

VISATRON

Operating
Instructions

Article No.: 10024

VN 115 / 87 EMC, VN 115 / 87

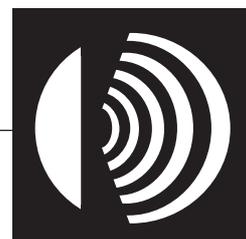
VN 116 / 87 EMC, VN 116 / 87

VN 215 / 87 EMC, VN 215 / 87



SCHALLER AUTOMATION
INDUSTRIELLE AUTOMATIONSTECHNIK KG

D-66440 Blieskastel/Saar · Industriering 14 · Germany / SW



It is recommended to read this instruction manual before commencing the repair, assembly or commissioning of the oil mist detector system!

CAUTION: The manufacturer's warranty will become void if these instructions are not followed!

Unless notified to the contrary, these operating instructions are applicable for:

VN 115 / 87 - EMC

VN 116 / 87 - EMC

VN 215 / 87 - EMC

VN 115 / 87

VN 116 / 87

VN 215 / 87

In case of an oil mist alarm, the oil mist detector (OMD) must be in condition to react within the next few seconds and shut down the engine, in order to minimise immediate or consequential damages!

The corresponding relay contacts are instantly connected to trigger the alarm safety system!



 Safety Signs in general

 Safety Signs electrical

 C'imos

Inhalt, Index

1. Product Description



2. Installation



3. Commissioning



4. Performance Test / Maintenance



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6. Repairing



7. Spare Parts



8. Service Facility Addresses



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10. General Information



11. Notes



12. Options



Product Description

Application

Oil mist detectors of the VISATRON series protect large diesel engines of all operation classes against serious damages originating from crankdrive bearing or piston component overheating.

Functional Description

The atmosphere of the crankcase compartments is continuously drawn out by means of headers and directed through an optical opacity measuring track. In this measuring track the opacity (turbidity) of the drawn crankcase atmosphere is determined by means of infrared light.

Main Structural Components (see Fig. 1.01 / 1 to 1.01 / 3)

1. Base plate with air jet pump for generating the required negative pressure (1) and main connector plug (5)
2. Measuring head with electronic module, display window (2) and inspection cover (3)
3. Connection for headers (4) or individual pipes (6)

Connection for headers designed as:

VN 115 / 87, VN 115 / 87 - EMC (see Fig. 1.01 / 1)

Connecting box for connecting two header pipes

(This type of oil mist detector may show an oil mist alarm, without identifying the individual compartment of damaged engine side) **VN 116 / 87, VN**

116 / 87 - EMC (see Fig. 1.01 / 2)

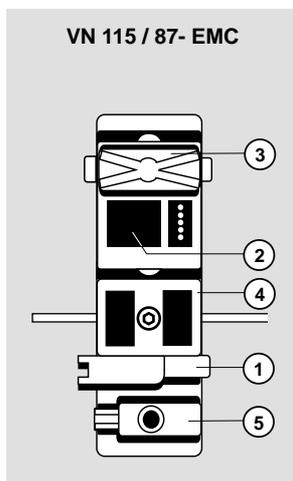
Valve box for connecting two header pipes

(This type of oil mist detector may show an oil mist alarm, identifying in the valve box window whether a damage has occurred in compartments located either to the left side or the right side of the detector) **VN 215 / 87, VN**

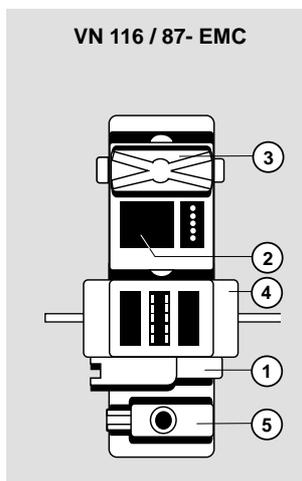
215 / 87 - EMC (see Fig. 1.01 / 3)

Valve box for connecting up to ten individual pipes

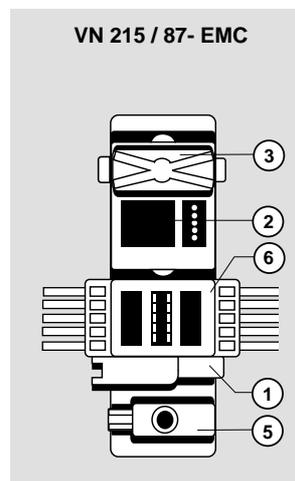
(This type of oil mist detector may show an oil mist alarm, identifying in the valve box window in which individual compartment the damage has occurred)



1. 01 / 1



1. 01 / 2



1. 01 / 3



Electrical Data

Only

VN 115 / 87

VN 116 / 87

VN 215 / 87

VN 115 / 87 - EMC

VN 116 / 87 - EMC VN

215 / 87 - EMC

In addition:

Technical Data

Operating voltage: 24 V DC +/- 25%, with reverse battery protection

Power consumption: Maximum 3 A

Electromagnetic

compatibility:

Wiring failures:

50 Hz to 10 kHz, 3 V eff. /10 kHz to 50 MHz, 1 V eff.

Electromagnetic fields:

30 kHz to 200 MHz, field strength 10 V / m,

Damped oscillation:

1 MHz, 1 kV, 400 pulses per second,

High- energy pulses:

0.5 joule, 5 kV, Ri = 500 Ω

Electromagnetic fields:

30 kHz to 1 GHz with 10 V/m, Acc. to IEC 801 - 3

(ambient class 3, 10 V / m, 30kHz - 16Hz)

Fast transients (burst):

Acc. to IEC 801 - 4, (ambient class 3)

Electrostatic discharge:

Acc. to IEC 801 - 2

Load to relay outputs: Maximum 60 V AC / DC, 2 A AC / DC, 60 W, 125 VA

Sensitivity: 1st row: switch position, 2nd and 3rd row: required opacity for triggering an alarm

Switch position:

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Alarm level: (% of opacity) of VN 115 / 87 - EMC

0,5	1,0	1,5	2,0	3,0	5,0	7,0	10,0	15,0	25,0
-----	-----	-----	-----	-----	-----	-----	------	------	------

Alarm level: (% of opacity)

of VN 116 / 87 - EMC and VN 116 / 87

0,7	1,1	1,6	2,4	3,7	5,5	8,2	12,4	18,5	27,8
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**Technical Data****Negative**

pressure measured: At least 60 mm, maximum 80 mm W.G.
in Measuring Unit

Driving air for air jet pump: 0.3 to 0.5 bar

Air consumption: Dependent on the number of
suction points, however, max. 1 normal m³ / h

Protection: IP 44

**Admissible operating
temperature range:** 0° C bis +70° C

**Admissible oil mist
temperaturerange:** Maximum +70° C

**Admissible storage and
transport temperature range:** - 25° C bis +80° C
Humidity: Maximum 90% relative humidity

Vibration: Maximum acceleration 6 g

Dimensions: (see drawings 1.04 / 1, 1.04 / 2, 1.05 / 1)

Weights: VN 115 / 87, VN 115 / 87 - EMC 7.5 kg
VN 116 / 87, VN 116 / 87 - EMC 9.4 kg
VN 215 / 87, VN 215 / 87 - EMC 9.6 kg

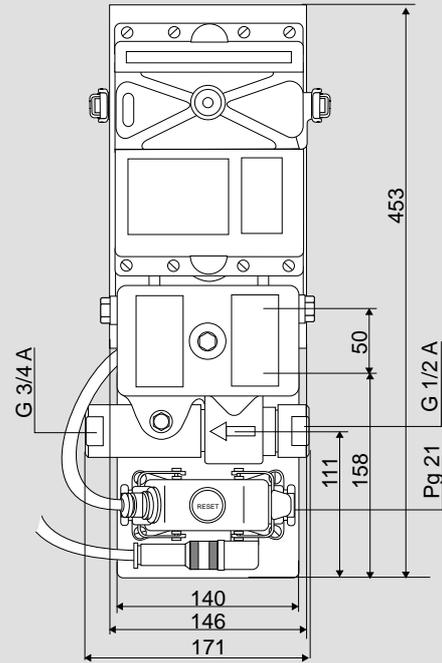
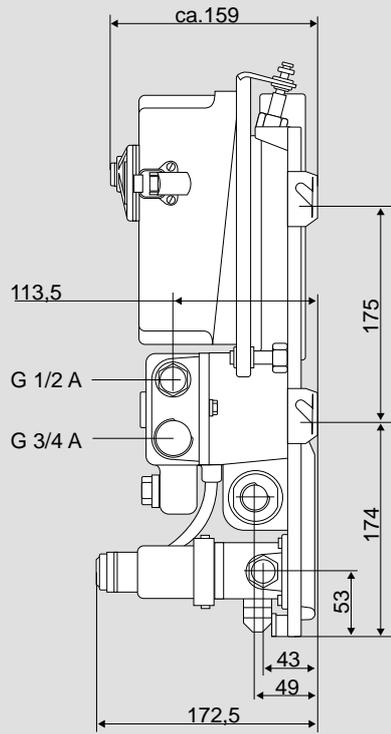
**Pipe connections for
suction system:** **VN 115 / 87, VN 115 / 87 - EMC** and
VN 116 / 87, VN 116 / 87 - EMC
Header (two pieces, ø 22 x 2 (i.d. 18 mm)
maximum length: 9 m, R 1/2" and R 3/4"
VN 215 / 87, VN 215 / 87 - EMC
Individual pipes (maximum 10 pieces),
ø14 x 2 (i.d. 10mm) maximum length: 9 m
Dimensions

Pneumatic Data**Ambient Conditions****Mechanical
Data**



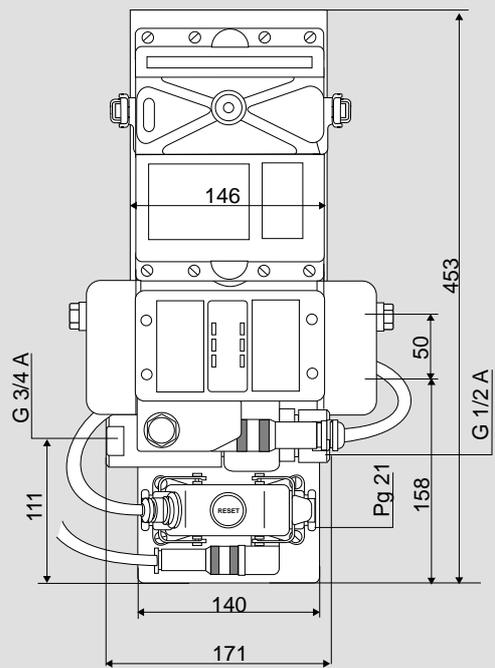
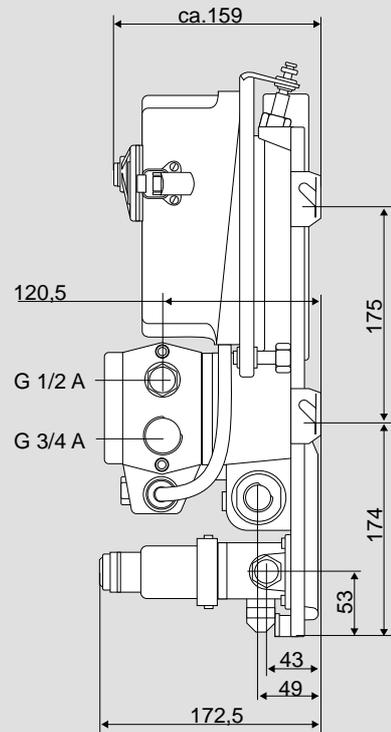
Dimensions

VN 115 / 87 - EMC
VN 115 / 87

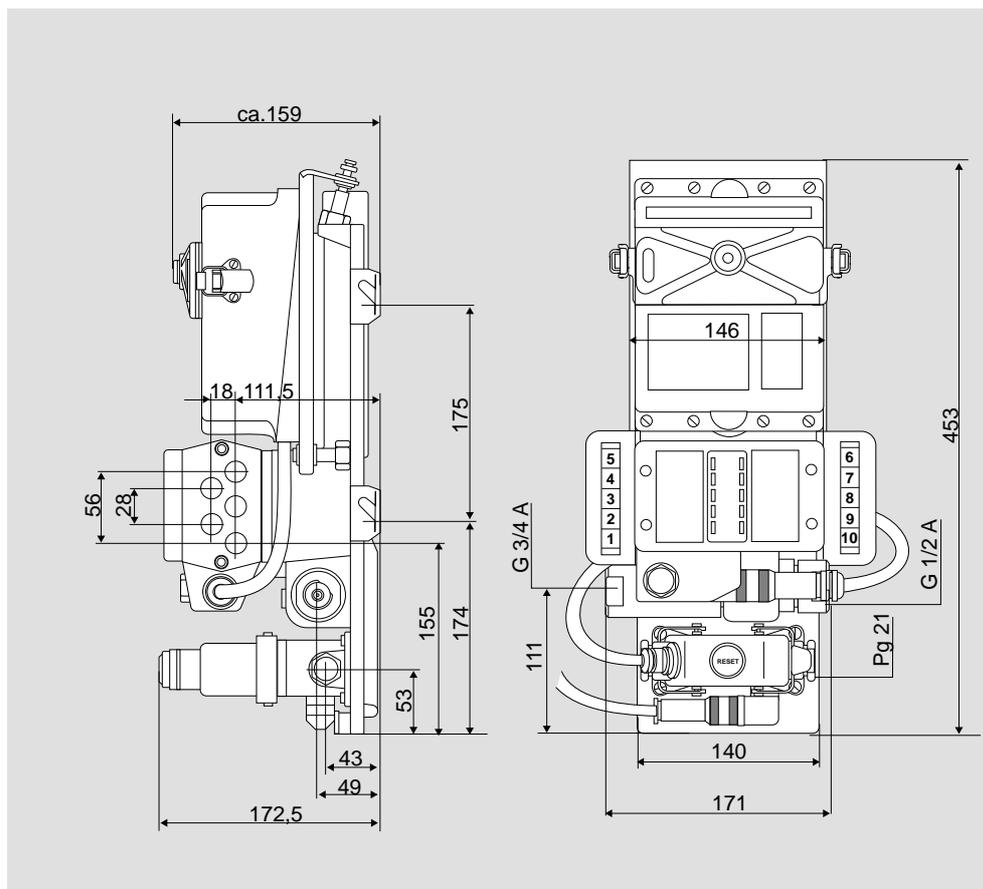


1. 04 / 1

VN 116 / 87 - EMC
VN 116 / 87

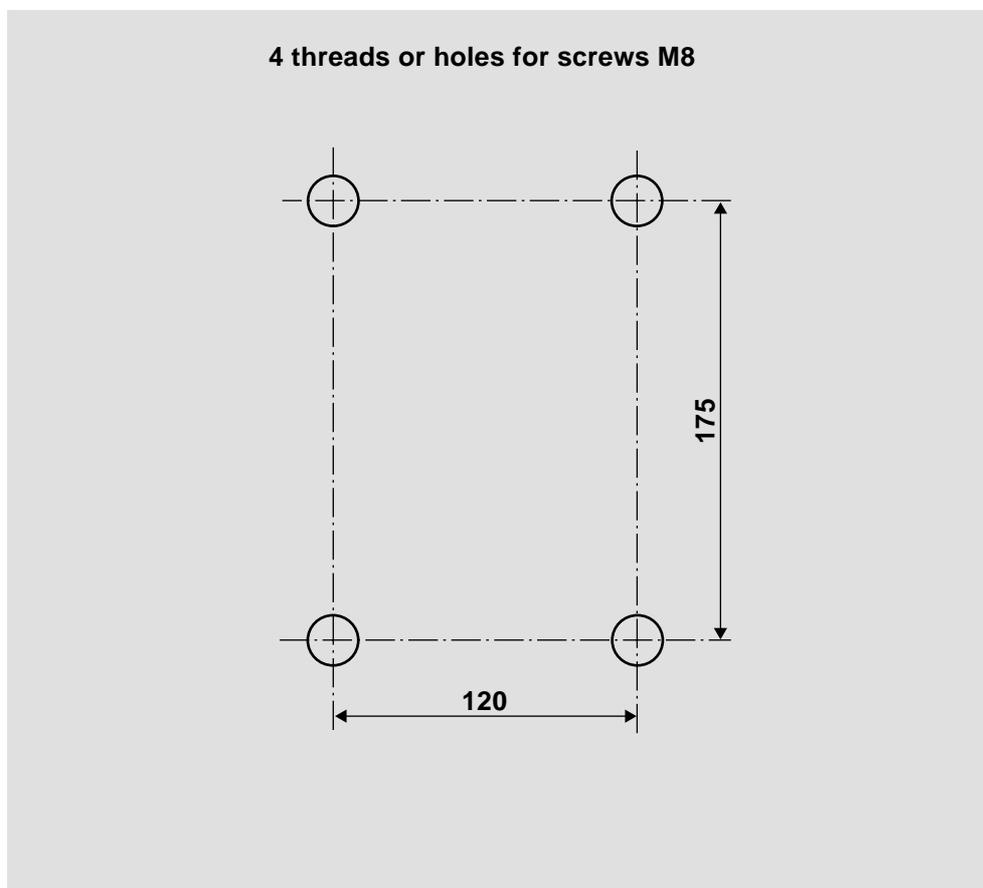


1. 04 / 2



VN 215 / 87 - EMC
VN 215 / 87

1. 05 / 1



Fastening
VN 115 / 87 - EMC
VN 116 / 87 - EMC
VN 215 / 87 - EMC
VN 115 / 87
VN 116 / 87
VN 215 / 87

1. 05 / 2



Installation

General

It is important to emphasize cleanliness during the assembly work!

