



## FUVR050 SERIES

Portable off-line filtration unit specific for reducing or eliminating the presence of varnish in hydraulic and lubrication systems.  
Without chiller



### TECHNICAL SPECIFICATION

MAIN:	Flow Rate: 50 l/min Operating temperature: from 0 °C to + 80°C Fluid viscosity range: 10-800cSt
ELECTRIC:	Voltage: 380/400 Vac 220/230 Vac (on request) Frequency: 50 - 60 Hz Power consumption: 1,5Kw
FRAME:	Dimensions L, W, H[mm]: 730X950X1320
DRY WEIGHT:	155 Kg
MATERIALS:	Base frame: Painted steel

### ELEMENT

VARNISH  
REMOVAL:

tested according to ISO 11170, 2941, 2942,  
2943, 3724, 3968, 16889, 16908, 23181

U564G01/VRE  
U564GW01/VRE

FLUID  
COMPATIBILITY:

Full with HH-HL-HM-HV  
HETG-HEES (acc. to ISO 6743/4).  
For use with other fluid please  
contact Filtrec Customer Service  
(info@filtrec.it).

The unit is supplied complete with an Instruction and Maintenance Manual available on our website [www.filtrec.com](http://www.filtrec.com) in the "Hydraulic Filter" section. The unit can be used by authorized operators who have read and understood all of its contents.

The FUVR050 filtration units are certified

## WHAT IS VARNISH



During the normal use of a hydraulic system, the lubricating or the hydraulic fluid can separate insoluble substances due to thermo-oxidative degradation of the fluid itself.

Different phenomena can lead to the separation of these substances:

- thermal degradation due to the presence of hot spots ( $T > 100^{\circ}\text{C}$ ) and electrostatic discharge
- hydrolysis and oxidation due to the presence of air, water and solid contamination that works as catalyst
- micro-dieseling due to cavitation

These substances are called "varnish precursors".

When they settle down on the surfaces of hydraulic system components, they form a thin, insoluble and sticky layer called "varnish".

Varnish has detrimental effects on the operating properties of the hydraulic components like bearings, servo-valves, pumps etc.

For example, on servo-valves, varnish can lead to incorrect and unstable response, jamming of the spool and burnout of the solenoid.

### CAN WE CHECK THE PRESENCE OF VARNISH PRECURSORS IN THE FLUID?

Using the colorimetric analysis described in ASTM D7843-21 standard, it is possible to measure the varnish potential of the fluid.

According to the analysis procedure, 50 ml of sample mixed with 50 ml of petroleum ether are filtered under vacuum on a  $0.45\ \mu\text{m}$ , mixed esters of cellulose, analysis membrane.

The analysis membrane is then analyzed using a spectrophotometer and compared with a brand-new membrane. Results are reported according to CIE Lab scale and  $\Delta E^*$  value, which represents the varnish potential of the fluid is calculated.

$\Delta E^*$  values lower than 25 are considered acceptable, however it is suggested to monitor the varnish potential with periodical analysis.

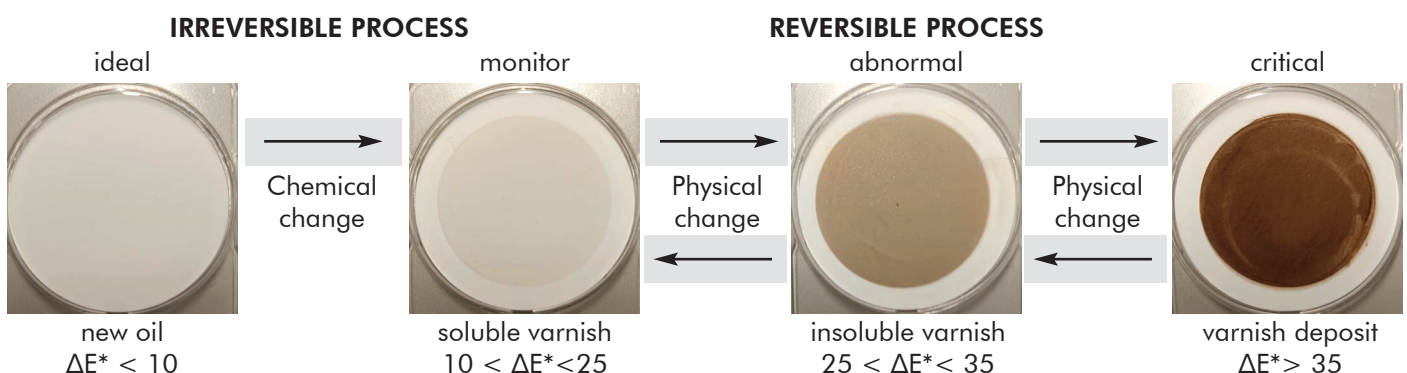
If  $\Delta E^*$  value increases, it is necessary to remove the varnish precursor from the oil to avoid any future problem.

