

**SAFETY
FOR
YOUR
ENGINE**



**SCHALLER
AUTOMATION**



Engine Protection Partner AS

Schaller Automation's Service, Repair & Sales Centre



A guide for VISATRON
Oil Mist Detector user's



Trouble shooting



Spare parts



Service & repair



Exchange pool

Norway, Sweden, Finland, Denmark, Iceland, Estonia, Latvia & Lithuania

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About this guide

This *Guide for Visatron Oil Mist Detector user's* has been designed especially for Engine Protection Partner AS, and will answer your questions concerning the handling, operation and maintenance of the oil mist detector Visatron series. Our intention is to make it more easy to fault locate, solve technical problems and to understand the basic functionality of the oil mist detector. Should you encounter any interruption or breakdown of your Visatron oil mist detector during operation, please find contact details at: <http://www.epp.no>. The repair of OMD device should be carried out by Engine Protection Partner AS- as repair center dedicated and authorized by Schaller Automation. You can expect safe and reliable operation of your OMD only when the device is operated in accordance with this guide.

Please take note of the following:

- Please read this OMD handbook thoroughly and acquaint yourself with the correct installation, operation and maintenance of your Visatron device.
- Use the Visatron devices only for the purpose described in the operating manual.
- Incorrect maintenance and handling errors may cause possible devices failure or an unsafe operating environment.
- The Visatron devices may only be used by authorized staff.

The original Operation Manual for VN/87plus can be downloaded at:



http://epp.no/bilder/filer/manuals/180040_Manual_VN87plus_Ver.2.1_Sep_2013_geschutzt.pdf


The original Operation Manual for VN/87 EMC can be downloaded at:

http://epp.no/bilder/filer/manuals/1504_VN87e-3b.pdf

Safety instructions

The Visatron oil mist detectors are manufactured according to the high quality standards of Schaller Automation and must pass stringent factory test. In order to keep the device in a smooth and problem free operation, the user has to take note of the safety hints and warnings. In the instruction manual they are marked with the following symbols:

	Used symbols:
	CAUTION! Do not ignore this text in this box. Personnel safety can be endangered or the device can be damaged.
	WARNING! The marked text contains important information.

	<p style="text-align: center;">WARNING:</p> <p>Do never ignore or try to restart the engine after a High Oil Mist Concentration Alarm/ Shutdown of the engine, before the cause of overheating has been found and corrected! <u>Otherwise you risk heavy engine damage or an oil mist explosion!</u> When the engine has been overheated, crankcase doors and other hand hold covers must remain closed for a minimum of 10 minutes after the engine is shut down!</p>
	<p style="text-align: center;">Reset of Oil Mist Alarms:</p> <p>CAUTION! Ensure that the oil mist concentration inside the engine has fallen under the Lower Explosion Level (LEL), and the cause of overheating the engine has been found and corrected- before acknowledging an oil mist alarm by pressing the Oil- Mist- Alarm button. <u>Otherwise you risk an oil mist explosion!</u> Follow the instructions of engine builder, ship yard and ship owner! Use a monitoring device at a safe location (e.g. ECR) to check for the actual oil mist concentration. At an Oil Mist Alarm, Schaller Automation strongly recommends to approach the engine only after indicated oil mist concentration (LED Chain) has lowered to half of its bar indication (Visatron device and Remote Indicator II)</p>

Why use of oil mist detector

With the very successful VISATRON VN/82 and VN/87 Oil Mist Detectors (OMDs), Schaller Automation has proven that oil mist is an early indication of an upcoming lubrication problem, and that the VISATRON detectors are a successful, false-alarm-free immune system for engine protection against crankcase explosions caused by the ignition of oil mist.

Crankcase explosions, which are caused by overheating of the moving components inside engines generating a potentially explosive oil mist, have devastating economic consequences and can endanger lives. Within the last four decades, the oil mist detection system has been perfected to a point where reliable crankcase monitoring systems have been delivered to the engine industry.

Customized oil mist detection systems:

Schaller Automation now offers false-alarm free VISATRON oil mist detection systems, with customized hardware and parameter settings to suit the specific engine type.

Oil Mist Detector advantages:

Following the mandatory SOLAS regulations for fire precaution, classification societies to be the number one choice for oil mist detection systems to be the number one choice for monitoring as part of the safety system required for marine engines with power in excess of 2,250kW, and / or a cylinder bore of more than 300mm.

This is because generic sensors measuring temperature and pressure are not sufficiently effective to guarantee the required operating safety, as they do not monitor a number of lubricated sliding surfaces.

Surfaces that can generate intensive oil mist in addition to the crankshaft bearing system include:

- *Pistons in cylinder liners*
- *Crankshaft bearings such as main bearings and big-end bearings*
- *Camshafts, their bearings and cams*
- *Timing gear shafts and their bearings*
- *Gear boxes with their bearings, and in some cases pumps*
- *Guide blocks and paths in cross-head engines*

Oil mist in these sliding surfaces can only be monitored by an oil mist detection system, and therefore in the case of an overheating phenomenon starting in one of them, or a possible piston seizure occurring, an oil mist detection system should be employed.

According to the information of a major classification society, there are, on average, one to two crankcase explosions a week onboard vessels worldwide, causing damage to human health and / or material; and this figure does not count cases where no visible human or material damage occurred, but expensive downtimes of engine and vessel had to be accepted.

Taking measures against the severe damage caused to large diesel and gas engines by oil mist explosions has therefore become far more important, as has an awareness of the need to take responsibility in managing potentially dangerous technologies.

For more than 40 years, Schaller Automation has been engaged in the protection of large diesel and gas engines against severe damage and their self-destruction. Schaller Automation's co-operation with renowned German research institutes, and the findings in scientific projects initiated by the company, are both invaluable toward the development of products that provide false-alarm-free safety monitoring.

Engine Protection Partner AS

is a part of the SCHALLER AUTOMATION group, and are the main center for *NORWAY, SWEDEN, DENMARK, FINLAND, ICELAND, ESTONIA, LATVIA and LITHUANIA*. Our location is Bergen city in Norway. Since the start in 1995, our high knowledge to the technology has been leading us to be well-known name onboard vessels around the world using the Visatron oil mist detector systems. Our philosophy is to provide the best possible service and to ensure the safety of large diesel, gas and dual fuel engines against crankcase explosions by detection of oil mist.



ENGINE PROTECTION PARTNER AS provides you as customer total service within sales, technical support, service and repairs 24/7. ENGINE PROTECTION PARTNER AS is authorized by SCHALLER AUTOMATION for repairs. The main stock center ensures you as customer deliveries within 24 hours. ENGINE PROTECTION PARTNER AS is certified by Intertec Certification according to DIN EN ISO 9001:2008.

Schaller Automation Gmbh



has for more than 50 years contributed worldwide to achieve a safe operation of large diesel, gas and dual fuel engines, brought innovative products to the market and build a trustworthy partnership with clients. These qualities have made SCHALLER AUTOMATION to become the market leader in the sector of the protection of large diesel, gas and dual fuel engines against crankcase explosions by detection of oil mist. SCHALLER AUTOMATION employs more than 70 engineers, task specialists. A close cooperation with several universities and private research institutes allows SCHALLER AUTOMATION to bring both together for best result: theoretical and practical know how. As the company's philosophy is highly based on quality aspects, SCHALLER AUTOMATION is certified by Germanischer Lloyd Certification GmbH, Hamburg according to DIN EN ISO 9001:2000.

With more than 50 000 installations world- wide, Schaller Automation is the marked leader in the oil mist detection!

Our services

ENGINE PROTECTION PARTNER AS is main center for following countries:

- **Norway**
- **Sweden**
- **Denmark**
- **Finland**
- **Iceland**
- **Faroe Island**
- **Estonia**
- **Latvia**
- **Lithuanian**



ENGINE PROTECTION PARTNER AS is a part of the SCHALLER AUTOMATION group, we are presented to support you for service on following sites:

- **Singapore**
- **China**
- **Europe**
- **India**
- **USA**
- **Australia**

Wherever your ships are located around the world, we support you through the SCHALLER AUTOMATION network!

We provide following services:

- Sale of complete VISATRON oil mist detector systems
- Sale and installation of complete oil mist detector kits
- Complete range of spare parts with delivery within 24 hrs.
- Exchange Pool (EXP) for all systems
- Vessel Service System (VSS) – maintenance agreements
- Authorized repair & service department
- Service on customer's location's
- Training of oil mist detector user's
- Service on-line 24/7

Sale of complete oil mist detector systems and installation kits

ENGINE PROTECTION PARTNER AS is supplying oil mist detectors in high quantities to the market every year. Our special "know how" ensures that you get the best protecting solution for your engine. We are in the position to offer complete systems to correct prices and short delivery time. All system types are presented in our main stock, and the delivery time are 1 day after received order.

ENGINE PROTECTION PARTNER AS is supplying complete installation kits according to our data base for mostly all engine types. We also design and produces complete installation kits. Our Service Team (ST team) is helpful for making installations on site.



Complete range of spare parts with delivery within 24 hours...



ENGINE PROTECTION PARTNER AS has a main stock for all types of spare parts for the oil mist detectors. The delivery time for spare parts is normally within 24 hours after received order. We have spare parts to following oil mist detector ranges: VN/79, VN/82, VN/87, VN/87 EMC, VN/87plus & VN/93.

You will find a good presentation of the different spare parts in this catalog. If you have questions regarding spare parts, please contact us, and we will be helpful to assist to find the correct parts!

For maintenance of your oil mist detector, we provide spare part kits for each recommended maintenance procedure. These kits ensure you that you got correct parts and correct needed quantities of each different part.



"Send us the order today- and get the parts delivered by tomorrow"

Repair & service department

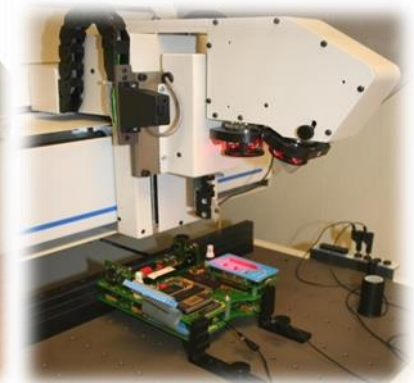
ENGINE PROTECTION PARTNER AS is authorized by SCHALLER AUTOMATION GMBH & CO for repairs on component level.

The repair and service department is authorized by Schaller Automation GmbH & Co, and it is known for high quality in all stages with the last technology in use. Our workshop has become known for quick repairs and first class service. All completed repairs goes through extensive tests and are delivered with full documentation. The repair department is certificated according to DIN EN ISO 9001:2008.

The repair department is separated in two departments: *electronic repairs* and *mechanical repairs*. ENGINE PROTECTION PARTNER AS ensures always highly skilled personnel specialized for the different repair processes. In the electronic repair department, you will find the latest repair technology based on the POLAR robot fault locators.

The repair department are flexible, so if you require urgent service/ repair of your Visatron oil mist detector- please contact us- we always find good solutions!

- *High quality repairs!*
- *Full documentation of your device!*
- *Short delivery time!*



Exchange pool (EXP) for all systems

We offer a complete stock of exchange units. You can order after your specific needs, for example a measuring head or a complete oil mist detector system. Our systems are based on the principle: "Plug & Play". This means that it is easy to make the installation by the crew of the different parts in the exchange pool. Installation documentation, return form sheet with return labels ready filled out by us, are following each exchange pool component- to make it easy for you as user to ensure correct return of the defect components. Normal return period is 60 days of the defect components. If you face problems with delay, please contact us, and we will extend the return period up to 120 days without any extra cost!

"Why spend a lot of money ordering a service engineer, when the problem can easily be solved by the crew onboard with an exchange unit?"

See chapter: Exchange pool for complete overview of presented EXP systems!



Service on customer location

We have our own highly skilled service crew for service at vessels/ power plants location. We are making sure that the complete system works according to the specified instructions of the system. This means that we are checking and testing not only the oil mist detector- but the complete oil mist detector installation with sampling funnels, tubing system, pressure reducer etc.

ENGINE PROTECTION PARTNER's service crew operates in Norway, Sweden, Denmark, Faroe Islands, Finland, Iceland, Estonia, Latvia and Lithuania. In countries outside this area, we use our Schaller Automation network. Beside of our main region, we are presented with service crew in Asia, Europe and USA.

Our highly skilled personnel are making training for the crew if this is requested!



Product description VN 115 series

VISATRON VN 115 type is the most used oil mist detector in our series. It is specially used on 4-stroke engines. During the last 30 years, the VN 115 series has been delivered as VN 115/79, VN 115/87 (EMC/ CE) and VN 115/93. From October 2008 the model VN 115/87 EMC/CE has been replaced by the VN 115/ 87plus series. Both have the same mechanical and electrical characteristics, being fully compatible and interchangeable. The new developed VN /87plus are equipped with 4- 20mA signal or RS 485 serial port.

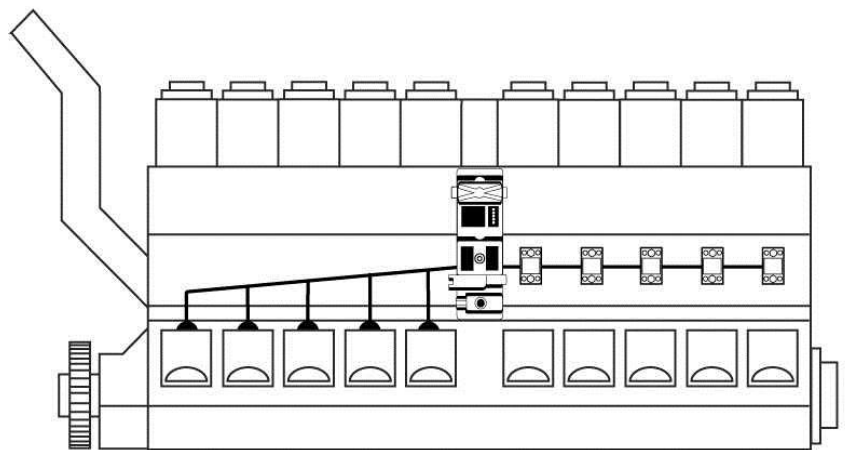
How does it work?

The VN 115 series continuously and simultaneously evacuate crankcase atmosphere from each crankcase compartment between two main bearings. The VN 115 and VN 116 series use a header-suction-tube system for this purpose. The oil mist detector is positioned in the middle between two header-suction-tube sections located on the engine sides; from these sections, single-suction tubes branch off near the compartments. These tubes are considerably thinner than the header-suction tubes and they have a throttling effect. Owing to the large header-suction- tube diameter the vacuum and consequently the sample flow at each suction point remain virtually constant. The arrangement of the detector in the middle of the header-suction tube results in an optimally short sample running time in the tube system. In the detector itself the sample mixture of both header-suction-tube sections is conducted through an optical turbid metric channel. Subsequently, the oil mist is discharged together with the exhaust air from the wear-resistant air jet pump. The turbidity of the crankcase atmosphere (oil mist droplets having a diameter of approx. 5 micron) is measured by optical absorption. The measuring path consists of two infrared diodes, one of them working as a transmitter and the other one as a receiver. Oil mist passing between them absorbs some of the infrared light, thereby reducing the amount of light reaching the receiver. The selected unit of measurement is % opacity [%OP]; 0% opacity means zero, turbidity, 100% OP, however, total optical absorption.



Typical installation solution for the VN 115 series:

The most typical installation method for the VN 115 series is to place the oil mist detector in mid center of the engine. The VN 115 series are using a main tube (left & right side), and collect the oil mist from each suction point. **The VN 115 series indicates that there is detected high oil mist level in crank case during an oil mist alarm. The VN 115 series do not indicate from what cylinder the high oil mist concentration is detected.**



VN 115/87plus	11669	Oil Mist Detector VN 115/87plus complete. Configuration: 10,00 K ohm wire break resistance- RS485-E4
VN 115/87plus	11655	Oil Mist Detector VN 115/87plus complete. Configuration: 10,00 K ohm wire break resistance- RS485-E6
VN 115/87plus	11870	Oil Mist Detector VN 115/87plus complete. Configuration: 24,90 K ohm wire break resistance- 4-20 mA-E4
VN 115/87plus	11659	Oil Mist Detector VN 115/87plus complete. Configuration: 33,20 K ohm wire break resistance- 4-20 mA-E4
VN 115/87plus	11650	Oil Mist Detector VN 115/87plus complete. Configuration: 33,20 K ohm wire break resistance- RS485-E4
VN 115/87plus	11755	Oil Mist Detector VN 115/87plus complete. Configuration: 33,20 K ohm wire break resistance- RS485-E5
VN 115/87plus	11054	Oil Mist Detector VN 115/87plus complete. Configuration: 33,20 K ohm wire break resistance- RS485-E6
VN 115/87plus	11657	Oil Mist Detector VN 115/87plus complete. Configuration: 3,30 K ohm wire break resistance- 4-20 mA-E4
VN 115/93	11200	Oil Mist Detector VN 115/93 complete. Configuration: 33,20 K ohm wire break resistance- RS485-E4
VN 115/93	11990	Oil Mist Detector VN 115/93 complete. Configuration: 33,20 K ohm wire break resistance- RS485-E5

Product description VN 116 series

series as compared to the VN 115 series is more sensitive because it has an additional differential alarm level. It is used on 2 & 4-stroke engines. During the last 30 years, the VN 116 series has been delivered as VN 116/82, VN 116/87 (EMC/ CE) and VN 116/93. From October 2008 the model VN 116/87 EMC/CE has been replaced by the VN 116/ 87plus series.