Clean pipelines and fastening parts before assembly.

Lay pipes in a stress- free manner!

Installation position of the device:

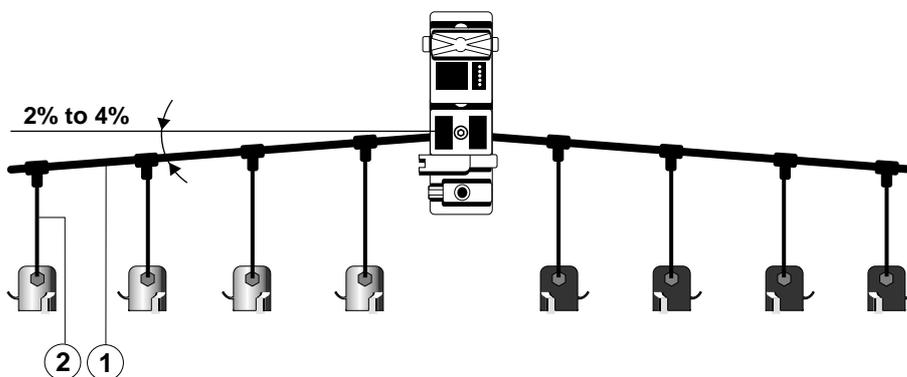
Locate the oil mist detector in a vertical position!

Make sure not to install the device within the airflow of blowers or air deflectors.

Suction pipes VN 115 / 87 - EMC and VN 116 / 87 - EMC (see Fig. 2.1 / 1)

Material: Seamless steel pipes,
header (1) 22 x 2 mm (i.d. 18mm), max. length: 9 m
suction pipes (2) 10 x 2 mm (i.d. not less than 6mm)

Pipe Laying: Ascending to the device,
ascending gradient 2% to 4%, without sagging, avoid oil collection
(see Fig. 2.01 / 1)



**Ascending
Gradient 2% to 4%!**

**Consider to avoid oil
collection when laying
the headers! Oil must
always drain back to
engine**

**VN 115 / 87- EMC
VN 116 / 87- EMC
VN 115 / 87
VN 116 / 87**



VN 115 / 87 - EMC

VN 116 / 87 - EMC und

VN 115 / 87

VN 116 / 87



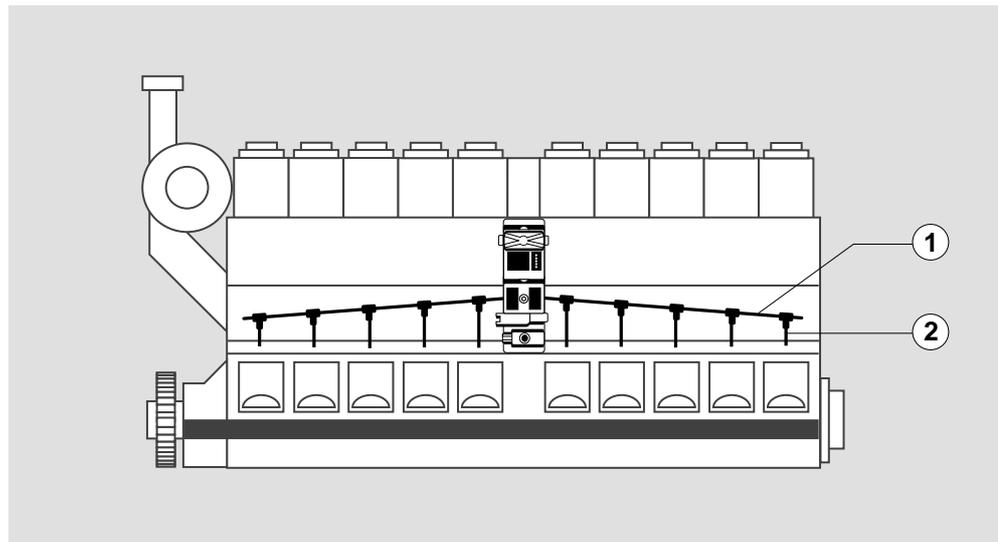
*without
pipe end- siphon*

*Lay headers in
ascending direction
to the detector!*

*with
pipe end- siphon*

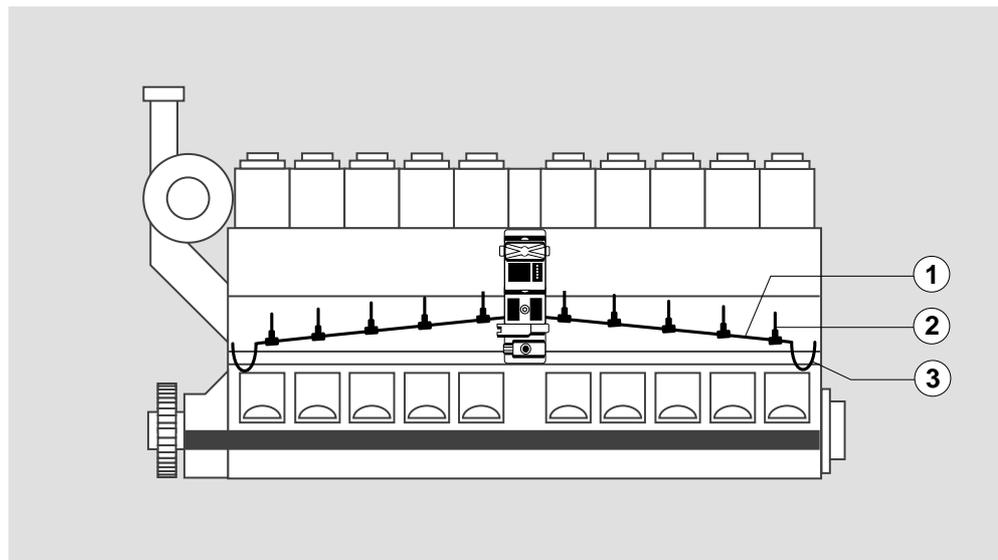
*Lay headers in
ascending direction
to the detector!*

Headers above suction points for:



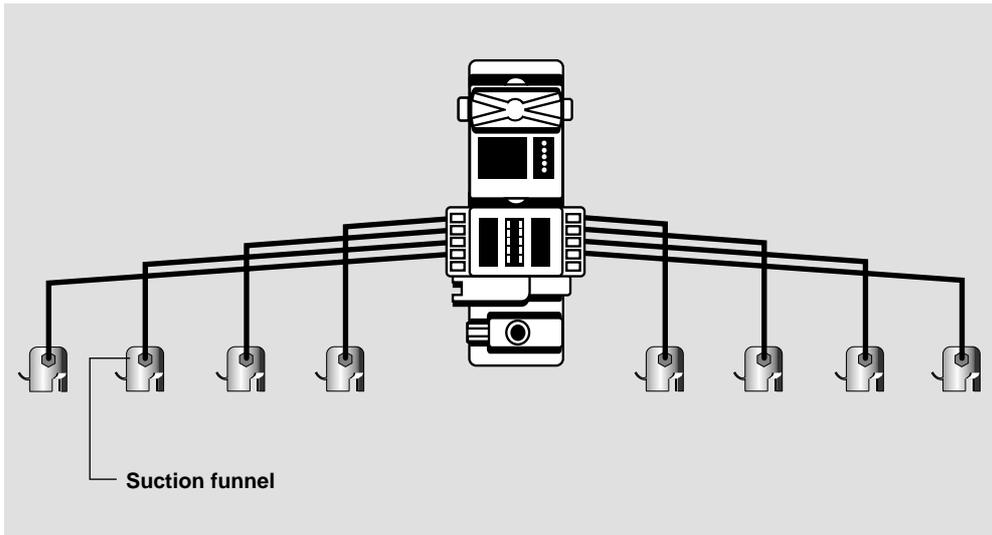
2. 02 / 1

Headers below suction points:



2. 02 / 2

- ① Header pipe $\varnothing 22 \text{ mm} \times 2 \text{ mm}$ (i.d. 18mm)
- ② Compartment suction pipes to header $\varnothing 10 \text{ mm} \times 2 \text{ mm}$
(i.d. not less than 6mm)
- ③ Pipe end- siphon 100 mm with oil return back to the engine,

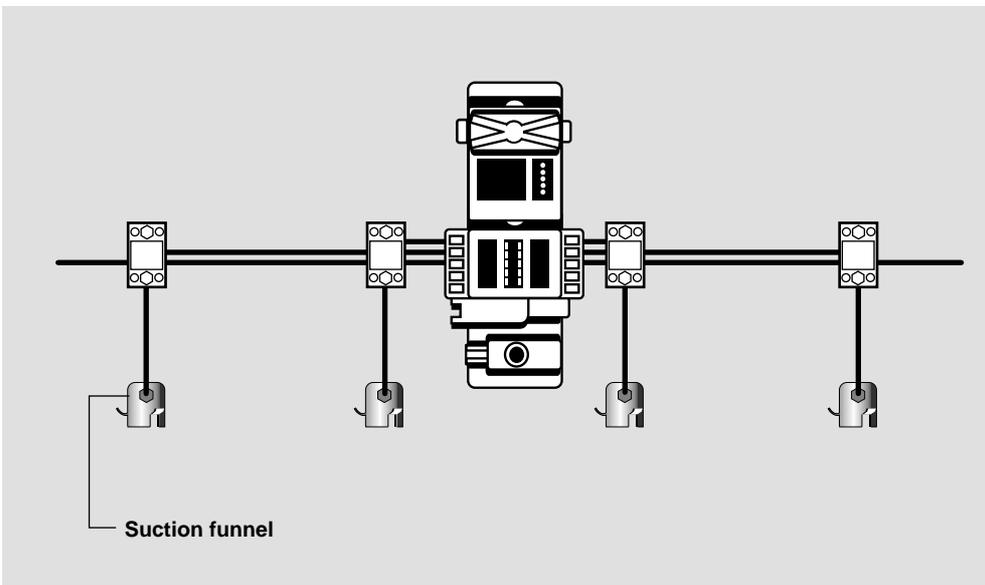


2. 03 / 1

Suction pipes VN 215 / 87 - EMC, VN 215 / 87

Material: Seamless steel pipes, 14 mm x 2 mm (i.d. 10mm)

Pipe Laying: Ascending to the device, ascending gradient 2 - 4%
(see Fig. 2. 03 / 1)



2. 03 / 2

VN 215 / 87 - EMC
VN 215 / 87



Lay suction pipes in descending manner!

Siphon blocks



Pipes can be mounted horizontally

Avoid sagging or oil collection

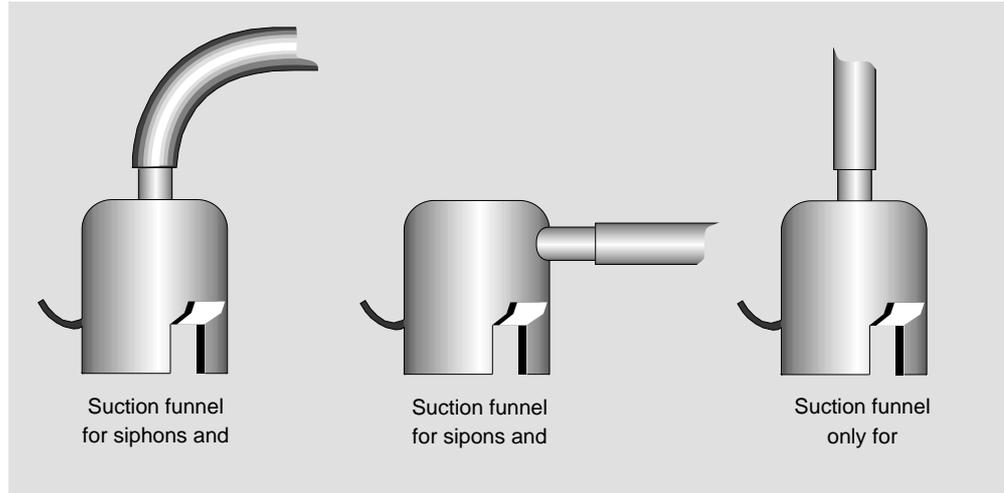
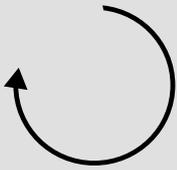


Suction funnel in the crankcase compartment

The suction funnels have to be fitted in such a way that flooding by splashing bearing oil or returning Piston cooling oil is avoided (see Fig. 2. 04 / 1).

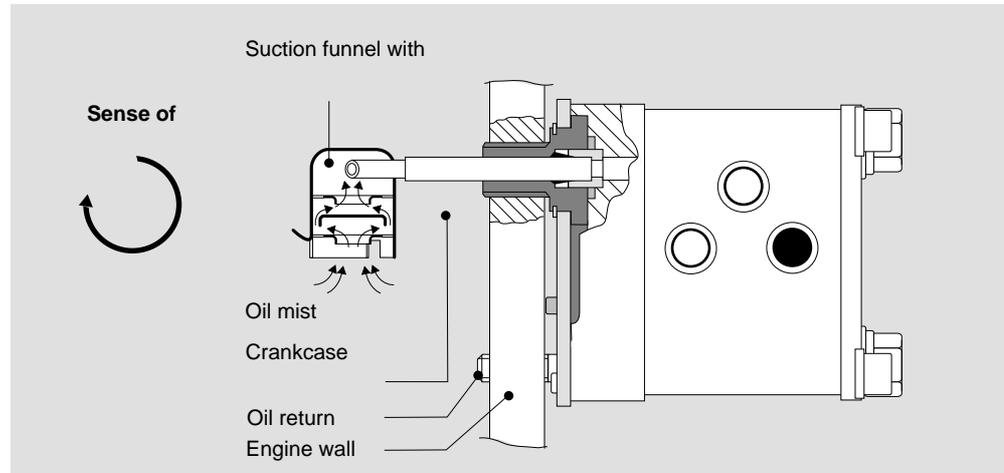
Caution: Make sure funnels are not interfering with rotating or moving parts of the engine.

