

# TeknoFluida

Your Solutions Partner for  
Fluid Technology

## VARNISH REMOVAL UNIT

TeknoFluida provides most complete varnish removal and prevention. It removes oxidation by-products and prevents varnish formation.

### Single Housing Series

Utilized for Following  
Applications:

Pulp and Paper  
Steel Work  
Mining and Gas  
General Industries  
Power Generation





## Varnish Removal Unit



### Technical Specification

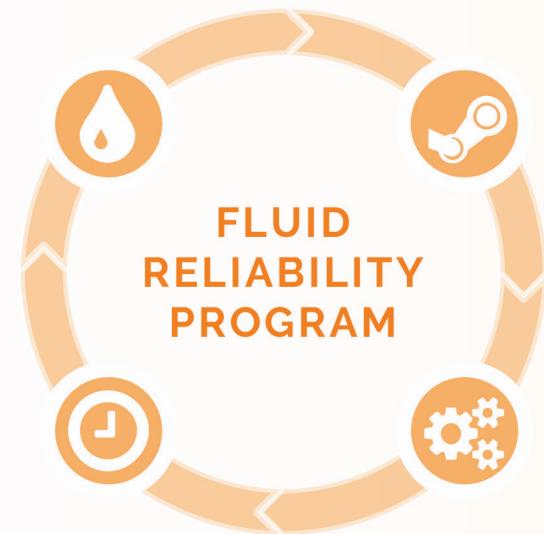
Unit types	VRU-15	VRU-25	VRU-40
Flow rates*	15 l/min	25 l/min	40 l/min
Permitted fluids*	Fluids compatibility: ⌘ Mineral oil ⌘ Synthetic ester ⌘ Phosphate ester ⌘ Other fluids (please contact us)		
Sealing material	Viton (or equivalent)		
By-pass opening pressure	5 bar (72.5 psi)		
Pump safety valve	15 bar (217 psi)		
Operating temperature	20...80 degree C		
Cartridge Material	Long Fiber Cellulose/Polypropylene		
Dirt holding capacity	1,955 g/cartridge element		
Water absorption	2.6 liters/cartridge element		
Inlet port	G1/2"	G3/4"	G1"
Outlet port	G1/2"	G1/2"	G1/2"
Weight (empty)	Unit dependent, contact a TFI representative		
Dimensions (L x W x H)	Unit dependent, contact a TFI representative		

\* For other fluids, flow rate or viscosities ranges, please contact us

### Advantages

VRU can be configured for applications with fluid volumes up to 36,000 liters (9,500 gallons), so that:

- ⌘ Removes soluble and insoluble varnish contaminants
- ⌘ Prolongs oil health by reducing additive consumption
- ⌘ Reduces and prevents servo valve sticking
- ⌘ Efficiently cleans without adding other by-products to the system



### Product Description

Varnish is a common problem for a wide range of hydraulic fluids and lubricants, especially in turbine and plastic injection moulding applications. It results in stickiness around the valves, shorter fluid life, shorter filter life and unscheduled downtime.

The formation of varnish begins with oxidation of the fluid. Wear particles and moisture generate oxidation. Those factors will react with hydraulic fluid resulting in degradation and rising Total Acid Number (TAN).

The Varnish Removal Unit combines highly efficient varnish removal and oil quality monitoring in one modular system.

The Long Fiber Cellulose / PP cartridges are specially designed for the removal of varnish byproducts which are dissolved in the fluid. These cartridges adsorb polar acids by means of special compacted fibers which create an intricate internal flow path. Unlike other technologies, the cartridges do not add water to the fluid. They actually remove water and other solid contaminants. The filter unit acts as a kidney loop, continuously circulating fluid through the filter media.

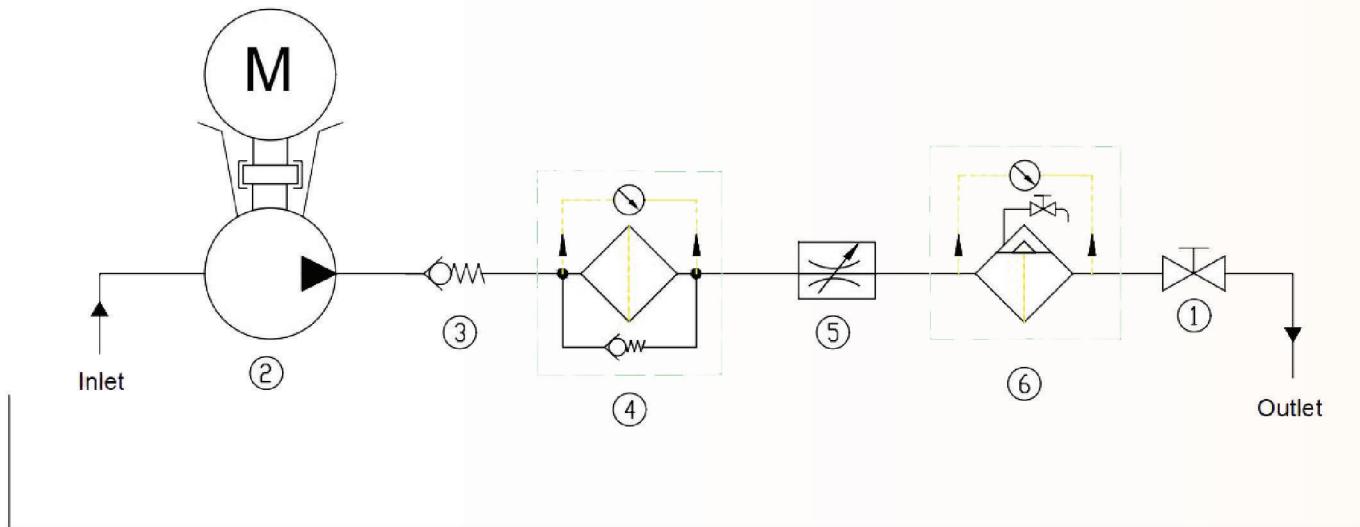
The MPC Color instrument allows real time on-site determination of the condition of your lubricant. Data results are captured and stored in text and audio captions for quick analysis. The MPC Color packs tremendous science into a convenient and extremely accurate package.

