

# RMF SYSTEMS

PURE POWER



BPU, BPUW, BPUS  
BY-PASS UNITS







# BPU\*A & BPU\*B

## BY-PASS UNITS

RMF SYSTEMS RADIAL MICRO FILTER UNITS ARE CHARACTERIZED BY THEIR EXTREMELY EFFICIENT FILTER ELEMENTS WITH A FINENESS OF 0.5 MICRON. IF REQUIRED, DIFFERENT MICRON SIZES ARE AVAILABLE TO SUIT ANY SPECIFIC APPLICATION. THE BY-PASS FILTERS CAN ALSO BE EQUIPPED WITH AN ADDITIONAL SPECIAL WATER ABSORBING PREFILTER. IN CASE OF EXTREME WATER CONTAMINATION, THESE WATER ABSORBING SPIN-ON CANS WILL REMOVE MOST OF THE WATER PRIOR TO THE FLUID REACHING THE CELLULOSE ELEMENT.

RMF By-pass filters are specially designed for mobile hydraulic installations and are available in single or double units which are equally suitable for OEM use and retrofitting. The By-pass filter comes equipped with an integrated pressure compensated flow control valve. This valve bleeds oil from the main hydraulic system, passes this through the filter after which it is returned to the hydraulic reservoir. The amount of oil extracted from the main system at any time is insignificant ensuring that it will not affect the working of the main system. Most commonly used biodegradable oils in the mobile sector are suitable for filtration with RMF filter elements.

### ECONOMICAL

The hydraulic market accepts that 80% of mechanical failures are caused by contamination in the system. The RMF By-pass filters attack this contamination at source and in addition to solid particles,

these filters are also capable of removing water from the oil. This prevents the catalytic reaction of water and solid particle contamination, resulting in extended usable oil life. The use of RMF filters means less defects, less maintenance, and less wear and tear of the hydraulic components.

### APPLICATIONS

RMF By-pass filter units can be fitted to every imaginable mobile application where hydraulic and/or transmission systems are present. Installation is very simple, the filter housing provides mounting slots on all four sides and the pressure and return connections are available on the side and the back of the By-Pass unit. In recent years RMF Systems have developed a great deal of experience in cleaning and keeping clean hydraulic and transmission systems.

### ADVANTAGES

- ▶ Extremely clean oil due to high filtration efficiency.
- ▶ Prevention of channel forming by radial filtration direction.
- ▶ Large dirt and water holding capacity.
- ▶ Compact and easy-maintenance design.
- ▶ Environmentally friendly elements available.
- ▶ Longer usage life for oil and components.
- ▶ Reduces cost of ownership.

### APPLICATIONS

- ▶ Excavators
- ▶ Wheel loaders
- ▶ Forestry machines
- ▶ Asphalt machines
- ▶ Concrete pumps
- ▶ Aviation ground support equipment
- ▶ Agricultural machines

# Specification BPU05



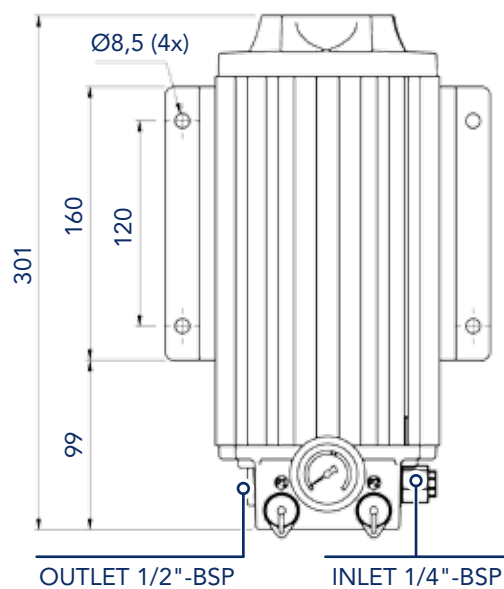
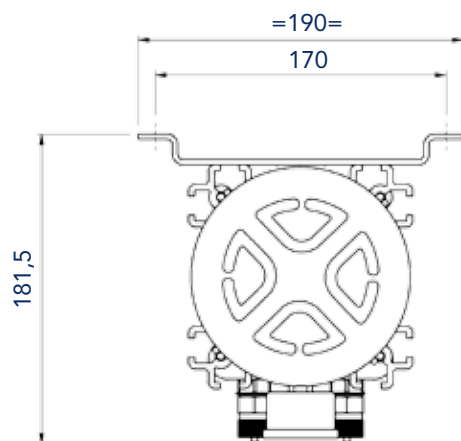
PRODUCT DETAILS	
FILTER MODEL	BPU05A
Material filter housing	Anodised Aluminium
Seal Material	NBR or FPM (see ordering code)
Nominal Flow	1,4 l/min
By-Pass opening pressure	6,2 bar (at 0 bar back pressure)
Suitable Elements <sup>1</sup>	20HB
Minimum overhead clearance for element removal	300 mm
Operating Pressure flow control valve (min - max)	12 - 420 bar
Max. Pressure filter housing	20 bar
Max. oil temperature <sup>2</sup>	80°C
Dirt indicator	Pressure Gauge (0 - 10 bar)
Pump safety valve	15 bar
Inlet connection	1/4" BSP female
Outlet connection	1/2" BSP female
Max. Tank volume	± 750 l
Fluid Compatibility <sup>3</sup>	Hydraulic fluids according ISO 2943
Approximate weight	5,0 kg

<sup>1</sup>For complete specifications of the RMF Systems Filter elements see page 33.

<sup>2</sup>For other oil temperatures please contact RMF Systems

<sup>3</sup>For other fluids, please contact RMF Systems

# Dimensions BPU05



# Specification BPU1



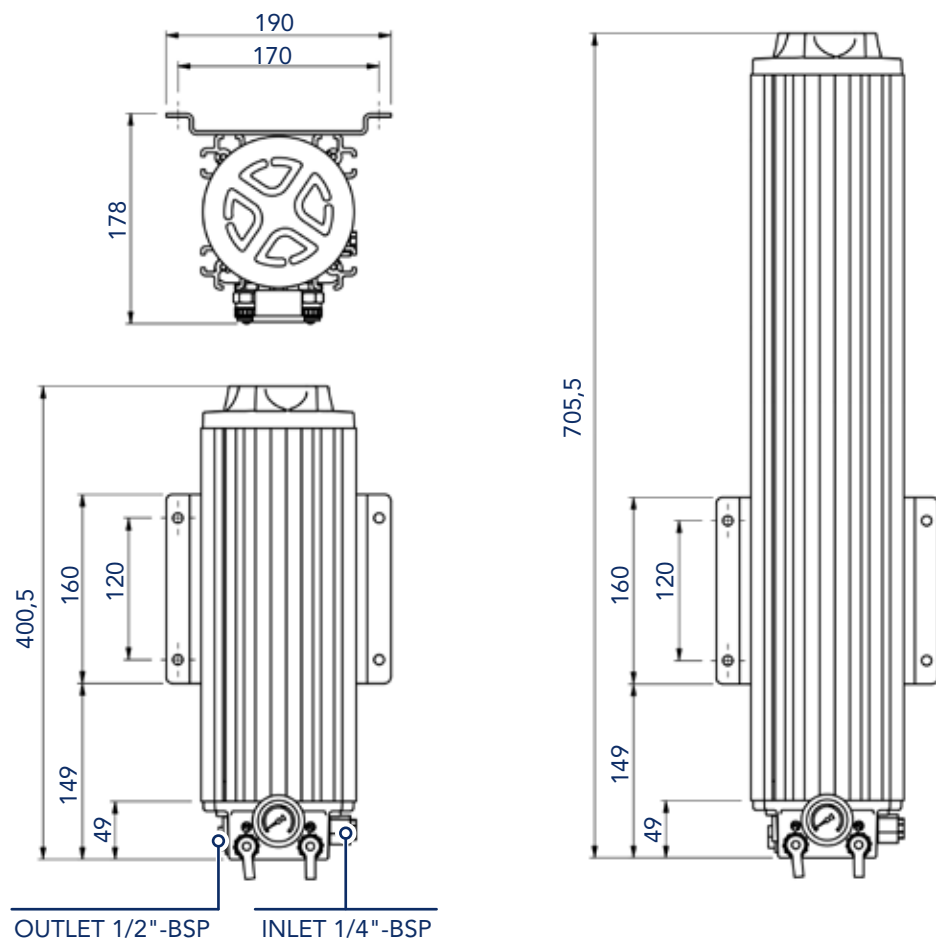
PRODUCT DETAILS		
FILTER MODEL	BPU1A	BPU1B
Material filter housing	Anodised Aluminium	
Seal Material	NBR or FPM (see ordering code)	
Nominal Flow	2,1 l/min	4,2 l/min
By-pass openings pressure	6,2 bar (at 0 bar back pressure)	
Standard Max. Oil Temperature <sup>1</sup>	80°C	
Suitable elements <sup>2</sup>	30HB, 30HV, 30NB, 30NV, 30G1B, 30G1V,30G3B, 30G3V, 30A5B	30HB, 30HV, 30NB, 30NV, 60HB 60HV, 60NB, 60NV, 30G1B, 30G1V, 30G3B,30G3V, 30A5B, 60G1B, 60G1V, 60G3B,60G3V
Minimum overhead clearance for element removal	400 mm	700 mm
Operating pressure Flow Control valve (min. - max.)	12 - 420 bar	
Max. Pressure filter housing	20 bar	
Pump safety valve	15 bar	
Dirt Indicator	Pressure Gauge (0 - 10 bar)	
Inlet connection	1/4" BSP female	
Outlet connection	1/2" BSP female	
Max. Tank volume	±750 l	± 1500 l
Fluid Compatibility <sup>3</sup>	Hydraulic fluids according ISO 2943	
Approximate weight	6 kg	10 kg