How does it work?

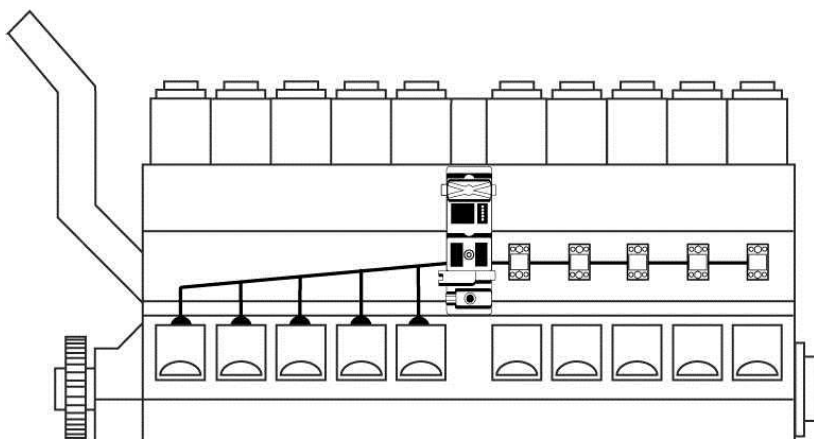
It compares the oil mist concentration from each side of the header-suction- tube section and responds if there is a difference, this being a sure sign for an overheating damage in the compartment group with the higher opacity. The differential alarm level is carried along with regard to its sensitivity relating to the 10-stage adjustment of the alarm level which is also available for VN 115. For measuring the opacity differential, the sample flows of both header-suction-tube sections are fed to the turbid metric channel one after the other by closing the respective tube sections alternately by means of reed valves. The microprocessor saves both opacity values and executes the opacity comparison (damage check). In home position both valves are open. They only become operative if the compound opacity from both header-suction-tube sections exceeds the sensitive threshold for starting the damage check. This will trip an alarm if the decisive differential alarm level is being exceeded. At the same time it is indicated in which compartment group the damage has occurred. Oil mist is explosive from a concentration of 48 mg of atomized oil in 1 liter of air = 40% OP, ignition temperature of approx. 500 C.

It is important that the opacity value exponentially depends, upon the oil mist concentration, i. e. it is already very high in case of a minor turbidity. Therefore, turbidity measurement with the header-suction-tube system can also reach a high sensitivity (e.g. 0,5% OP= 0,1 mg/l of oil mist) from a damaged compartment mixed with crankcase atmosphere from the other compartments is diluted in the header-suction tube. In case of medium speed trunk-piston engines the compartment volumes are relatively small compared with the crankcase of crosshead engines so that the oil mist has developed from an overheating damage will rapidly result in a higher concentration.



Typical installation solution for the VN 116 series:

The most typical installation method for the VN 116 series is to place the oil mist detector in mid center of the engine. The VN 116 series are using a main tube (left & right side), and collect the oil mist from each suction point. The VN 116 detect and gives indication from witch side of the installation the oil mist comes from during an high oil mist concentration alarm!



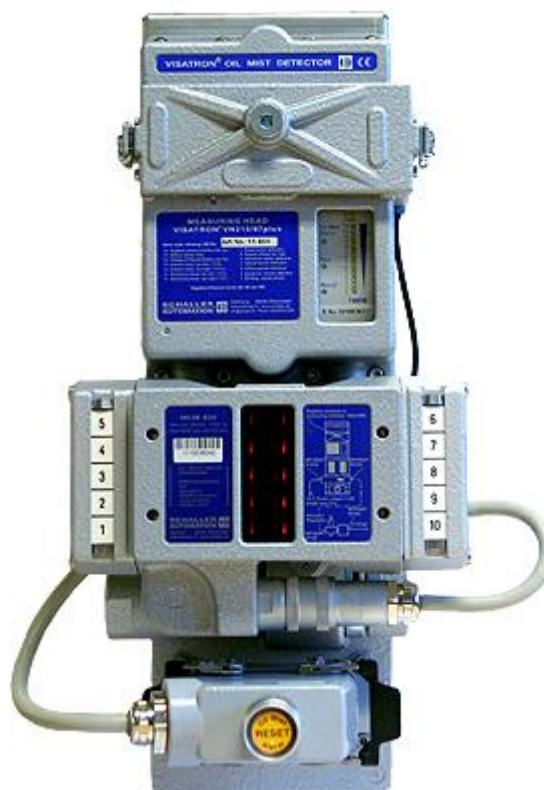
VN 116/87plus	11760	Oil Mist Detector VN 116/87plus complete. Configuration: 33,20 K ohm wire break resistance- 4-20 mA-E4
VN 116/87plus	11750	Oil Mist Detector VN 116/87plus complete. Configuration: 33,20 K ohm wire break resistance- RS485-E4
VN 116/93	11400	Oil Mist Detector VN 116/93 complete. Configuration: 33,20 K ohm wire break resistance- RS485-E4
VN 116/93	11411	Oil Mist Detector VN 116/93 complete. Configuration: 3,30 K ohm wire break resistance- RS485-E4

Product description VN 215 series

series are mostly used on 2 -stroke engines. During the last 30 years, the VN 215 series has been delivered as VN 215/82, VN 215/87 (EMC/ CE) and VN 215/93. From October 2008 the model VN 215/87 EMC/CE has been replaced by the VN 215/87plus series.

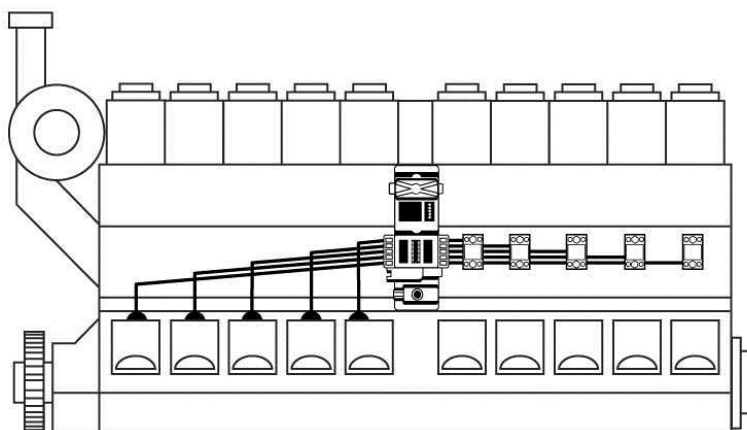
How does it work?

It operates in the same way as the VN 116 series as far as the tripping of an alarm is concerned, however, it is able to additionally indicate the suction point with the highest opacity and thus the compartment in which the overheating damage has occurred. Unlike the other types, the VN 215 series has a single-suction-tube system, each compartment being connected by a separate tube to valve box designed for 10 suction lines. All procedures are similar to those of type VN 116 series. Normally, the compound opacity of the oil mist from all compartments will continuously be measured. If the opacity exceeds the damage check starting threshold a damage check will be executed. If the differential alarm level is exceeded, an alarm causing the automatic stop of the machine or a speed reduction will immediately be tripped. In contrast to the type VN 116 series, a search run will be continued. By closing the valves of certain compartment groups according to an iteration procedure and by an opacity comparison, the single-suction line can finally be determined which is supplied with oil mist from the compartment in which the overheating damage has occurred. For damage indication on the detector, the position of the valve which is still left open is used for indicating the damaged compartment.



Typical installation solution for the VN 215 series:

The most typical installation method for the VN 215 series is to place the oil mist detector in mid center of the engine. The VN 215 series use single tubes to each compartment, and are normally installed at the mid center of the engine. **The VN 215/87plus gives indication from which suction point there is high oil mist concentration during a high oil mist concentration alarm!**



VN 215/87plus	11669	Oil Mist Detector VN 115/87plus complete. Configuration: 10,00 K ohm wire break resistance- RS485-E4
VN 215/87plus	11655	Oil Mist Detector VN 115/87plus complete. Configuration: 10,00 K ohm wire break resistance- RS485-E6
VN 215/87plus	11870	Oil Mist Detector VN 115/87plus complete. Configuration: 24,90 K ohm wire break resistance- 4-20 mA-E4
VN 215/87plus	11659	Oil Mist Detector VN 115/87plus complete. Configuration: 33,20 K ohm wire break resistance- 4-20 mA-E4

Pressure reducer. Part no. 10001

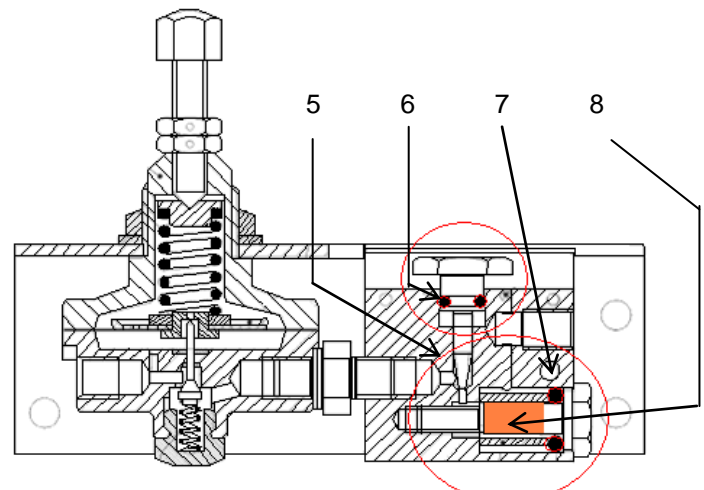
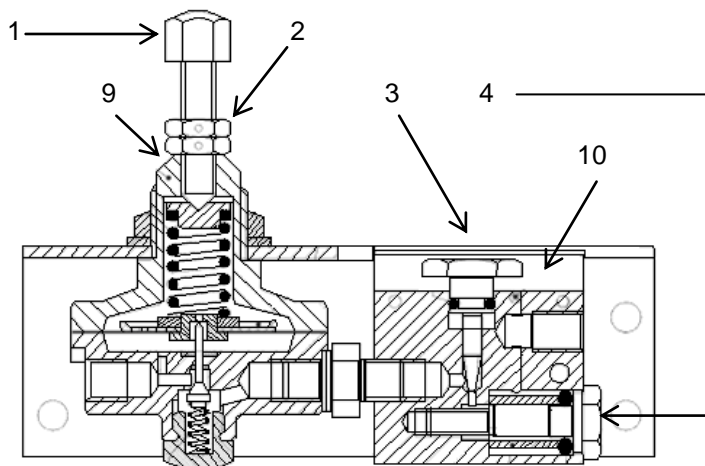
The Visatron pressure regulator is an important part combined with the oil mist detector. The device secures a safe operation of the airflow supplied to the oil mist detector. The system is build up with a safety unit that secures the airflow not to pass over max. 90,00 mm WC. The system also provides clean air to the oil mist detector threw the filter system. The pressure reducer is used for all VISATRON oil mist detectors.

Benefits:

- The pressure reducer secures stabile and clean air to the oil mist detector
- Air filter installed in the safety unit
- Solid construction with long life time
- Complete repair/ maintenance kit available



Technical overview/description of device:



1. Adjusting set screw
2. Adjusting safety screws
3. Setting screw **
4. Bronze filter plug
5. O- ring for throttle set screw- small. P/n: 10679

6. O- ring for throttle set screw. P/n:10004
7. O-ring for bronze filter screw. P/n:10003
8. Pressure reducer filter. P/N: 10002
9. Main adjusting device
10. Safety device

** On devices delivered after 01.2012, setting screw is not presented - as the setting point is set by manufacturer!

Repair kit for pressure reducer. P/n.: 11068, contains following parts:

- 1 x The complete adjusting device incl. adjustment screw
- 1 x Filter for pressure reducer. P/n: 10002
- 1 x O- ring for bronze filter screw. P/n: 10003
- 1 x O- ring for throttle set screw. P/n: 10004
- 1 x O- ring for throttle set screw- small. P/n: 10679



Part no:	Product:	Other information:
10001	Pressure reducer	Complete reducer with safety device
10002	Filter for pressure reducer	Shown as no. 8 under "Technical description"
10003	O- ring for bronze filter screw	Shown as no. 7 under "Technical description"
10004	O- ring for throttle set screw	Shown as no. 6 under "Technical description"
10679	O- ring for throttle set screw- small	Shown as no. 5 under "Technical description"
11068	Repair kit for pressure reducer	See: "Repair kit for pressure reducer"

Driving air conditioning kit. Part no. 272213

In case of a non optimal driving air quality to the oil mist detector, the driving air conditioning kit (P/n: 272213) may help you getting rid of failing measuring heads, being activated eg. by failure LED no. 14- negative pressure/ airflow too low. The water separator device eliminate the risk of water making technical problems inside the pressure reducer, measuring head and the ejector pump. The system are expesially made to rise up the air quality to a high stabile level.

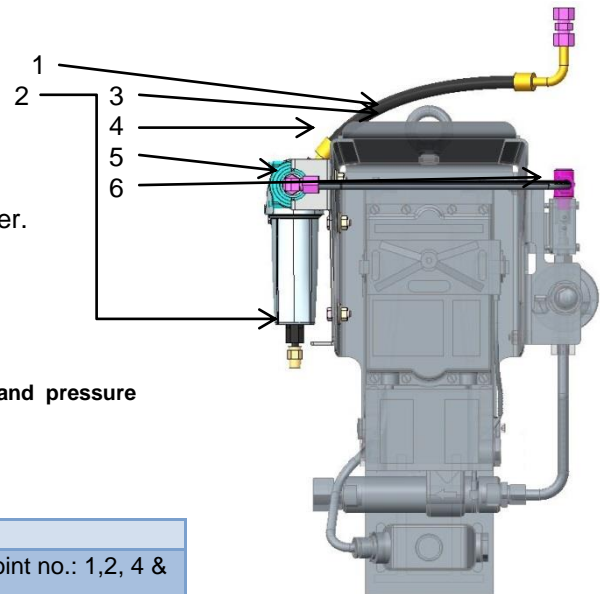
Benefits:

- For longer lasting fresh air filter/ scavenging air filter (P/n: 10042) lifetime
- Makes independ of onboard air quality
- Automatic de- oiling/ watering system as option

Technical overview/description of device:

1. Flexible tube for connection to inlet compressed air
2. Draining for water/ oil
3. Protection cover. P/n: 10753**
4. Connection pipe between separator unit and pressure reducer. P/n: 10001
5. Separator device
6. Pressure reducer. P/n: 10001**

**** The driving air conditioning kit requires protection cover (P/N: 10753) and pressure reducer (P/n: 10001) for installation!**



Part no:	Product:	Other information:
272213	Driving Air Conditioning Kit	Complete kit including point no.: 1, 2, 4 & 5
10753	Protection cover	The driving air conditioning kit requires protection cover for installation.
10001	Pressure reducer	The driving air conditioning kit requires pressure reducer for installation.

Digital u- tube manometer. Part no. 100138

The digital u- tube manometer is easy to use for checking the negative pressure in your oil mist detector. The digital u- tube manometer shows the value in mmH2O- the same as mmWC. Recommended pressure is 60,00 mmWC/ mmH2O.

Benefits:

- Easy to use
- Do not require water to be filled in
- Solid construction with long life time
- Accurately and measuring



Part no:	Product:	Other information:
100138	Digital u- tube manometer	Complete manometer without adapter kit
10053	Quick connection for u- tube manom.	Quick connection connected to inspection cover on OMD!
1000139	Adapter kit	Adapter connections incl. flexible pipe!
100140	Batteries for digital u- tube manometer	2 x 1.5 V AAA batteries.

Remote indicator II. Part no. 11506

The remote indicator II allows the safe remote monitoring of the oil mist concentration from outside the engine room e.g. from the engine control room. In use with a VN93 or VN87plus, it is possible to monitor the relative opacity and the state of one OMD device similar to the OMD display. The connection to the VN/93 and VN/87plus units is realized by a RS485 two-wire bus. Optional the remote indicator II can be connected to a VN87-EMC unit. This connection to the VN/87-EMC is realized as a two-wire analog interface. If a VN/87-EMC is connected to the remote indicator II, the device monitors only the oil mist concentration and not the state of the OMD device.

