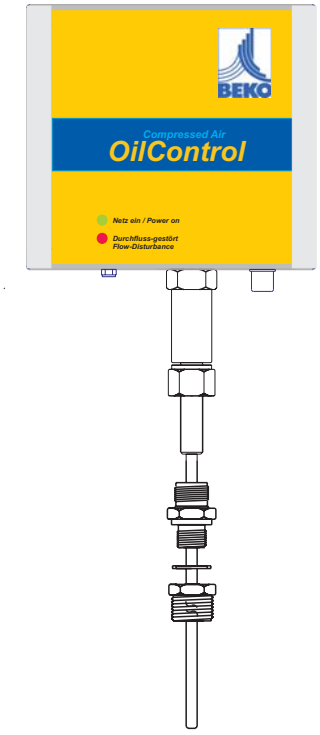
Operating instructions

Compressed Air

OilControl

OCK 111-10 (16), OCF 211-10 (16) and OCA 211-10 (16)

with ISO-KINETIC sampling probe (ISP) type 1 and 2



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NOTE: This operating instructions is valid for the equipment types OCK 111 and OCF/A 211, V0701

The products described in this operating instructions are subject to continuous development and it is therefore acknowledged that this operating instructions may contain errors or omissions. workline ProcessControls encourage customer feedback and welcome any comments or suggestions relation to the product or documentation. The should be forwarded tho the Technical Department at the address given below.

Please follow the ese installation, connection and adjustment instructions carefully. Failure to comply with the instructions or misuse of this equipment will void your warranty coverage. ***Equipment installation, connection and adjustment by qualified personnel only.*** This operating instructions is intended as a guide to the use and installation of the product. workline ProcessControls shall not be liable for any loss or damage whatsoever arising from the use of any information or details therein, or omission or error in this orperating instructions or any mis-use of the procuct.

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Contents

1. Preface

Dear customer!
We thank you for your decision to use a product of our house and congratulate you to this resolution.
OilControl is conceived in principle for the stationary enterprise.
In order to use the function variety of this equipment for you optimally, we ask to consider you the following:

Each person, who is assigned start-up or operation of this equipment, must have read and understand the Operating instructions and in particular the safety references!

2. Safety references

2.1. General references

For the guarantee of a safe enterprise the equipment may be operated only according to the data in the operating instructions. With the use additionally the law and safety regulations necessary for the respective application are To be considered. This applies in a general manner also when using accessories.

2.2. Intended use

OilControl serve to stationary measurement and control of compressed air airborne remainder oil rate.
Each use going beyond it is not considered as intended.

A device of the oil control types may not be used as exclusive way for the prevention of dangerous states at machines and units. Machines and units must be designed in such a way that incorrect states cannot lead to a situation dangerous for the service personnel (e.g. by independent limit value switches, mechanical latchings, etc.).

2.3. Qualified personnel

The oil control measuring instruments may are only used of qualified personnel, excluding accoring of the technical data. Qualified personnel are persons, who are familiar with the location, mounting, start-up and enterprise of this device and Order over one their activity corresponding the qualification.

2.4. Remainder dangers

The oil control measuring instruments correspond to the state of the art and are reliable in service. From the measuring instrument can proceed remainder dangers, if it is inappropriately used and served by untrained personnel. In this guidline Tto remainder dangers with the following symbol one refers:

This symbol refers to that during neglect of the safety notes consists dangers for humans up to the heavy bodily injury or death and/or the possibility of damages to property.

2.5. Conformity explanation

The measuring instrument corresponds to the EN 50081-2 and may be used only in the industrial range. The conformity explanation is laid out with us. You can refer these gladly.

3. Description

The oil control measuring instruments is at any time adjust and programmed on requirements of the user . The analogue output (4 - 20 mA) can measure off terminals 8 (+) and 9 (-) for subsequent treatment in remote controls, data recordings and remote controls. The scaling of the output signal been affected similar to the measuring range (functionla range) of the measuring cell, see rating platerating plate.
Over pushing (less than 1 second) the [UP] or [DOWN] key the minimum and maximum value can be called..

3.1. Special safety notes

Note: Pressure range max. 10 barg (optionally max. 16 barg) with standard design observe, see rating plate.

Measuring range of the messzellen observe!
During overheating the messzelle and evaluation electronics are destroyed.

Permissible storage and transportation temperature as well as the permissible operating temperature observe (e.g. Measuring instrument protect against direct solar radiation).

If opening the measurement cell, inappropriate treatment or use of force, the warranty claims expire.

Functional tests, adjustment and maintenance work have only done by BEKO Instruments authorized personnel.

Calibration work is in principle only feasible by the manufacturer BEKO Instruments GmbH in Neuss.

Importantly: Before the installation to divert briefly let compressed air remove around condensate and particle. It hinds the unnecessary contamination of the probe and measuring cell.

Being compressed air can indicate an increase of the remainder oil rate values.

If the system is made pressure-free, the measuring signal rises toward measuring range final value. This leads for safety reasons to the excess of the employed limit values.

3.2. Electrical installation hints

Although the device exhibits a high protection in relation to electromagnetic disturbances, the installation and the laying of cables must be in the prescribed form accomplished, so that in all cases an electromagnetic fail-safe characteristic Is ensured.

1. Observe the following installation hints. They guarantee in relation to a high protection electromagnetic disturbances.

2. Use for the signal and control lines shielded cable. The connecting lead of the shield should be as short as possible. The connection point of the shield hangs of available the in each case electrical operating conditions off:

   A. Connect the shield only with the switchboard, even if this is grounded.

   B. Connect both ends of the shield with earth, if the frequency of the electrical interferences is above 1 MHz.

   C. Connect the shield only on a side with mass and isolate you the other side.

3. Never shift signal and control lines together with mains, engine inlets, inlets of cylinders reel, rectifiers, etc. The managements should shifted in conductive, grounded troughings become. This particularly applies with long management routes, or if the managements strong radiowellen through broadcasting station are suspended.

4. Install signal lines within cubicles as far as possible from contactors, pilot relay, transformers and other interference sources.

5. If there are very strong electromagnetic disturbances an external filtering should be made. This can by the installation by ferritperlen to be achieved. The beads should used for signal and control lines, and to be installed as close as possible at the device. In order to achieve a high fail-safe characteristic, put several loops by a bead.

6. Long managements are more susceptible to electromagnetic disturbances than short. Hold therefore the managements as briefly as possible.

7. Avoid a switching from inductive loads, and/or you provide for a sufficient screening. Beads for a cable. In order to suppress malfunctions on the voltage supply management, power line filters should installed become. Install These close of the entrance of the voltage supply management into the cubicle.

3.2..1. Safety precautions

CURRENT BLOW

The device can be supplied with the following voltage:

110 to 230 V AC, 50 / 60 Hz

In both cases it is to be always noted that supply voltage can lead to fatal injuries. Therefore suitable safety precautions are to be met, with all maintenance or maintenance work in particular with opened evaluation and display unit.

The device is to be grounded absolutely appropiately!

PROCESS DEPENDENT DANGERS!

