Separ UK (ISO9001:2008)
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Separ KWA range

The Separ KWA range of fuel filter/water separators are high performance technically advanced systems for all types of diesel engines. They operate by a three stage system, filtering out all harmful solid particles and liquid impurities which are heavier than diesel fuel that would otherwise cause engine problems.

Advantages of the Separ KWA filter system

- Extends life of filter element (4 times longer service life)
- Less wear of pump and injection system
- Improved combustion (giving lower harmful emissions)
- Lower fuel consumption
- Lower maintenance costs and shorter down-times

Twenty five reasons to use a Separ KWA fuel filter/water separator

1. High fuel flow, low pressure differential
2. Highly effective water removal
3. Ease of filter change/servicing
4. T-bar handle for simple, one hand servicing
5. Low cost
6. 10, 30 or 60 mic elements
7. Water in fuel sensors available
8. 100% separation of free water (according to DIN 51777)
9. Vacuum gauges
10. Vacuum sensors (electronic switching)
11. Metal bowl versions available
12. RINA compatible units
13. ISO10088 approved units available
14. Lloyd's type approval
15. Gemanisher lloyds register type approval
16. Will not choke internal valve, unlike the competition
17. Separ - A tried and trusted name in the industry
18. Readily available spare parts
19. Centrifugal water removal
20. Ball valve separation
21. Particulate removal
22. Locking drain tap to avoid accidental drainage
23. Large filtering element
24. Fuel flow rates up to 600 litres per hour
25. Diesel (MDO, gas oil etc) filtration as standard, petrol filtration as an option

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Working principle of the Separ KWA range of fuel filter/water separators

- **First stage**
  Separation of foreign solids (down to 30 micron) and of liquid impurities by the centrifugal action of the Separator

- **Second stage**
  Collection of very small particles (down to 15 micron). Floating particles rise within the fuel to the top of the conical insert (or cone) and collect on its sloping surfaces. The larger and heavier fractions which build up in the course of time gradually sink to join the impurities separated in the first stage at the bottom of bowl.

- **Third stage**
  Fine filtering of the fuel in the Separ replaceable element. Removal of remaining particles, down to 10 micron (96%)

The combined action of the three stages achieved a 100% separation of free water (according to DIN 51777)

Part number selector	KWA	20	M	K
KWA fuel filter/water separator range				
Unit size 20, 50, 90 or 100				
Bowl option 1 No option = clear bowl M = metal bowl D = heat shield				
Bowl option 2 K = alarm contacts S = integrated water in fuel sensor				

Rated flow and port sizes

KWA-20	2 lit/min	120 lit/hr	M14x1.5 ports
KWA-50	4 lit/min	240 lit/hr	M14x1.5 ports
KWA-90	6 lit/min	360 lit/hr	M22x1.5 ports
KWA-100	10 lit/min	600 lit/hr	M22x1.5 ports

Type M and D bowls have the required ISO10088 fireproofing standard for use on inland waterways and to pass RCD inspections. Unless otherwise specified, all filters will be supplied with 30 micron elements pre-installed.

The 10 and 30 micron elements are manufactured from hydrophobic cellulose paper, the 60 micron elements are manufactured from washable stainless steel.

Filter range	10 micron element	30 micron element	60 micron element	Seal Kit
KWA-20	20510	20530	20560s	30171
KWA-50	20110	20130	20160s	30171
KWA-90	20410	20430	20460s	30172
KWA-100	20210	20230	20260s	30172