Benefits:

Full overview of "real time" measurement of oil mist concentration
 Secures personnel's situation in cases of high oil mist alarm
 Meet's the IACS UR 10.11 requirement
 Easy to install



Accessories:

Remote indicator unit II	Part no. 11506
Connector FK-MCP 1,5/12-STF-3,81*	Part no. 11507
Grommet	Part no. 11501
Network terminator	Part no. 11502
Front glass plate for horizontal installation	Part no. 11510
Front glass plate for vertical installation	Part no. 11511
Jumper	Part no. 11512
5 x label engine type	Part no. 11508
Manual	Part no. 11088

Connection diagram for remote indicator II to VN/93 & VN/87plus:

Name:	Pin- no. Remote indicator II	Connected to pin- no. on oil mist detector:
RS485 A	1	Pin 13 of VN/93 and VN/87plus
RS485 B	2	Pin 11 of VN/93 and VN/87plus
RS485 GND	3	-----
Optional current interface +	4	-----
Optional current interface -	5	-----
VN/87- PWM interface +	6	-----
VN/87- PWM interface -	7	-----
4- 20 mA Output + (max. 220 ohm)	8	Optional to alarm monitoring system
4- 20mA Output -	9	Optional to alarm monitoring system
Earth	10	Earth & data cable shield
Power supply GND	11	0 Volts
Power supply 24 Volts	12	+24 Volts DC

Connection diagram for remote indicator II to VN/87EMC:

Name:	Pin- no. Remote indicator II	Connected to pin- no. on oil mist detector:
RS485 A	1	-----
RS485 B	2	-----
RS485 GND	3	-----
Optional current interface +	4	-----
Optional current interface -	5	-----
VN/87- PWM interface +	6	Pin 9 of VN/87 EMC
VN/87- PWM interface -	7	PIN 10 of VN/87 EMC
4- 20 mA Output + (max. 220 ohm)	8	Optional to alarm monitoring system
4- 20mA Output -	9	Optional to alarm monitoring system
Earth	10	Earth & data cable shield
Power supply GND	11	0 Volts
Power supply 24 Volts	12	+24 Volts DC

Syphon block for VN180 for VN 115 & VN 116 series. Part no. 10013

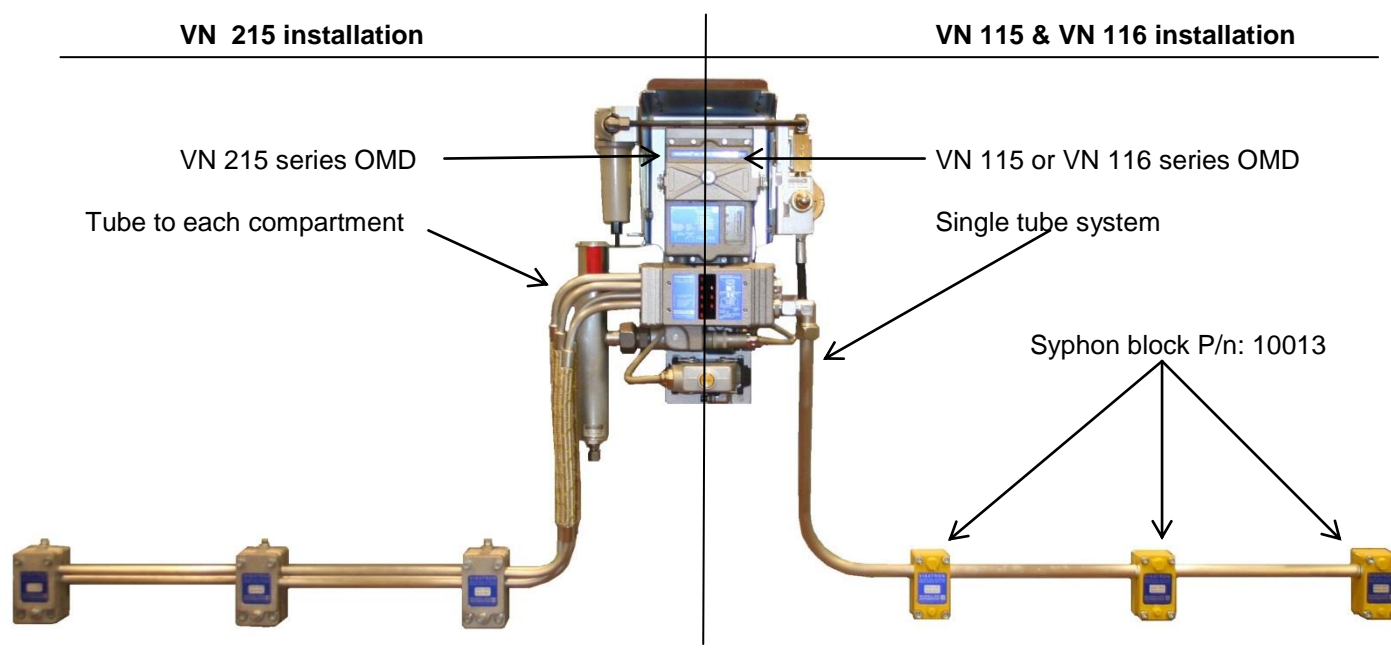
Not all engines allow installations where the main tube have recommended 2- 4 % angel. The reason why we recommend the 2- 4 % angel on the main tube is based that collected oil inside the tubing system are drained back to the crank case. The syphon blocks are specially made for oil mist detector installations where the main tubes are installed in horizontal position. The syphon blocks are designed to let the oil mist go through the pipe system and let the oil and oil droplets be drained back to the crank case. The design makes the installation of pipes quick and easy.

Benefits:

- Easy installation
- No need for main pipes system with 2- 4 % angel
- Easy to maintenance



Difference between VN 215 & VN 115/ VN 116 installation:



Accessories



1	Syphon block VN 180	Part no.: 10013
2	Rubber insert for syphon block VN180	Part no.: 10095
3	Mounting plate for syphon block VN180	Part no. 10089
4	O- ring for syphon block VN 115 & VN 116	Part no.: 365287
5	Plug for syphon block VN 180	Part no.: 340375

Syphon block VN 280 for VN 215 series

Not all engines allow installations where the main tube have recommended 2- 4 % angel. The reason why we recommend the 2- 4 % angel on the main tube is based that collected oil inside the tubing system are drained back to the crank case. The syphon blocks are specially made for oil mist detector installations where the main tubes are installed in horizontal position. The syphon blocks are designed to let the oil mist go through the pipe system and let the oil and oil droplets be drained back to the crank case. The design makes the installation of pipes quick and easy.

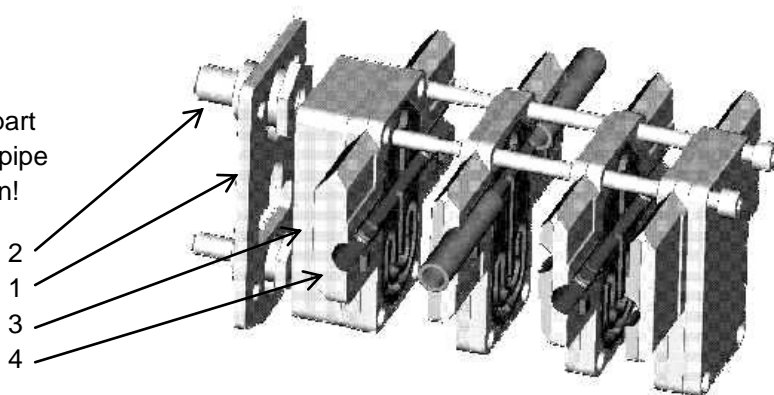
Benefits:

- Easy installation
- No need for main pipes system with 2- 4 % angel
- Easy to maintenance

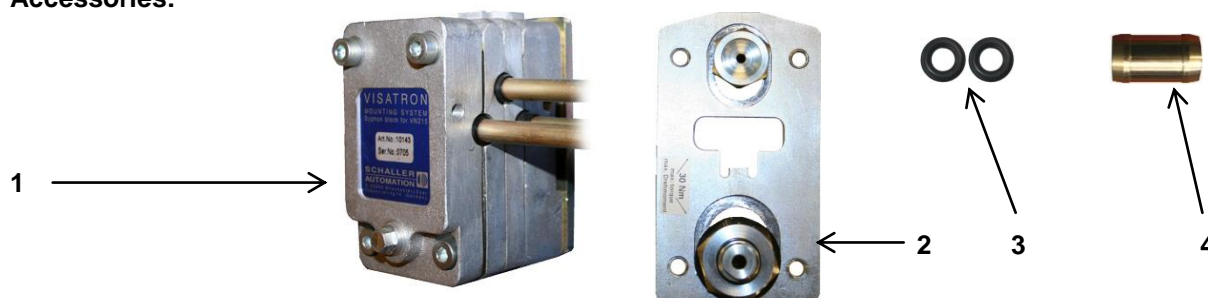
Note:

The syphon block for the VN 215 series have different part numbers acc. to the position of the syphon block in the pipe system. Please see overview under for more information!

1. Mounting plate
2. Fastening screw for sampling funnel
3. Syphon block body
4. Suction tubes to the OMD device



Accessories:



1	Syphon block VN 280 for 1 tube	Part no.: 10140
1	Syphon block VN 280 for 2 tubes	Part no.: 10142
1	Syphon block VN 280 for 3 tubes	Part no.: 10143
1	Syphon block VN 280 for 4 tubes	Part no.: 10144
1	Syphon block VN 280 for 5 tubes	Part no.: 10145
2	Mounting plate for syphon block	Part no.: 271544
3	O- ring set for siphon block VN280	Part no.: contact us!
4	Block plug for siphon block VN 280	Part no.: 10788

Service boxes & maintenance kit for Visatron oil mist detectors

To ensure and minimize downtime of your oil mist detector, we provide different types of service boxes and maintenance kits for all models. The main service boxes (in wood) are equipped with spare parts and necessary tools to provide fault locating of your system.

The maintenance kits (black plastic boxes) have all necessary spare parts to trouble shoot and make the necessary maintenance of your system. The maintenance kits are not including hand tools.

The maintenance kits are covering the recommended yearly procedure no. 3- replacement of complete maintenance kit.

Service box:

Type of oil mist detector:	Part no:
VN 115/87, VN 116/87, VN 215/87, VN 115/87 EMC/ CE, VN 116/87 EMC /CE & VN 215/87 EMC/ CE	10055
VN 115/87plus, VN 116/87plus & VN 215/87plus	11079
VN 115/93, VN 116/93 & VN 215/93	10950

The service box is recommended as a basic needed spare part to have in stock. The service box has spare parts included for the VN 115, VN 116 and VN 215 version. The service box is equipped with necessary hand tool.



Maintenance kit:

Type of oil mist detector:	Part no:
VN 115/79, VN 115/87 & VN 115/87plus	100150
VN 116/80, VN 116/82, VN 116/87 & VN 116/87plus	100151
VN 215/80, VN 215/82, VN 215/87 & VN 215/87plus	100152
VN 115/93	100153
VN 116/93	100154
VN 215/93	100155

The maintenance kit has all spare parts specified for each model. ex. the kit no. 100150, only has spare parts for the VN 115 series- not for the VN 116 or VN 215 series! This ensures that it is easy to replace and find correct spare part for your specific model. The maintenance kits are covering the recommended yearly procedure no. 3- replacement of complete maintenance kit.



Sampling funnels

As a supplier of complete oil mist detection systems to protect engines against engine explosions, Schaller Automation focuses on safety in all steps protecting engines with the Visatron series. To ensure maximum safety against, the special designed sampling funnels are used to reduce the oil/ oil mist from the engine to the oil mist detector system. A sampling funnel is a mechanical oil labyrinth where the large oil droplets are filtered away, and just the small oil mist droplet will pass. It is necessary to install long type sampling funnels if the pipe system does not have the 2-4 % of an angel. There is two different main types of sampling funnels: the short type (normally used for new engines) and long type sampling funnel (normally used for engines with age over 8 years). Please contact us for specified type for your engine!



We have sampling funnels for all different types of engines, please contact us for sampling funnel specification for your engine- and we will find the correct solution!

Upgrading your old oil mist detector to Visatron system

During the latest years, many of our clients are contacting us for assistance to get spare parts and technical assistance for other oil mist detector types than the Visatron systems. Our clients often find difficulties to get spare parts and mayor parts for these systems and in many cases the parts can be in a very high price level. A more cost efficiently solution is to upgrade the old defect oil mist detector to Visatron system. To help and secure the safety of the engine, we are offering complete oil mist detector upgrade kits. Sampling funnels are included in the kits where necessary!

In many cases part of the existing tubing system can be used- easily modified with our kit. Examples of replaceable types are Daihatsu, Graviner and QMI.

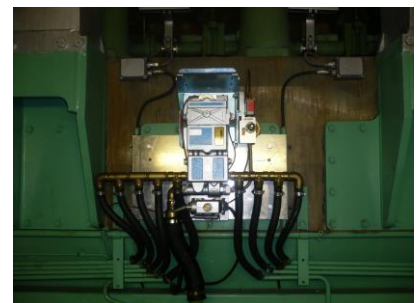
Example of replacing an old system to Visatron system:



Existing Graviner Mark 5 system...



system removed...



the VN 115/87plus installed with pipe modification adapter kit incl. sampling funnels in crank case.

Installation kit/ pipe systems

ENGINE PROTECTION PARTNER AS is supplying complete installation kits according to our database for mostly all engine types. We also design complete installation kits if required. In cases of designing installation, we need no specification drawings of the engine-only images and measurement acc. to instructions from our design team. The brackets and bending procedure of the tube takes place on the installation site. Our service personnel are recognized worldwide for its on-site installations.

All piping systems are delivered with long-type sampling funnels as standard to ensure maximum safety of protecting your engine!



Oil separators for pipe systems

Oil draining device (P/n.: 11164)

The oil draining device is used to drain back oil laying in the pipe system from the engine to the oil mist detector.

The oil draining device is basically required for pipe installations missing the possibility of recommended 2-4 % angel.



Oil draining device 11164

Oil separator. (P/n.: 11163)

This oil separator unit drains / returns the oil coming out from the oil mist detector exhaust port. The oil separator unit is the solution to eliminate the problem with oil spills around the engine and to avoid that oil mist remains in the engine room atmosphere.

The system is designed to lead back the oil into the oil sump of the engine.



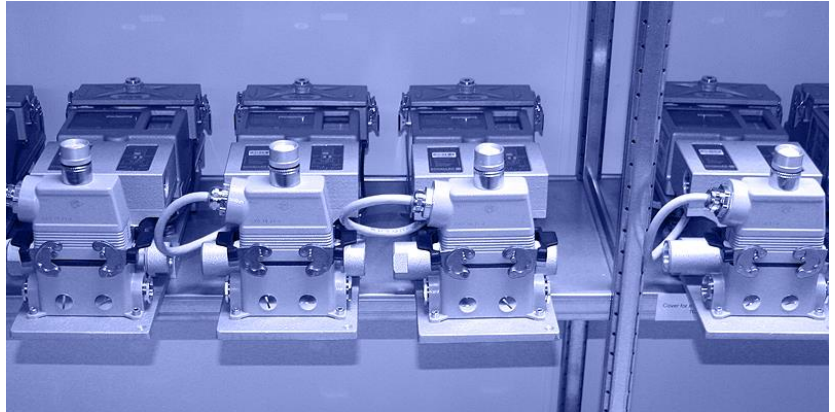
Oil separator 11164

Oil draining device	Part no.: 11164
Oil separator	Part no.: 11163

Exchange pool (ExP)

Engine Protection Partner AS offers a huge stock of exchange units. You can order what your need, as example a measuring head or a complete system. Our systems are based on the principle as "Plug & Play". This means that it is simple make the installation for the crew with the different parts in the exchange pool.

"Why spend a lot of money ordering a service engineer, when the problem can easily be solved by the crew onboard with an exchange unit?"



Every day we are sending exchange units, and the feedback from our clients are the same:

"We solved the problem without any kind of problems!"

Terms and conditions for purchase of exchange components:

- *Used exchange components are to be returned in equal numbers containing the same constituent parts as delivered.*
- *Returned components are to be in repairable condition. If the components are not in repairable condition, this will result in extra invoice to customer.*
- *If the parts are delivered later than 60 days acc. to Return Form Sheet, this will result in extra invoice to customer.*

Return address to be used for all EXP components:

Engine Protection Partner AS
O. J. Brochs gate 16A
5006 Bergen, Norway
Phone: +47 5530 1900
E- mail: epp@epp.no

Note: Always mark the goods with following information:

- **Vessel/ plant name**
- **Return Form Sheet (RFS) number**

We have the following devices in the EXP program

Type:	Product:	The Exchange package contains:	Part no.:
VN 115/87	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	10200EXP
VN 115/87	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	10201EXP
VN 116/87	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	10300EXP
VN 116/87	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	10301EXP
VN 215/87	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	10400EXP
VN 215/87	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	10401EXP
VN 115/87 EMC/CE	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	10600EXP
VN 115/87 EMC/CE	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	10601EXP
VN 116/87 EMC/CE	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	10700EXP
VN 116/87 EMC/CE	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	10701EXP
VN 215/87 EMC/CE	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	10800EXP
VN 215/87 EMC/CE	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	10801EXP
VN 115/87plus	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	12600EXP
VN 115/87plus	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	12601EXP
VN 116/87plus	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	12700EXP
VN 116/87plus	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	12701EXP
VN 215/87plus	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	12800EXP
VN 215/87plus	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	12801EXP
VN 115/93	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	11200EXP
VN 115/93	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	11201EXP
VN 116/93	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	11400EXP
VN 116/93	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	11401EXP
VN 215/93	Complete oil mist detector	Complete oil mist detector with heating element and scavenging air set.	11900EXP
VN 215/93	Measuring head	Complete measuring head with electronic module, and mounted heating element and scavenging air set.	11901EXP

Wire break resistance for oil mist alarm



Important information:

All Visatron oil mist detectors are equipped with wire break resistance for oil mist alarm. The wire break resistance is a set resistance valve for the oil mist alarm, and are connected between pin 7 & 8 and pin 15 & 16. It is important to ensure that the wire break resistance is correct according to the required resistance for the alarm shut down function of the engine. If the value is not correct according to required wire break resistance value (at the alarm shut down function panel)- this may lead to a situation where you get no shut down or reduced RPM of the engine during a real high oil mist level alarm situation!