That the sensors are installed in a line system, the health-endangering occurs Hydrocarbons contains. These or other coal hydrogen types can occur:

- Hydrocarbons and other particles, which are inflammable or explosive.

- Hydrocarbons and other particles, which are dangerous malicious or in another way for the health.

- Particles, which are contained in high temperature gas.

As long as it can be not completely guaranteed that the trial conditions are absolutely safe, to have suitable precautionary measures like the use of a breathing mask or a rinsing / a detoxicating of the Line system to be met, before any engagement into the line system to maintenance or installation purposes is affected. In principle you must insure yourselves that the pipeline is pressure-free, before possibly which mounting or dismantling work to be accomplished. If it itself in or other case, ask you are not safe please your safety representatives locally and/or you read in the local Safety regulations after.

NOTES, PRECAUTIONARY MEASURES AND WARNING NOTES

The available operating instructions contains three kinds of notes, those the reader on important information make careful:

NOTE:
Important information, which does not refer however to the security of the system.

CAUTION:
Important information, their can neglect to faults to the device, to the software or at the trial data to conduct.

ATTENTION:
Important information, whose can lead neglect to injuries, in individual cases also to faults to the device.

3.3. General system and function description

The OilControl belonged to the family of intelligent compressed air monitors and become special for the monitoring of remainder oil rates (ISO spec.) in compressed air systems develops. Owing to its microprocessor price increase and its compact building method the oil control can supervise airborne remainder oil rate in the on-line procedure and provent thus an endangerment for production processes before oil contamination.
Generally will a pre and a main alarm preset, in order to alarm, if the current values lie outside of the adjusted tolerance limits. The OilControl can be adjusted in such a way that it ignores short term fluctuations of the values in the plant, in order to release no wrong alarm and to interrupt the process not unnecessarily.
The legally prescribed limit values may not do thereby over walked to become.

The OilControl can be safely inserted for the supervision of maximum permissible total oil rate according to ISO-8573-1-C as well as to the protection forwards oil break-through with lubricate-Inge-sprayed compressors.

The oil control orders the actual state of its unit over a measured value indicator, at that the user to read off knows, as well as two relay ouputs tunable on the trial for external subsequent treatment.
Optionally the device can be equipped with further outputs.

The oil control consists of two main parts, the **measuring cell with ISO-KINETIC sample probe** (ISP) and the **evaluation and indication electronics**. The measuring cell can be connected over a long cable (max. 200 m) with that evaluation and indication electronics, which contain the serving and indicator functions. The ISO-KINETIC sampling probe is installed from above centrally into the riser (see example drawing in the appendix), so that the probe rises up into the supervised compressed air flow.

Function mode

The oil control works after the proven and reliable *MHMdynamic* procedure, whereby the oil/hydrocarbon molecules contained in compressed air (ISO8573.1-C specification C6 and more highly) on the sensor cause a change of the potential. Thus develops an electrical signal, which is seized and evaluated by electronics.
This measuring method give you fast and reliable results and needs on a long-term basis small maintenance.

3.4 Installation and start-up

>> Before installation and start-up absolutely read! <<

A. The air supply line must be absolutely pressure-free before the installation of the sample probe!
NOTE: Maximum permissible operating positive pressure 10 barg!!!
(optionally up to 16 barg - - > see rating plate!)

B. The sampling probe has a G 3/8" external thread connection.

C. The sample probe must be built perdicularly into the riser.

D. The sample probe only touch at the top.
Hands separate fat, which is measured otherwise by the OilControl!

E. By the internal heaters, the inserted measuring system needs a stabilisation time of approx. 10 to 15 min. Afterwards the measuring system works stanly and the indicated measured values can be used.

Procedure

1. Remove at first the smaple probe protection.

2. Sealing disk [3] down-take.

3.. Nut [1] loosen, until the male connector body can be removed [2].

4. Push the sealing disk over the G 3/8” - threads of the male connector body [2].

5. Reducing bushing (G ½" to G 3/8”) at the G 1/2”-side with teflon seal in-close and into the existing G 1/2” screw in. Subsequently, screw in and with the suitable thin spanner firmly tighten the male connector body with the enclosed gasket into the reducing bushing.

6. Subsequently, insert the sample probe point of the sampling probe carefully into the screw connection body, until, until the union nut [1] touches down on the screw connection body.
NOTE: Not by force, since otherwise the probe is damaged and/or bent!

7. Now screw the union nut [1] carefully onto the screw connection body, until this is strong.

8. Turn the probe into the desired position.

9. Union nut [1] with help of a thin spanner (SW 22) in the clockwise direction ¼ revolution tighten.
NOTE: Do not turn the secure the probe when tightening the sleeve nut to the upper box case [9].
If the probe should turn with tightening, then you locate the probe only by securing also a thin spanner (SW 24) at the bottom of the box case. There is one wrench flat.

10. Attach the box case [8], as the evaluation and indicator electronics are, to the wall in that proximity of the probe by means of the provided wall straps (4 pieces). Please absolutely note that those removal between measuring cell and electronics can be maximally so far as it sets the interwiring. In order to obtain the removal, unroll you in addition the connected black cable with the plug and holds it left beside the box case [9] for the sampling probe. There is the connection for that cable connection [6].

11. After you attached the box case [8] to the wall, put the plug of the black cable connection [6] into the bush [5] the box case with measuring cell [9]. Thus itself this compound can not more to dissolve, Bolts you on these by means of the sleeve nut.

12. Now a connection to voltage supply must be only made. Let this by a specialist (electrician) absolutely implement.

13. The OilControl possess internal heaters, which need a stabilization time from approx. 10 to 15 min. Afterwards works the OilControl stably. Make sure that you give this time to the measuring instrument, before you set those pipeline again under full flow rate.

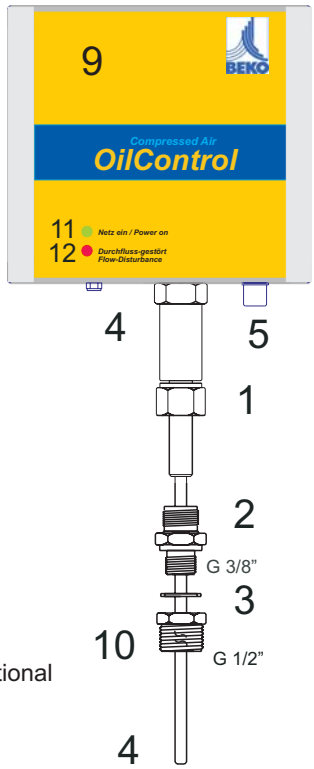
14. Please pressure rise the pipeline slowly, otherwise the equipment can take damage.

3.5 Putting out of operation and development

This is necessary and effected for maintenance or calibration purposes in reverse order.

NOTE: All devices to be separated from the current supply and make pipeline pressure-free!