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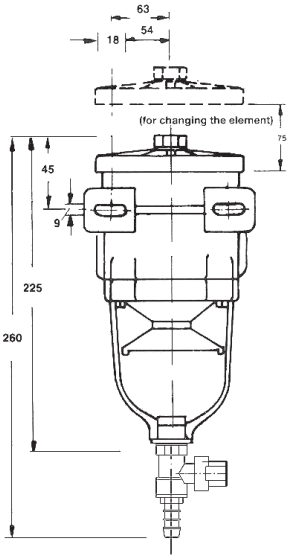
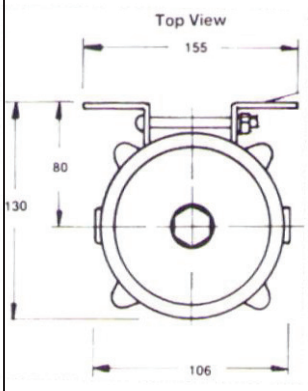
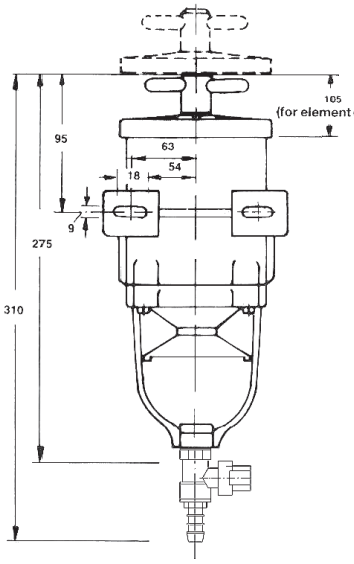
KWA Range Dimensions

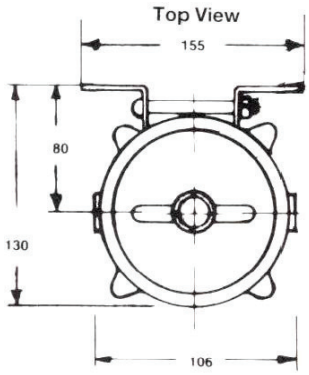
KWA-20 range



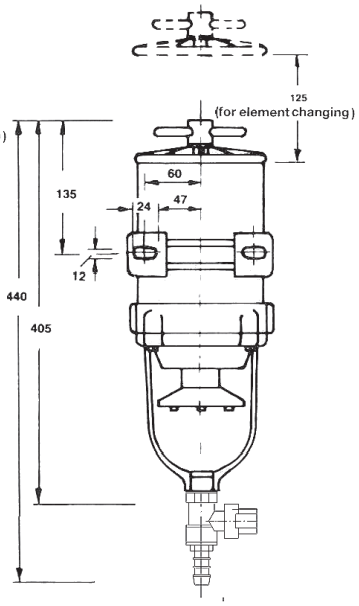


KWA-50 range

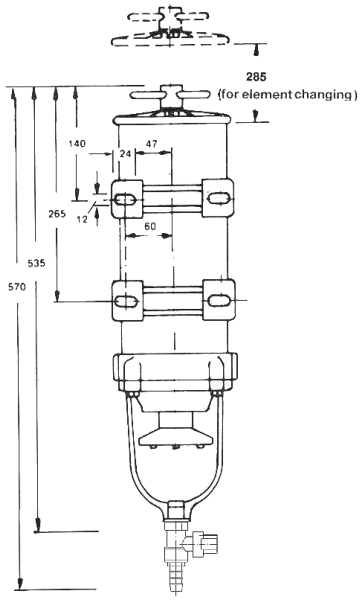


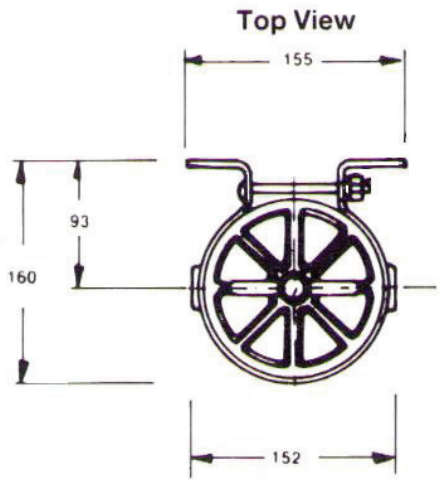


KWA-90 range



KWA-100 range





All dimensions are shown in mm and are subject to technical modification.
Drawings are not to scale