If you are replacing the complete oil mist detector or a measuring head with ex. an exchange unit- you always need to check the documented wire break resistance on the "old" device. When you have this information, you need to check that it is the same wire break resistance value on the new device before starting up the engine. If the wire break resistance is different between the devices, you can transfer the wire break resistances (2 pc. presented on the backside of the electronic module placed in the measuring head) from the "old" device to the new device. Always make a proper test of your system when replacing measuring head or complete oil mist detector!



Wire break description for VN/87 EMC & VN/87plus:

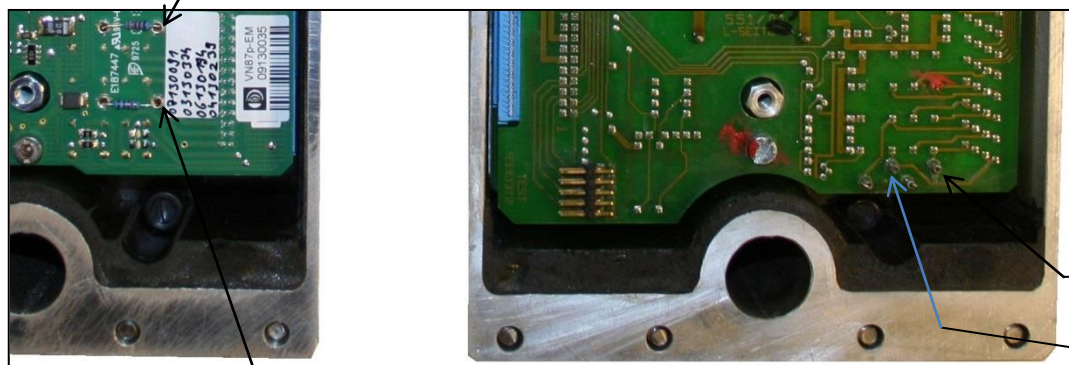
Protection plate for electronic module

Interface to monitoring device 4-20mA or RS485 (VN/87plus)

Bus address switch (VN/87plus) SW1

Sensitivity switch (VN/87plus) SW2

Wire break resistor VN/87plus pin 7 & 8



Wire break resistor VN/87plus pin 15 & 16

Wire break resistor R223- VN/87 pin 15 & 16

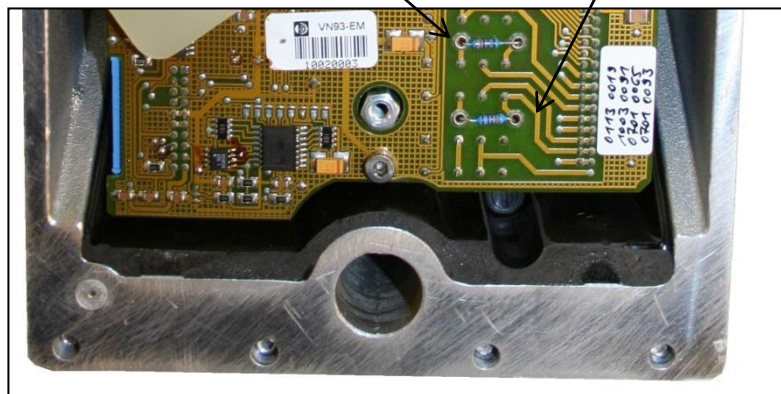
Wire break resistor R222- VN/87 pin 7 & 8

Wire break description for VN/93:

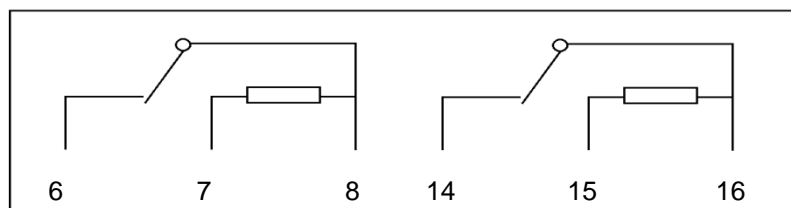
Protection plate for electronic module

Wire break resistor VN/93 pin 15 & 16

Wire break resistor VN/93 pin 7 & 8



Alarm diagram for VN/87 EMC, VN/87plus & VN/93:



Part numbers for wire break resistors:

Part no:	Value K ohm:	Other information:
100900-33,00K	33,00 K ohm	2 pc. per package incl. instruction fact sheet
100900-33,20K	33,20 K ohm	2 pc. per package incl. instruction fact sheet
100900- 24,90K	24,90 K ohm	2 pc. per package incl. instruction fact sheet
100900-10,00K	10,00 K ohm	2 pc. per package incl. instruction fact sheet
100900-3,30K	3,30 K ohm	2 pc. per package incl. instruction fact sheet

How to test the alarm system



ATTENTION! You will stop or slow down the engine during this test!
ATTENTION! Before starting the on board test, execute procedure 1 and 2 of the Recommended Maintenance Routine. The pipe system has to be clean and if used-all siphons to be filled with oil.

It is important to test your oil mist detector system regularly during maintenance work and replacement of measuring head or complete oil mist detector. It is important to ensure that the oil mist detector works according the functionality instructions and that the alarm signal from the oil mist detector reaches the shutdown/ reduced RPM function at the engine during an alarm situation!



What do you need to do the test:

To perform the functionality test, we offer you" Test plate-Kit for VN functional Test" with part no. 11072.

The kit consist of following parts:

A. Test plate

B. Test glass 10%



How to perform the test:



ATTENTION! You will stop or slow down the engine during this test!



Open the inspections cover on the measuring head...

the oil mist detector need to be in operation mode with negative pressure set to 60,00 mmWC. Place the test plate over the open chamber- the test plate will be sucked into position by the vacuum in the measuring head...

press the 10% glass into the test plate...



CAUTION!
The oil mist alarm will now be triggered, showing Alarm LED lighting up and the engine will be shutted down/ reducing the RPM!

ensure that the glass plate is in straight vertical position!

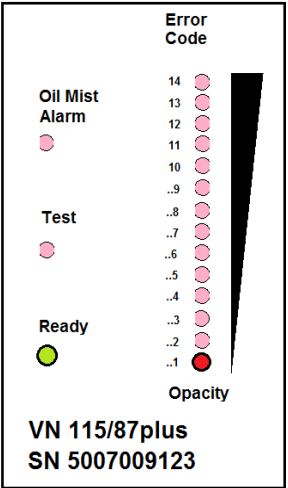
Pos.	Product	P/n.:
1	Test plate- kit for VN functional test	11072

Operating instructions of the VN/87 & VN/87plus LED display

Normal display mode under running conditions of the oil mist detector:

When starting- up the VN/87 & VN/87plus oil mist detector, following LED's will show:

- 1. LED 1 is blinking for 30 seconds
- 2. The device will show the following display: READY LED on, LED 1 on.

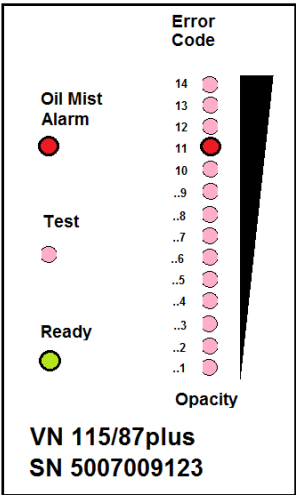


Oil mist alarm state:

In case of a high oil mist concentration, the LED goes up and at 70% opacity compared to the adjusted alarm level the Oil Mist Alarm switches on. At 100% opacity, compared to the alarm level, the Oil Mist Alarm LED starts blinking. If the opacity later goes down, later the alarm condition will be stored.

The device will show the following display:

- 1. READY LED on, ALARM LED blinking and opacity LED will go upwards during a high concentration of oil mist. The opacity LED is not blinking!

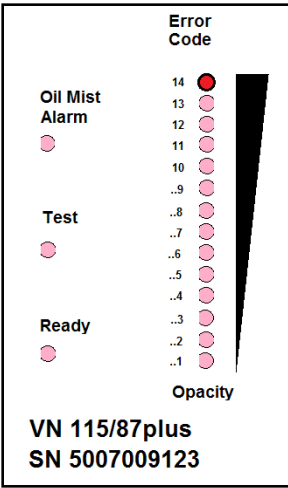


Device not ready- example of negative pressure too low. LED 14 blinking:

If a device internal error or a system failure occurs, the diagnostics system shows the failure condition by blinking LED on the LED bar. A detected oil mist alarm is displayed at this time with the TEST LED. In this case the alarm relay or shutdown relay is not switched on.

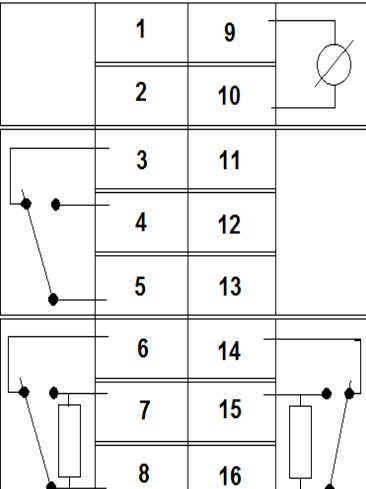

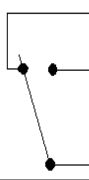
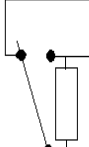
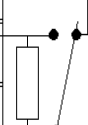
The device will show the following display:

- 1. READY LED off and blinking LED 14.

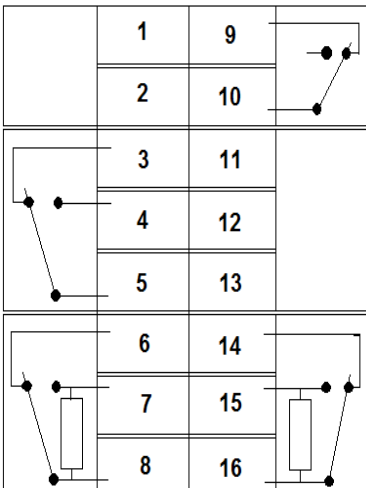
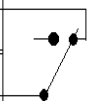
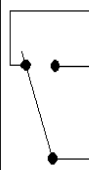
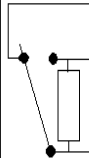
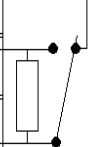


Terminal plan

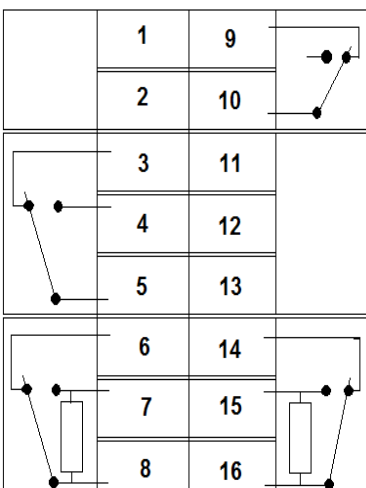
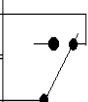
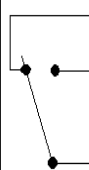
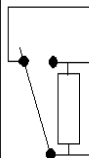
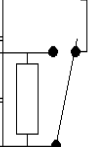
VN/87 series

24 Volts DC		1	9		2 Lines shielded analog display
24 Volts DC GND		2	10		2 Lines shielded analog display
"Ready" relay closed		3	11		Not in use!
"Ready" relay open		4	12		Not in use!
"Ready" relay common		5	13		Not in use!
"Alarm 1" relay closed		6	14		"Alarm 2" relay closed
"Alarm 1" relay open		7	15		"Alarm 2" relay open
"Alarm 1" relay common		8	16		"Alarm 2" relay common

VN/87plus series

24 Volts DC		1	9		"Pre- alarm" relay
24 Volts DC GND		2	10		"Pre- alarm" relay
"Ready" relay closed		3	11		RS485 B (opt. 4-20 mA -)
"Ready" relay open		4	12		Reserved- do not use!
"Ready" relay common		5	13		RS 485 A (opt. 4-20 mA +)
"Alarm 1" relay closed		6	14		"Alarm 2" relay closed
"Alarm 1" relay open		7	15		"Alarm 2" relay open
"Alarm 1" relay common		8	16		"Alarm 2" relay common

VN/93 series

24 Volts DC		1	9		"Pre- alarm" relay
24 Volts DC GND		2	10		"Pre- alarm" relay
"Ready" relay closed		3	11		RS485 B
"Ready" relay open		4	12		Reserved- do not use!
"Ready" relay common		5	13		RS 485 A
"Alarm 1" relay closed		6	14		"Alarm 2" relay closed
"Alarm 1" relay open		7	15		"Alarm 2" relay open
"Alarm 1" relay common		8	16		"Alarm 2" relay common

Recommended maintenance schedule:

This recommended maintenance schedule is valid for oil mist detector model:

VN 115/87	VN 115/87 EMC/CE	VN 115/87plus	VN 115/93
VN 116/87	VN 116/87 EMC/CE	VN 116/87plus	VN 116/93
VN 215/87	VN 215/87 EMC/CE	VN 215/87plus	VN 215/93

It is always a good solution to maintenance your Visatron oil mist detector system with a view to be precautionary in relation to technical problems. This eliminates the risk of downtime of the oil mist detector and the engine.

The recommended routine maintenance schedule can be followed as described below.



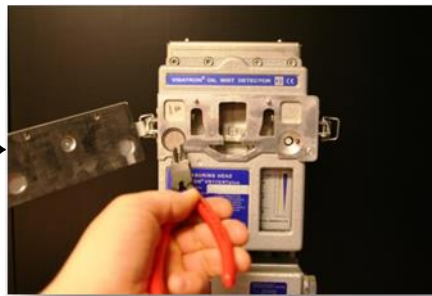
CAUTION! Maintenance work has to be done when the engine is stopped.

Procedure no.	What to do:	Time period:
1	<ul style="list-style-type: none"> Check the negative pressure with u- tube manometer. Adjust if necessary! Setting level is 60,00 mm WC! Replace the sintered bronze air filter/ fresh air filter (P/n.: 10042) in the measuring head. Clean the fresh air bores in the measuring head. Use the cleaning needle (P/n.: 10135) Clean both infra-red sensor glasses in the measuring head with cotton pins and technical alcohol, and perform test with test plate kit (P/n.:11072) to check alarm signal functionality/ shut down function of the engine. 	Every month
2	<ul style="list-style-type: none"> Replace sintered bronze filter and o- ring in the pressure regulator (P/n.: 10002 & 10003). 	Every 4 month
3	<ul style="list-style-type: none"> Replace complete service kit on OMD. Clean the inside/ outside of the base plate. Check performance of pressure regulator- replace parts if necessary! Clean suction pipes/ pipe system and siphon blocks with compressed air! 	Every year!
4	<ul style="list-style-type: none"> Replace the measuring head. Use our Exchange Pool (ExP) for this procedure! 	Every 4 years!

Procedure 1:



Check the negative pressure with u- tube manometer. Adjust if necessary! Setting level is 60,00 mm WC!...



replace the sintered bronze air filter/ fresh air filter (P/n.:10042)...



clean the fresh air bores in the measuring head. Use the cleaning needle (P/n.:10135)...



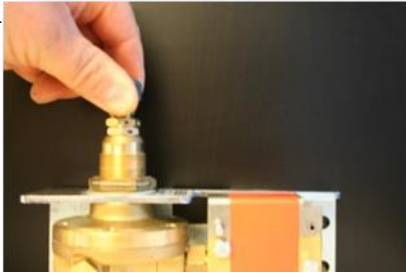
clean the infra- red sensor glasses at the left and the right side inside the measuring head. Use cotton stick (P/n.: 10036) and technical alcohol (P/n.:10035).

Procedure 2:



Replace sintered bronze filter and o- ring in the pressure regulator (P/n.: 10002 & 10003).

Procedure 3:



Stop the engine and reduce the incoming air pressure.... disconnect the RESET task connector...

dismount the measuring head housing...



disconnect the connecting case...

change the small seal (P/n.: 10206)

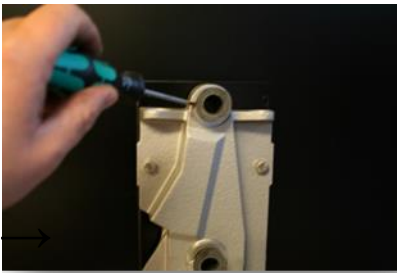
... change the valve box seal (P/n.: 10049)...



disconnect the connector case on the base plate...

unscrew the vibration plate...

change the upper & lower elastic mounting system (P/n.: 10018 & 10019)...



