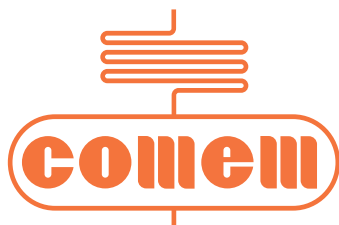


SDB

Self dehydrating breather



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SDB

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Self dehydrating breather type SDB

Main Benefits for End User are:

1. Increase transformer reliability

- Consistent moisture absorption ensured by:
- two independent silicagel tanks working alternatively
 - continuous monitoring of silicagel saturation.

2. Operational cost savings

Automatic silicagel regeneration process drastically reduce expensive maintenance activities.

3. Easy to install

Suitable for new installation and retrofit case.
Compatible with with EN and DIN standards.

SDB

Ultimate safety performance through superior design



SDB-30
with double tank



SDB-15
with coaxial tank



SDB-10
single tank to be used in combination
with SDB-030 or SDB-015

Moisture is a leading cause of transformer aging. Avoiding moisture ingress into the transformer is paramount to avoiding outage and maximizing the lifetime of the equipment. The traditional way of managing this problem is with conventional breathers which are expensive to maintain and present a significant risk of moisture entering into the transformer between checks. In response to this situation, COMEM has developed the Self Dehydrating Breather (SDB) which delivers the best performance of any low maintenance solution on the market:

COMEM SDB is the only solution to guarantee a consistent flow of dry air, out-performing both conventional breathers and alternative low maintenance solutions. Self Dehydrating Breather SDB family is the right choice in order to minimize the possible risk of transformer outage due to insulation fluid impairment through moisture: thanks to its unique and proven working principle, the air is always fully dehydrated because silicagel tanks are independent each other thus the regeneration process does not start simultaneously in the two tanks.

Self dehydrating breather type SDB

Model selection

The below number and size of Self Dehydrating Breathers are 'Rule of Thumb' recommendations for the devices in question. This is to be considered as a guide only and should not replace good design and engineering practice and experience

Application	SDB-10 SDB-10C*	SDB-12C	SDB-14C	SDB-15	SDB-30
OLTC					
Petersen Coil					
Cable boxes					
Traction					
Network <40 MVA					
Phase shifting <40 MVA					
Shunt reactors <40 MVA					
Network ≥40 MVA ≤200 MVA					
Phase shifting ≥40 MVA ≤200 MVA					
Shunt reactors ≥40 MVA ≤200 MVA					
Step up ≥40 MVA ≤200 MVA					
Generator and network >200 MVA					
Phase shifting >200 MVA					
Shunt reactors >200 MVA					
HVDC					
Furnace					
Cavern					
GSU					

* = SDB-10C to be used in combination with SDB-12C or SDB-14C

Main Features

SDB	Tank	Working principle	Fitting	Notes
SDB-10	1	Continuous silicagel monitoring	OLTC	In combination with SDB-15 or SDB-30
SDB-10C	1	Adjustable time based regeneration	OLTC	In combination with SDB-12C or SDB-14C
SDB-12C	2	Adjustable time based regeneration	OLTC	Stand alone
SDB-14C	2	Adjustable time based regeneration	Oil conservator	Stand alone
SDB-15	2	Continuous silicagel monitoring	Oil conservator	Stand alone
SDB-030	2	Continuous silicagel monitoring	Oil conservator	Stand alone

SDB-30 and SDB-15 operating principle



The self-dehydrating air breather works in accordance with the following principles.

During the normal operation the oil conservator intakes air that passes through the metallic filter. The metallic filter stops dust, sand and other particles from the contaminating air. The air then passes through the salt tank 1.

The salt tank is filled with silica gel that absorbs the moisture. The dehydrated air goes through piping to the oil conservator. When the silica gel absorbs the moisture in the air, the weight of the salt increases and is constantly monitored by a weighing cell. When the weight increases and exceeds the pre-set value a solenoid valve blocks the passage of air through salt tank 1 and deviates through the "plenum chamber" 2.

At the same time, a heating system inside tank 1 is activated. The water vapor leaving the silica gel is expelled outward by a fan that also dissipates the heat.

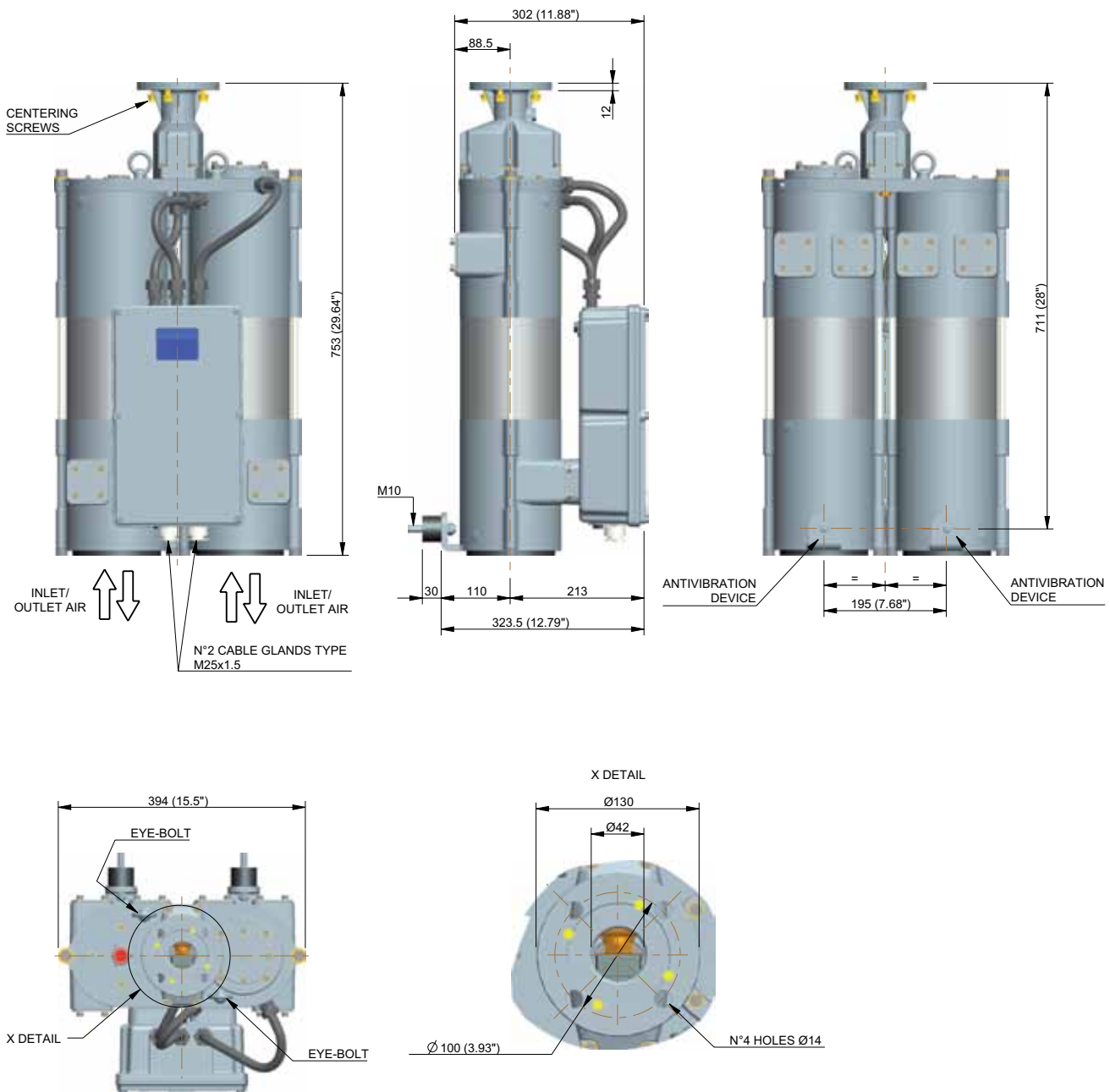
Inside the salt, a probe controls the temperature of the heating element.