3.5.1 Equipment illustration

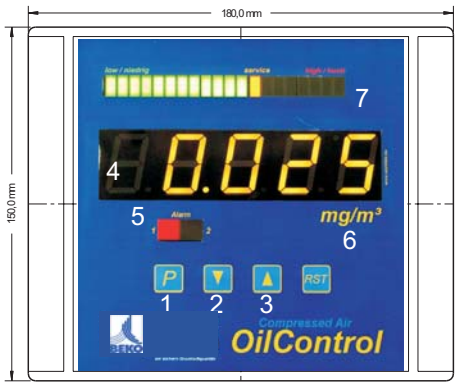


1 - Nut
2 - Male connector body with G 3/8 " (male thread)
3 - Sealing disk
4 - ISO-KINETIC sampling probe with mounted measuring cell
5 - Connection of the cable (6) on the evaluation electronics (8)
6 - Cable connection
7 - Power supply cable (110 - 230 V AC / 50-60 Hz))
8 - Evaluation electronics in the box case
9 - Measuring cell in the box case
10 - Reducing adapter G 1/2 "(Male thread) / G 3/8 " (Female thread) <-- optional
11 - Green LED - Power on
12 - Red LED - Volume flow alarm (Flow-Disturbance)

3.6. Mounting

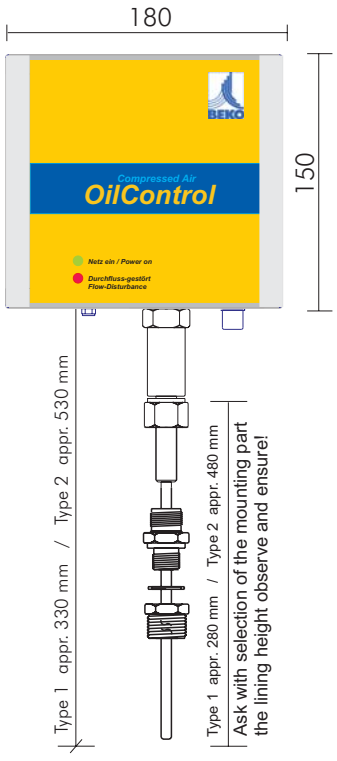
3.6.1. Dimensions

WxHxD: 180 x 150 x 90 mm



Housing depth: 90 mm

WxHxD: 180 x 150 x 90 mm



3.6.2. Assembly of field housing

I. Before mounting the unit, the side flaps covering the area where the screws are located must be removed.

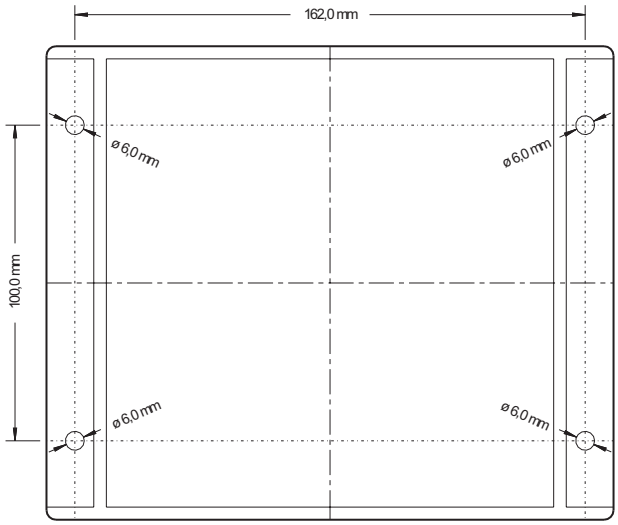
II. Whith a suitable screw driver, loosen the 4 fixed screws joining the upper to the lower section. Now the upper part can be removed from the lower part. The upper section is connected to the lower section via a catch support, facilitating subsequent cable assebly on the evaluation electronics, which is hanging downwards.

III. In the next step, in accordance with the below diagram, 4 holes should be drilled for the screws. After this, you can mount the housing on the wall with the PG screws aligned downwards.

IV. Now, the connecting cables ca be fed via the PG screws to the unit and connected to the screw clamp terminal in line with the connecting diagram.

V. After successfully mounting the lower section, lift up with the evaluation electronics and place it on the lower section. Using the 4 fixing screws, screw the upper part to the lower part. Take care that the screws are completely tightened in order to attain protection Ip65. Finally, attache the cover flaps again.

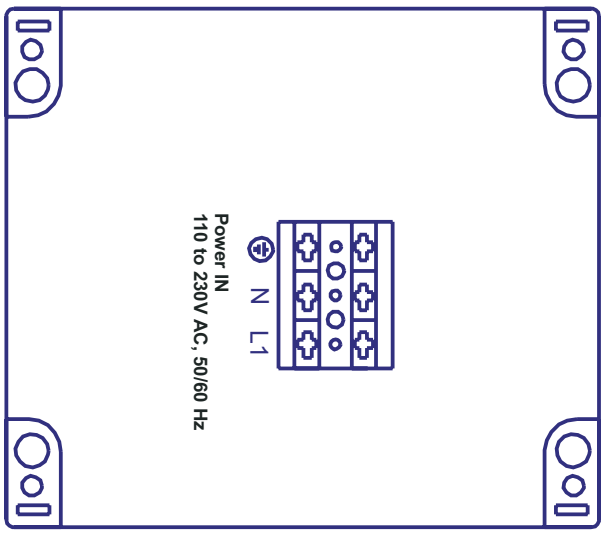
3.6.3. Mounting holes

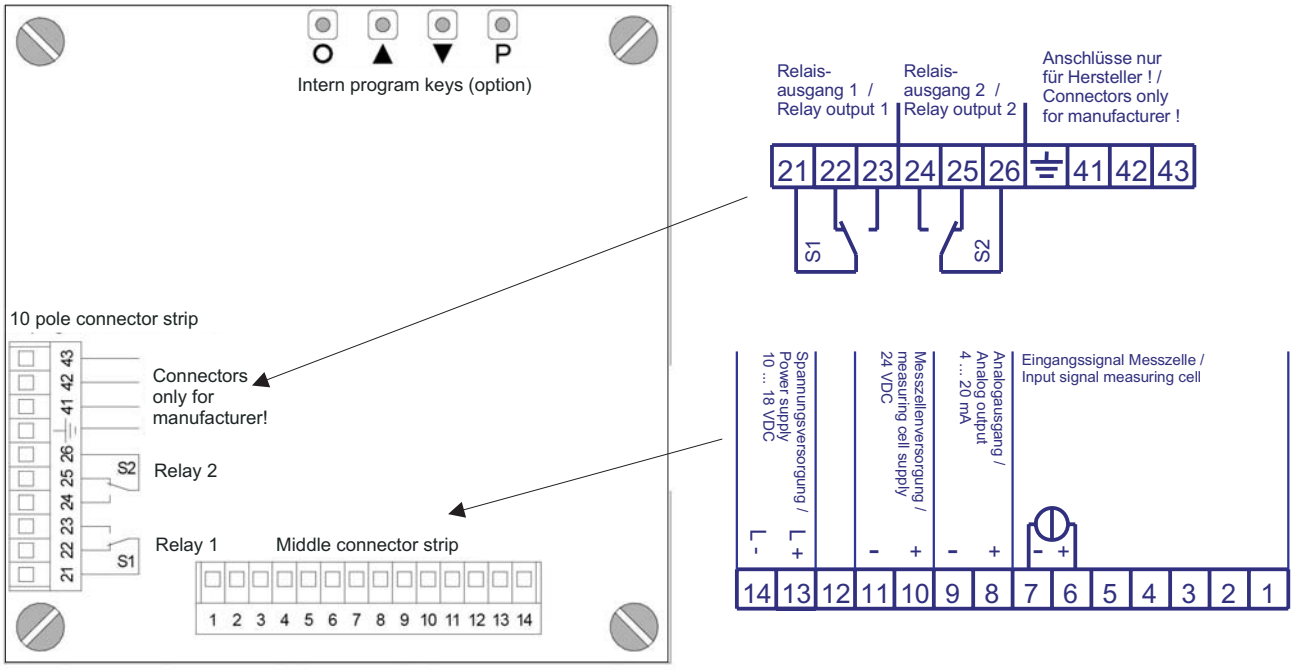


Dimension diagram of mounting holes

4. Electrical connection

4.1. Position of the connection terminals





4.2. Connector strips

At the rear strips are connected all signals needed for operation.