<sup>1</sup>For other oil temperatures please contact RMF Systems

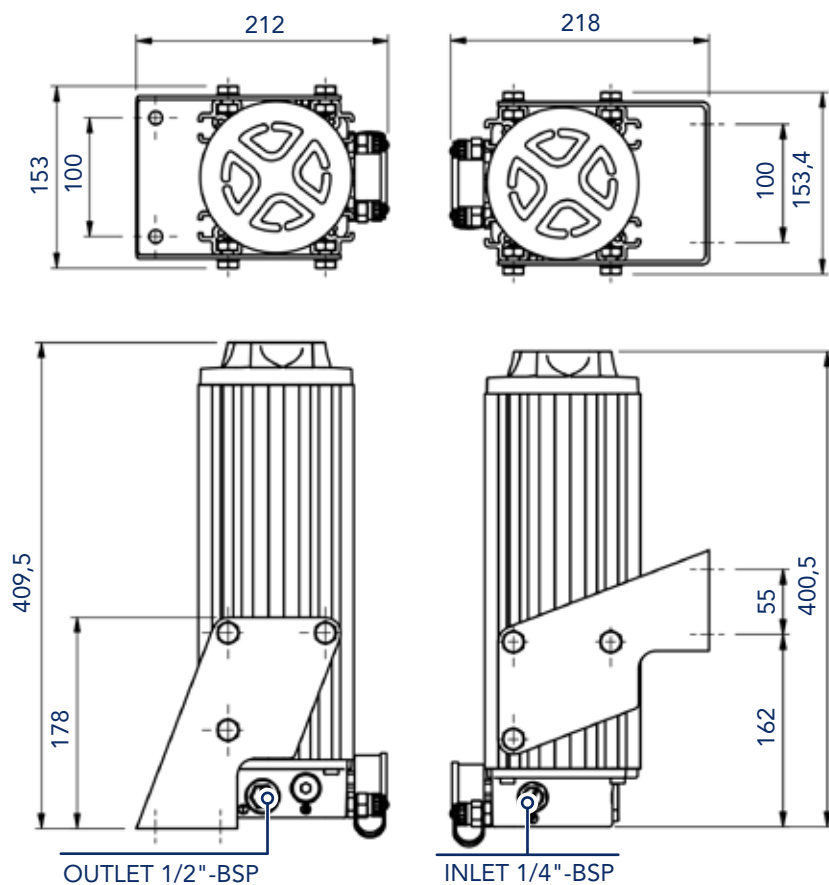
<sup>2</sup>For complete specifications of the RMF Systems Filter elements see page 33.

<sup>3</sup>For other fluids, please contact RMF Systems

# Dimensions BPU1



BPU1B with mounting plate



BPU1A with Bulk head mounting

# Specification BPU2



## PRODUCT DETAILS

FILTER MODEL	BPU2A	BPU2B
Material filter housing	Anodised Aluminium	
Seal Material	NBR or FPM (see ordering code)	
Nominal Flow	4,2 l/min	8,4 l/min
By-pass openings pressure	6,2 bar (at 0 bar back pressure)	
Standard Max. Oil Temperature <sup>1</sup>	80°C	
Suitable elements <sup>2</sup>	30HB, 30HV, 30NB, 30NV, 30G1B, 30G1V, 30G3B, 30G3V, 30A5B	30HB, 30HV, 30NB, 30NV, 60HB, 60HV, 60NB, 60NV, 30G1B, 30G1V, 30G3B, 30G3V, 30A5B, 60G1B, 60G1V, 60G3B, 60G3V
Minimum overhead clearance for element removal	400 mm	700 mm
Operating pressure Flow Control valve (min. - max.)	12 - 420 bar	
Max. Pressure filter housing	20 bar	
Pump safety valve	15 bar	
Dirt Indicator	Pressure Gauge (0 - 10 bar)	
Inlet connection	1/4" BSP female	
Outlet connection	1/2" BSP female	
Max. Tank volume	±1,500 l	± 3,000 l
Fluid Compatibility <sup>3</sup>	Hydraulic fluids according ISO 2943	
Approximate weight	13 kg	18 kg

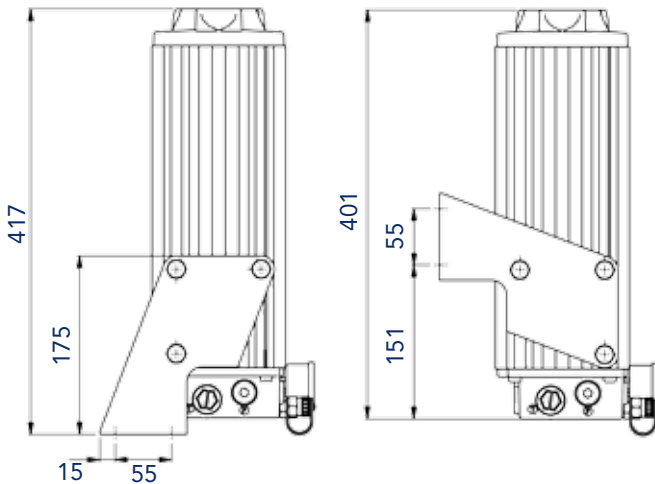
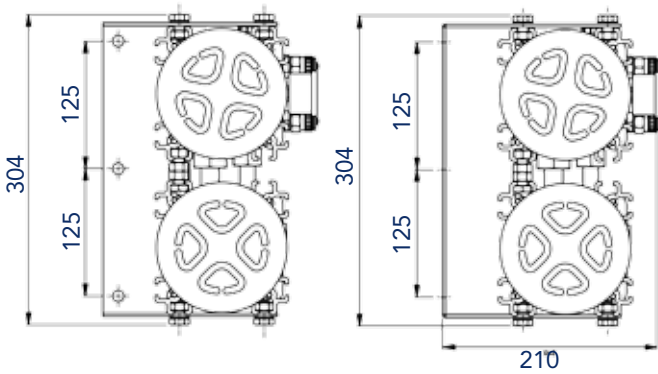
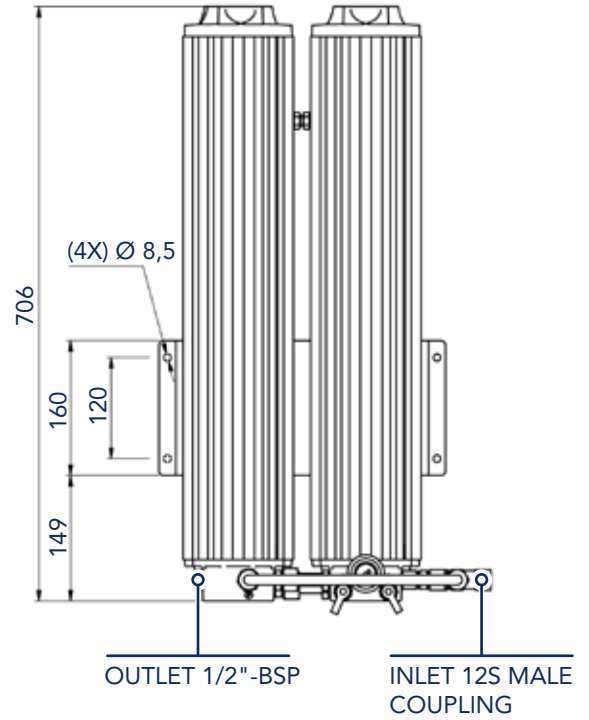
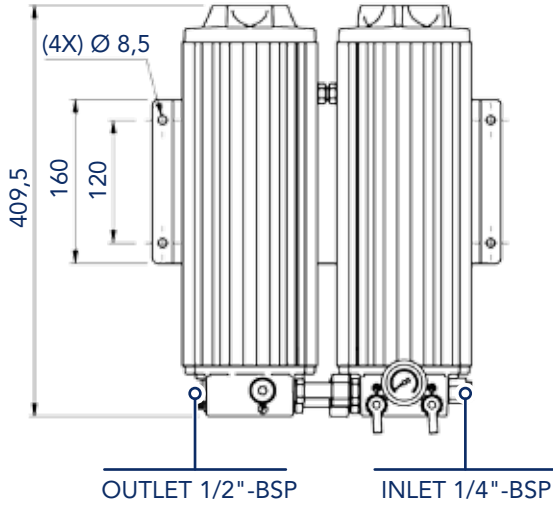
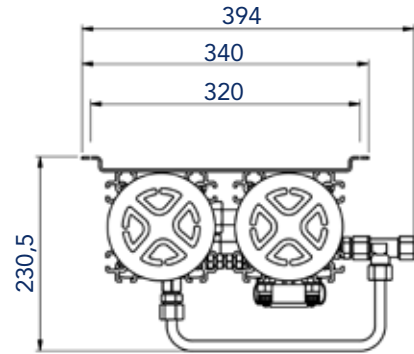
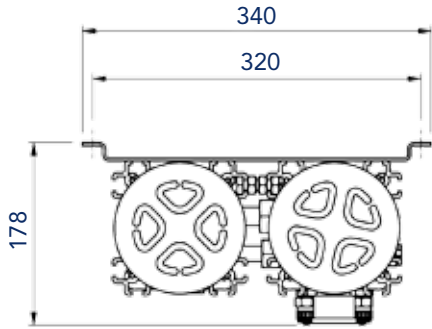
<sup>1</sup>For other oil temperatures please contact RMF Systems