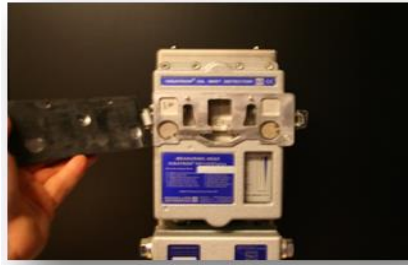
change the flexible bellows (P/n.: 10023)...

re-install the vibration plate to the base plate...

change the measuring head seal (P/n.: 10022)...



install the measuring head at the vibration plate...



open the inspection cover...



change the scavenging air filter
(P/n.: 10042)...



change the seal for inspection cover...
(P/n.: 10010/ 10166)



clean the infra- red sensor glasses with cotton sticks and alcohol...
(P.n.:10036 & 10035)



clean the bores with cleaning needle
(P/n.: 10135)...



change the screw plug seal 1/4" for inspection cover...
(P/n.: 10082)



close the inspection cover...



unscrew the plugs at the connection case...



change the screw plug seal 1/2" (P/n.: 10209)...



check the heating element if it is hot- if cold
device- replace!...



check all leaders in the main socket...
If bad condition- replace (P/n.: 10033)

Procedure 4:



Stop the engine, and replace the measuring head.
When starting up the OMD device, please check the
negative pressure and adjust if necessary!- see procedure no. 1.

Oil mist detector failure display

If an internal or a system failure occurs the diagnostics system shows the failure condition by a blinking LED on the LED bar. The error codes are shown in table under. A detected oil mist alarm is displayed at this time with the TEST LED. In this case the alarm relay or shutdown relay is not switched on.



Note:

Ensure that the LED is blinking permanently at the given LED on the OMD failure display! If the LED are blinking between the LED's (ex. LED 7 and 8) - this can be an indication that the OMD device are measuring oil mist concentration!


LED indicator panel for VN/87 & VN/87plus:

Blinking LED display:	Series VN/87plus and VN/ EMC device failures:
14	Negative pressure/ airflow too low
13	Optical sensor dirty
12	VN/87plus: Voltage of internal battery too low. VN/87 EMC: Not in use!
11	Ambient temperature too low (< 0 degrees Celsius)
10	Ambient temperature too high (> 70 degrees Celsius)
9	Electronics temperature too low (< 0 degrees Celsius)
8	Electronics temperature too high (> 75 degrees Celsius)
7	RESET button defective
6	VN/87plus: Supply voltage too high. VN/87 EMC: Selection switch defective
5	Switch for adjusting sensitivity defective
4	Optical sensor defective
3	Airflow- sensor defective
2	Electronic module defective
1	Blinking: Start-up phase

LED indicator panel for VN/93:

Blinking LED display:	Series VN/93 device failures:
18	Voltage of internal battery too low!
17	Electronic module defective!
16	Electronic module defective!
15	Optical sensor dirty!
14	Negative pressure/ airflow too low!
13	Optical sensor dirty!
12	Checksum error!
11	Ambient temperature too low!
10	Ambient temperature above 70 C°!
9	Electronic temperature too low!
8	Electronic temperature too high!
7	Light button defective!
6	Supply voltage too high!
4	Optical sensor defective!
3	Airflow- sensor defective!
2	Airflow- sensor defective!

Fault location VN/87 & VN/87plus:

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Fault	LED number 14 is blinking, and the ready light is off! - Negative pressure/ airflow too low!
Valid for:	VN/87 & VN/87plus

Step 1:



Turn off the pressure regulator...



remove the plug at the inspection cover...



install the u- tube manometer...



turn up the pressure until it reaches 60 mm WC...



the LED 14 will stop blinking, and the OMD will go back to "ready" mode.

Step 2:



Open the inspection cover ...



replace the scavenging air filter (P/n.:10042) and circlip for scavenging air filter (P/n.:10041) .



close the inspection cover.

Step 3:



Open the inspection cover...



use the cleaning needle (P/n.:10135) and clean the fresh air bores on the left and right side...



close the inspection cover.

Step 4:



Remove the measuring head...



check the gasket for measuring head (P/n.:10022). If damaged, replace the gasket...



check the flexible bellows (P/n.:10023) If damaged, replace the flexible bellows !

Step 5:



Disconnect the ejector input...

clean the unit with clean spray for OMD...

reinstall the ejector input.

Step 6:



Disconnect the ejector output...

clean the unit with clean spray for OMD...

reinstall the ejector output.

Step 7:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Digital u- tube manometer	100138	Checking negative pressure
Step 1	Standard u- tube manometer	10046	Checking negative pressure
Step 2	Scavenging air filter/ Fresh air filter	10042	Replacement of filters
Step 2	Circlips for scavenging air filter	10041	Replacement of filters
Step 3	Cleaning needle	10135	Cleaning of the fresh air bores
Step 4	Gasket for measuring head	10022	Replacement of gaskets
Step 4	Flexible bellow	10023	Replacement of gaskets
Step 5 & 6	Clean spray for oil mist detector	10035	Cleaning of parts
Step 7	Exchange measuring head	See under **	Replacing of measuring head

**** Please check your model type for correct part number under "EXCHANGE POOL"!**

Fault	LED number 13 is blinking, and the ready light is off! - Optical sensor dirty
Valid for:	VN/87 & VN/87plus

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:



Open the inspection cover...



the infrared filter glasses may be dirty...



clean the glasses with a cotton stick (P/n.:10036) and technical alcohol (P/n.:10035)...



Close the inspection cover.

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Cotton stick for cleaning of infrared sensor glasses	10036	Cleaning of the infrared sensor glasses
Step 1	Technical alcohol for cleaning of infrared sensor glasses	10035	Cleaning of the infrared sensor glasses
Step 2	Exchange measuring head	See under **	Replacing of measuring head

**** Please check your model type for correct part number under "EXCHANGE POOL"!**



Note: Only VN/87plus:

Fault	LED number 12 is blinking, and the ready light is off! - Voltage of internal battery too low!
Valid for:	VN/87plus



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	--------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**



Note: Only VN/87:

Fault	LED number 12 is blinking, and the ready light is off! - LED 12 not in use!
Valid for:	VN/87



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step1:



Push the reset button
several times...

if this does not help,
do as follows...

Step 2:



replace the measuring
head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	LED number 11 is blinking, and the ready light is off! - Ambient temperature too low!
Valid for:	VN/87 & VN/87plus

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:

VN/87plus: Engine compartment ventilator blows cold air into the device... change blowing direction of ventilator away from the OMD. Check measuring head heating if this component is defect.

VN/87: Engine compartment ventilator blows cold air into the device... change blowing direction of ventilator away from the OMD. Install heating element for measuring head (P/n.:10671) and scavenging air set (P/n.: 10798).

Step 2:




Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Heating element for measuring head- VN/87	10671	Installation of equipment- VN/87 only!
Step 1	Scavenging air set- VN/87	10798	Installation of equipment- VN/87 only!
Step 2	Exchange measuring head	See under **	Replacing of measuring head

**** Please check your model type for correct part number under "EXCHANGE POOL"!**

Fault	LED number 10 is blinking, and the ready light is off! - Ambient temperature above 70 C°!
Valid for:	VN/87 & VN/87plus

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step1:

VN/87plus: Protect device against sources of heat radiation.
VN/87: Protect device against sources of heat radiation. Install scavenging air set (P/n.: 10798)

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Scavenging air set- VN/87	10798	Installation of equipment- VN/87 only!
Step 2	Exchange measuring head	See under **	Replacing of measuring head

**** Please check your model type for correct part number under "EXCHANGE POOL"!**

Fault	LED number 9 is blinking, and the ready light is off! - Electronic temperature too low!
Valid for:	VN/87 & VN/87plus

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:

Check if engine room ventilator blows air directly at the OMD device... change blowing direction of the ventilator to ensure that cold air is not directed to the OMD device. Check measuring head heating if this component is defect.

Step 2:




Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	LED number 8 is blinking, and the ready light is off! - Electronic temperature too high!
Valid for:	VN/87 & VN/87plus

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:

VN/87plus: Protect device against sources of heat radiation, install metal heat shields against radiation if necessary and Improve fresh air circulation.

VN/87: Protect device against sources of heat radiation, install metal heat shields against radiation if necessary and improve fresh air circulation. Install scavenging air set (P/n.: 10798)

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Scavenging air set- VN/87	10798	Installation of equipment - VN/87 only!
Step 2	Exchange measuring head	See under **	Replacing of measuring head

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	LED number 7 is blinking, and the ready light is off! - RESET button defective!
Valid for:	VN/87 & VN/87plus

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:



Check if the reset button is blocked. Eliminate blocking when pushing the reset button a few times...

if this does not help,
do as follows...

Step 2:



replace the measuring head
with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under "EXCHANGE POOL"!**

 **Note: Only VN/87plus:**

Fault	LED number 6 is blinking, and the ready light is off! - Supply voltage too high!
Valid for:	VN/87plus

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:



Measure supply voltage
between pin 1 and 2.
Voltage to be 18 and 31,20 V dc...

if this does not help,
do as follows...

Step 2:



replace the measuring head
with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under "EXCHANGE POOL"!**



Note: Only VN/87:

Fault	LED number 6 is blinking, and the ready light is off! - Not in use!
Valid for:	VN/87



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	LED number 5 is blinking, and the ready light is off! - Switch for adjusting sensitivity defective!
Valid for:	VN/87 & VN/87plus



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	LED number 4 is blinking, and the ready light is off! - Optical sensor defective!
Valid for:	VN/87 & VN/87plus

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:



Open the inspection cover...



the infrared filter glasses may be dirty...



clean the glasses with cotton sticks (P/n.:10036) and technical alcohol (P/n.:10035)...



close the inspection cover.

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Technical alcohol for cleaning IR filter	10035	Cleaning of IR glasses
Step 1	Cotton stick for cleaning IR filter	10036	Cleaning of IR glasses
Step 2	Exchange measuring head	See under **	Replacing of measuring head

**** Please check your model type for correct part number under “EXCHANGE POOL”!**



Note: Only VN/87plus:

Fault	LED number 3 is blinking, and the ready light is off! - Airflow sensor defective!
Valid for:	VN/87plus

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model dtype for correct part number under “EXCHANGE POOL”!**



Note: Only VN/87:

Fault	LED number 3 is blinking, and the ready light is off! - Electronic module defective!
Valid for:	VN/87



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	LED number 2 is blinking, and the ready light is off! - Electronic module defective!
Valid for:	VN/87 & VN/87plus



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	LED number 1 is blinking, and the ready light is off! - Electronic module defective!
Valid for:	VN/87 & VN/87plus



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	All LED off! - No power on the unit
Valid for:	VN/87 & VN/87plus



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Remove the reset task house...



measure the voltage between pin 1 and 2 to be between 18 and 31,2 Vdc...



if voltage is ok- remove the measuring head...



and replace the 2A fuse.

Necessary parts used in the fault locating procedure:

Step 1	Fuse 2A	10043	Replacement of fuse
---------------	---------	--------------	---------------------

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault location on VN/93:

Fault	Error 18 - Voltage of internal battery too low!
Valid for:	VN/93



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 17 - Electronic module defective!
Valid for:	VN/93



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 16 - Electronic module defective!
Valid for:	VN/93



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 15 - Optical sensor dirty!
Valid for:	VN/93



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Open the inspection cover ...



clean the infra-red sensor glass on the left side with cotton sticks (P/n.:10036) and technical alcohol (P/n.:10035)...



clean the infra-red sensor glass on the right side with cotton sticks (P/n.:10036) and technical alcohol (P/n.:10035)...



close the inspection cover!

Necessary parts used in the fault locating procedure:

Step 1	Cotton sticks	10036	Checking negative pressure
Step 1	Technical alcohol	10035	Checking negative pressure

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 14 - Negative pressure/ airflow too low!
Valid for:	VN/93



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



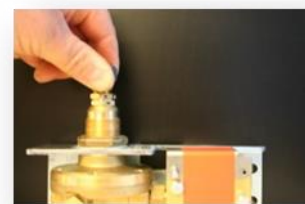
Turn off the pressure regulator...



remove the plug at the inspection cover..



install the u- tube manometer...



turn up the pressure until it reaches 60 mm WC...



the LED 14 will stop blinking, and the OMD will go back to "ready" mode.

Step 2:



Open the inspection cover ...



replace the scavenging air filter's (P/n.:10042) and fresh air restrictor's (P/n.:10992) ...



close the inspection cover.

Step 3:



Open the inspection cover...



use the cotton stick (P/n.:10036) and clean the open fresh air bores on the left and right side...



close the inspection cover.

Step 4:



Remove the measuring head...



check the gasket for measuring head (P/n.:10969). If damaged, replace the gasket...



check the flexible bellows (P/n.:10023) If damaged, replace the flexible bellows



check the flexible bellow for fresh air (P/n.:10975)- replace if necessary!

Step 5:



Disconnect the ejector input...

clean the unit with clean spray for OMD...

reinstall the ejector input.

Step 6:



Disconnect the ejector output...

clean the unit with clean spray for OMD...

reinstall the ejector output.

Step 7:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Digital u- tube manometer	100138	Checking negative pressure
Step 1	Standard u- tube manometer	10046	Checking negative pressure
Step 2	Scavenging air filter/ Fresh air filter	10042	Replacement of filters
Step 2	Fresh air restrictor	10992	Replacement of filters
Step 3	Cotton stick	10036	Cleaning of the fresh air bores
Step 4	Gasket for measuring head	10969	Replacement of gaskets
Step 4	Flexible bellow	10023	Replacement of gaskets
Step 5 & 6	Flexible bellow for fresh air	10975	Replacement of gaskets
Step 7	Exchange measuring head	See under **	Replacing of measuring head

**** Please check your model type for correct part number under "EXCHANGE POOL"!**

Fault	Error 13 - Optical sensor dirty!
Valid for:	VN/93



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:



Open the inspection cover ...



clean the infra-red sensor
glass on the left side
with cotton sticks
(P/n.:10036) and technical alcohol
(P/n.:10035)...



clean the infra-red sensor
glass on the right side
with cotton sticks
(P/n.:10036) and technical
alcohol (P/n.:10035) ...



close the inspection
cover!

Necessary parts used in the fault locating procedure:

Step 1	Cotton sticks	10036	Checking negative pressure
Step 1	Technical alcohol	10035	Checking negative pressure

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under "EXCHANGE POOL"!**

Fault	Error 12 - Checksum error!
Valid for:	VN/93



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:

Repeat parameter setting- see instruction manual!

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 11 - Ambient temperature too low!
Valid for:	VN/93



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step 1:

Engine compartment ventilator blows cold air into the device... change blowing direction of ventilator away from the OMD. Check measuring head heating if this component is defect.

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 10 - Ambient temperature above 70 C°!
Valid for:	VN/93

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:

Remove or turn away ambient heating components. Install metal heat shields against radiation. Install vortex coolers.

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 9 - Electronic temperature too low!
Valid for:	VN/93

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:

Check if engine room ventilator blows air directly at the OMD device... change blowing direction of the ventilator to ensure that cold air is not directed to the OMD device. Check measuring head heating if this component is defect.

Step 2:




Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 8 - Electronic temperature too high!
Valid for:	VN/93

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:

Remove or turn away ambient heating components. Install metal heat shields against radiation. Install vortex coolers.

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 7 - Light button defective!
Valid for:	VN/93

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:



Clean the glass LED plate...

If this does not help,
do as follows...

Step 2:



replace the measuring head with
an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 6 - Supply voltage too high!
Valid for:	VN/93

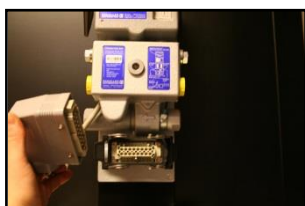


CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step1:



Remove the reset task house...



measure the voltage between pin 1 and 2 to be between 18 and 31,2 Vdc. Re- adjust the voltage if necessary!

Step 2:



Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 4 - Optical sensor defective!
Valid for:	VN/93



CAUTION!

Fault locating has to be done when the engine is stopped!

Ensure that the LED is blinking permanently at the given LED on the OMD failure display!

Step1:



Open the inspection cover ...



clean the infra-red sensor glass on the left side with cotton sticks (P/n.:10036) and technical alcohol (10035)...



clean the infra-red sensor glass on the right side with cotton sticks (P/n.:10036) and technical alcohol (10035)...



close the inspection cover!

Necessary parts used in the fault locating procedure:

Step 1	Cotton sticks	10036	Checking negative pressure
Step 1	Technical alcohol	10035	Checking negative pressure

Step 2:

Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 3 - Airflow- sensor defective!
Valid for:	VN/93

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
--	--

Step 1:

Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	Error 2 - Airflow- sensor defective!
Valid for:	VN/93

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
--	--

Step 1:

Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 1	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

**** Please check your model type for correct part number under “EXCHANGE POOL”!**

Fault	All LED off! - No power on the unit
Valid for:	VN/93

	CAUTION! Fault locating has to be done when the engine is stopped! Ensure that the LED is blinking permanently at the given LED on the OMD failure display!
---	--

Step 1:



Remove the reset task house...



measure the voltage between pin 1 and 2 to be between 18 and 31,2 Vdc...



if voltage is ok- remove the measuring head...



and replace the 3,15 A fuse.

