improper handling of used filter elements may endanger the environment.

- ➢ Dispose of the old parts in accordance with local environmental regulations.

2.5 Environment protection

The operation of the compressed air filter may cause dangers for the environment.

- ➢ Do not allow cooling oil to escape to the environment or into the sewage system.
- ➢ Store and dispose of replaced parts in accordance with local environmental protection regulations.
- ➢ Observe national regulations.
  This applies particularly to parts contaminated with cooling fluids or oil.

2.6 Copyright

This operator manual is copyright protected. Queries regarding use or duplication of the documentation should be referred to KAESER. Correct use of information will be fully supported.

3 Design and Function

3.1 General design

This section provides information to the design of the compressed air filter.

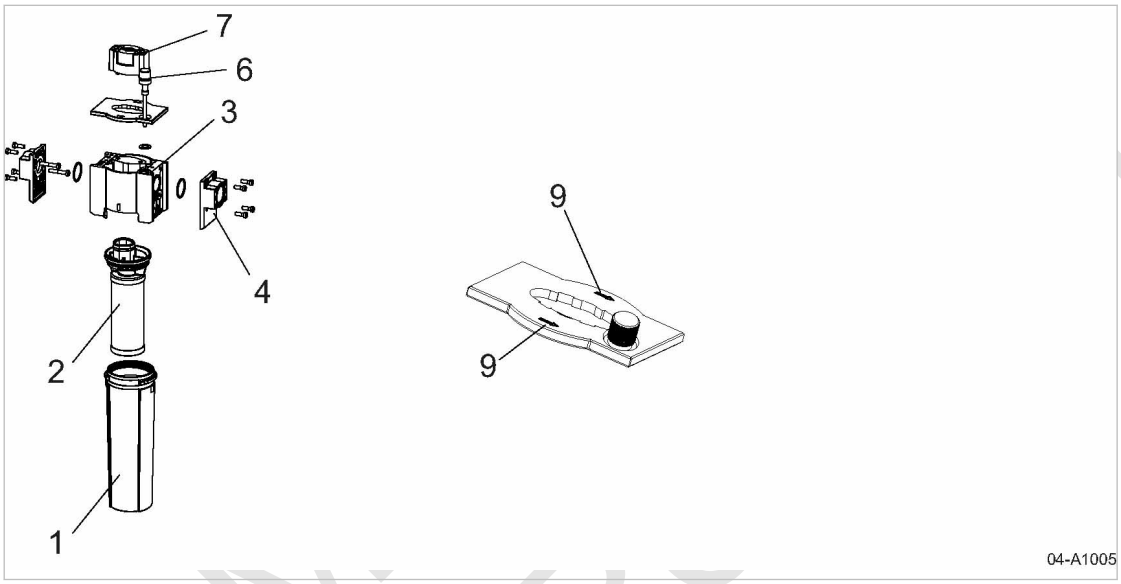


Fig. 2 General design

[1] Filter bowl
[2] Filter element
[3] Filter head
[4] Connection flange
[6] Locking screw
[7] Differential pressure gauge
[9] Direction of flow

The filter bowl [1] receives the filter element [2].

The connection flanges [4] at the filter head [3] connect the compressed air filter with the air network.

The arrows [9] on the filter head indicate the direction of flow.

The retaining screw [6] secures the filter housing against unintended opening. The compressed air filter is vented as soon as the retaining screw is loosened.

The pressure differential gauge [7] provides information regarding the pressure difference between fluid inlet and fluid outlet.

3.2 Condensate drain

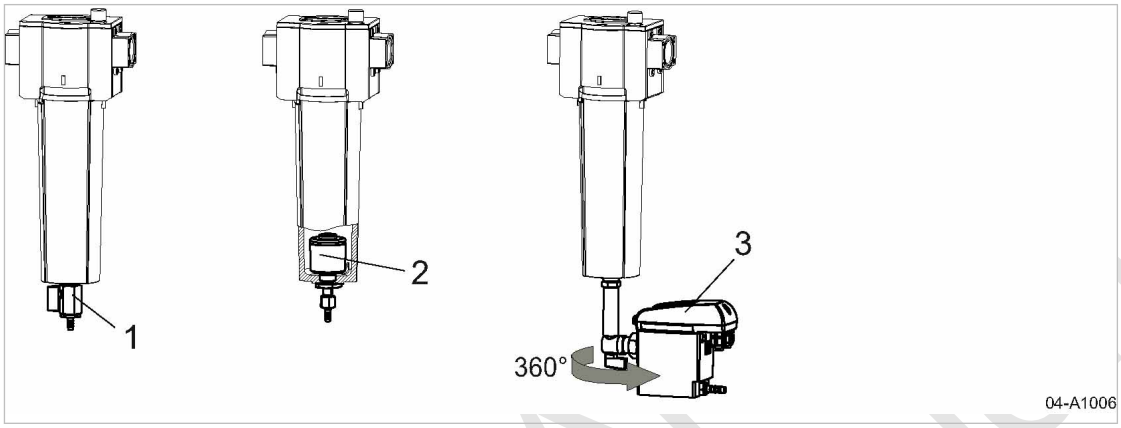


Fig. 3 Condensate drain

1 Manual condensate drain (shut-off valve)
2 Automatic condensate drain (internal float)
3 Electronic condensate drain

Option K12 Manual condensate drain

A manual condensate drain is provided in the compressed air filter with degree of filtration KD. It is only used for inspection as fluid is not removed from the compressed air flow. In a fault, oil or an oil-water mixture will escape.

Option K13 Automatic condensate drain

An automatic condensate train with internal float is installed as standard in compressed air filters with degree of filtration KB and KE. It opens automatically as soon as sufficient liquid has accumulated in the filter bowl.

Option K6 Electronic condensate drain

In compressed air filters with degree of filtration KB and KE, an electronic condensate drain is offered as alternative option. The electronic condensate drain opens automatically as soon as sufficient liquid has accumulated in the filter bowl.

A floating contact will transmit a signal in the event of a fault.

The electronic condensate drain works more precisely, more reliably, causes lower pressure losses, and has a longer maintenance interval. It can be tilted horizontally by 360 degrees.

Further information The operating instructions for the electronic condensate drain are supplied in chapter 8.1.

3.3 Pressure differential gauge

The pressure differential gauge does not provide maintenance information. The filter material ages due to continuous use, regardless of the value of the differential pressure shown.

➢ Clean the disk of the measured value display only with solvent-free cleaning agents.

The pressure differential gauge indicates the pressure difference currently existing between fluid entry and fluid outlet.

As a rule, the pressure differential of a new filter element will slightly rise within a short time, and then remain at this level for a long time.

KAESER recommends early replacement of the filter element if the display moves into the range around 5 psi (350 mbar) prior to expiry of the regular maintenance interval for the filter element.

Option F9 Pressure differential gauge (mechanical)

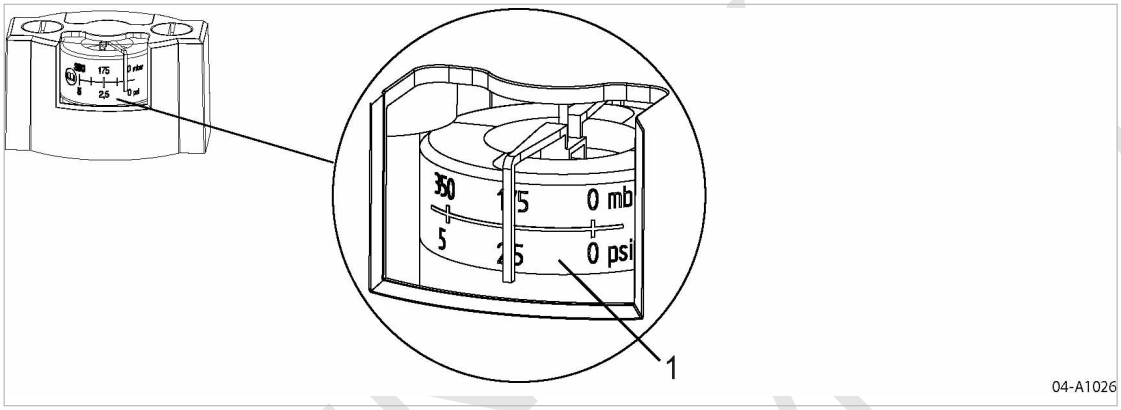


Fig. 4 Pressure differential gauge (mechanical)

[1] Measured value display

4 Installation and commissioning

4.1 Reporting transport damage

1. Check the compressed air filter for visible and hidden transport damage.
2. Inform the carrier and the manufacturer in writing of any damage immediately.

4.2 Comply with all instructions

➢ If surface temperatures exceeding 122 °F are to be expected, label the relevant components accordingly, and secure them against unintended contact.
➢ Protect the compressed air filter from extreme pressure and flow rate fluctuations.
➢ Load the compressed air filters as evenly as possible with their maximum flow rate.
➢ Ensure that air can flow through the compressed air filter only in the direction of flow.

Compressed air filter degree of filtration KB must be protected from large quantities of drops of liquid, this is necessary in tropical regions, for example.

➢ In such a situation, connect an upstream centrifugal separator (degree of filtration of KC).

Compressed air filters with degree of filtration KE must be protected from large quantities of drops of liquid and solid particles.

➢ In this case, install an upstream compressed air filter with degree of filtration of KB.
➢ If the design conditions for the air network change, please have the KAESER Service check as to whether the compressed air filter can still be used.

4.3 Connecting the condensate drain

The condensate must be able to drain freely.

➢ Only compressed air filters with 232 psig maximum permissible working pressure may be connected to the condensate collecting line.

The illustration shows the recommended installation.
Condensate flows downward into the condensate manifold. This prevents condensate from the condensate manifold to flow back to the condensate drain.

If condensate flows at several points into the condensate manifold, you must install a shut-off valve in each condensate line to enable individual shut-off of the condensate lines before starting maintenance work.

Condensate line

Feature	Value
Max. length[1)] [ft.]	50
Max. delivery head [ft.]	16

[1)] For longer lengths, please contact KAESER before installation.

Feature	Value
Material (pressure-resistant, corrosion-proof)	Copper Stainless steel Plastic Hose line
[1] For longer lengths, please contact KAESER before installation.	

Tab. 8 Condensate line

Condensate manifold

Feature	Value
Gradient [%]	>1
Max. length[1] [ft.]	65
Material (pressure-resistant, corrosion-proof)	Copper Stainless steel Plastic Hose line
[1] For longer lengths, please contact KAESER before installation.	

