Manual

Version 04.01.2023

Single Beam, Dual Wavelength Absorption- Process- Photometer

Model MoniSpec-C-AD (MSC-AD)

Chemtronic Waltemode GmbH

D-40789 Monheim Niederstr.14
Phone: +49-(0)2173-57007 Fax: +49-(0)2173-56007
E-mail: info@chemtronic-gmbh.de
Internet: www.chemtronic-gmbh.de

chemtronic
Waltemode GmbH

Transportation Damages!

Please inspect the instrument immediately after receiving for potential shipping damages.
For any claims to the transportation insurance or warranty repair, it is absolutely required to notify transportation damages immediately after receiving the instrument. In case of obvious damages of the outer packaging, the carrier must give a receipt for this damage to make demands for the insurance. In case of a delayed announcement the insurance will not pay for damages and Chemtronic Waltemode GmbH will not assume liability for these damages.

Content

Copyright

There are no further reaching warranty claims to take because of the content of existing document.

Non-warranty

Chemtronic Waltemode GmbH takes no responsibility or warranty for technical or editorial mistakes or omissions in this document. The information in this publication will be provided without warranty for their correctness. Chemtronic Waltemode GmbH reserves all rights to make changes to this document without announcement.
Chemtronic Waltemode GmbH is by no means liable for any consequential damages or miscellaneous damages, which occur during the use or storage of the system.
Some countries do not allow the limitation of liability, so that this exclusion is possibly not valid for you.

Warranty conditions

The warranty for this product takes place according to the legal provisions. As place of warranty we explicitly name Chemtronic Waltemode GmbH, Monheim am Rhein, Germany. Chemtronic will charge the additional expenses e.g. travel expenses, overnight cost, etc., in case of warranty service at the customer site.
Consumable parts as well as wearing parts e.g. lamps, gaskets, etc. are not covered by warranty.
Improper use, gross negligence, use of the system outside of the technical specifications, missing or improper maintenance will cause a loss of the warranty claim. Please pay attention to our general terms of contract.

Storage

Please inspect the instrument immediately after receiving for potential shipping damages.
If the instrument has already been unpacked for inspection or testing, or if the instrument has been removed from the process and it is not to be installed or reinstalled for more than 1 day, the following procedure should be observed:

1. If the instrument has been in service, the wetted portion should be thoroughly cleaned (typically with clean water) and then thoroughly dried.
2. In case the original packing material is not available, place the instrument in a sealed heavy plastic bag with a desiccant added to assure clean dry storage.
3. The instrument should then be stored in a protected area until time of installation.

Shipment of the instrument

Please clean the instrument carefully before shipment (e.g. for revision / repair). Please use fixed packaging to protect the instrument against any shipping damages.
If at all possible the original packaging should be used.

Safety instructions

Take notice to the following general safety instructions during use and operation of the system. Ignoring these instructions or special warnings inside of this manual can damage the sensor, cause inaccurate measurements, and possibly result in unsafe installations. Chemtronic Waltemode GmbH will not take any responsibility for consequences arising from ignoring the safety instructions and warnings.

For ALL chemical liquids

Reagents, standards or the measured product may be toxic or otherwise harmful to human health. Observe appropriate precautions when handling and disposing the reagents. Review the appropriate published material safety data sheets regarding the safe handling and disposal of all these products.

Electrical installation

Qualified technical personnel must perform the electrical installation of the system.

Hazardous area

DO NOT INSTALL the system in hazardous area without the optional Ex-proof equipment. Operation of non Ex- proof systems in hazardous area will cause an extreme high risk. Please check separate Ex-documents and stickers on the sensor.

Using the system in hazardous areas (Ex Zone I) will only be safe, with the installation of the optional special Ex-proof designs including all required certifications.

Maintenance

Always disconnect the instrument from power during maintenance, replacement of components, installation of additional components or any other operations at the open instrument.
Only qualified technical personnel must perform this work.

Operating the instrument with open enclosure

Only qualified technical personnel should operate the instrument when the enclosure is open (e.g. during repair or calibration procedure). Be careful that no moisture enters the enclosure.

Some components inside the instrument are energized with voltages, which can cause lethal shocks in case of contact. Be careful during installation, handling and operation of the instrument.

Improper installation / operation of the system

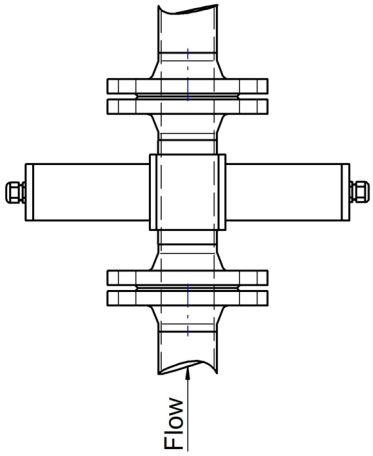
Warranty is void if the system is / was installed improperly, handled improperly, used outside of the technical specifications or damaged by gross negligence.

Installation Guidelines

Danger!
Exceeding the specified maximum pressure and / or the specified maximum temperature will cause a very high safety risk. Please read the additional safety instructions before installation and start-up.

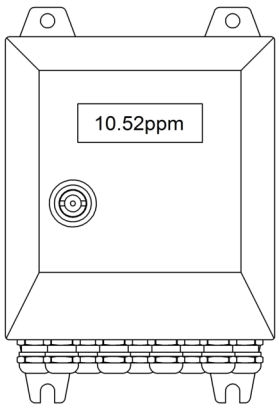
- The sensor is manufactured according to the customer's application (variable line size, flange type, cleaning jets, gasket material etc.).
- It is recommended to run the calibration of the system before installation.
- The location / installation of the sensor should be in a vertical standpipe.
- The process pressure should never exceed the specification of the sensor.
- The process temperature should never exceed the specification of the sensor.
- Avoid air and gas bubbles inside the sensor, they cause disturbances. Air and gas bubbles will cause noise and drift of the measurement signal. (The air bubbles are not expected at pressures upwards of 2bar in aqueous solutions).
- In case the process temperature should fall under the dew point or rise above 85 °C purge the sensor optic housings with dry instrument air (approx. 10 l/h). Condensed water and excessive temperatures can damage the sensor and cause inaccurate measurements.
- Due to potential noise problems we recommend not to extend the sensor cables.
- Due to potential noise problems use original cables and parts only.
- In case the optional cleaning jets are being used, make sure the pressure of the cleaning fluid is at least 50% higher than the process pressure.

Sensor



- Pay attention to the separate manual of the transmitter.
- Transmitter and Sensors are sensitive components, do not drop, handle with care.
- Follow the wiring diagrams (pay attention to sensor / transmitter manuals).
- Please do not use the system in case of any visible mechanical damages!
- The Messenger enclosure fits IP65 / Nema 4x protection class but we recommend installation in a dry / dust free area.
- The ambient temperature for the transmitter must be in a range of -10°C to 50°C (use dry purge air above 40°C approx. 10 l/h).
- The power consumption of the Messenger transmitter is less than 50 VA.
- Transmitter relay ratings for alarms and external devices are 2 A at 48V.
- Do not operate with open enclosure. Exposed electronics will promote the risk of electrical shock and might cause damage to the unit.
- Do not alter cable length. The instrument was calibrated with a specified cable length. Altering cable length can cause unstable signals and void instrument calibration.
- Proper instrument grounding: The instrument must be grounded to avoid electrical shock hazards to personnel and damages to the unit.

Transmitter



Principle of Operation

The single beam, dual wavelength photometer model MoniSpec-AD / Messenger is used to measure the colour of liquid products. The light absorption is measured at two different wavelengths. The difference between these both absorbance values is used to calculate the colour concentration.

What does Colour mean?

Colour is defined as a light released sense impression mediated by eye.
The physical science considers light as electromagnetic waves. Colour is not a clear defined magnitude like e.g. temperature or pressure, colour is a subjective impression.

How arises a Colour Impression?

A colour impression will be caused, in case electromagnetic waves of the visible spectrum (wavelengths of about 380nm up to 750nm) will fall on the eye.

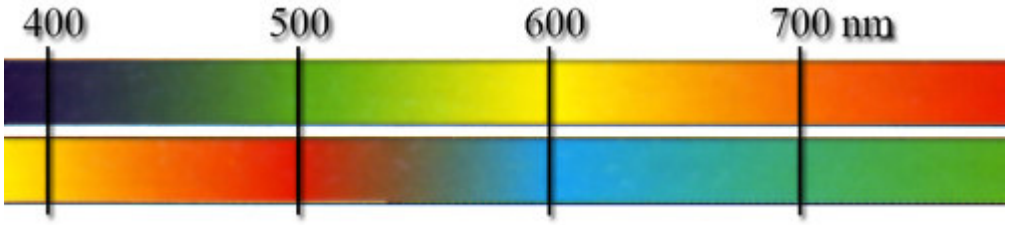
How accrues Colour?

White light (colourless) consists from the summation of all colours of the visible spectrum. A colour impression accrues for the eye, in case a specific range of wavelengths within the visible spectrum will be absorbed.

