## Bilge Water Separators with Ceramic Membrane CPS 3.2E + EMB



## **High Design and Construction Technology**

Experience, knowledge and innovation, united to develop a compact, small footprint and lightweight equipment fully driven by a PLC.

The presence of emulsified oil in the bilge water of the latest generation vessels caused IMO to issue the resolution MEPC.107(49), which requires that the resulting effluent after bilge water treatment must contain levels below 15 ppm of surfactants.

The treatment of this type of water using traditional bilge water separators has resulted ineffective in achieving these results, so in order to comply with this resolution, in Facet we have developed the bilge water separators with ceramic membrane.

The combination of this technology together with Facet MPak® coalescent plates has allowed that our Facet CPS 3.2E + EMB Separators meet the strict requirements of the aforementioned IMO regulation.

#### **Results**

CPS 3.2E + EMB equipment eliminates hydrocarbons in two stages. In the first stage, the free hydrocarbon is separated from water through Facet coalescing plates, while in the second stage emulsions are broken by the ceramic membrane which removes emulsified hydrocarbon, reaching down an effluent with total hydrocarbon content of less than 5 ppm.

### **Standard Design Features**

- Flow rate homologated: 0.73 m<sup>3</sup>/h (3.2 USGPM)
- · Supplied ready to be installed
- No moving components other than pumps and pneumatic valves.
- Fixed control level, without float
- Very low maintenance, consisting in occasional hosing cleaning of the plates, and membrane's hot self-cleaning process. No chemicals needed in both operations
- Water presence less than 5% in the separated oil, so it can be burned if required
- · Separated oil discharge facilitated by pump
- Power supply 380/440V, 50 or 60 Hz

#### **Accessories**

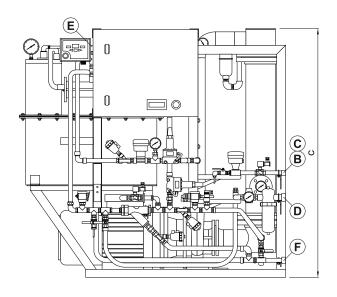
The equipment is supplied with the following accessories:

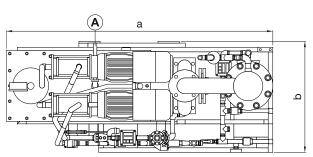
• Bilge alarm: as latest IMO MEPC. 107(49) resolution

### **Approvals**

Facet CPS 3.2E + EMB has been tested, approved and certified according to the requirements of IMO MEPC.107(49).

# Bilge Water Separators with Ceramic Membrane CPS 3.2E + EMB

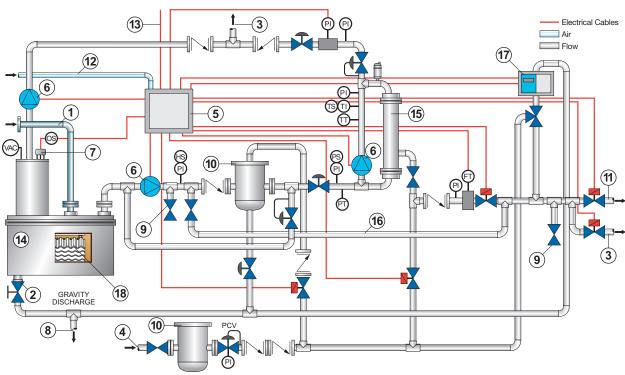




MARK	SERVICE
Α	Oil / Water from bilge tank
В	Overboard discharge
С	Bilge back
D	Potable water inlet
E	Oil discharge
F	Common drain to bilge

			DI	MEN	SIOI			WORKING				
MODEL		á	1	b		С		WEI	GHT	WEIGHT		
										lbs		
	CPS 3.2E +EMB	50%	1280	24%	625	$70^{27}/_{32}$	1800	1047	475	1322	600	

