

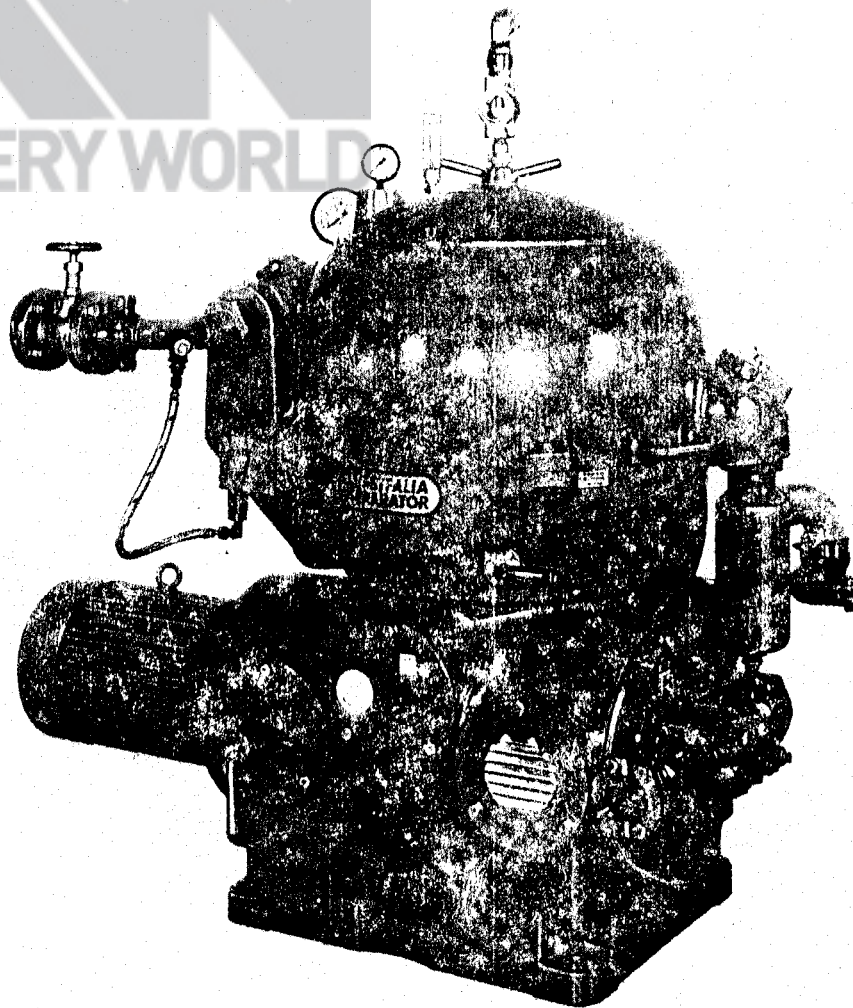
**WESTALIA  
SEPARATOR**

Data Sheet

# **OSA 20**

## **VARIZONE Purifier**

**Mineral Oil Centrifuge  
with self-cleaning bowl**



### **Standard version**

OSA 20-02-066, design 14  
OSA 20-02-066, design 20  
OSA 20-02-066, design 25

### **Explosion-proof version**

OSA 20-02-566, design 14  
OSA 20-02-566, design 20  
OSA 20-02-566, design 25

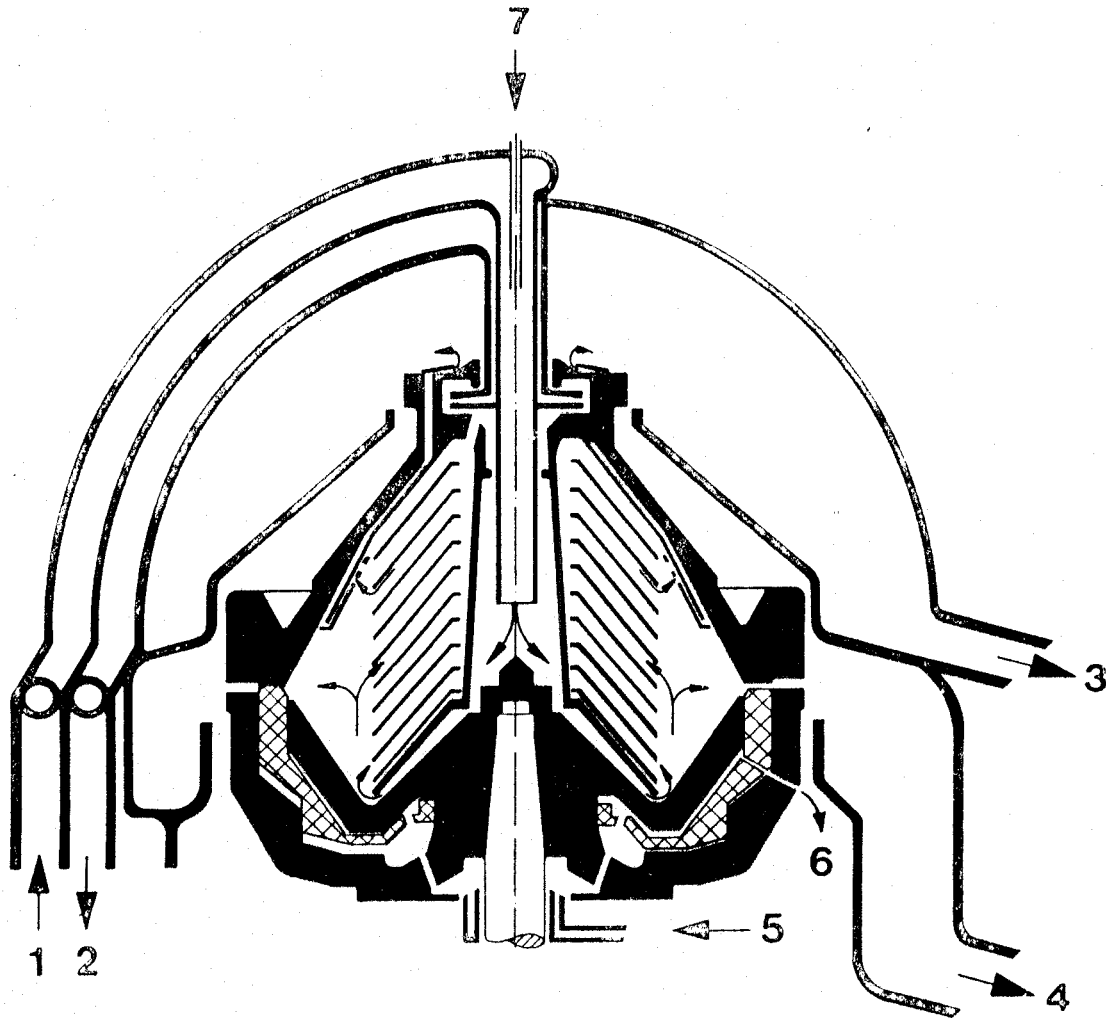
### **Function**

Continuous clarification, de-watering and washing of mineral oils such as fuel and lube oils, hydraulic oils, cutting and cooling oils, etc.

### **Fields of application**

Mainly on board of ships, in power stations, rolling mills, engineering works, automotive industry, etc.

# Operating principles and constructional features



- 1 Dirty oil feed
- 2 Clean oil discharge
- 3 Dirty water discharge
- 4 Sludge discharge

- 5 Operating-water feed
- 6 Operating-water discharge
- 7 Make-up water

## Bowl

This centrifuge is equipped with a self-cleaning disc-type bowl, which can be arranged for either clarification of liquids or separation of liquid mixtures.

Ejection of solids at full operating speed is accomplished by opening the operating-water valve.

To simplify operation and to ensure better separation, the bowl is provided with a patented separating disc which permits the separation of oil-water mixtures with varying densities without having to re-adjust the separating zone. The bowl does not contain wear-prone parts such as screws, bolts, springs and valves.

## Gear pump, centripetal pump

A gear pump for dirty oil feed can be flanged to the centrifuge frame, if required. The clean oil is discharged under pressure by a centripetal pump.