### CAN WE REMOVE VARNISH PRECURSORS FROM THE FLUID?

Using dedicated filtration media and a low flow rate it is possible to remove varnish precursors from hydraulic and lubricating fluid.

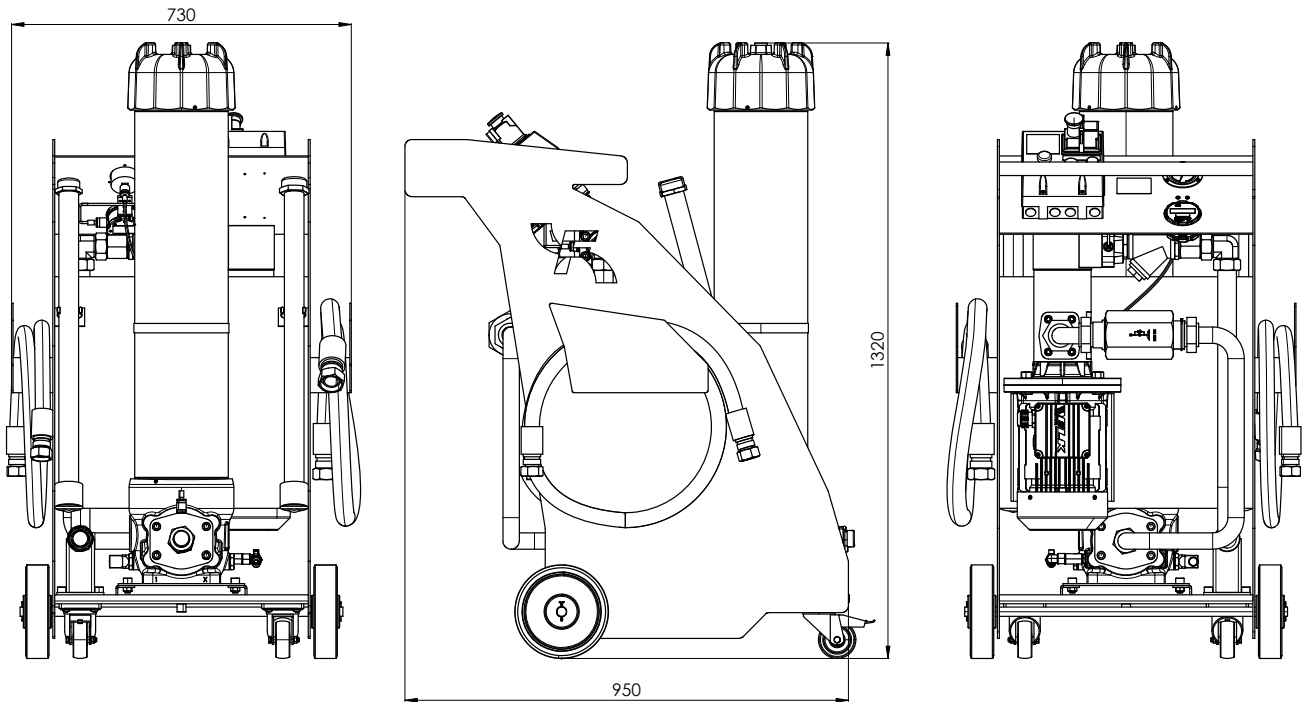
Filtrec filter elements with "/VRE" option are able to efficiently remove non-solid substances like varnish precursors as well as solid particle contamination.

These filter elements combine a high efficiency glass fiber media ( $\beta_4(c) \geq 2000$ ) and a dedicated cellulose fibers media to reach high filtration performance for solid and non-solid contaminants.



