



# R M F <sup>TM</sup>

S Y S T E M S

A Des-Case Brand



## GIANT OFF-LINE FILTER

#### GOLU benefits

- ▶ Reduces solid particle contamination
- ▶ Maintains excellent cleanliness levels
- ▶ Reduces water contamination
- ▶ Reduces machine downtime
- ▶ Reduces oxidation of the oil
- ▶ Extends the machines useful life
- ▶ Reduces cost of ownership

#### GOLU Facts

- ▶ The water absorbing elements can remove as much as 1,5 liter of water per element
- ▶ The micro glass elements can remove up to 1 kg of solid particle contamination



## The Giant Off-Line Unit

The Giant Off-Line Unit is also known as "The Giant". The Giant's filter housing is combined with a pump motor group and an electrical control box. This is an easy to use plug-and-play filter solution. It only requires electrical power, suction and return lines.

The Giant Off-line Filter Unit can be easily mounted to new and existing hydraulic installations. By means of an integrated pump-motor unit in the off-line filter, the oil is pumped from the reservoir through the filter unit and after filtering the oil is then returned to the tank. If required, elements are available in different micron sizes to suit any application. Water absorbing elements can also be applied.

#### The Giant

The RMF Systems Giant Off-line Filter is especially designed for industrial hydraulic and lubrication systems. The pump is a cast steel low noise gear pump with a large viscosity range from 12 cSt - 800 cSt. Delta P indicator is standard in the delivery.

A range of filter elements is available for the giant, running from 1 up to 25 micron. The filter elements have the capacity to remove even the smallest of dirt particles from the oil. When

fitted with water absorbing elements, the reduced water contamination level prolongs the life of the additive package and reduces oxidation of the oil, components and bearing surfaces.

#### Monitoring

The Giant can be equipped with additional components for Condition Monitoring, such as the CMS (Contamination Monitoring System), the OQS (Oil Quality Sensor) and the OQD (Oil Quality Display). The electrical control box is already prepared for these additions. The CMS can report oil cleanliness levels in all international standard formats (8 channel sensor 4,6,14,21,25,38,50,70  $\mu\text{m}(c)$ ) If required the CMS can include the optional moisture and temperature sensor as to report water content in RH %.

#### Applications

The Giant can be used on hydraulic power units, lube and oil tanks, large gearboxes and storage tanks for

biodegradable fluids. Industries that are successfully applying 'The Giant' include: steel industry, marine industry, automotive industry, pulp & paper industry.

#### System Contamination

In the hydraulic market it is an accepted fact that contamination causes 80% of all mechanical failures. This contamination results from the presence of solid particles such as metal, sand and rubber in oil. Water contamination can cause corrosion, metal surface fatigue, fluid breakdown and reduced lubricating film thickness.

# Specification

PRODUCT DETAILS	
Dimensions H x W x D	1225 x 581 x 290 mm
Weight	115 kg
Power supply all 50/60Hz 3ph	230/400VAC
	400/690 VAC
	200/346 VAC
Connections suction return	1 ½" SAE 3.000 psi / 205 Bar
Power rate	2,2 kW (standard)
Flow rate	Approx. 80 l/min (depending on frequency)
Viscosity range	12-800 cSt
Pump safety valve	15 bar
Maximum return pressure	1 bar
Fibre glass elements	1, 3, 6, 12, 25 micron
Water absorbing element material	Super absorbent polymer, combined with fiber glass A6, A12
Element change	3,5 bar with pressure difference switch (with indicator on control box)
Unit seal	All viton seals
Element seal	Must be specified
Extra options	Optional CMS, OQS, OQD
Control box	Fully equipped control box with on/off, motor protection relais, filter saturation alarm, 24VDC power supply for CMS and OQS unit.