## Frame, hood and drive

The centrifuge meets the requirements of the various marine classification societies. It is of enclosed design. The hinged hood is fitted with a flowmeter, pressure gauge and thermometer. The discharging heavy phase and solids can be observed through inspection ports.

The machine is driven by an electric flange motor, type B 5. Power is transmitted to the bowl spindle by means of a centrifugal clutch and a worm wheel gear.

All bearings and the gear are splash lubricated from a central oil bath.

## Materials of construction

Frame	Grey cast iron GG-25
Hood	Silumin G-AISI 12
Bowl parts	
Bowl top	27 Cr 5 Ni 1.8 Mo stainless steel
Bowl bottom	17 Cr 1.5 Ni stainless steel
Sliding piston	27 Cr 5 Ni 1.8 Mo stainless steel
Centrifugation chamber bottom	27 Cr 5 Ni 1.8 Mo stainless steel
Distributor	Bronze
Discs, regulating rings	18 Cr 8 Ni stainless steel

## Standard accessories

Rubber cushions; anchor bolts; counter-flanges; expansion joints in feed and discharge lines; make-up water regulating valve; flowmeter; pressure gauge; thermometer; pre-set valve with connectors; 1 set of regulating rings to adjust the bowl for separation or clarification; valve and strainer for operating-water feed line; 1 set of standard spare parts.

## Special accessories (available at extra cost)

Single gear pump; constant pressure valve; pre-strainer for dirty oil feed; electric motor; motor control; impulse relay for operating water; timing unit for automatic desludging control; supervisory equipment; alarm devices; steam or electric pre-heaters for oil and water; heater controls; tool set and set of special operating spares.

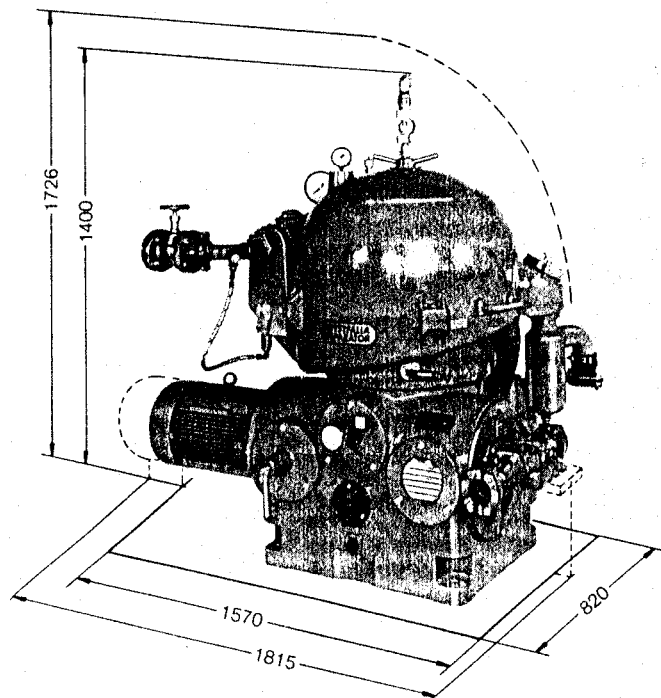
## CENTRI-PACK Mobile installations

A complete, self-contained package unit incorporating all accessories necessary for operation can be supplied on request. CENTRI-PACK units can be installed both on board of ships and in land stations. Mobile installations are also available.

## Weights and shipping data

	design 14	design 20	design 25
Complete centrifuge including gear pump and motor			
Net weight (with bowl)	1043 kg	1050 kg	1060 kg
Gross weight (with bowl)	1183 kg	1190 kg	1200 kg
Bowl			
Net weight	158 kg	163 kg	168 kg
Case dimensions (L x W x H)	1800 x 1000 x 1400 mm		
Shipping volume	2.5 m <sup>3</sup>	2.5 m <sup>3</sup>	2.5 m <sup>3</sup>