# Bilge Water Separators with Ceramic Membrane CPS 3.2E + EMB



ITEM	DESCRIPTION
1	Oily water inlet line from bilge
2	Drain
3	Oil outlet
4	Pressure potable water
5	Control panel
6	Pump
7	Level control
8	Back to bilge line
9	Sample probe
10	Filter
11	Overboard water outlet line
12	Air line (customer supply)
13	Electrical line (customer supply)
14	Facet CPS 3.2E
15	Polishing module
16	Membrane by-pass
17	Bilge alarm
18	Facet MPak®

# Bilge Water Separators with Ceramic Membrane for Submarines CPS 3.2E + EMB



## **High Design and Construction Technology**

Experience, knowledge and innovation, united to develop a compact, small footprint and lightweight equipment fully driven by a PLC.

The presence of emulsified oil in the bilge water of the latest generation vessels caused IMO to issue the resolution MEPC.107(49), which requires that the resulting effluent after bilge water treatment must contain levels below 15 ppm of surfactants.

The treatment of this type of water using traditional bilge water separators has resulted ineffective in achieving these results, so in order to comply with this resolution, in Facet we have developed the bilge water separators with ceramic membrane.

The combination of this technology together with Facet MPak® coalescent plates has allowed that our Facet CPS 3.2E + EMB Separators meet the strict requirements of the aforementioned IMO regulation.

#### **Results**

CPS 3.2E + EMB equipment eliminates hydrocarbons in two stages. In the first stage, the free hydrocarbon is separated from water through Facet coalescing plates, while in the second stage emulsions are broken by the ceramic membrane which removes emulsified hydrocarbon, reaching down an effluent with total hydrocarbon content of less than 5 ppm.

### **Standard Design Features**

- Flow rate homologated: 0.73 m<sup>3</sup>/h (3.2 USGPM)
- Supplied ready to be installed
- No moving components other than pumps and pneumatic valves.
- Fixed control level, without float
- Very low maintenance, consisting in occasional hosing cleaning of the plates, and membrane's hot self-cleaning process. No chemicals needed in both operations
- Water presence less than 5% in the separated oil, so it can be burned if required
- · Separated oil discharge facilitated by pump
- Power supply 380/440V, 50 or 60 Hz

#### **Accessories**

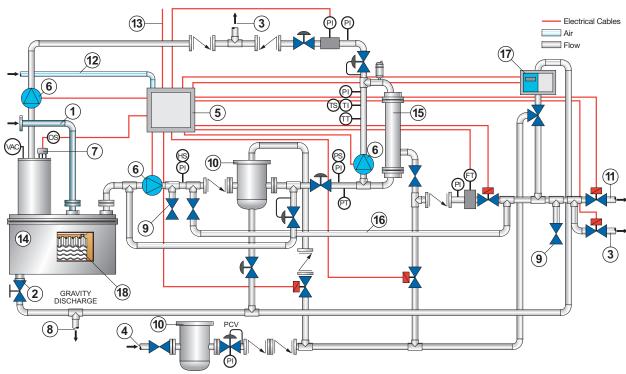
The equipment is supplied with the following accessories:

• Bilge alarm: as latest IMO MEPC. 107(49) resolution

### **Approvals**

Facet CPS 3.2E + EMB has been tested, approved and certified according to the requirements of IMO MEPC.107(49).

# Bilge Water Separators with Ceramic Membrane for Submarines CPS 3.2E + EMB



ITEM	DESCRIPTION
1	Oily water inlet line from bilge
2	Drain
3	Oil outlet
4	Pressure potable water
5	Control panel
6	Pump
7	Level control
8	Back to bilge line
9	Sample probe
10	Filter
11	Overboard water outlet line
12	Air line (customer supply)
13	Electrical line (customer supply)
14	Facet CPS 3.2E
15	Polishing module
16	Membrane by-pass
17	Bilge alarm
18	Facet MPak®

# Bilge Water Separators with Ceramic Membrane CPS-10B MKIII + EMB



## **High Design and Construction Technology**

Experience, knowledge and innovation, united to develop a compact, small footprint and lightweight equipment fully driven by a PLC.