Technical Data	KWA-20	KWA-50	KWA-90	KWA-100
Max Flow Rate	2 lit/min	4 lit/min	6 lit/min	10 lit/min
Max Vacuum	805 mbar	805 mbar	805 mbar	805 mbar
Temperature Range	-40 to +120 ^{O}C	-40 to +120 ^{O}C	-40 to +120 ^{O}C	-40 to +120 ^{O}C
Weight (approx)	1.2 kg	1.6 kg	3.4 kg	5.5 kg
Ports (thread)	M14 x1.5	M14 x1.5	M22 x 1.5	M22 x 1.5

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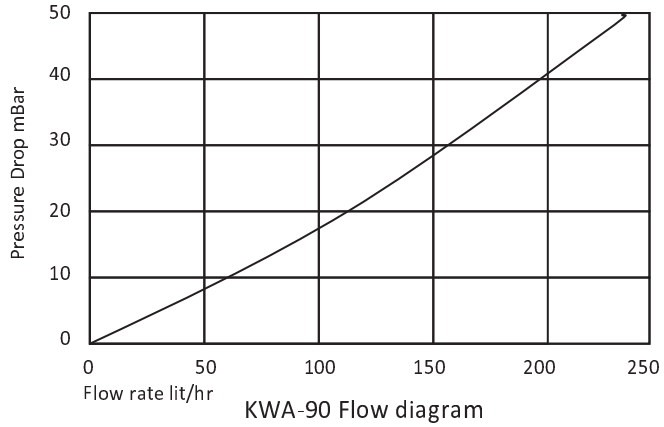
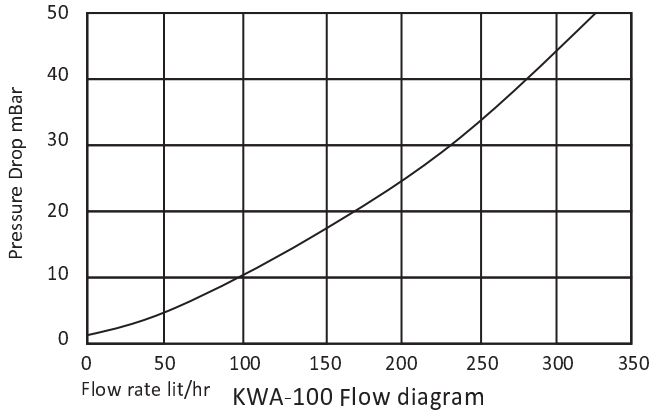
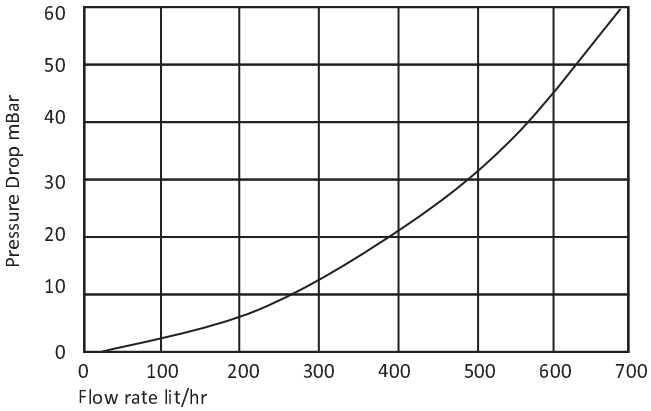
KWA-20 Flow diagram