Tab. 9 Condensate manifold

Compressed air flow rate[1] [cfm]	Line cross-section ["]
<350	3/4
350 – 700	1
701 – 1400	1 1/2
>1400	2
[1] Compressed air flow rate as guide for the condensate volume to be expected	

Tab. 10 Condensate manifold: Line cross-section

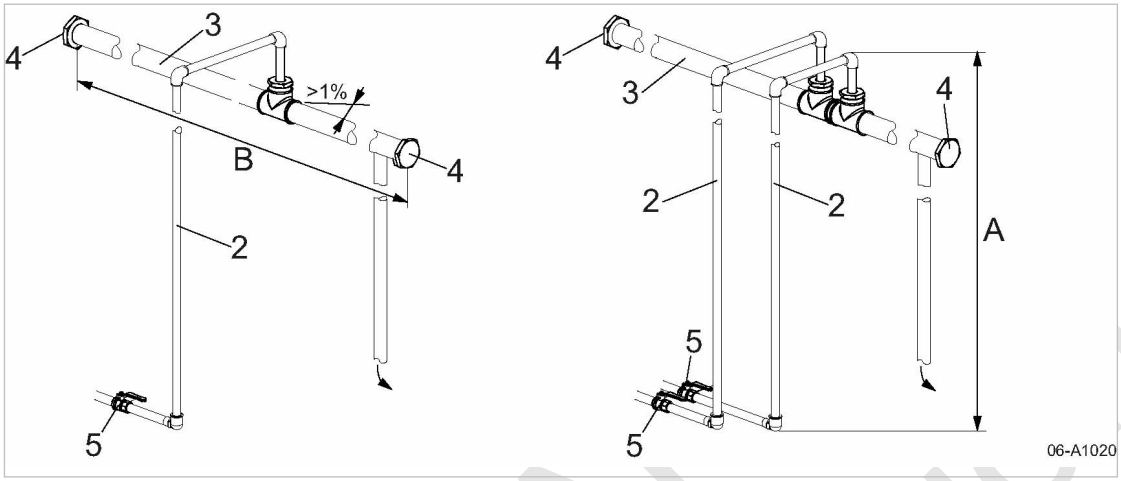


Fig. 5 Connecting the condensate drain

[1] Automatic condensate drain
[2] Hose connector
[3] Electronic condensate drain
[4] Shut-off valve

➢ Connect the condensate drain to the hose connection.

➢ Collect the condensate in a suitable container and dispose of it in accordance with local environmental regulations.

4.4 Commissioning the compressed air filter

High flow velocities are generated in all components of an air network when an empty air network is filled. Treatment equipment cannot work under these circumstances. Solid particles, aerosols and vapors will flow through the network without being filtered. These conditions could damage the material of the filter elements.

➢ Install an air main charging system from KAESER to fill your air network.

You will avoid subsequent damages caused by contaminated compressed air.

➢ Fill the air network slowly, in order not to exceed the permissible volume flow of the compressed air filter.

Newly installed compressed air lines may be contaminated (by shavings or chips, for example). These contaminations can adversely affect the function of the filter and the condensate drain.

➢ Vent the compressed air filter after first use, clean the filter bowl, and check the functioning of the condensate drain.

5 Maintenance

5.1 Regular maintenance tasks

The table below lists the required maintenance tasks.

The actually required intervals depend very much on the application conditions of the compressed air filter.

➢ Take these recommendations as a baseline and discuss with KAESER SERVICE the economically appropriate intervals.

➢ Carry out maintenance tasks in a timely manner and according to the operating conditions:

Interval	Maintenance task	See chapter
Weekly	Check the compressed air filter for condensate. (only degree of filtration KD)	5.5
	Electronic condensate drain: Check functionality.	8.1
See maintenance plate At least annually	Replacing the filter element: ■ KB ■ KD ■ KE	5.2
At least annually	Automatic condensate drain: Replace the float.	5.4
At least every 2 years	Electronic condensate drain: Replace the Service Unit.	5.3
h = operating hours		

Tab. 11 Regular maintenance tasks

5.2 Replacing the filter element

➢ Carefully handle and manually install all components in order to avoid damages. This applies to sealing surfaces, in particular.

Material KAESER filter element (including silicone-free sealing grease and O-ring)

5.2.1 Removing the filter element

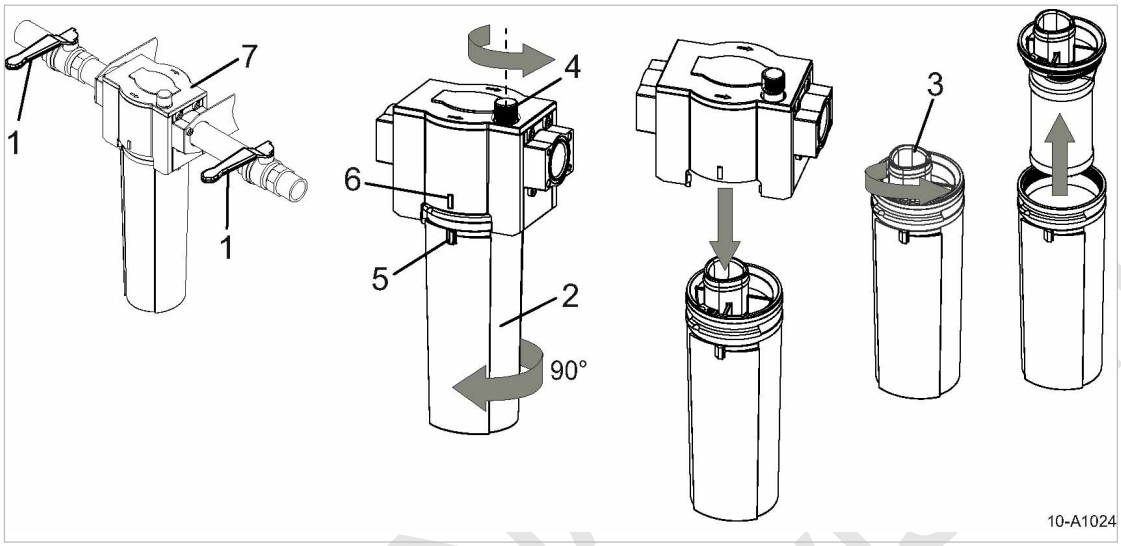


Fig. 6 Removing the filter element

[1] Shut-off valve
[2] Filter bowl
[3] Filter element
[4] Locking screw (secured against full removal)
[5] Installation mark at the filter bowl
[6] Installation mark at the filter head
[7] Filter head

1. Close the shut-off valve [1].
2. Loosen the locking screw [4] manually until you feel resistance.
   If the compressed air filter was pressurized, the residual compressed air will escape.

The equipment emits persistent whistling?

The compressed air filter is pressurized!

➢ Disconnect the compressed air filter from the air network, or depressurize the entire air network.

3. Gently jiggle the filter bowl [2] and then turn by 90° until the installation markings at filter bowl [5] and filter head [6] face each other.
4. Remove the filter bowl and the screwed-in filter element vertically downward.
5. Unscrew the filter element [3] (approx. 1 1/2 turns) from the filter bowl.
6. If required: Drain and dispose of the condensate.
7. Check the filter bowl for corrosion.

The filter bowl is clearly corroded?

➢ Determine the cause (e.g., composition of the compressed air, operating conditions)

➢ Replace the compressed air filter completely.

Dispose of the contaminated filter element according to environmental regulations.

5.2.2 Installing the filter element

➢ Do not touch the surface of the filter material.

Precondition The inner surfaces of the filter head and the filter bowl are clean.

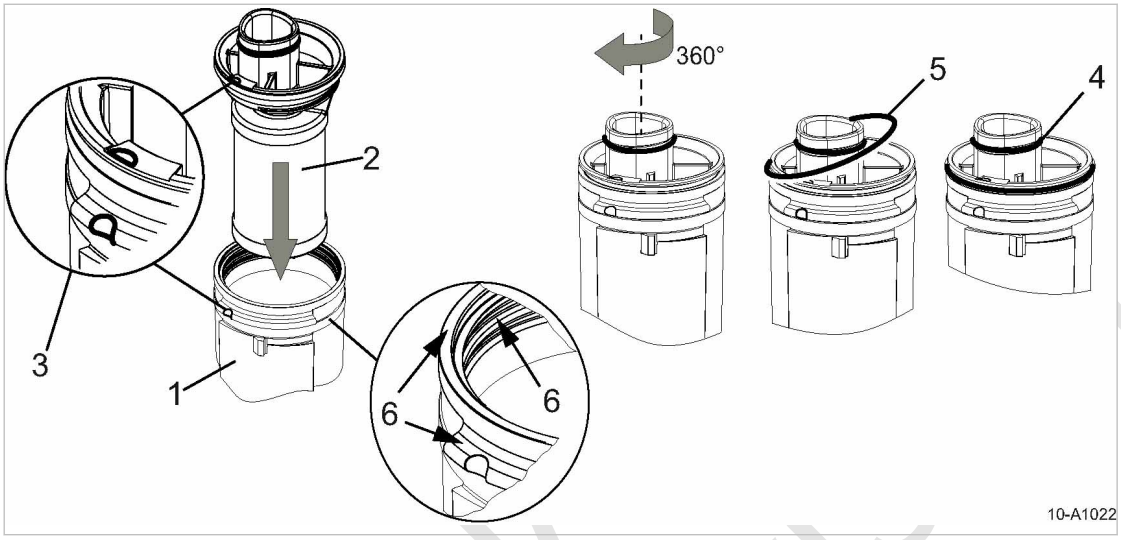


Fig. 7 Installing the filter element

1	Filter bowl	4	O-ring
2	Filter element	5	O-ring
3	Installation marks	6	Surface to be greased

1. Grease the thread, front surface, and bayonet catch of the filter bowl (item 6).
2. Push the filter element 2 into the filter bowl 1 in such a manner that the installation marks 3 are aligned to each other.
3. Use one turn to screw the filter element into the filter bowl.
4. Fully grease the O-ring 5 and insert between filter element and filter bowl.
5. Grease the O-ring 4.

5.2.3 Installing the filter bowl

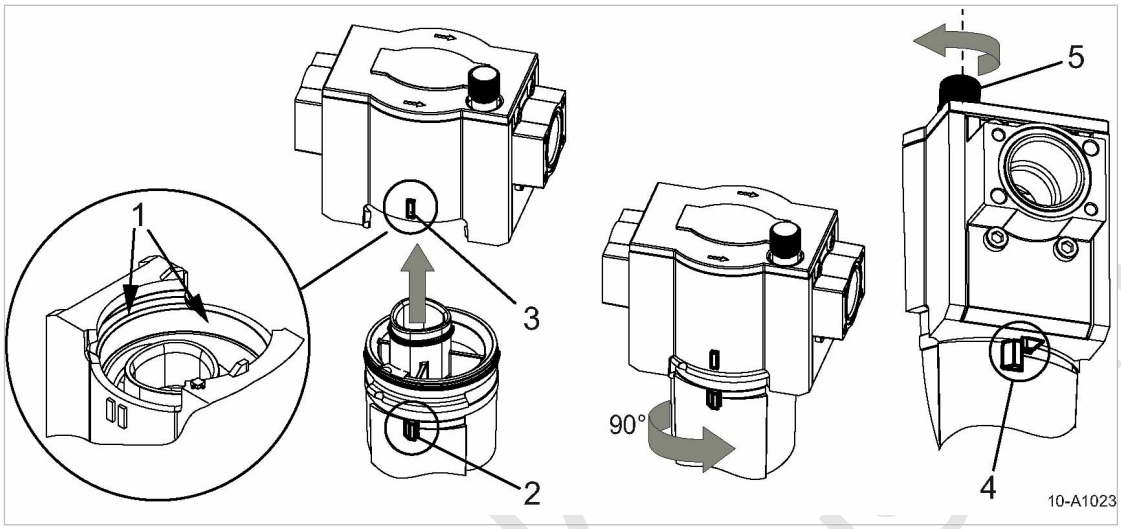


Fig. 8 Installing the filter bowl

[1] Surface to be greased
[2] Installation mark at the filter bowl
[3] Installation mark at the filter head
[4] Stop at the filter head
[5] Locking screw

1. Grease the interior of the filter bowl (item [1]).
2. Align the installation marks ([2] and [3]) at filter bowl and housing head to each other.
3. Insert the filter bowl into the filter head.
4. Turn the filter bowl 90° to the stop [4].
5. Manually tighten the locking screw [5].