During the functioning of the device, the weighing cell temperature is monitored by a temperature sensor mounted in the upper part.

As soon as the salt regeneration in tank 1 is completed, the solenoid valve is de-energized and the airflow through tank 2 is inhibited. The salt in this tank (2) is also dehydrated, regeneration of the salt in tank 2 follows automatically.

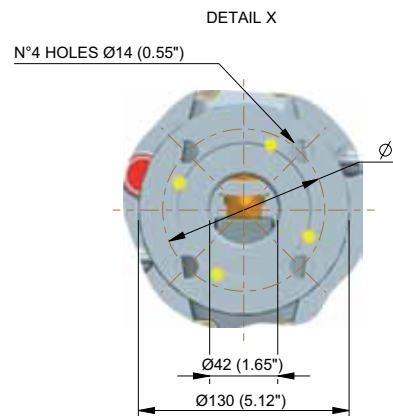
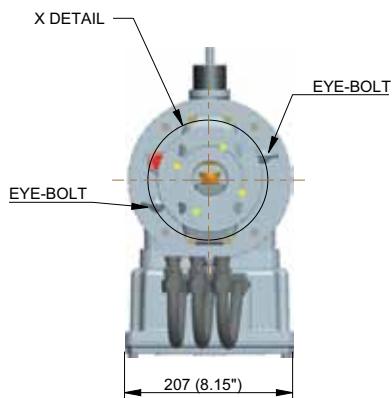
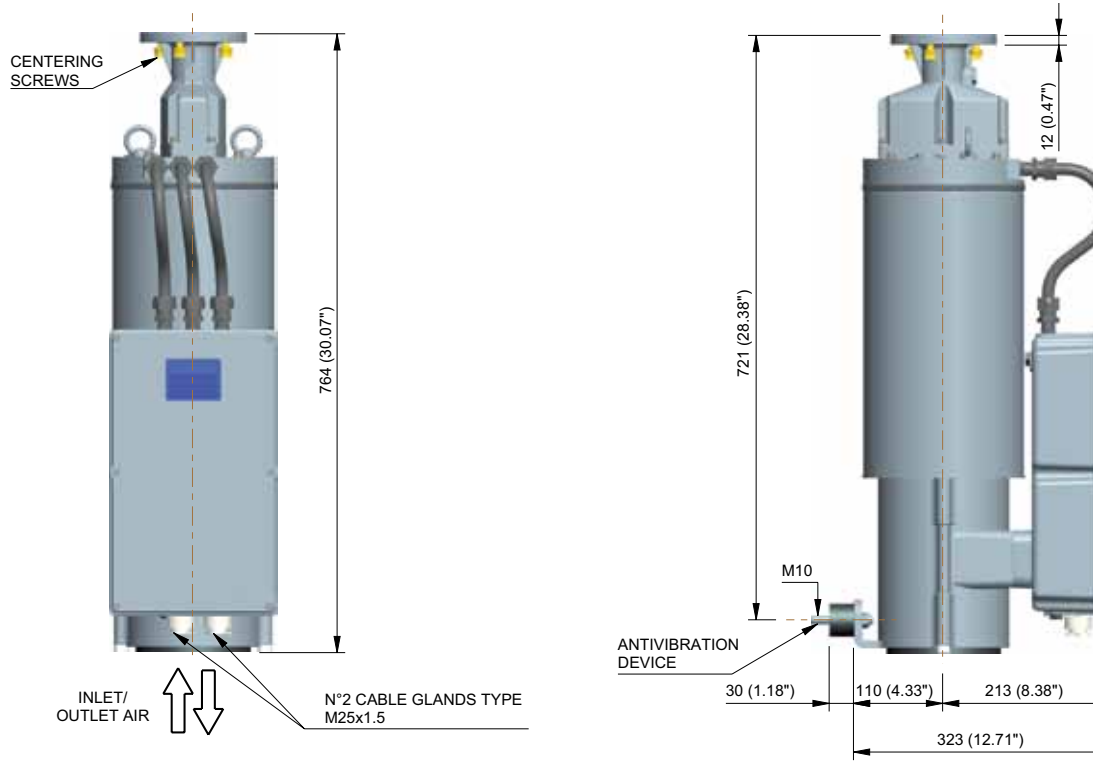
No maintenance is required for replacement and regeneration of the desiccant.