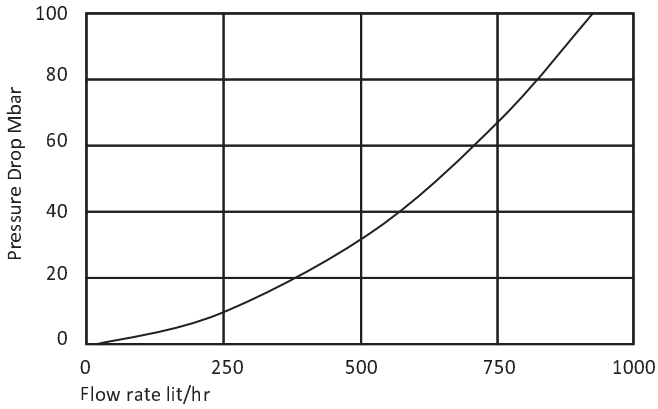
KWA-50 Flow diagram



KWA-90 Flow diagram

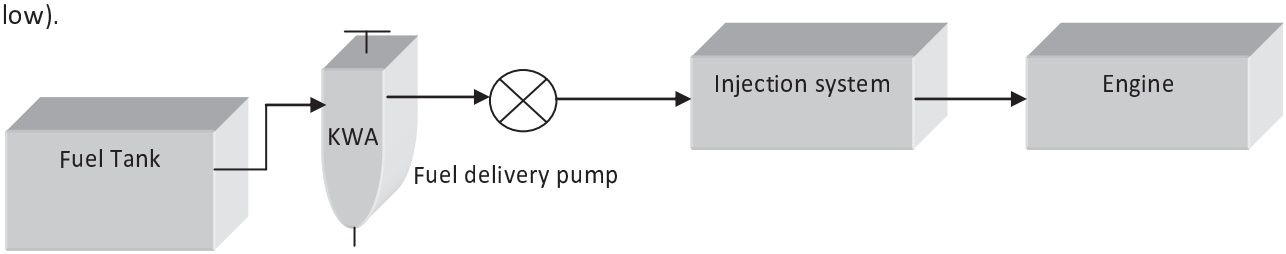


KWA-100 Flow diagram



Installation

1) Remove all fuel filters between the fuel tank and the fuel delivery (lift) pump. Filters between the pump and injection system can also be removed if the filtering degree meets the engine specification (e.g. 10 micron) unless it is a distributor type injection pump or injector system and/or pressure relief valves are located on the original filter unit.
2) In principle the Separ KWA is installed on the intake side between the fuel tank and pump (see schematic below).



3) If at all possible, the KWA should be installed no higher than the fuel pump (except in gravity-fed systems).
4) When connecting up, use screwed couplings with O-ring seals
5) After fitting the KWA separator, unscrew the top screw, remove cover and top up with clean fuel, filling it to the brim.
6) After replacing the cover and starting the engine, check all fuel system joints for leaks.

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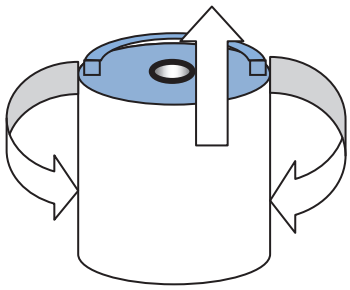
Maintenance

The Separ KWA separator requires little maintenance. It is recommended that accumulated water and dirt in the bowl should be checked daily and if necessary drained off (after stopping the engine). An automatic water-in-fuel alarm is available to notify the user when this action is required, see following pages, this is especially useful in the solid metal bowl (ISO10088) variants.

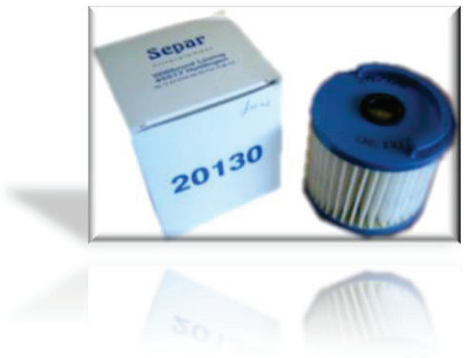
If the fuel tank is located much lower than the KWA separator, the cover of the KWA must be opened before water and dirt can be released. In this case, after removing the water and dirt, top up the KWA Separator with clean fuel again, filling it to the brim.