You cannot tighten the locking screw?

The bayonet catch of the filter bowl is not fully closed.

➢ Turn the filter bowl to the stop.

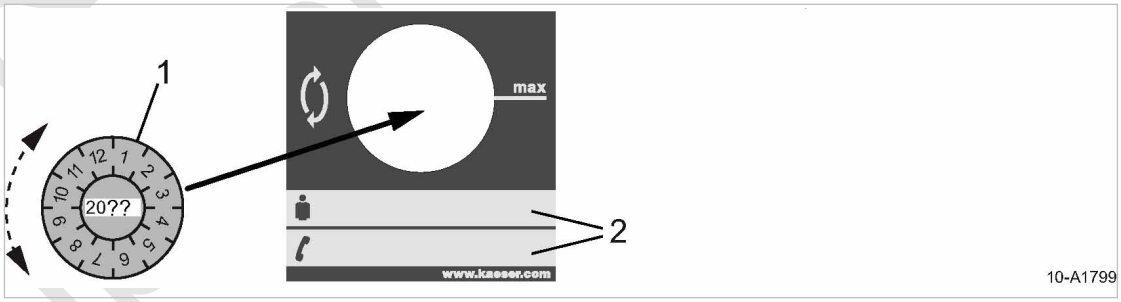


Fig. 9 Amending the maintenance sticker

[1] Maintenance sticker
[2] Service contact information

6. Inscribe the maintenance sticker with the year for the next maintenance.
7. Attach the maintenance sticker in such a manner that the marking *max* points to the month for the next maintenance.

5.2.4 Pressurizing the compressed air filter

A high flow rate of the fluid may damage the filter material.

1. Check as to whether the locking screw was properly tightened manually.
2. Slowly open the shut-off valve at the **fluid inlet**.
3. Slowly open the shut-off valve at the fluid outlet.

5.3 Option K5/K6 Changing the service unit

The condensate drain cannot be cleaned. The service unit must be changed if condensate does not drain.

Material Sealing tape for sealing the screw-in part

If required: O-ring 16x2 (5.1519.0)

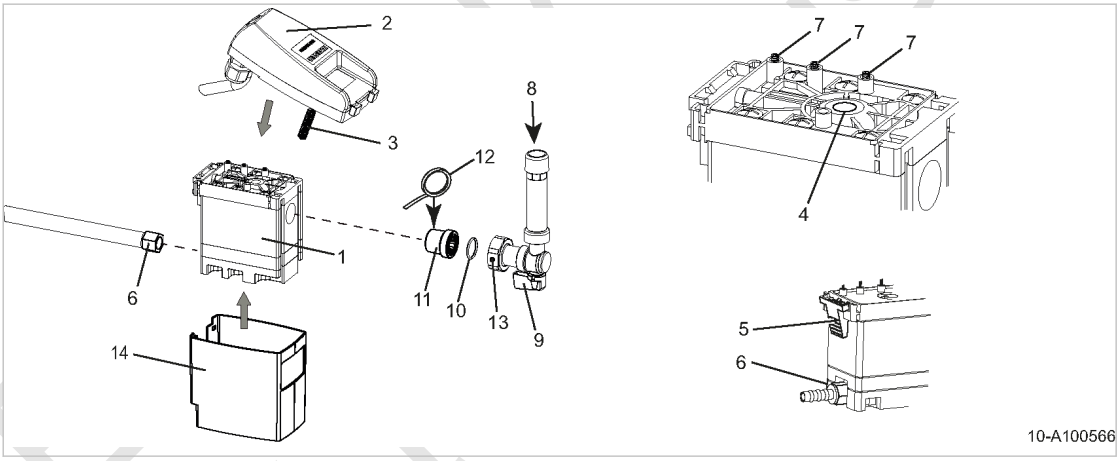


Fig. 10 Change the service unit

[1]	Service unit	[8]	Condensate inlet
[2]	Control unit	[9]	Shut-off valve
[3]	Sensor	[10]	O-ring
[4]	Sensor opening	[11]	Screw-in part
[5]	Snap fastener	[12]	Sealing tape
[6]	Condensate line screw connection	[13]	Clamping nut with vent hole
[7]	Contact springs	[14]	Casing

Removing the service unit

1. **⚠ WARNING** *Serious injury or death can result from loosening or opening components under pressure!*
   ➢ *Fully vent all pressurized components and enclosures.*
2. Close the shut-off valve [9] upstream of the condensate drain.
3. Unscrew the screw connection [6] at the condensate line.
4. Press the snap fastener [5] and carefully remove the control unit [2] from the service unit [1].
5. Carefully loosen the clamping nut [13] at the shut-off valve [9] until remaining residual air has escaped through the venting hole.

6. Unscrew the screw-in part [11] from the service unit and place aside.
7. Remove the casing [14] from the service unit.

Installing the service unit

Use only KAESER service units to ensure correct function of the condensate drain.

Precondition Make sure that the top of the service unit and the contact springs are clean and dry.

1. Fit the casing [14] to the service unit [1].
2. Carefully insert the sensor [3] of the control unit [2] in the opening [4] of the service unit.
3. Place the snap fastener [5] of the control unit into the service unit eyes.
4. Press the control unit against the service unit until the snap fastener can be heard clicking into place.
5. At the screw-in part [11], replace old sealing material with new sealing tape.
6. Install the screw-in part into the service unit and tighten to a maximum of 20 Nm.
7. If necessary, insert a new O-ring [10].
8. Tighten the clamping nut [13] at the shut-off valve [9].
9. Attach the condensate line.
10. Open the shut-off valve upstream of the condensate drain.

5.4 Option K13 Automatic condensate drain; Replacing the float

See chapter 5.2 for information on the removal and re-installation of the filter bowl.

Precondition The filter housing is fully vented.

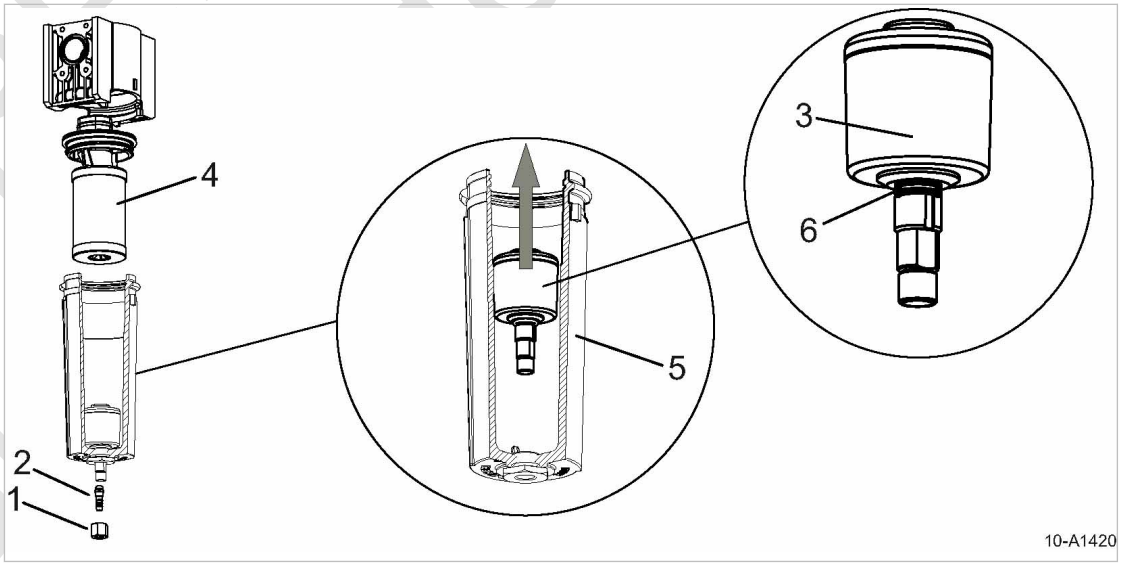


Fig. 11 Replacing the float

[1] Union nut
[2] Hose coupling
[3] Float
[4] Filter element
[5] Filter bowl
[6] O-ring

1. Undo the union nut [1] and remove the hose coupling [2].
2. Remove the filter bowl [5] and the filter element [4].
3. Turn the float [3] clockwise until it is fully removed from the filter bowl.
4. Check whether the O-ring [6] at the bottom of the new float is fully inserted in the groove.
5. Manually screw the float drain into the filter bowl and finally tighten with 3 lbf-ft.
6. Install the filter element and the filter bowl.
7. Install the hose coupling with the union nut.

5.5 Option K12 Checking the compressed air filter for condensate

Precondition The filter bowl is pressurized.

Wear safety glasses.

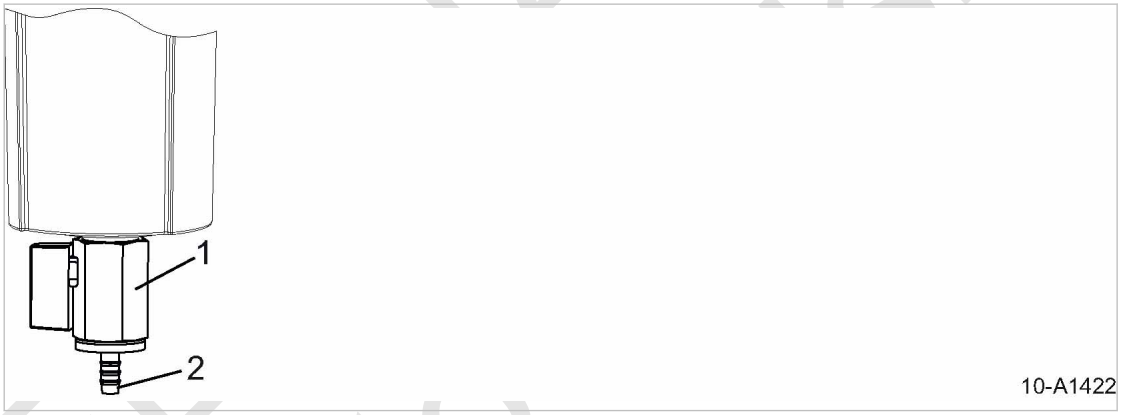


Fig. 12 Checking the compressed air filter for condensate

[1] Shut-off valve
[2] Hose coupling

1. Place a suitable container under the condensate drain.
2. Install a sufficiently long, transparent, and pressure-tight hose at the hose coupling and the collection container.
3. Carefully open the shut-off valve and close immediately when fluid escapes.

In case of a fault, oil or an oil-water mixture will escape first.