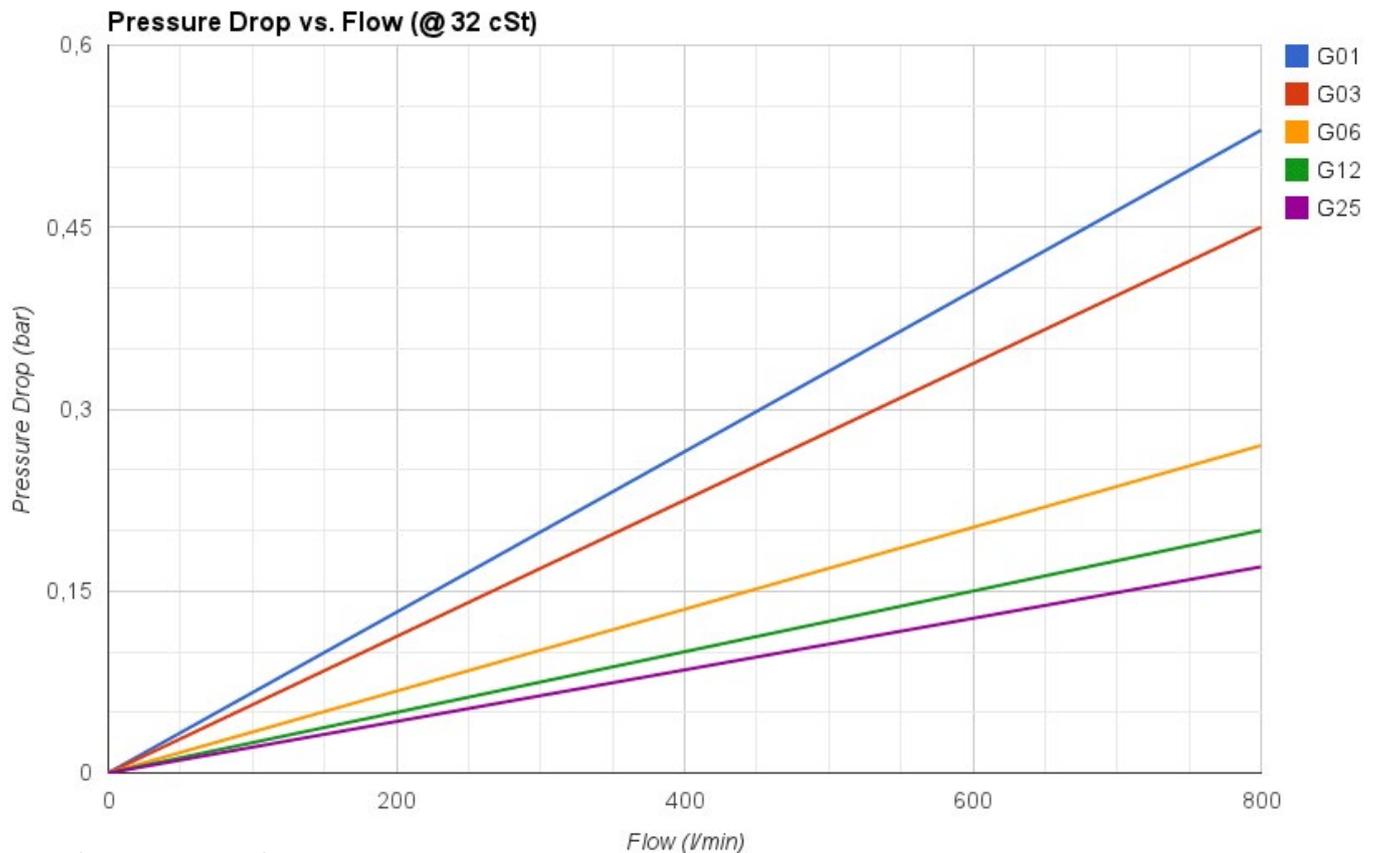
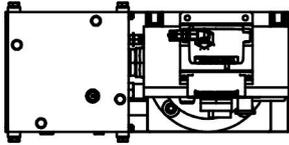