Sense of engine rotation



2. 04 / 1

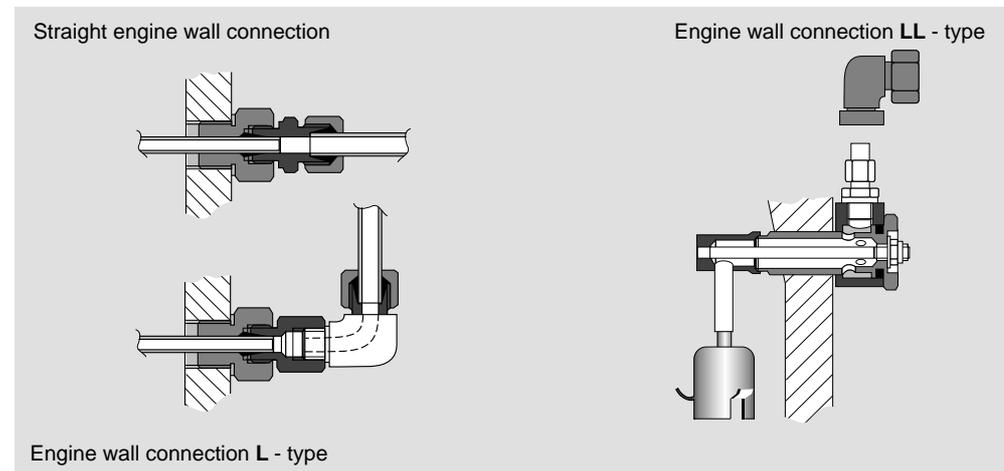
Push in suction funnel pipe firmly to the stop during assembly!



2. 04 / 2

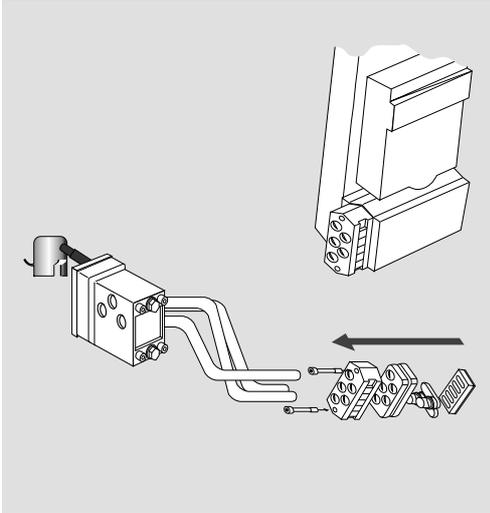


Observe mounting position!

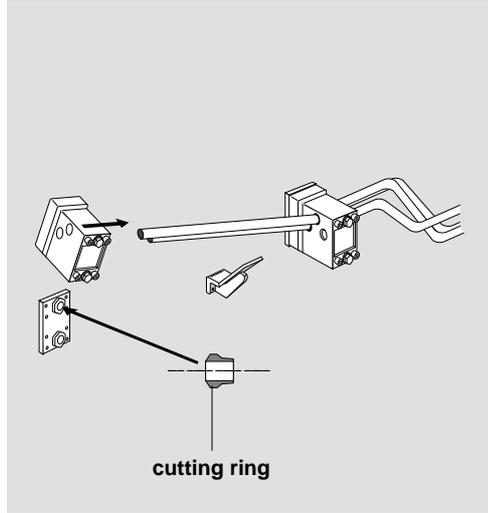


2. 04 / 3

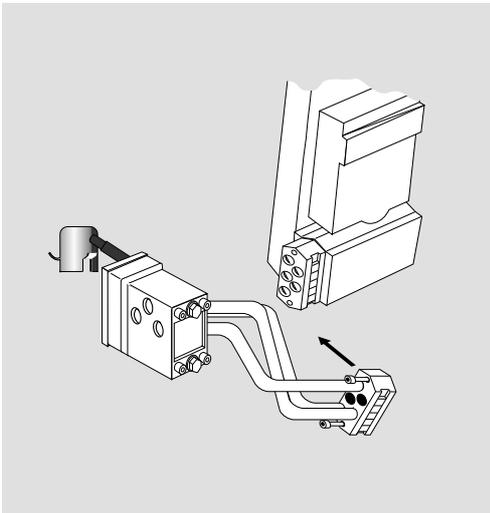
Installation of siphon blocks



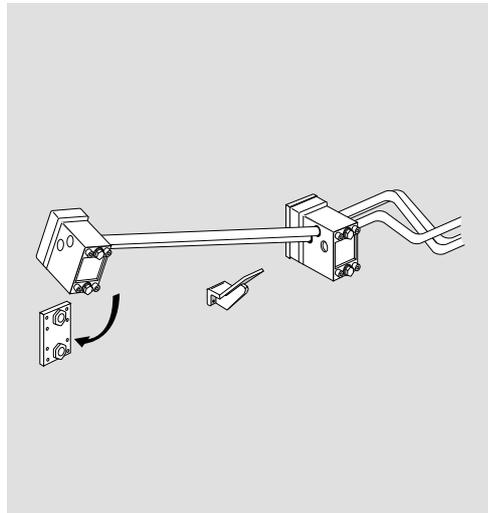
2. 05 / 1



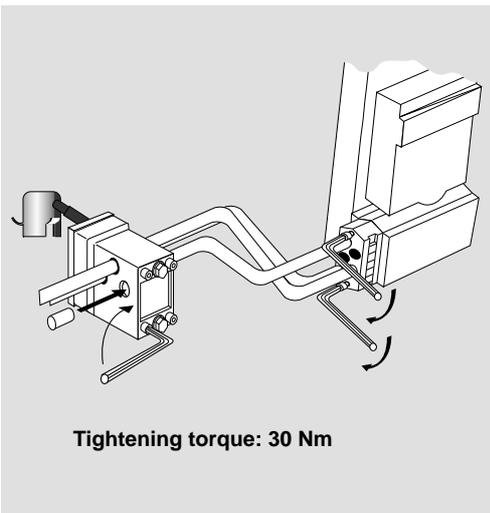
2. 05 / 4



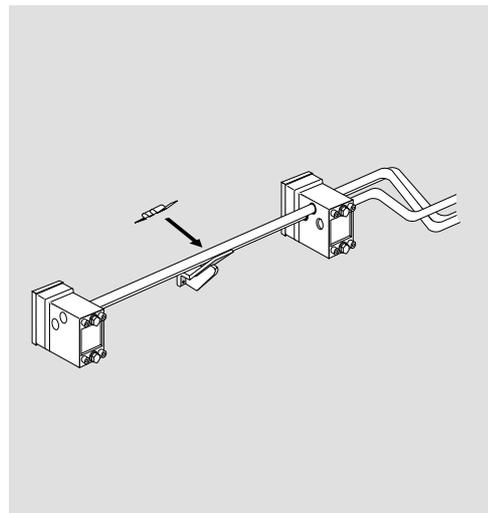
2. 05 / 2



2. 05 / 5



2. 05 / 3



2. 05 / 6



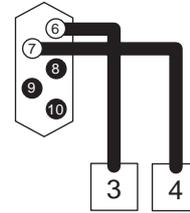
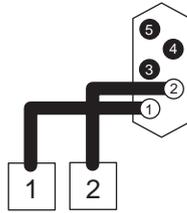
Suction piping of VN 215 / 87 - EMC

Connecting flange,
Valve box

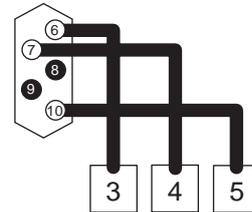
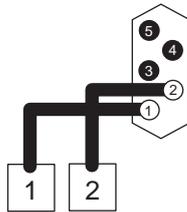
left

right

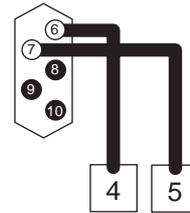
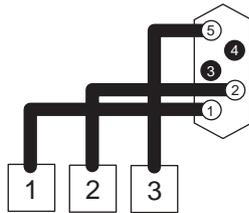
4 - cylinders



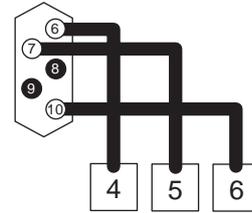
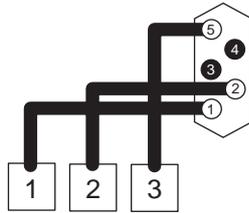
5 - cylinders



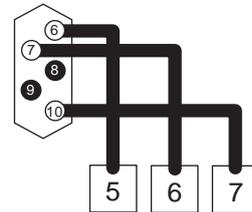
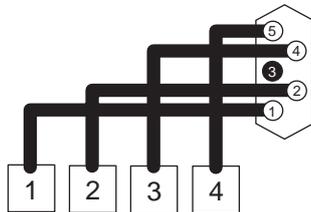
5 - cylinders



6 - cylinders



7 - cylinders



⑤ Connection numbers to valve box

● Closed by drain plug

○ Connection for suction pipe

Unused pipe connection bores in flangeare to be plugged with the supplied viton plugs.

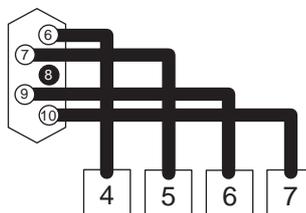
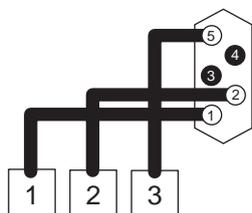


Suction piping of VN 215 / 87 - EMC

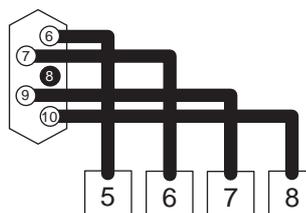
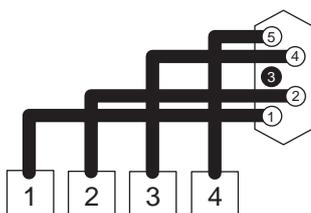
Connecting flange,
Valve box

left

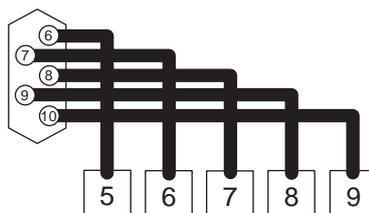
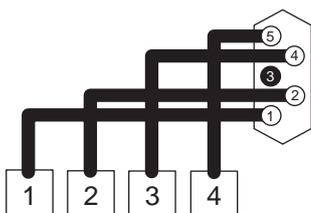
right



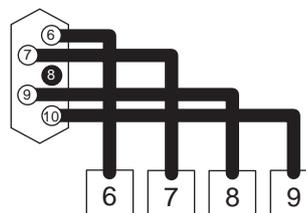
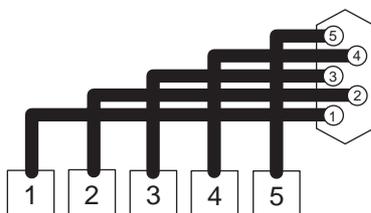
7 - cylinders



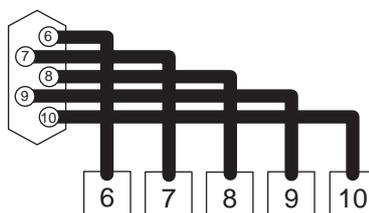
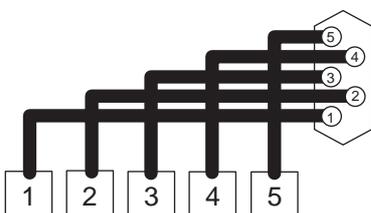
8 - cylinders



9 - cylinders



9 - cylinders



10 - cylinders

⑤ Connection numbers to valve box

● Closed by drain plug

○ Connection for suction pipe

Unused pipe connection bores in flangeare to be plugged with the supplied viton plugs.

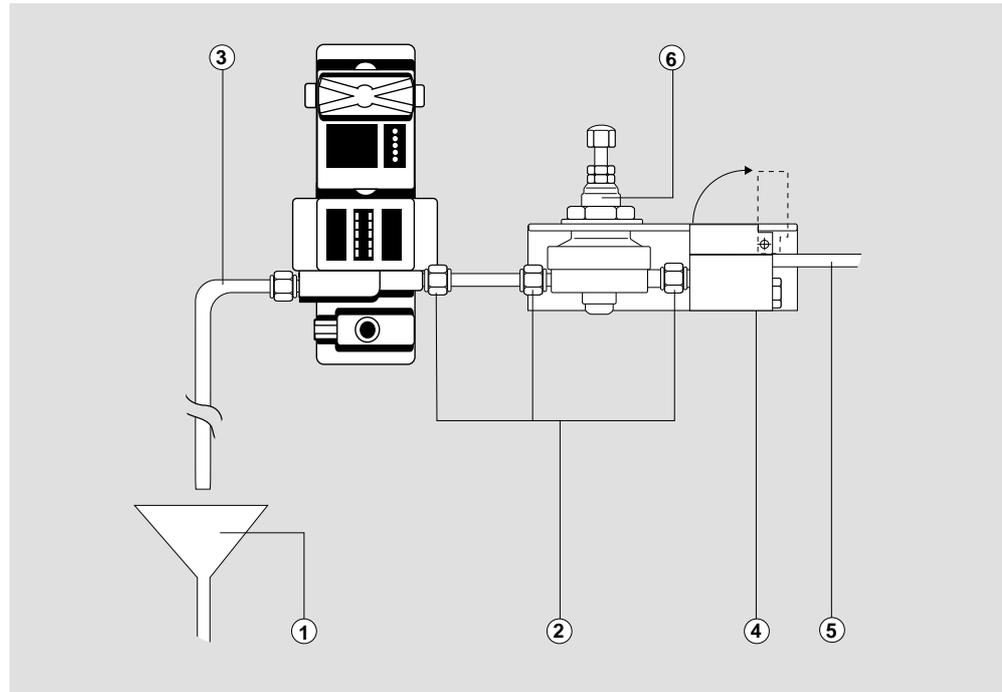


**No back pressure
and no oil collection
is allowed in
exhaustair pipe!**

**Parts are not included
in the scope of supply,
but they can be
purchased as an option!**



Air supply



2. 08 / 1

- ① Discharge funnel
- ② Draft air connection set
- ③ Exhaust air connection

Pressure regulator unit consisting of:

- ④ Throttle block
- ⑤ Pressure connection 2 - 12 bar
- ⑥ Pressure regulator

If parts are not included in the scope of supply they can be purchased as an option!

To avoid backpressure, lay exhaust pipes without any reducers (DN 22).