# Technical data



Dimensions in mm

## Technical data

<b>Bowl</b>	
Speed	7500 min <sup>-1</sup>
Volume	8 litres
Sludge space	4.2 litres
<b>Motor power</b>	
Separator without pump	8.5 kW
Separator with small or medium pump	8.5 kW
Separator with large pump	10 kW
Synchronous speed at 50 Hz	1500 min <sup>-1</sup>
Synchronous speed at 60 Hz	1800 min <sup>-1</sup>
Type	B5
<b>Gear pump capacity</b>	
Gear pumps can be selected from a special table covering the whole capacity range.	
Suction height	0.4 bar
Pressure head	1-3 bar
Centripetal pump pressure head	2-3 bar

## Capacities

	design 14	design 20	design 25
Rated capacity	7400 l/h	10000 l/h	12500 l/h

For optimum capacities please refer to table of capacity data no. 9997-7510

Subject to modification



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# Mineral Oil Separators with Self-Cleaning Bowl Type OSA

continuously-operating separator

## Operation and Design

Separator with self-cleaning disc-type bowl for purification or clarification. Solids are discharged periodically while the bowl is rotating at full speed. This type of machine is particularly suited to the treatment of very dirty oils, water and emulsions. It can be integrated in a fully-continuous operating process in combination with a timing unit.

## Design Features:

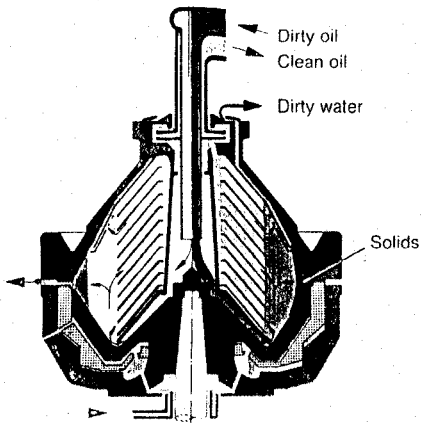
Enclosed, gas-tight design – bowl with hydraulically controlled piston – hinged Silumin hood with thermometer in feed connection and pressure gauge for the liquid component discharged by centripetal pump (paring disc).

Types OSA 20 and OSA 35 can be supplied in two versions:

OSA 20-02-066 and OSA 35-02-066 for de-watering mineral oil; with enclosed pressure discharge of the oil by centripetal pump, with gravity discharge of the water from the bowl, with flow meter in the feed line and make-up water regulating device.

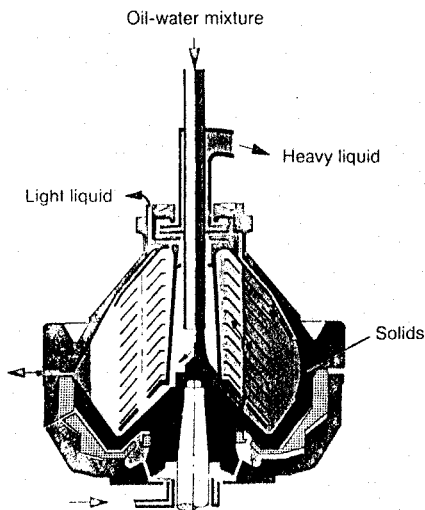
OSA 20-03-066 and OSA 35-03-066 for de-oiling of water and emulsion; with enclosed pressure discharge of the heavy liquid component by centripetal pump and gravity discharge of the light liquid component.

For treatment of readily-inflammable liquids with low flashpoint the separator can be supplied with explosion protection based on VDE 0171, providing degree of protection (Ex) d2 "flameproof enclosure".