### Applications

- ⌘ Turbine oil
- ⌘ Transformer oil
- ⌘ EHC oil
- ⌘ Insulating oil
- ⌘ Synthetic oil
- ⌘ Gear oil

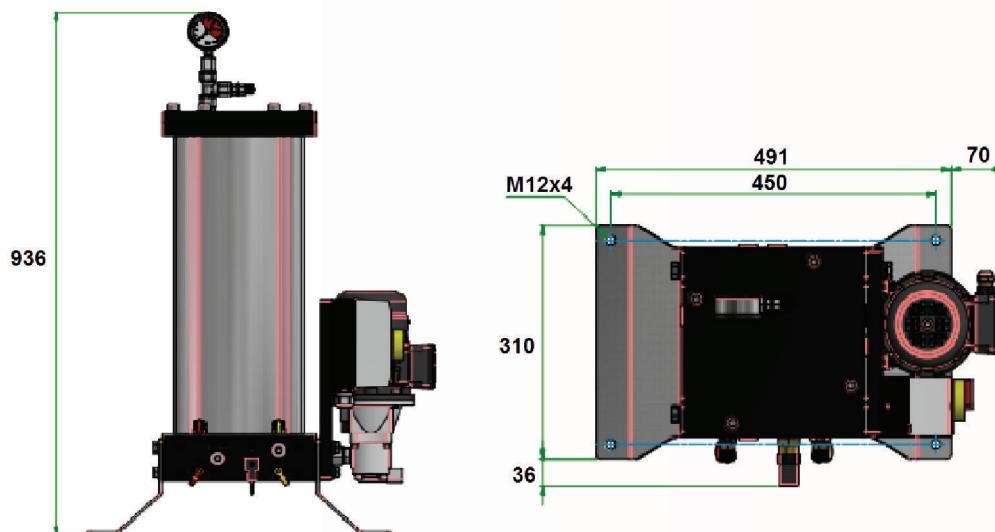


## System Diagram



## Working Principle

The hot oil is drawn from the lowest point of the system tank to the Varnish Removal Unit by means of the transfer pump on the unit. The process inside the unit includes passing the oil through the efficient cartridge element, specially designed for varnish removal. Because of its chemical structure, varnish molecules are believed to be attracted to the adsorbent material and the adsorbate molecules (varnish precursors). This cartridge element is a composite consisting of a cellulose fiber matrix and other materials that give it a high-void volume and an open-fiber matrix. The resin-bonded, open-fiber matrix provides high permeability, which is necessary for the fluid to come in contact with the large fiber surface area for the absorption of the varnish precursors. The specially formulated binder resins give the filter media high affinity for the polar varnish precursors, resulting in high removal efficiency and retention of the material suspended in the fluid phase.



# TeknoFluida

## Order Code

1	2	3	4	5	6	7	8
VRU	15	-	01	/	1	-	1

### 1. Basic Model

VRU = Varnish Removal Unit

### 2. Flow Rate\*

15 = 15 liter/min

25 = 25 liter/min

40 = 40 liter/min

### 3. Power Supply

01 = 230/380 VAC; 50Hz

02 = 280/480 VAC; 60Hz

03 = 230 VAC; 50 Hz

\*Other flow rate and information source please inform us

### 4. Motor Phase

1 = single phase

2 = three phase

### 5. Control Box

0 = None

1 = on/off (standard)

### 6. Indicator Option

0 = Pressure gauge (standard)

1 = Differential pressure gauge

### 7. Sealing Material

V = Viton

N = NBR

### 8. Oil Sensor

00 = None

01 = TFC-1500 installed

SO = Special order



**TFC-1500**

### Reading Indicator on MPC Test



**NORMAL RANGE (green)** - This indicates that there are low levels of the precursors that lead to soft contaminants (varnish).

**MONITOR RANGE (yellow)** - This means the production of varnish within the system could be approaching soon and the oil condition should be watched especially when the lubricant is cooled to an ambient temperature.

**ABNORMAL RANGE (orange)** - This means that there is an increased level of soft contaminants due to oil degradation. These soft contaminants will form varnish in tight clearance zones or cooler spots in the system. The oil may also cause servo valves to stick or seize causing a unit trip, especially after a shutdown and the unit is being brought back online.

**CRITICAL RANGE (red)** - This means that there is exponentially increasing level of soft contaminants due to oil degradation. These soft contaminants will form varnish in tight clearance zones or cooler spots in the system. The oil may also cause servo valves to stick or seize causing a unit trip, particularly after a shutdown and the unit is being brought back online.