The presence of emulsified oil in the bilge water of the latest generation vessels caused IMO to issue the resolution MEPC.107(49), which requires that the resulting effluent after bilge water treatment must contain levels below 15 ppm of surfactants.

The treatment of this type of water using traditional bilge water separators has resulted ineffective in achieving these results, so in order to comply with this resolution, in Facet we have developed the bilge water separators with ceramic membrane.

The combination of this technology together with Facet MPak® coalescent plates has allowed that our Facet CPS 10B MKIII + EMB Separators meet the strict requirements of the aforementioned IMO regulation.

#### Results

CPS 10B MKIII + EMB equipment eliminates hydrocarbons in two stages. In the first stage, the free hydrocarbon is separated from water through Facet coalescing plates, while in the second stage emulsions are broken by the ceramic membrane which removes emulsified hydrocarbon, reaching down an effluent with total hydrocarbon content of less than 5 ppm.

### **Standard Design Features**

- Flow rate homologated: 2.5 m<sup>3</sup>/h (10 USGPM)
- Supplied ready to be installed
- No moving components other than pumps and pneumatic valves.
- · Fixed control level, without float
- Very low maintenance, consisting in occasional hosing cleaning of the plates, and membrane's hot self-cleaning process. No chemicals needed in both operations
- Water presence less than 5% in the separated oil, so it can be burned if required
- Separated oil discharge facilitated by pump
- Power supply 380/440V, 50 or 60 Hz

#### **Accessories**

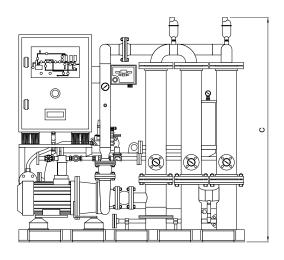
The equipment is supplied with the following accessories:

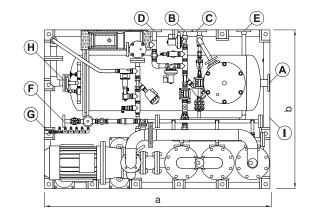
- Bilge alarm: as latest IMO MEPC. 107(49) resolution
- Electric heater in the oil dome to facilitate heavy oil discharge (if required)

#### **Approvals**

Facet CPS 10B MKIII + EMB has been tested, approved and certified according to the requirements of IMO MEPC.107(49).

# Bilge Water Separators with Ceramic Membrane CPS-10B MKIII + EMB

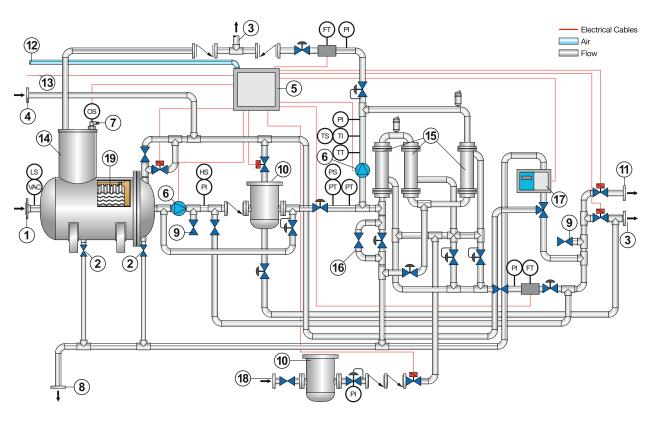




MARK	SERVICE
Α	Oil / water from bilge tank
В	Overboard discharge
С	Oil concentrate discharge
D	Bilge / tank recirculation
E	Common drain to bilge
F	Potablle water inlet
G	Air inlet
Н	Clean water inlet
I	Drain for spills tray

	DIMENSIONS										
MODEL	í	a	ŀ	)	С						
	in	mm	in	mm	in	mm					
CPS 10B MKIII +EMB	7013/16	1800	511/8	1300	72¾	1850					