When the filter element is replaced, it should be steadily rotated while being carefully withdrawn from the housing. The new element is inserted by reversing this procedure. In addition to the standard 30 micron, there are options for both 10 and 60 micron replaceable elements. After replacing the element, always check the compression seal and cover seal (and replace if necessary). It is not necessary to air-bleed the system after draining water and dirt of after changing the element.

Replacement Elements

For each model in the Separ KWA range, there are 3 replacement filtering elements options available. The standard fit, unless otherwise specified at time of ordering, is the 30 micron hydrophobic cellulose paper element. This can be identified by the last 2 digits of that part number, for example the 30 micron element for the KWA-50 is part number 20130. For each model, a 10 micron paper and 60 micron stainless steel element is also available; the part numbers follow the same format (e.g. 20110 and 20160s).



In each case, the 10 and 30 micron elements can be back-flushed and reused a couple of times, whereas the 60 micron stainless steel element can be cleaned (using clean diesel for the best results) and reused. With careful handling the stainless steel elements should last the life of the main filter. Please note, for cleaning we do not recommend the use of an air line as this will atomise the fuel and contaminate, causing a health risk.

The seals required for an element change are integral, in other words, the element itself has the required seals. However, when servicing the KWA filter we recommend that the bowl and lid seals are inspected in case they need replacing. Biocides in the fuel, higher bio-diesel mixes and high water levels in the storage tank can cause the fuel to have a higher acidity level. This will mean the seals will require more frequent replacing.

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Options

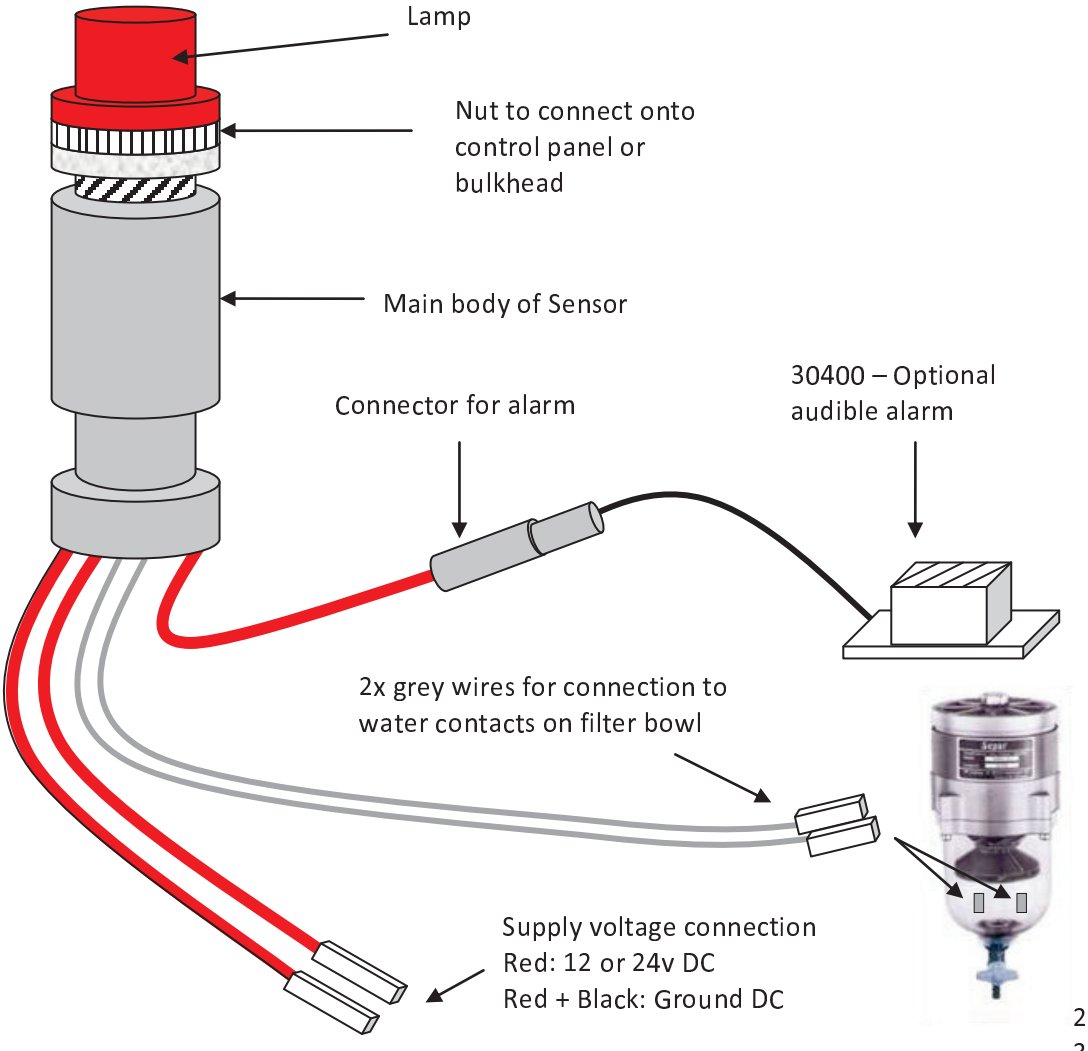
When ordering a Separ KWA fuel filter/water separator, you will already have one of the finest filtration devices on the market. However we also know that you may want to integrate it into your fuel or engine management system.