➢ Examine and eliminate the cause of this fault.

6 Spares, Operating Materials, Service

6.1 Note the nameplate

The nameplate contains all information to identify your filter. This information is essential to us in order to provide you with optimal service.

➢ Please give the information from the nameplate with every inquiry and order for replacement parts.

6.2 KAESER AIR SERVICE

KAESER AIR SERVICE offers:

- authorized KAESER service representatives with KAESER factory training,
- increased operational reliability ensured by preventive maintenance,
- energy savings achieved by avoidance of pressure losses,
- optimum conditions for operation of the compressed air system,
- the security of genuine KAESER spare parts,
- increased legal certainty as all regulations are kept to.

➢ Why not sign a KAESER AIR SERVICE maintenance agreement!

Result Your advantage:
lower costs and higher compressed air availability.

6.3 Ordering replacement parts and operating materials

KAESER replacement parts are original KAESER products. They are specifically selected for use in KAESER compressed air filters.

Unsuitable or poor quality consumable parts and operating materials may damage the filter or impair its proper function.

Damage to the filter can also result in personal injury.

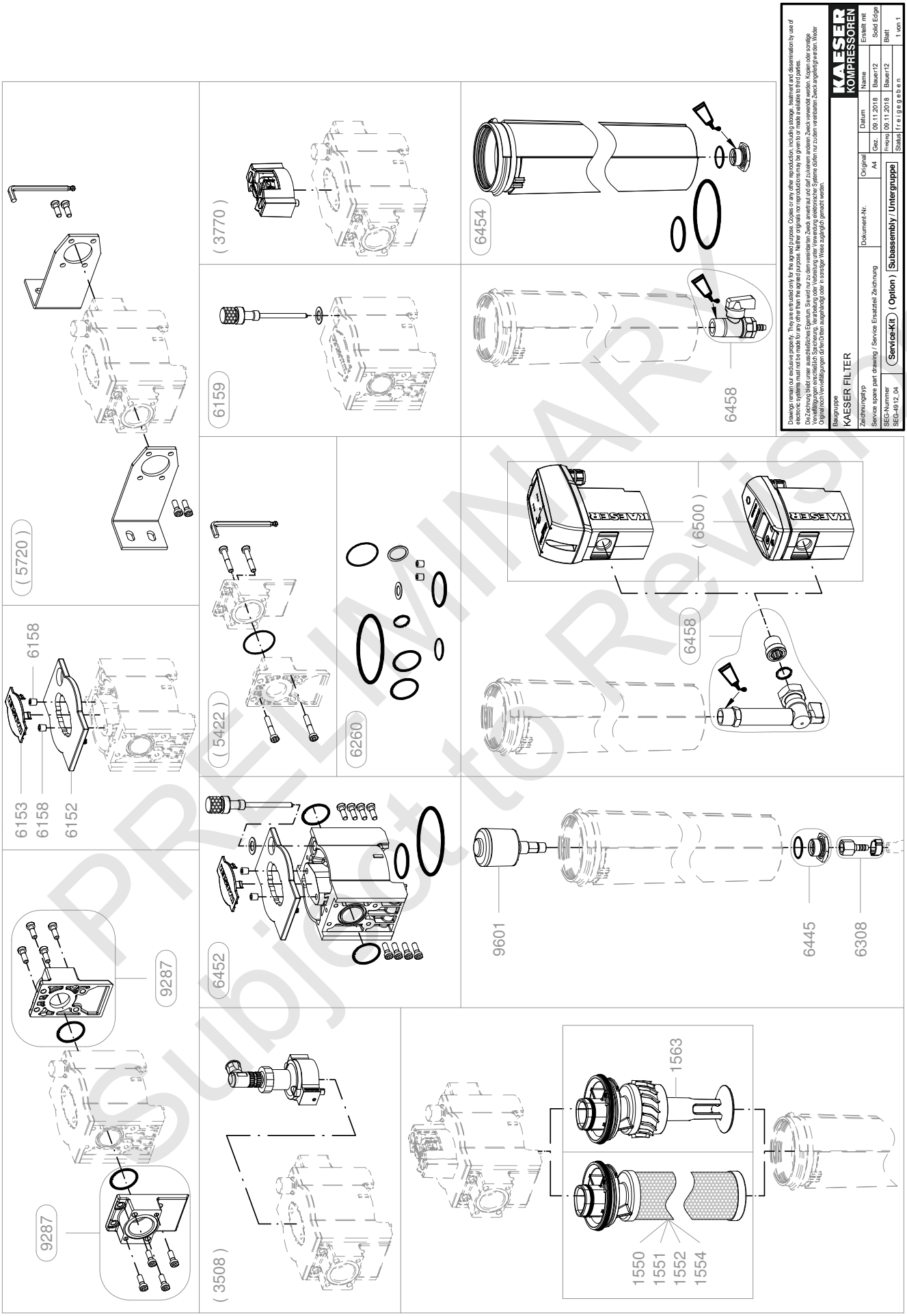
⚠ WARNING

There is risk of personal injury or damage to the machine resulting from the use of unsuitable replacement parts or operating materials.

➢ *Use only original KAESER parts and operating materials.*

➢ *Have an authorized KAESER service representative carry out regular maintenance.*

➢ *Do not attempt any tasks other than those described in this manual.*



Legend		KAESER KOMPRESSOREN
	KAESER FILTER	SEL-3642_04 E

Item	Description	Option
1550	Prefilter element	
1551	Microfilter element	
1552	Activat. carbon filter element	
1554	Particulate filter element	
1563	Centrifugal insert KC	
3508	Diff. pressure transducer	X
3770	Pressure diff. indicator	X
5422	Connecting kit	X
5720	Filter support	X
6152	Filter cover	
6153	Filter cover, covering	
6158	Threaded plug	
6159	Locking screw	
6260	Gasket kit	
6308	Hose connection	
6445	Reduction piece	
6452	Upper housing	
6454	Lower housing	
6458	Stop valve	
6500	Condensate drain	X
9287	Adaptor	
9601	Maintenance kit, condens.drain	

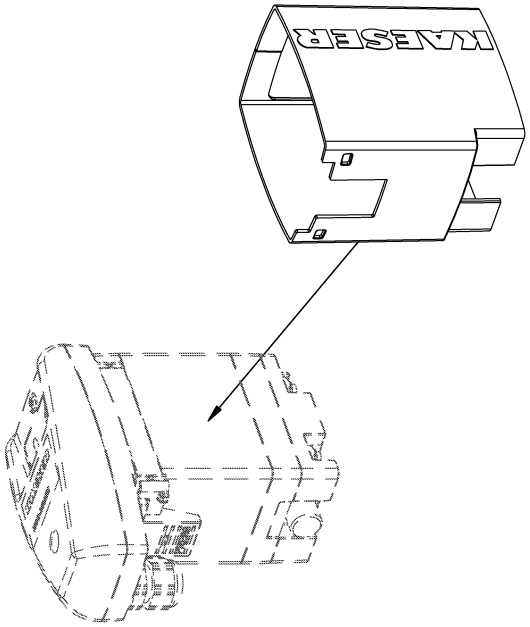
Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual!

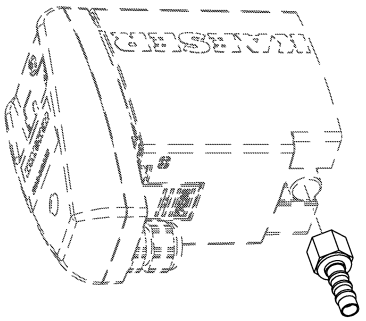
Service-Kit (Option)

Kondensatableiter / Condensate drain

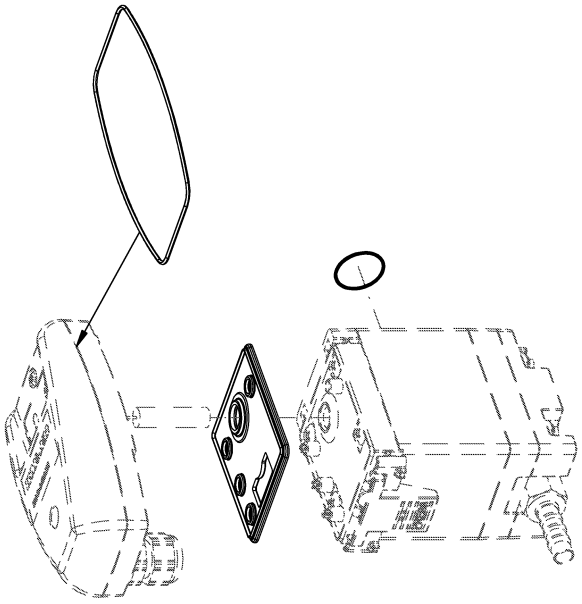
SEG-5405_01



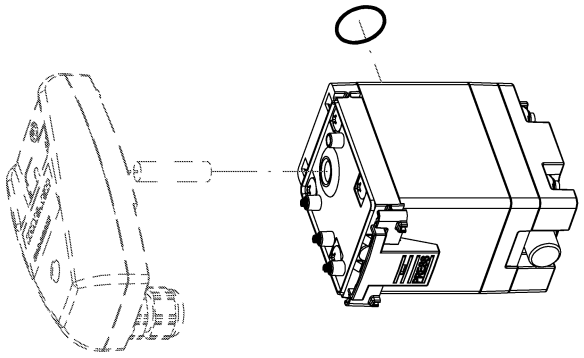
9022



6307



9603



9602

Legend		KAESER
	Condensate drain	SEL-3886_01 E

Item	Description	Option
6307	Hose connection	
9022	Panelling	
9602	Condensate drain service-unit	
9603	Condensate drain gasket kit	

Please quote the part number and serial number of the machine together with the item number and the description of the part when ordering.

Before and during all work, be sure to read and follow the safety and service instructions in the machine's service manual!

7 Decommissioning, Storage and Transport

7.1 De-commissioning

1. Isolate the compressed air filter from the air network.
2. Open the locking screw until the filter housing is fully vented.
3. Remove the compressed air filter from the air network.
4. Remove the filter element, and clean and dry the filter bowl.

Dispose of the used filter element according to environmental regulations.

7.2 Storage

Moisture can lead to corrosion.

Freezing moisture can damage components, valve diaphragms, and gaskets.

Please consult with KAESER if you have questions to the appropriate storage and commissioning.

➢ Store the compressed air filter in a dry, frost-proof room.

7.3 Transport

Weight determines the most suitable method of transportation.

Precondition Transport only by personnel trained in the safe transportation of loads.

1. **NOTICE** *Damages caused by incorrect lifting!*
   Pressure differential gauge or condensate drain can be damaged.
   ➢ *Lift the compressed air filter only at the filter head and the filter bowl.*
2. Secure the compressed air filter for transport.

7.4 Packing

Appropriate packaging is required for overland transport to protect the product from mechanical damage.

Other measures must be taken for the transport of the product by sea or air. Please contact KAESER SERVICE for more information.

Material Desiccant
Rigid carton as transport packing

Precondition The compressed air filter is dry.

1. Place sufficient desiccant (silica gel or desiccant clay) in the packaging.
2. Use a rigid carton to protect the compressed air filter from mechanical damages.