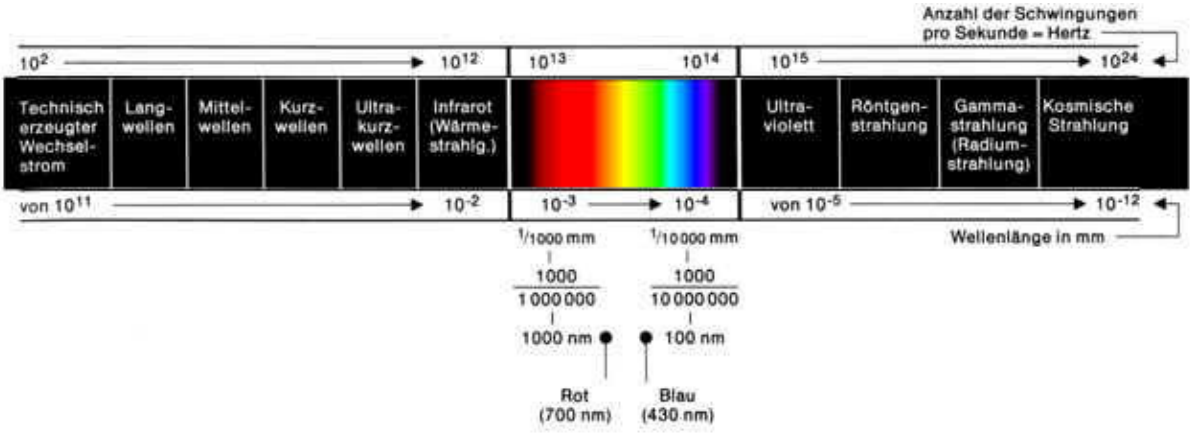
Context between Wavelength and Colour

Absorbed Wavelength λ [nm]	Colour of absorbed Light	Visual impression human eye
380 – 435	violet	yellow-green
435 – 480	blue	yellow
480 – 490	greenish-blue	orange
490 – 500	bluish-green	red
500 – 560	green	magenta
560 – 580	yellow-green	violet
580 – 595	yellow	blue
595 – 650	orange	greenish-blue
650 – 780	red	bluish-green

Comparison absorbed light colour / product colour



Total Spectrum



Measurement of Colour

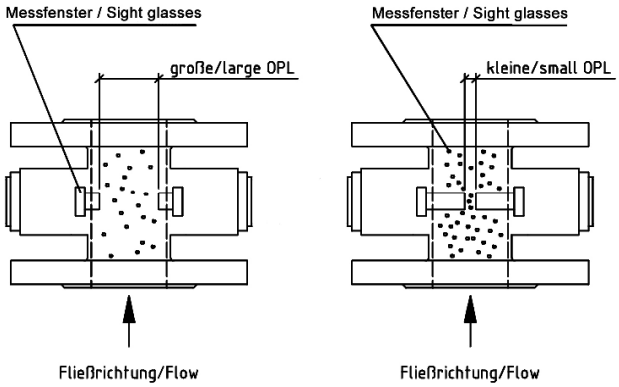
The following methods are used for the measurement of a “colour concentration” in a liquid; both methods are based on the principle of light absorption at specific wavelengths.

Example single wavelength absorption:
Measurement of blue colour in a liquid.
The light absorption in a spectral range of approximately 600nm will be detected and evaluated; this is the range of wavelengths where the blue colour generates light absorption.

Mainly two parameters will affect the sensitivity of the measurement.

1. The initial intensity of the white light source, which is a constant value of the respective sensor.
2. The optical path length (OPL) which is a variable magnitude of the sensor.

The sensor requires a large optical path length (OPL) to generate enough light attenuation at low colour concentration.
The sensor requires a small optical path length (OPL), to ensure enough light intensity penetrates the product at high colour concentration.



Large optical path length/OPL = measurement of low concentrations/high sensitivity
Small optical path length/OPL = measurement of high concentrations/low sensitivity

Single Beam dual Wavelength Measurement

Single Beam dual Wavelength Measurement
The previously described method of single wavelength absorption operates with filtrated liquids with low particle content only, because the particles in the liquid absorb the light as well as colour. Therefore particles affect the measurement results. Particles absorb the light at the complete spectral range and not at specific wavelengths only. Colour absorbs the light at specific wavelengths in the visible spectrum. Therefore colour is typically measured at two different wavelengths ranges. The measurement channel detects in a spectral range where colour and particles absorb. The reference channel detects in a spectral range where only colour absorbs. This method is called, single beam dual wavelength measurement.

The measurement channel detects the absorption caused by colour and particles.
The reference channel detects the absorption caused by particles only.

The difference of both signals will result the absorption caused by colour only.

The difference measurement compensates for cross interference’s caused by particles, window coatings and lamp ageing

Example dual wavelength absorption:
Measurement of blue colour in liquid.
The measurement channel detects the light absorption in a range of approx. 600nm (colour and particles).
The reference channel detects the particle absorption at 850 nm (invisible NIR light, unaffected by colour).

Measurement Ch. (blue colour + particles) – **Reference Ch.** (particles only) = **Colour Concentration**

Maintenance

Replacement of measurement lamp

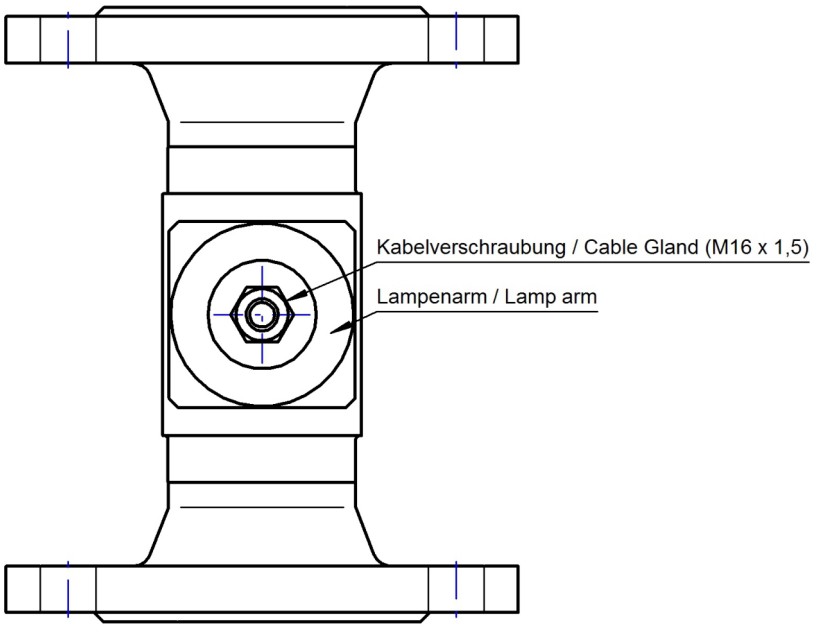
Ignoring of the following hints will cause a loss of warranty

Notice:

- Qualified technical personnel must perform repair and maintenance.
- The sensor must be cleaned and flushed thoroughly, before beginning any work. Depending on customers' application product residues can be very dangerous (aggressive, poisonous).
  Please handle the system very careful due to possible leakage etc.
- Avoid pulling and twisting of the lamp cable.
- Avoid applying excessive force during assembling and disassembling of the sensor.
- Screw in all bolts and cable glands stalwart only.
- Please work carefully during the replacement of the measurement lamp.
- The lamp replacement should be done in a dry and clean location, to protect the optical components from dirt.
- Please make sure that no dust or other particles penetrates into the optical assembly.
- Do not touch the lenses.
- In case of dirty component please clean carefully by using fresh water and a cloth (lint-free), dry all components by using instrument air.
- Use suitable tools only.

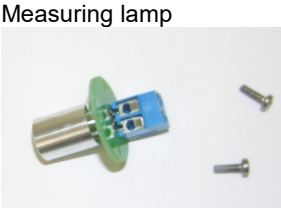
1. Loosen the cable gland to assure that you do not twist the lamp cable.
2. Unscrew the lamp arm (right thread, do not twist lamp cable).
3. Pull the lamp arm carefully backwards.

Take notice!
The lamp cable is marked with "lamp".

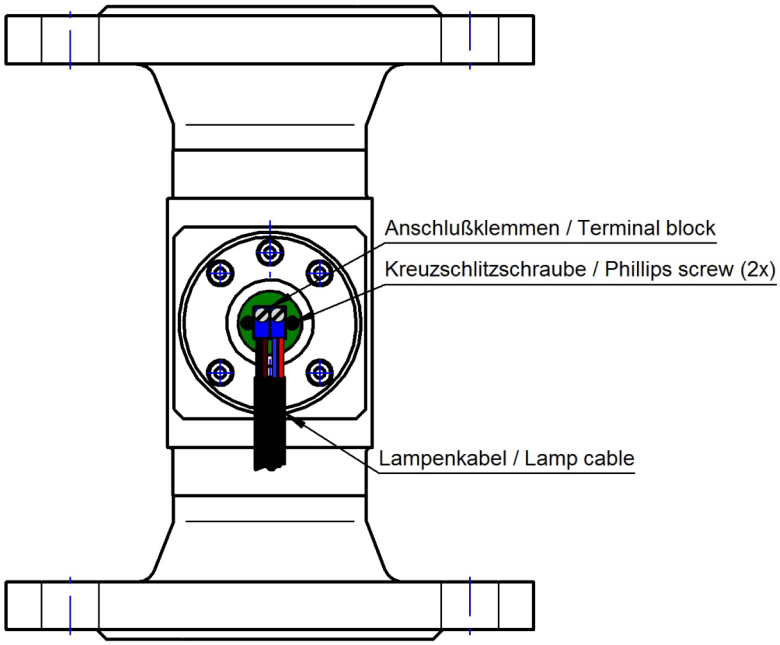


4. Loosen the slotted screws of the terminal block and remove the lamp cable.
5. Unscrew the Phillips screws and pull out the measuring lamp carefully.