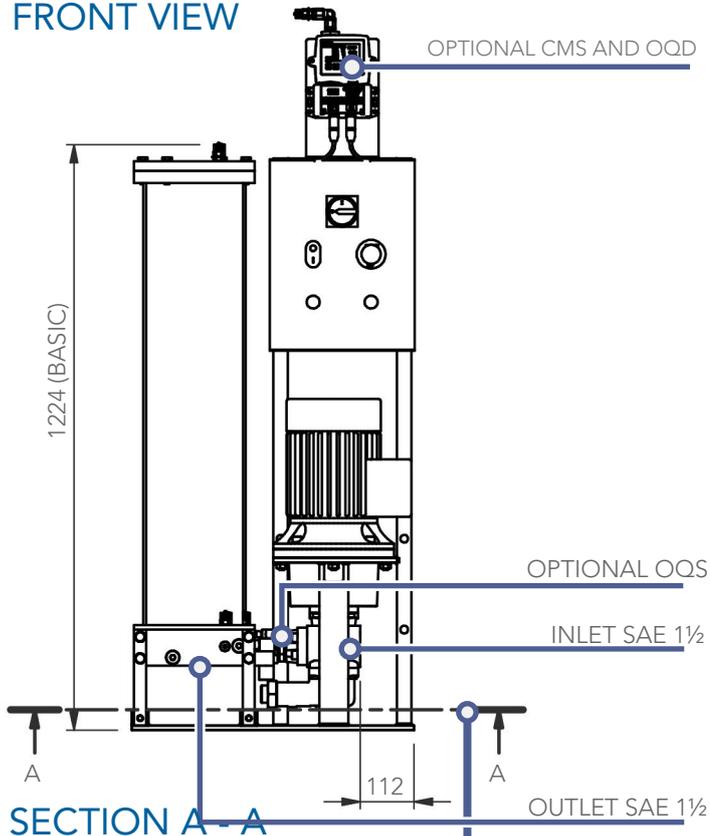
Fig. 1: Flow vs. Pressure drop

# Main dimensions

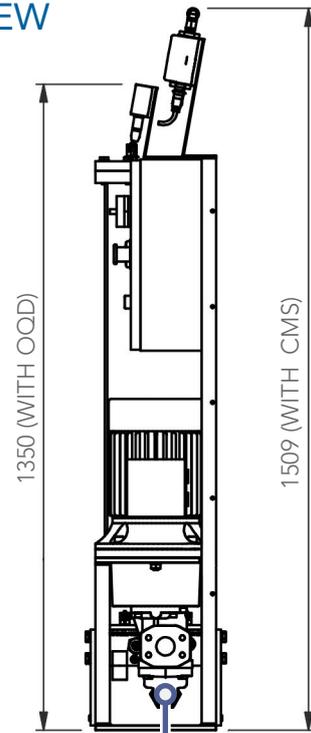
## TOP VIEW



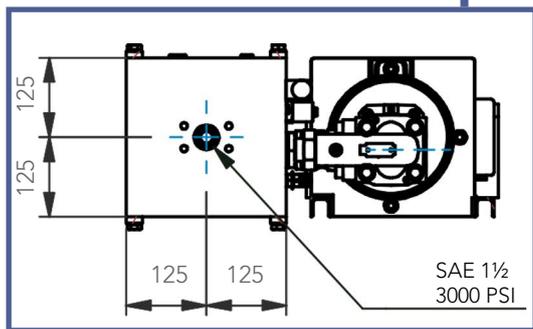
## FRONT VIEW



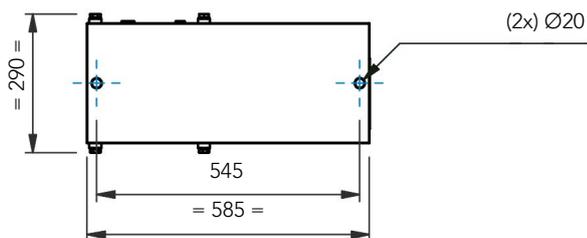
## SIDE VIEW



## SECTION A-A



## BOTTOM VIEW



## DETAIL

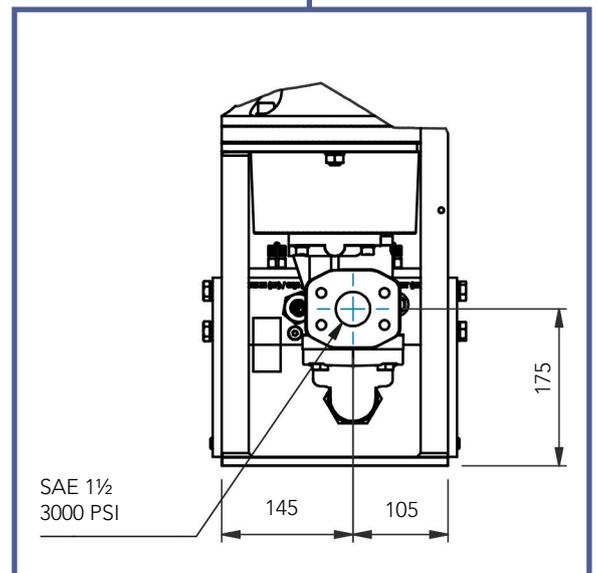


Fig. 2: Main dimensions

# Hydraulic Diagram

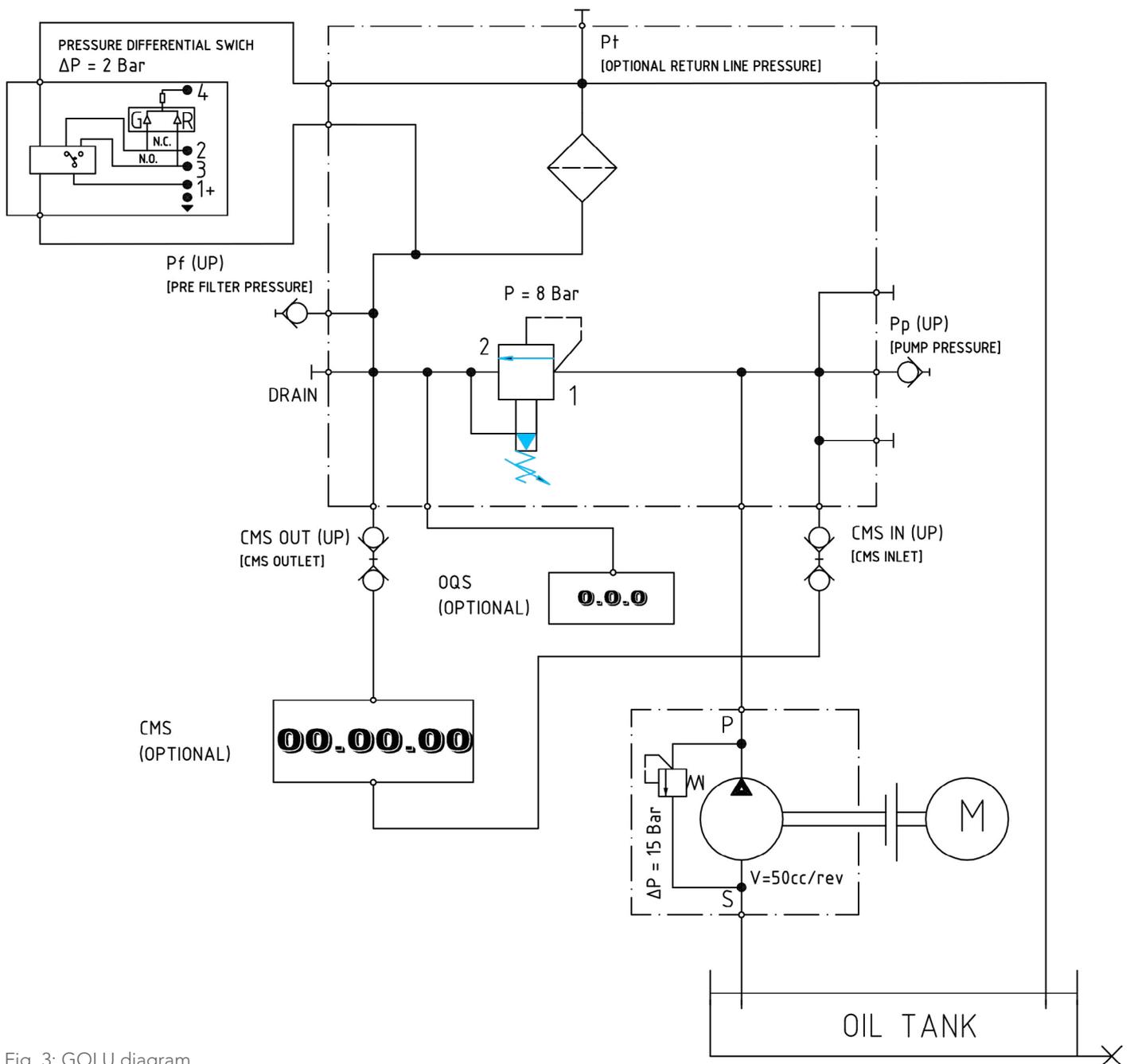


Fig. 3: GOLU diagram

# Contamination Monitoring Sensor CMS

The CMS in-line contamination monitor automatically measures and displays particulate contamination, moisture and temperature levels in various hydraulic fluids. It is designed specifically to be mounted directly to systems where ongoing measurement or analysis is required, and where space and costs are limited.

## Specification

LED Based Light Extinction  
Automatic Optical Particle  
Counter

## Analysis Range

ISO 4406:1999 code 0 to 25  
NAS 1638 Class 00 to 12  
AS4059 Rev.E. Table 2  
Sizes A-F: 000 to 12  
(lower Limits Test Time  
dependent)

Measurement in 8 channels  
with particle sizing  
4,6,14,21,25,38,50,70  $\mu\text{m}(c)$   
to revised ISO 4406 Standard

