

COVID-19: How to get 10L/min oxygen by joining two 5L/min oxygen concentrators







Seán King (OCA biomed + cold chain advisor), reviewed by Kate White (OCA e-desk emergency support manager)



Background:

As part of MSF-OCA's COVID-19 response, it is expected that oxygen flow rate up to 10L/min will be needed for adults being treated for COVID-19 in health facilities. If a location has 10L/min oxygen concentrators these are ideal to use.

[EEMDCONE5— CONCENTRATOR O2 (New Life Intensity) 10l, 230V, 50 Hz + acc.]

If you only have 5L/min oxygen concentrators and need to have a flow rate of up to 10L/min O2 then here is a list of articles you need to connect two oxygen concentrators of the same make and model together.

Code	Label	Picture	Quantity for joining TWO x 5L concentrators	Comment
EEMDCONS335	(conc. DeVilbiss 515KS/AKS/525KS) OUTLET CONNECTOR plast.gre		2	Request extra e.g. 10 per pair of oxygen concentrators as these get lost.
SCTDTUBE052	TUBE, silicone, autoclavable, int. Ø 5 mm, 25 m		Cut three x 1m pieces <i>** 1m long pieces can be sterilised in autoclave. If >1m long: single use **</i>	Recommend to order one x 25m roll per pair of oxygen concentrators.
SCTDCONN4S-	CONNECTOR, Y-shaped, ext. Ø 4 to 5 mm, autoclavable		1	Request extra e.g. 10 per pair of oxygen concentrator as these get lost.
EEMDCONA003	HUMIDIFIER, autoclavable (FLOWMETER TR200)		1 <i>Medics to decide if humidification is needed</i>	Request extra e.g. 5 per pair of oxygen concentrators (5L/min) to allow for sterilisation process, wear & tear.
EEMDCONS342	(conc. DeVilbiss 515KS/AKS/525KS) MALE OUTLET CONNECTOR		1 <i>This is needed to connect humidifier to tube.</i> <i>Medics to decide if humidification is needed</i>	Request extra e.g. 5 per pair of oxygen concentrators - for sterilisation process, wear & tear.
EEMDCONC611	(conc. Eclipse 5) CABLE TIES PACK 6968-SEQ		1 piece for each arm of the Y connector = 3. (Single use item - dispose when sterilising tubing + Y-connector)	Order 100 pieces per O2 concentrator. Local purchase ok if small cable ties available locally.

EIMTCONE1--	OXYGEN ANALYSER, 0-10 LPM 21%-95.6%		1	You need 1 per project/health facility. Needed to verify the oxygen output (% and pressure) from pair of O2 concentrators.
KMEDMTUB1--	(oxygen concentrator 5-10 litres) MODULE TUBERCULOSIS		1 <i>See description on Logistics Expertise Website link Medics to decide on use</i>	1 TB module has 100 antibacterial filters. If used they will need to be changed between each patient on oxygen.