Overall dimensions type SDB-30



The double tank solution is reliable and drastically reduces any moisture entering the transformer

Overall dimensions type SDB-15



The coaxial tank allows you to have the advantages of the double tank while having a compact configuration

SDB-10 operating principle

During the normal operation the oil conservator intakes air that passes through the metallic filter. The metallic filter stops dust, sand and other particles from the contaminating air. The air then passes through the salt tank 1.

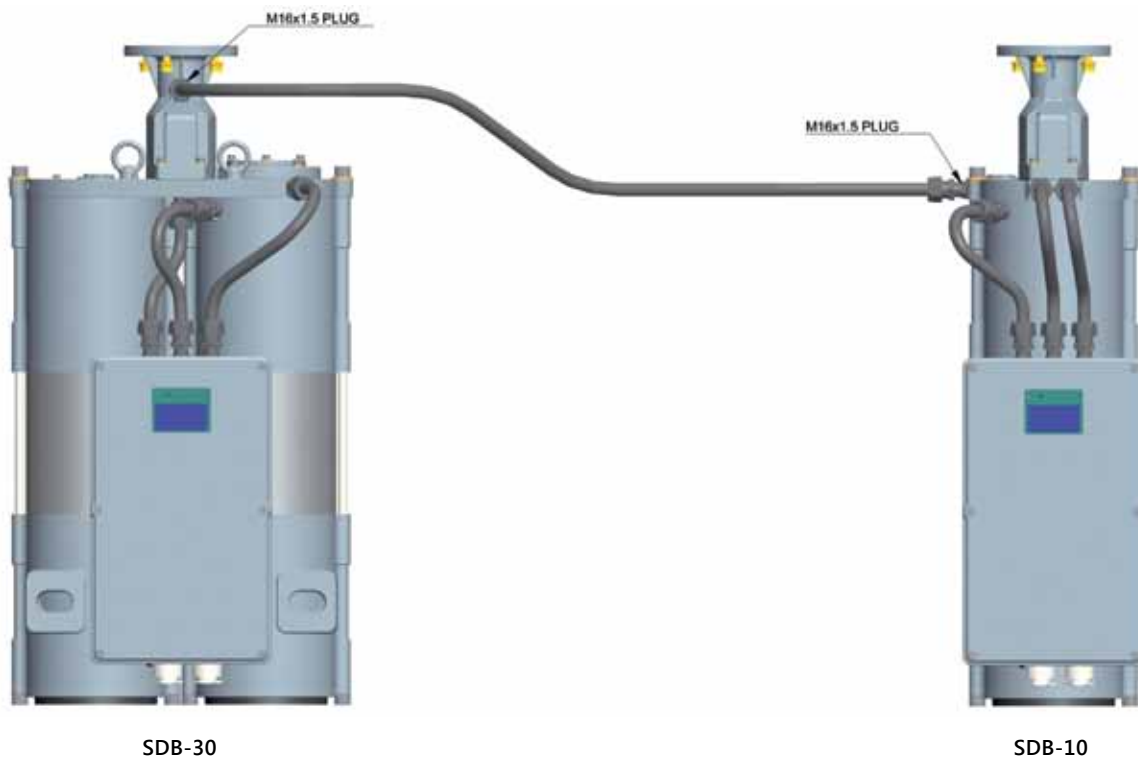
The salt tank is filled with silica gel that absorbs the moisture. The dehydrated air goes through piping to the oil conservator. When the silica gel absorbs the moisture in the air, the weight of the salt increases and is constantly monitored by a weighing cell. When the weight increases and exceeds the pre-set value a solenoid valve blocks the passage of air through salt tank 1 and deviates through the main self-dehydrating breather by the pipe connected on one of the two plug.

At the same time, a heating system inside tank 1 is activated. The water vapor leaving the silica gel is expelled outward by a fan that also dissipates the heat. Inside the salt, a probe controls the temperature of the heating element.

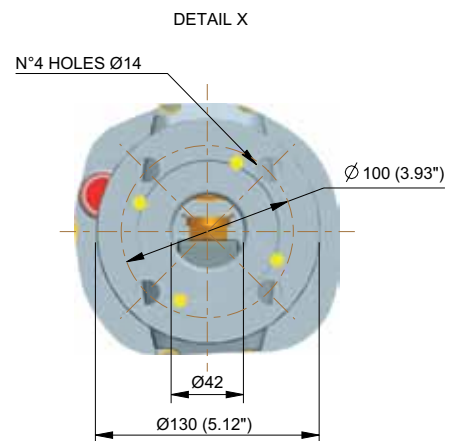
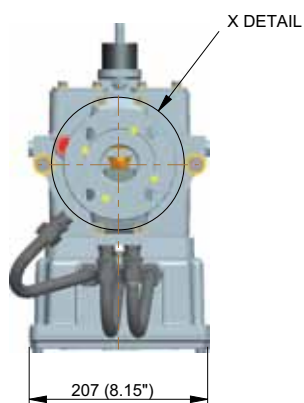
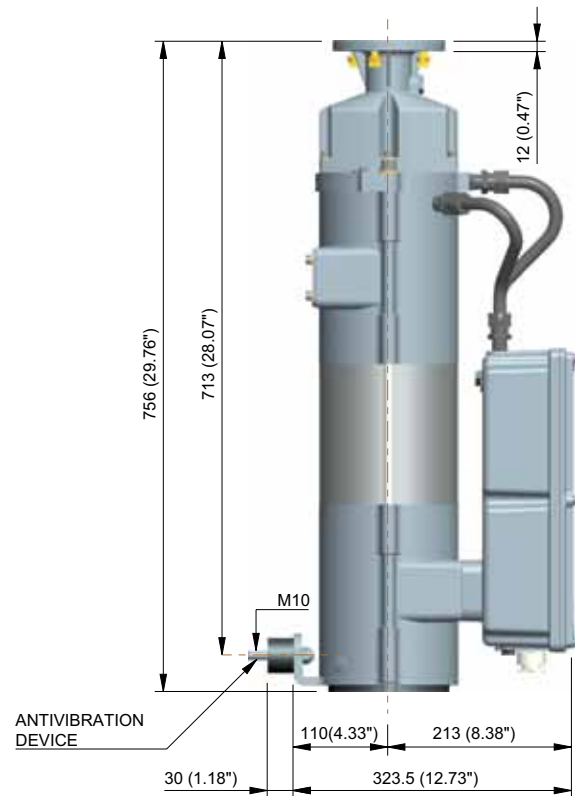
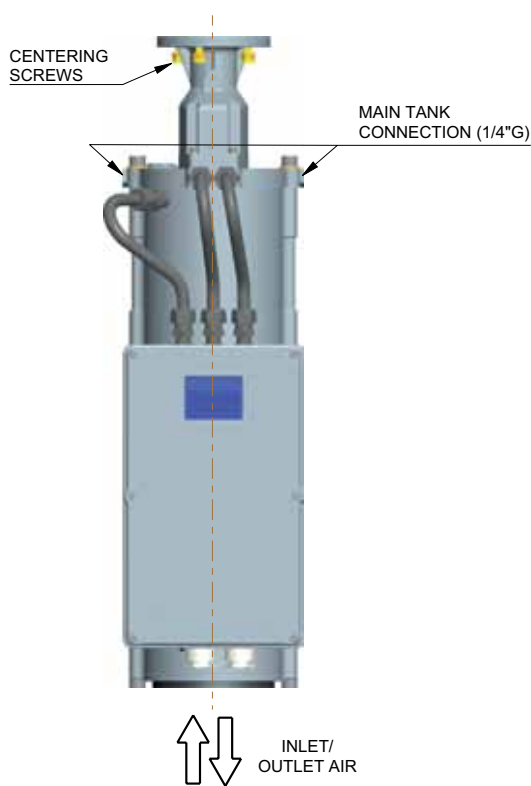
During the functioning of the device, the weighing cell temperature is monitored by a temperature sensor mounted in the upper part.

