



# ECMO with CytoSorb

## Quick Setup Guide

### Notes prior to treatment start

- The preparation and use of CytoSorb must always be carried out under hygienic conditions.
- Before connecting CytoSorb, the feeding tube system must be prefilled with sterile isotonic saline solution and completely free of air.
- **Under no circumstances should air enter the CytoSorb Adsorber or the ECMO system.**
- Always pay attention to the running direction indicated on the label when flushing or installing CytoSorb.

### Anticoagulation

- Anticoagulation must be effective at the start of treatment.
- In general, no special adaptations of the protocols for CytoSorb are necessary. The specifications of the device manufacturer must be observed.
- Systemic heparinization
  - An aPTT of 60-80 s or an ACT of 160-210 s is usually sufficient for CytoSorb. The aPTT or ACT should be checked regularly.
- Any decision on dosage and target values is the responsibility of the treating physician.

### Notes during treatment

- The recommended blood flow rate should be between 150 - 700 ml/min, with a minimum rate of at least 100 ml/min
- The maximum running time of a CytoSorb adsorber should not exceed 24 hours.
- It may be useful to replace the adsorber earlier if there are indications of an exhausted elimination capacity.
- Check the extracorporeal circuit at regular intervals for signs of blood clots, secure seating of the connections and for air within the circuit.

### Materials required

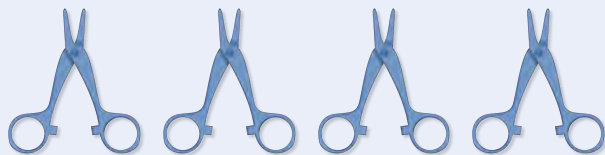
Mounting option for CytoSorb



Normal saline 2 liters, sterile



Plastic scissor clamps, x 4

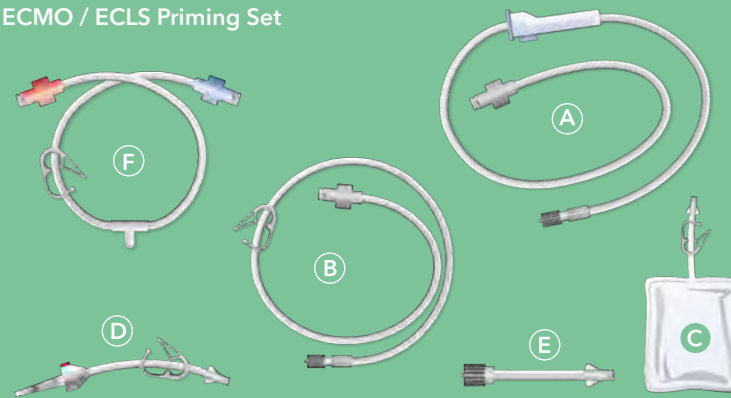


Adsorber



**H** CytoSorb Adsorber

ECMO / ECLS Priming Set



- A** DIN Lock female - Luer Lock Male - Roller clamp
- B** DIN Lock female - Luer Lock Male - Pinch clamp
- C** 2 liter disposal bag
- D** Adapter DIN Lock female - Spike
- E** Adapter DIN Lock male - Luer Lock female
- F** DIN Lock female - DIN Lock female

CytoSorb ECMO - Connector Set

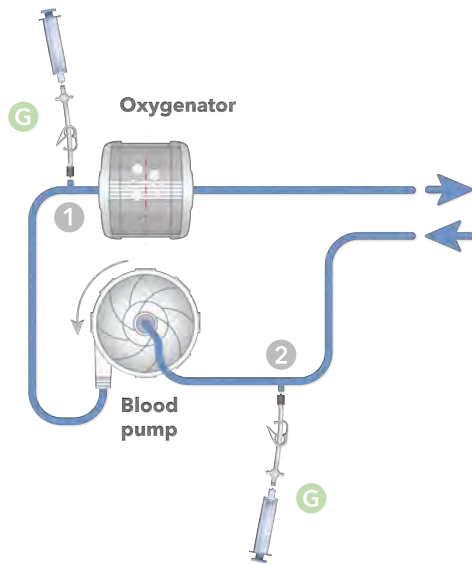


- G** 2x ECMO connector (high flow adapter for ECMO bypass with safety functions)  
2x Luer-Lock syringe 10 ml