Avoid sagging and oil collection in pipes (See drawing 2. 08 / 1)

Electrical connection (see Fig. 2. 09 / 1)

Connection: 24 V DC

min. 18 V

max. 30 V

Power consumption: 3 A

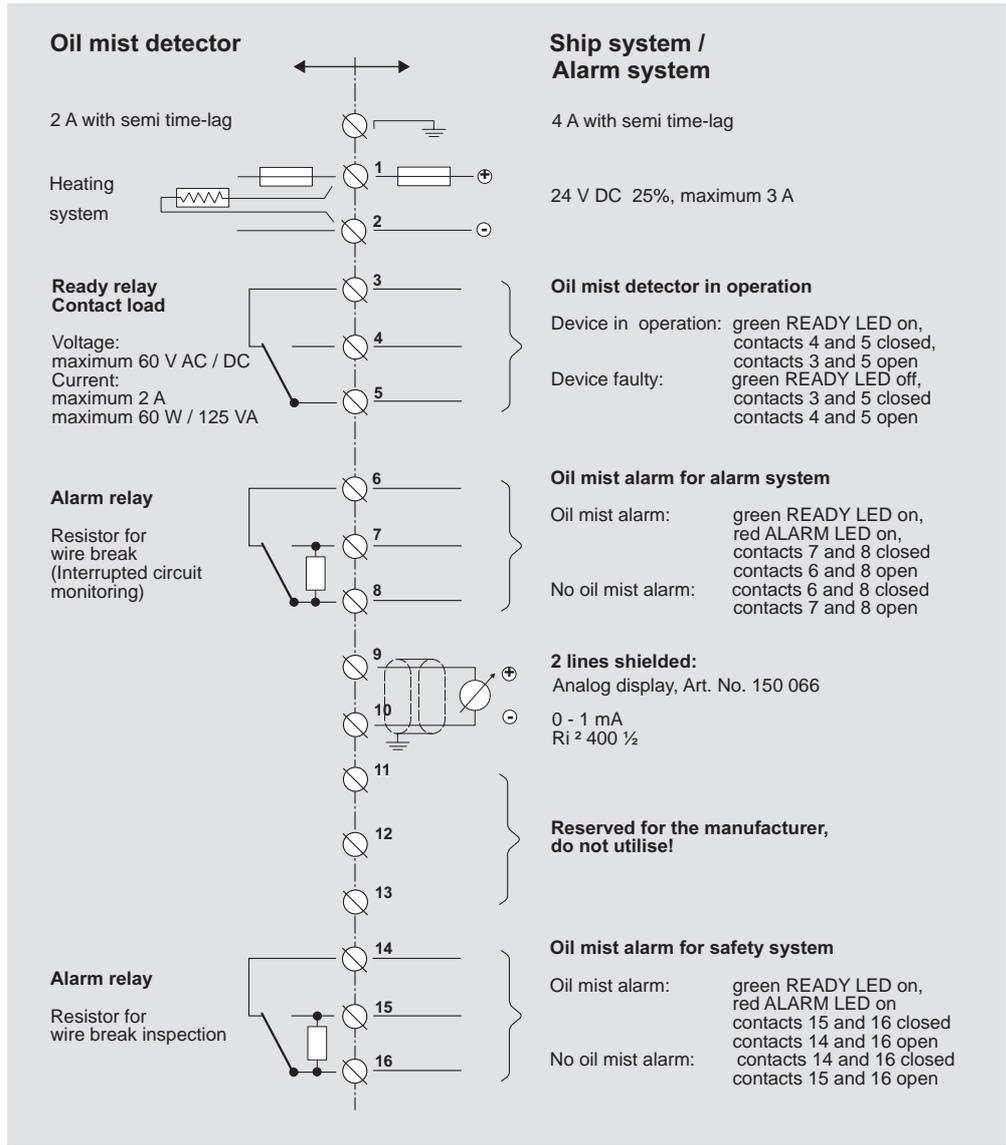
Protection: 4 A with semi time- lag

When power is supplied by batteries, charging voltages of more than 30 V might occur. These voltages are not permitted. Device will go into failure mode.

Voltage limiters must be installed! (See Fig. 2. 09 / 2)

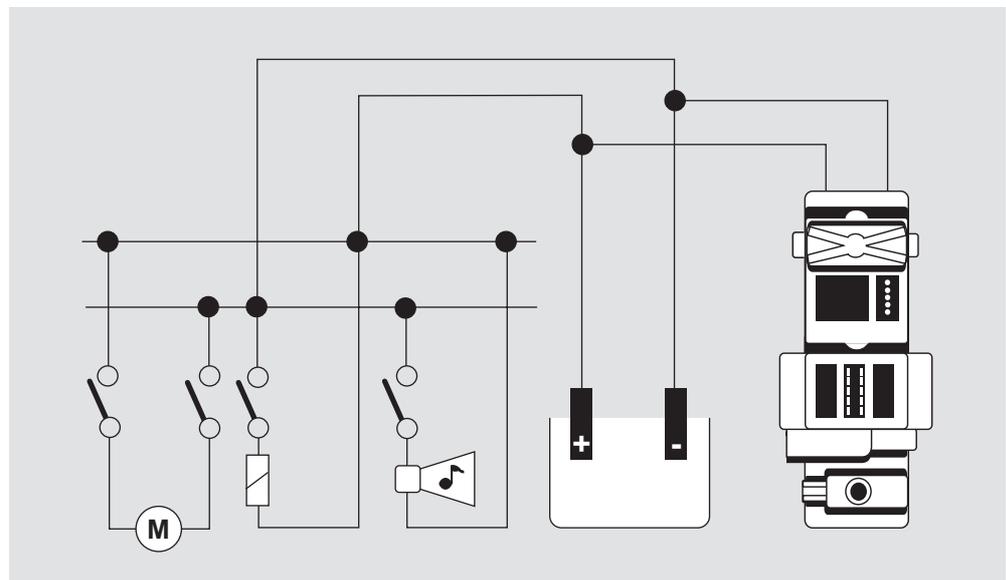


Terminal Plan



2. 09 / 1

Power supply connection for battery supply

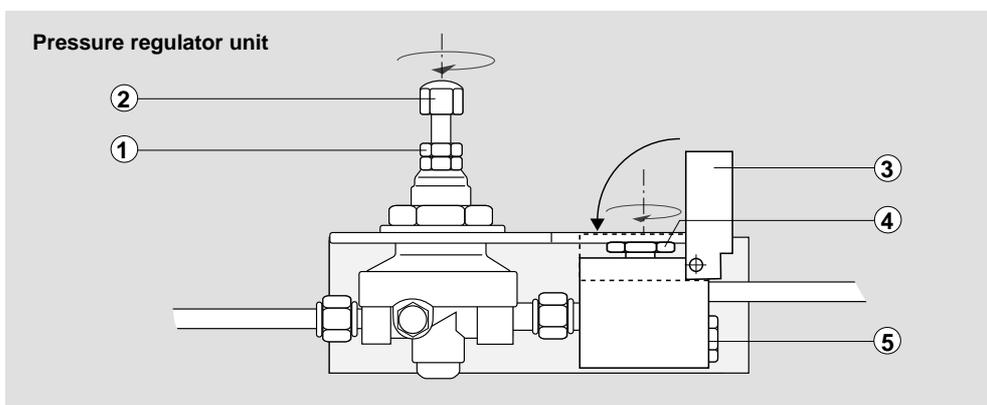


2. 09 / 2

Commissioning

Adjust suction pressure

The suction pressure must be calibrated by adjusting the pressure regulator when the engine is at a standstill. Make sure ventilation of the engine room is in operation (pressure difference in room). An increase or decrease of the pressure in the crankcase compartment during operation and its effect on the flow velocity of the oil mist in the suction pipes, is largely compensated by the internal restriction integrated in the device. (e.g., +25 mm W. G. in the crankcase compartment against the atmosphere account for an increase of the oil mist flow velocity in the suction pipes of approx. 8%; +50 mm W. G. of approx. 14%, a negligible figure). This is important because precipitation of minute oil droplets of the oil mist increases with a too high flow rate, thus reducing the sensitivity of the device.



3. 01 / 1

1. Connect U-tube pressure gauge at inspection cover. (See Fig. 3. 01 / 1)
(Pressure gauge is included in the service box, available as an option)
2. Loosen nut (1) and turn setscrew (2) in clockwise direction gently up to the stop.
3. Open safety cover (3) at the throttle (5) and manually turn setscrew (4) in clockwise direction gently up to the stop.
4. Switch on compressed air supply with inlet pressure (range 2 to 12 bar).
The pressure gauge should now read zero pressure.
5. Turn setscrew (4) in counterclockwise direction until the U- tube pressure gauge indicates a negative pressure of 80 mm W. G.
6. Close safety cover.
7. Turn setscrew (2) in counterclockwise direction until the negative pressure is only 60 mm W. G.
8. Tighten counternut (1).

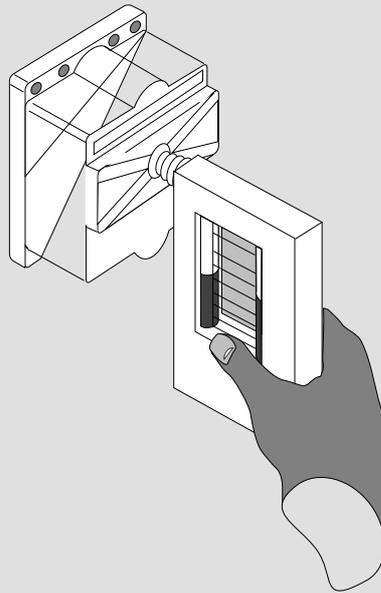


Adjust 60 mm W. G.!

**After adjustment,
remove U- tube
pressure gauge
and screw in the
previously removed
plug**

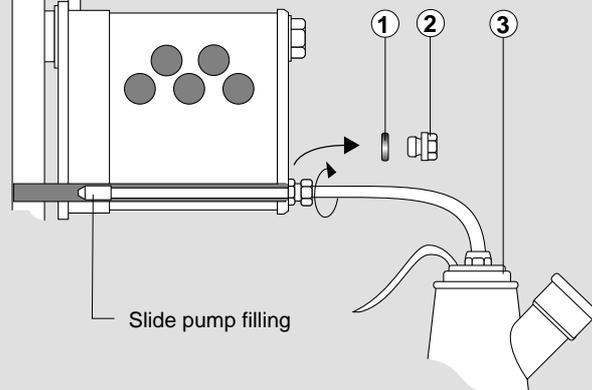


Exhaust air connection



3. 02 / 1

Filling of siphons



3. 02 / 2

1. Remove plug (1) and seal ring (2).
2. Introduce filling pump (3) against the stop.
3. Secure filling pump with fitting and slightly tighten union nut.
4. Pump 10 to 12 times with fast strokes.
5. After the filling process has been completed, remove pump and tighten plug (1) and seal ring (2).
6. Measure negative pressure in the last siphon.

Apply power supply

Switch on power supply after checking the wiring.

Device Operation

Control and display elements

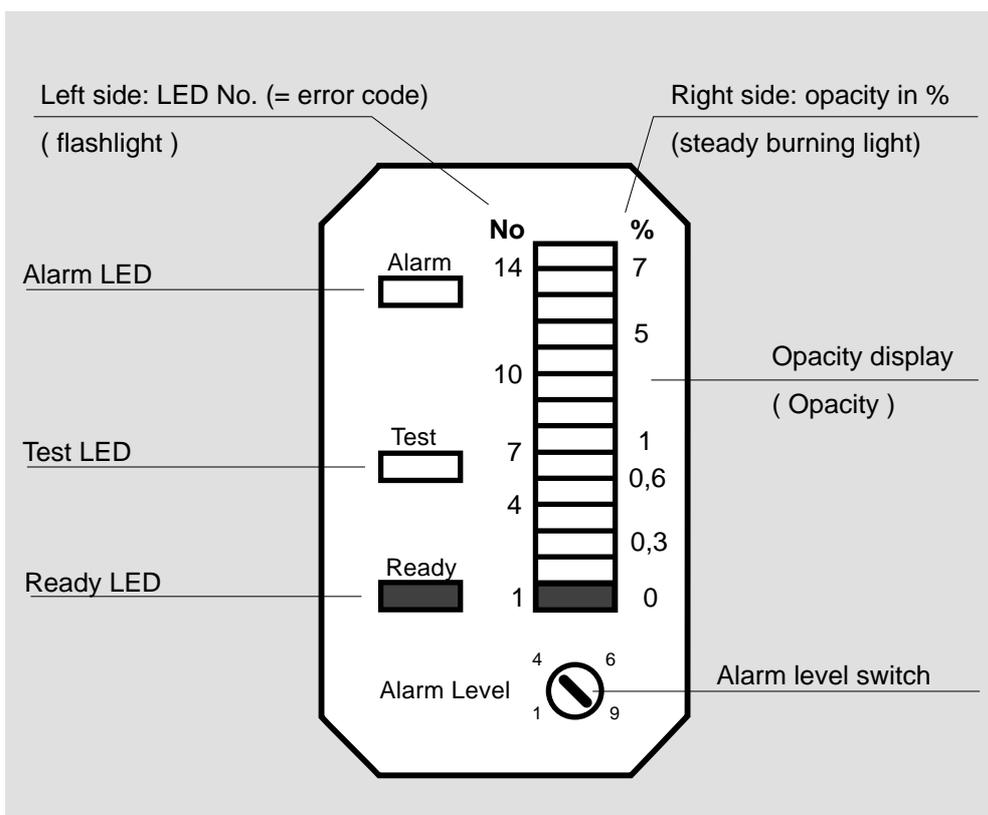
After the preparation work has been carried out (commissioning) the device sets itself to normal operation in approx. 30 seconds, after the power supply has been switched on. This phase is indicated by a blinking LED No. 1.

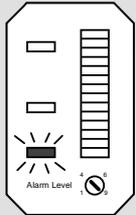
The device only needs to be controlled, if:

- an oil mist alarm is recognized
- a malfunction of the oil mist detector is recognised
- the oil mist detector has to be maintained.

The present state of the device is indicated in the display window:

Visatron Display Window





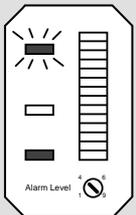
only

VN 116 / 87 - EMC

VN 116 / 87

VN 215 / 87 - EMC

VN 215 / 87



Display and function during normal operation:

The basic state (oil mist opacity below alarm level) is marked by
(see Fig. 3. 03 / 1):

- green READY LED is on
- the percentage of change in oil mist opacity with regard to basic opacity is shown on the opacity display
- TEST LED is off
- ALARM LED is off
- READY relay switched on
- ALARM relay switched off
- RESET button showing no function
- all valves in the valve box are opened, visible by the symbols displayed in the inspection windows of the valve box
(only VN 116 / 87 - EMC, VN 116 / 87 and VN 215 / 87 - EMC, VN 215 / 87)

Opacity increase beyond search run level

The search run level is fixed to 10 % of the adjusted alarm level. Valves in the valve box are activated according to a defined algorithm in order to find the corresponding engine side or compartment showing an increasing opacity (search run). The search run can be interrupted by pressing the RESET button.

Further opacity increase beyond alarm level marked by:

- blinking red ALARM LED
- READY relay is switched on
- ALARM relay is switched on
- 3 red symbols in the inspection window of the valve box showing the engine side on which the damage has occurred
(only VN 116 / 87 - EMC, VN 116 / 87)
- a red symbol in the inspection window of the valve box showing the compartment in which there is the highest opacity.
(only VN 215 / 87 - EMC, VN 215 / 87)

Alarm condition reset to basic state

- By pressing the RESET button
- If there is a device failure, e. g. breakdown of driving air supply
(READY LED is off)

Display and function in case of a failure

A failure is shown by:

- green READY LED switched off
- the LED assigned to the failure is blinking in the opacity display
- TEST LED switched off
- ALARM LED switched off
- READY relay switched off
- ALARM relay switched off
- RESET button toggling from fault indication to opacity display and vice versa

Oil mist opacity exceeds alarm level

- TEST LED is additionally switched on
- READY LED remains switched off
- ALARM LED remains switched off!

Assignment of blinking LEDs on the opacity display showin device failure:

LED No.	Cause of failure
14	Negative pressure in the measuring compartment too low
13	Infrared filter dirty
12	<i>Not assigned</i>
11	Ambient temperature $\leq 0^{\circ}\text{C}$
10	Ambient temperature $\geq 70^{\circ}\text{C}$
9	Electronics temperature $\leq 0^{\circ}\text{C}$
8	Electronics temperature $\geq 75^{\circ}\text{C}$
7	Reset button defective
6	<i>Not assigned</i>
5	Switch for adjusting sensitivity defective
4	Infrared light track defective
3	Flow control defective
2	Electronic module defective
1	Blinking for about 30 seconds after the oil mist detector has been switched on (warm-up phase)

To eliminate malfunctions see chapter “Failures”!