To assist, we can offer the following enhancements:

1) Water in fuel sensors

If you order a KWA filter with the letter "K" in the bowl options (e.g. KWA-50MK), this it will have alarm contacts on the bowl. These are to accept the Separ water in Fuel sensors (WiF)

Part number	Description
30090	12v water contamination sensor for KWA filter range - 100ma current draw
30091	24v water contamination sensor for KWA filter range - 50ma current draw
30400	Optional audible alarm system for either 30090 or 30091



The system and indicator bulb can be tested by shorting out the two grey water contacts – however this must not be done if fuel is present. We always recommend testing the bulb with the connectors separate to the fuel filter.

The output from the sensor can also be used to de-rate the engine, or to alert the user that water is present and must be drained.

2)

3)

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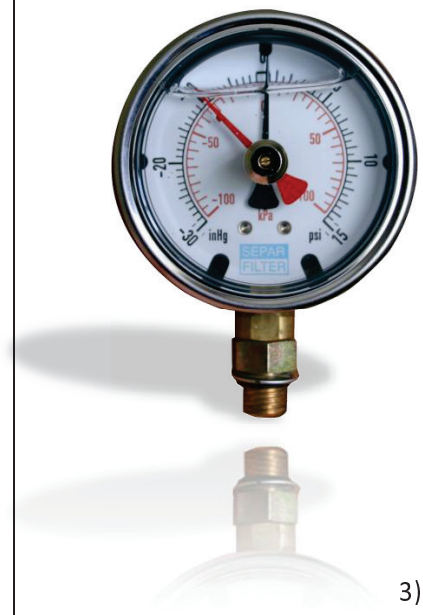
2) Vacuum gauges

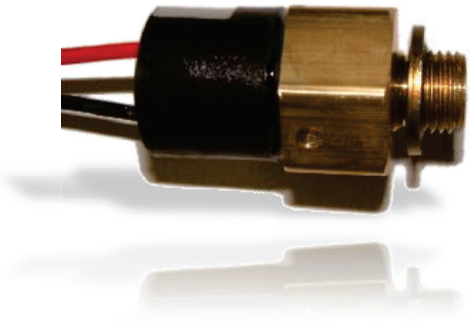


We are able to offer vacuum gauges to be fitted to the output pipe work of the KWA filter. These give a visual indication of how full the filtering element is by indicating the vacuum change at the output of the filter.

The vacuum gauge is part number 30650 and as well as indicating the current vacuum, a manual adjust needle allows the operating to indicate the clean vacuum of the filter (i.e. the vacuum shown when the filtering element is new). A change of 3-4 PSI indicates that a service is now required.