# ECMO with CytoSorb

## Quick Setup Guide - preparation of ECMO system and Cytosorb adsorber

1



### Preparation of the ECMO system

1. Set up the ECMO system dry, according to manufacturer's instructions.
2. Connect the first ECMO connector **G** with Luer-Lock of ECMO mainstream **1** in front of oxygenator membrane  
**Note:** Adapter **E** can be used to connect ECMO connector **G** alternatively to DIN-Lock port on the oxygenator.
3. Connect second ECMO connector **G** with blood return port (Luer-Lock connector) to ECMO mainstream **2** in front of the pump.

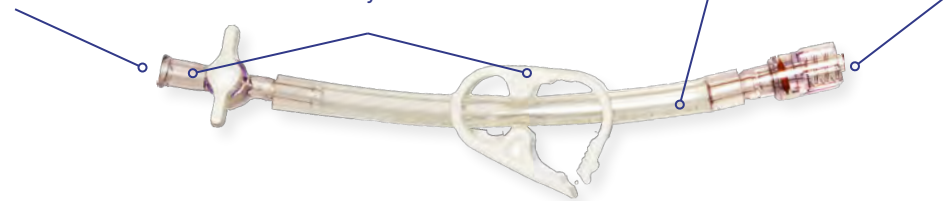
### \*CytoSorb-ECMO-Connector - Simple and safe connection

No open ports:  
No air can enter the system

Redundant safety mechanisms to prevent unintended air intake into the ECMO system

Kinking not possible

360° rotatable torsion-free line.



4. Prime the ECMO system according to the manufacturer's instructions. Flush and deaerate **G** at **1** and **2** and close their clamps and stopcocks. Place a sterile, saline-filled 10 ml Luer-Lock syringe on the Luer-Lock connections of **G** at **1** and **2**.
5. Connect the ECMO system to the patient according to the instructions of the attending physician if indicated.
6. According to the doctor's prescription, CytoSorb can be installed into the ECMO system. Please follow **2** and **3**.  
**Note:** Never use a connection on the ECMO mainline after the oxygenator for CytoSorb blood return.

2



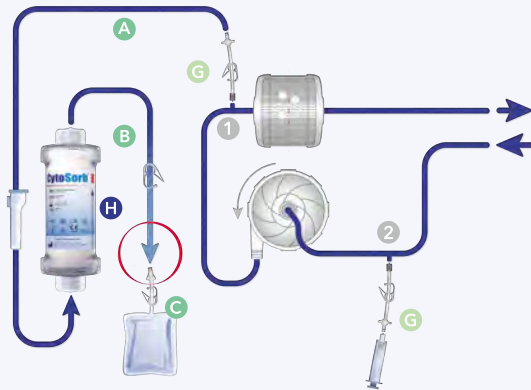
### CytoSorb rinsing procedure

1. Connect line **A** with saline solution, deaerate it and disconnect it with the **clamp**.  
**Note:** Use spike adapter **D** if necessary.
2. Remove the port plug only at the **bottom** of the CytoSorb blood inlet **H** and connect the bubble-free, vented line **A**.  
**Observe flow direction (indicated by the arrow on the label).**
3. Remove the port plug from the **top** of the CytoSorb blood outlet **H**. Connect tube **B** and irrigation bag **C**.  
**Note:** If CytoSorb is used in series with a hemoconcentrator (HC), use adapter **F**, connect the HC to the blood outlet of **H**.
4. Open the **clamp** on line **A** and rinse CytoSorb with gravity and vent it by tapping with the palm of your hand. In total 2 liters of isotonic saline solution are required for filling the lines and flushing CytoSorb.
5. Close the **clamps** on lines **A** and **B** to prevent CytoSorb **H**, **A** and **B** from running empty.
6. Close the **clamp** on the rinsing bag **C**.