# Bilge Water Separators with Ceramic Membrane CPS-10B MKIII + EMB



ITEM	DESCRIPTION
1	Oily water inlet line from bilge
2	Drain
3	Oil outlet
4	Clean water inlet
5	Control panel
6	Pump
7	Level control
8	Back to bilge line
9	Sample probe
10	Filter
11	Overboard water outlet line
12	Air line (customer supply)
13	Electrical line (customer supply)
14	Facet CPS 10B MKIII
15	Polishing module
16	Membrane by-pass
17	Bilge alarm
18	Pressure potable water
19	Facet MPak®

## Bilge Water Separators with Disposal Membrane CPS 3.2E + EBM 14x1



Small volume: 0.53 m³ (18.7 cu.ft.). Low working weight: 412 Kgs.

Great treatment capacity: 17.28 m³/day (4,565 usg/day). Cost effective.

IMO MEPC 107(49) APPROVED.

Facet CPS 3.2E + EBM 14x1 bilge water separator is a device compact, adaptable to the small spaces available on board, lightweight and low maintenance. Its operation is very easy and completely automatic, with all its functions controlled through a PLC.

The presence of emulsified oil in the bilge water of the latest generation vessels caused IMO to issue the resolution MEPC.107(49), which requires that the resulting effluent after bilge water treatment must contain levels below 15 ppm of surfactants.

This model combines the classic coalescing plates Facet MPak® with the disposal membranes which achieve a high efficiency in the breakdown of chemical and mechanical emulsions.

This combination allows that Facet CPS 3.2E + EBM 14x1 Separator meets the strict requirements of the aforementioned IMO regulation.

#### **Results**

Facet CPS 3.2E + EBM 14x1 eliminates hydrocarbons in two stages. In the first stage, free hydrocarbon is separated from water through Facet coalescing plates, while in the second stage emulsions are broken by a membrane which removes emulsified hydrocarbon, reaching down an effluent with total hydrocarbon content of less than 5 ppm.

### **Standard Design Features**

- Flow rate homologated: 0.73 m<sup>3</sup>/h (3.2 USGPM)
- · Supplied ready to be installed
- No moving components other than pumps and pneumatic valves.
- Fixed control level, without float
- Very low maintenance, consisting in occasional hosing cleaning of the plates, and membrane replacement. No chemicals needed in both operations
- Water presence less than 5% in the separated oil, so it can be burned if required
- Power supply 380/440V, 50 or 60 Hz

### **Accessories**

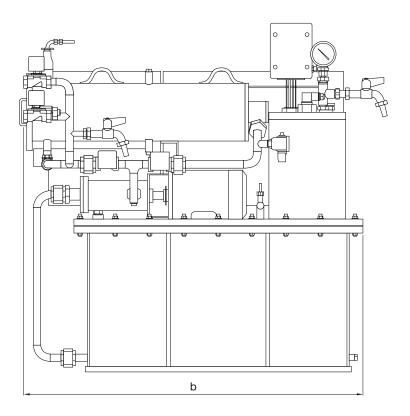
The equipment is supplied with the following accessories:

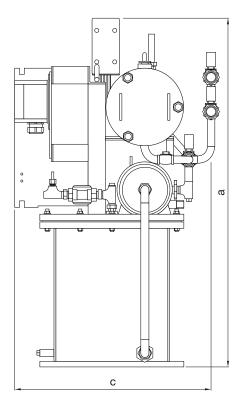
- Bilge alarm: as latest IMO MEPC. 107(49) resolution
- Electric heater in the oil dome to facilitate heavy oil discharge (if required)

#### **Approvals**

Facet CPS 10B MKIII + EMB has been tested, approved and certified according to the requirements of IMO MEPC.107(49).