After the salt regeneration in tank 1 (timed regeneration), the solenoid valve is de-energized.

No maintenance is required for replacement and regeneration of the desiccant.



Overall dimensions type SDB-10



The single tank used in combination with the SDB-30 or SDB-15 allows you to have the same advantages as the other models while reducing the total cost.

Self dehydrating breather type SDB

Technical features

	SDB-10	SDB-15	SDB-30
Standard connection flange	DN40 flange in accordance with standard UNI EN 1092-1:2003		
Maximum oil volume	45 m ³ , 40 tons oil, 12,000 gals	90 m ³ , 80 tons oil, 24,000 gals	
Standard color	RAL 9002 **		
Ambient temperature	-40 to +80°C / -40 to + 176 °F ***		
Terminal box degree of protection	IP65 in accordance with EN 60529		
Weight	22 Kg/48.5lb	28 kg/61.7 lb	37 kg/81.6 lb
Salt weight	tank 1 with approx. 2.0 Kg/4.4 lb of silica gel	tank 1 with approx. 2.5 kg/5.5 lb and tank 2 with approx. 2 Kg/4.4 lb of silica gel	Two tanks with approx. 3 kg/6.6 lb of silica gel each
Vibration damping	Optional antivibration supports can be anchored to the transformer		
Environmental application	Standard painting for moderate salinity areas. Special treatment for off-shore areas (on request) acc. to ISO 12944		
Functional test	Available		
Power panel			
Degree of protection	IP65 in accordance with EN 60259		
Ventilation valve	Available		
Cable gland	Two M25x1.5		
Wires	4 mm ² , AWG 24-10 flexible cables with or without terminals. For digital/analog output advised 4x1 mm ² (4x0.00155"²) / 2x1 mm ² (2x0,0155"²) shielded twisted pair cable		
Power supply			
Supply voltage	115/230V AC/DC ±10% 50/60Hz		
Current consumption	Max 100 mA		
Current consumption (during regeneration process)	3.0A		
Heating element insulation	2 kV 50/60 Hz, 1 min, power terminals - ground /// contacts - ground		
Breaking capacity	Voltage	Current	Braking capacity
	230V AC 30/110/220V DC	2A 10/03/0,12A	500VA cosφ>0,5 L/R<40 ms
Analog output			
Signal output (optional)	4-20 mA proportional to silica gel saturation level (0% - 4mA 100% - 20mA)		
Distance for analogical output	~ 200m / 656ft		
Digital output (optional)			
Digital output	Serial RS485 (for more information contact COMEM assistance dept.)		
Distance for digital output	~ 500m / 1640ft		
Signal contacts			
Dielectric strength of contacts (short duration power frequency withstand voltage 1 min)	Between contacts and ground: 2kV Between contacts in open position: 1kV		

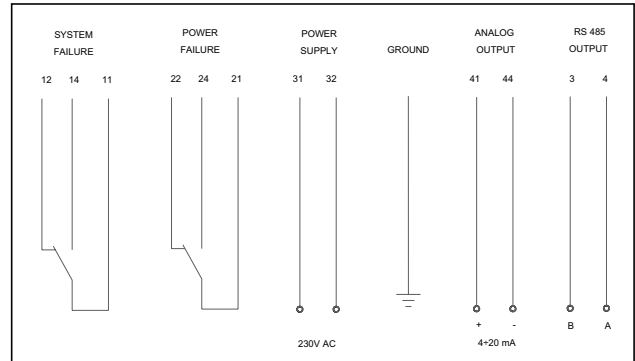
** For critical environmental conditions please contact COMEM

*** Below -20 °C/-4 °F the inscriptions on the display disappear until the temperature reaches over -20 °C/-4 °F again

SDB Wiring terminals

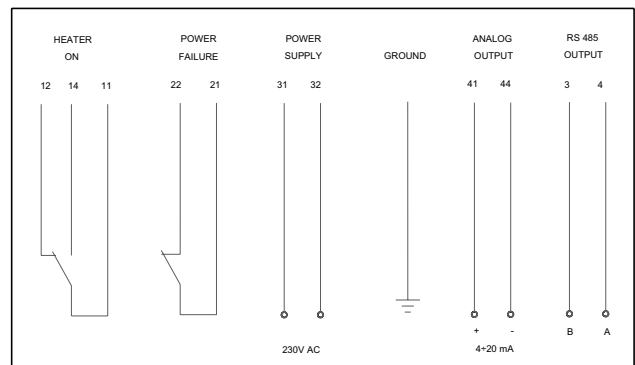
Standard:

- POWER FAILURE (terminals 22-24-21) - change-over contact:
NO contact: terminals 24-21
NC contact: terminals 21-22
- POWER SUPPLY:
terminals 31-32
- SYSTEM FAILURE (terminal 12-14-11) - change-over contact:
NO contact: terminals 14-11
NC contact: terminals 11-12
- ANALOG OUTPUT 4÷20 mA (optional):
terminals 41-44
- DIGITAL OUTPUT RS485 (optional):
Digital Signal: terminals 3-4
- DATA LOG



Available on demand:

- POWER FAILURE (terminals 22-21) - NC contact:
NC contact: terminals 24-21
- HEATER ON (terminals 12-14-11) - change over contact:
NO contact: terminals 14-11
NC contact: terminals 11-12
- ANALOG OUTPUT 4÷20 mA (optional):
terminals 41-44
- DIGITAL OUTPUT RS485 (optional):
Digital Signal: terminals 3-4
- DATA LOG



Self dehydrating breather type SDB-C

Main Benefits for End User are:

1. Increase transformer reliability

Continuous moisture absorption ensured by two independent silicagel tanks working alternatively.

2. Operational cost savings

Automatic silicagel regeneration process drastically reduce expensive maintenance activities.

3. Easy to install

Suitable for new installation and retrofit case.
Compatible with with EN and DIN standards.

SDB-C

Effective safety performance trough compact design



SDB-12C/14C
with double coaxial tank with
DIN connection flange*



SDB-10C
single tank to be used in
combination with other
SDB-12C or SDB-14C

* DIN flange connection is available for all SDB models upon request

Moisture is a leading cause of transformer aging. Avoiding moisture ingress into the transformer is paramount to avoiding outage and maximizing the lifetime of the equipment. The traditional way of managing this problem is with conventional breathers which are expensive to maintain and present a significant risk of moisture entering into the transformer between checks. In response to this situation, COMEM has developed the Self Dehydrating Breather (SDB-C) which delivers the best performance of any low maintenance solution on the market:

COMEM SDB-C is the only solution to guarantee a consistent flow of dry air, out-performing both conventional breathers and alternative low maintenance solutions.

Self Dehydrating Breather SDB-C family is the right choice in order to minimize the possible risk of transformer outage due to insulation fluid impairment through moisture: thanks to its unique and proven working principle, the air is always fully dehydrated because silicagel tanks are independent each other thus the regeneration process does not start simultaneously in the two tanks.

Self dehydrating breather type SDB-C

Model selection

The below number and size of Self Dehydrating Breathers are 'Rule of Thumb' recommendations for the devices in question. This is to be considered as a guide only and should not replace good design and engineering practice and experience

Application	SDB-10 SDB-10C*	SDB-12C	SDB-14C	SDB-15	SDB-30
OLTC					
Petersen Coil					
Cable boxes					
Traction					
Network <40 MVA					
Phase shifting <40 MVA					
Shunt reactors <40 MVA					
Network ≥40 MVA ≤200 MVA					
Phase shifting ≥40 MVA ≤200 MVA					
Shunt reactors ≥40 MVA ≤200 MVA					
Step up ≥40 MVA ≤200 MVA					
Generator and network >200 MVA					
Phase shifting >200 MVA					
Shunt reactors >200 MVA					
HVDC					
Furnace					
Cavern					
GSU					

* = SDB-10C to be used in combination with SDB-12C or SDB-14C

Main Features

SDB	Tank	Working principle	Fitting	Notes
SDB-10	1	Continuous silicagel monitoring	OLTC	In combination with SDB-15 or SDB-30
SDB-10C	1	Adjustable time based regeneration	OLTC	In combination with SDB-12C or SDB-14C
SDB-12C	2	Adjustable time based regeneration	OLTC	Stand alone
SDB-14C	2	Adjustable time based regeneration	Oil conservator	Stand alone
SDB-15	2	Continuous silicagel monitoring	Oil conservator	Stand alone
SDB-030	2	Continuous silicagel monitoring	Oil conservator	Stand alone

SDB-12C/14C operating principle



The self-dehydrating air breather works in accordance with the following principles.

During the normal operation the oil conservator intakes air that passes through the metallic filter. The metallic filter stops dust, sand and other particles from the contaminating air. The air then passes through the salt tank 1.

The salt tank is filled with silica gel that absorbs the moisture.

The dehydrated air goes through piping to the oil conservator.