4.2.1. Lateral connection strip

At the 10-pole strip the alarms are measured. It concerns two relays with change-over switch contacts.

Relay 1			Relay 2		
21	22	23	24	25	26
Com	Normally open	Normally close	Normally close	Normally open	Com

Besides are still four connections for the manufacturer.
Please attach there nothing, since otherwise the equipment can be demaged.

Connectors only for manufacturer!			
Protective ground	22	23	24

4.2.2. Middle connection strips (screw-clamps)

At the middle connector strips are connected the power supply, measuring cell supply, analog output and inputs signal measuring cell.

Clamp 1 - 7 Input signal measuring cell

The measuring cell output is connected via this connector strips with the terminal numbers 1 to 7.

	1	2	3	4	5	6	7
Input signal measuring cell						+	-

Clamp 8 - 9 Analog output

At these clamps the signal of the analogue output is made available. A current signal (4... 20 mA) can be measured there.

8	9
Analog output +	Analog output -

Clamp 10 - 11 Measuring cell supply

The measuring cell supply is available at terminal 10 and 11. The the signal input is galvanically insulated from the mesuring cell supply. The voltage of the measuring cell supply amounts to 24 V DC.

10	11
Measuring cell supply +	Measuring cell supply -

Clamp 13 - 14 Power supply

The supply voltage is connected via this connector strips with the terminal numbers 13 and 14. The supply voltage is galvanic insulated from the measuring cell input.

10	11	Supply voltage
L +	L -	10 … 18 V DC

5. Operation

This unit is operated via the [P], [UP] and [DOWN] keys.

5.1. Operating and display elements

1 Program key [P]
2 Minus key [DOWN]
3 Plus key [UP]
4 Color change display
5 Alarm display
6 Dimension
7 Bargraph

5.1.1. Keys

The evaluation electronics has 3 keys, with which you can parameterise and call up various functions during operation.

1	Program key [P]	With the program key, you can call up the programming mode or perform various functions in the programming mode.
2	Minus key [DOWN]	With the decrease key, you can call up the MIN memory or alter parameters in the programming mode.
3	Plus key [UP]	With the increase key, you can call up the MAX memory or alter parameters in the programming mode.

5.1.2. Displays

4	7-segment display	The 7-segment displaydisplays measurements or, during programming the program numbers or parameters.
5	Alarm display	The alarm point display indicates the state of the relay outputs. If a relay switched, the LED lights up. Without implemented relays an optical feedback of limit values is possible by means of this announcement.

5.1.3. Dimension

6	Dimension	Physical unit of the measured variable used by the factory visibly.

5.1.4. Bar graph

7	20-segment bar graph	12 x GREEN, 4 x YELLOW, 4 x RED Indicate the condition of the compressed air preparation system.

5.2. Switching on

Before switching on you have to check all the electrical connections to make sure they are correct. On completion of the installation, the device can be switched on by applying the power supply.

5.3. Starting sequence

During the switching-on process a segment test is performed for approx. 1 second, whereby all LEDs on the front (including alarm LEDs) are triggered. After this, the type of software is indicated for approx. 1 second, the software version. After the starting procedure, the unit changes to operation/display mode.

5.4. MIN/MAX memory

The measured minimum and maximum values are saved in a volatile memory in the unit and get lost when the unit is switched off.
You can call up the content of the memory by pushing (less than 1 second) the [UP] or [DOWN] key. The relevant value is indicated for approx. 7 seconds. By briefly pressing the same key again, you will return immediately to the display mode.

[UP] => Display of the MAX value
[DOWN] => Display of the MIN value

You can erase the value shown in the display by simultaneously operating the [UP] & [DOWN] keys. The erasur is acknowledged by horizontal bars.

The content of the memory is lost when the unit is switched off.

5.5. Overflow and Underflow

An overflow of the display is indicated by horizontal bars at the top of 7-segment display.

An underflow of display is indicated by horizonal bars at the bottom of the 7-segment display.

5.6. Allocation of the seized values on the alarm (relay) outputs

Because it is not always desired that the outputs follow the indicator mode, so you can assign the outputs to the possible sources. In addition the adjustable range of value of the appropriate program number is extended as follows

Mode	Source / heading for size:
0	None / deactivates
1	Momentary value
2	MIN value
3	MAX value
4	HOLD value

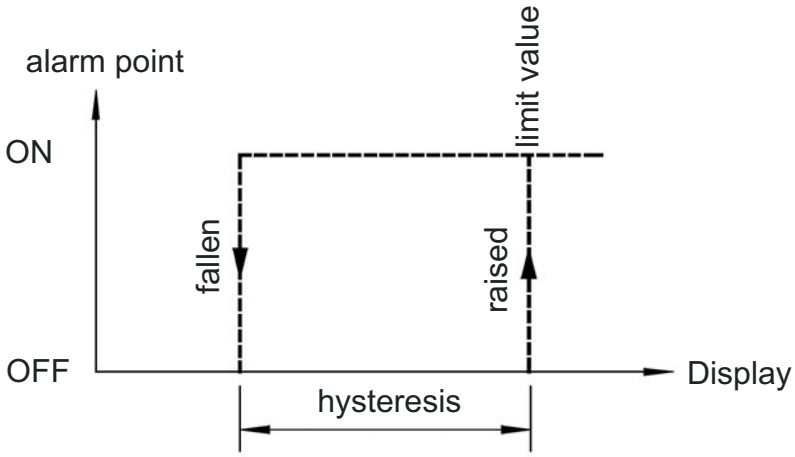
5.7. Switching points and alarms

With the aid of the LEDs below the 7-segmnent display, you can view the switching state of the relay (and/or alarm) An active relay is indicated by the relevant LED lighting up.
Alarm relay 1 drops after falling below the limit value with consideration of hysteresis independently again.
Alarm relay 2 is locked and can only be unlocked at the equipment. It is necessary that a coworker suburb goes and itself inquired about the cause, because the alarm can be only unlocked, if the limit value with consideration of hysteresis is fallen below.