Necessary parts used in the fault locating procedure:

Step 1	Fuse 3,15 A	11058	Replacement of fuse
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Step 2:



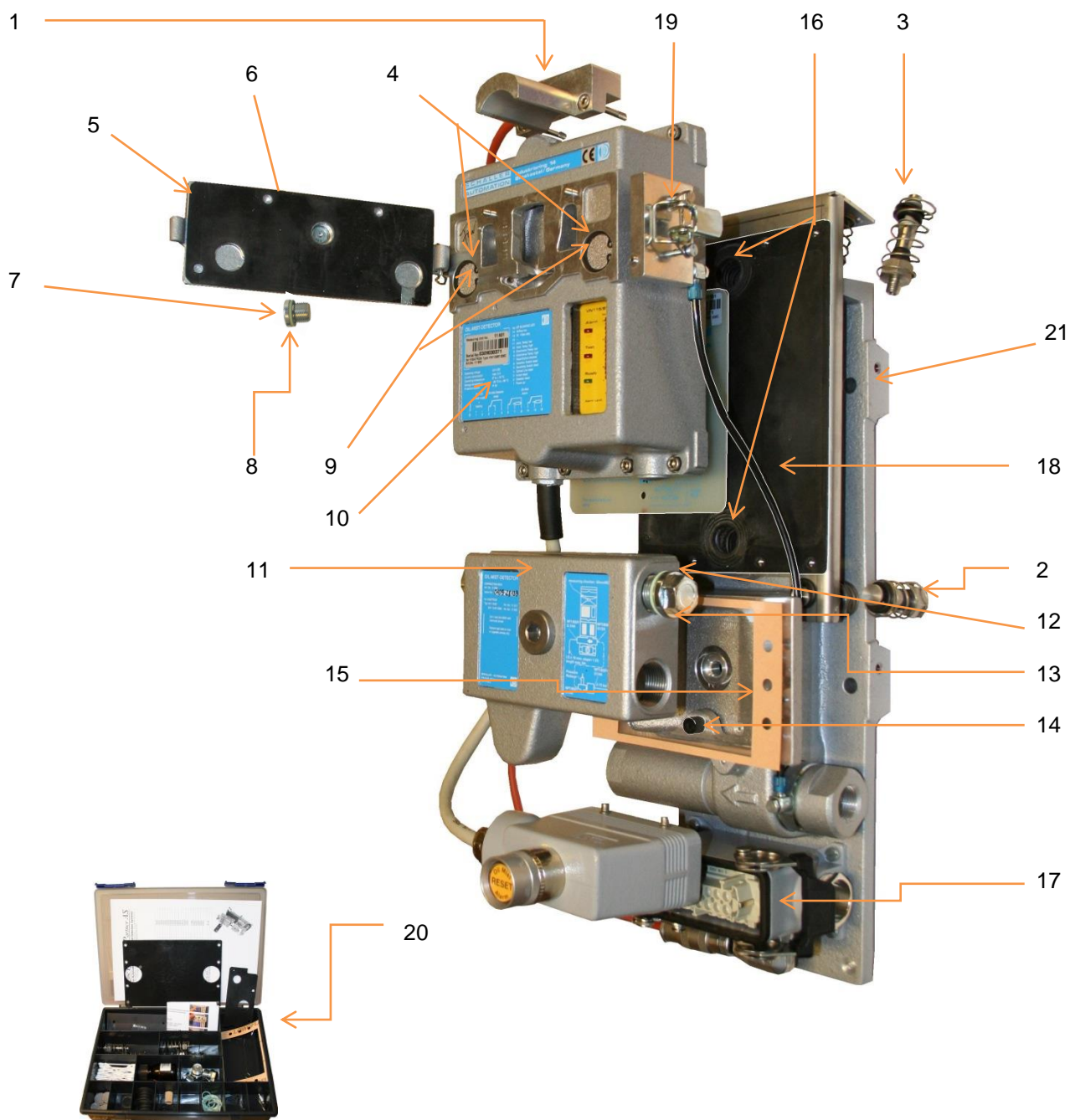
Replace the measuring head with an exchange unit!

Necessary parts used in the fault locating procedure:

Step 2	Exchange measuring head	See under **	Replacing of measuring head
---------------	-------------------------	---------------------	-----------------------------

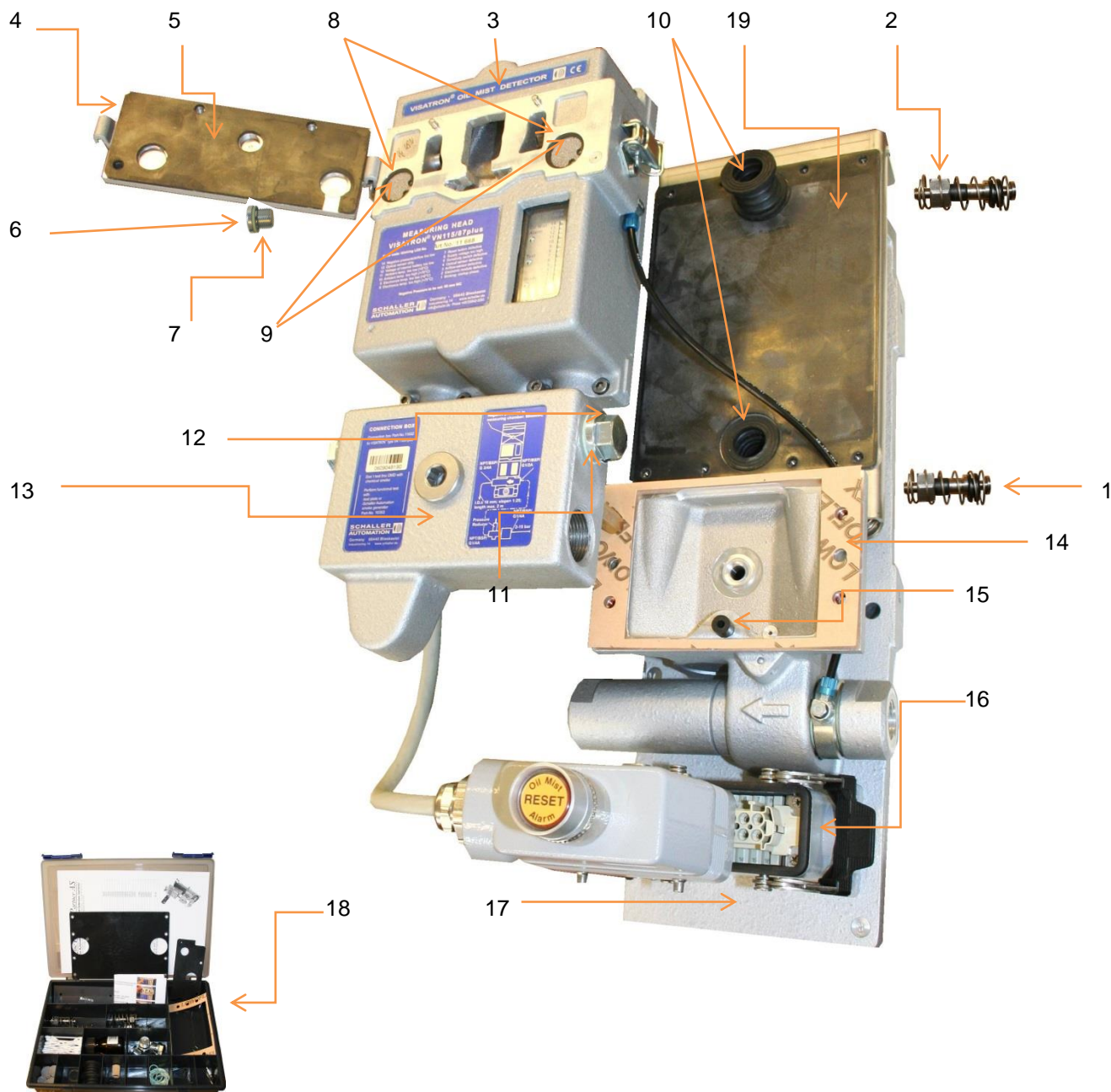
**** Please check your model type for correct part number under "EXCHANGE POOL"!**

Spare parts for VN 115/87 & VN 115/87 EMC



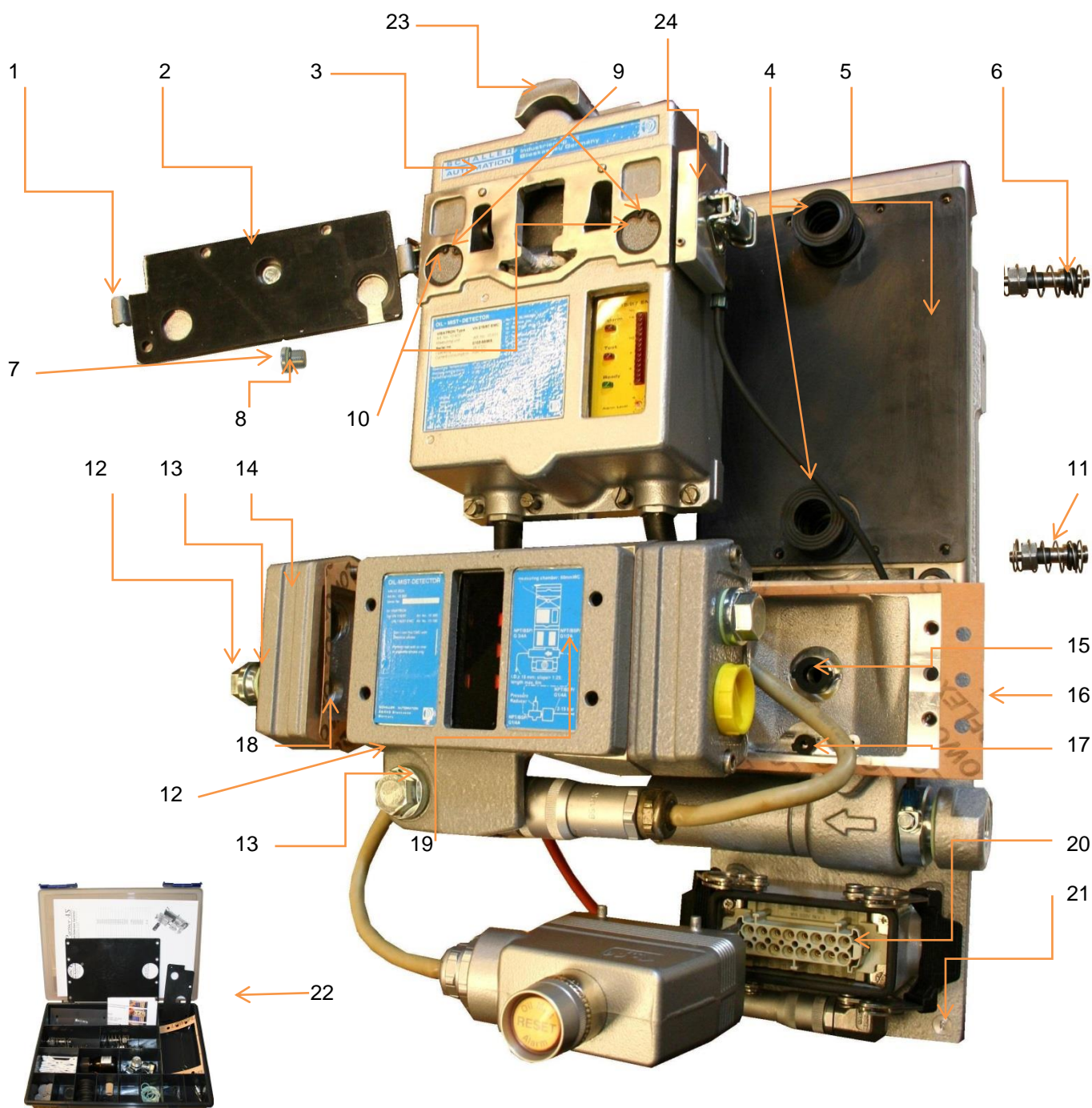
1	10671	Heating element for measuring head	12	10209	Screw plug seal R1/2"
2	10019	Lower elastic mounting system	13	10208	Screw R1/2"
3	10018	Upper elastic mounting system	14	10206	Seal
4	10041	Circlip for scavenging air filter	15	10049	Valve box seal
5	10798	Inspection cover for VN/87	16	10023	Flexible bellow
6	10166	Gasket for inspection cover	17	10033	Connection socket VN/87
7	10083	Plug R1/4"	18	10022	Measuring head gasket
8	10082	Seal for plug R1/4"	19	10798	Scavenging air set
9	10042	Scavenging air filter/ fresh air filter	20	100150	Maintenance kit for VN 115/87
10	10601	Measuring head VN 115/87 EMC	21	10604	Base plate VN 115/87
11	10202	Connecting casing VN 115/87			

Spare parts for VN 115/87plus



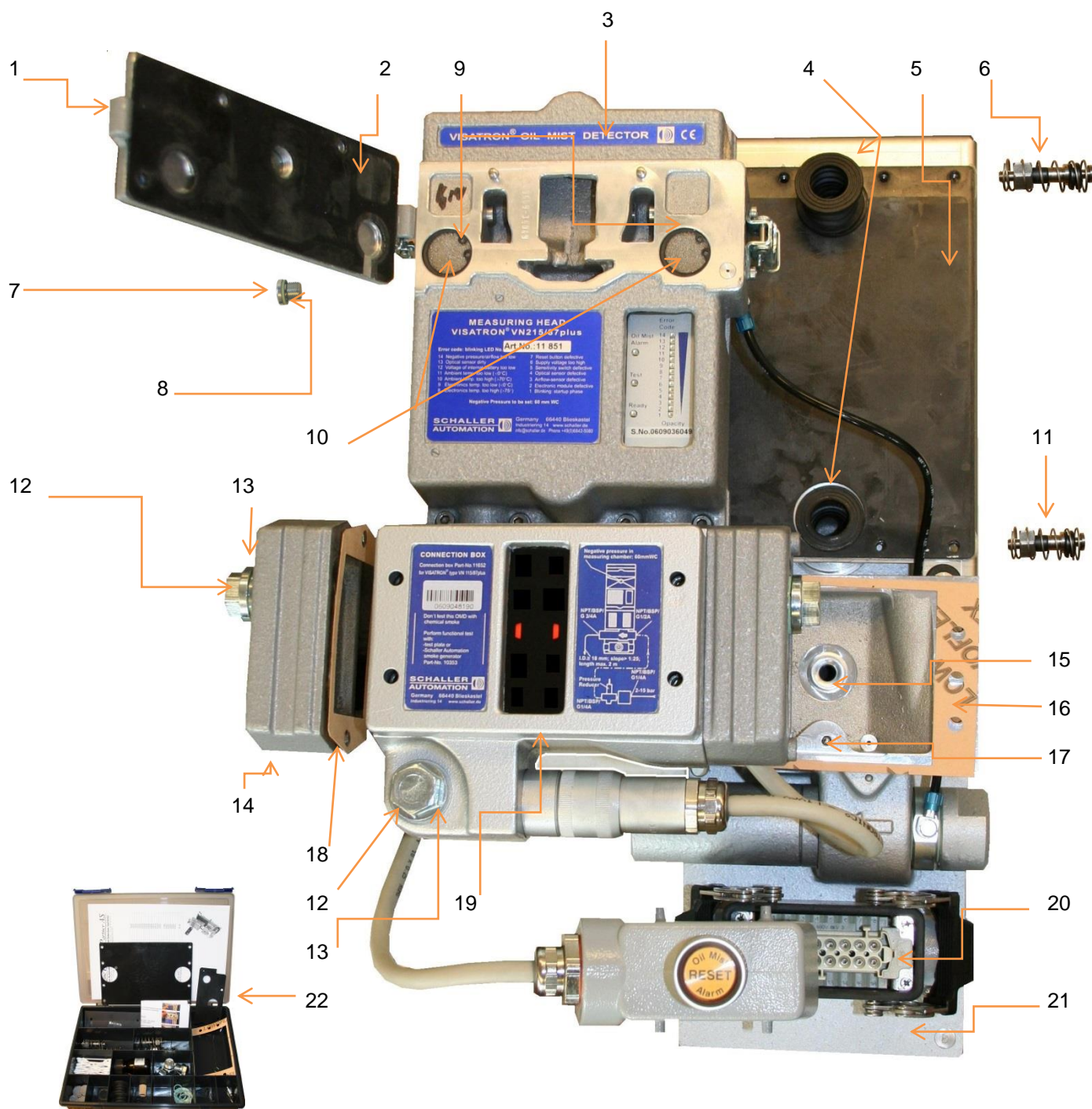
1	10019	Lower elastic mounting system	11	10209	Screw plug seal R1/2"
2	10018	Upper elastic mounting system	12	10208	Screw R1/2"
3	11651	Measuring head VN 115/87plus	13	11652	Connecting casing VN 115/87 plus
4	10798	Inspection cover for VN/87plus	14	10049	Valve box seal
5	10166	Gasket for inspection cover	15	10206	Seal
6	10083	Plug R1/4"	16	11004	Connection socket VN/87plus
7	10082	Seal for plug R1/4"	17	11076	Base plate VN 115/87plus
8	10041	Circlip for scavenging air filter	18	100150	Maintenance kit for VN 115/87plus
9	10042	Scavenging air filter/ fresh air filter	19	10022	Measuring head seal
10	10023	Flexible bellow			