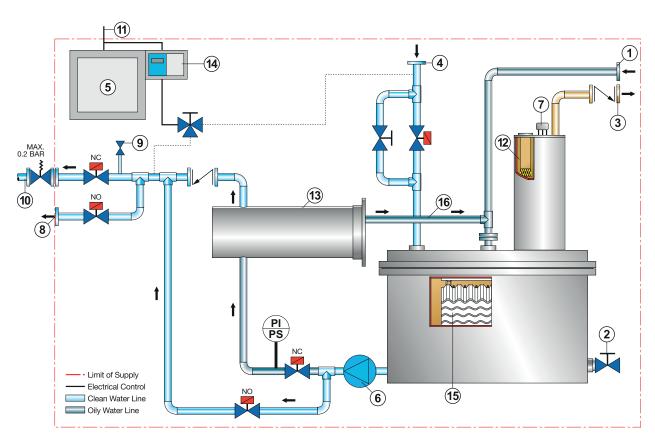
# Bilge Water Separators with Disposal Membrane CPS 3.2E + EBM 14x1





			DIMEN	ISIONS			VOL	INAE	MEL	СПТ	WORKING WEIGHT		
MODEL	8	a	b		С		VOLUME		WEIGHT		WORKING WEIGHT		
	in	mm	in	mm	in	mm	ft³	m³	lbs	kg	lbs	kg	
CPS 3.2E + EBM 14x1	39¾	1000	38½	980	221/4	565	18.72	0.53	630	286	908	412	

# Bilge Water Separators with Disposal Membrane CPS 3.2E + EBM 14x1



ITEM	DESCRIPTION
1	Oily water inlet line from bilge
2	Drain
3	Oil outlet
4	Clean water inlet
5	Control panel
6	Pump
7	Level control
8	Back to bilge line
9	Sample point
10	Overboard water outlet line
11	Electrical line (customer supply)
12	Heater (optional)
13	EBM 14x Separator module
14	PPM alarm & sensor
15	Facet MPak®
16	Oil return line

## Bilge Water Separators with Disposal Membrane CPS B MKIII + EBM 14x



Facet bilge water separator is a device compact, adaptable to the small spaces available on board, lightweight and low maintenance.

Its operation is very easy and completely automatic, with all its functions controlled through a PLC.

The presence of emulsified oil in the bilge water of the latest generation vessels caused IMO to issue the resolution MEPC.107(49), which requires that the resulting effluent after bilge water treatment must contain levels below 15 ppm of surfactants.

This model combines the classic coalescing plates Facet MPak® with the disposal membranes which achieve a high efficiency in the breakdown of chemical and mechanical emulsions.

This combination allows that Facet CPS B MKIII + EBM 14x Separator meets the strict requirements of the aforementioned IMO regulation.

#### **Results**

Facet CPS B MKIII + EBM 14x eliminates hydrocarbons in two stages. In the first stage, free hydrocarbon is separated from water through Facet coalescing plates, while in the second stage emulsions are broken by a membrane which removes emulsified hydrocarbon, reaching down an effluent with total hydrocarbon content of less than 5 ppm.

### **Standard Design Features**

- Flow rate range homologated: from 0.5 m³/h (2.2 USGPM) to 10 m³/h (44 usgpm)
- · Supplied ready to be installed
- No moving components other than pumps and pneumatic valves.
- Fixed control level, without float
- Very low maintenance, consisting in occasional hosing cleaning of the plates, and membrane replacement. No chemicals needed in both operations
- Water presence less than 5% in the separated oil, so it can be burned if required
- Power supply 380/440V, 50 or 60 Hz

#### **Accessories**

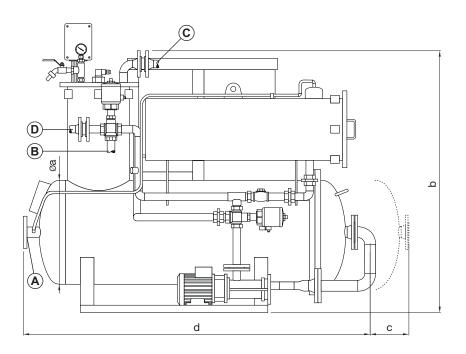
The equipment is supplied with the following accessories:

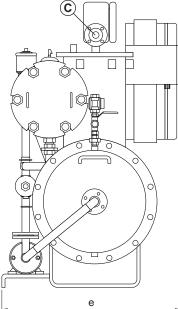
- Bilge alarm: as latest IMO MEPC. 107(49) resolution
- Electric heater in the oil dome to facilitate heavy oil discharge (if required)

#### **Approvals**

Facet CPS B MKIII + EBM 14x bilge water separators have been tested, approved and certified according to the requirements of IMO MEPC.107(49).

# Bilge Water Separators with Disposal Membrane CPS B MKIII + EBM 14x

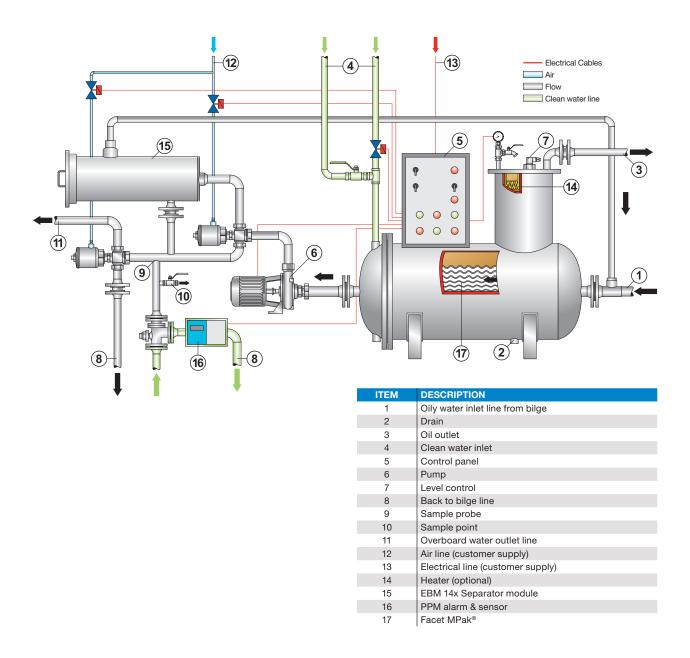




		DIMENSIONS										FLOW		WEIGHT		WORKING	
MODEL	а		b		С		d		е		FLOW		WEIGHT		WEIGHT		
	in	mm	in	mm	in	mm	in	mm	in	mm	gpm	m³/h	lbs	kg	lbs	kg	
CPS 2.5B MKIII+EBM 14x1	181/32	457	39%	1000	10¾	275	33%	860	321/4	820	2.2	0.5	573	260	948	430	
CPS 5B MKIII+EBM 14x1	181/32	181/32 457		1000	10¾	275	45	1145	33½	850	4.4	1	617	280	1036	470	
CPS 10B MKIII+EBM 14x2	181/32	457	39¾	1000	3911/16	1010	691/16	1755	321/4	820	11	2.5	915	415	1598	725	
CPS 25B MKIII+EBM 3 14x2	357/16	900	571/8	1450	29%	760	611/2	1565	5111/16	1315	22	5	1620	735	3891	1765	
CPS 50B MKIII+EBM 3 14x3	351/16	900	611/16	1550	29%	760	861/16	2185	51 <sup>11</sup> / <sub>16</sub>	1315	44	10	1786	810	5357	2430	

MODEL	CONNECTIONS											
MODEL	A (Inlet)	B (Discharge to sea)	C (Oil Discharge)	D (Discharge to Bilge)								
CPS 2.5B MKIII+EBM 14x1	DN32 PN10/16	1/2" BSP	DN25 PN10	DN15 PN10								
CPS 5B MKIII+EBM 14x1	DN32 PN10/16	1" BSP	DN25 PN10	DN25 PN10								
CPS 10B MKIII+EBM 14x2	DN32 PN10/16	1" BSP	DN25 PN10	DN25 PN10								
CPS 25B MKIII+EBM 3 14x2	DN65 PN10/16	2" BSP	DN50 PN10	DN50 PN10								
CPS 50B MKIII+EBM 3 14x3	DN65 PN10/16	2" BSP	DN50 PN10	DN50 PN10								

