



# SYNERGY

INNOVATIVE DIVING EQUIPMENT TRADING LLC

INSPIRING • ENGINEERING • INNOVATION



## SYNERGY HYPERBARIC CARBON DIOXIDE CLEARFLOW SCRUBBER SY-SBHS-241



	<b>SYNERGY</b>
<b>HYPERBARIC CO<sub>2</sub> SCRUBBER</b>	
PART NUMBER	SY-SBHS-241
SERIAL NUMBER	SB - 209

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### Why CO2 Removal is Crucial?

CO2 is a natural byproduct of human respiration. In confined spaces like decompression and hyperbaric chambers, CO2 can accumulate rapidly, leading to increased levels that can be harmful or even lethal if not controlled. Effective CO2 removal is essential to prevent symptoms such as dizziness, headaches, and more severe respiratory issues.

### CO2 Levels and Health Risks:

Elevated CO2 levels can lead to hypercapnia, a condition characterized by excessive CO2 in the bloodstream. Symptoms range from shortness of breath and confusion to unconsciousness and death in extreme cases. Ensuring proper CO2 scrubbing in confined environments is therefore a critical safety measure.

### Understanding CO2 Scrubbers:

#### What Are CO2 Scrubbers?

CO2 scrubbers are devices designed to remove carbon dioxide from the air, maintaining safe levels within enclosed environments. They are commonly used in submarines, spacecraft, and underwater habitats, as well as in decompression and hyperbaric chambers.

#### Basic Components of CO2 Scrubbers

#### The main components of CO2 scrubbers include:

- **Absorbent Material:** Substances like soda lime or lithium hydroxide that chemically react with CO2 to remove it from the air.
- **Fans or Blowers:** Devices to circulate air through the scrubber to ensure efficient CO2 absorption.

#### How CO2 Scrubbers Work:

##### Chemical Absorption Process:

The primary mechanism in CO2 scrubbers involves a chemical reaction between the absorbent material and CO2. For instance, soda lime reacts with CO2 to form calcium carbonate, effectively removing CO2 from the air.

##### Air Circulation and CO2 Removal:

Fans or blowers continuously circulate air through the scrubber, ensuring that CO2-laden air comes into contact with the absorbent material. This constant circulation is crucial for maintaining low CO2 levels.

##### Role of CO2 Scrubbers in Decompression Chambers:

In decompression chambers, CO2 scrubbers are critical for removing exhaled CO2, ensuring a breathable atmosphere. They help maintain the necessary oxygen levels and pressure conditions required for effective treatment.



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### Operational Procedures CO2:

- **Pre-Operation Checks:**

Ensuring the CO2 scrubber is functioning correctly before starting treatment.

- **Continuous Monitoring:**

Real-time monitoring of CO2 levels during the operation.

- **Post-Operation Maintenance:**

Regular maintenance and replacement of absorbent materials to ensure ongoing efficiency.

### Conclusion:

CO2 scrubbers are essential components in maintaining safe and breathable environments within the Closed environments, decompression and hyperbaric chambers.

By understanding their mechanisms, applications, and maintenance, we can ensure the safety and effectiveness of these critical systems. Ongoing innovations promise even greater efficiency and reliability in the future, enhancing the safety and comfort of confined environments.

### Synergy CO2 Scrubber Specifications:

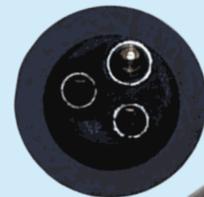
SR	DESCRIPTION
1	Powder coated stainless steel enclosure
2	Rugged powder coated stainless steel mounting bracket
3	Power requirement 1.5 amps 12v-28v DC
4	Papst motor 12v to 28v DC (designed to work in high levels of oxygen without electrical sparks)
5	Constant circulation of Air= Co2, water vapor & odor absorption
6	Co2 Absorbent – SOFNOLIME 7.5 lbs (approx-3.5kg)
7	Gas flows @ 1 atmosphere – 0.85 m3/min
8	Effective for 10-12 man hour's approx per refill of co2 absorbent
9	Weight including mounting bracket 13.5 kgs