<sup>2</sup>For complete specifications of the RMF Systems Filter elements see page 33.

<sup>3</sup>For other fluids, please contact RMF Systems



# Dimensions BPU2



# Ordering Code BPU

## BY-PASS UNIT

YOUR BY-PASS UNIT ORDERING CODE							
TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5	TABLE 6	TABLE 7	TABLE 8
BPU							

TABLE 1 - BASIC CONFIGURATION		CODE
By-pass unit	Mobile applications	BPU

TABLE 2 - HOUSING CONFIGURATION			CODE
HOUSING CONFIGURATION	TYPICAL RESERVOIR SIZE	NUMBER OF ELEMENTS	
Single housing (short version)	Suitable for 500 l reservoir	1 pcs element (200 mm)	05A
Single housing (single length)	Suitable for 750 l reservoir	1 pcs element (300 mm)	1A
Twin housing (single length)	Suitable for 1500 l reservoir	2 pcs element (300 mm)	2A
Single housing (double length)	Suitable for 1500 l reservoir	2 pcs element (300 mm)	1B
Twin housing (double length)	Suitable for 3000 l reservoir	4 pcs element (300 mm)	2B

TABLE 3 - LENGTH ELEMENT		CODE
200 mm*		20
300 mm (standard)		30
600 mm		60

\*Only suitable with 05A housing

TABLE 4 - FILTER MATERIAL		CODE
Cellulose 0.5 micron, bottom seal		H
Cellulose 0.5 micron, NO bottom seal		N
Glass fiber with polymer, 5 micron, $\beta_5 \geq 200^*$		A5
ALSO SUITABLE FOR WATER GLYCOL		
Glass fiber, 1 micron, $\beta_1 \geq 200^*$		G1
Glass fiber, 3 micron, $\beta_3 \geq 200^*$		G3

\* Not suitable in combination with 05A type housing.

TABLE 5 - SEAL MATERIAL		CODE
Buna-N (standard)		B
Viton		V

TABLE 6 - INDICATOR	CODE
Pressure gauge (standard)	0
Additional electric switch	1
No switch mounted	2
Additional $\Delta p$ switch	3
OQS	4
OQS + display	5
OQS prepared	6
CMS prepared	7

TABLE 7 - OPTIONS	CODE
No options	0
Without flow control valve (please consult RMF)	1
Needle valve - NO flow control valve	2
With 1.6 mm HAWE orifice - NO flow control valve / stainless steel components	3
With 1.5 mm HAWE orifice - NO flow control valve / 1 minimes (always together with option "2" in table 6)	4
Non standard flow / 2.1 l/min	5
With 1.5 mm orifice - NO flow control valve / 1 minimes (always together with option "2" in table 6)	6
Non standard flow / 1.4 l/min	7
Non standard flow / 4.2 l/min	8
Single test point only (P)	9

TABLE 8 - BRACKET OPTIONS	CODE
No options	0
With standard foot / bulk head mounting bracket	1
With standard "OLU" wall mounting bracket	3







# BPUW\*A & BPUW\*B

## BY-PASS UNIT WITH H2O SORB

THE HYDRAULIC MARKET ACCEPTS THAT 80% OF MECHANICAL FAILURES ARE CAUSED BY CONTAMINATION IN THE SYSTEM. THE RMF BY-PASS FILTERS ATTACK THIS CONTAMINATION AT SOURCE AND IN ADDITION TO SOLID PARTICLES, THESE FILTERS ARE ALSO CAPABLE OF REMOVING WATER FROM THE OIL. THIS PREVENTS THE CATALYTIC REACTION OF WATER AND SOLID PARTICLE CONTAMINATION, RESULTING IN EXTENDED USEABLE OIL LIFE. THE USE OF RMF FILTERS MEANS LESS DEFECTS, LESS MAINTENANCE, AND LESS WEAR AND TEAR OF THE HYDRAULIC COMPONENTS.

RMF Systems radial micro filter units are characterized by their extremely efficient filter elements with a fineness of 0.5 micron. If required, different micron sizes are available to suit any specific application.

RMF By-pass filters are specially designed for mobile hydraulic installations and are available in single or double units which are equally suitable for OEM use and retro-fitting. The By-pass filter comes equipped with an integrated pressure compensated flow control valve. This valve bleeds oil from the main hydraulic system, passes this through the filter after which it is returned to the hydraulic reservoir.

The By-pass filters can also be equipped with special water absorbing pre-filters in

case of extreme water contamination, these water absorbing spin-on cans will remove most of the water prior to the fluid reaching the cellulose element .

### WATER ABSORBING

RMF water absorbing filters are By-Pass filters that use a special water absorbing spin on as a pre-filter. The fluid is pumped through the pre-filter which removes most water and larger solid contamination, in the second second stage the fluid passes through the RMF micro filter where final water removal takes place as well as solids removal down to 0.5 micron.