Measuring lamp



6. Replace the measuring lamp and reassemble the sensor in reverse order.



Replacement of measurement lamp (sensor with optional flameproof enclosure (ATEX Ex d IIC T6)

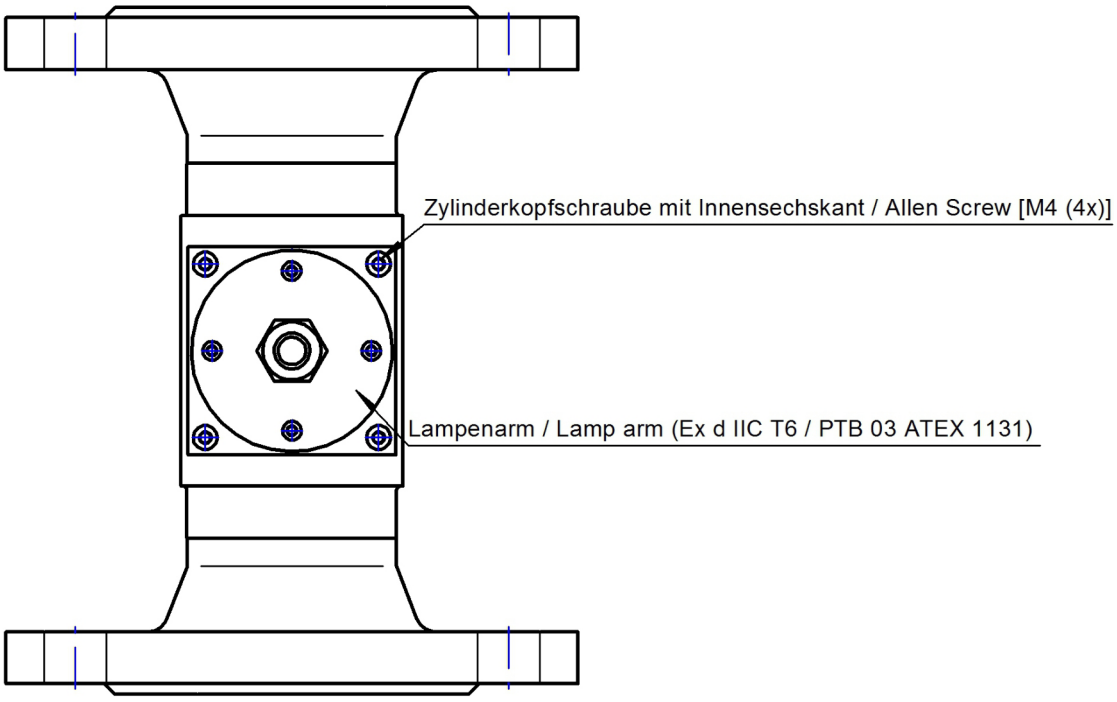
Please take notice:
The flameproof- housings may be opened by an expert operator only, if it is closed with hexagon socket screws and these screws are not sealed.
The housing must not be opened if only one circuit is under voltage, unless there is no risk of explosion (fire permission).

Ignoring of the following hints will cause a loss of warranty

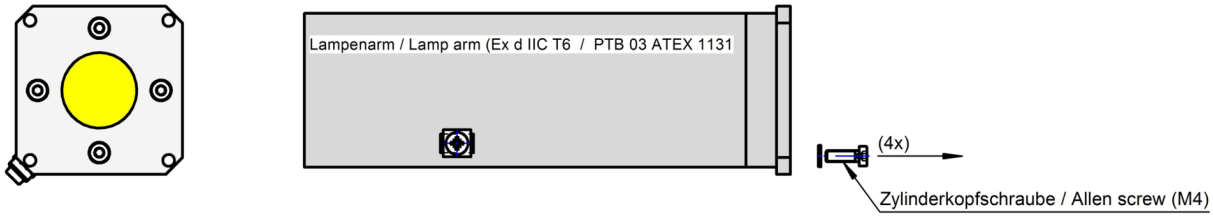
- The sensor must be cleaned and flushed thoroughly, before beginning any work. Depending on customers' application product residues can be very dangerous (aggressive, poisonous).
  Please handle the system very careful due to possible leakage etc.
- Avoid pulling and twisting of the lamp cable.
- Avoid applying excessive force during assembling and disassembling of the sensor.
- Screw in all bolts and cable glands stalwart only.
- Please work carefully during the replacement of the measurement lamp.
- The lamp replacement should be done in a dry and clean location, to protect the optical components from dirt.
- Please make sure that no dust or other particles penetrates into the optical assembly.
- Do not touch the lenses.
- In case of dirty component please clean carefully by using fresh water and a cloth (lint-free), dry all components by using instrument air.
- Use suitable tools only.

1. Loosen the four Allen screws at the mounting flange and remove the lamp arm.
   Take care that you do not damage the o-ring seals.

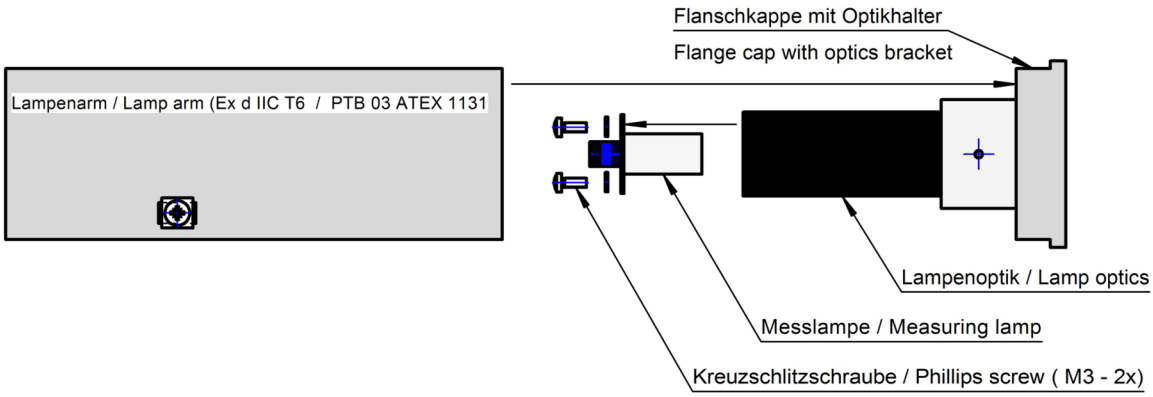
Take notice!
The lamp cable is marked with "lamp".



2. Unscrew the four Allen screws located at the inside of the mounting flange.

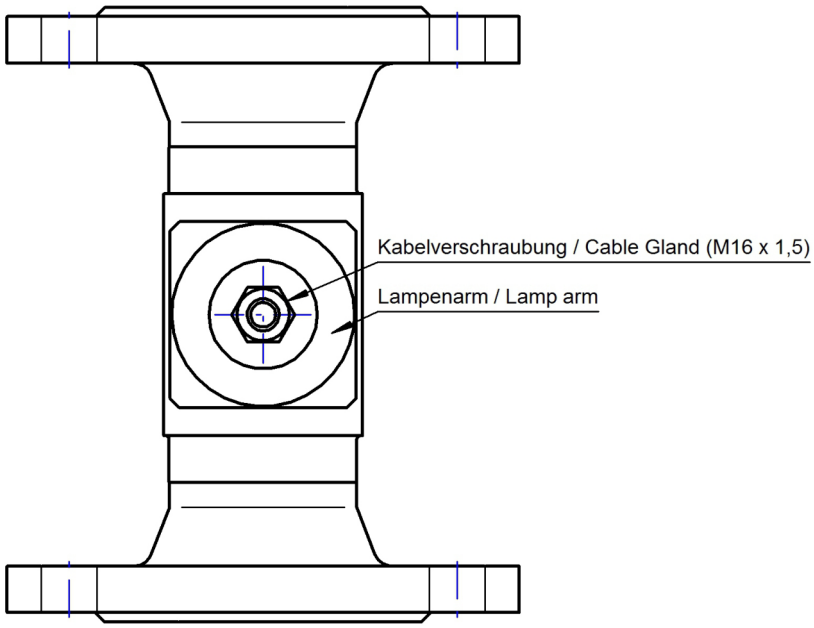


4. Pull the flange cap carefully out of the lamp arm.
5. Loosen the slotted screws of the terminal block.
6. Disconnect the wires carefully from terminal block.
7. Loosen the Phillips screws and pull out the measuring lamp carefully.
8. Replace the measuring lamp and reassemble the sensor in reverse order.