Spare parts for VN 116/87 & VN 116/87 EMC



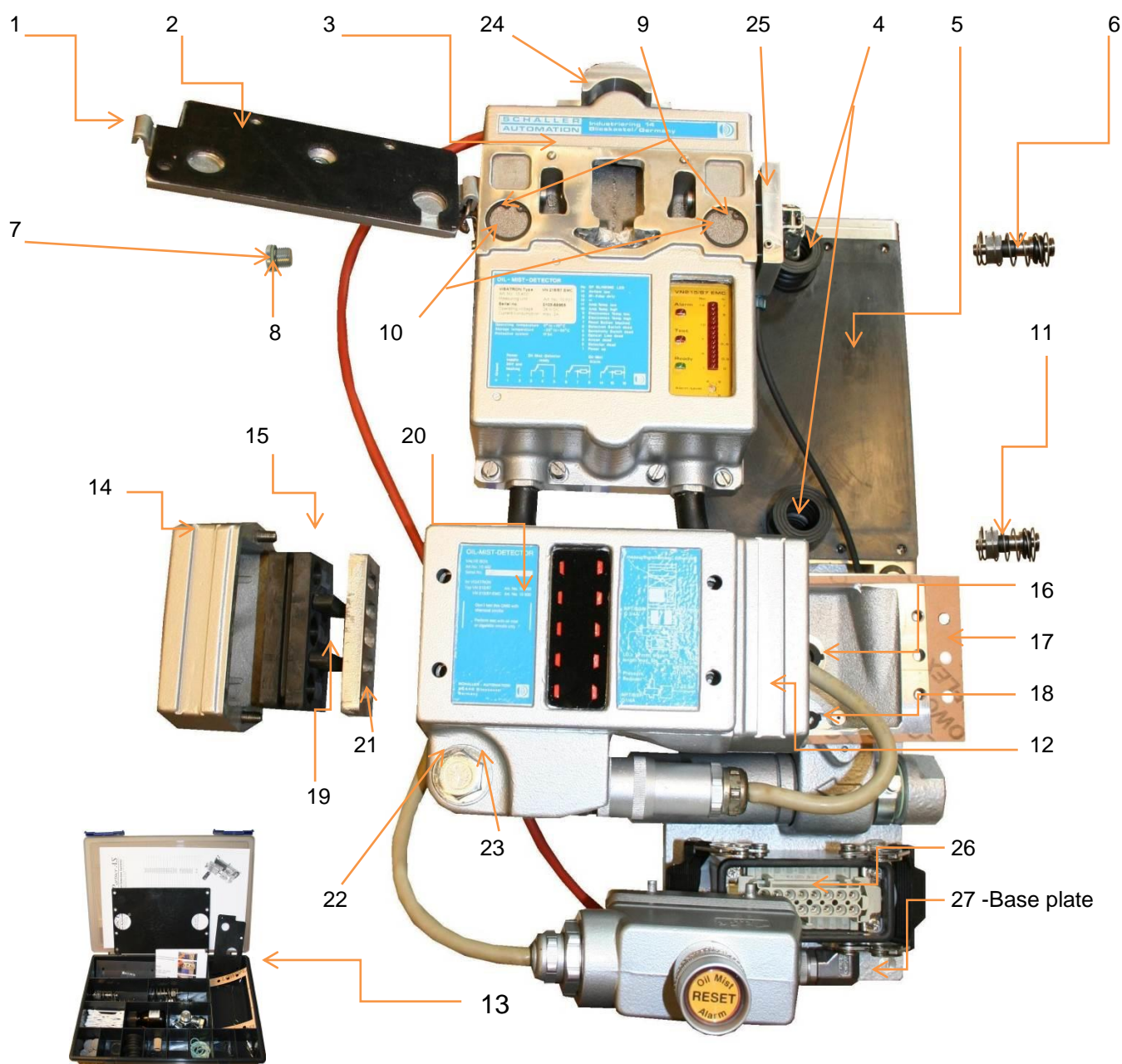
1	10798	Inspection cover for VN/87	13	10209	Screw plug seal R1/2"
2	10166	Gasket for inspection cover	14	10312	Pipe connection adapter
3	10706	Measuring head VN 116/87	15	10307	Oil mist seal
4	10023	Flexible bellow	16	10305	Gasket for valve box
5	10022	Measuring head seal	17	10306	Oil reflux seal
6	10018	Upper elastic mounting system	18	10313	Gasket for pipe connection
7	10083	Plug R1/4"	19	10302	Valve box VN 116/87
8	10082	Seal for plug R1/4"	20	10033	Connection socket
9	10041	Circlip for scavenging air filter	21	10708	Base plate VN 116/87
10	10042	Scavenging air filter/ fresh air filter	22	100151	Maintenance kit VN 116 series
11	10019	Lower elastic mounting system	23	10671	Heating element for measuring head
12	10208	Screw R1/2"	24	10798	Scavenging air set

Spare parts for VN 116/87plus



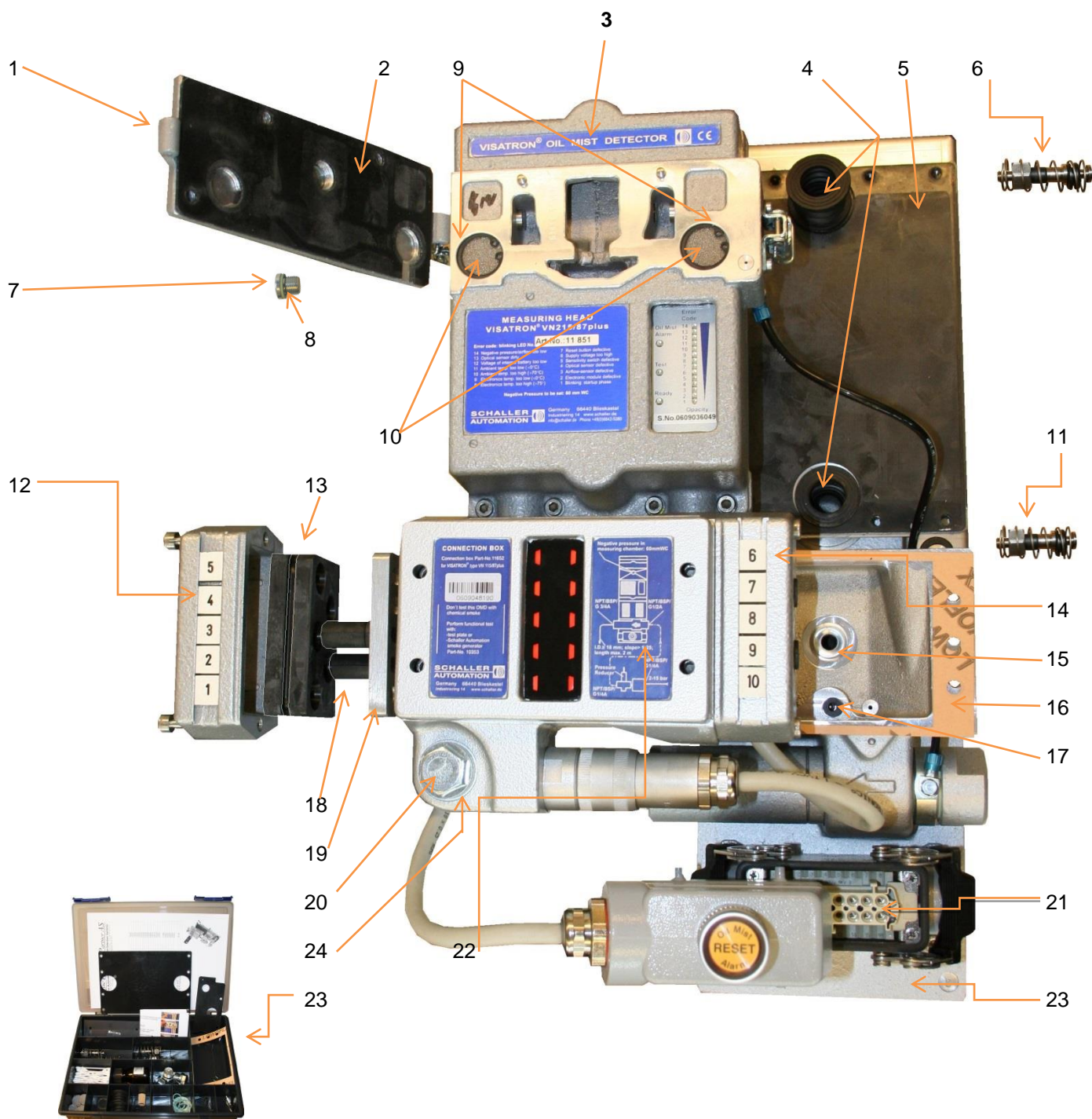
1	10798	Inspection cover for VN/87plus	13	10209	Screw plug seal R1/2"
2	10166	Gasket for inspection cover	14	10312	Pipe connection adapter
3	11751	Measuring head VN 116/87plus	15	10307	Oil mist seal
4	10023	Flexible bellow	16	10305	Gasket for valve box
5	10022	Measuring head seal	17	10306	Oil reflux seal
6	10018	Upper elastic mounting system	18	10313	Gasket for pipe connection
7	10083	Plug R1/4"	19	11752	Valve box VN 116/87plus
8	10082	Seal for plug R1/4"	20	11004	Connection socket
9	10041	Circlip for scavenging air filter	21	11076	Base plate VN 116/87plus
10	10042	Scavenging air filter/ fresh air filter	22	100151	Maintenance kit VN 116 series
11	10019	Lower elastic mounting system			
12	10208	Screw R1/2"			

Spare parts for VN 215/87 & VN 215/87 EMC



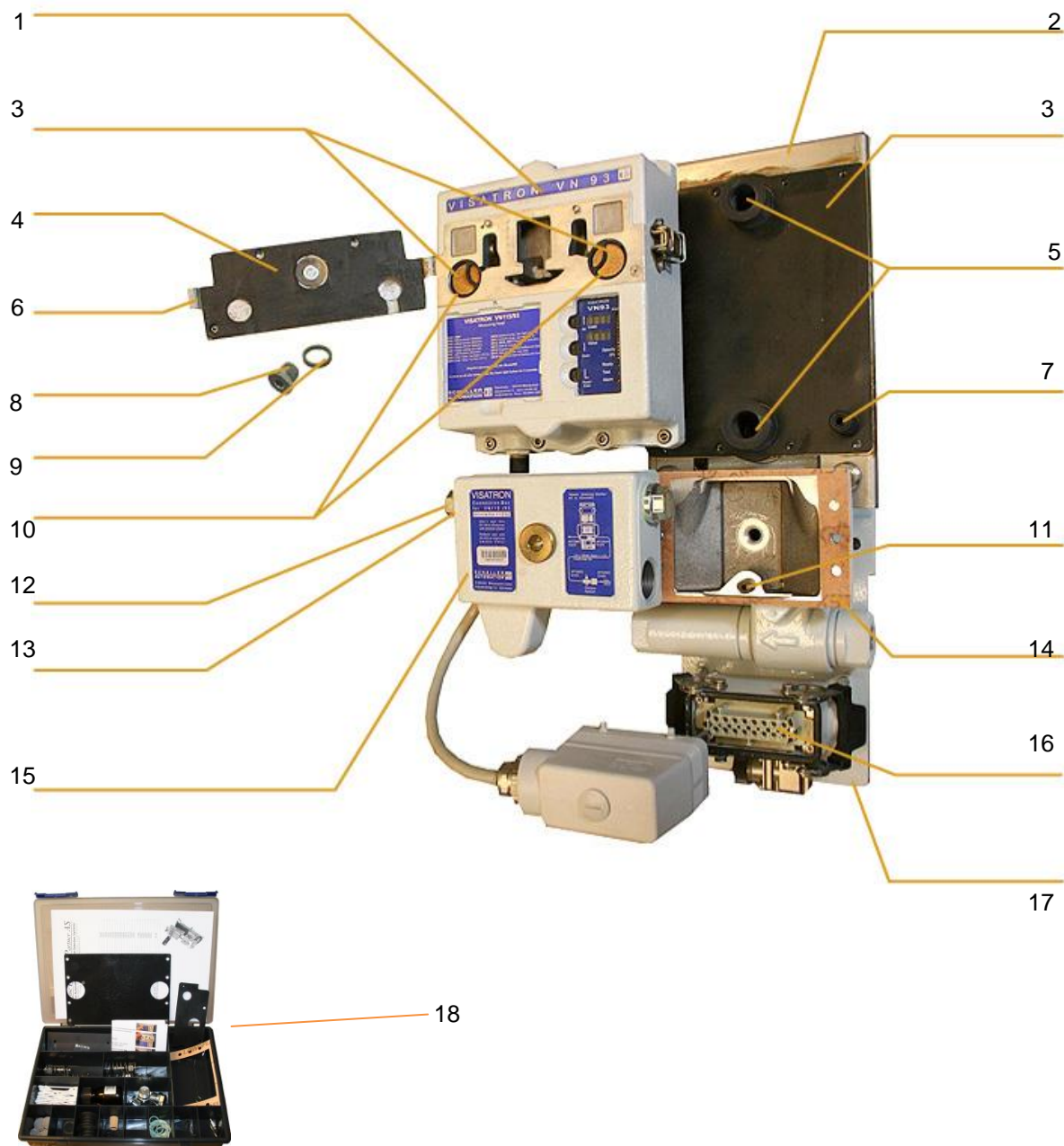
1	10798	Inspection cover for VN/87	14	10408	Pipe connection
2	10166	Gasket for inspection cover	15	10411	Rubber sleeve
3	10802	Measuring head VN 215/87	16	10407	Oil mist seal
4	10023	Flexible bellow	17	10405	Gasket for valve box
5	10022	Measuring head seal	18	10406	Oil reflux seal
6	10018	Upper elastic mounting system	19	10412	Lock plug for pipe connection
7	10083	Plug R1/4"	20	10402	Valve box VN 215/87
8	10082	Seal for plug R1/4"	21	10409	Clamping plate for pipe connection
9	10041	Circlip for scavenging air filter	22	10208	Screw R1/2"
10	10042	Scavenging air filter/ fresh air filter	23	10209	Screw plug seal R1/2"
11	10019	Lower elastic mounting system	24	10671	Heating element for measuring head
12	10430	Pipe connection	25	10798	Scavenging air set
13	100152	Maintenance kit VN 215 series	26	10033	Connection socket

Spare parts for VN 215/87plus



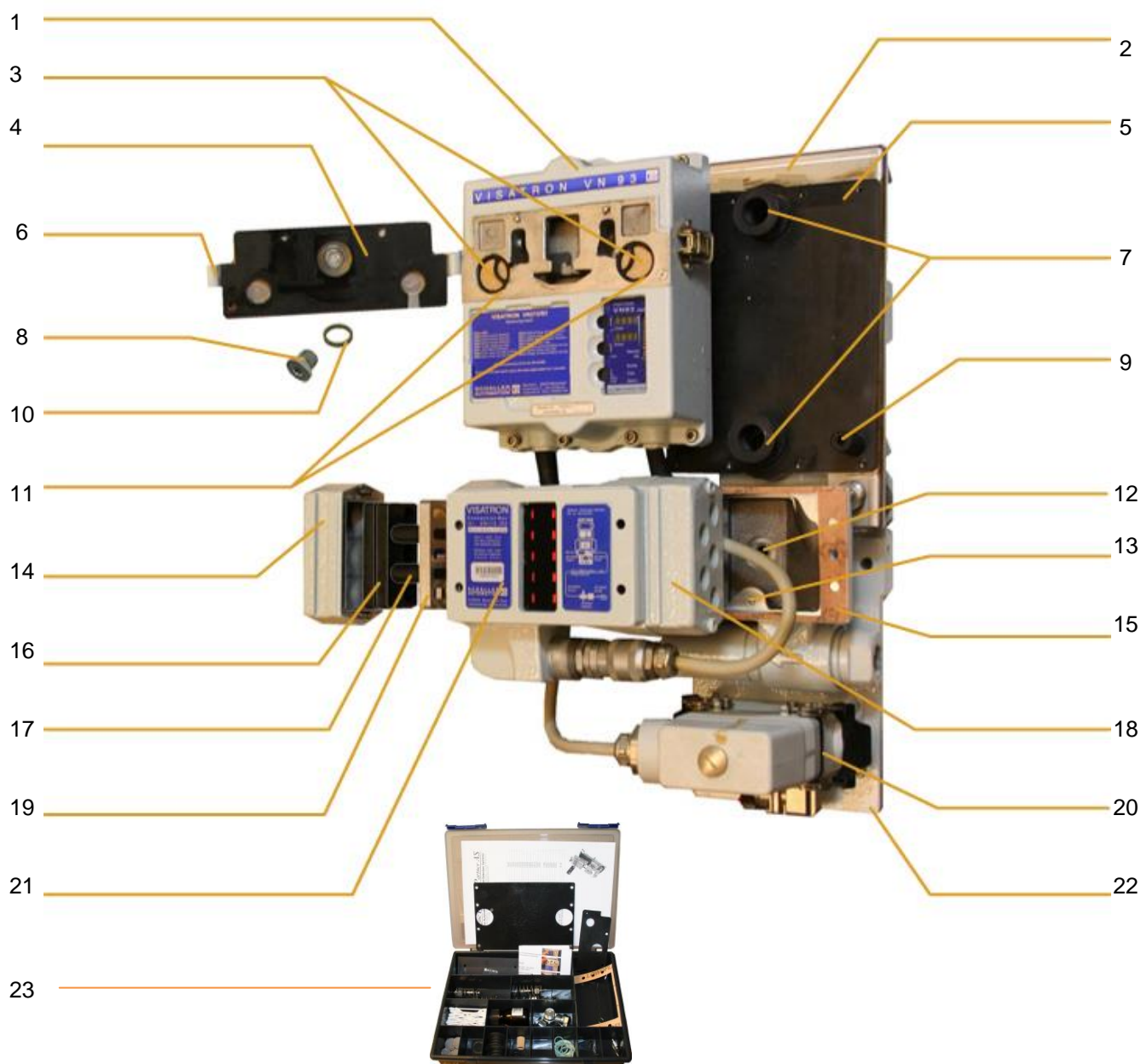
1	10798	Inspection cover for VN/87plus	13	10411	Rubber sleeve for pipe connection
2	10166	Gasket for inspection cover	14	10408	Pipe connection
3	11851	Measuring head VN 215/87plus	15	10407	Oil mist gasket
4	10023	Flexible bellow	16	10405	Gasket for valve box
5	10022	Measuring head seal	17	10406	Oil reflux seal
6	10018	Upper elastic mounting system	18	10412	Lock plug for valve box
7	10083	Plug R1/4"	19	10409	Clamp plate for tube connection
8	10082	Seal for plug R1/4"	20	10208	Screw R1/2"
9	10041	Circlip for scavenging air filter	21	11004	Connection socket
10	10042	Scavenging air filter/ fresh air filter	22	11852	Valve box VN 215/87plus
11	10019	Lower elastic mounting system	23	100152	Maintenance kit VN 215 series
12	10430	Pipe connection	24	10209	Screw plug seal R1/2"