### APPLICATION

- ▶ Excavators
- ▶ Wheel loaders
- ▶ Forestry machines
- ▶ Asphaltting machines
- ▶ Cement mixers
- ▶ Aircraft ground support equipment
- ▶ Sugar cane harvesters
- ▶ Agricultural machines

# Specification BPUW1



## PRODUCT DETAILS

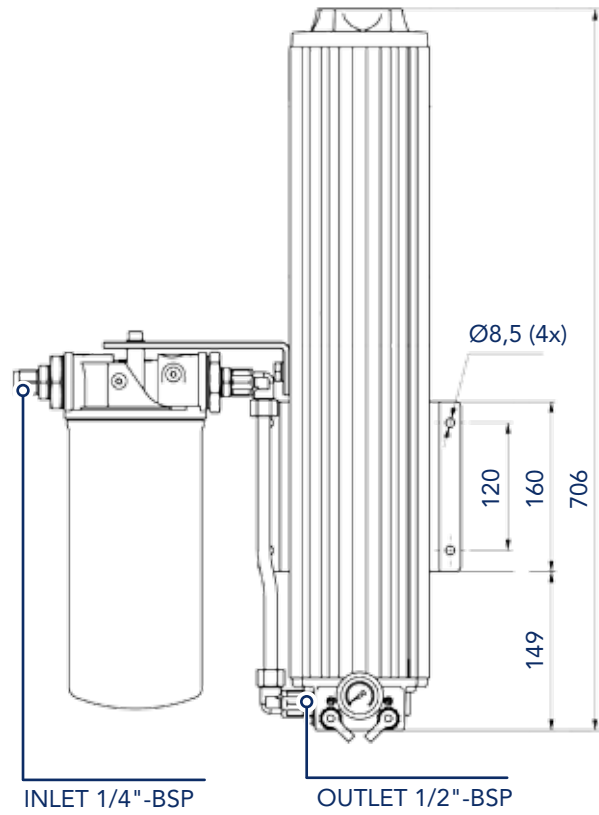
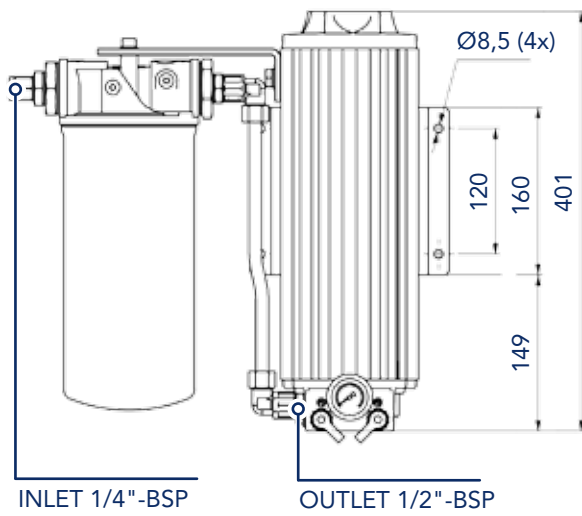
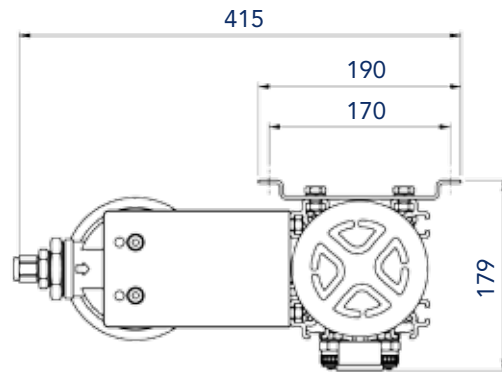
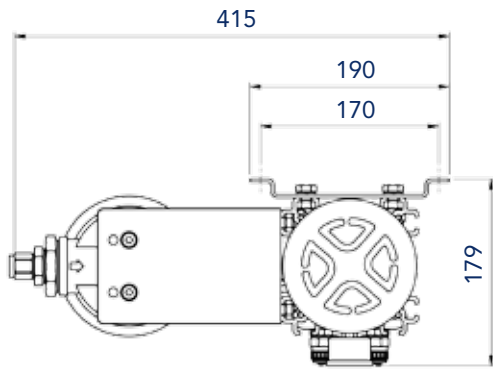
FILTER MODEL	BPUW1A	BPUW1B
Material filter housing	Anodised Aluminium	
Seal Material	NBR or FPM (see ordering code)	
Nominal Flow	2,1 l/min	4,2 l/min
By-pass openings pressure	6,2 bar (at 0 bar back pressure)	
Standard Max. Oil Temperature <sup>1</sup>	80°C	
Suitable elements <sup>2</sup>	30HB, 30HV, 30NB, 30NV, 30G1B, 30G1V, 30G3B, 30G3V, 30A5B	30HB, 30HV, 30NB, 30NV, 60HB, 60HV, 60NB, 60NV, 30G1B, 30G1V, 30G3B, 30G3V, 30A5B, 60G1B, 60G1V, 60G3B, 60G3V
Minimum overhead clearance for element removal	400 mm	700 mm
Operating pressure Flow Control valve (min. - max.)	12 - 420 bar	
Max. Pressure filter housing	20 bar	
Pump safety valve	15 bar	
Dirt Indicator	Pressure Gauge (0 - 10 bar)	
Inlet connection	1/4" BSP female	
Outlet connection	1/2" BSP female	
Max. Water Absorption capacity	850 ml (with 30A5 element)	1,2 l (with 60A5 element)
Max. Tank volume	±750 l	± 1500 l
Fluid Compatibility <sup>3</sup>	Hydraulic fluids according ISO 2943	
Approximate weight	6 kg	10 kg

<sup>1</sup>For other oil temperatures please contact RMF Systems

<sup>2</sup>For complete specifications of the RMF Systems Filter elements see page 33.

<sup>3</sup>For other fluids, please contact RMF Systems

# Dimensions BPUW1



# Specification BPUW2



## PRODUCT DETAILS

FILTER MODEL	BPUW2A
Material filter housing	Anodised Aluminium
Seal Material	NBR or FPM (see ordering code)
Nominal Flow	4,2 l/min
By-pass openings pressure	6,2 bar (at 0 bar back pressure)
Standard Max. Oil Temperature <sup>1</sup>	80°C
Suitable elements <sup>2</sup>	30HB, 30HV, 30NB, 30NV, 30G1B, 30G1V, 30G3B, 30G3V, 30A5B
Minimum overhead clearance for element removal	400 mm
Operating pressure Flow Control valve (min. - max.)	12 - 420 bar
Max. Pressure filter housing	20 bar
Pump safety valve	15 bar
Dirt Indicator	Pressure Gauge (0 - 10 bar)
Inlet connection	1/4" BSP female
Outlet connection	1/2" BSP female
Max. Water Absorption capacity	1,2 l (with 30A5 element)
Max. Tank volume	±1500 l
Fluid Compatibility <sup>3</sup>	Hydraulic fluids according ISO 2943
Approximate weight	17 kg

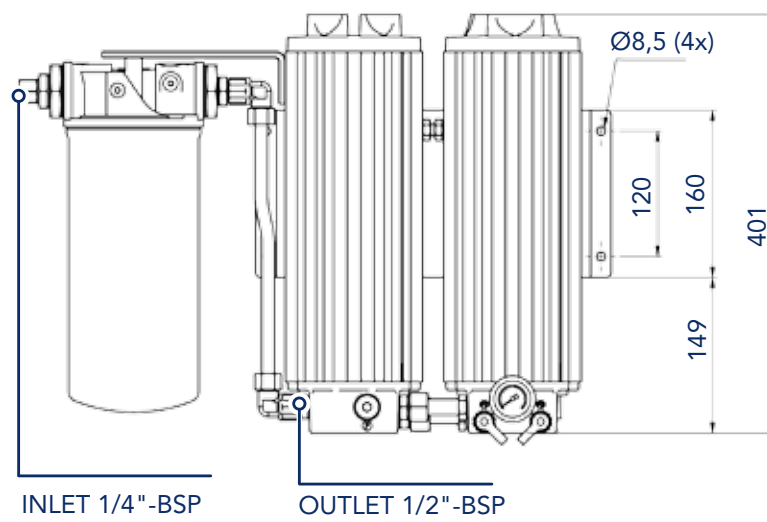
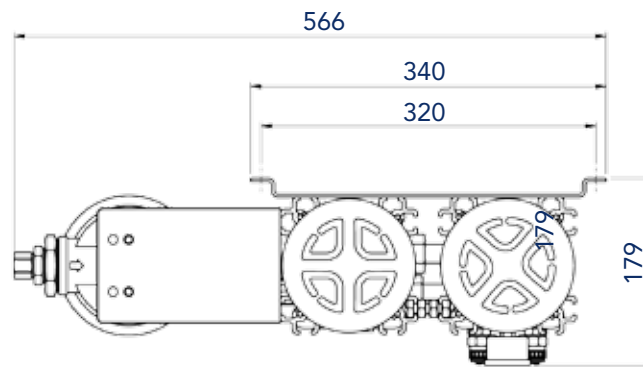
<sup>1</sup>For other oil temperatures please contact RMF Systems

<sup>2</sup>For complete specifications of the RMF Systems Filter elements see page 33.