# Bilge Water Separators with Disposal Membrane CPS B MKIII + EBM 14x



# MAS Series Oil Water Separators for Offshore Applications



Facet Model MAS Oil Water Separators are designed to treat hydrocarbon water. These separators can be fed by gravity or pumped. These separators carry out separation by physical means, do not require consumables and have no mobile parts, therefore no maintenance is needed and its operation is free of failures.

These Plates are mounted in modular packs and provided with an adjust device against the vessel that secures that all the flow to be treated goes through the Plates. Optimal working range temperature of Plate Packs MPak® is 4 to 98 °C (40 to 208 °F). Each separator of the Model MAS can be equipped with adjustable skimmers to withdraw separated hydrocarbons. Optionally, they can also be provided with a storage chamber to accumulate separated hydrocarbons.

#### **Standard Features**

- · Access covers for easy adjustment of oil skimmers
- Epoxy coating interior and exterior
- MPak® plate packs: frame in steel and plastic hardware media is oleophilic polypropylene
- Clean plate packs in place -no need to remove from unit
- Solids collection connections built into all units
- ¾",¼" or ½" MPak® coalescing plate spacing
- Computerized effluent predictions for accurate sizing
- Skid in carbon steel
- · Safety closure device in the outlet

## **Engineering Specifications**

- Flanges: ANSI B16.5
- Material of construction: carbon steel
- Separator hydrostatically tested for ½ hour
- Welding in accordance with the latest edition of A.W.S.

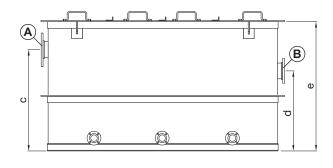
#### **Standard Connections**

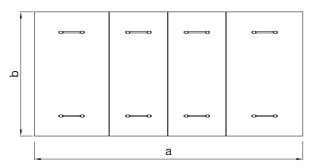
- Inlet and outlet: 150# R.F.S.O.
- Solids cleanout: 150# R.F.S.O.
- Drain: 150# R.F.S.O.
- Heater: 2 1/2" NPT coupling (heaters optional)

## **Options**

- Two adjustable oil skimmers
- Oil storage tank
- Oil pump control station: includes pump and motor, control panel, high and low level float switches
- Immersion heater: Available in various ratings
- Gasketed covers

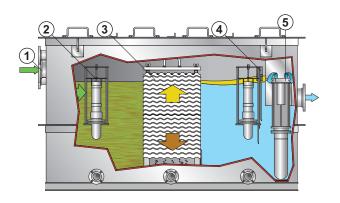
# MAS Series Oil Water Separators for Offshore Applications