**SYNERGY HYPERBARIC CARBON DIOXIDE CLEARFLOW SCRUBBER SY-SBHS-241**



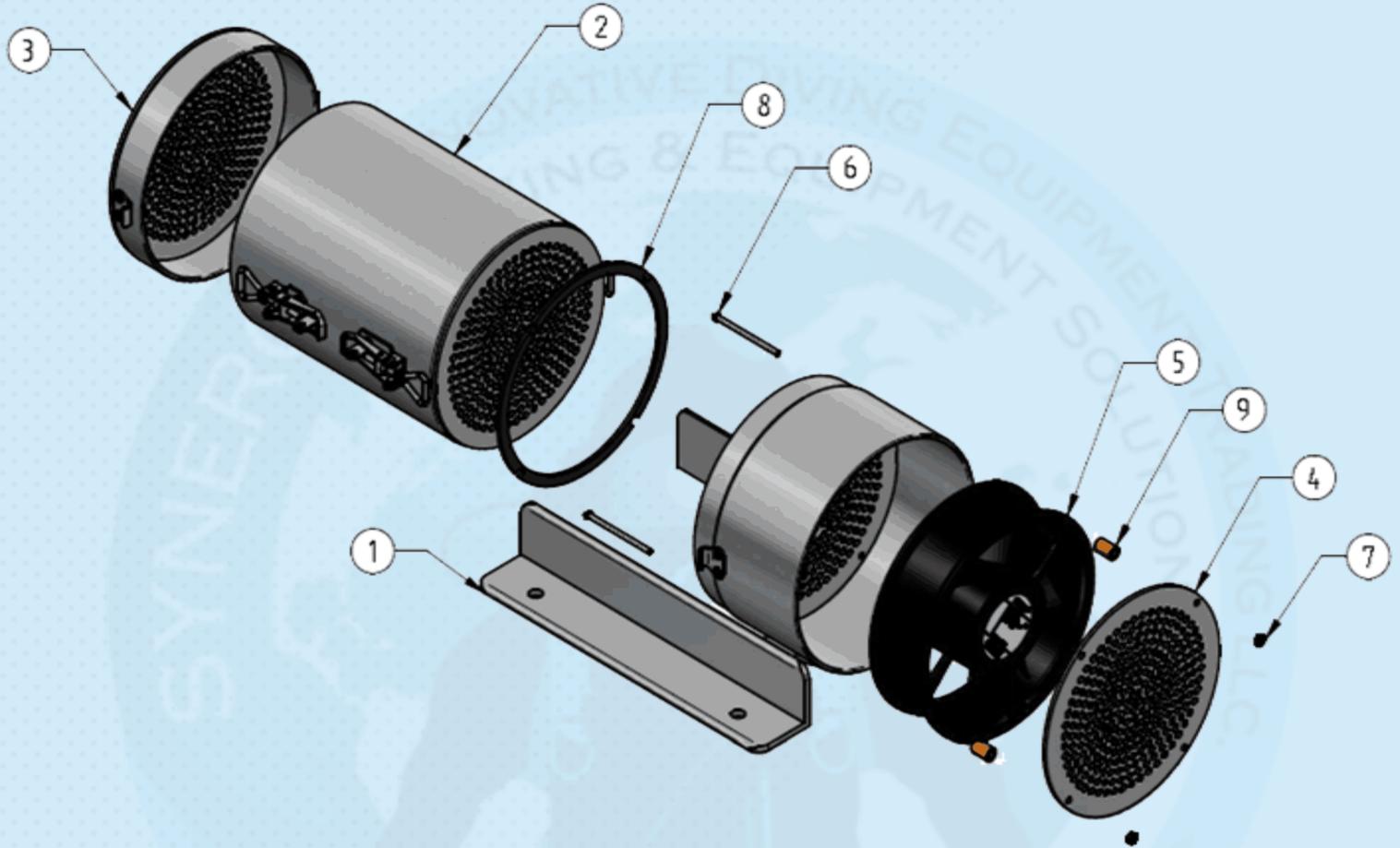
**PAPST Fan Specifications:**

<b>Type:</b>	<b>6224 N</b>	
Parameter	Unit	Value
Nominal voltage range	VDC	12 ... 28
Speed	min <sup>-1</sup>	3400
Power input	W	18.0
Min. ambient temperature	°C	-20
Max. ambient temperature	°C	72
Air flow	m <sup>3</sup> /h	410
Sound power level	B	6.1
Sound pressure level	dB(A)	55



Sr.	Part Number	Description
1	SY-RMG-3-MP	Marsh Marine, 3 pin , Male, 18"
2	SY-RMG-3-FS	Marsh Marine, 3 pin, Female, 18"

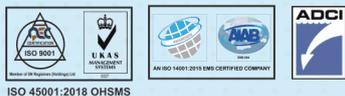
**SYNERGY HYPERBARIC CARBON DIOXIDE CLEARFLOW SCRUBBER SY-SBHS-241**



SR	Part Number	Description	Qty
1	SY-SB-S012-1	Base body weldment	1
2	SY-SB-S012-2	Middle body_weldment	1
3	SY-SB-S012-3	Top cover body_weldment	1
4	SY-SB-S012-4	Closing plate -1 for base body	1
5	SY-SB-S012-5	Fan-6224n-ebmpapst	1
6	SY-STD	Screw_m4	2
7	SY-STD	Nut_m4	2
8	SY-SB-S012-6	Gasket	1
9	SY-SB-S012-7	Spacer	2

**ORDERING INFORMATION**

SR	Part Number	Part Number
1	SY-SBHS-241	HYPERBARIC CO2 SCRUBBER, 12V-28V DC



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## SYNERGY INFRASTRUCTURE





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## SYNERGY HYPERBARIC CARBON DIOXIDE CLEARFLOW SCRUBBER SY-SBHS-241

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