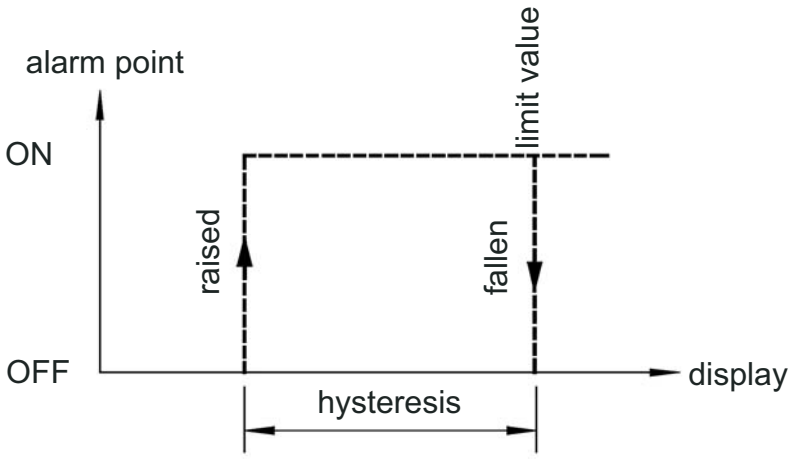
The relays have the following properties with regard to their switching properties:

Alarm output	Deactivated, activated
Limit value	Limit valu for switchover
Hysteresis	Width of the window between the limit values
Operating principle	active above alarm point / active below alarm point
Switch-on delay	Time between reaching the limit value and the resultant switching on of the relay
Switch-off delay	Time between reaching the limit value and the resultant switching off of the relay

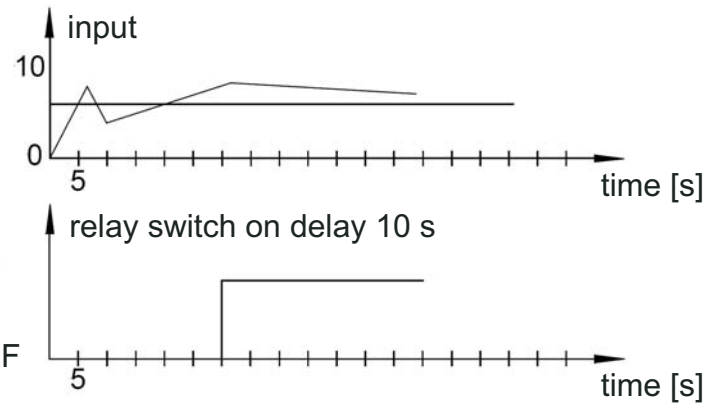
Active above alarm point
The alarm point is off below the limit value and switched on on reaching the limit value.



Active below alarm point
The alarm point is on below the limit value and switched off on reaching the limit value.



Switch-on delay
The relay is on e.g. 10 seconds after reaching the limit value; briefly exceeding the limit value does not lead to the relay being switched on. The switch-off delay function in a similar manner, in order words it keeps the alarm output switched on until the parameterised time has elapsed.



5.7.1. Optical response, flashing display

The switching on of one or more alarm point outputs can also be set to trogger a flashing of the display to enhance the optical response.

Example:
The limit value for the indicator flashing is adjusted to alarm 2.
If the alarm 1 is exceeded and alarm 2 not, then alarm LED 1 shines permanently.
If alarm 2 crosses the limit value, then the 7-segment display begins to flash, alarm 1 shines permanently and alarmLED 2 flashes.
A strengthened optical feedback is reached by flashing and the operators sees on a view, that by this equipment an important limit value is exceeded.
Only if the alarm value 2 is again fallen below (consider hysteresis), leaves themselves the indicator flashing of the alarm 2 through pressures of the RST key to acknowledge. The announcement changes then into the color according to the up-to-date measured value (YELLOW or GREEN).

5.8. Color change bar graph

The color change of the bar graph is programmed by the factory according to the employment. Switching from GREEN to YELLOW takes place with the employment behind activated charcoal adsorbents e.g. With 0,019 mg/m³ and from YELLOW to RED e.g. with 0,300 mg/m³.

5.9. Color change display

The color change of the announcement becomes by the factory preset. Generally the color change takes place according to the announcement the color change of the bar graph.
The customer can adapt the color change of the announcement accordingly with alarm its local conditions.

Example:
The color change of the bar graph from GREEN to YELLOW takes place with 0,019 mg/m³, but the color change of the announcement from GREEN to YELLOW in your application is already to take place by 0,010 mg/m³. You can change this under the program numbers PN60 to PN67. Exactly the same you can proceed with the second alarm.

GREEN

YELLOW

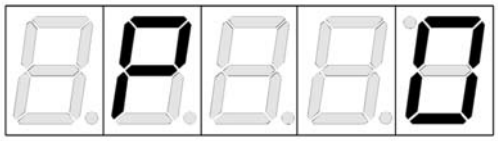
RED

5.10. Analog output

The analogue output serves the passing on of a measured value. The analogue output is programmed according to the measuring (funtional) range of the measuring system and can not be changed by the customer. At the zero scale is the value adjusted, at which the analogue output spends the minimum value and at the final value the value, at which the output spends its maximum value.

6. Programming

The display shows the program numbers (PN) right-aligned, as a 3-digit number with a **P** at the front.



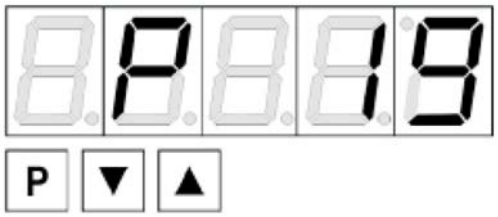
Display of e.g. program number 0

6.1. Programming procedure

The entrire programming of the evasluation electronics is done by the steps described below.

Change to the programming mode

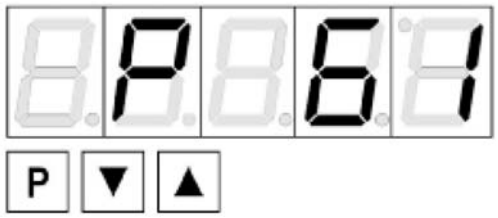
Pushing the [**P**] key changes to programming mode. The unit goes to the lowest available program number. When the programming lock is activated, the key must be pressed for at least 1 seconds.



Example:
Change to programming mode by pushing key [**P**]. The first released program number [**PN**] appears, in this case Pn19.

Change to other program numbers

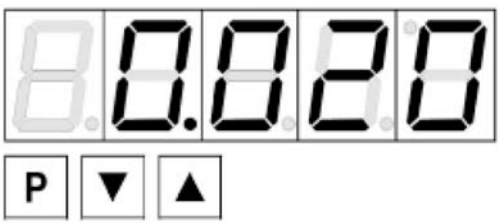
To change between individual program numbers, hold the [**P**] key down and press the [**UP**] key for changing to a higher program number or the [**DOWN**] key for changing to a lower number. By keeping the keys pushed, e.g. [**P**] & [**UP**], the display will begin, after approx. 1 second, to automatically run through the program numbers.



Example:
A 0.020 is parameterised under PN61.
Hold the [**P**] key down and press the [**UP**] key some times. PN61 appears in the display. Under this parameter, the limit value of alarm 1 can be changed.