<sup>3</sup>For other fluids, please contact RMF Systems



# Dimensions BPUW2



# Ordering Code BPUW

BY-PASS UNIT WITH H2O SORB

## YOUR BY-PASS FILTER ORDERING CODE

TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5	TABLE 6	TABLE 7	TABLE 8	TABLE 9
BPUW								

## TABLE 1 - BASIC CONFIGURATION

		CODE
By-pass unit with water sorb pre filter	Mobile applications	BPUW

## TABLE 2 - HOUSING CONFIGURATION

			CODE
HOUSING CONFIGURATION	TYPICAL RESERVOIR SIZE	NUMBER OF ELEMENTS	
Single housing (single length)	Suitable for 750 l reservoir	1 pcs element (300 mm)	1A
Twin housing (single length)	Suitable for 1500 l reservoir	2 pcs element (300 mm)	2A
Single housing (double length)	Suitable for 1500 l reservoir	2 pcs element (300 mm)	1B

## TABLE 3 - LENGTH ELEMENT

	CODE
300 mm	30
600 mm	60

## TABLE 4 - FILTER MATERIAL

	CODE
Cellulose 0.5 micron, bottom seal	H
Cellulose 0.5 micron, NO bottom seal	N
Glass fiber, 1 micron, $\beta_1 \geq 200$	G1
Glass fiber, 3 micron, $\beta_3 \geq 200$	G3
Glass fiber with polymer, 5 micron, $\beta_5 \geq 200$	A5

## TABLE 5 - SEAL MATERIAL

	CODE
Buna-N (standard)	B
Viton	V

## TABLE 6 - INDICATOR

	CODE
Standard pressure gauge	0
Additional electr. switch (5.5 bar rising)	1
Additional $\Delta p$ switch	3

TABLE 7 - OPTIONS		CODE
No options		0
Without flow control valve (please consult RMF)		1
Non standard flow / 2.1 l/min		5
Non standard flow / 1.4 l/min		7
Non standard flow / 4.2 l/min		8

TABLE 8 - BRACKET OPTIONS		CODE
No options		0
With standard foot / bulk head mounting bracket		1
With standard "OLU" wall mounting bracket		3

TABLE 9 - WATER ABSORPTION ELEMENT			CODE
WATER ABSORPTION ELEMENT	CAPACITY	FILTER HEAD	
Single H <sub>2</sub> O-sorb element	540 ml	Single filter head, left side mounted	A
Single H <sub>2</sub> O-sorb element	540 ml	Single filter head, right side mounted	B





# Smart By-Pass Unit

THE SUCCESSFUL APPLICATION OF DEPTH FILTRATION ON HYDRAULIC AND LUBE OIL SYSTEMS AND THE GROWING DEMAND FOR CONTAMINATION MONITORING SENSOR TO OPTIMIZE THE APPLICATION OF THE FILTERS HAS LED TO THE DEVELOPMENT OF THE NEXT GENERATION IN RMF SYSTEMS TECHNOLOGY: RMF BY-PASS FILTERS WITH AN INTEGRATED CMS UNIT.

## ONE ECONOMICAL INSTALLATION

Smart By-Pass Units enable machine operators to keep their hydraulic oil clean and monitor contamination levels real-time in one economical installation.

The integrated CMS (Contamination Monitoring Sensor) can be combined with the entire selection of By-Pass Units in the RMF systems range.

## CONFIGURATIONS

Specially designed for Mobile hydraulic installations, the RMF Smart By-Pass Units are available in single or double housing configurations.

The Smart By-Pass Units can be easily mounted to new and existing installations, and combine all advantages of RMF By-Pass filters and CMS in one efficient installation.

The CMS related product options are equally applicable to the Smart By-Pass filter Units.

## INTEGRATED CONTAMINATION MONITORING SENSOR (CMS)

The CMS in-line contamination monitor automatically measures and displays particulate contamination, moisture and temperature levels in various hydraulic fluids where ongoing measurement or analysis is required.

- ▶ Measures and displays the international standard formats ISO 4406:1999, NAS 1638, AS 4059E and ISO 11218
- ▶ 8 Channels solid contamination measurement
- ▶ Moisture (RH) & Temperature option
- ▶ 9-36 Volt DC
- ▶ Large backlit display and keypad
- ▶ Multicolour LED status alarms
- ▶ Programmable test times
- ▶ Manual / Auto operation
- ▶ Programmable alarm relays
- ▶ PC/ PLC Operation
- ▶ Windows based software included
- ▶ RS 485 communication standard / USB optional

## APPLICATION

- ▶ Excavators
- ▶ Wheel loaders
- ▶ Forestry machines
- ▶ Asphalting machines
- ▶ Cement mixers
- ▶ Aircraft ground support equipment
- ▶ Sugar cane harvesters
- ▶ Agricultural machines

## THE BENEFITS

- ▶ Extremely clean oil due to high filtration efficiency
- ▶ Permanent reporting of contamination levels
- ▶ Permanent reporting of moisture RH % and temperature
- ▶ Prevention of channel forming by radial filtration direction
- ▶ Large dirt holding capacity
- ▶ Large water holding capacity
- ▶ Compact and easy-maintenance design
- ▶ Environmentally friendly elements available
- ▶ Longer life for oil and components
- ▶ Reduces cost of ownership

# Specification BPUS1



## PRODUCT DETAILS

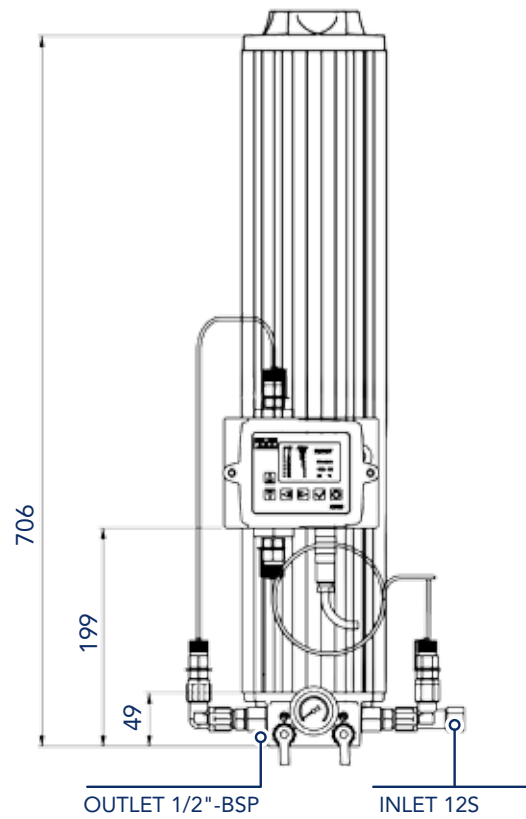
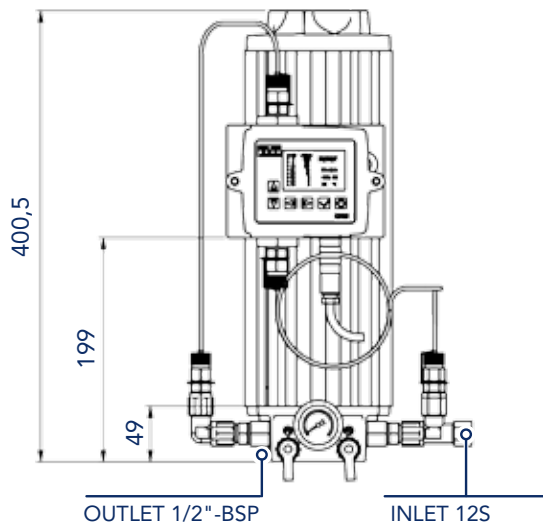
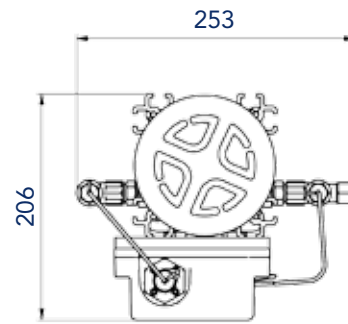
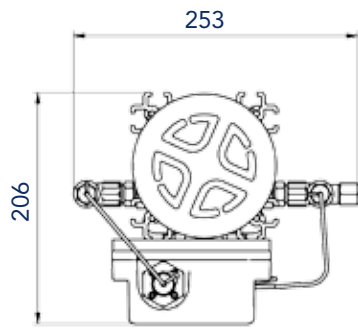
FILTER MODEL	BPUS1A	BPUS1B
Material filter housing	Anodised Aluminium	
Seal Material	NBR or FPM (see ordering code)	
Nominal Flow	2,1 l/min	4,2 l/min
By-pass openings pressure	6,2 bar (at 0 bar back pressure)	
Standard Max. Oil Temperature <sup>1</sup>	80°C	
Suitable elements <sup>2</sup>	30HB, 30HV, 30NB, 30NV, 30G1B, 30G1V, 30G3B, 30G3V, 30A5B	30HB, 30HV, 30NB, 30NV, 60HB, 60HV, 60NB, 60NV, 30G1B, 30G1V, 30G3B, 30G3V, 30A5B, 60G1B, 60G1V, 60G3B, 60G3V
Minimum overhead clearance for element removal	400 mm	700 mm
Operating pressure Flow Control valve (min. - max.)	12 - 420 bar	
Max. Pressure filter housing	20 bar	
Pump safety valve	15 bar	
Dirt Indicator	Pressure Gauge (0 - 10 bar)	
Inlet connection	12S	
Outlet connection	1/2" BSP female	
Max. Tank volume	±750 l	± 1500 l
Fluid Compatibility <sup>3</sup>	Hydraulic fluids according ISO 2943	
Approximate weight	7 kg	11 kg