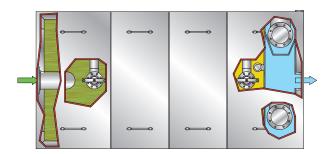


					DIMEN	SIONS		FLOW		WEIGHT		CONNECTIONS				
MODEL	a	a	b		(	;	(	d	•	•	FLC	JVV	WEI	<b>G</b> П I	CONNE	CHONS
	in	mm	in	mm	in	mm	in	mm	in	mm	gpm	lpm	lbs	kg	A (Inlet)	B (Outlet)
MAS 22-1	1091/16	2770	24¾	630	521/8	1324	33%	860	635/8	1620	60-100	227-379	2320	1052	DN150	DN150
MAS 22-2	935/8	3380	24¾	630	521/8	1324	33%	860	635/8	1620	60-100	227-379	2917	1323	DN150	DN150
MAS 22-3	1571/8	3990	24¾	630	521/8	1324	33%	860	635/8	1620	60-100	227-379	5230	1601	DN150	DN150
MAS 32-1	1091/16	2770	36½	930	521/8	1324	33%	860	635/8	1620	80-150	340-568	3195	1449	DN150	DN150
MAS 32-2	93 %	3380	36½	930	521/8	1324	33%	860	635/8	1620	80-150	340-568	4020	1824	DN150	DN150
MAS 32-3	1571/8	3990	36½	930	521/8	1324	33%	860	635/8	1620	80-150	340-568	4785	2170	DN150	DN150
MAS 52-1	1091/16	2770	60 %	1540	57%	1470	39%	1010	70	1780	150-250	568-946	3933	1784	DN150	DN150
MAS 52-2	93%	3380	60%	1540	57%	1470	39%	1010	70	1780	150-250	568-946	5101	2314	DN150	DN150
MAS 52-3	1571/8	3990	60%	1540	57%	1470	39%	1010	70	1780	150-250	568-946	6263	2841	DN150	DN150
MAS 53-1	1091/16	2770	60 %	1540	64%	1650	441/8	1140	79%	2030	225-375	852-1419	4442	2105	DN200	DN200
MAS 53-2	93%	3380	60%	1540	64%	1650	441/8	1140	79%	2030	225-375	852-1419	5948	2698	DN200	DN200
MAS 53-3	1571/8	3990	60 %	1540	64%	1650	44 1/8	1140	79%	2030	225-375	852-1419	7253	3290	DN200	DN200
MAS 64-1	1091/16	2770	72¾	1850	77%	1980	55¾	1420	961/16	2440	360-600	1363-2271	7634	3463	DN250	DN250
MAS 64-2	93 %	3380	723/4	1850	77%	1980	55¾	1420	961/16	2440	360-600	1363-2271	9704	4402	DN250	DN250
MAS 64-3	1571/8	3990	723/4	1850	77%	1980	55¾	1420	961/16	2440	360-600	1363-2271	11781	5344	DN250	DN250
MAS 74-1	1091/16	2770	84%	2150	77%	1980	55¾	1420	961/16	2440	420-700	1590-2650	8476	3845	DN250	DN250
MAS 74-2	935/8	3380	84%	2150	77%	1980	55¾	1420	961/16	2440	420-700	1590-2650	10734	4869	DN250	DN250
MAS 74-3	1571/8	3990	84%	2150	77%	1980	55¾	1420	961/16	2440	420-700	1590-2650	12992	5893	DN250	DN250
MAS 75-1	1091/16	2770	84%	2150	89%	2280	681/32	1730	107%	2740	525-875	1987-3312	9149	4150	DN250	DN250
MAS 75-2	935/8	3380	84%	2150	89%	2280	681/32	1730	107%	2740	525-875	1987-3312	11680	5298	DN250	DN250
MAS 75-3	1571/8	3990	841/16	2150	89%	2280	681/32	1730	107%	2740	525-875	1987-3312	14213	6447	DN250	DN250
MAS 76-1	1091/16	2770	84%	2150	102¾	2610	78 %	2000	1241/16	3150	630-1050	2385-3974	10024	4547	DN300	DN300
MAS 76-2	93 %	3380	841/16	2150	102¾	2610	78 %	2000	1241/16	3150	630-1050	2385-3974	12890	5847	DN300	DN300
MAS 76-3	1571/8	3990	84%	2150	102¾	2610	78 %	2000	1241/16	3150	630-1050	2385-3974	15754	7146	DN300	DN300

# MAS Series Oil Water Separators for Offshore Applications



ITEM	DESCRIPTION
1	Inlet
2	Skimmer (optional)
3	Facet MPak®
4	Oil level probe (optional)
5	Automatic closure device
6	Outlet







144 Intracoastal Dr. Houma, LA 70363

Toll Free: (866) 218-0013

Phone: (985) 346-0122

Fax: (985) 346-0244 www.separatorequipment.com

info@separatorequipment.com