3)

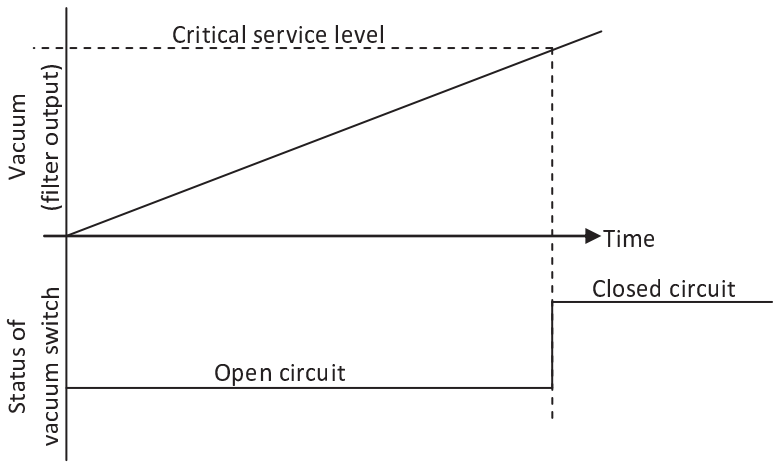
3) Vacuum switches



If a visual indication is not sufficient, we can also offer a vacuum switch. These are again connected to the pipe work on the output side of the filter and will automatically complete the circuit between the 2 wires when the filter becomes blocked and requires a service.

These are typically used to either give a signal to the engine management system to de-rate the engine, or to notify the user that a service must be carried out in the very near future (ie an alarm of a becon).

These are volt free devices (part number W-VS-16-14), so any available voltage can be applied to the switch. The operation of the switch is as follows



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Spare parts list

Typically a user should never need a spare part, with the exception of the occasional filter element. However, below is a list of the most popular spare parts for each unit in the range, should the need ever arise.

	KWA-20	KWA-50	KWA-90	KWA-100
10 mic element (paper)	20510	20110	20410	20210
30 mic element (paper)	20530	20130	20430	20230
60 mic element (stainless steel)	20560s	20160s	20460s	20260s
Gasket/O-Ring Kit	30171	30171	30172	30172
Lid screw (20)/ T-handle (50/90/100)	30024	30001	30001	30001
Lid closure Disc	30002	30002	30002	30002
Lid screw gasket	30003	30003	30003	30003
Lid	30004	30004	30027	30027
Lid gasket	30005	30005	30028	30028
Centre tube	30025	30006	30029	30040
Filter body	30026	30007	30030	30041
Bowl gasket	30009-1	30009-1	30028	30028
Bowl retaining ring	30010	30010	30031	30031
Screw for bowl retaining ring (4 req)	30011	30011	30032	30032
Valve ball gasket	30012	30012	30033	30033
Valve ball	30013	30013	30034	30034
Cone	30014	30014	30035	30035
Centrifuge	30015	30015	30036	30036
Clear Bowl	10356	10356	30986	30986
Clear bowl with alarm contacts	10356k	10356k	30986k	30986k
Metal bowl	10188	10188	30983	30983
Metal bowl with alarm contacts	10188k	10188k	30983k	30983k
Clear bowl with heat-shield (RINA spec)	30255	30255	30177	30177
Drain cock gasket	40002	40002	40003	40003
Drain cock	30366	30366	30343	30343
Mounting bracket	30020-1	30020-1	30038-1	30038-1
Mounting bracket washer	30021	30021	30021	30021
Mounting bracket nut	30022	30022	30022	30022
Mounting bracket bolt	30023	30023	30039	30039
Spring (below element)	-	-	30008	30008

Please note, a minor design change to our filter bowls means that older KWA filters with a silver 'bar' handled drain tap (see image below) will no longer fit into the newer bowls. Drain taps with yellow handles will fit directly in. If you need to change a bowl or tap of the older design, a new tap and bowl must be purchased.

Older "silver bar" type tap

Modern locking drain cock with yellow handle