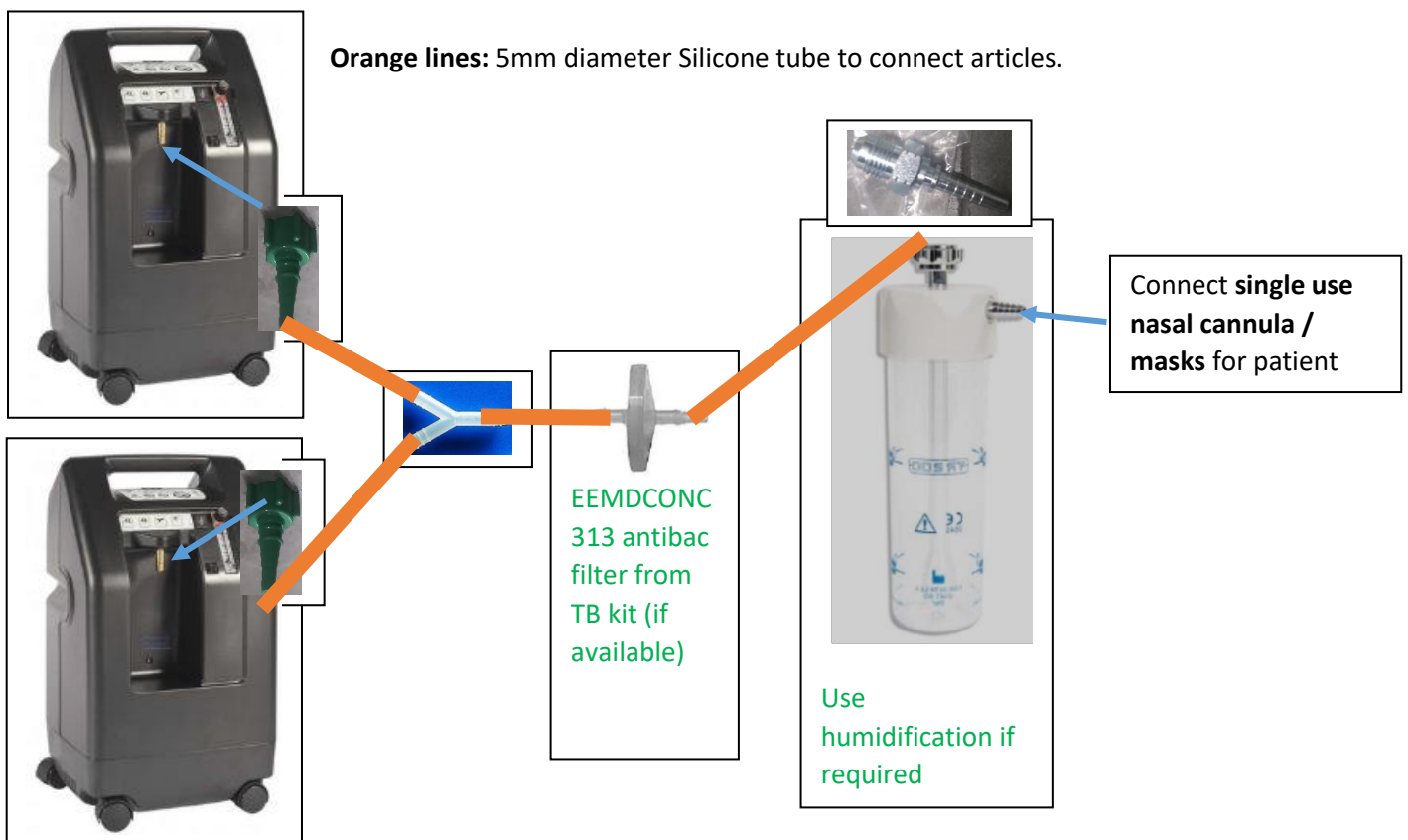
Basic instructions on how to connect everything together:

The following are possible.

1. outlet of two oxygen concentrators -> Y-connector -> patient.
2. outlet of two oxygen concentrators -> Y-connector -> humidifier -> patient (medics decide on humidifier)
3. outlet of two oxygen concentrators -> Y-connector -> antibac. filter -> humidifier -> patient (medics decide)

Where possible use antibacterial filters, but do not delay treatment if they are not available.

This is general guidance that needs to be contextualised for your project/mission by the medical team.



Checks after you assemble this:



1. Check the **flow rate** and **% oxygen** after the Y-connector with an oxygen analyzer. Is it giving the flow rate you expect? (Max 10L/min) If not there may be a leak. **Tip:** You can use 3 small cable ties to make the silicone tube grip better to each arm of the Y-connector.
2. Check the **pressure** after the Y-connector with an oxygen concentrator. It should be in the pressure range of a single oxygen concentrator. (DeVilbiss 525KS and 1025KS = 8.5 PSI, AirSep NewLife 10L = 20 PSI)

You can find more information about oxygen concentrators, humidifiers, the oxygen analyser and TB kit on the Logistics Expertise Website (LEW) [here](#).

Infection Prevention Control (IPC):

- Follow the **MSF guidance on IPC in COVID-19 settings (EN, FR, ES)** taking note of 'Treatment of reusable medical equipment' on page 3. [Link](#)
- For oxygen concentrators make sure that all the items after the humidifier (**tubes and mask**) are used for a **single patient**, and sterilise the humidifier between each patient.
- Dispose of tubing that is longer than 1m or that is single use.
- Sterilise all autoclavable 5mm diameter tubing <1m long between patients.
- If using a TB module / antibacterial filters: change the antibacterial filter between patients.

List of patient lines for oxygen therapy:

Code	Label	Picture	Quantity	Comment
SCTDCANN2A-	NASAL OXYGEN CANNULA, 2 prongs + tube, adult		Qty depends on patient numbers	Single use
SCTDCANN2N-	NASAL OXYGEN CANNULA, 2 prongs + tube, neonate		Qty depends on patient numbers	Single use
SCTDCANN2P-	NASAL OXYGEN CANNULA, 2 prongs + tube, paediatric		Qty depends on patient numbers	Single use
SCTDCANN2PL	NASAL OXYGEN CANNULA, 2 prongs + tube, premature low flow		Qty depends on patient numbers	Single use
SCTDMASO1A-	OXYGEN FACE MASK, simple, with tubing, adult size		Qty depends on patient numbers	Single use
SCTDMASO1P-	OXYGEN FACE MASK, simple, with tubing, paediatric size		Qty depends on patient numbers	Single use

Questions?

Contact OCA biomed advisor [Seán](#) or OCA flying biomedics [Eric](#) or [Christian](#) with your questions.