<sup>1</sup>For other oil temperatures please contact RMF Systems

<sup>2</sup>For complete specifications of the RMF Systems Filter elements see page 33.

<sup>3</sup>For other fluids, please contact RMF Systems

# Dimensions BPUS1



# Specification BPUS2



PRODUCT DETAILS	
FILTER MODEL	BPUS2A
Material filter housing	Anodised Aluminium
Seal Material	NBR or FPM (see ordering code)
Nominal Flow	4,2 l/min
By-pass openings pressure	6,2 bar (at 0 bar back pressure)
Standard Max. Oil Temperature <sup>1</sup>	80°C
Suitable elements <sup>2</sup>	30HB, 30HV, 30NB, 30NV, 30G1B, 30G1V, 30G3B, 30G3V, 30A5B
Minimum overhead clearance for element removal	400 mm
Operating pressure Flow Control valve (min. - max.)	12 - 420 bar
Max. Pressure filter housing	20 bar
Pump safety valve	15 bar
Dirt Indicator	Pressure Gauge (0 - 10 bar)
Inlet connection	12S
Outlet connection	1/2" BSP female
Max. Tank volume	±1,500 l
Fluid Compatibility <sup>3</sup>	Hydraulic fluids according ISO 2943
Approximate weight	14 kg

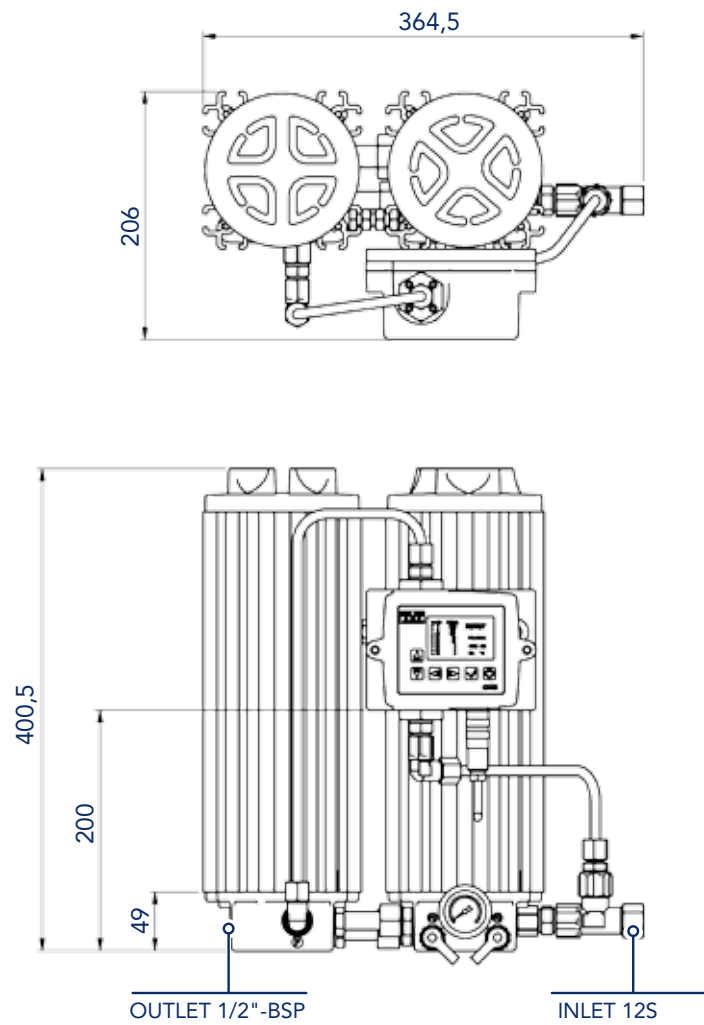
<sup>1</sup>For other oil temperatures please contact RMF Systems

<sup>2</sup>For complete specifications of the RMF Systems Filter elements see page 33.

<sup>3</sup>For other fluids, please contact RMF Systems



# Dimensions BPUS2



# Ordering Code

## SMART BY-PASS UNIT

### YOUR BY-PASS FILTER ORDERING CODE

TABLE 1	TABLE 2	TABLE 3	TABLE 4	TABLE 5	TABLE 6	TABLE 7	TABLE 8	TABLE 9	TABLE 10
BPUS								0	

### TABLE 1 - BASIC CONFIGURATION

#### CODE

By-pass unit with integrated contamination monitoring sensor (CMS)	Mobile applications	BPUS
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### TABLE 2 - HOUSING CONFIGURATION

#### CODE

HOUSING CONFIGURATION	TYPICAL RESERVOIR SIZE	NUMBER OF ELEMENTS	
Single housing (single length)	Suitable for 750 l reservoir	1 pcs element (300 mm)	1A
Twin housing (single length)	Suitable for 1500 l reservoir	2 pcs element (300 mm)	2A
Single housing (double length)	Suitable for 1500 l reservoir	2 pcs element (300 mm)	1B
Twin housing (double length)	Suitable for 3000 l reservoir	4 pcs element (300 mm)	2B

### TABLE 3 - LENGTH ELEMENT

#### CODE

300 mm	30
600 mm	60

### TABLE 4 - FILTER MATERIAL

#### CODE

Cellulose 0.5 micron, bottom seal	H
Cellulose 0.5 micron, NO bottom seal	N
Glass fiber, 1 micron, $\beta_1 \geq 200$	G1
Glass fiber, 3 micron, $\beta_3 \geq 200$	G3

### TABLE 5 - SEAL MATERIAL

#### CODE

Buna-N (standard)	B
Viton	V

### TABLE 6 - INDICATOR

#### CODE

Pressure gauge (standard)	0
Additional electr. switch	1
No switch mounted	2
Additional $\Delta p$ switch	3
OOS	4

TABLE 7 - OPTIONS		CODE
No options (standard flow per element 2.1 l/min)		0
Non standard flow / 2.1 l/min (for total filter)		5
Non standard flow / 1.4 l/min (for total filter)		7
Non standard flow / 4.2 l/min (for total filter)		8

TABLE 8 - BRACKET OPTIONS		CODE
No bracket (standard)		0
With foot / bulk head mounting bracket		1
With standard "OLU" wall mounting bracket		3