Change to the parameter

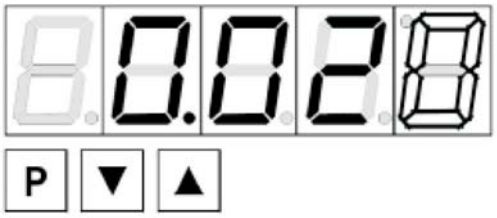
Once the program number appears in the display, you can press the [**DOWN**] or [**UP**] key to get to the parameter set for this program number. The currently stored parameters are displayed.



Example:
By pressing the [DOWN] ir [UP] key, the current stored value for Pn61 appears in the display.
In thsi case, it is 0.020.

Changing a parameter

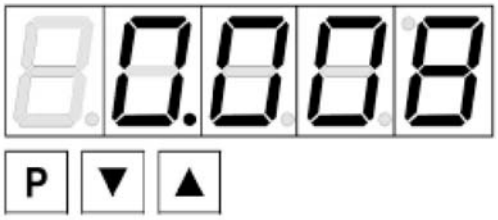
After changing to the parameter, the lowest digit of the respective parameter flashes on the display. The value can be changed with the [**UP**] or [**DOWN**] key. To move to the next digit, the [**P**] key must be briefly pressed. Once the highest digit has been set and confirmed with [**P**], the lowest digit will begin to flash again.



Example:
The 0 is flashing; this is the lowest value digit and, by flashing, it is asking for a figure to be entered. In our example, the value is to be changed from 0.020 to 0.008. You can change the value by changing the figure from 0 to 8 using the [UP] or [DOWN] key. To move to the next digit, the [P] key must be briefly pressed. The 2 begins flashing. Change the value from 2 to 0 using the [UP] or [DOWN] key. The 0 and the 0 need no change.

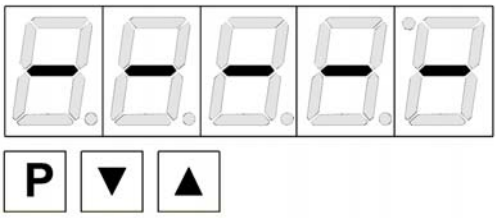
Saving parameters

All parameters must be acknowledged by the user by pressing the [P] key for one second. The changed parameters are then taken over as the current operating parameters and saved in the EEPROM.
This is confirmed by horizontal bars lighting up in the display.



Example:
Save the parameters by pressing [**P**] for one second.

All the newly entered data are confirmed by the unit.
If no confirmation is received, the relevant parameters have not been saved.



Example:
You receive confirmation from the unit that the changes have been saved through the appearance of horizontal bars in the middle segments.

6.1.1.Change to the operating mode

If no key is pressed in programming mode for approx. 7 seconds, the unit automatically returns to operating mode.

6.1.2. Alarms PN60 to PN97

The behaviour of the switching points can be influenced via various program numbers. The data refer to the scaled measurement and are updated with the set measuring time. Optionally integrated relays with change-over switch contact can be switched with the alarms. A description of the various parameters is given in *Section 5.7. And 7.*

6.1.3. Serial number PN200

Under PN200 the 5-digit serial number can be called up that allows allocation to the production process and the manufacturing procedure. This parameter can only be viewed.

7. Program table

The program table lists all the program numbers (PN) with their function and range of values.

PN	Function	Range of values		
19	Brigness of the display	0...9 (0=light / 9=dark)		
	Security settings			
50	Code			
	Flashing of the LED display			
59	Display flashing (approx. 0.5 seconds) No flashing Flashing at alarm point 1 Flashing at alarm point 2 Flashing at alarm point 1 and 2	 0 = no flashing 1 = flashes with 1st 2 = flashes with 2nd 5 = flashes with 1st and 2nd		
	Alarm point 1			
60	Alarm point 1	0 = deactivated 1 = Momentary value 2 = MIN value 3 = MAX value 4 = HOLD value		
61	Limit value 1	-9999...99999		
62	Hysteresis	1...99999		
63	Operating mode	0 = active below 1 = active above		
64	Switch delay in seconds	0,0...10,0 Sek.		
65	Delay type	0 = none 1 = switch-on delay 2 = switch-off delay 3 = switch-on/-off delay		
66	Color change by alarm	0 = no color change 1 = color change to GREEN 2 = color change to YELLOW 3 = color change to RED		
67	Acknowledgement of alarms	0 = no bolting device function 1 = waste bolting device with acknowledgement over the fourth key. 2 = waste bolting device with acknowledgement over the digital entrance. 3 = waste bolting device with acknowledgement over fourth key or digital entrance. 4 = no bolting device function 5 = suit bolting device with acknowledgement over the fourth key. 6 = suit bolting device with acknowledgement over those the digital entrance. 7 = departure bolting device with acknowledgement over fourth key or digital entrance.		
	Alarm point 2			
70	Alarm point 2	0 = deactivated 1 = Momentary value 2 = MIN value 3 = MAX value 4 = HOLD value		
71	Limit value 2	-9999...99999		
72	Hysteresis	1...99999		
73	Operating mode	0 = active below 1 = active above		
74	Switch delay in seconds	0,0...10,0 Sek.		

PN	Function	Range of values		
75	Delay type	0 = none 1 = switch-on delay 2 = switch-off delay 3 = switch-on/-off delay		
76	Color change by alarm	0 = no color change 1 = color change to GREEN 2 = color change to YELLOW 3 = color change to RED		
77	Acknowledgement of alarms	0 = no bolting device function 1 = waste bolting device with acknowledgement over the fourth key. 2 = waste bolting device with acknowledgement over the digital entrance. 3 = waste bolting device with acknowledgement over fourth key or digital entrance. 4 = no bolting device function 5 = suit bolting device with acknowledgement over the fourth key. 6 = suit bolting device with acknowledgement over those the digital entrance. 7 = departure bolting device with acknowledgement over fourth key or digital entrance.		
	Alarm point 3			
80 - 87	optional	Not installed!		
	Alarm point 4			
90 - 97	optional	Not installed!		
	Information			
200	Serial number	0...99999		

8. Technical data

8.1. Remainder oil content measuring device

Medium: Compressed air
Measuring medium: Remainder oil content according to specification ISO 8573
Operating temperature: -20 to +60°C
Operation pressure: max. 10 barg (optional to 16 barg - - > see rating plate)

Measuring application:
OCK 111 after the compressor, behind cyclone separator
OCF 211 after fridge dryer, behind coalescing filters
OCA 211 after fridge dryer, behind activated carbon filter / adsorption

Measuring range:
OCK 111 0.5 to 100 mg/m³ remainder oil content (aerosols)
OCF 211 0.01 to 20.00 mg/m³ remainder oil content (aerosols)
OCA 211 0.001 to 1.000 mg/m³ remainder oil content (total according to ISO 8573.1-C)
Functional range: up to 9.999 mg/m³

Measured variable: mg/m³ related to standard conditions (1 bar and 20 °C)

Connection probe: G 3/8 "male thread
The installation ISP (ISO-kinetic Sample Probe) the type 1 and 2 becomes a sleeve with G 1/2 "female thread and a centered through-hole of at least 13 mm requires.
Type 3 - ask requests!