# ECMO with CytoSorb

## Quick Setup Guide - Integration and exchange of Cytosorb Adsorber in ECMO System

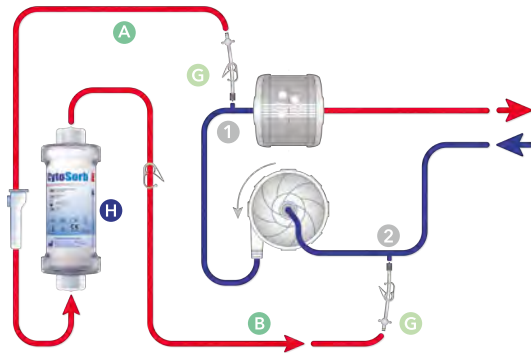
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### Fill rinsed CytoSorb with blood

1. Attach the CytoSorb-Adsorber (H), prepared according to 2, vertically to the ECMO device using the holder.
2. Detach line A from the saline bag and connect it bubble-free to the ECMO connector at G on 1 before Oxygenator membrane.
3. Open clamp and stopcock from G at 1. Open clamp at A, B and C.
4. Fill CytoSorb bypass with blood and let saline solution flow into the rinsebag bag C.
5. As soon as blood becomes visible in tube B after CytoSorb, close the clamp on B.

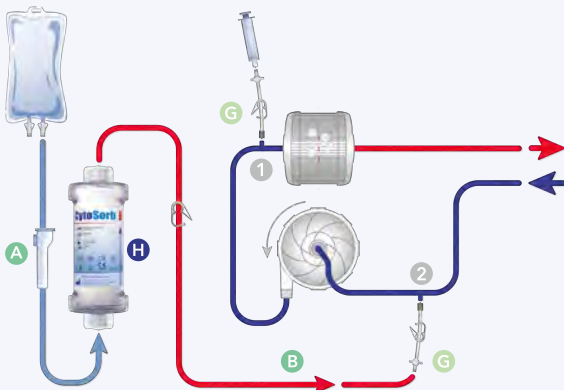
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### Complete CytoSorb Bypass

1. Connect the completely vented line B (from CytoSorb) with the completely vented ECMO-Connector G to 2.  
**Under no circumstances should air enter the system.**
2. Open clamp on line B. Open clamp and stopcock from G at 2 (upstream of pump).
3. The blood flow through CytoSorb can be monitored with the aid of an ultrasound Doppler probe (on line A or B) if necessary.
4. If necessary, the blood flow can be regulated by the roll clamp on line A. The recommended blood flow rate should be between 150 - 700 ml/min, with a minimum rate of at least 100 ml/min

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### Removal of used adsorbers before installation of fresh adsorbers / Termination of CytoSorb therapy

1. Prepare a fresh bag of saline solution (2 liters, sterile, no bottle to reduce the risk of air aspiration into the system). Fill 2x10 ml Luer-Lock syringes with saline solution (air-free). Close clamp and stopcock from G on 1 and 2 and clamp on line A.
2. Release line A from G on 1 and connect it bubble-free to the fresh saline bag.
3. Place 10 ml Luer-Lock syringe filled with saline bubble-free on G on 1. Open clamp and stopcock and rinse G on 1. Then close clamp and stopcock G on 1. **Under no circumstances should air enter the system.** Leave Luer-Lock syringe on ECMO connector G (on 1).
4. Open clamp and stopcock from G on 2. Blood is returned from the CytoSorb (H) into the ECMO system by flushing with saline solution. As soon as saline solution is visible in tube B, close clamp and stopcock from G on 2.
5. Disconnect line B. Place 10 ml Luer-Lock syringe filled with saline solution bubble-free on G on 2. Open clamp and stopcock and rinse G on 2.
6. Close clamp and stopcock from G on 2 again. **Under no circumstances should air enter the system.** Leave the Luer-Lock syringe on G on 2.
7. Discard used CytoSorb (H), lines A and B.