## CMS Water en Temperature Sensor

The water sensor option measures water content using a capacitive RH (relative humidity) sensor. The results is expressed as percentage saturation.

100% RH corresponds to the point at which free water exists in the fluid, i.e. the fluid is no longer able to hold the water in a dissolved solution.

## Software

All CMS Units are supplied with software that can be installed on you PC. The results can be downloaded from the CMS to your computer. When the CMS is connected to the PC, it can be controlled directly by the software.

Alternatively historical results can be downloaded form the CMS's in built memory. The CMS memory has space for around 4000 log entries, when full, the oldest log entry is overwritten.

- ▶ Which test are logged, and when, are determined by the log settings
- ▶ Each log entry is time-stamped and contains the CMS serial number, so that it can be identified later.

## CMS ALARM RELAY STATUS LED

All CMS versions have a multicoloured indicator on the front panel, which is used to indicate the status or alarm state. The alarm thresholds can be set from the supplied software via the serial interfaces.



## CMS "USB-I" CONNECTOR

This is a ready-made solution for easily connecting a PC/ Laptop to the CMS. It comprises of a USB:RS485 interface with a terminal block pre-wired to connect directly to the CMS. An extra terminal block is provided for any customer wanting to wire external devices through two solid state relays. An external DC adapter can be used to power the complete system, or if the computer is always connected during use, power can be taken directly from the USB cable. Powered PC / Laptops only.

# Oil Quality Sensor

## OQS

The Oil Quality sensor (OQS) from RMF Systems puts you in control with real-time monitoring of oil degradation due to contamination and water ingress. Expensive oil changes are now based on oil condition, not on historical schedule.

### Environmental

Strict schedule based maintenance programmes have several downsides. Environmental experts argue that the greatest of these is the preventable waste. The Oil Quality Sensor (OQS) real-time monitoring sensor makes extending the oil service life effortless.

### Market leading

The Oil Quality Sensor (OQS) is 60 times more sensitive to oil degradation than any other dielectric constant measuring sensor.

### Intelligent

The OQS measures the energy loss component of oil permittivity. All contaminants such as metallic particles, soot, water, oxidization, glycol and particularly burnt fuel dilution increase this measured value.