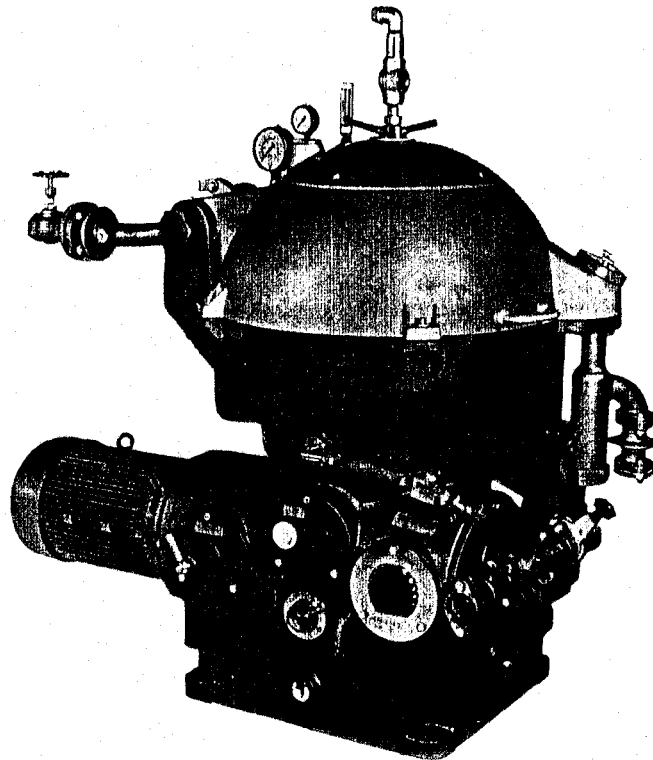
"02" version

De-sludging      Separation



"03" version

De-sludging      Separation



# Applications

Mineral oil separators are used primarily in marine and shore power plants, rolling mills, engineering works, waste oil collection stations, in the automobile industry etc.

## Functions

The working life, reliability and economy of prime movers and machines depend to a great extent on the purity of the oil used. The job of the separator is to improve the quality of the fuel oil and to maintain the quality of the lubricating oils, running-in oils, coolants, function and safety liquids.

Unpurified fuel oils cause rapid wear of the cylinder liners and damage to the injection system and to the exhaust valves; insufficiently purified lubricating oils, running-in oils, function and safety liquids cause wear and corrosion damage to driving mechanisms, bearings, hydraulic systems etc. Inadequately treated coolants result in reduced tool life and poor workpiece surfaces in machining or in rolling. In addition, inadequate treatment of the operating media mentioned will entail shortening their useful life as with increasing contamination accelerated aging takes place. Mineral oil separators ensure proper cleaning and dewatering of the oil. A special table provides information on the performance of the separators. Specifications can be taken from the individual data sheets of the separator types.

## Planning the Separator System

When selecting separators the following considerations arise:

- How many separators are necessary and what should their total output be? Important factors are the design and size of the propulsion unit or machine as well as type, quantity and quality of the oil and the desired separation time because these factors determine the number of separators needed as well as their design and size. It is also important with heavy oil (as fuel) whether treatment is to be one or two-stage. It should be pointed out in this connection that separators must never be chosen too small.
- Should separators with normal bowls or self-cleaning bowls be used for separating fuel oils and lubricating oils? If self-cleaning separators are chosen, it is still necessary to decide whether desludging should be carried out manually or by an automatic timing unit. It should be considered whether monitoring of the separator system should be provided only in the separator room or from another point, for example from the central control room or engine room.
- It is desirable to obtain all parts belonging to the system such as separator with attached pump and motor together with pre-heaters, timing unit, supervisory equipment, motor and heater controls etc. as individual system parts or is it preferable to order a Centri-Pack system in which all necessary system sections are assembled to form a block unit ready for connection? For a power station or an engineering works a mobile system may be preferable.

# Automatically-Operating Self-Cleaning Separators

The use of self-cleaning separators substantially facilitates the work of the operating staff as the manual cleaning of the bowl necessary with discontinuously-operating separators is eliminated. Westfalia Separator have developed a timing unit for mineral oil separators by means of which the program of purification and bowl desludging can be carried out automatically. These timing units have proved their value a thousand times over in rugged marine operation. When they are used, the separator system can be monitored from the engine room or control room. Any faults occurring can usually be remedied instantly from these points.

- centrifugation is interrupted for a few seconds only by controlled total de-sludging (see switching sequence diagram),
- the sludge resulting from controlled total de-sludging has a low volume and a low oil content,
- reduced fresh water consumption due to exact water addition,
- the operation of the separators may be monitored both in the separator room itself and at any point in the engine system, for example in a ship's engine control room,
- reporting, location and rapid elimination of any faults occurring, either automatically or by manual operation of a pushbutton,
- low operating costs due to man power savings.