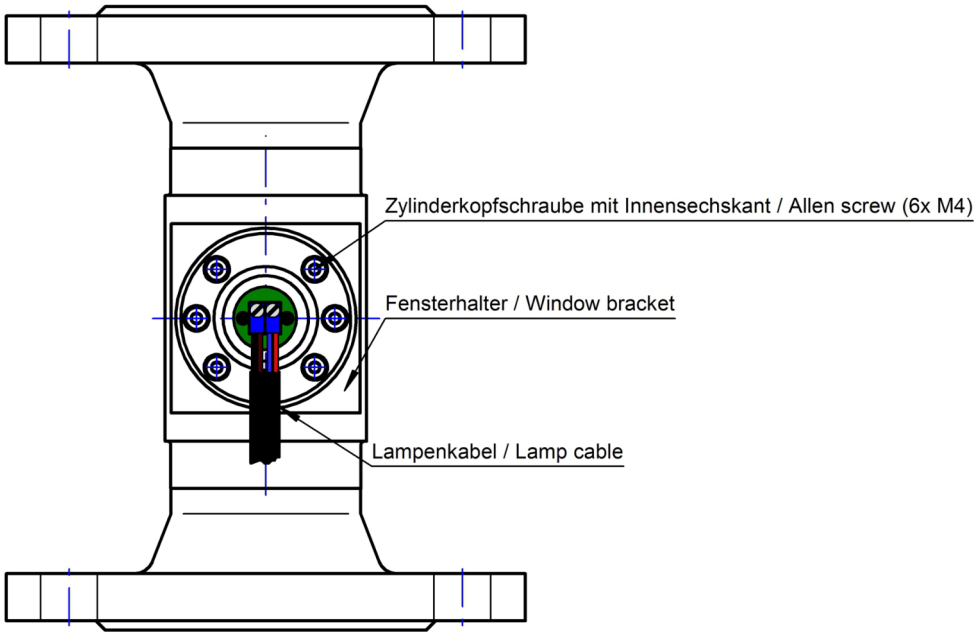


Replacement of gaskets

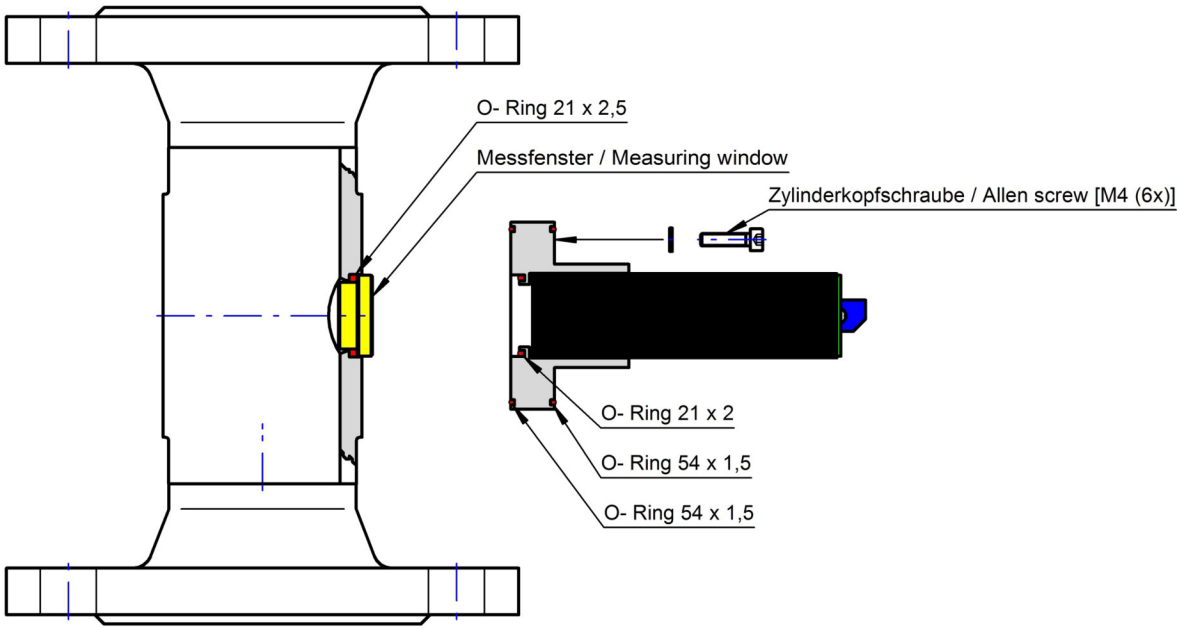
1. Loosen the cable glands to assure that you do not twist the measurement cables.
2. Unscrew the measurement arms (right thread, do not twist lamp cable).
3. Pull the measuring arms carefully backwards.



4. Disconnect lamp- / detector cable.



5. Unscrew the six Allen screws at the window bracket.



6. Remove the measuring windows and the o-ring seals and replace them if necessary.
7. Reassemble the sensor in reverse order.

Replacement of gaskets (sensor with optional flameproof enclosure (ATEX Ex d IIC T6)

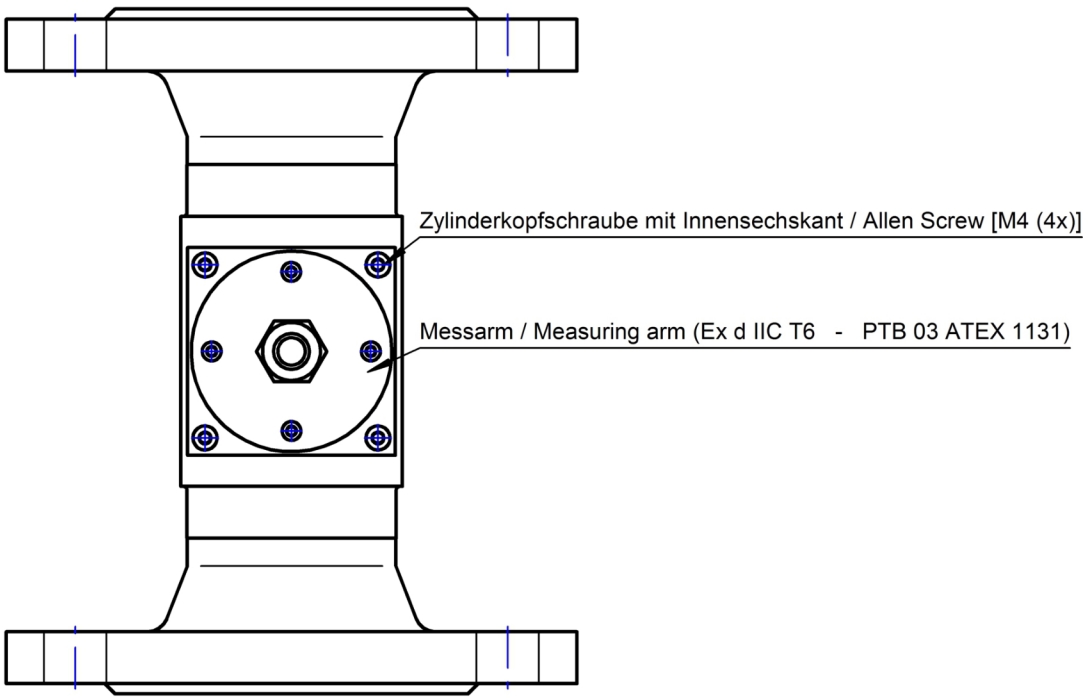
Ignoring of the following hints will cause a loss of warranty

- The sensor must be cleaned and flushed thoroughly, before beginning any work. Depending on customers' application product residues can be very dangerous (aggressive, poisonous).
  Please handle the system very careful due to possible leakage etc.
- Avoid pulling and twisting of the lamp cable.
- Avoid applying excessive force during assembling and disassembling of the sensor.
- Screw in all bolts and cable glands stalwart only.
- Please work carefully during the replacement of the measurement lamp.
- The lamp replacement should be done in a dry and clean location, to protect the optical components from dirt.
- Please make sure that no dust or other particles penetrates into the optical assembly.
- Do not touch the lenses.
- In case of dirty component please clean carefully by using fresh water and a cloth (lint-free), dry all components by using instrument air.
- Use suitable tools only.