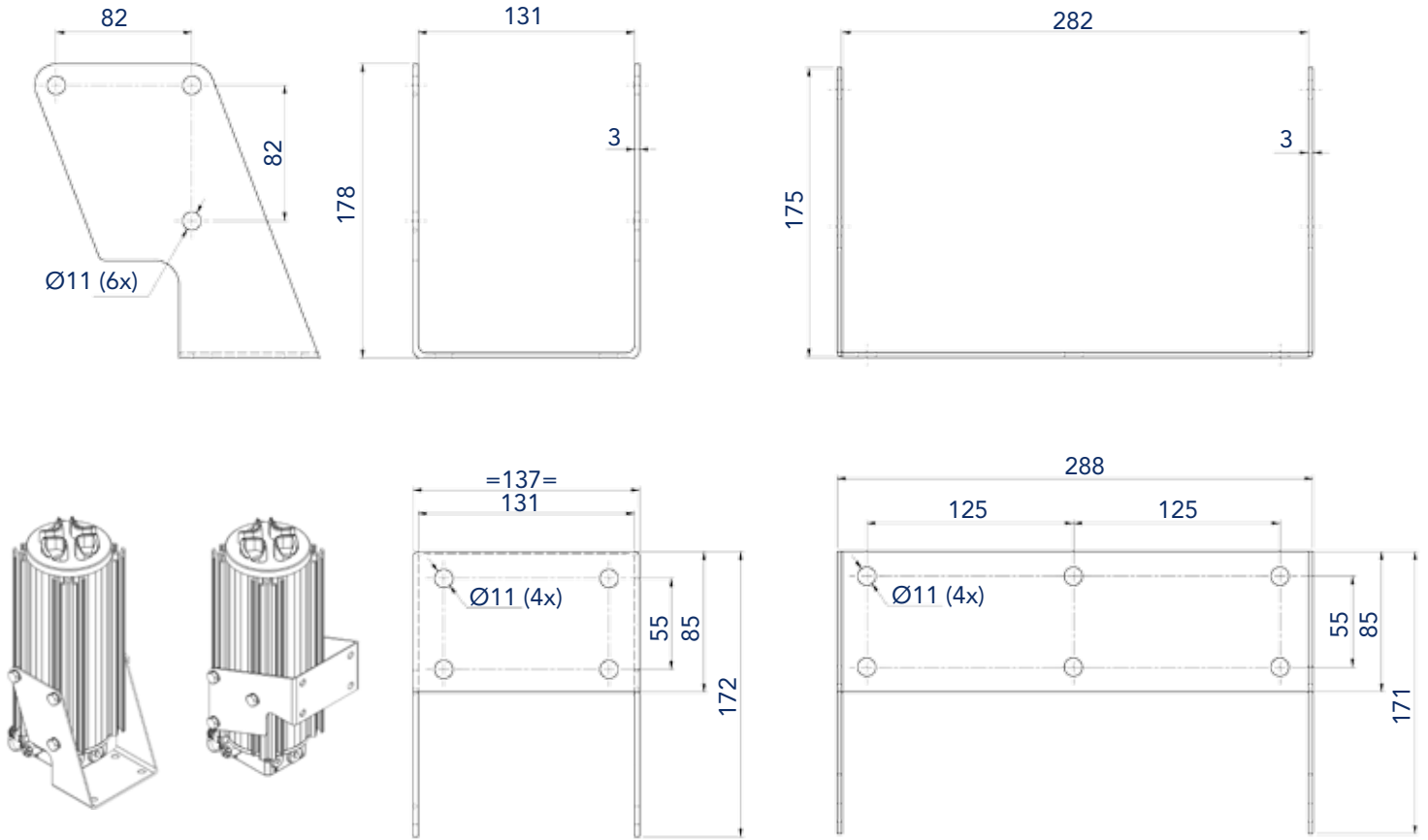
TABLE 9 - EXTRA OPTIONS		CODE
No options		0

TABLE 10 - CMS OPTIONS		CODE
CMS-W-M-K-R-G1	CMS unit with keypad with relays with moisture sensor	0
CMS-0-M-K-R-G1	CMS unit with keypad with relays without moisture sensor	1
CMS-W-M-0-R-G1	CMS unit without keypad with relays with moisture sensor	2
CMS-0-M-0-R-G1	CMS unit without keypad without relays with moisture sensor	3
CMS Prepared		S