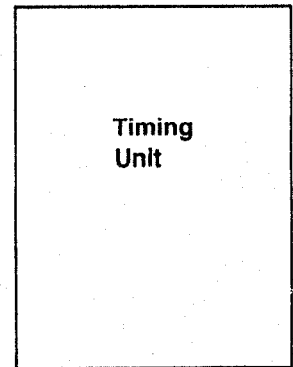
## The following advantages accrue from the use of timing units:

- automatic separator operation from port to port,
- high precision program execution which eliminates operating errors, offers increased reliability during unsupervised long-term operation and ensures uniform high quality of the oil,

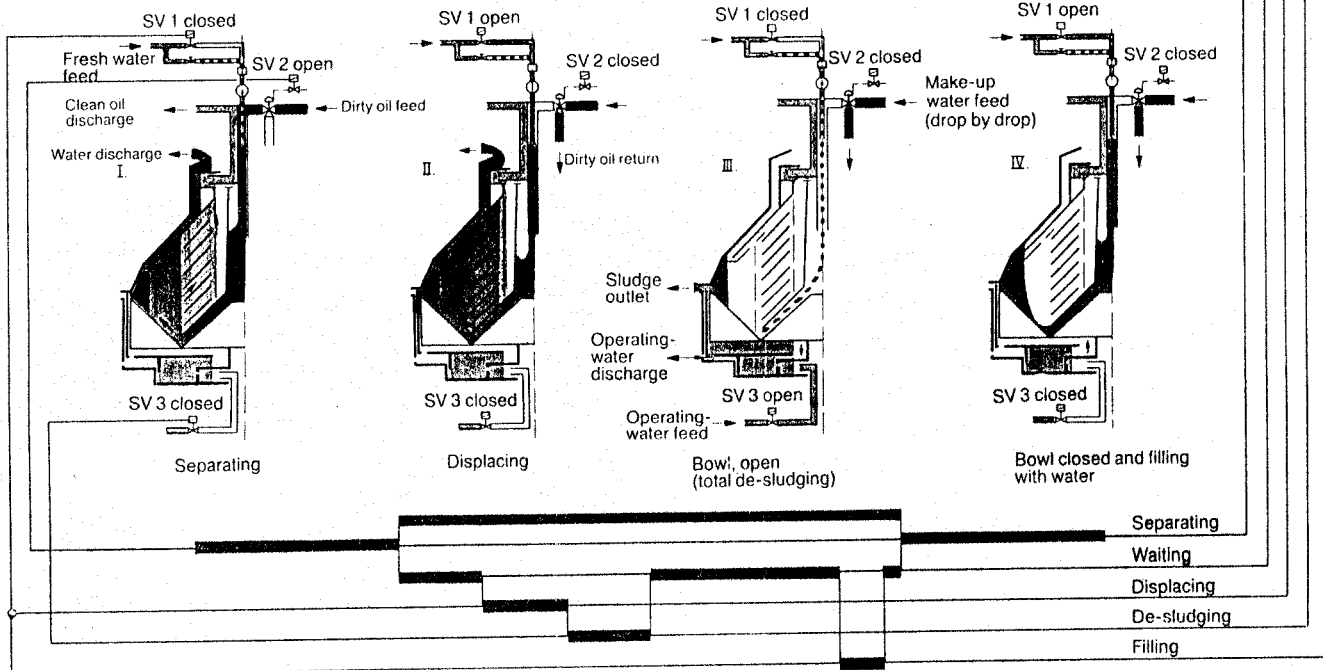
## VESA Timing Unit

The timing unit is used in conjunction with the self-cleaning separator to ensure a continuous operating process in the unmanned separator room.

The program switching mechanism controls the opening and closing of the feedstock supply and the water supply for displacement of the oil from the bowl, for carrying out total and flush de-sludging as well as filling the bowl before turning on the feedstock supply again. In addition, it incorporates a standard supervisory equipment as described in detail on page 8. Connection to the monitoring system in a remote control room is possible.



## Phases of automatic de-sludging



Switching sequence diagram for a continuously operating OSA type separators with VESA timing unit