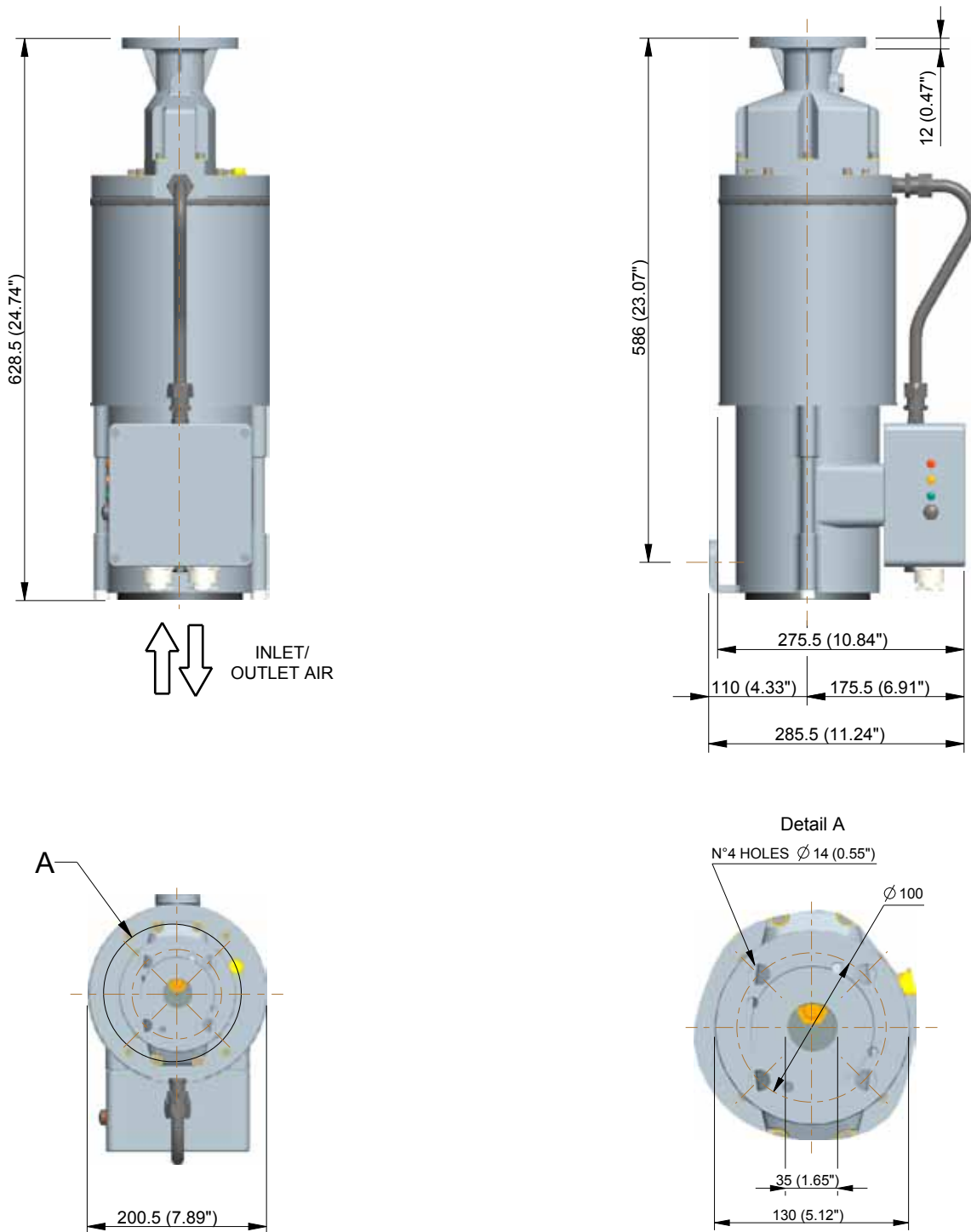
After a pre-determinate time (adjustable) a solenoid valve blocks the passage of air through salt tank 1 and deviates through the "plenum chamber" 2.

At the same time, a heating system inside tank 1 is activated. The water vapor leaving the silica gel is expelled outward by gravity. Inside the salt, a probe controls the temperature of the heating element.

As soon as the salt regeneration in tank 1 is completed, the solenoid valve is de-energized and the airflow through tank 2 is inhibited. The salt in this tank (2) is also dehydrated, regeneration of the salt in tank 2 follows automatically.

No maintenance is required for replacement and regeneration of the desiccant.

Overall dimensions type SDB-12C/14C



The double tank solution is reliable and drastically reduces any moisture entering the transformer

SDB-10C operating principle

The self-dehydrating air breather works in accordance with the following principles.

During the normal operation the oil conservator intakes air that passes through the metallic filter. The metallic filter stops dust, sand and other particles from the contaminating air.

The air then passes through the salt tank 1.

The salt tank is filled with silica gel that absorbs the moisture.

The dehydrated air goes through piping to the oil conservator.

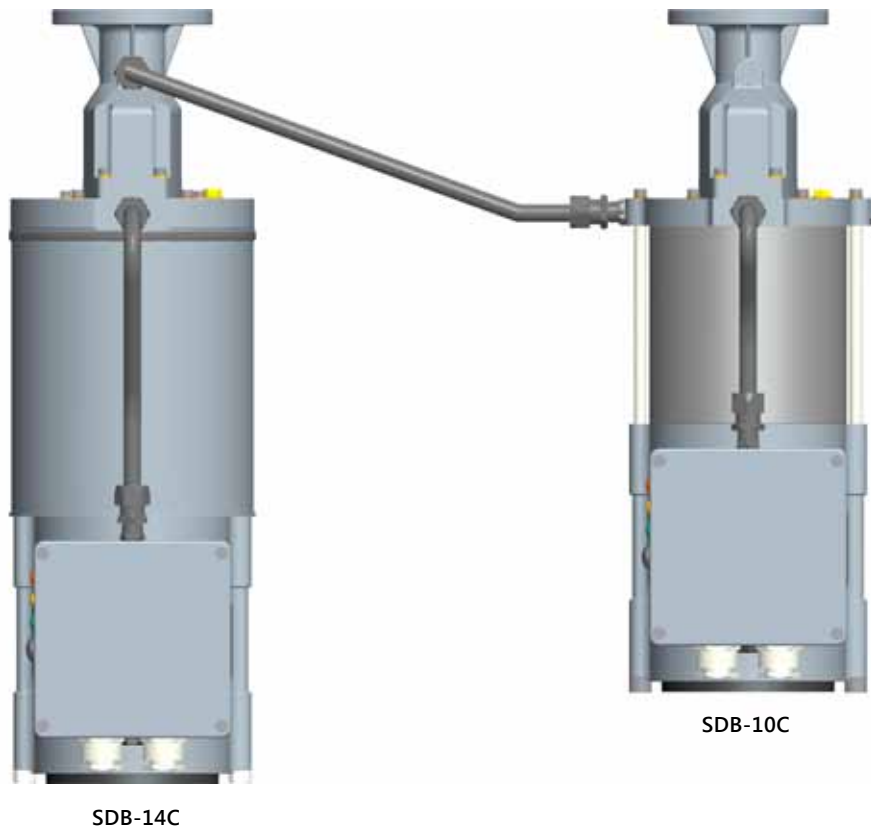
After a pre-determinate time (settable) a solenoid valve blocks the passage of air through salt tank 1 and deviates through the main self-dehydrating breather (SDB-14C, SDB-15 or SDB-30) by the pipe connected on one of the two plug.