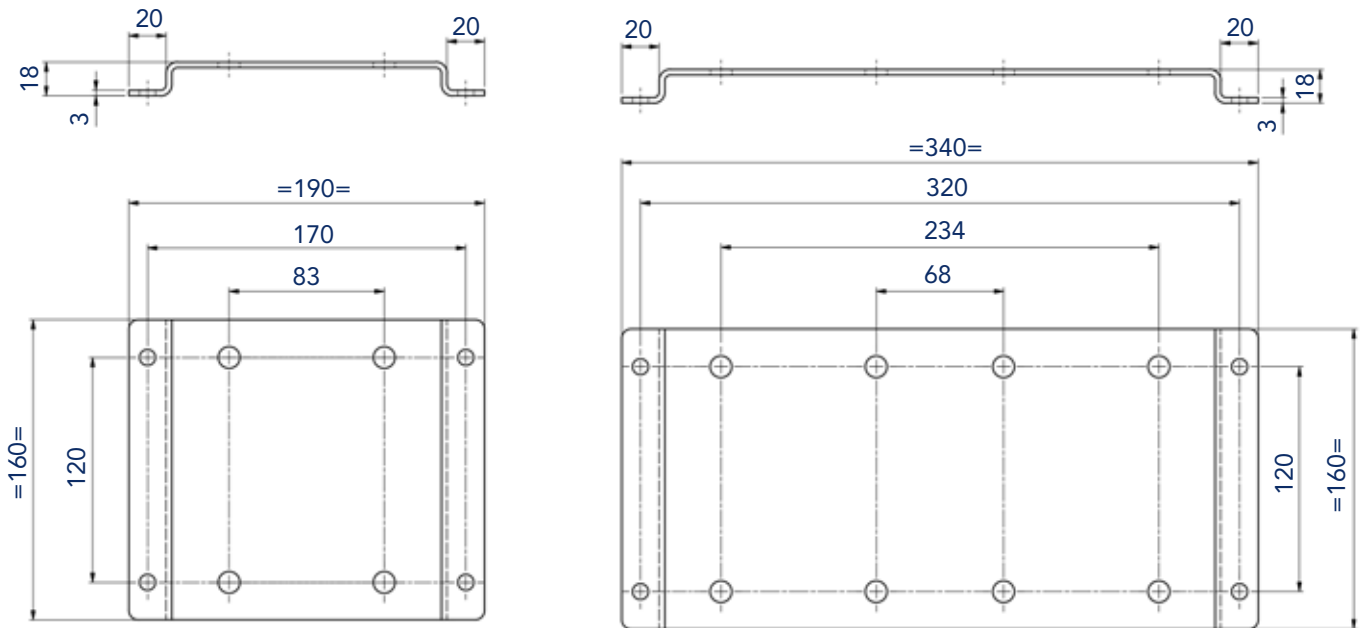
# Bracket Options

## DIMENSIONS

### FOOT / BULK HEAD MOUNTING BRACKET(OPTION 1)

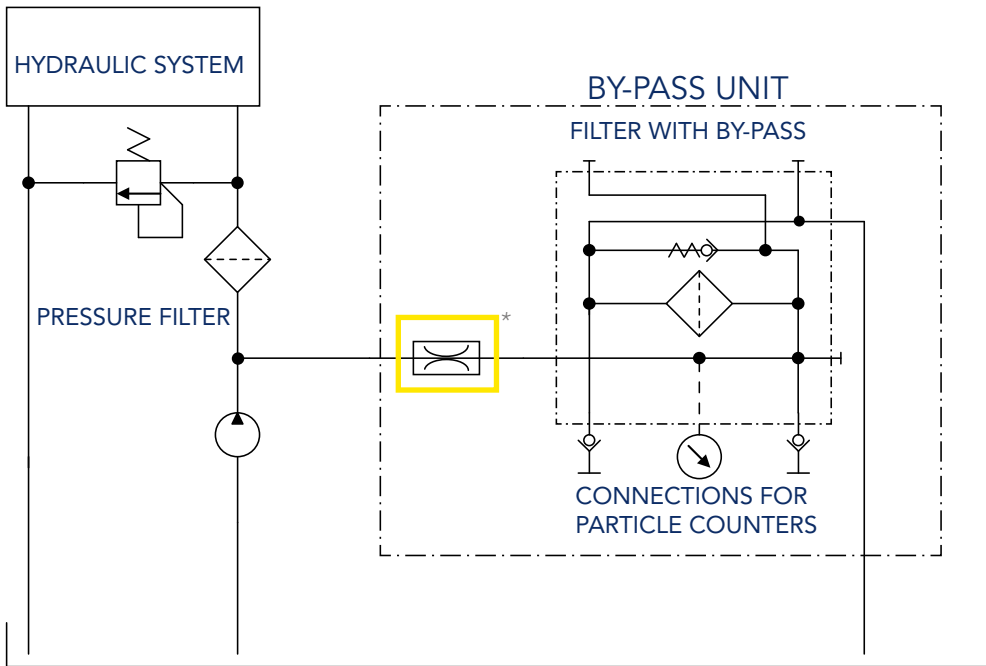


### MOUNTING PLATE (OPTION 3)

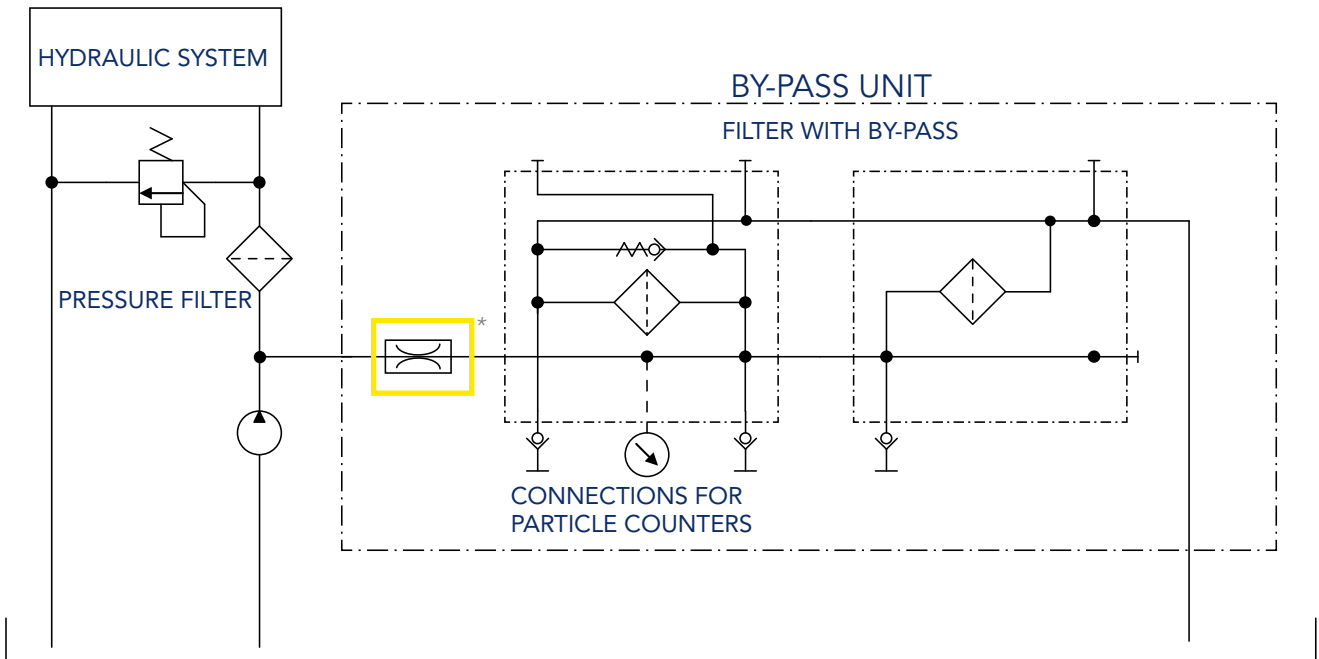


# Hydraulic Diagrams

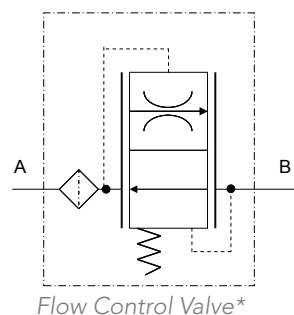
## BY-PASS UNITS



Hydraulic diagram BPU1



Hydraulic diagram BPU2





# Filter Elements

The principle of the RMF Systems filters is based on the unique original filter elements. With a choice of filter fineness down to 0,5 micron they have the capacity to remove even the smallest of dirt particles from the oil. RMF Systems offers a wide range of elements in micron sizes, filter media and fluid compatibility. Contact your local distributor for specific fluids. Combi-elements (water and solid particle retention) complement the unique range.



## CELLULOSE ELEMENTS

The RMF Systems Cellulose filter elements are unique in their design. They consist of several hundred layers of cellulose fiber which are rolled on a perforated center tube. The micro filter element works as a fine filter through which oil passes, trapping solid particles throughout all the layers of cellulose. The filter medium is also capable of absorbing water, adding the benefit of water removal from the oil. RMF Systems cellulose elements are extremely efficient and have a large dirt holding capacity.

## FIBERGLASS ELEMENTS

RMF Systems offers a range of Fiberglass filter elements in a fineness of 1 micron and 3 micron. The Fiberglass filter elements (conventional pleated construction) are extremely efficient and have a large dirt holding capacity. These filter elements are particularly suited for gearbox applications where high viscosity fluids limit the use of the cellulose elements.

## WATER SORB FILTER INSERTS

RMF Systems offers a specially designed Water Sorb combination filter element: water absorbing and particle retention. The elements have layers of polymers in between layers of fiberglass, creating a unique media to remove both water and solid particles.



## WATER SORB SPIN-ON ELEMENTS

RMF Systems offers a specially designed Spin-on filter, the H<sub>2</sub>O Sorb for water absorbing and particle retention. This Spin-on filter element with a fineness of 20 micron is constructed of a unique medium containing water-absorbing polymer which chemically bonds water.

# Specification Filter Elements

FILTER ELEMENTS					
	30HB	30HV	30NB	30NV	20HB
Filter material	Cellulose	Cellulose	Cellulose	Cellulose	Cellulose
Seal Material	NBR	FPM	NBR	FPM	NBR
Filter efficiency	$\beta_2 \geq 2331$	$\beta_2 \geq 2331$	$\beta_2 \geq 2331$	$\beta_2 \geq 2331$	$\beta_2 \geq 2331$
Water absorption	150 ml	150 ml	150 ml	150 ml	100 ml
Dirt holding capacity	40 gram MTD	40 gram MTD	40 gram MTD	40 gram MTD	27 gram MTD
	60HB	60HV	60NB	60NV	
Filter material	Cellulose	Cellulose	Cellulose	Cellulose	
Seal Material	NBR	FPM	NBR	FPM	
Filter efficiency	$\beta_2 \geq 2331$	$\beta_2 \geq 2331$	$\beta_2 \geq 2331$	$\beta_2 \geq 2331$	
Water absorption	300 ml	300 ml	300 ml	300 ml	
Dirt holding capacity	80 gram	80 gram	80 gram	80 gram	
	30G1B	30G1V	30G3B	30G3V	
Filter material	Glass fibre	Glass fibre	Glass fibre	Glass fibre	
Seal Material	NBR	FPM	NBR	FPM	
Filter efficiency	$\beta_1 = 200$	$\beta_1 = 200$	$\beta_3 = 200$	$\beta_3 = 200$	
Water absorption	-	-	-	-	
Dirt holding capacity	230 gram	230 gram	269 gram	269 gram	
	60G1B	60G1V	60G3B	60G3V	
Filter material	Glass fibre	Glass fibre	Glass fibre	Glass fibre	
Seal Material	NBR	FPM	NBR	FPM	
Filter efficiency	$\beta_1 = 200$	$\beta_1 = 200$	$\beta_3 = 200$	$\beta_3 = 200$	
Water absorption	-	-	-	-	
Dirt holding capacity	465 gram	465 gram	535 gram	535 gram	
	30A5B	30A5V	60A5B	60A5V	
Filter material	Glass fibre and Polymer	Glass fibre and Polymer	Glass fibre and Polymer	Glass fibre and Polymer	
Seal Material	NBR	FPM	NBR	FPM	
Filter efficiency	$\beta_{5(c)} = 200$	$\beta_{5(c)} = 200$	$\beta_{5(c)} = 200$	$\beta_{5(c)} = 200$	
Water absorption	350 ml	350 ml	720 ml	720 ml	
Dirt holding capacity	205 gram	205 gram	415 gram	415 gram	
WATER SORB SPIN-ON ELEMENTS					
Water absorbing material	Polymer's				
Seal Material	FPM				
Water absorption capacity	500 ml				



# 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 from 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.





RMF Systems is the complete solution to oil cleanliness, conditioning and monitoring for all types of machinery and in practically every industry. Contaminated oil is the no.1 source of malfunctions in mobile and industrial applications. The extensive RMF program attacks all kinds of contamination, whether it be particle, water or air borne. Clean oil prolongs the usage life of machinery, increases fluid service life, reduces machine down time for both maintenance and malfunctions, and reduces cost – which in turn increases your profits.





KEEP IT CLEAN  
KEEP IT WORKING  
KEEP IT PROFITABLE  
THAT IS THE RMF PROMISE



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