ISP type 1: measure in DN 15 to DN 65 (DN = Diameter Nominal)
ISP type 2: measure in DN 80 to DN 150
ISP type 3: measure in DN 165 to DN 350

Insertion requirement: into the riser

Intake route: 15 x DN (min. 400 mm)
Discharge route: 3 x DN (min. 200 mm)

8.2. Indication and evaluation electronics

Housing	
Dimensions	180 x 150 x 90 mm (W x H x D)
Protection	standard IP65
Weight	approx. 1.8 kg
Fixing	4 fixing holes in the lower section of the housing
Connection	abatable screw and screw terminals,; line cross section up to 2.5 mm²
Display	
Digit height:	25 mm:
Segment color	green, yello and red
Display range	-9999 to 99999
Alarm points	2 LEDs, each alarm one LED
Overflow	horizintal bars at top
Underflow	horizontal bars at the bottom
Indication time	0.1 to 10.0 seconds
Input	
Resolution	approx. 24 bit
Measuring error	0.1% in range of Tu= 20 to 40°C, temperature drift: 50 ppm/K
Input resistance	100 ohm
Output	
Relay	Switch over contact 230 VAC / 5 A - 30 VDC / 2 A with resistive load Separation as per DIN EN 50178 Charateristics as per DIN EN 60255
Number of operations	$0.5 * 10^5$ with contact load; $5 * 10^6$ mechanically
Analog output (galvanic insulated)	4 to 20 mA (16 bit), load <= 500 ohm
Measuring cell supply (galvanic insulated)	24V DC
Power supply	
Supply voltage (galvanic insulated)	85 to 264 VAC , 50/60 Hz, +/-10%
Power consumption	max. 8 VA
Memory	Parameter memory EEPROM
Data life	>20 years
Ambient conditions	
Operating temperature	0 to 60°C
Storage temperature	-20 to +80°C
Climatic resistance	rel. Humidity <= 75% on year average, non condensing
EMV	DIN 61326
CE-sign	Conformity to 89/336/EWG
Safety standard	DIN 61010

9. Error messages and service

9.1. Error messages and additional informations

9.1.1. Indication and evaluation electronics

The following list gives the recommended procedure for dealing with faults and locating their possible cause.

I. The unit permanently indicates overflow „ ¯ ¯ ¯ ¯ “.
> The evaluation electronics get indicated an measuring error.
Device must for check / calibration back to the manufacturer. Please contact service.

II. The unit permanently indicates underflow „ _ _ _ _ “, bar graph segment 1 flashed.
> No communication between evaluation electronics and measuring cell.
Check the cable connection to the measuring cell (e.g. plug not connected.at the measuring cell or cable break...)

III. The device shows “HELP” in the 7-segment display.
> The unit has found an error in the configuration memory.
.This error can only be eliminated by the manufacturer. Please contact service.

IV. „Err1“ lights up in the 7-segment display
> This error can only be eliminated by the manufacturer. Please contact service.

9.1.2. Meaning of the bar graph on indication and evaluation electronics

GREEN	1st. to 12th. segment	low	total oil rate in order	
YELLOW	1th. to 2nd. segment	service	increased total oil rate	--> maintenance needed
YELLOW	3th. to 4th. segment	service	total oil rate critically	--> increased maintenance needed
RED	1st. to 4th. segment	high	Attention: Total oil rate too highly --> system can take damage! Preparation system outside of the performance!	

9.1.3. LED's on measuring cell with following informations:

Geen LED ON - Measuring cell will be supplied with power

Red LED ON - Measuring cell - flow-disturbed (flow too low, possibly clogs).

9.1.4. Sensors / Measurement equipment

Internal signal goes on 0 mA, the equipment indicates flashing alarm, there both points of alarm (1 + 2) to be exceeded. Possible causes:

1. Cable break
2. Measuring channel disturbed
3. Detector heating disturbed
4. Voltage supply too low

With the structure of the measuring instrument to its own execution importance was attached.
The measuring sensor technology as well as the monitoring of the device functions are developed as separated system. The loss of a measure does not have influence on the function of the other units.
Each evaluation and indicator electronics are separately implemented and had a even diagnosis program.
Errors and defects are expressed in principle over the alarm circuits. An excess of the limit value 2 (main alarm) is signaled by a flashing announcement, whereby additionally the alarm is locked. An unblocking by the service personnel is only possible for suburb by operation of the RST key.
Thus arising main alarms cannot be ignored.

5.2. Calibration

Half-yearly function-technical control by the service is recommended. For the working reliability an annual cleaning -, function and gas-technical examination must be done. If this suburb should not be possible, OilControl must be developed by the customer in the pressure-free condition and sent into the manufacturing. Please speak with our service about a regular agreement.

5.3. Maintenance and servicing

OilControl does not need to be waited with adequate use and treatment by the customer. Use only soft cloths with something soapy water and/or mild house detergent for the cleaning of the display and wall housing. In the case of a flooding/an overloading OilControl with dampness, hydrocarbons and other damaging substances, which can cause a verb luring of the measuring gas supply and their construction units, must Be accomplished a complete cleaning and functional test as well as a new calibration by the BEKO Instruments - service.

 Sharp finery and solvents avoid!

5.4. Limited warranty

Objections, which are based as can be prove on a work error, are repaired free of charge.
A condition is that you announce this lack immediately and within the guarantee period granted by us as well as keep the cleaning -, functional test and calibration intervals by the manufacturer service.

Damage, which developed by not intended use as well as due to neglect of the operating instructions or damage to the Sensors arises by all kinds of Silicons, like silicone steams, silicone oils, hair spray, oil-like substances etc. and glass screen end substances such as cyanacrylate (contained in second adhesives), is excluded from this warranty.