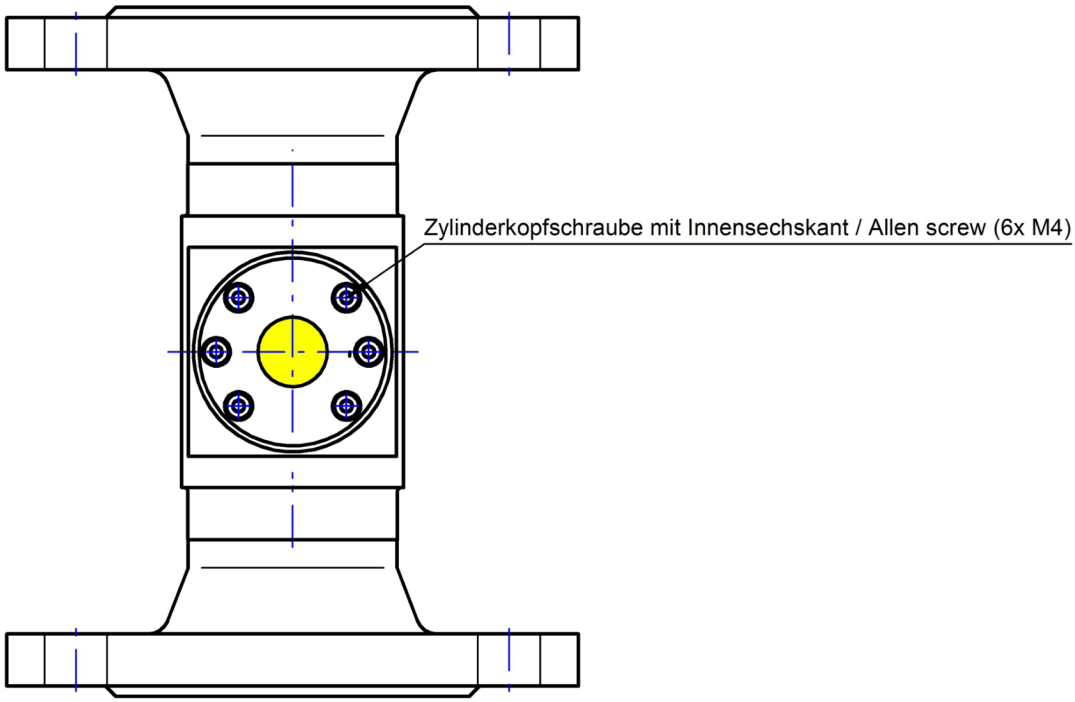
The interval to replace the gaskets depends by the specific application.
The replacement cycle depends on process pressure, process temperature, sealing material and product characteristics. In worst case (high temperature, high pressure, aggressive medium) the gaskets must be replaced every month. Under normal conditions the gaskets should be replaced every year. The maximum lifetime in easy applications can go up to 2 years.
We strictly recommend that the customer establishes a maintenance interval based on local conditions.
If you have any questions or if you require more information contact Chemtronic Waltemode GmbH.

Please take notice!
Make sure that the measuring cell is empty and not pressurized, before beginning of work.

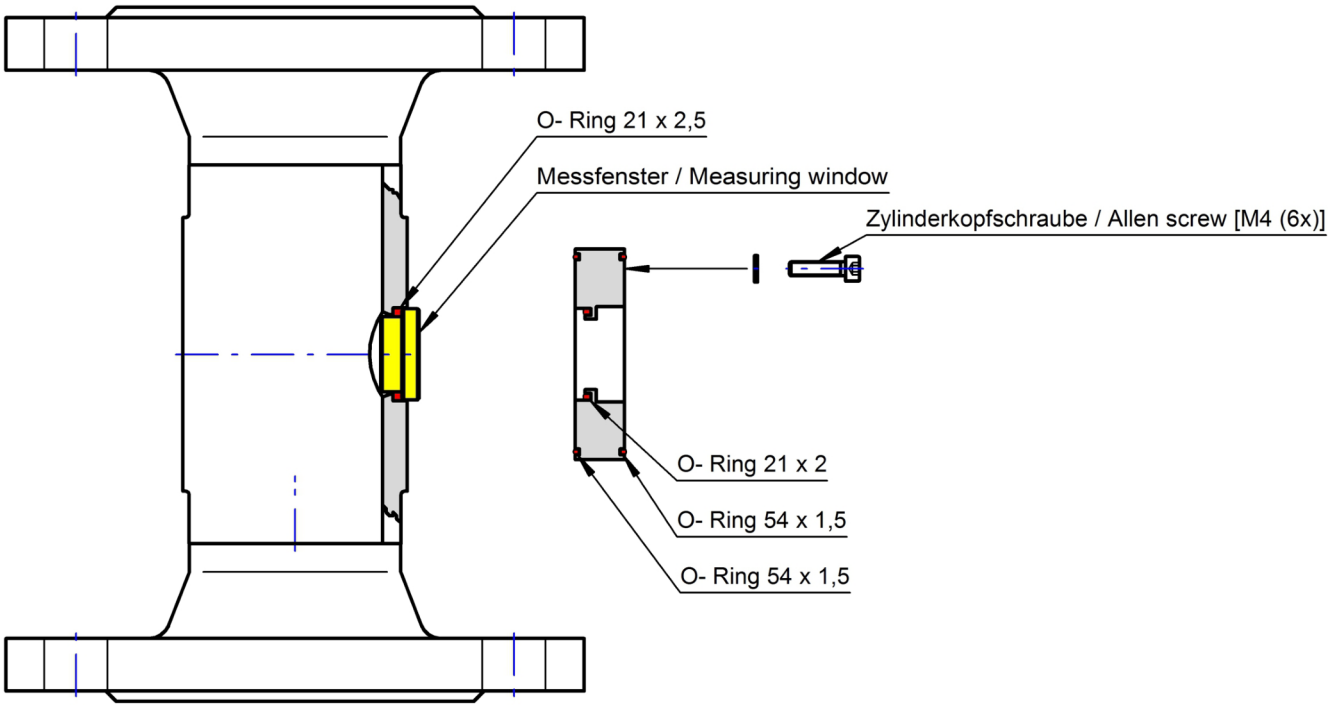
8. Unscrew the four Allen screws at the mounting flanges and remove the measuring arms.
9. Place the measuring arms aside carefully.



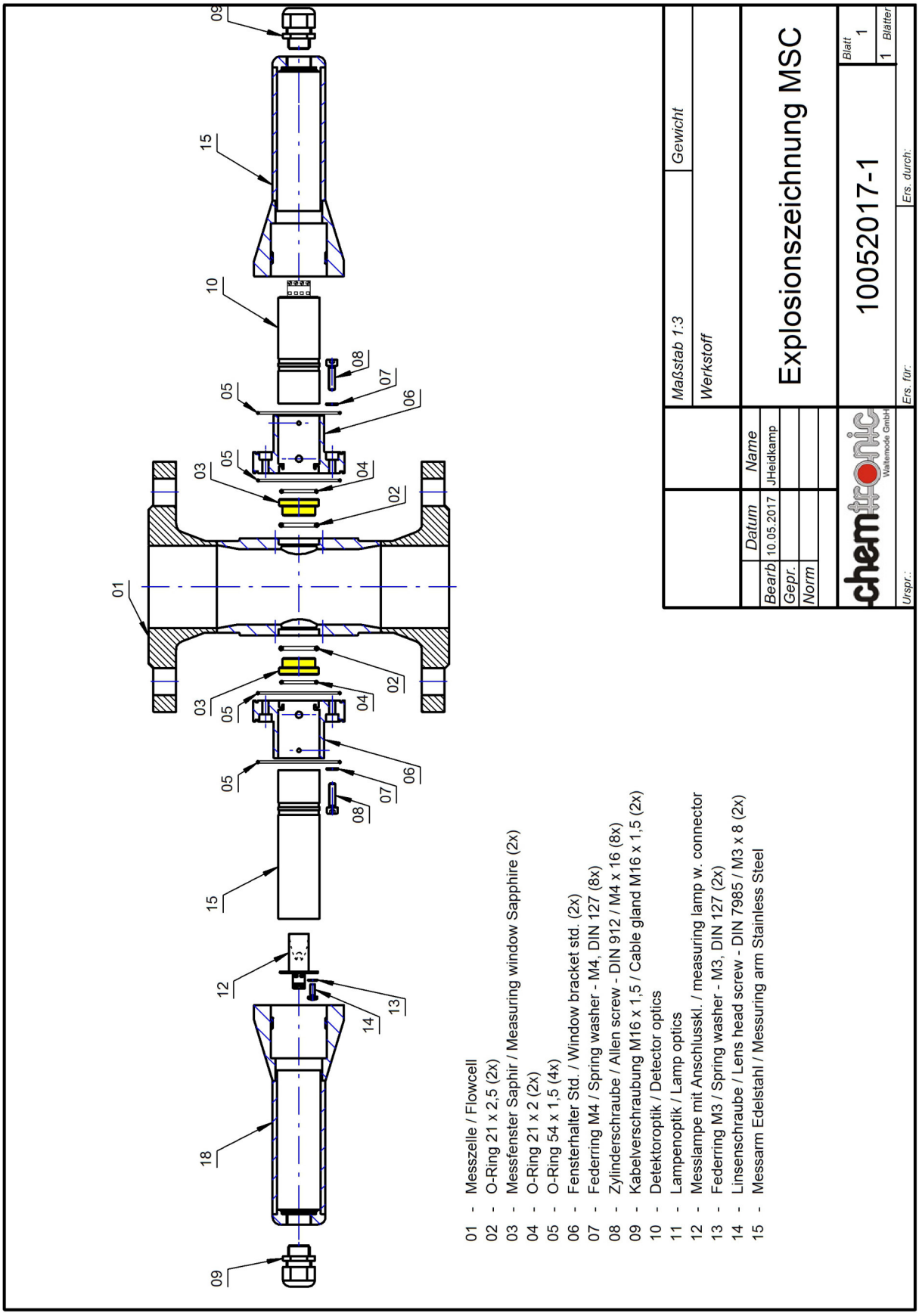
10. Unscrew the six Allen screws and remove the window bracket carefully.