***Modifications
only permitted by
consultation with the
manufacturer!***



***Touch electronic
module only at
exterior edges
of printed circuit
board!***

ALARM LEVEL Switch

Meaning of switch positions:

- 1 = Highest sensitivity
- 4 = Factory-set sensitivity
- 10 = Lowest sensitivity

To change sensitivity

(this must be done by authorized personnel only!):

- Pull out plug with RESET button
- Unscrew measuring head casing
- Remove electronic module (see Fig. 5.06/2)
- Adjust new sensitivity at ALARM LEVEL switch by means of a screwdriver
- Reinsert electronic module
- Screw on measuring head casing
- Reconnect plug with RESET button

Function of relay outputs

Function of READY relay

(corresponding to the state READY LED)

- The relay is switched on when the oil mist detector is in operation

Function of ALARM relay

- The relay is switched on when the opacity exceeds the adjusted alarm level.
- Wire break monitoring by the alarm system is made possible by wire break resistors installed between contacts 7 and 8 as well as between 14 and 16 (33 k $\frac{1}{2}$ factory-preset).
- To replace the line break resistors the electronic module must be removed. The resistors are located near the relay on the lowest printed electronic board (R222, R 223).

Attention:

In case of an oil mist alarm, the oil mist detector (OMD) must be in condition to react within the next few seconds and shut down the engine, in order to minimise immediate or consequential damages

(see Fig. 2. 09 / 1)





Search Run only:

VN 116 / 87 - EMC

VN 116 / 87

VN 215 / 87 - EMC

VN 215 / 87



Performance Test

Attention

The engine is uncontrolled during this performance test!

A performance test of the device without an alarm being indicated externally can be carried out as follows:

- Open the cover of the measuring head casing
- Wait until the READY LED is switched off (after about 10 seconds) and LED14 is blinking (negative pressure in the measuring compartment too low)
- Darken the measuring track with filter glass or another object
- Search run (as described in 3. 04) is started
- TEST LED lights up when alarm level is reached
- Alarm reset by pressing the RESET button
- By pressing the RESET button once again the display switches over from fault indication to opacity display
- Close cover again
- Device is again ready for operation after about 15 seconds (READY LED is switched on)

Attention

Take care that the cover of the measuring head casing is definitely closed after the performance test has been carried out in order to ensure that the engine is controlled again!

When painting works are carried out near the device, the draft air supply to the device has to be turned off, in order to prevent the scavenging air filters from clogging.

Shut Down

- **Stop driving air supply**
- **Do not switch off the power supply**

Storage

in closed rooms

T min -25°C

T max +80°C

Maximum air humidity 85%



***Avoid
condensation!***



Performance Test / Maintenance

Performance test

(To be preformed before the engine is started):

- Pull out the main supply plug,
green READY LED will go off
- Re- install main supply plug,
LED No. 1 is blinking for about 30 seconds, then:
the green READY LED and LED No. 1 light up.
Device is ready for operation
- Open inspection cover at the measuring head.
After about 15 seconds the green READY LED and
LED No. 1 turn off simultaneously.
LED No. 14 is blinking
(meaning: negative pressure in the measuring compartment is too low)
- Close inspection cover at the measuring head again.
LED No. 1 is blinking for about 15 seconds.
The green READY LED subsequently switches on.
Device is ready for operation.

**Performance test with test vapour, e. g. vapour distillate from the service box
(to be performed only when engine is not running)**

- Open crankcase - cover of a compartment in order to access
a suction pipe or sampling funnel.
- Fill the plastic bag (found in the service box) with vapour
- Affix the plastic bag to suction pipe or sampling funnel.
- Allow the oil mist detector to draw in the distillate vapour for
a minimum of 20 seconds.
- It depends on the vapour density and suction time (at least 20 seconds)

1. whether an oil mist alarm is triggered, or

2. whether an oil mist alarm is triggered, and a search run is started, or during
the search run only one half or the engine or the
affected compartment is indicated.

(If the amount of vapour is insufficient or the suction time is too short, a wrong
compartment may be indicated in the display window of the valve box.)



**Search Run only:
VN 116 / 87 - EMC
VN 116 / 87
and
VN 215 / 87 - EMC
VN 215 / 87**



**Rough filter side
outwards!**

**Use cotton sticks only,
otherwise the glasses
may be damaged!**

Maintenance work to be carried out regularly. In case of non-compliance, the manufacturer's liability expires. Maintenance work has to be documented.

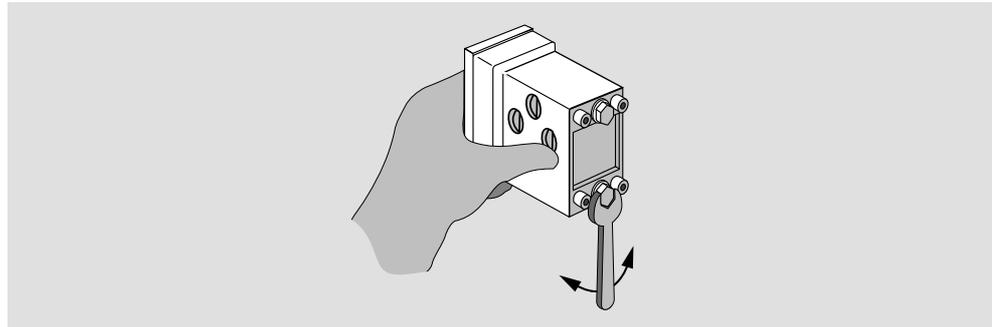
Monthly: Check the negative pressure in the measuring head
(range 60 - 80 mm H₂O)

Quarterly: Replace the sintered bronze filter in the measuring head.
Attention: Filters cannot be cleaned.
(see Fig. 5. 03 / 1)

Clean the two fresh air bores in the measuring head
(see Fig. 5. 03 / 2)

Clean the infrared filter glasses in the measuring head
(see Fig. 5. 04 / 1)

Every 6 months: (only with siphon block assembly system,
optional for all OMD device types)



4. 02 / 1

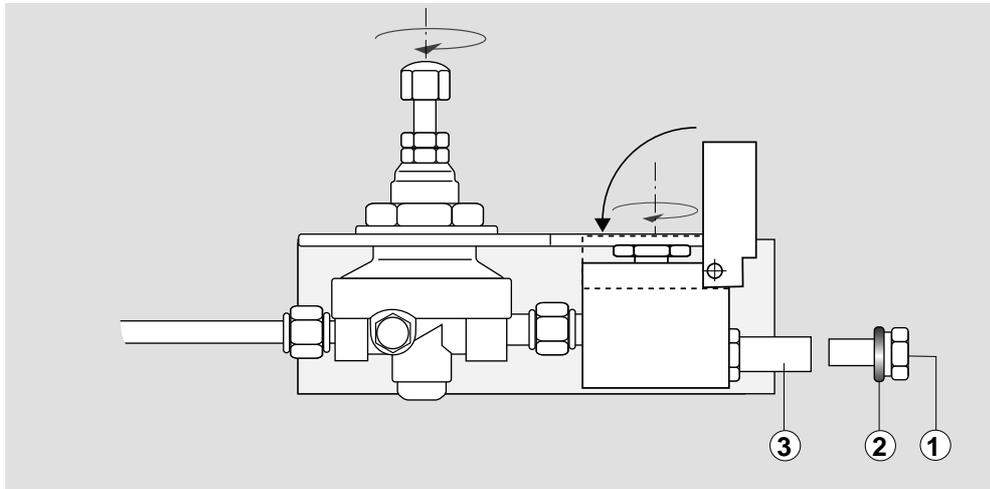
In order to do so:

Remove header pipes from the connecting box,
(VN 115 / 87 - EMC, VN 115 / 87) or from the valve box of
VN 116 / 87 - EMC, VN 116 / 87, or individual pipes from
valve box of VN 215 / 87 - EMC, VN 215 / 87
(to ensure that the device is not contaminated during the
cleaning operation). Remove siphon block plug, blow-clean the
siphons with compressed air (max. 7 bar), mount the header or
the individual suction pipes and siphon block plug,
tighten accordingly.

Subsequently fill the siphon blocks with lubricating oil
(see Fig. 3. 02 / 1)



Annually: Replace the sintered bronze filter in the pressure reducer
(see Fig. 4. 03 / 1)



4. 03 / 1

In order to do so:

Turn off control air supply, remove plug (1) with O- ring (2), detach sintered bronze filter (3), insert new filter, install and tighten plug (1) with O-ring (2) and turn on the air supply.



Malfunctions

Failures and corrective action

A malfunction in the operation of the oil mist detector has occurred if:

- the green READY LED is off
- an LED assigned to the failure mode is blinking in the opacity display

A pending oil mist alarm is reset.

Failure:

No display in the inspection window, all LEDs off.

Possible cause:

Remedy:

Breakdown of power supply
or voltage too low

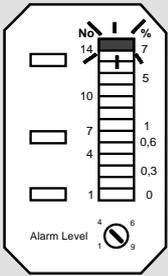
Check power supply
by: pulling off the main supply plug.
Between terminals 1 and 2 in the socket
on the base plate, check if 18V to 30V
is available.
Push on main plug and lock into place.
Make sure that the power supply does not
break down under the load of the
oil mist detector. (voltage not below 18V)

Fuse in the measuring head
defective (see Fig.5. 06 / 1)

Replace fuse in the measuring head
(2 A, semi time lag)
by: pulling off the main supply plug.
Detach measuring head (8 screws)
Replace fuse by a new one.
Mount measuring head into position.
Push on main supply plug
and lock into place.

Should there still be no indication

Replace the electronic module
(see Fig. 6. 02 / 1)



Failure

LED No. 14 is blinking - negative pressure in the measuring head too low.

Possible causes:

Open inspection cover

Filter or water separator in the air supply pipe clogged or filled

Pressure reducer misadjusted by vibration

Pressure restrictor misadjusted by vibration

Sintered bronze filter in the pressure reducer clogged

Sintered bronze filters in the measuring head clogged

Remedy:

Close inspection cover

Clean accordingly, empty if necessary

Readjust (see chapter 3. 01)

Readjust (see chapter 3. 01)

Replace bronze filter
(see Fig. 5. 03 / 1)
by: Turn off the control air supply.

Release plug (1),
remove O- ring (2),
detach filter (3),
insert new filter (3),
mount O- ring (2),
install and tighten plug (1),
Turn on air supply.

Replace sintered bronze filters
(see Fig. 5. 03 / 1)
by: opening the inspection cover.

Remove circlips.
Mount new filters (always on both sides,
rough side outwards),
insert circlips,
close cover.



***Do not clean filters,
but always replace
by new ones!***



Possible causes:

Fresh air bores for flow control clogged

Remedy:

Clean both bores (see Fig.5. 03 / 2)
by: opening the inspection cover.

Press cleaning pin contained in the service box into the left or right fresh air bore, respectively,

The bores can be seen from the side of the scavenging air chamber.

Close inspection cover.

Leakage at the device

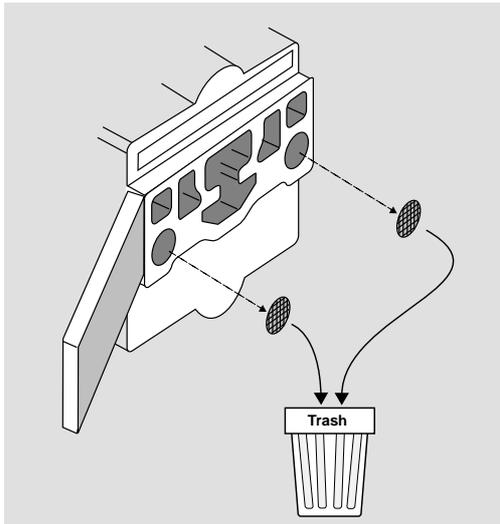
Check all pipes and seals

by: checking flexible expansion bellows (accessible after the measuring head has been detached)

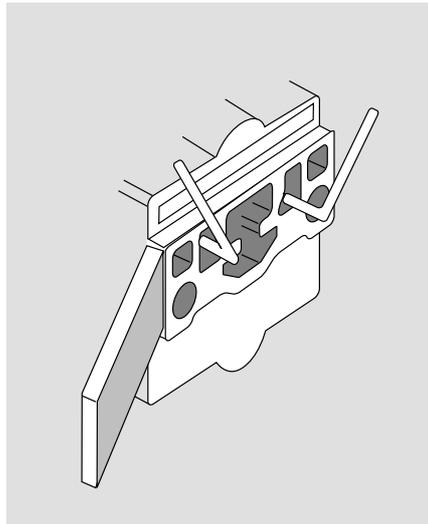
Replace damaged seals or expansion bellows.

Exhaust air pipe malfunction

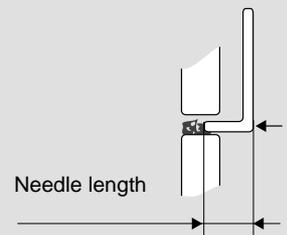
Eliminate blockage of the exhaust air pipe, the air must flow without restriction.

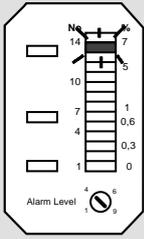


5. 03 / 1



5. 03 / 2





Failure

LED No. 13 is blinking - infrared filter clogged -

Possible causes:

Infrared filter clogged

Remedy: (see Fig. 5. 04 / 1)

Clean infrared filter

by: opening the inspection cover.

Soak cotton stick (plastic only!) with alcohol.

Clean infrared filter with cotton stick several times.

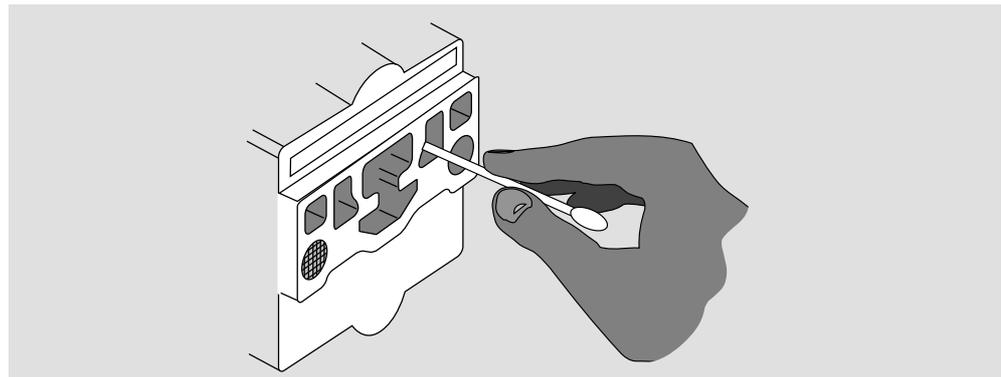
Rub infrared filter dry by means of cotton stick. Make sure no fluff remains on the infrared filter

Close inspection cover again.

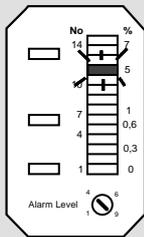
If failure continues:

Replace electronic module

(see Fig. 6. 02 / 1)



5. 04 / 1



Failure:

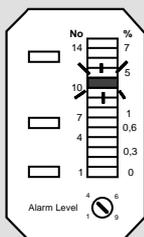
LED No. 11 is blinking - ambient temperature below 0° C

Possible causes:

Engine compartment ventilator blows cold air onto the device.

Remedy:

Change blowing direction of ventilator, away from oil mist detector.



Failure:

LED No. 10 is blinking - ambient temperature above 70° C

Possible causes:

Source of heat radiates on the device.

Remedy:

Protect device against sources of heat radiation, ensure an improved fresh air supply.



Failure

LED No. 9 is blinking - electronic temperature below 0° C

Possible causes:

Engine room ventilator blows cold air onto the device.

Remedy:

Change blowing direction of the ventilator to ensure that cold air it is not directed to the oil mist detector

Failure

LED No. 8 is blinking - electronic temperature above 70° C

Possible causes:

Source of heat radiates on the device.