7.5 Disposal

➢ All components of the compressed air filter must be sent to a certified waste disposal company.

➢ Components contaminated with condensate or cooling fluids must be disposed of in accordance with local environmental protection regulations.

8 Annex

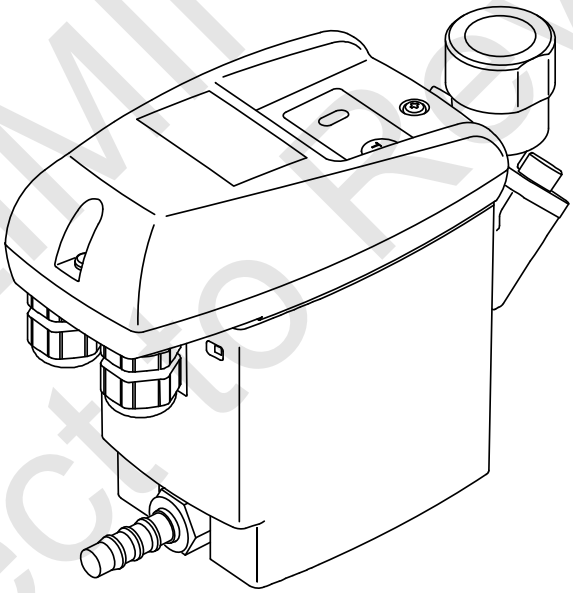
8.1 ECO-DRAIN 31 condensate drain – operating instructions

KAESER COMPRESSORS

EN-US - english US

Instructions for installation and operation

Condensate drain
ECO-DRAIN 31



01-2336

ECO-DRAIN31 07 USE

Dear customer,

Thank you for deciding in favor of the ECO-DRAIN 31 condensate drain. Please read the installation and operating instructions carefully before mounting and starting up the ECO-DRAIN 31, and follow our directions. Perfect functioning of the ECO-DRAIN 31, and thus reliable condensate discharge, can only be guaranteed when the provisions and notes stipulated here are strictly adhered to.

Pictograms and symbols

1 Pictograms and symbols


Observe the installation and operating instructions


Observe the installation and operating instructions (on the type plate)


General danger symbol (danger, warning, caution)


General danger symbol (danger, warning, caution) for supply voltage and supply voltage-carrying plants components

2 Safety instructions

Please check whether or not these instructions correspond to the device type.

Adhere to all advice given in these operating instructions. They include essential information which must be observed during the installation, operation and maintenance. Therefore, it is imperative for the service technician and the responsible operator / technical staff to read these operating instructions prior to installation, start-up and maintenance.

The operating instructions must be accessible at any time at the place of application of the ECO-DRAIN 31 .

In addition to these operating instructions, local or national regulations must be complied with, if necessary.

Make sure that the ECO-DRAIN 31 is operated only within the permissible limit values indicated on the type plate. Any deviation involves a risk for persons and materials, and may result in malfunction and service failures.

If you have any queries regarding these installation- and operating instructions, please contact KAESER.

Danger!

Compressed air!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components or plant components which are not secured.

Measures:

- Do not exceed the maximum operating pressure (see type plate).
- **Only carry out service measures when the system is pressure less.**
- Use pressure-resistant installation material only.
- The feed pipe must be tubed firmly. Discharge pipe: short, fixed pressure hose onto pressure-resistant pipe.
- Make sure that persons or objects cannot be hit by condensate or escaping compressed air.

Safety instructions

Danger!

Supply voltage!

There is the risk of an electric shock involving injury or death when coming into contact with non-insulated components carrying supply voltage.

Measures:

- During electric installations, all regulations in force need to be adhered to (e.g. VDE 0100 / IEC 60364).
- **When the control unit is open, service and installation works must only be undertaken when the system is deactivated.**
- **The removed control unit has no IP degree of protection.**
- All types of electrical works must be carried out by authorized and qualified personnel only.

Further safety instructions:

- For installation and operation, the national regulations and safety codes in force must also be adhered to.
- Do not use the ECO-DRAIN 31 in hazardous areas.
- Regarding the inlet screw joints, excessive tightening forces must be avoided. This applies in particular to conical screw joints.
- The ECO-DRAIN 31 will only function when voltage is applied.
- Do not use the test button for permanent drainage.
- Use genuine spare parts only. This is imperative to ensure perfect functioning.

Additional advice:

- The removed control unit has **no IP degree of protection**.
- During installation, use spanner flat at the feed pipe (wrench size SW27) as a back rest.
- The service unit must not be dismantled.

Caution!

Malfunction during operation!

Through incorrect installation and poor maintenance, malfunction may occur at the ECO-DRAIN.

Condensate which is not discharged may cause damage to plants and in production processes.

Measures:

- Condensate drainage which is reliable in performance directly optimizes the compressed-air quality.
- To prevent damage and breakdowns, it is imperative to observe the following:
  - Exact compliance with the specifications of use and with the performance parameters of the ECO-DRAIN, in connection with the case of application (see "Proper use" section)
  - Exact compliance with the installation- and operation instructions in this manual
  - Regular maintenance and control of the ECO-DRAIN in accordance with the instructions in this operating manual

Proper use

3 Proper use

- The ECO-DRAIN 31 is an electronically level-controlled condensate drain for compressed-air plants.
- The device is employed within the permissible performance parameters (see "Technical data").
- The ECO-DRAIN 31 is able to drain condensate under operating pressure from the plant components virtually without compressed-air loss.
- For its function, the ECO-DRAIN 31 requires an supply voltage and an operating pressure (see "Technical data").
- As far as the employment in plants with increased demands on compressed air is concerned (food industry, medical technology, laboratory equipment, special processes etc.), the operator must decide on measures for the monitoring of the compressed-air quality. These have an effect on the safety of the subsequent processes and may prevent damage to persons and plants.
- It is the task of the operator to ensure that the indicated conditions are met during the entire operating time.

4 Exclusion from the scope of application

- The ECO-DRAIN 31 as a condensate drain **alone cannot** guarantee a defined compressed-air quality, for this purpose, other additional technical devices are required.
- ECO-DRAIN 31 is **not** suitable for use in plants carrying vacuum or atmospheric ambient pressure or in ex-areas.
- The ECO-DRAIN 31 must not be exposed to permanent direct solar or thermal radiation.
- The ECO-DRAIN 31 must not be installed and operated in areas with an aggressive atmosphere.
- The ECO-DRAIN 31 is not heatable and, therefore, not suitable for the use in areas where frost is likely to occur.
- The ECO-DRAIN 31 is not suitable for CO_2 plants.

5 Technical data

min./max. operating pressure (see type plate)	0,8...16 bar (12...230 psi) or 1,2...16 bar (17...230 psi)
min./max. temperature (see type plate)	+1...+60 °C (+34...+140 °F) or +1...+70 °C (+34...+158 °F)
Condensate inflow	NPT ½ (G ½) internal max. screw-in depth 13,5 mm (½")
Condensate outflow	G ¼ Ø 8 ... 10 mm hose connector
Condensate	oil-contaminated + oil-free
Housing	aluminium + plastic, glass fibre-reinforced
Weight (empty)	1.0 kg (2.2 lbs)

This product has been tested to the requirements of CAN/CSA-C22.2 No. 61010-1-12, third edition, including a later version of the same standard incorporating the same level of testing requirements.

Peak compressor performance	225 scfm
Peak refrig. dryer performance (only with pre-separation)	450 scfm
Peak filter performance (behind dryer)	2250 scfm