At the same time, a heating system inside tank 1 is activated.

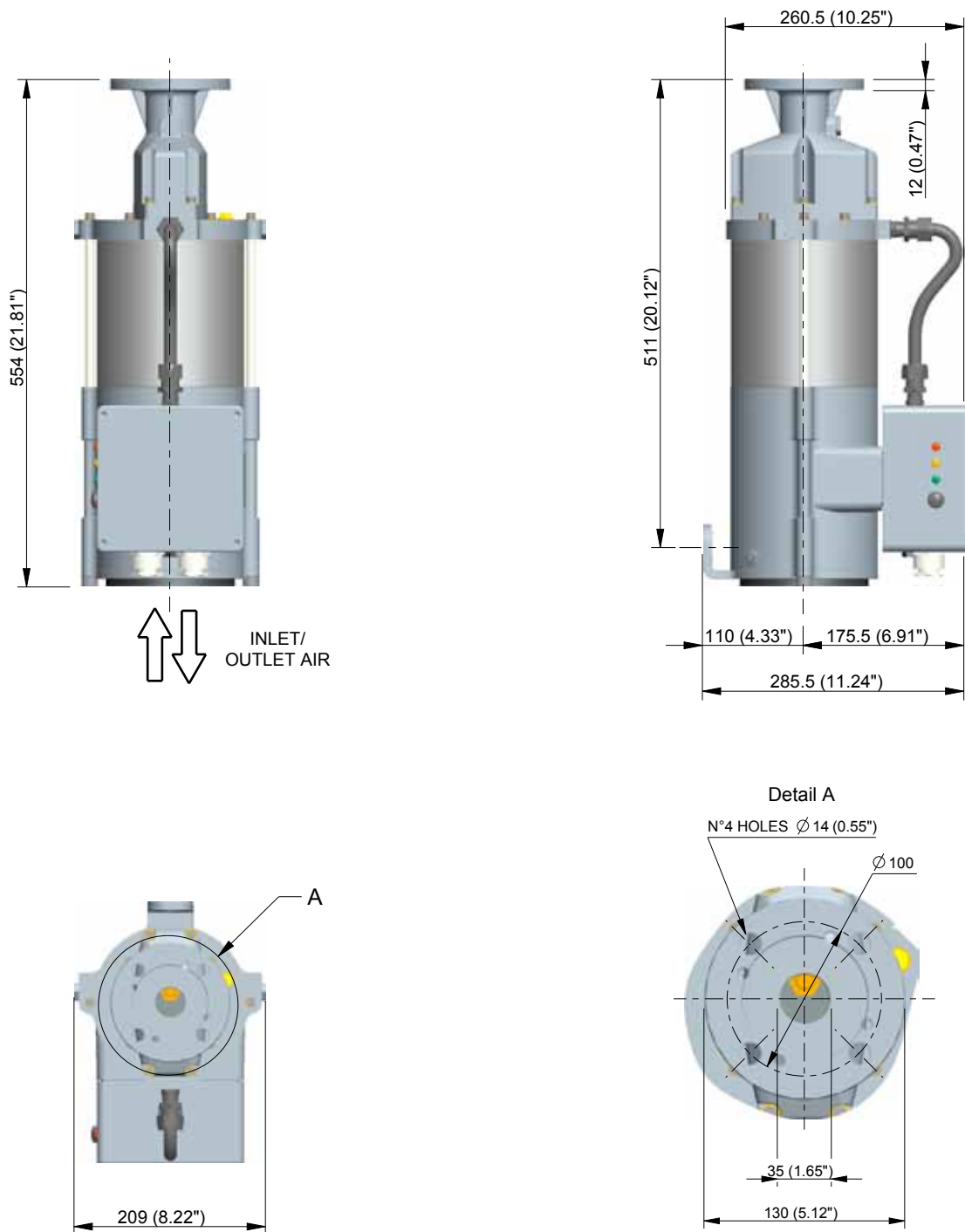
The water vapor leaving the silica gel is expelled outward by gravity. Inside the salt, a probe controls the temperature of the heating element.

As soon as the salt regeneration in tank 1 is completed, the solenoid valve is de-energized.

No maintenance is required for replacement and regeneration of the desiccant.



Overall dimensions type SDB-10C



The single tank used in combination with the SDB-30 or SDB-15 allows you to have the same advantages as the other models while reducing the total cost.

Self dehydrating breather type SDB-C

Technical features

	SDB-10C	SDB-12C	SDB-14C
Standard connection flange	DN40 flange in accordance with standard UNI EN 1092-1:2003		
Maximum oil volume	45 m ³ , 40 tons oil, 12,000 gals		
Standard color	RAL 9002 **		
Ambient temperature	-40 to +80°C / -40 to + 176 °F ***		
Terminal box degree of protection	IP65 in accordance with EN 60529		
Weight	12 kg/26,45 lb	18 kg/39,6 lb	18 kg/39,6 lb
Salt weight	tank 1 with approx. 2.0 Kg/4.4 lb of silica gel	tank 1 with approx. 2 kg/4.4 lb and tank 2 with approx. 1 Kg/2.2 lb of silica gel	tank 1 with approx. 2 kg/4.4 lb and tank 2 with approx. 1 Kg/2.2 lb of silica gel
Vibration damping	Optional antivibration supports can be anchored to the transformer		
Environmental application	Standard painting for moderate salinity areas. Special treatment for off-shore areas (on request) acc. to ISO 12944		
Functional test	Available		
Power panel			
Degree of protection	IP65 in accordance with EN 60529		
Ventilation valve	Available		
Cable gland	Two M25x1.5		
Wires	4 mm ² , AWG 24-10 flexible cables with or without terminals. For digital/analog output advised 4x1 mm ² (4x0.00155") / 2x1 mm ² (2x0.0155") shielded twisted pair cable		
Power supply			
Supply voltage	115/230V AC/DC ±10% 50/60Hz		
Current consumption	Max 100 mA		
Current consumption (during regeneration process)	3.0A		
Heating element insulation	2 kV 50/60 Hz, 1 min, power terminals - ground /// contacts - ground		
Breaking capacity	Voltage	Current	Braking capacity
	230V AC 30/110/220V DC	2A 10/03/0,12A	500VA cosφ>0,5 L/R<40 ms
Analog output			
Signal output (optional)	4-20 mA proportional to tank 1 temperature		
Distance for analogical output	~ 200m / 656ft		
Digital output (optional)			
Digital output	Serial RS485 (for more information contact COMEM assistance dept.)		
Distance for digital output	~ 500m / 1640ft		
Signal contacts			
Dielectric strength of contacts (short duration power frequency withstand voltage 1 min)	Between contacts and ground: 2kV Between contacts in open position: 1kV		