Remedy:

Protect device against sources of heat radiation, improve fresh air circulation.

Failure

LED No. 7 is blinking - RESET button defective

Possible causes:

Blocked RESET button

Remedy:

Eliminate blocking

Failure

LED No. 5 is blinking - OMD sensitivity switch defective

Possible causes:

Switch defective

Remedy:

Replace electronic module
(see Fig. 6. 02 / 1)

Failure

LED No. 4 is blinking - infrared light track defective

Possible causes:

Infrared filter clogged

Remedy:

Clean infrared filter (see failure LED No. 13)

If failure continues

Replace electronic module (see Fig. 6. 02 / 1)

Failure

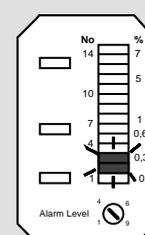
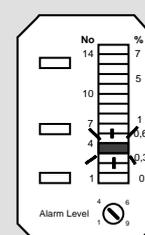
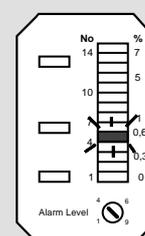
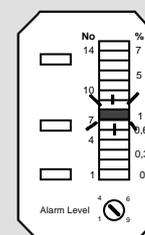
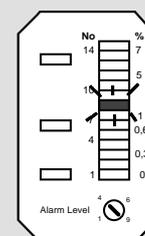
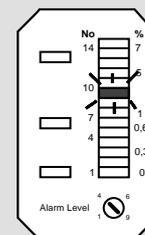
LEDs No. 3 and 2 are blinking

Possible causes:

Electronic module defective

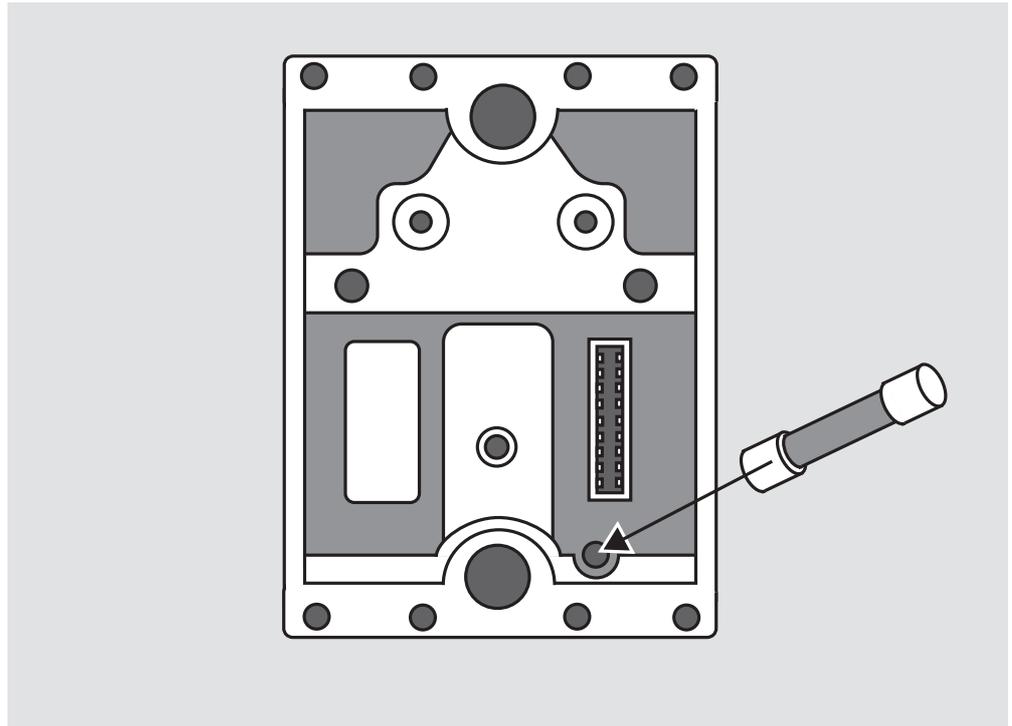
Remedy:

Replace electronic module (see Fig. 6. 02 / 1)





*Replace fuse
in the measuring
head!*



5. 06 / 1



Repairing

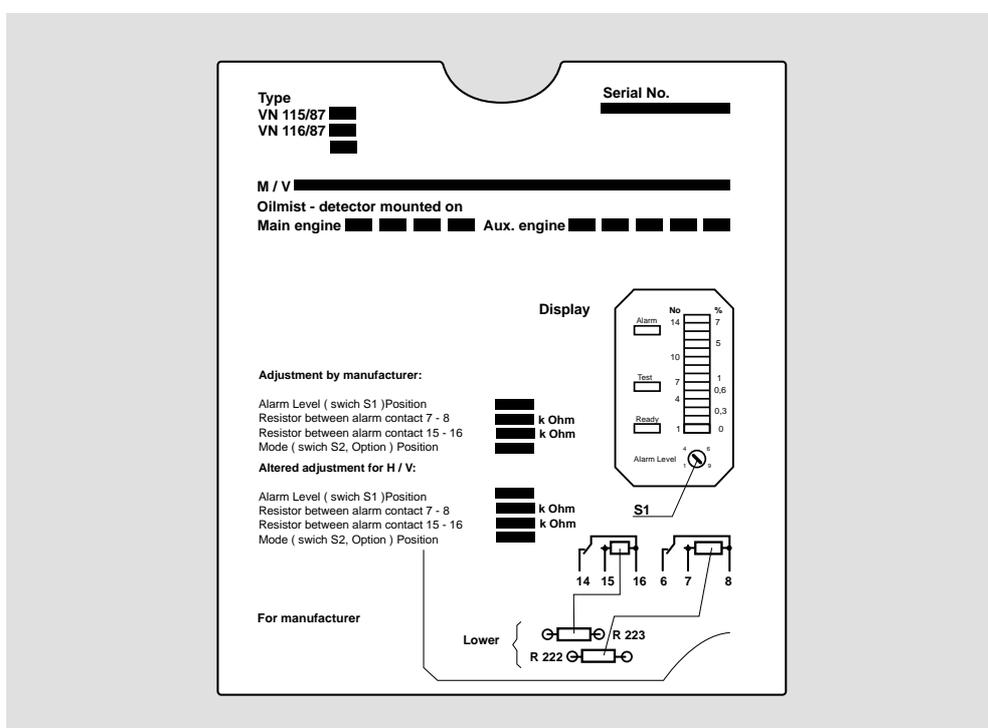
Replace electronic module / measuring head

Attention

If these factory pre- settings (resistors) are replaced by those with other values, it must be ensured that a spare electronic module or the one in a replacement measuring head is also modified accordingly!

Modifications have to be printed on the protecting cover plate on the rear side of the measuring head casing, in the fields provided for this purpose.

(see Fig. 6. 01 / 1)



6. 01 / 1

The wire break resistors are located on the first visible printed circuit board, which is under the protecting cover plate, near the relays (R 222 and R 223)! The resistors are designed as plug- in resistors and can be replaced without soldering!

You find the ALARM LEVEL switch on the front display plate of the electronic module (see Fig. 3. 03 / 1).



Examine Module or spare when received from shipment. If you return the electronic module, ensure that the completed form "Why do you declare this unit faulty" is included!

If the electronic module is replaced, take care that the same wire break resistors are used and that the Alarm Level switch is set on the same position! Observe locks!



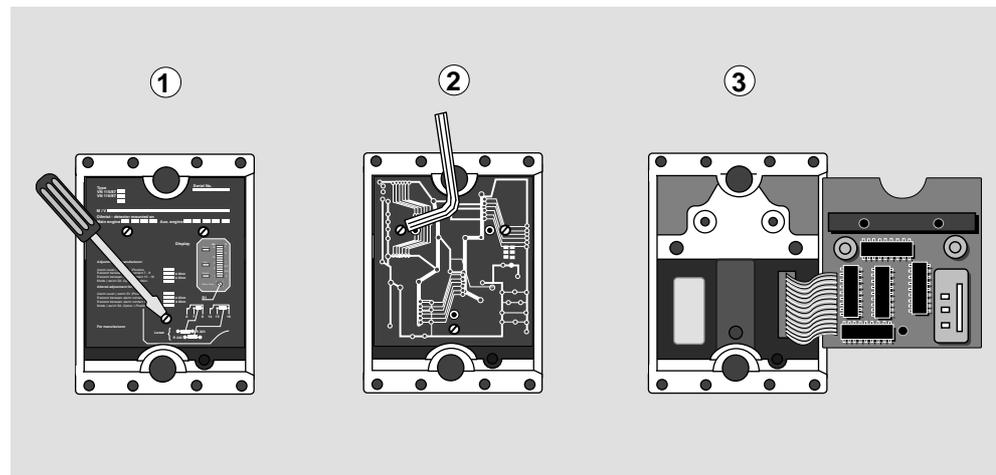
Detach electronic module!

Examine Module or spare when received from shipment. If you return the electronic module, ensure that the completed form "Why do you declare this unit faulty" is included!



Procedure: (see Fig. 6. 02 / 1)

- Pull off the main supply plug
 - Dismantle the measuring head (8 screws)
- If the electronic module is replaced or needs to be modified:
- Remove protecting cover plate (3 screws)
 - Remove the 3 hexagon distance bolts
 - Remove defective electronic module from the casing, first pulling off the lateral flat cable plug from the socket in the casing.
 - Mount new electronic module in reverse order
 - Install protecting cover plate, fasten 3 screws
- Fasten measuring head, tighten 8 screws moderately.
 - Push on main supply plug and lock it into place
 - Carry out performance test (see chapter 4.01)



6. 02 / 1

- ① Dismantle cover plate by removing 3 screws
- ② Loosen 3 hexagonal screws of module
- ③ Extract module

Attention:

The electronic module is equipped with components which are sensitive against electrostatic discharges. A replacement must be carried out by skilled personnel only! Do not touch infrared lenses or circuitry! Utilise grounding strap on your wrist.



Leaks or failure of the valve box of VN 115 / 87 - EMC, VN 115 / 87

Remedy: (see Fig. 6. 03 / 1)

Disconnect header pipes on the left and right side of connecting box (1),
push pipes aside to get free access.

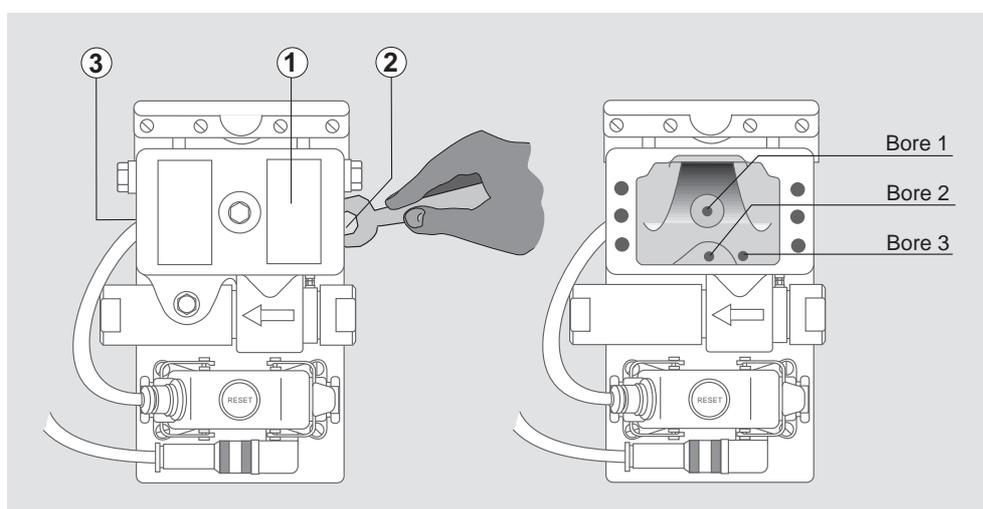
Loosen the two screws (2) and (3) of the connecting box

Detach the connecting box and remove the gasket

Check if bores 1, 2 and 3 are free from dirt, blow them free with
compressed air

Clean the base plate cavity from oil.

Assembly in reverse order, utilising new gasket.



6. 03 / 1

Leaks or failure of the valve box of VN 116 / 87 - EMC, VN 116 / 87

Remedy: (see Fig. 6. 04 / 1)

Dismantle the pipe connecting blocks with the headers on the
right and left side

Push away the header pipes for free access to the valve box

Unscrew the valve control cable plug and loosen the four screws
(3), (4), (5) und (6) of the valve box.

Detach valve box and remove seal

Check if bores 1, 2 and 3 are free from dirt, blow them free
with compressed air.

Clean the base plate cavity from oil.

Assembly in reverse order, utilising new seals and gasket

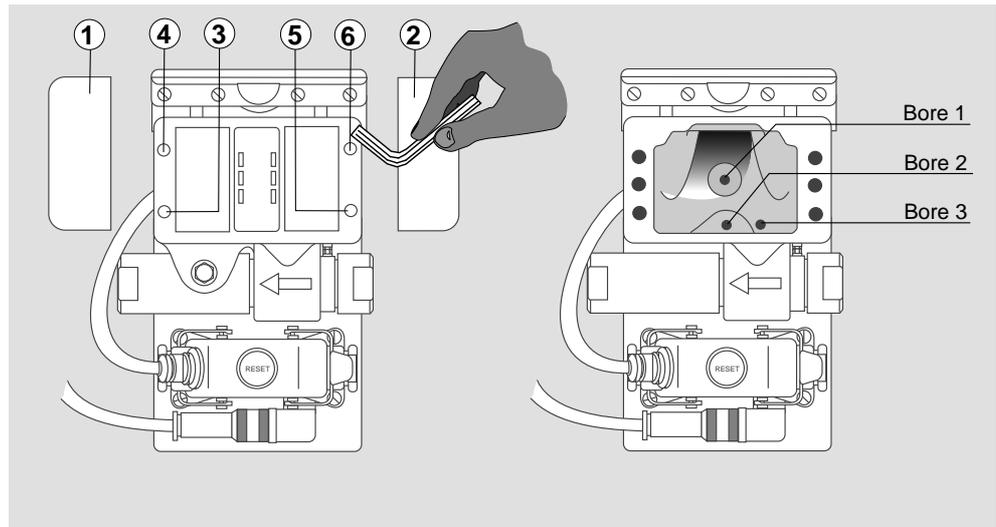
***On principle, use new
connecting box gasget!***

**VN 115 / 87 - EMC
VN 115 / 87**

***On principle, use new
valve box seals!***



VN 116 / 87 - EMC
VN 116 / 87



6. 04 / 1

Leak or failure of the valve box of VN 215 / 87 - EMC, VN 215 / 87

Remedy: (see Fig.. 6. 04 / 2)

Release the pipe connecting blocks (1) and (2)
on the right and on the left side.

Push away blocks with with individual suction pipes for free access
to the valve box.