Electrical data

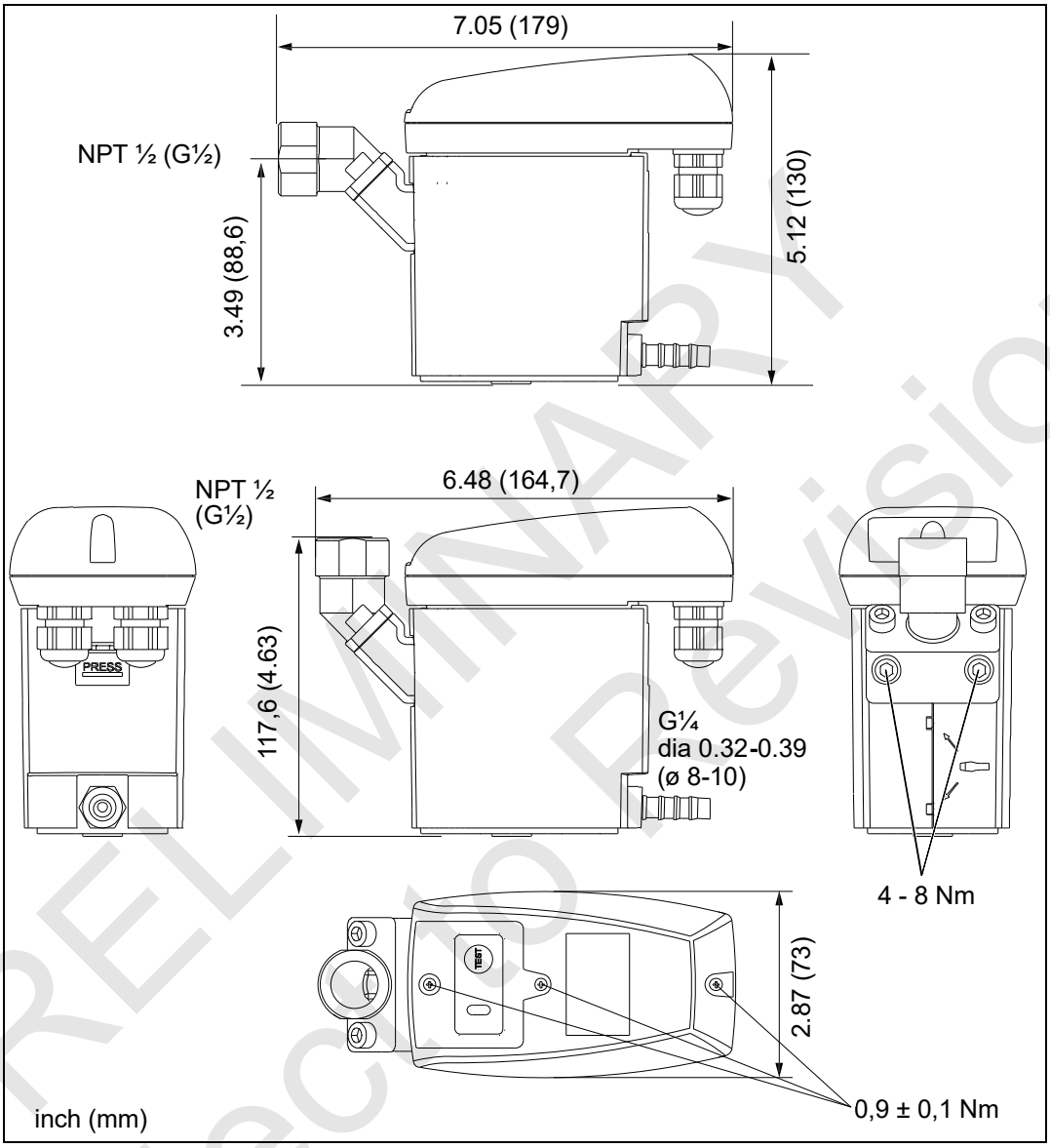
6 Electrical data

Supply voltage (see type plate)	95…240 VAC ±10% (50…60 Hz) /100…125 VDC ±10% or 24…48 VAC ±10% (50…60 Hz) / 18…72 VDC ±10%
Power consumption	P = 0.6 ... 3 VA (W)
Recommended cable-jacket diameter	Ø 5.0…10 mm (0.20“…0.39“)
Recommended wire cross section Spring-loaded terminal (voltage supply/relay)	0.75...1.5 mm² (AWG 16...20)
Recommended wire cross section Screw terminal (voltage supply)	0.75...2.5 mm² (AWG 14...20)
Recommended wire cross section Spring-loaded terminal (external test)	0.75...1.0 mm² (AWG 18...20)
Recommended wire cross section Screw terminal (relay/external test)	0.75...1.5 mm² (AWG 16...20)
Recommended stripping of cable jacket (voltage supply/relay)	~ 30 mm (~ 1.18")
Recommended stripping of cable jacket (external test)	~ 90 mm (~ 3.54")
Recommended length of the wire end tube Spring-loaded terminal	~ 8 mm (~ 0.31 inch)
Recommended length of the wire end tube Screw terminal	~ 6 mm (~ 0.24 inch)
Connection data of the potential-free contact Switch to load*)	AC: max. 250V / 1A DC: max. 30V / 1A
Connection data of the potential-free contact Switch to low signal*)	min. 5 VDC / 10 mA
Connection data of the external test contact	on the unit side 5 VDC; switching current ≥ 0,5 mA
Protection class	IP 67
Overvoltage category (IEC 61010-1)	II

VAC = V alternating current
VDC = V direct current

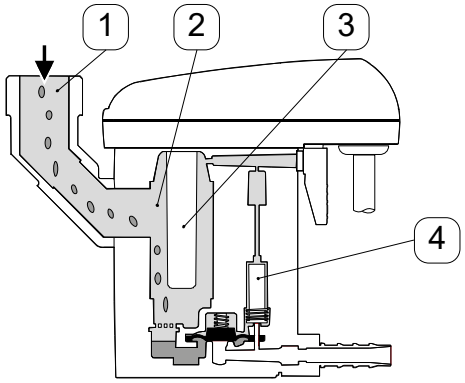
*) The switching of loads means that the properties of the contact are no longer suitable for the switching of low signals.

7 Dimension drawing



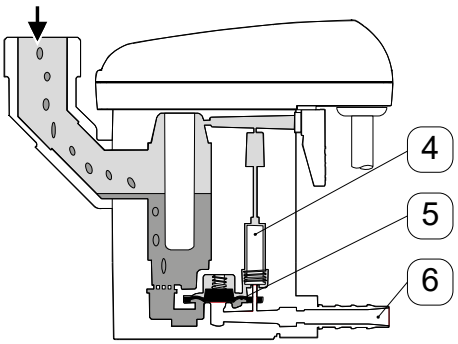
Function

8 Function



Via the inlet line (1) the condensate flows into the ECO-DRAIN 31 and accumulates in the housing (2).

A capacitive functioning sensor (3) continuously registers the filling level and relays a signal to the electronic control as soon as the container is filled.

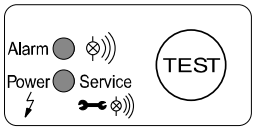


The pilot valve (4) is activated and the membrane (5) opens the outlet line to discharge the condensate (6).

When the ECO-DRAIN 31 is empty, the outlet line is reclosed tightly in time before unnecessary compressed-air losses occur.

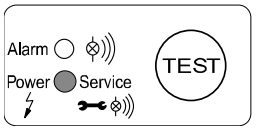
Function

At the ECO-DRAIN 31, two LEDs indicate the individual operating states.

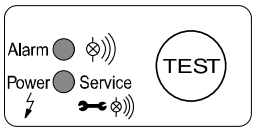


When applying supply voltage, the ECO-DRAIN 31 carries out a **self-test**.

Both LEDs are lit for approximately 1 second, subsequently, the device changes over to the **"ready-to-operate"** state.

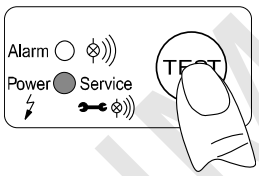


Ready to operate, voltage is applied.



In the event that the condensate discharge is disturbed, an alarm mode will start which is indicated by the flashing of the red alarm LED.

Malfunction/alarm

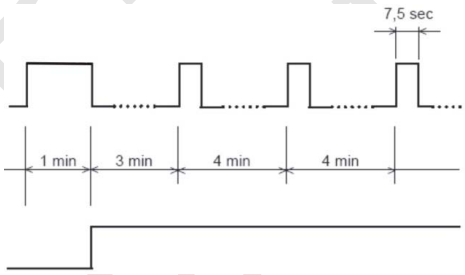


Test of the valve function (manual drainage): press and hold the button for approximately 2 s.

Test of the alarm function (see below): press and hold the button for at least 1 min.

Do not use for permanent drainage.

Switching sequence of the valve in the alarm mode



Trouble indication via a potential-free contact

Alarm mode:

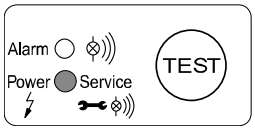
In the event that the ECO-DRAIN is not empty after one minute, a trouble indication is released:

- The alarm LED flashes.
- The alarm relay switches over (the signal can be picked off potential-freely).
- The valve opens every four minutes for 7.5 seconds.
- When the malfunction has been eliminated, the ECO-DRAIN will switch back automatically into the normal mode.

Possible trouble sources include :

- Mistakes during installation
- Dropping below the minimum pressure
- Excessive accumulation of condensate (excess load)
- Blocked / obstructed outlet line
- Extreme amount of dirt particles
- Frozen pipe work

Function



The ECO-DRAIN 31 releases a maintenance message for a service that is to be carried out.

Depending on the operating mode, a visual maintenance message (service) is activated which signalizes the replacement of the service unit.

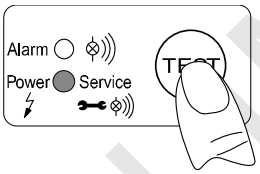
The maintenance message is indicated by the flashing supply voltage-LED "Power".

The maintenance message is released after 2 x 8.760 h or one million switching cycles.

The maintenance signal is released when one of these two values is reached.

In the event of a power outage or when the energy supply is deactivated, the status of the timer will be maintained.

The activities to be carried out regarding maintenance are described in the chapter entitled "Check and maintenance".



Prior to the replacement of the service unit, a reset needs to be carried out. The control unit is released by actuating the arresting hook. When removed, the TEST button must be pressed and held for at least five seconds.

9 Installation

Danger!

Compressed air!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components or plant components which are not secured.

Measures:

- Do not exceed the maximum operating pressure (see type plate).
- **Only carry out service measures when the system is pressure less.**
- Use pressure-resistant installation material only.
- The feed pipe must be tubed firmly. Discharge pipe: short, fixed pressure hose onto pressure-resistant pipe.
- Make sure that persons or objects cannot be hit by condensate or escaping compressed air.

Caution!

Malfunction during operation!

Through incorrect installation and poor maintenance, malfunction may occur at the ECO-DRAIN.

Condensate which is not discharged may cause damage to plants and in production processes.

Measures:

- Condensate drainage which is reliable in performance directly optimizes the compressed-air quality.
- To prevent damage and breakdowns, it is imperative to observe the following:
  - Exact compliance with the specifications of use and with the performance parameters of the ECO-DRAIN, in connection with the case of application (see "Proper use" section)
  - Exact compliance with the installation- and operation instructions in this manual
  - Regular maintenance and control of the ECO-DRAIN in accordance with the instructions in this operating manual

Note

It is imperative to observe all hazard statements and warnings listed here.

Please also observe all regulations and notes regarding industrial safety and fire prevention at the place of installation.

As a matter of principle, only use suitable and appropriate tools and materials in a proper condition.

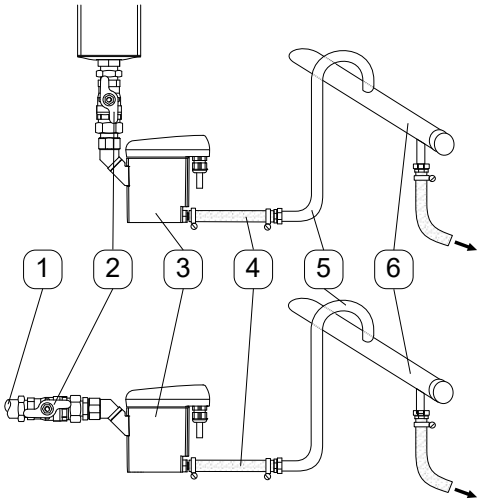
Do not use aggressive cleaners and improper devices such as high-pressure cleaners.

Please note that condensates may contain aggressive or harmful components. Therefore, skin contact should be avoided.

Condensate is subject to mandatory waste disposal. As such, it must be collected in suitable containers, and disposed of or processed properly.

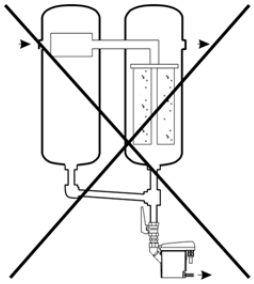
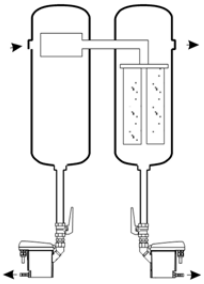
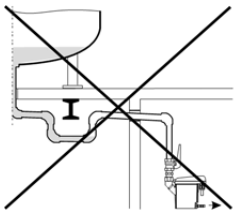
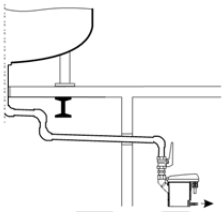
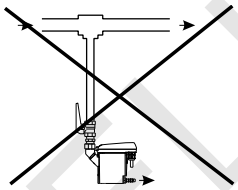
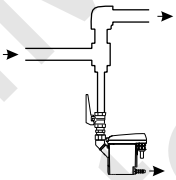
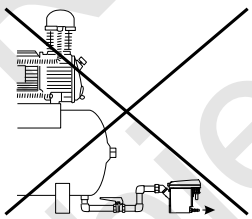
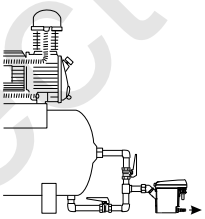
Installation

Installation instructions:



- Only the displayed installation position of the ECO-DRAIN (3) is permissible. Never install in a horizontal or any other tilted position.
- Feed pipe (1) and ball valve (2) at least G½.
- No filter or screen in the inlet line.
- Slope in the inlet line >1%.
- Use ball valves (2) only.
- Operating pressure: min. 0,8/1,2 bar (12/17 psig), max. 16 bar (230 psig). See type plate.
- Short pressure hose (4) fixed on a pressure-resistant pipe.
- The required minimum pressure increases by 0,1 bar (1,4 psi) per metre gradient in the discharge pipe (5).
- Discharge pipe (5) rising by max. 5 m (16,4ft).
- Install manifold (6) ½" with a slope of 1%.
- Introduce the discharge pipe (5) from the top into the manifold (6).
- Prior to the start-up, always carry out a leak test and verify the correct engagement of the control unit.