### Universal

Reliably measures oil degradation in all industrial equipments, including;

- ▶ Diesel and petrol engines
- ▶ Compressors
- ▶ Industrial gear reducers
- ▶ Wind turbines
- ▶ Generator sets
- ▶ Hydraulic systems

### BENEFITS

- ▶ Reduced maintenance cost
- ▶ Extended oil change intervals
- ▶ Scheduled downtime intervals for increased productivity
- ▶ Reduced waste oil cost
- ▶ Improved equipment reliability
- ▶ Low cost investment tool
- ▶ Reduced carbon foot print
- ▶ Reduces total cost of ownership

### OQS facts

- ▶ Robust design
- ▶ Resistant to high fluid temperatures, -40 C °to 120 C °
- ▶ Resistant to fluid pressures up to 20 bar



### Oil Quality Display

The Oil Quality Display is a simple but powerful device which allows you to read the quality and temperature of the oil from a sensor without a PC.

This enables you to set up the display box on site and then be able to see the oil quality and temperature readings as required. Use an Android app to connect your Smartphone with the OQD smart via Bluetooth. With it being IP67 rated (when connected) you do not need to worry about the need to keep it in a dry place. Also with it being made from polycarbonate it is a strong durable product which cannot be damaged easily. The new 'Rate of Change' feature allows you to easily monitor the degradation of oil over a programmable period of time.

# Ordering code

## GIANT OFF-LINE FILTER

### YOUR GOLU ORDERING CODE

TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5	TABLE 6	TABLE 7	TABLE 8	TABLE 9	TABLE 10	TABLE 11
GOLU	1B	92				10	0			

### TABLE 1 - BASIC CONFIGURATION

	CODE
Giant Off-line unit	GOLU

### TABLE 2 - HOUSING CONFIGURATION

HOUSING	NUMBER OF ELEMENTS	CODE
Single housing (double length)	1 pcs element - (916 mm)	1B

### TABLE 3 - LENGTH ELEMENT

L = 916mm	1B housing	CODE
		92

### TABLE 4 - FILTER MATERIAL

	CODE
Glass fiber, 1 micron, $\beta_{1} \geq 200$	G01
Glass fiber, 3 micron, $\beta_{3} \geq 200$	G03
Glass fiber, 6 micron, $\beta_{6} \geq 200$	G06
Glass fiber, 12 micron, $\beta_{12} \geq 200$	G12
Glass fiber, 25 micron, $\beta_{25} \geq 200$	G25
Glass fiber with polymer, 6 micron absolute	A06
Glass fiber with polymer, 12 micron absolute	A12

### TABLE 5 - SEAL MATERIAL

	CODE
Viton (RMF standard)	V
Buna-N	B

### TABLE 6 - THREADED CONNECTION OPTIONS

	CODE
230/400 VAC 50Hz / 3 Phase	0
255/460 VAC 60Hz / 3 Phase (RMF standard)	
200/346 VAC 50/60Hz / 3 Phase	P

### TABLE 7 - PUMP OPTIONS

STANDARD FOR 50/60 HZ MOTOR	STANDARD FOR	CODE
50 cc/rev.	GOLU1B	10

### TABLE 8 - INDICATOR

	CODE
$\Delta p$ switch (RMF standard)	0

TABLE 9 - EXTRA OPTIONS	CODE
Standard control box with on/off, motor protection relays and 24VDC power supply for CMS and OQS unit. with integrated double RS485 to USB converter for data transfer	0
Without control box	1
Control box with on/off, motor protection relays and 24VDC power supply for CMS and OQS unit. with integrated double RS485 to ethernet converter for data transfer.	2
Standard control box with on/off, motor protection relays and 24VDC power supply for CMS and OQS unit. with integrated double RS485 to USB converter for data transfer and frequency controller.	3

TABLE 10 - PREPARATION OPTIONS	CODE
No options	0
Preparation for CMS	1
Preparation for OQS	2
Preparation for CMS and OQS	3

TABLE 11 - INSTALLATION OPTIONS (FOR DETAILS, SEE ORDERING CODE CMS AND OQS)	CODE
No options	0
RMF full option (Standard) CMS installed	1
RMF OQS/OQD installed	2
RMF OQS/OQD and full option (Standard) CMS installed	3
RMF CMS-0-M-K-R-G1	4
RMF CMS-W-M-0-R-G1	5
RMF CMS-O-M-0-R-G1	6
RMF OQS/OQD and CMS-0-M-K-R-G1	7
RMF OQS/OQD and CMS-W-M-0-R-G1	8
RMF OQS/OQD and CMS-O-M-0-R-G1	9