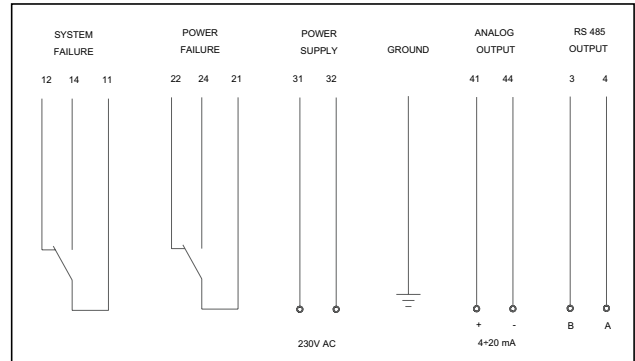
** For critical environmental conditions please contact COMEM

*** Below -20 °C/-4 °F the inscriptions on the display disappear until the temperature reaches over -20 °C/-4 °F again

SDB-C Wiring terminals

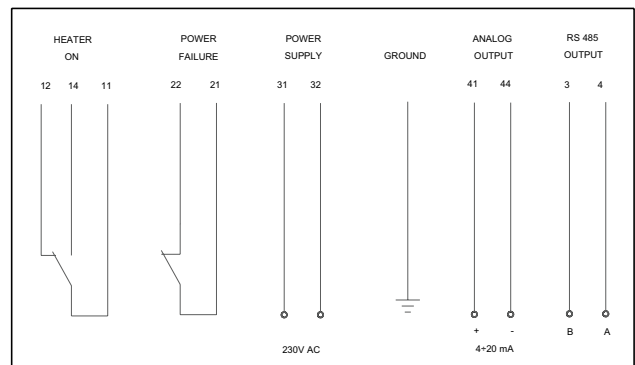
Standard:

- POWER FAILURE (terminals 22-24-21) - change-over contact:
NO contact: terminals 24-21
NC contact: terminals 21-22
- POWER SUPPLY:
terminals 31-32
- SYSTEM FAILURE (terminal 12-14-11) - change-over contact:
NO contact: terminals 14-11
NC contact: terminals 11-12
- ANALOG OUTPUT 4÷20 mA (optional):
terminals 41-44
- DIGITAL OUTPUT RS485 (optional):
Digital Signal: terminals 3-4
- DATA LOG



Available on demand:

- POWER FAILURE (terminals 22-21) - NC contact:
- HEATER ON (terminals 12-14-11) - change over contact:
NO contact: terminals 14-11
NC contact: terminals 11-12
- ANALOG OUTPUT 4÷20 mA (optional):
terminals 41-44
- DIGITAL OUTPUT RS485 (optional):
Digital Signal: terminals 3-4
- DATA LOG



SDB and SDB-C order sheet

SDB version

<input type="checkbox"/>	SDB-10
<input type="checkbox"/>	SDB-15
<input type="checkbox"/>	SDB-30

SDB-C version

<input type="checkbox"/>	SDB-10C
<input type="checkbox"/>	SDB-12C
<input type="checkbox"/>	SDB-14C

Supply Voltage

<input type="checkbox"/>	230V AC/DC
<input type="checkbox"/>	115V AC/DC
<input type="checkbox"/>	Overtoltage protection*

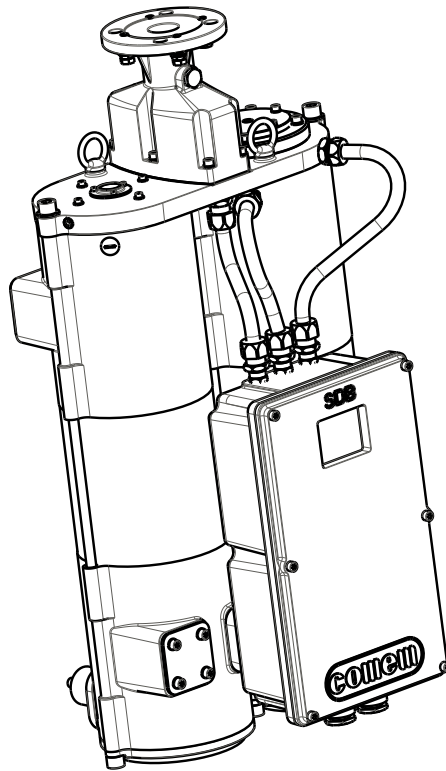
* extension voltage range between 90 to 270V AC/DC

Color

<input type="checkbox"/>	RAL 9002 standard
<input type="checkbox"/>	Special

Cable gland

<input type="checkbox"/>	2x M25x1,5 (standard)
<input type="checkbox"/>	Special



Others

<input type="checkbox"/>	Damper
--------------------------	--------

Connection flange

<input type="checkbox"/>	DN40 flange in accordance with standard UNI EN 1092-1:2003 (standard)
<input type="checkbox"/>	DIN flange (similar to DIN 42 562-3)
<input type="checkbox"/>	Overpressure valve

Options

<input type="checkbox"/>	MODBUS RTU
<input type="checkbox"/>	DATA LOGGER (DATA LOGGER VIA MODBUS)
<input type="checkbox"/>	4-20 mA

Environmental protection

<input type="checkbox"/>	Moderate salinity areas acc. to ISO 12944 (standard)
<input type="checkbox"/>	Off-shore areas acc. to ISO 12944

Packaging

<input type="checkbox"/>	Carton box (standard)
<input type="checkbox"/>	Wood box

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