Installation

wrong	correct	
		**Pressure differences!** Each condensate accumulation point must be drained separately.
		**Continuous slope!** Avoid a water pocket when installing the feed pipe
		**Deflector area!** If drainage is to be carried out directly from the pipe, deflection of the air flow will be useful.
		**Ventilation!** If the slope in the inlet line is not sufficient or if any other inflow problems occur, a venting line needs to be installed.

Electrical installation

10 Electrical installation

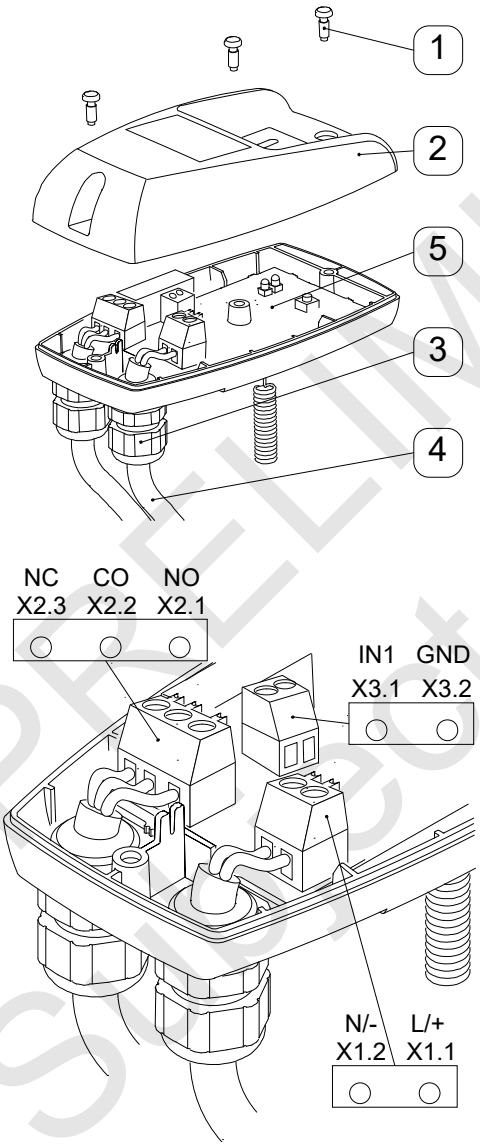
Danger!

Supply voltage!

There is the risk of an electric shock involving injury or death when coming into contact with non-insulated components carrying supply voltage.

Measures:

- During electric installations, all regulations in force need to be adhered to (e.g. VDE 0100 / IEC 60364).
- **When the control unit is open, service and installation works must only be undertaken when the system is deactivated.**
- **The removed control unit has no IP degree of protection.**
- All types of electrical works must be carried out by authorized and qualified personnel only.



Note:

Power supply connection:

1. Read the permissible supply voltage on the type plate and make sure this voltage is observed.
2. For the supply voltage, a reliably accessible separator must be provided close-by (e.g. power plug or switch), which separates all current-carrying conductors.
3. At a low voltage supply (< 50 VAC / < 75 VDC), only use a protective extra-low-voltage.
4. Carry out installation in accordance with VDE 0100 / IEC 60364.
5. Observe the terminal assignment.
6. Do not install when the device is energized.
7. Unscrew the screws (1) and remove the upper part of the cover (2).
8. Unscrew the threaded cable connection (3), remove the plug (if there is one), and lead the cable (4) for the power supply through.
9. Connect the cable (4) with terminals X1 (1.1, 1.2) (5).
10. Install the cables as shown (see also terminal assignment in the following text).
11. Tighten the threaded cable connection (3) with a slightly sealing effect.
12. Put on the upper part of the cover (2) and tighten the screws (1) fingertight.

Electrical installation

Connection of the potential-free contact and of the external test:

1. Selection of the suitable cable.
2. Connection to X2 and X3, as shown on the left.
3. The installation steps are the same as for the power supply connection.
4. If the potential-free contact carries voltage that is dangerous in the case of contact, a corresponding separator must also be provided, as described above.
5. When using the potential-free contacts and the connection external test, sufficient clearance to the other parts of the unit, or suitable insulation in accordance with EN 60664-1 must be ensured.
6. When using a multiwire, common line for the connection of the potential-free contact and the external test, this line must be suitable for the highest occurring voltage and the intended temperature range with regard to its nominal ratings.

Electrical installation

Terminal assignment supply voltage (operating voltage)

X 1		X 2			X 3	
L/+	N/-	NO	CO	NC	IN1	GND
phase	neutral	normally open	common	normally closed	external test (IN1)	GND
1.1	1.2	2.1	2.2	2.3	3.1	3.2

Power supply
- X 1.1 L/+
- X 1.2 N/-

L = Outer conductor
N = Neutral conductor

Terminal assignment low voltage (operating voltage)

X 1		X 2			X 3	
L/+	N/-	NO	CO	NC	IN1	GND
power	power	normally open	common	normally closed	external test (IN1)	GND
1.1	1.2	2.1	2.2	2.3	3.1	3.2

Power supply
- X 1.1 L/+
- X 1.2 N/-

Terminal assignment of the potential-free contact and of the external test

X 1		X 2			X 3	
L/+	N/-	NO	CO	NC	IN1	GND
power	power	normally open	common	normally closed	external test (IN1)	GND
1.1	1.2	2.1	2.2	2.3	3.1	3.2

Fault indication/potential-free contact:
- X 2.1 n.o.
- X 2.2 com.
- X 2.3 n.c.

n.c. - com. closed in the event of malfunction or power failure

n.o. - com. closed during normal operation
(closed current principle)

The contacts X2.1 - 2.3 are potential-free.

External test / remote control:
- X 3.1 external test (IN1)
- X 3.2 GND

Contacts connected = test active = discharge

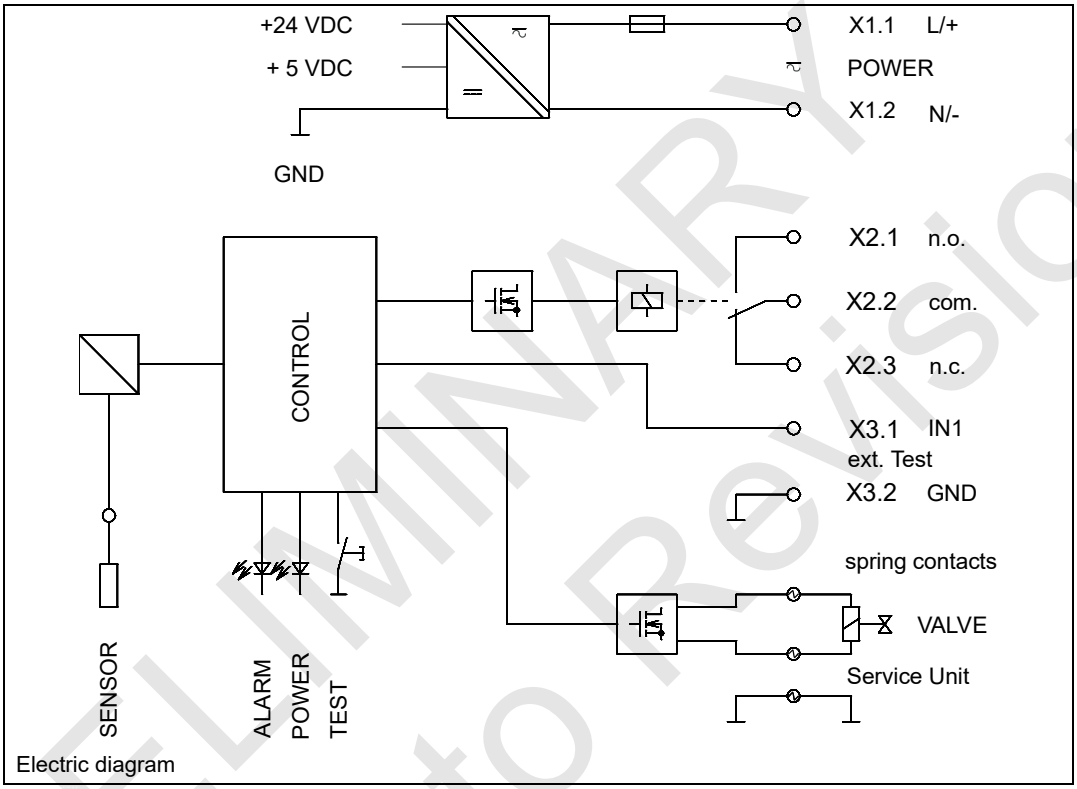
Contacts open = test inactive

The contacts X 3.1 -3.2 are not potential-free.

Electrical installation

Note:

At a low-voltage supply (< 50 VAC / < 75 VDC), only use a protective extra-low-voltage.
Tighten the threaded cable connection with a slightly sealing effect.



Electric diagram

Inspection and maintenance

11 Inspection and maintenance

Danger!

Compressed air!

Risk of serious injury or death through contact with quickly or suddenly escaping compressed air or through bursting plant components or plant components which are not secured.

Measures:

- Do not exceed the maximum operating pressure (see type plate).
- **Only carry out service measures when the system is pressure less.**
- Use pressure-resistant installation material only.
- The feed pipe must be tubed firmly. Discharge pipe: short, fixed pressure hose onto pressure-resistant pipe.
- Make sure that persons or objects cannot be hit by condensate or escaping compressed air.

Danger!

Supply voltage!

There is the risk of an electric shock involving injury or death when coming into contact with non-insulated components carrying supply voltage.

Measures:

- During electric installations, all regulations in force need to be adhered to (e.g. VDE 0100 / IEC 60364).
- **When the control unit is open, service and installation works must only be undertaken when the system is deactivated.**
- **The removed control unit has no IP degree of protection.**
- All types of electrical works must be carried out by authorized and qualified personnel only.

Caution!

Malfunction during operation!

Through incorrect installation and poor maintenance, malfunction may occur at the ECO-DRAIN.

Condensate which is not discharged may cause damage to plants and in production processes.

Measures:

- Condensate drainage which is reliable in performance directly optimizes the compressed-air quality.
- To prevent damage and breakdowns, it is imperative to observe the following:
  - Exact compliance with the specifications of use and with the performance parameters of the ECO-DRAIN, in connection with the case of application (see "Proper use" section)
  - Exact compliance with the installation- and operation instructions in this manual
  - Regular maintenance and control of the ECO-DRAIN in accordance with the instructions in this operating manual

Note

It is imperative to observe all hazard statements and warnings listed here.

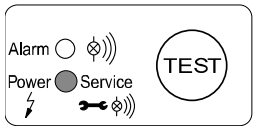
Please also observe all regulations and notes regarding industrial safety and fire prevention at the place of installation.

As a matter of principle, only use suitable and appropriate tools and materials in a proper condition.