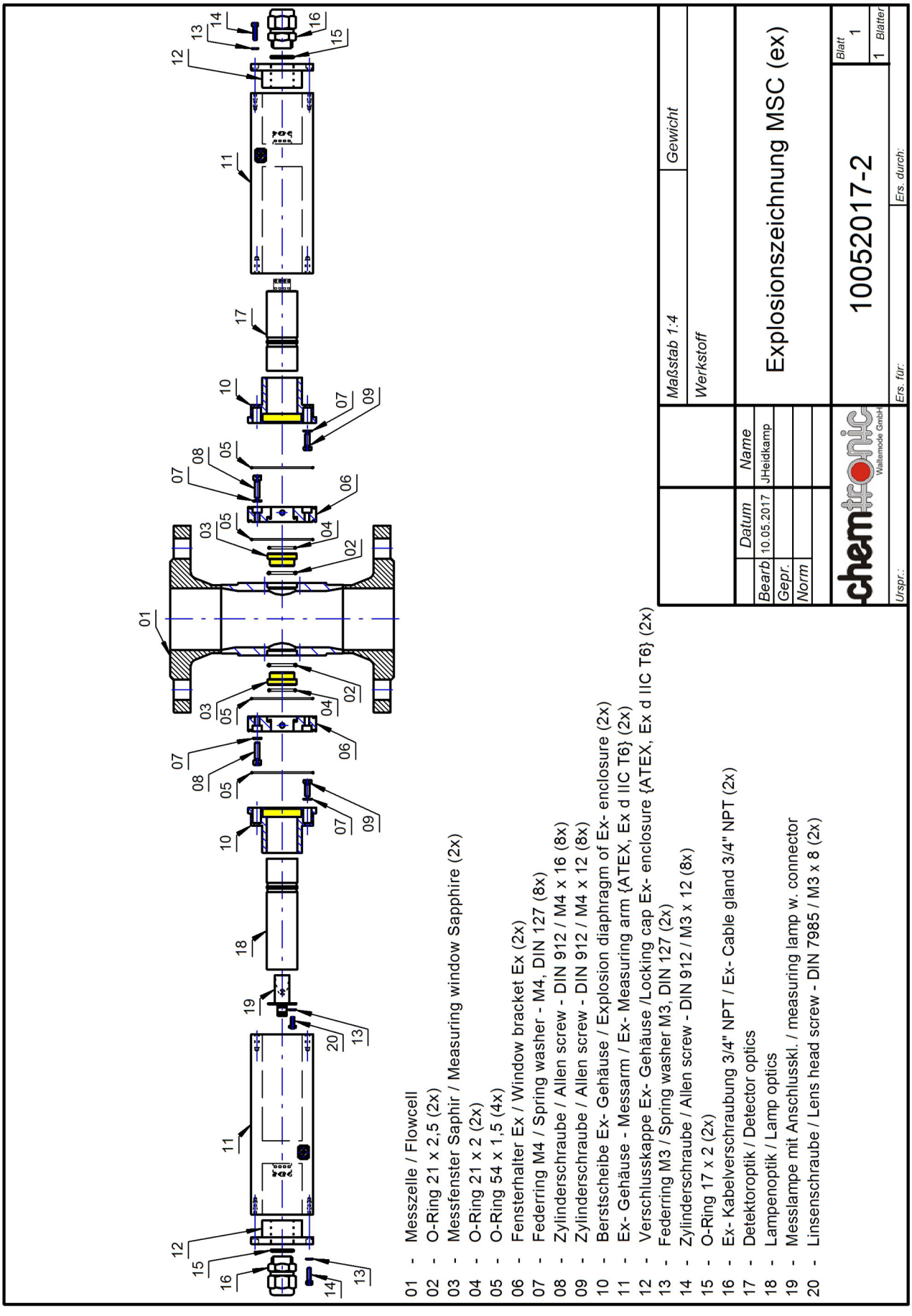
11. Remove the measuring windows and the o-ring seals and replace them if necessary.
12. Reassemble the sensor in reverse order.



Exploded View Model MoniSpec-C-AD (MSC-AD)



Exploded View Model MoniSpec-C-AD (MSC-AD), flameproof enclosure (ATEX Ex d IIC T6)



Parts List Model MoniSpec-C-AD (MSC-AD)

Chemtronic Waltemode GmbH
Niederstr. 14
40789 Monheim

Tel.: +49 - (0)2173/57007
Fax: +49 - (0)2173/56007
E-mail: info@chemtronic-gmbh.de
Home: www.chemtronic-gmbh.de

Ersatzteilpreisliste / Price list spare-parts

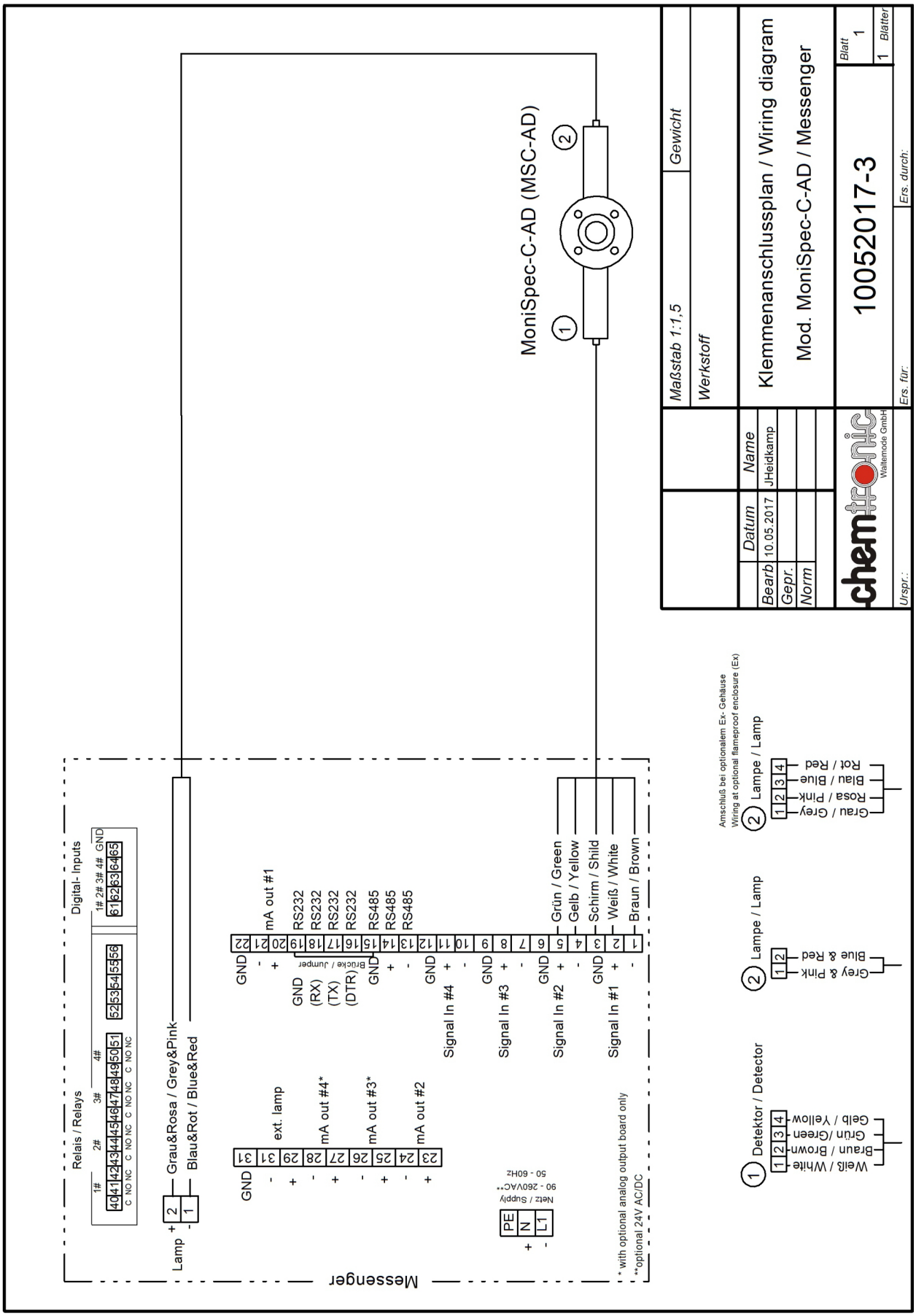
Pos.	Qty required	Article-No.	Article-Description	Price per piece	Price total
001	1	S-0000-0105-00	Stückliste MoniSpec-C-AD	0,00 €	0,00 €
002	2	C208-6000-VI	O-Ring (MTC • FKM • 21x2,5)	22,00 €	44,00 €
003	2	C208-6000-KA	O-Ring (MTC • FFKM • 21x2,5)	112,00 €	224,00 €
004	2	2200-1100-SA	Messfenster / measuring window (OPL45- Saphir 11mm) - (22 , 45, MTC)	267,00 €	534,00 €
005	2	2200-1400-SA	Messfenster / measuring window (OPL40- Saphir 14,0mm) - (22 , 45, MTC)	290,00 €	580,00 €
006	2	2200-1900-SA	Messfenster / measuring window (OPL30- Saphir 22.0mm) - (22 , 45, MTC)	315,00 €	630,00 €
007	2	2200-2400-SA	Messfenster / measuring window (OPL20- Saphir 24,0mm) - (22 , 45, MTC)	325,00 €	650,00 €
008	2	2200-2900-SA	Messfenster / measuring window (OPL10- Saphir 29,0mm) - (22 , 45, MTC)	340,00 €	680,00 €
009	2	2200-3150-SA	Messfenster / measuring window (OPL5- Saphir 31,5mm) - (22 , 45, MTC)	360,00 €	720,00 €
010	2	2200-3300-SA	Messfenster / measuring window (OPL2- Saphir 33mm) - (22 , 45, MTC)	390,00 €	780,00 €
011	2	C208-6001-VI	O-Ring (MTC • FKM • 22x2)	19,00 €	38,00 €
012	2	C208-6001-KA	O-Ring (MTC • FFKM • 22x2)	102,00 €	204,00 €
013	4	C208-6006-VI	O-Ring (MTC • FKM • 54x1,5)	23,00 €	92,00 €
014	2	D650-0004-00	Fensterhalter Std. / Window bracket std. (MTC)	245,00 €	490,00 €
015	2	D650-0011-00	Fensterhalter Ex / Window bracket Ex (MTC)	225,00 €	450,00 €
016	2	D650-0001-00	Messarm Edelstahl / Measuring arm SS (MTC)	390,00 €	780,00 €
017	1	C608-1001-10	Ex-Arm Lampe o. Optik / Ex-arm lamp w/o optics (MT/MS - Ex d IIC T6)	835,00 €	835,00 €
018	1	C608-1001-12	Ex-Arm Detek. o. Optik / Ex-arm detec. w/o optics (MT/M - Ex d IIC T6)	835,00 €	835,00 €
019	2	D650-0003-00	Verschlußkappe Messarm / Locking cap (MTC)	120,00 €	240,00 €
020	2	C208-6005-VI	O-Ring (MTC • FKM • 52x1,5)	23,00 €	46,00 €
021	2	C305-1038-00	Kabelverschraubung VA/Cable gland 316SS (M16x1,5)	35,00 €	70,00 €
022	2	C305-1039-00	Kabelverschraubung Polyamid/Cable gland Polyamid (M16x1,5)	8,00 €	16,00 €
023	2	C305-1044-00	Kabelverschraubung-Ex VA/Cable gland-Ex 316SS (3/4" NPT)	35,00 €	70,00 €
024	1	2001-0506-00	Baugruppe Detektor MSAD & MSC-AD - Kit detector assy MSAD & MSC-AD	725,00 €	725,00 €
025	1	2001-0508-50	Baugruppe Messlampe - Kit lamp assy / VIS (MSA-C, MSAD-C)	880,00 €	880,00 €
026	1	C402-1001-11	Messlampe / measuring lamp - (MT1, MS1) incl. holder + board	125,00 €	125,00 €
027	1	C604-1001-00	Detektorkabel / detector cable - (MT, MS) per 1m	9,00 €	9,00 €
028	1	C604-1002-00	Lampenkabel / lamp cable - (MT , MS) per 1m	9,00 €	9,00 €
029	2	C305-1002-00	Luftanschluss 90°/Connector air purge 90°	21,00 €	42,00 €
030	1	2001-1000-01	Verschraubung Reinigungsdüse (1/4" MNPT • MT, MS)	55,00 €	55,00 €
031	1	C608-1002-00	Reinigungssonde, 120mm lang / Cleanig probe 120mm length (MT, MS)	430,00 €	430,00 €