Unscrew valve control cable plug and loosen screws (3), (4), (5) und (6)
of the valve box

Detach valve box and remove seal

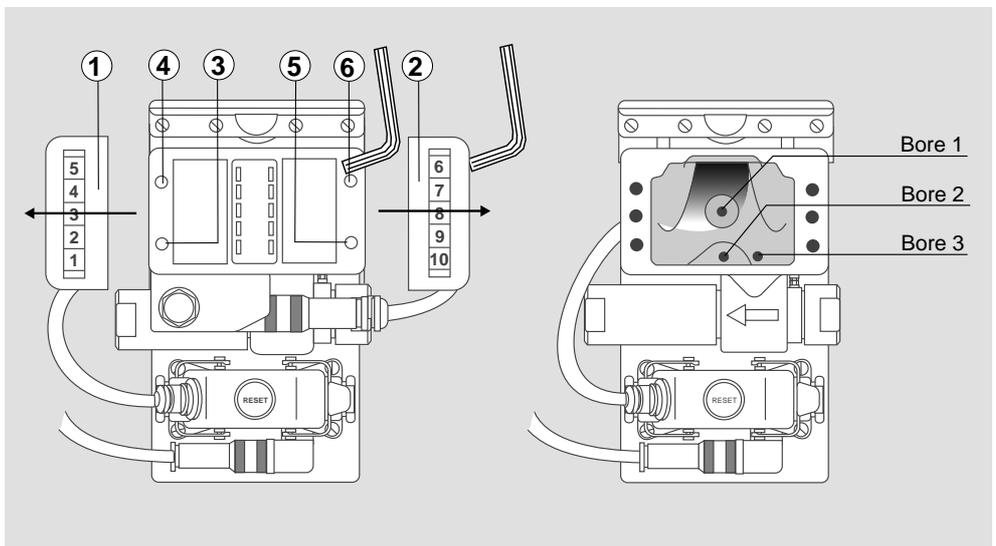
Check if bores 1, 2 and 3 are free from dirt, blow them free with
compressed air.

Clean the base plate cavity from oil.

Assembly in reverse order, on principle, use new valve box seals and gasket.

*On principle, use new
valve box seals and
gasket!*

VN 215 / 87 - EMC
VN 215 / 87



6. 04 / 2



False alarm in the case of fire with smoke development in the engine room

In case of a fire with smoke development in the engine room, a false alarm cannot be prevented since smoke may pass into the measuring track through the sintered bronze filters in the measuring head. This condition induces an opacity which can trigger an oil mist alarm.

Remedy: Install optional pressurised air scavenging system, available from the manufacturer (Press RESET button to reset the alarm)

Further possible failures

Sudden false alarms in very warm or cold climatic areas can be triggered by humidity (in the crankcase) falling below the dew point: water droplets passing the measuring track or dew on the filter glasses may trigger a false alarm.

Remedy: Check negative pressure and calibrate to 60 mm W. G., if required.

Ventilation air fans, if any, blowing towards the device and its suction pipes.

Change blowing direction (install deflectors) of the ventilator to ensure that cold air it is not directed to the oil mist detector or suction pipes.

Check VISATRON heating system. (The heating element is located in the base plate and is hooked up with the connector plug to the 24 V power supply!)

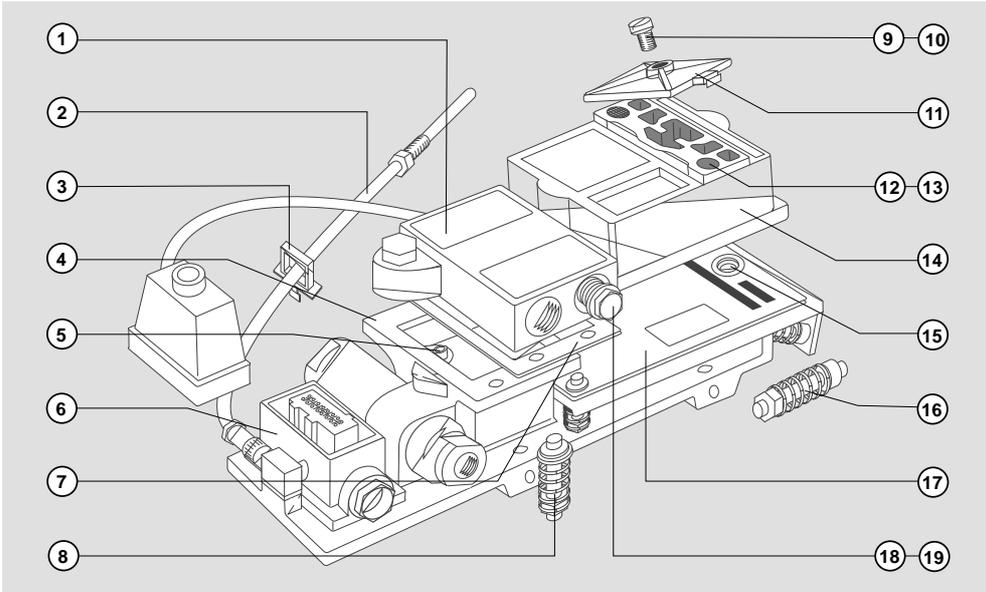
Furthermore, a measuring head heating system is available as an option (see chapter "Options"!).



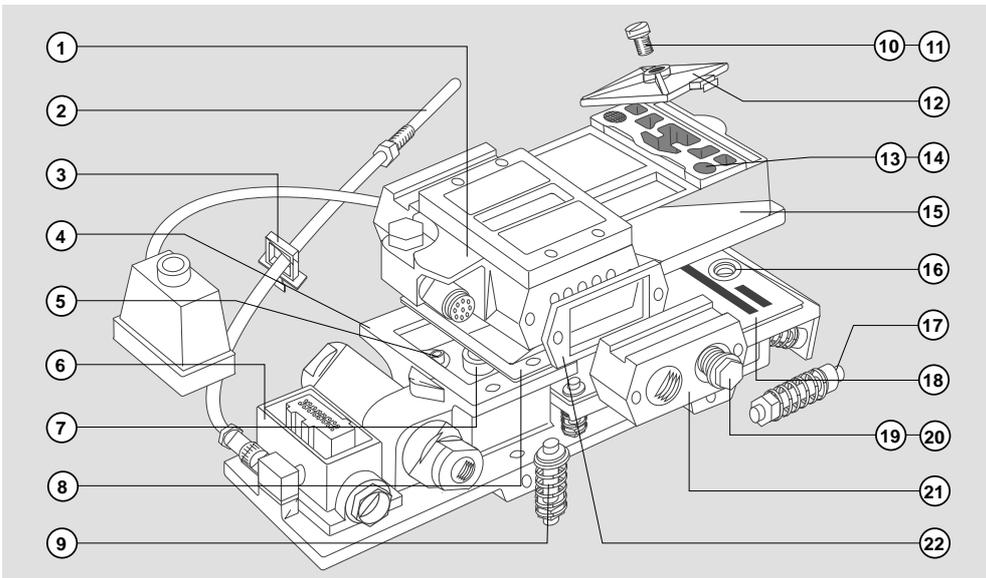
Caution!
Danger of burns
T max = 120° C



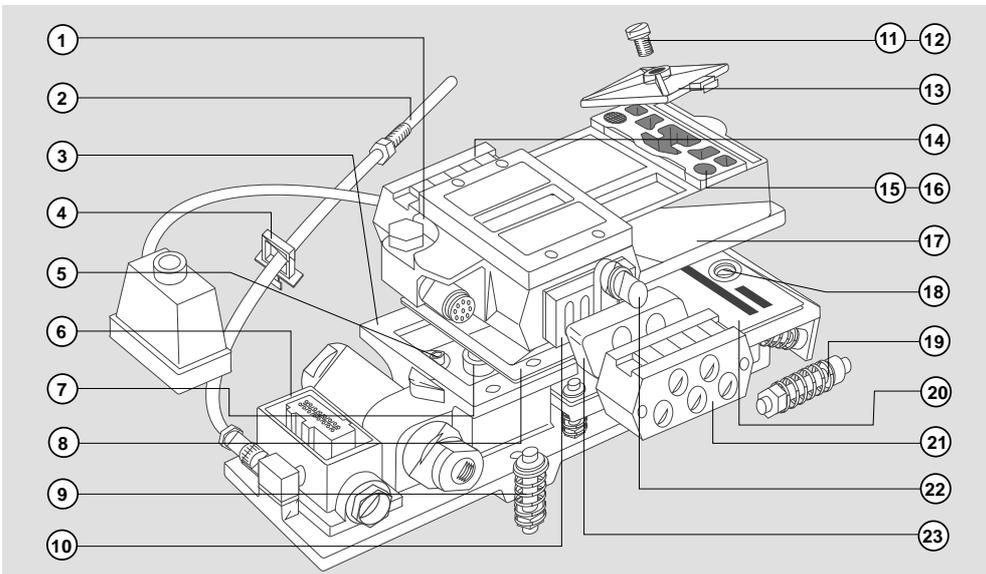
Spare Parts



7. 01 / 1



7. 01 / 2



7. 01 / 3

VN 115 / 87 - EMC

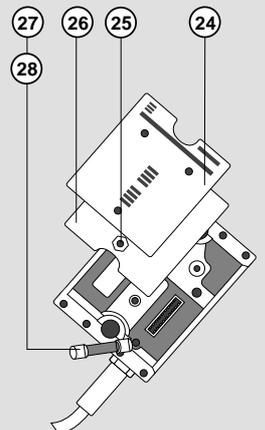
VN 115 / 87

VN 116 / 87 - EMC

VN 116 / 87

VN 215 / 87 - EMC

VN 215 / 87



7. 02



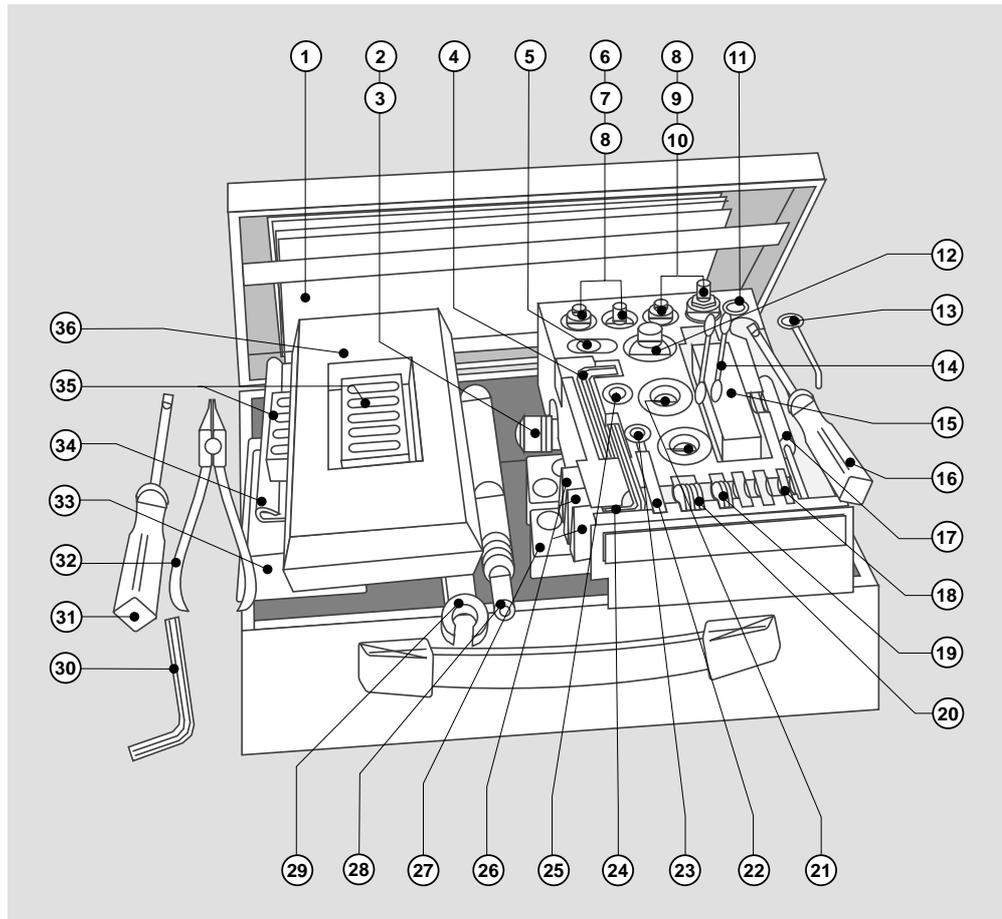
Item	Description	Article No.	No. of	Item	Description	Article No.	No. of pieces
VN 115 / 87							
1.	Connecting casing	10202	1	14.	Measuring head for VN 115/87	10201	1
2.	Heating element	10051	1	15.	Expansion bellows	10023	2
3.	Cable clip	10052	1	16.	Measuring head suspension, top	10018	2
4.	Lower VN part	10032	1	17.	Measuring head seal	10022	1
5.	Seal	10206	1	18.	Srew plug R 1/2"	10208	3
6.	Connecting socket	10033	1	19.	Screw plug seal	10209	3
7.	Valve box seal	10049	1	24.	Protecting cover for E-module	10084	1
8.	Measuring head suspension, bottom	10019	2	25.	Fastening screw for E-module	10085	3
9.	Cap seal	10054	2	26.	Electronic module for VN 115/ 87	10203	1
10.	Screw plug R 1/4"	10083	1	27.	Fuse 2 A	10043	1
11.	Cover for measuring head	10088	1	28.	Fuse cap	10087	1
12.	Scavenging air filter	10042	2				
13.	Circlip for scavenging air filter	10041	2				
VN 116 / 87							
1.	Valve box VN 116 / 87	10302	1	16.	Expansion bellows	10023	2
2.	Heating element	10051	1	17.	Measuring head suspension, top	10018	2
3.	Cable clip	10052	1	18.	Measuring head seal	10022	1
4.	Base plate	10032	1	19.	Screw plug R 1/2"	10208	2
5.	Oil reflux seal	10306	1	20.	Seal for Item 19	10209	2
6.	Connecting socket	10033	1	21.	Pipe connection	10312	2
7.	Oil mist seal	10307	1	22.	Seal for connecting casing	10313	2
8.	Seal for valve box	10305	1	24.	Protecting cover for E-module	10084	1
9.	Measuring head suspension, bottom	10019	2	25.	Fastening screw for E-module	10085	3
10.	Screw plug R 1/4"	10083	1	26.	Electronic module VN 116/ 87	10303	1
11.	Seal for Item 10	10082	2	27.	Fuse 2A	10043	1
12.	Cover for measuring head	10088	1	28.	Fuse cap	10087	1
13.	Scavenging air filter	10042	2				
14.	Circlip for scavenging air filter	10041	2				
15.	Measuring head VN 116 / 87	10301	1				
VN 215 / 87							
1.	Valve box VN 215 / 87	10402	1	16.	Circlip for scavenging air filter	10041	2
2.	Heating element	10051	1	17.	Measuring head for VN 215 / 87	10401	1
3.	Base plate	10032	1	18.	Expansion bellows	10023	2
4.	Cable clip	10052	1	19.	Measuring head suspension, top	10018	2
5.	Oil reflux seal	10406	1	20.	Measuring head seal	10022	1
6.	Connecting socket	10033	1	21.	Pipe connection, right	10430	1
7.	Oil mist seal	10407	1	22.	Drain plug for pipe connection	10412	6
8.	Valve box seal	10405	1	23.	Rubber sleeve for pipe connect.	10411	2
9.	Measuring head suspension, bottom	10019	2	24.	Protecting cover for E-module	10084	1
10.	Clamping plate for pipe connection	10409	2	25.	Fastening screw for E-module	10085	3
11.	Screw plug R 1/4"	10083	1	26.	Electronic module for VN 215/ 87	10403	1
12.	Seal for Item 11	10082	2	27.	Fuse 2A	10043	1
13.	Cover for measuring head	10088	1	28.	Fuse cap	10087	1
14.	Pipe connection, left	10408	1				
15.	Scavenging air filter	10042	2				