Do not use aggressive cleaners and improper devices such as high-pressure cleaners.

Please note that condensates may contain aggressive or harmful components. Therefore, skin contact should be avoided.

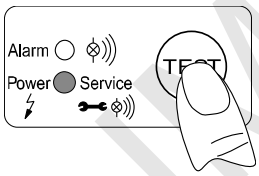
Condensate is subject to mandatory waste disposal. As such, it must be collected in suitable containers, and disposed of or processed properly.



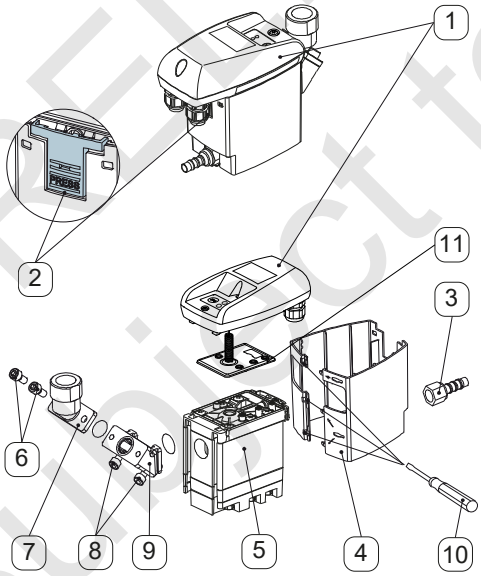
Maintenance recommendation:

After 2 x 8,760 operating hours or one million switching cycles, a maintenance message is released.

The green power LED flashes. Afterwards, or at the latest after two years (2 x 8,760 operating hours), the service unit (5) needs to be replaced.

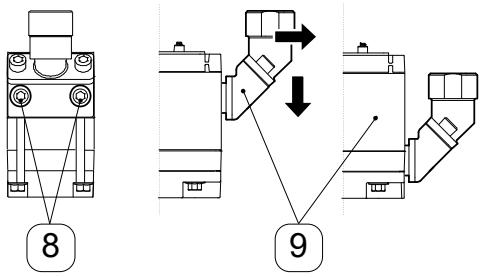


1. Prior to the replacement of the service unit, a reset needs to be carried out. The control unit is released by actuating the arresting hook. When removed, the TEST button below the LED must be pressed and held for at least five seconds.



2. Remove the control unit (1) by pressing the arresting hook (2).
3. Unfasten the ECO-DRAIN 31 from the outlet (3).
4. Remove the design shell (4) (if there is one) using a screwdriver (10).
5. Detach the service unit (5) from the tubing at the inlet by removing the union nut.
6. **or** remove the screws (6) from the angle nozzle (7).

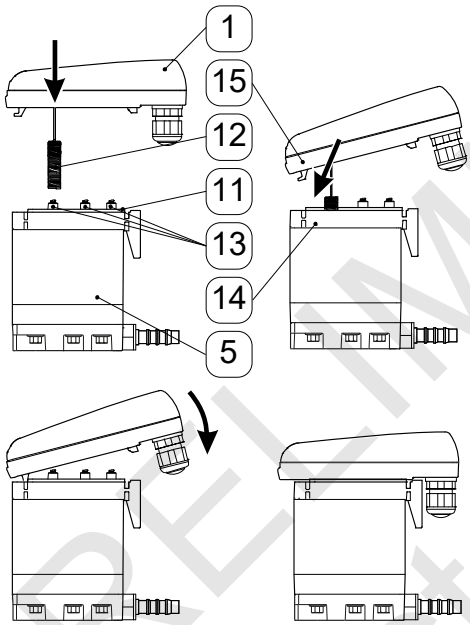
Inspection and maintenance



M_{max} = 4...8 Nm

7. **or** remove the screws (8) at the intermediate adapter (9) and remove the latter from the service unit by pulling it downwards.
8. Check whether or not the new service unit (5) goes with the control unit (1) (model designation and color of the arresting hook (2)).

9. Installation of the new service unit (5) in reverse order.



Installation of the control unit on the service unit:

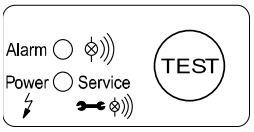
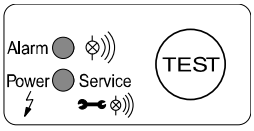
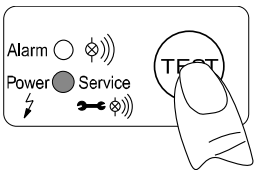
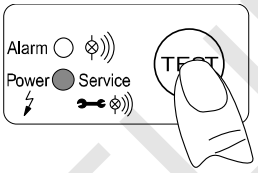
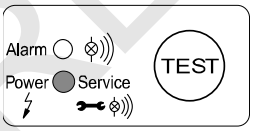
1. Check whether or not the service unit (5) goes with the control unit (1) (model designation and color of the arresting hook).
2. Check whether or not the sealing mat (11) and the contact springs (13) are clean, dry, and free from impurities.
3. Introduce the sensor (12) into the sensor tube plate (14).
4. Hang the hook (15) of the control unit (1) in the sensor tube plate (14).
5. Press the control unit (1) against the service unit (5) and snap into place.

Start-up subsequent to maintenance measures:

Always carry out prior to the start-up:

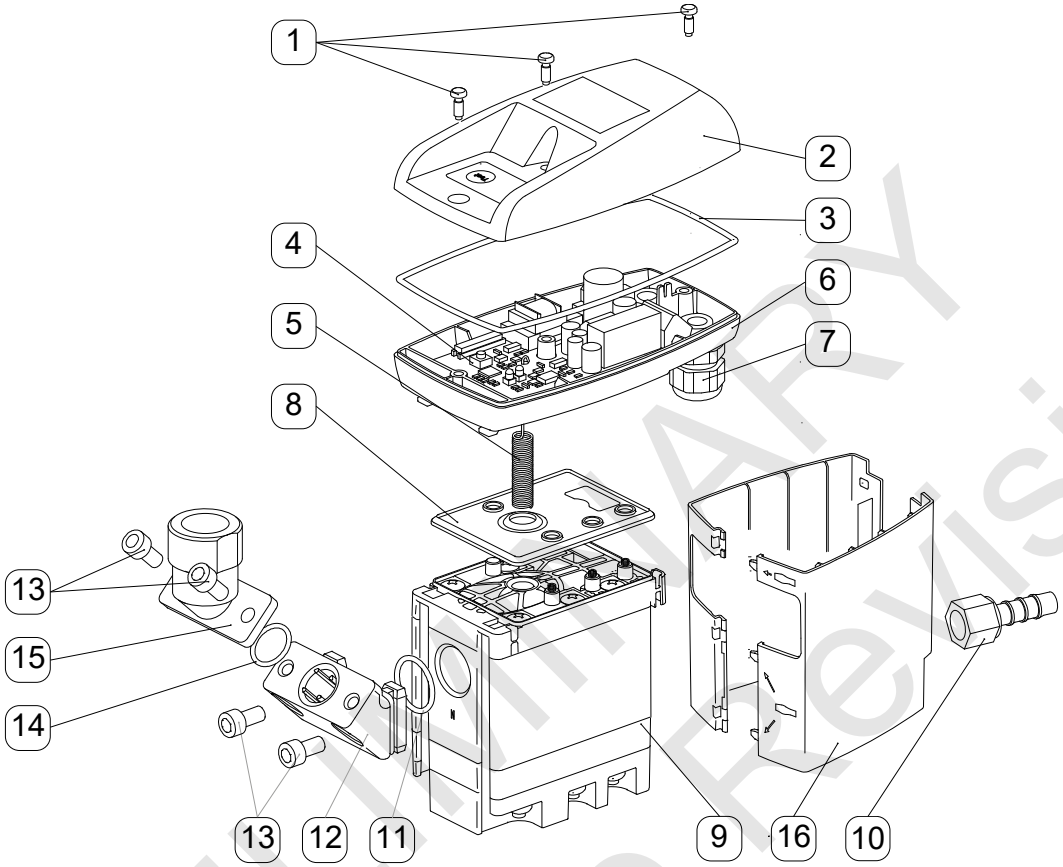
- Leak test of the screwed connector
- Check of the electrical connections
- Check of the correct engagement of the control unit

12 Troubleshooting and fault elimination

Symptoms	Possible reasons	Measures
 **No LED lights up**	Supply voltage incorrect Circuit board defective	Check the voltage on the type plate Check the connections and the supply voltage Check the circuit boards for possible damage
 **All LEDs are continuously on**	Failure during the start of the program Circuit board defective	Separate the device from the supply voltage and reactivate after > 5 s Check the circuit boards for possible damage
 **Test button pressed, but no condensate discharge**	Feed pipe and/or discharge pipe blocked or obstructed Wear and tear Circuit board defective Service unit defective Minimum pressure not reached Maximum pressure exceeded	Check feed and discharge pipe Check whether or not the valve opens audibly (press the test button several times for >2 seconds) Check the circuit board for possible damage Check the operating pressure
 **Condensate discharge only when the test button is pressed**	Feed pipe without sufficient slope Cross section not large enough Condensate accumulation too high (surge) Service unit extremely dirty	Install feed pipe with a slope Replace the service unit
 **Device blows off continuously**	Service unit defective or dirty	Replace the service unit

Elements and components

13 Elements and components



1 Screw 3.5 x 10
2 Upper part of the cover
3 Moulded gasket
4 Circuit board
5 Sensor
6 Lower part of the cover
7 Cable bushing
8 Sealing mat
9 Service unit
10 Hose connector
11 O-ring 20 x 2
12 Intermediate adapter
13 Screw M6 x 12
14 O-ring 14 x 1.78
15 Angle adaptor
16 Design shell

14 Recommended spare parts

Available sets of spare parts	Contents	Order number
Service Unit AN8247400370 for ANECODRAIN31 Service Unit AN8247400370* for ANECO31-24DC	8, 9, 11**	AN8247400370 AN8247400370*
Gasket kit	3, 8, 11**, 14**	AN8247400390
Design shell*	16**	AN8247400410
Connection adapter G** Connection adapter NPT**	11**, 12**, 13**, 14**, 15**	AN4010155 AN4012610

** Not for ECO-DRAIN 31 built-in

W

Water pocket 15

CANADA
KAESER COMPRESSORS, Inc.
3760 La Vérendrye
Boisbriand, QC J7H 1H5 Canada
Phone: (450) 971-1414 • Fax: (450) 971-1415
E-mail: info.canada@kaeser.com

MEXICO
KAESER COMPRESORES de México S. de R.L de C.V.
Calle 2 No. 123
Parque Industrial Jurica
76100 Querétaro, Qro México
Teléfono: (52) 442-218-6448 • Fax: (52) 442-218-6449
E-mail: sales.mexico@kaeser.com

USA
KAESER COMPRESSORS, Inc.
511 Sigma Drive
P.O. Box 946
Fredericksburg, VA 22404
Phone: 540-898-5500 • Fax: 540-898-5520
E-mail: info.usa@kaeser.com

www.kaeser.com

Subject to technical modifications without notice / errors accepted.
eco-drain_31_manual_en-us_01-2336_v02.
Printed in Germany

ECO-DRAIN 31