## 92 SERIES FILTER ELEMENTS

YOUR FILTER ELEMENT ORDERING CODE		
TABLE 1	TABLE 2	TABLE 3
92		

TABLE 1 - LENGTH ELEMENT	CODE
920 mm	92

TABLE 2 - FILTER MATERIAL	CODE
Glass fiber, 1 micron, $\mu 1 \geq 200$ (ISO 4572) / $\mu 2,5 \geq 1000$ (ISO 16889)	G1
Glass fiber, 3 micron, $\mu 3 \geq 200$ (ISO 4572) / $\mu 5 \geq 1000$ (ISO 16889)	G3
Glass fiber, 6 micron, $\mu 6 \geq 200$ (ISO 4572) / $\mu 7 \geq 1000$ (ISO 16889)	G6
Glass fiber, 12 micron, $\mu 12 \geq 200$ (ISO 4572) / $\mu 12 \geq 1000$ (ISO 16889)	G12
Glass fiber, 25 micron, $\mu 25 \geq 200$ (ISO 4572) / $\mu 25 \geq 1000$ (ISO 16889)	G25
Glass fiber with polymer, 6 micron, $\mu 6 \geq 200$ (ISO 4572)	A6
Glass fiber with polymer, 12 micron, $\mu 12 \geq 200$ (ISO 4572)	A12

TABLE 3 - SEAL MATERIAL	CODE
FPM	V

# Details

## CONTAMINATION MONITORING SENSOR

YOUR CMS ORDERING CODE					
TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5	TABLE 6
CMS		M		R	G1

TABLE 1 - BASIC CONFIGURATION	CODE
Contamination Monitoring Sensor (RMF standard)	CMS

TABLE 2 - SENSOR OPTIONS	CODE
Moisture sensor option (mineral oil only) (RMF standard)	W
No Moisture sensor option	0

TABLE 3 - FLUID COMPATIBILITY	CODE
Mineral / synthetic fluid compatibility (RMF standard)	M

TABLE 4 - KEYBOARD AND DISPLAY	CODE
6 key keypad and 128 x 64 pixel back lit graphical display (RMF standard)	K
No keypad and display	0

TABLE 5 - RELAYS	CODE
Two fully customisable "alarm" relay outputs to set upper and lower limits for the test results and indicates these via a "multicolour" front panel LED indicator and/or remote devices. (RMF standard)	R

TABLE 6 - PORT OPTION	CODE
Test point M16 x 2 (RMF standard)	G1

### WARRANTY AND RECALIBRATION

The CMS is guaranteed for 12 months from date of receipt and is recommended to be recalibrated every 12 months. Return to RMF Systems for recalibration.

# Details

## OIL QUALITY SENSOR

### YOUR OQS ORDERING CODE

TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5	TABLE 6	TABLE 7
OQS	1	08	0	SC	4	OQD-S-1

### TABLE 1 - BASIC CONFIGURATION

	CODE
Oil Quality Sensor	OQS

### TABLE 2 - MATERIAL CASE

	CODE
Stainless steel (RMF standard)	1

### TABLE 3 - THREADED CONNECTION OPTIONS

	CODE
G1/2" BSP male thread (RMF standard)	08
Alternative connections on special request	

### TABLE 4 - SEALING OPTIONS

	CODE
DIN 3852-11 Form E / ISO 1179-2 Viton (RMF standard)	0

### TABLE 5 - OUTPUT CONNECTION OPTIONS

	CODE
Straight circular connector	SC
Lumberg M16x0,75 (6-pin IP67) (RMF standard)	
<i>Note: the connector is not included in the supply</i>	

### TABLE 6 - COMMUNICATIONS OPTIONS

	CODE
Smart version - Protocol for RS485 2w / Modbus / Canbus / 4 - 20 mA	4

### TABLE 7 - ACCESSOIRES

	CODE
Display with data logger	OQD-S-1