Item	Description	Article No.	No. of	Item	Description	Article No.	No. of
VN 115 / 87 - EMC							
1.	Connecting casing	10202	1	14.	Measuring head for VN 115/8 -EMC	10601	1
2.	Heating element	10051	1	15.	Expansion bellows	10023	2
3.	Cable clip	10052	1	16.	Measuring head suspension, top	10018	2
4.	Lower VN part	10032	1	17.	Measuring head seal	10698	1
5.	Seal	10206	1	18.	Srew plug R 1/2"	10208	3
6.	Connecting socket	10033	1	19.	Screw plug seal	10209	3
7.	Valve box seal	10049	1	24.	Protecting cover for E-module	10084	1
8.	Measuring head suspension, bottom	10019	2	25.	Fastening screw for E-module	10085	3
9.	Cap seal	10054	2	26.	Electronic module, VN 115/ 87-EMC	10603	1
10.	Screw plug R 1/4"	10083	1	27.	Fuse 2 A	10043	1
11.	Cover for measuring head	10088	1	28.	Fuse cap	10087	1
12.	Scavenging air filter	10042	2				
13.	Circlip for scavenging air filter	10041	2				
VN 116 / 87 - EMC							
1.	Valve box VN 116 / 87 - EMC	10302	1	16.	Expansion bellows	10023	2
2.	Heating element	10051	1	17.	Measuring head suspension, top	10018	2
3.	Cable clip	10052	1	18.	Measuring head seal	10698	1
4.	Base plate	10032	1	19.	Screw plug R 1/2"	10208	2
5.	Oil reflux seal	10306	1	20.	Seal for Item 19	10209	2
6.	Connecting socket	10033	1	21.	Pipe connection	10312	2
7.	Oil mist seal	10307	1	22.	Seal for connecting casing	10313	2
8.	Seal for valve box	10305	1	24.	Protecting cover for E-module	10084	1
9.	Measuring head suspension, bottom	10019	2	25.	Fastening screw for E-module	10085	3
10.	Screw plug R 1/4"	10083	1	26.	Electronic module VN 116/ 87- EMC	10707	1
11.	Seal for Item 10	10082	2	27.	Fuse 2A	10043	1
12.	Cover for measuring head	10088	1	28.	Fuse cap	10087	1
13.	Scavenging air filter	10042	2				
14.	Circlip for scavenging air filter	10041	2				
15.	Measuring head VN 116 / 87- EMC	10706	1				
VN 215 / 87 - EMC							
1.	Valve box VN 215 / 87 - EMC	10402	1	16.	Circlip for scavenging air filter	10041	2
2.	Heating element	10051	1	17.	Measuring head, VN 215 / 87- EMC	10801	1
3.	Base plate	10032	1	18.	Expansion bellows	10023	2
4.	Cable clip	10052	1	19.	Measuring head suspension, top	10018	2
5.	Oil reflux seal	10406	1	20.	Measuring head seal	10698	1
6.	Connecting socket	10033	1	21.	Pipe connection, right	10430	1
7.	Oil mist seal	10407	1	22.	Drain plug for pipe connection	10412	6
8.	Valve box seal	10405	1	23.	Rubber sleeve for pipe connect.	10411	2
9.	Measuring head suspension, bottom	10019	2	24.	Protecting cover for E-module	10084	1
10.	Clamping plate for pipe connection	10409	2	25.	Fastening screw for E-module	10085	3
11.	Screw plug R 1/4"	10083	1	26.	Electronic module VN 215/ 87- EMC	10802	1
12.	Seal for Item 11	10082	2	27.	Fuse 2A	10043	1
13.	Cover for measuring head	10088	1	28.	Fuse cap	10087	1
14.	Pipe connection, left	10408	1				
15.	Scavenging air filter	10042	2				



*Re - order
spare parts
taken out!*





Item	Designation	Art. No.	Quantity
1.	Manual in English		
2.	Quick connecting for U- tube manometer		
3.	Gasket		
4.	Wrench mounting of electronic module		
5.	Filter for pressure reducer		
6.	"Upper" spring for elastic mounting of the measuring head		
7.	"Upper" distance bolt for elastic mounting of the measuring head		
8.	Flexible clamp ring for distance bolts for mounting of the measuring head		
9.	"Lower" spring for elastic mounting of the measuring head		
10.	"Lower" distance bolt for elastic mounting of the measuring head		
11.	Oil return gasket VN 115 / 87 - EMC, VN 115 / 87		
12.	Bottle with alcohol		
13.	Cleaning needle		
14.	Cottonstick for cleaning of infrared filters		
15.	Bottle with slacked water		
16.	Screwdriver for mounting of measuring head		
17.	Screwdriver for adjustment of alarmborder		
18.	Coloured glas, 5%		
19.	Safety ring for fresh air filter		
20.	Fresh air filter		
21.	Flexible bellow for connection of measuring head with base plate		
22.	Fuse 2A / semi time- lag		
23.	Oil return gasket VN 116 / 87 - EMC, VN 116 / 87		
24.	Hexagon wrench for valve box mounting		
25.	Oil mist gasket valve box VN 116 / 87 - EMC, VN 116 / 87, and VN 215 / 87 - EMC and VN 215 / 87		
26.	Lockplug for not connected tube at VN 215 / 87- EMC and VN 215 / 87		
27.	Rubberplate for tube connection at VN 215 / 87- EMC, VN 215 / 87		
28.	Mouth piece for cigarette burner		
29.	Ring box end wrench		
30.	Hexagon wrench for release of lockscrew at cover of measuring head		
31.	Screwdriver 4 mm		
32.	Pliers for mounting of safety rings for fresh air filters		
33.	Gasket for valve / box connecting frame / connecting cover		
34.	Plastic bag for cigarette smoke		
35.	Clamp plate for tube connection at VN 215 / 87- EMC, VN 215 / 87		
36.	U- tube manometer		

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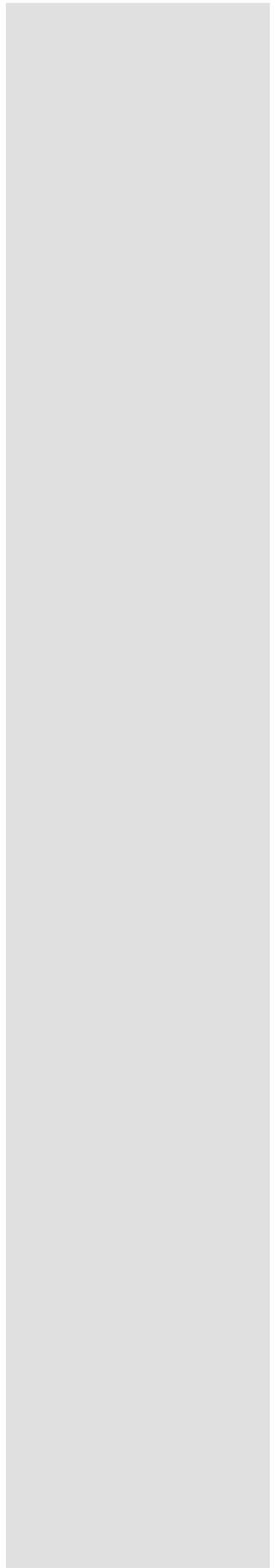
Brochures, Leaflets, etc.

General Information

Recycling

Forms:

Error descriptions



SCHALLER - AUTOMATION

Industrielle Automationstechnik KG
 66440 Blieskastel, Industriering 14
 Tel.:(06842) 508-0, Fax (06842) 508-260



Why do you declare this unit faulty ?

Please fill out this form sheet when replacing electronic card, measuring head or complete OMD and add the issued sheet to the unit when shipping it to SCHALLER Automation or Representative. Thanks in advance !

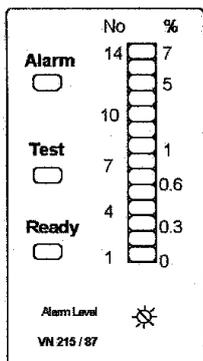
You can send this information sheet also by Fax or mail in case the VISATRON oil mist detector is malfunctioning. We will reply immediately giving you technical advice. Please write us particulars.

Name:	_____
Vessel/plant:	_____
Fax:	_____
Phone :	_____
Telex :	_____

You have on hand:	
Manual, Art. No 10024	<input type="checkbox"/>
Service Box, Art. No. 10055	<input type="checkbox"/>
Installation instructions	
Art. No. 10055	<input type="checkbox"/>

1.) Ready LED OFF Yes No

If Yes mark with a cross which LED on the LED chain (red LED's from 1 to 14) is blinking:



Please insert data to enable identification:

Oil Mist Detector Type: VN 115 / 87 , VN 116 / 87 , VN 215 / 87

Serial No. : (At label of measuring head) example: 11S-11111

- (2 numbers, 1 alphabetical letter, dash(-), 5 numbers)

Oil Mist Detector is installed at :

Main Engine Aux. Engine

Engine manufacturer: _____

Engine type: _____

1.1) In case No 14 is blinking:

LED No 14 is blinking

1. Replace dirty air filters
2. Clean both fresh air bores
3. Adjust air pressure
4. Measure air vacuum at detector

Replace Sintered bronze filter
 Clean fresh air bores(on both sides)
 Check / adjust suction pressure (60-80 mm water column)

Malfunction still present Yes No

1.2) In case LED No. 13 is blinking:

Clean the infrared filter glasses on both sides with cotton sticks and alcohol or detergent.

LED No. 13 is blinking

3. Clean glasses

Malfunction still present	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Above described procedures performed	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If "no", due to the lack of :		
spares	<input type="checkbox"/>	tools <input type="checkbox"/> , time <input type="checkbox"/>

Please turn page

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66440 Blieskastel, Industriering 14
Tel.: (06842) 508-0, Fax (06842) 508-260



- 2.) Condition of Reset Button:
Button mechanically damaged: No response when button is pressed
- 3.) Valve box working properly (if present) Yes No
- 4.) Condition of cables of device, OK? Yes No
- 5.) Condition of plugs, OK? Yes No
- 6.) No LED is illuminated at all Yes No
- Check power supply at terminals 1(+) and 2(-) with volt-meter
Minimum is 18 V =
Maximum is 30 V = Value: V

7.) Problems with performance:

Emergency shut downs caused by Oil mist high concentration alarms without obvious reasons.

7.1) Device is giving oil mist alarm occasionally , or permanently

During: Engine start Warm up
increasing load decreasing load
shut down various condition

7.1.2) Engine crankcase checked Yes No
If Yes damages found Yes No
water leakage found Yes No
condensed water found Yes No

7.1.3) Suction pipes and pipe connection box / valve box of device checked
Yes No

If Yes: lots of oil found Yes No
condensed water found Yes No

7.1.4) Open control cover and check inside
lots of oil found Yes No
condensed water found Yes No

7.1.5) Check suction pressure with U-Tube Manometer (see previous page)
Measured value: mm WC (normal: 60-80 mm Water column)

7.1.6) Position of Alarm level Switch S1 (At display)

Your additional Comments:

Yours truly,

Schaller Automation
Please turn page



Notes

A large, vertical rectangular area with a light gray background, intended for taking notes.



Notes



Notes



Notes

Options

List of Options for VN 87

As an option, the following device extensions can be supplied for the oil mist detectors of series 87:

Item	Description	Article No.
1	Protecting cover 10015	
2	Pressure control unit with input throttle 10001	
3	Typhoon filter 10632	
4	Measuring head heating system 10671	
5	Pressurised air scavenging 10752	
6	Analog opacity indicator 10058	

Description of the individual items

Item 1, Protecting cover

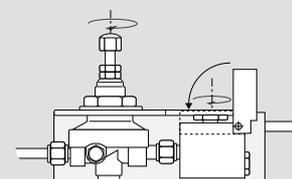
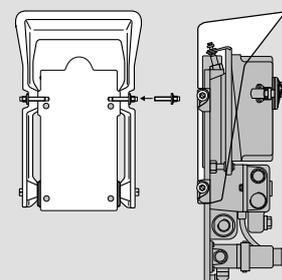
The protecting cover can easily be mounted on the four provided threads on the base plate of the VN device. It serves to protect the device against mechanical damage and contamination.

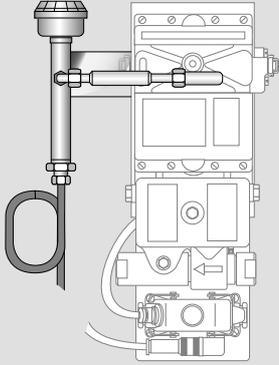
Item 2, Pressure regulator unit

The pressure reducer unit consists of a pressure reducer and a throttle block. Both parts are mounted together on a frame which is fastened by 3 screws, M8.

The pressure reducer device is especially designed to supply the draft air to the VISATRON (VN) device. The throttle block ensures that the negative pressure in the VN is limited and does not surpass 25% above of the calibrated negative pressure, should a failure occur in the pressure reducer (e. g. rupture of the diaphragm, etc.).

In addition, the throttle block is equipped with a filter to retain impurities from the plant air supply.





Item 3, Typhoon filter

The typhoon filter serves as a pre- filter for supplying fresh air to the scavenging air chambers of the VN device.

The typhoon filter is laterally affixed to the protecting cover of the VN device.

The filter outlet and is joined to the air inlet at the inspection cover of the VN device by means of a flexible hose.

The typhoon filter considerably increases the service life of the fresh air filter (sinter bronze), in particular, if the power plant is operated under contaminated ambient air conditions, such as dusty air, or if the plant is operated in regions where the air humidity is high. The typhoon filter is furnished with a filter cartridge which can be cleaned with compressed air (blowing from inside outwards) or, if required, be replaced with by unscrewing the top cover.

The typhoon filter consists of:

- a complete filter
- a special inspection cover for the measuring head
- a connecting hose

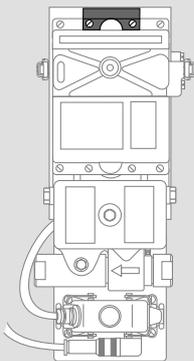
Item 4, Measuring head heating system

A standard heating element is installed in all the VN 87 series, in the base plate.

This heating unit might not be sufficient to cover all cases (cases of extreme humidity in the crankcase, higher water content in the lubricating oil or lower than normal ambient temperatures).

The measuring head heating system serves to warm up the top of the measuring head and the crankcase gas flowing through the VN device, in order to avoid condensation of water, especially in climatic zones with high humidity or low temperatures. Condensation of water may trigger a false high oil mist alarm when small droplets of water are detected by the optical measuring track and shut down the engine.

The measuring head heating system can be mounted on top of the measuring head and replaces the heating system in the base plate. The power supply is connected in the same way as the heating system of the base plate by means of a plug under the main Harting plug on the base plate.



Item 5, Pressurised air scavenging

By means of driving air scavenging it is possible to provide filtered air to the scavenging air chambers independent of the ambient air.

This option is recommended to prevent false alarms with consequential engine shut downs due to a fire with smoke development in the engine room. The smoke may reach the VN device, entering through the fresh air slots in the inspection cover, passing through the fresh air filters (sinter bronze filters) to the optical measuring track, triggering a high oil mist alarm. The pressurised air scavenging receives the air through the nozzle of the draft pump which is connected with a hose to the special inspection cover on the measuring head. The air flow is metered by special jets located in the nozzle and inspection cover.

Item 6, Analogue opacity indicator

The analogue square shaped opacity indicator may be utilised for all VN 87 devices. Its dimensions are 96 x 96 mm and it is appropriate for the installation into switchboards or panels. The analogue opacity indicator is connected to the terminals 9 (+) and 10 (-) of the VN 87 device. The relative distance to the adjusted alarm level is indicated on a scale from 0 to 1, meaning 0% to 100% being away from the alarm level.

Example: If the measured opacity has reached a value corresponding to 50% of the adjusted alarm level, the analogue opacity indicator will display the value 0.5.

Item 7, Siphon block assembly systems

Siphon blocks are devices which enable to drain the accumulated oil, from the oil mist suction pipes, directly back to the engine crankcase. The siphon blocks allow a horizontal suction pipe installation, from compartment to compartment.

Conventional suction pipe systems, without siphon blocks, require to be installed with a gradient of 2% to 4% ascending to the VN device, in order to drain the precipitated oil back to the engine.

It is imperative to drain the oil to the crankcase and avoid potential clogging.

Special engine-oriented assembly systems in modular design are available for VISATRON Oil Mist Detectors for a large number of two- and four- stroke engine types of various manufacturers.