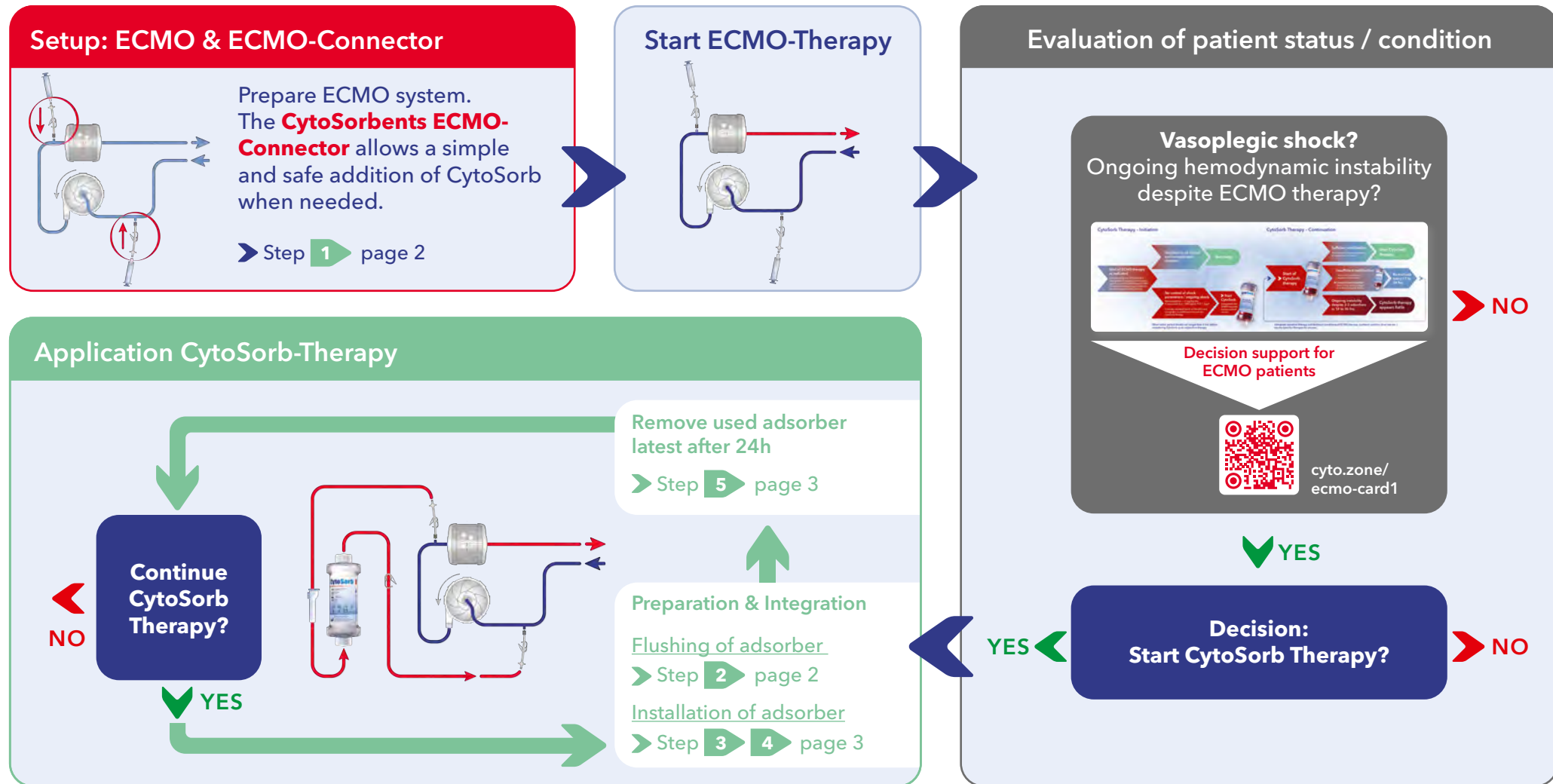
To continue the CytoSorb therapy, please follow steps 3 & 4 to insert a new CytoSorb adsorber into the ECMO system.



If it is foreseeable that no further CytoSorb therapy will be carried out, the ECMO connectors G together with 1 and 2 should be removed from the ECMO system.

# ECMO with CytoSorb

Strategy - CytoSorb therapy and ECMO patients



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Watch the complete set-up video: [cytosorb.com/setup](https://www.cytosorb.com/setup)

The clinical and preclinical data and results obtained with the CytoSorb adsorber are not transferable to other products. CytoSorb should only be administered by personnel who have been properly trained in administration of extracorporeal therapies. CytoSorb is not available for commercial sale in USA.

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