Please take notice: Minimum order EUR 100,00
Bitte beachten Sie: Mindestbestellsumme EUR 100,00

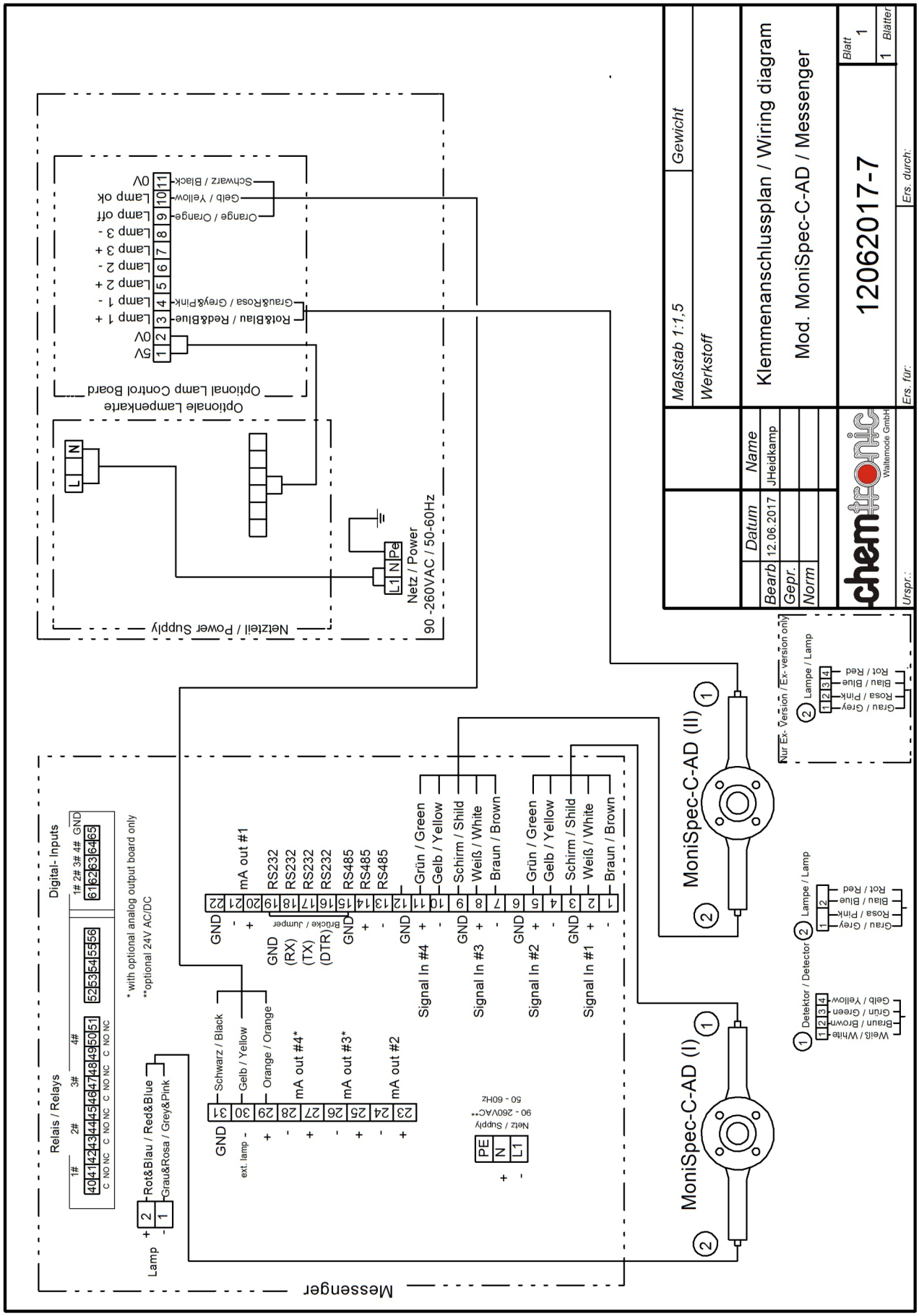
Die Liste enthält die gängigsten Ersatzteile für nicht gelistete Teile kontaktieren Sie Chemtronic / This list contains the most common spare parts, for non listed parts contact Chemtronic.

