# Use of Closed-Circuit In-line Suction

## When to use Closed-Circuit Suction?

- Patients with suspected or proven COVID-19 (or respiratory tract infections)
- High PEEP on ventilator and concerns regarding de-recruitment on disconnection

## Benefits of Closed-Circuit Suction

- Avoids disconnection from ventilator
- Reduces aerosol generating procedures (AGPs)
- Reduces risk of ventilator associated pneumonia

## Setting up the Closed-Circuit Suction

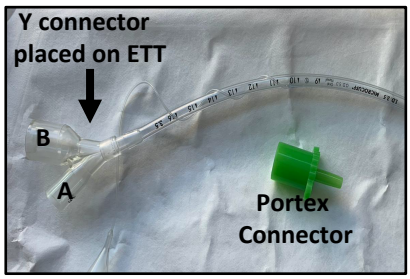
Select correct catheter size = ETT (Size) 2
(e.g. 7fr suction catheter for a size 3.5 ETT)
[if catheter is too large it will occlude the ETT]

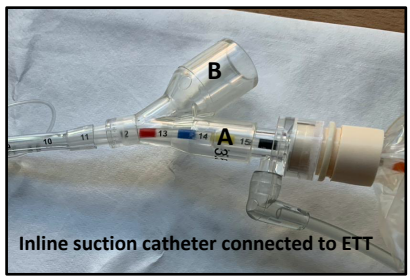
Select the correct size Y connector from the set. The Y connector replaces the Portex connector on the end of ETT (but do not throw this away)

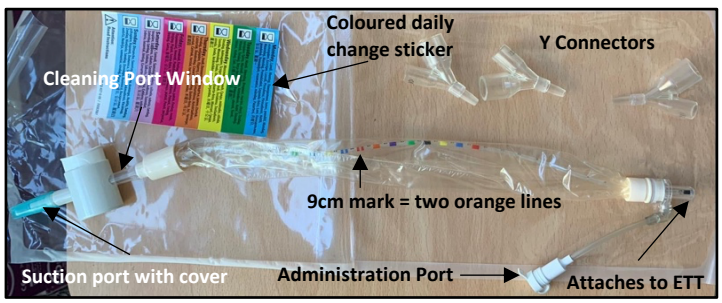
For ETT≤6.0 Connect the Y connector to the ETT
For ETT>6.0 suction catheter connects to Portex Connector
(it is useful to loosen the Portex connector on the ETT prior to intubating)

Connect the suction catheter to the smaller port on Y connector [A on picture] and the ventilator tubing to the larger port on Y connector [B on picture]

Attach daily change sticker across the bottom of suction control valve.
The catheter should be changed every 24 hours




| Age | Suction mmHg | Suction kPa |
|---|---|---|
| Neonate | 80-150 | 8-12 |
| Children | 150-200 | 12-15 |
| Adolescents | 200-250 | 15-18 |


**To calculate length of suction catheter that needs to be inserted into ETT tube:**

**Record the last visible cm mark on ETT before suction port_____cm and add 5cm**
**This is the mark you should see in the in the Y connector when suction catheter has been advanced to the correct position (e.g. 4+5 = 9 cm = 2 orange marks (see photo above)**

## Using In-line Suction for Secretion Clearance

***Follow SORT secretion clearance guideline***

**Differences for in-line suction:**

- **Advance suction catheter down ETT, allowing plastic sleeve to slide back over catheter, until you see the correct coloured strip in the Y connector**
- **Apply suction by depressing the suction button. Slowly withdraw the catheter, until the black suction catheter tip is in the Y connector**
- **The suction catheter should be cleaned after each use. With black tip in Y connector, apply suction and at same time instil 1ml of saline via administration port**
- **Disconnect suction tubing and replace blue cap**
- **If using saline lavage whilst suctioning, advance the suction catheter slightly and tilt the ETT downwards. Instil saline via administration port**

## Potential Complications!

- **ACCIDENTAL EXTUBATION: Loosen Portex ETT connector *before intubation* and hold ETT during suctioning. Have an airway trolley ready and reintubate if concern regarding ETT dislodgement.**
- **DISCONNECTION: Avoid disconnection by holding ETT and Y connector throughout suctioning. Ensure that appropriate PPE is used for AGPs. Reconnect ASAP**
- **TRACHEAL TRAUMA: Avoid advancing suction catheter too far. Suction to calculated length only**
- **SUDDEN DETERIORATION: Give 100% Oxygen and search/treat most likely causes; *Accidental extubation - ensure $E_TCO_2$ waveform present* or *ETT occluded by suction catheter OR secretions - Check patency with suction catheter***
- **If suction catheter cover inflates, remove the catheter from the Y connector and disconnect the suction, squeeze air out of the catheter bag and replace suction**
- **If catheter is not suctioning, flush suction catheter with saline, it may be blocked**
- **It is important to fully withdraw the catheter to avoid occlusion of ETT**