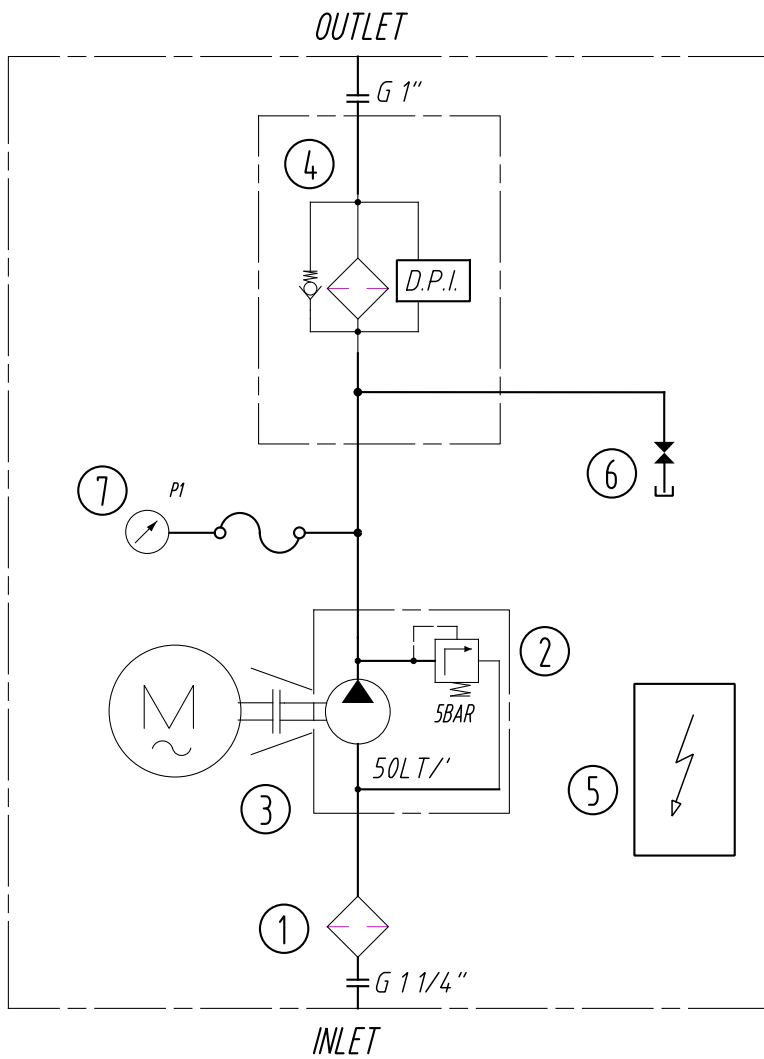
## OVERALL DIMENSIONS

### FUVR050



## HYDRAULIC DIAGRAM

### FUVR050



- 1- Suction filter "Y" 500  $\mu$ m
- 2- Gear pump + pressure relief valve 5 bar
- 3- Motor with pump coupling
- 4- Filter with visual clogging indicator
- 5- Control Panel
- 6- Sampling drain valve
- 7- Pressure gauge

Suction and delivery hoses are included but not connected

## ORDERING INFORMATION

### FUVR050

1.	2.	3.	4.	5.	6.	7.	8.
<b>FUVR</b>	<b>050</b>	<b>T</b>	<b>G</b>	<b>4</b>	<b>B</b>	<b>S</b>	<b>0</b>

1. FILTER UNIT	FUVR	
2. MODEL	050	flow rate 50 l/min
3. ELECTRIC MOTOR	T	three phase electric motor, 380/400 Vac 50-60 Hz, 1,5 Kw
	M	single phase electric motor, 220/230 Vac 50-60 Hz, 1,5 Kw (on request)
4. PUMP SIZE	G	gear pump with + pressure relief valve 5 bar
5. FILTER / ELEMENT SIZE	4	1 x U564 series
6. SEAL	B	NBR
7. VERSION	S	standard version
8. OPTION	0	With visual clogging indicator, differential indicator model VX2 Support frame with drip tray Suction filter "Y" 500 µm Suction and delivery hoses + lance L=3m 3P+N+PE (N=not connected)+ industrial plug, L=2m Control panel with ON/OFF switch with safety release coil and emergency interlock push button

## ORDERING INFORMATION SPARE ELEMENTS

1.	2.	3.	4.	5.	6.
<b>U5</b>	<b>64</b>	<b>G01</b>	<b>B</b>	<b>0</b>	<b>/VRE</b>
1. FILTER ELEMENT SERIES	U5				
2. FILTER SIZE	64				
3. FILTER MEDIA	G01	glassfiber $\beta_{4\mu m(c)} > 2.000$			
	GW01	glassfiber $\beta_{4\mu m(c)} > 2.000$ + water absorbent			
4. SEALS	B	NBR			
5. BYPASS VALVE	0	no bypass			
6. OPTION	/VRE	varnish removal element			

## USER TIPS

The filter element must be replaced when:

1. the clogging indicator shows ; more filter elements could be necessary to reach acceptable  $\Delta E$  value  $< 25$ , depending on the oil volume to be cleaned and from the initial contamination level.

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