Site of Company: 40213 Düsseldorf, Amtsgericht Düsseldorf, HRB 45293

Wiring Diagram Model MoniSpec-C-AD / Messenger (single Sensor)

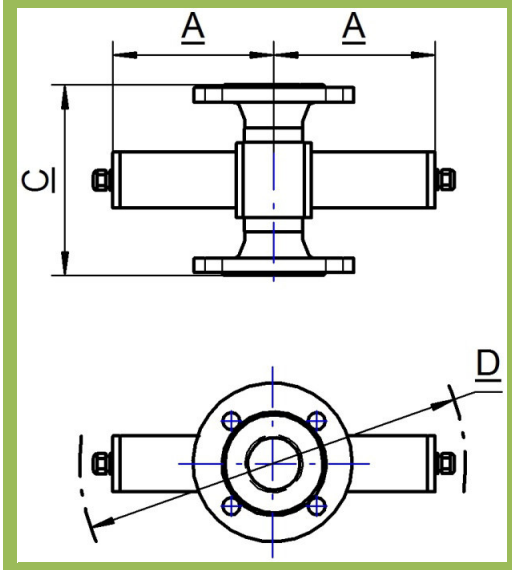


Wiring Diagram Model MoniSpec-C-AD / Messenger (two Sensors)



Dimensions Model MoniSpec-C-AD

Modell MSC (Flanges EN1092-1 Typ 11 / PN16)



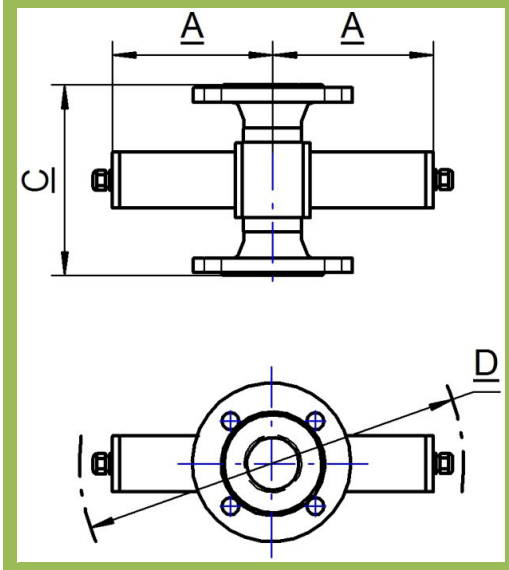
Version for installation in safe Area

	A		C	D
DN25	191		228	444
DN32	191		232	444
DN40	191		238	444
DN50	191		198	444
DN65	201		198	464
DN80	208		208	478
DN100	219		212	500
DN125	233		218	528

Version for installation in hazardous Area

	A		C	D
DN25	246		228	602
DN32	246		232	602
DN40	246		238	602
DN50	246		198	602
DN65	256		198	622
DN80	263		208	636
DN100	274		212	658
DN125	288		218	686

Modell MSC (Flanges ANSI B16.5 / 150lbs)



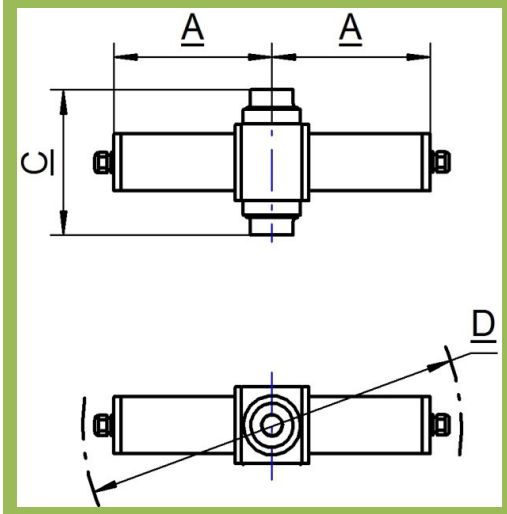
Version for installation in safe Area

	A		C	D
1”	191		259,2	444
1 ¼”	191		262,4	444
1 ½”	191		272	444
2”	191		235	444
2 ½”	201		247,8	464
3”	208		247,2	478
4”	219		260,4	500
5”	233		285,8	528

Version for installation in hazardous Area

	A		C	D
1”	246		259,2	602
1 ¼”	246		262,4	602
1 ½”	246		272	602
2”	246		235	602
2 ½”	256		247,8	622
3”	263		247,2	636
4”	274		260,4	658
5”	288		285,8	686

Model MSC (NPT Fittings)



Version for installation in safe Area

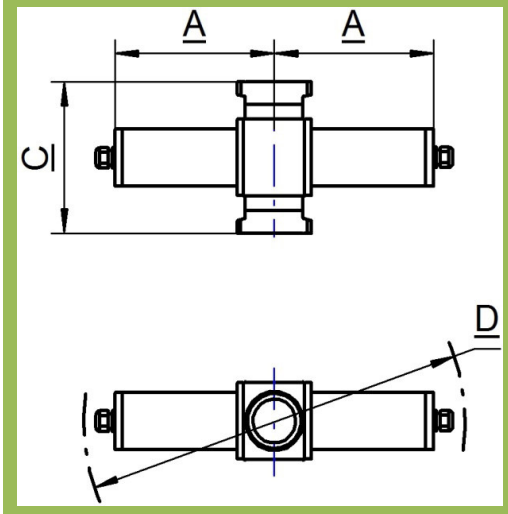
	A		C	D
¼"	191		148	444
½"	191		148	444
¾"	191		148	444
1"	191		148	444
1 ¼"	191		148	444
1 ½"	191		148	444

Version for installation in hazardous Area

	A		C	D
¼"	246		148	602
½"	246		148	602
¾"	246		148	602
1"	246		148	602
1 ¼"	246		148	602
1 ½"	246		148	602

Tolerances for all Dimensons: +/- 2mm

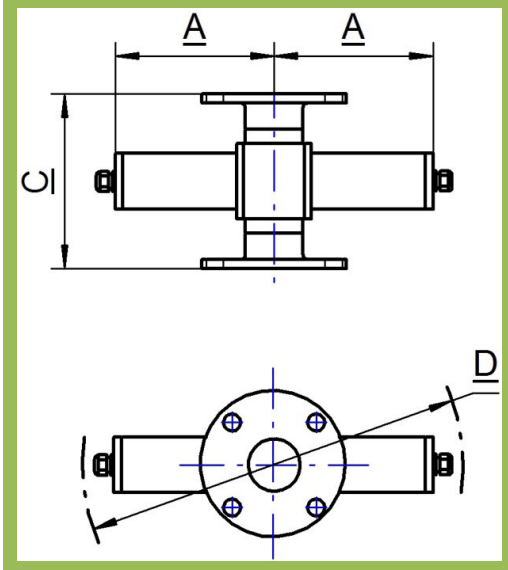
Model MSC (Milk Fittings DIN11851)



Version for installation in safe Area

	A		C	D
DN25	191		192	444
DN32	191		192	444
DN40	191		192	444
DN50	191		154	444
DN65	201		158	464
DN80	208		158	478
DN100	219		168	500
DN125	233		o. R.	528

Model MSC (APV Sanitary Flanges FG1 / PN10)



Version for installation in safe Area

	A		C	D
DN25	191		196	444
DN40	191		196	444
DN50	191		156	444
DN65	201		156	464
DN80	208		156	478
DN100	219		156	500
DN125	233		162	528

Technical Data / Data Sheet Model MoniSpec-C-A (MSC-AD)

Model MoniSpec-C-AD (MSC-AD)

- **Principle of measurement: Absorption**
- **Low maintenance / long service life**
- **Optimized flow cell for simplified maintenance & cleaning**
- **Calibration- / maintenance interval 24 months (depending by application)**
- **Measuring lamp, gas filled (λ 380 - 1100nm), life time approx. 2 years**
- **Protection class: All parts are at least IP65 / Nema 4x rated**
- **Flow cell material: stainless steel 1.4404 (optional titanium, PTFE, ...)**
- **Sight glass material: Sapphire (optional Borosilicate, Plexiglas, ...)**
- **Gasket material: FKM (optional FFKM, EPDM, silicone, ...)**
- **Process connections: DIN flanges, ANSI flanges, NPT, ...**
- **Span of measuring ranges: 0 - 0.1AU to 0 – 5AU**
- **For use in hazardous area Ex- Zone I & Ex- Zone II (ATEX- Ex d IIC / T6)**
- **Optional air purge**
- **Cleaning: Cleaning in place / optional cleaning jets**

Description:

The sensor model MoniSpec-C-AD uses the principle of dual channel light absorption to detect colour in liquids. The transmitter model Messenger is required to use this sensor. The system has been designed for continuous operation with long life time. The difference between measurement and reference channel ([colour + turbidity] – turbidity = colour) provides the colour signal. The sensor can be installed into almost any type of pipe. Process connection, gasket material, etc. will be selected application specific. Optional cleaning jets will allow a cleaning of the sapphire windows in determined intervals. Calibration can be done in multiple ranges and measurement units like Hazen, APHA, ASTM, ppm, etc.. Due to the availability of multiple optical path lengths (2mm up to 500mm) the sensor allows measurement ranges of approximately 0 - 20Hazen up to 0 - 50000Hazen acc. APHA.

Applications:

- Product colour
- Hazen colour according APHA
- ASTM 1500 colour & Saybolt Colour
- Lovibond colour & EBC colour

Operational areas:

- Chemical industry
- Petrochemical industry
- Water & vegetable oil
- Brew & Beverage

Technical Data:

Line size:	DN 25 – DN 125 / ½“ - 5“	Measurement range:	typical 0–20Hazen, 0–50000Hazen
Process pressure:	PN16 / ANSI class 150	Reproducibility:	± 1 %
Process temperature:	maximum 140°C	Detector:	Silica diode
Sensor material:	1.4404 / 316L	Measurement wavelength:	390 - 900nm
Sight glass material:	Sapphire	Cleaning:	optional cleaning jet probe
Gasket material:	application specific	Sterilization:	CIP (cleaning in place)
Protection class:	IP65 / NEMA 4X	optional hazardous area:	ATEX Zone I or Zone II