Spare parts for VN 115/93



1	11201	Measuring head for VN 115/93	11	10206	Oil mist seal
2	10991	Mounting plate VN/93	12	10208	Screw R1/2"
3	10042	Fresh air filter / Scavenging air filter	13	10209	Screw plug seal
4	11180	Gasket for inspection cover VN/93	14	10405	Valve box seal
5	10023	Flexible bellow	15	11232	Connecting casing VN 115/93
6	10798	Inspection cover	16	10905	Connection socket VN/93
7	10975	Flexible bellow for fresh air	17	10904	Base plate VN /93
8	10083	Plug R1/4"	18	100153	Maintenance kit for VN 115/93
9	10082	U-tube plug gasket			
10	10992	Fresh air restrictor			

Spare parts for VN 215/93


















1	11901	Measuring head for VN 215/93	13	10406	Oil reflux gasket
2	10991	Mounting plate	14	10430	Pipe connection
3	10042	Fresh air filter/ scavenging air filter	15	10405	Gasket for valve box
4	11180	Gasket for inspection cover	16	10411	Rubber sleeve
5	10969	Measuring head seal	17	10412	Lock plug for valve box
6	10798	Inspection cover	18	10408	Pipe connection
7	10023	Flexible bellows	19	10409	Clamp plate for tube connection
8	10083	Plug R1/4"	20	10905	Connection socket VN/93
9	10975	Flexible bellow for fresh air	21	10902	Valve box VN 215/93
10	10082	Gasket for plug R1/4"	22	10904	Base plate VN/93
11	10992	Fresh air restrictor	23	100155	Maintenance kit VN 215 series
12	10407	Oil mist seal			






Spare part list of the most common spare parts














Part no:	Product:	Used on type:	
10001	Pressure reducer	Used on all Visatron oil mist detectors.	
10002	Filter for pressure reducer	Used at the pressure reducer!	
10003	O- ring	Used at the pressure reducer! See pages: Pressure reducer 10001!	
10004	O- ring	Used at the pressure reducer! See pages: Pressure reducer 10001!	
10005	O- ring	Used at the pressure reducer! See pages: Pressure reducer 10001!	
10010	Gasket for inspection cover-old type	VN/82 & VN/87.	
10013	Siphon VN180	VN 115/79, VN 116/82 VN 115/87, VN 115/87plus VN 116/87 & VN 116/87plus.	
10018	Measuring head suspension-top	VN/79, VN/82, VN/87 & VN/87plus.	
10019	Measuring head suspension-bottom	VN/79, VN/82, VN/87 & VN/87plus.	
10020	Flexible clamp ring	VN/79, VN/82, VN/87 & VN/87plus.	
10022	Measuring head gasket	VN/79, VN/82, VN/87 & VN/87plus.	
10023	Flexible bellows	VN/79, VN/82, VN/87 VN/87plus & VN/93.	
10031	Box Spanner No.92/8	VN/79, VN/82, VN/87 & VN/87plus.	
10033	Main connection socket	VN/87.	
10035	Bottle with cleaning fluid	Used on all Visatron oil mist detectors.	
10036	Cotton stick	Used on all Visatron oil mist detectors.	
10037	Screwdriver 8 x 75	VN/79, VN/82 & VN/87.	






10038	Screwdriver 3 x 60	VN/79, VN/82 & VN/87.	
10040	Bottle 100 ml slacked water	Used on all Visatron oil mist detectors.	
10041	Circlip for fresh air filter	VN/79, VN/82, VN/87 & VN/87plus.	
10042	Scavenging air filter/ Fresh air filter	Used on all Visatron oil mist detectors.	
10043	Fuse 2A	VN/79, VN/82 & VN/87 VN/87plus.	
10046	U-pipe pressure gauge	Used on all Visatron oil mist detectors.	
10047	Allen key 6 DIN911	VN/79, VN/82 & VN/87 VN/87plus.	
10048	Circlip pliers I2 straight	Used on all Visatron oil mist detectors- except VN/93!	
10049	Gasket for valve box	Used on all Visatron oil mist detectors.	
10052	Cable clip for heating elem.	Used on all Visatron oil mist detectors.	
10053	Quick connection	Used on all Visatron oil mist detectors.	
10054	Gasket G1/4 oil resistant	Used on all Visatron oil mist detectors.	
10055	Service box VN/87	VN 115/87, VN 116/87 & VN 215/87.	Contact us for fact sheet!
10056	Spare part kit-small	VN/79, VN/82, VN/87 & VN/87plus.	Contact us for fact sheet!
10059	Spare part kit-large	VN/79, VN/82, VN/87 & VN/87plus.	Contact us for fact sheet!
10062	Filling pump for siphon VN180/280	Used on all Visatron oil mist detectors.	
10082	Gasket	Used on all Visatron oil mist detectors.	
10083	Plug R1/2"	Used on all Visatron oil mist detectors.	











10084	Protection plate for electronic module.	VN/87.	
10085	Mounting screw for electronic module	Used on all Visatron oil mist detectors.	
10087	Fuse holder 2A small	VN/79, VN/82, VN/87 & VN/87plus.	
10088	Inspection cover-old type	VN/87.	
10089	Connection unit for siphon	Used on all Visatron oil mist detectors.	Contact us for fact sheet!
10091	Plug lock siphon VN215	Used on siphon block.	Contact us for fact sheet!
10095	Rubber insert for syphon block	Used on VN180.	
10097	Steam liquid for oil mist generator	Oil mist generator .	Contact us for fact sheet!
10135	Cleaning needle	VN/79, VN/82, VN87 & VN/87plus.	
10140	Siphon block 1 tube	All VN215!	
10141	Siphon block 1 tube with measurement connection	All VN215!	
10142	Siphon block 2 tube	All VN215!	
10143	Siphon block 3 tube	All VN215!	
10144	Siphon block 4 tube	All VN215!	
10145	Siphon block 5 tube	All VN215!	
10156	Ring spanner 17 x 14	Used on all Visatron oil mist detectors.	
10157	Screwdriver 4 x 100	VN/79, VN/82 & VN/87 & VN/87plus.	
10160	Connection unit 05 for siphon block	Used on the siphon block.	Contact us for fact sheet!

10166	Inspection cover gasket for scavenging air set inspection cover	VN/87 & VN/87plus.	
10167	Pressure gauge with couplings	Contact us for fact sheet!	
10181	Connection-unit 04 (without suction hole)	Used on all Visatron oil mist detectors.	Contact us for fact sheet!
10189	Maintenance set VN/93	VN/93.	
10200EXP	Exchange oil mist detector VN 115/87- 33,00 K	VN 115/87.	
10201EXP	Exchange measuring head VN 115/87	VN 115/87.	
10202	Pipe connection VN 115/87	VN 115/87.	
10204	VN115/87 housing for measuring head without e- module	VN/87.	
10206	Seal/ oil return gasket	VN 115/79, VN 115/87, VN 115/87plus & VN 115/93.	
10208	Plug R1/2	VN 115/79, VN 115/87, VN 115/87plus & VN 115/93.	
10209	Seal for screw plug R1/2	Used on all VN 115 Visatron oil mist detectors.	
10305	Gasket for valve box	All VN 116 series.	
10306	Oil return seal	All VN 116 series.	
10307	Oil mist gasket	All VN 116 series.	
10309	Seal ring for valve box	Used on VN 116 series.	
10312	Tube connection	Used on VN 116 series.	
10313	Gasket for tube connection	Used on VN 116 series.	
10353	Oil mist generator 230V	Used on all Visatron oil mist detectors for testing the functionality!	

10356	Open spanner 14X17	Used on all Visatron oil mist detectors.	Contact us for fact sheet!
10400 EXP	Exchange oil mist detector VN 215/87	Used on VN 215/87.	
10400	Oil mist detector VN 215/87	Used on VN 215/87.	
10401 EXP	Exchange measuring head VN 215/87	Used on VN 215/87.	
10401 EXP	Measuring head VN 215/87	Used on VN 215/87.	
10402 EXP	Exchange valve box VN 215/87	Used on VN 215/87.	
10402	Valve box VN 215/87 VN 215/87	Used on VN 215/87.	
10405	Gasket for valve box	Used on VN 215 series.	
10406	Oil return gasket	Used on VN 215 series.	
10407	Oil mist gasket	Used on VN 215 series.	
10408	Pipe connection-left	Used on VN 215 series.	
10409	Clamp plate for tube connection	Used on VN 215 series.	
10411	Rubber plate for tube connection	Used on VN 215 series.	
10412	Lock plug for tube connection	Used on VN 215 series.	
10430	Pipe connection-right	Used on VN 215 series.	
10500	Connection pipe DN20 X 430	Used on all Visatron oil mist detectors!	Contact us for fact sheet!
10502	Heat transfer paste	Used on all Visatron oil mist detectors!	Contact us for fact sheet!
10512	ST-tube ERMETO DIN2391 14X2 ST37.4	Used on all Visatron oil mist detectors!	Contact us for fact sheet!

10523	Sampling funnel centered curved connection. Dimension D10x108L	Used on all Visatron oil mist detectors!	Note: Illustration picture!	
10547	Loctite 572 -10 ml	Used on all Visatron oil mist detectors!	Contact us for fact sheet!	
10562	Gasket for air- jet pump	Used on all Visatron oil mist detectors!		
10577	Ejector out- put	Used on all Visatron oil mist detectors!		
10600 EXP	Exchange oil mist detector VN 115/87 EMC	Used on VN 115/87 EMC.		
10600	Oil mist detector VN 115/87 EMC	Used on VN 115/87 EMC.		
10601 EXP	Exchange measuring head VN 115/87 EMC	Used on VN 115/87 EMC.		
10601	Measuring head VN 115/87 EMC	Used on VN 115/87 EMC.		
10612	Siphon block VN180 with manometer con.	Used on all Visatron VN 115 series.	Contact us for fact sheet!	
10640	Plug lock siphon VN115	Used on all Visatron VN 115 & 116 series.	Contact us for fact sheet!	
10667	Connection unit 03	Used on all Visatron oil mist detectors!	Contact us for fact sheet!	
10671	Heating element for measuring head	Used on all Visatron VN/87 systems!		
10679	O-ring 4,0x 1,75	Used on all Visatron oil mist detectors!	Contact us for fact sheet!	
10700 EXP	Exchange oil mist detector VN 116/87 EMC	Used on VN 116/87 EMC.		
10700	Oil mist detector VN 116/87 EMC	Used on VN 116/87 EMC.		
10701 EXP	Exchange measuring head VN 116/87 EMC	Used on VN 116/87 EMC.		
10701	Measuring head VN 116/87 EMC.	Used on VN 116/87 EMC.		
10715	Flat gasket crossing block VN215	Used on all Visatron VN 215 series.		

10726	Scavenging air hose- L=235 preassembled	Used on all Visatron VN/87 & VN/87plus!	Contact us for fact sheet!	
10727	Control cover VN/87 for forced scavenging air	Used on all Visatron VN/87!		
10734	Siphon VN280plus- 1 pipe w. extra bore	Used on all Visatron VN 215 series!		
10736	Siphon VN280plus- 2 pipes w. extra bore	Used on all Visatron VN 215 series!		
10737	Siphon VN280plus- 3 pipes w. extra bore	Used on all Visatron VN 215 series!		
10738	Siphon VN280plus- 4 pipes w. extra bore	Used on all Visatron VN 215 series!		
10753	Protection cover	Used on all Visatron VN/87, VN/87plus & VN/93!		
10784	Siphon VN280plus- 5 pipes w. extra bore	Used on all Visatron VN 215 series!		
10788	Block plug for siphon VN280plus complete	Used on all Visatron VN 215 series!		
10798	Scavenging air set	Used on all Visatron VN/87!		
10800 EXP	Exchange oil mist detector VN 215/87 EMC	Used on VN 215/87 EMC.		
10800	Oil mist detector VN 215/87 EMC	Used on VN 215/87 EMC.		
10801 EXP	Exchange measuring head VN 215/87 EMC	Used on VN 215/87 EMC.		
10801	Measuring head VN 215/87 EMC	Used on VN 215/87 EMC.		
10815	Sampling funnel side straight connection- dimension D10x118LG	Used on all Visatron oil mist detectors!	Note: Illustration picture!	
10834	Sampling funnel centered straight connection- dimension D12x40LG	Used on all Visatron oil mist detectors!		
10835	Sampling funnel centered curved connection- dimension D12x108LG	Used on all Visatron oil mist detectors!	Note: Illustration picture!	
10837	Sampling funnel centered straight connection- dimension D10x100LG	Used on all Visatron oil mist detectors!		

10900	Oil mist detector VN 115/93-configuration 33K2-RS485-E4	Used on Visatron VN 115/93!	
10901	Measuring head VN 115/93-configuration 33K2-RS485-E4	Used on Visatron VN 115/93!	
10902	Valve box VN 215/93	Used on Visatron VN 215/93!	
10904	Base plate VN /93	Used on Visatron VN/93!	Contact us for fact sheet!
10910	Assembly unit with VN215/93 engine standard configuration 33K-RS485-E4	Used on Visatron VN 215/93!	Contact us for fact sheet!
10949	Assembly unit with VN215/93 engine standard configuration 10K0-RS485-E4	Used on Visatron VN 215/93!	Contact us for fact sheet!
10950	Service box VN/93	Used on Visatron VN/93!	
10961	Measuring head VN 215/93-configuration 10K0-RS485-E4	Used on Visatron VN 115/93!	
10964	Assembly unit with VN215/93 engine standard configuration 3,3K-RS485-E4	Used on Visatron VN 215/93!	Contact us for fact sheet!
10968	Control cover VN/93	Used on Visatron VN/93!	Contact us for fact sheet!
10969	Measuring head gasket VN/93	Used on Visatron VN/93!	
10973	Fuse for VN/93 3,15 A	Used on Visatron VN/93!	
10975	Insert for scavenging air filter	Used on Visatron VN/93!	Contact us for fact sheet!
10991	Mounting plate	Used on Visatron VN/93!	Contact us for fact sheet!
10992	Fresh air restrictor	Used on Visatron VN/93!	Contact us for fact sheet!
11000	Commissioning- box VN/87plus	Used on Visatron VN/87 plus!	
11004	Connection socket for VN/87plus.	Used on Visatron VN/87 plus!	
11048	Commissioning- box VN/93	Used on Visatron VN/93!	

For complete spare part list, please contact us!

Welcome to visit us

As the main center for Schaller Automation GmbH & Co. KG in Scandinavia and the Baltic countries, we have a huge responsibility to ensure that all of our customers the best possible support in all different aspects.

Our goal is to make a long term relation to our customers and the user's of the Visatron oil mist detector products.

Every year, we provide training courses in how to operate and maintenance the Visatron oil mist detector systems. We also have an own training department with all Visatron oil mist detector presented to ensure that you as a customer gets the correct training and best possible quality experience!

Welcome!



Contact details:

Visiting address/ Postal address

Engine Protection Partner AS
O. J. Brochs gate 16A- 2nd floor
5006 Bergen, Norway.

Forwarding address

Engine Protection Partner AS
O. J. Brochs gate 16A- 2nd floor
5006 Bergen, Norway.

Contact numbers

Main phone line:	+47 55 3019 00
Fax:	+47 55 3019 01
Service line 24/7:	+47 55 301900
E- mail:	epp@epp.no
Home page:	www.epp.no

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

The ultimate choice for your high trusted values!

Visiting/ postal address:

Engine Protection Partner AS
O. J. Brochs gate 16A
5006 Bergen, Norway.

Forwarding address:

Engine Protection Partner AS
O. J. Brochs gate 16A
5006 Bergen, Norway

www.epp.no
Contact: epp@epp.no
Phone: +47 5530 1900

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Author: Yngve Nilsen- CEO and founder of Engine Protection Partner AS.