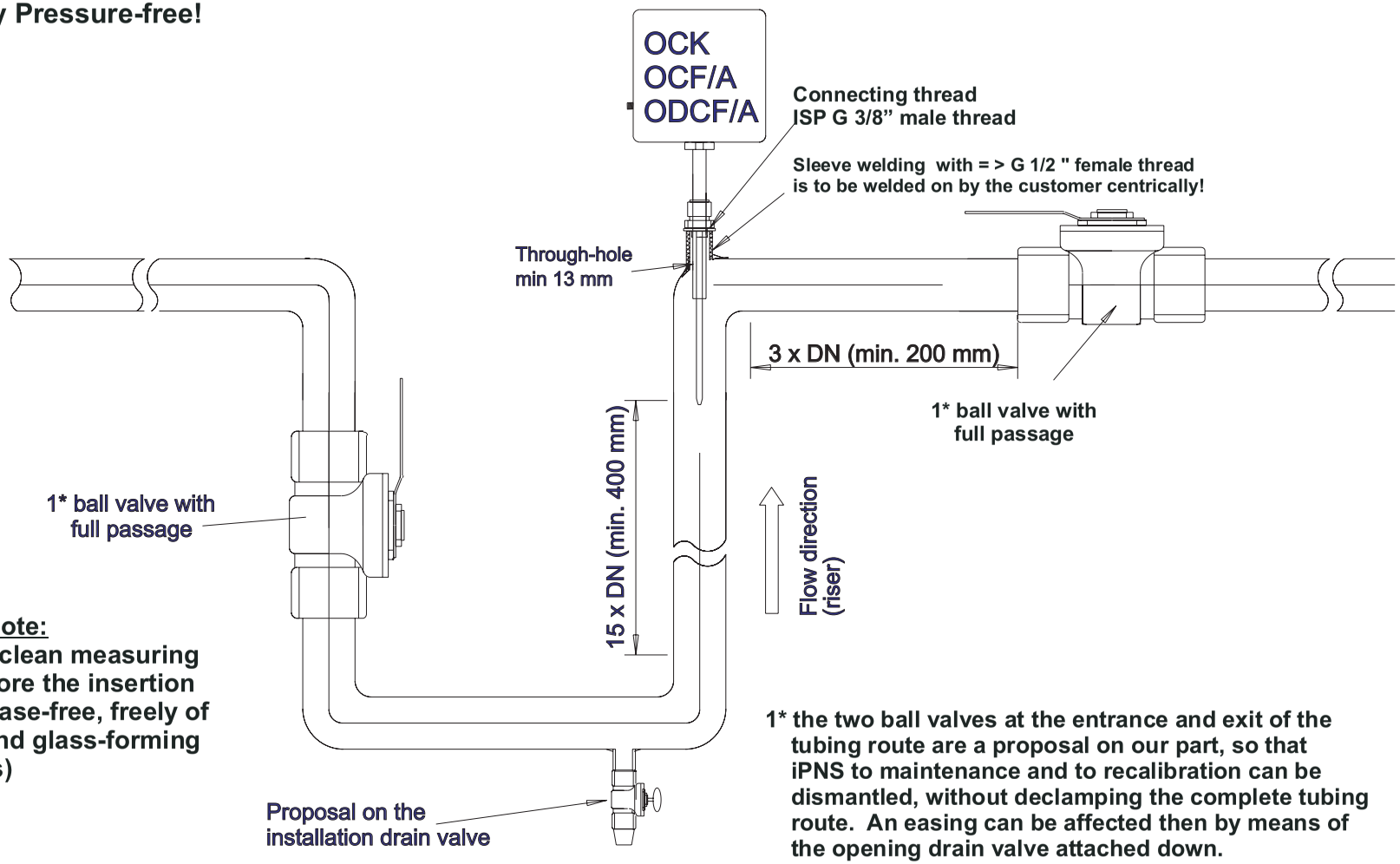
In addition the warranty is void, if OilControl one opened - so far this not expressly in the operating instructions for maintenance or connection purposes described is - or however Serial No. in and at the equipment were changed, damaged or removed.

The Company warrants the products it manufactures against defects in materials and workmanship for a period limited to one year from the date of shipment, provided the products have been stored, handled, installed, and used under proper conditions. The Company's liability under this limited warranty shall extend only to the repair or replacement of a defective product, at The Company's option. The Company disclaims all liability for any affirmation, promise or representation with respect to the products.
The customer agrees to hold BEKO Instruments ProcessControls (BIPC) harmless from, defend, and indemnify BIPC against damages, claims, and expenses arising out of subsequent sales of BIPC products or products containing components manufactured by BIPC and based upon personal injuries, deaths, property damage, lost profits, and other matters which Buyer, its employees, or sub-contractors are or may be to any extent liable, including without limitation penalties imposed by the Consumer Product Safety Act (P.L. 92-573) and liability imposed upon any person pursuant to the Magnuson-Moss Warranty Act (P.L. 93-637), as now in effect or as amended hereafter.
No warranties expressed or implied are created with respect to The Company's products except those expressly contained herein. The Customer acknowledges the disclaimers and limitations contained herein and relies on no other warranties or affirmations.

Apart from the guaranteeing if necessary repairs, were accomplished adjustments or such a thing the guaranteeings are free, which become other achievements however just like transport and packing computed.

Width-going or other requirements, in particular with developed damage those not the equipment to concern, is impossible - so far an adhesion is not compellingly legally prescribed.

ATTENTION:
Installation and removal may be affected only Pressure-free!



Important note:
Absolutely clean measuring section before the insertion (oil and grease-free, freely of Silicones and glass-forming Substances)

1* the two ball valves at the entrance and exit of the tubing route are a proposal on our part, so that iPNS to maintenance and to recalibration can be dismantled, without declamping the complete tubing route. An easing can be affected then by means of the opening drain valve attached down.

	DATE	NAME
CHECKED		
DRAWN	16.02.2006	Jänsch

Example of the insertion of the ISO-KINETIC sampling probe (ISP) type 1 + 2 for ODCF/A 520 OCK 111 and OCF/A 211

DRAWING NUMBER: 20060216-01

BEKO Instruments GmbH
Im Taubental 52
D-41468 Neuss

Support for technical problems

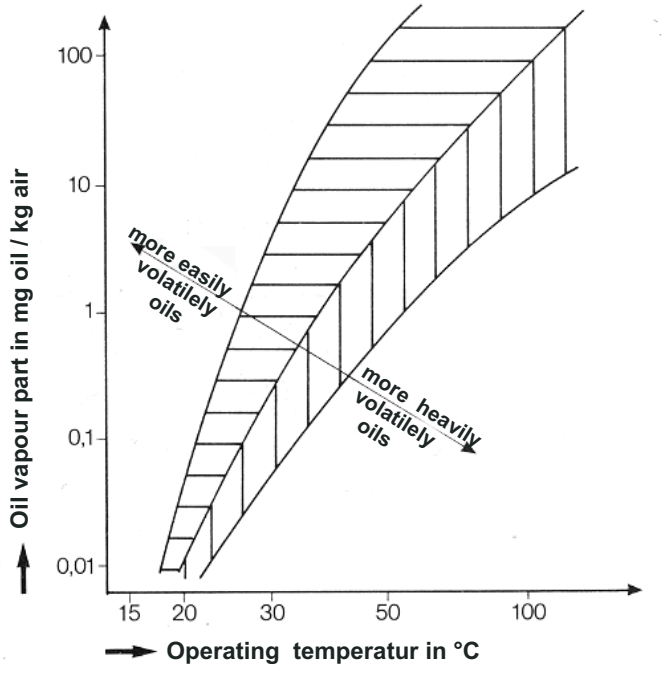
For technical problems our technicians are to you gladly at the disposal. You achieve us by telephone from Monday to Friday during office hours, outside of office hours by fax (both numbers you find in front in the manual).

For consultation please be so kind and hold the serial number for your oil control, measuring range of the measuring cell (indicated on the rating plate laterally at the measuring cell) as well as if necessary the code of the occurred disturbance ready.

Since the filter capacity with increasing temperature diminishes, the oil contamination is sometimes substantial. Also an activated charcoal filter or a activated charcoal adsorbent can only raise a limited amount of oil!

You should not get your compressed air quality into the handle, we are to you for the solution of any functions each time and neutrally with our entire experience to the side.

Relationship between operating temperature and the part of oil vapour in compressed air



Operating pressure: 10 barg
Type of oil with medium steam pressure value

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