

Maquet SERVO-n 'NAVA' ventilator- Set up

This LOP is developed to guide safe clinical practice in Newborn Care Centre (NCC) at The Royal Hospital for (LOP).

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INTRODUCTION

Neurally Adjusted Ventilatory Assist (NAVA) is a mode of mechanical ventilation intended for use in spontaneously breathing patients. The patient's own Edi (Electrical Diaphragmatic activity) waveform is used to trigger-on and cycle-off each assisted breath, also controlling the pressure delivered, thus providing truly synchronized and proportional assist.

1. AIM

- To ensure a safe set up procedure of the Maquet SERVO-n 'NAVA' ventilator.

2. PATIENT

- Neonates

3. STAFF

- Medical and nursing staff

4. EQUIPMENT

Maquet SERVO-n ventilator

Grey set up tubing (from storage box on ventilator)

Fischer Paykel **RT266 ventilator tubing** (this is **NOT** the usual Dräger ventilator tubing)

Maquet Servo Duo Guard filter

MR850 Humidifier base with cables

2 L Sterile water bag

EDi catheter

- 6FR - 49 cm, weight 0.5-1 kg, length < 55cm
- 6FR - 50 cm, weight 1-2 kg, length < 55cm
- 8FR – 50 cm, weight 1-2 kg, length <55 cm (Needs a Vygon adaptor ENFIT Nutrisafe 2 to attach feeding syringes)
- 8FR - 100 cm, weight ≥2 kg, length 45-85cm

For Invasive Ventilation:

Maquet Y Flow sensor (disposable)

Flow sensor cable (from storage box on ventilator)

Opaque Pressure line (from ventilator tubing)

NOTES

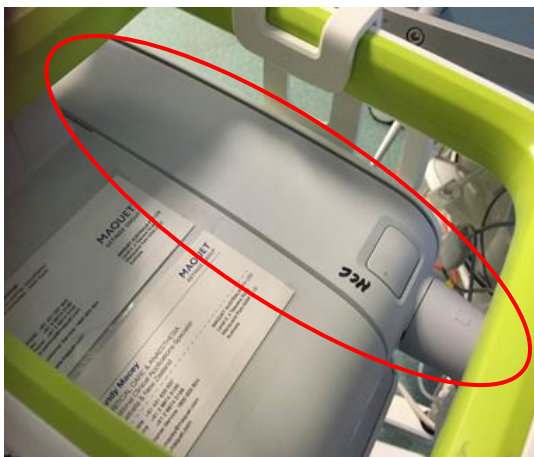
- The EDI catheter can be difficult to aspirate but placement can be reliably ascertained when EDi monitoring is commenced.
- Once a circuit is wet it must be used on a patient within 24 hours.
- There are two flow sensors. One is internal, one at the Y sensor. Should one fail the other will continue.
- The filter must be labelled and changed 48 hourly. The internal block only needs to be changed when is has been used on a patient with an infectious illness, post discontinuation.
- Patient circuit check can only be reliably completed on a wet circuit so should be performed immediately prior to use to best assess tube compliance. All other pre-use checks can, however, be completed beforehand.
- The tubing used for SERVO-n is the RT266, labelling is green.

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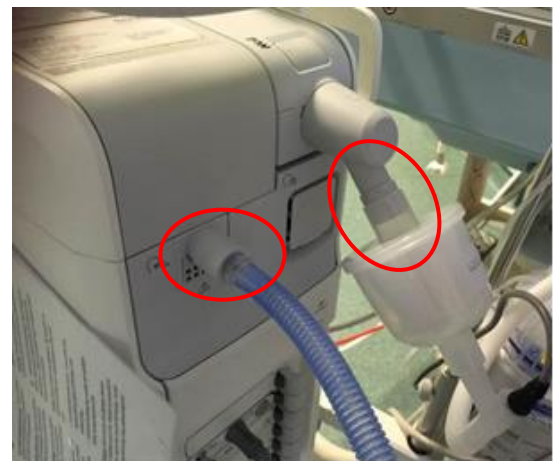
CLINICAL PRACTICE

1. Collect all accessories on a clean trolley.
2. Assess correct EDi catheter size for patient and measure length from nose/mouth to ear to xiphisternum (nose first preference even with mask or prongs) (R1).
3. Wet Edi catheter using sterile water (R2). Pass and secure as you would an NG or OG tube.
4. Connect ventilator to oxygen and air wall supply
5. Plug ventilator power cord into blue UPS point.
6. Insert humidifier base power cord to wall power supply.
7. Ensure expiratory block is in situ (Pic 1)

NB. This is only changed and sent to CSSD between patients if it has been used for an infectious patient AND/OR the filter has not been in place.



Picture 1

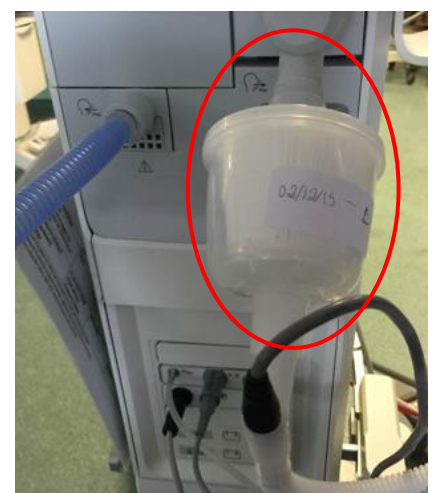


Picture 2

8. Attach humidifier chamber to base and water bag to humidifier. Turn on humidifier base to commence warming.
9. Attach blue gas inspiratory tubing to gas inlet port and the other end to the humidifier (Pic 2).
10. Attach second blue tubing to the second humidifier port (Pic 3).
11. Attach white expiratory tubing to the filter and then to the expiratory block (Pic 4). Attach heating wires to two ports on blue tubing (Pic 5a and 5b). Attach heating wires to two ports on white tubing (Pic 5b AND 6)



Picture 3

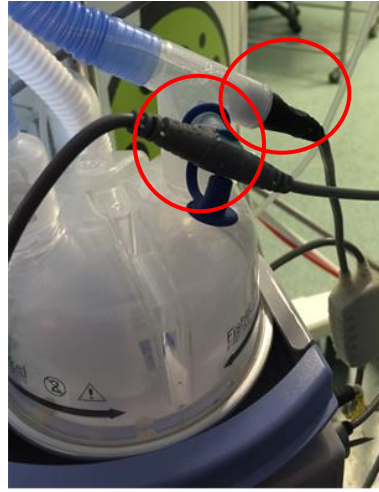


Picture 4

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Picture 5a



Picture 5b



Picture 6

12. For invasive ventilation:

- Attach flow sensor to sensor cable and then to the patient tubing. (Pic 7).
- Attach flow sensor cable to Y sensor block on the ventilator (PIC 8)
- Close system with a false lung and calibrate following the prompts on the screen.
- Attach the thin opaque pressure tubing into the ventilator tubing at the small port close to the Y sensor on the expiratory arm. It attaches using the L-shaped arm. Push in well to avoid accidental disconnection. (Pic 9 and 10)
- Cut the other end of the opaque pressure tubing so that it fits into the port marked PaW on the ventilator block. (Pic 11 and 12)
- Ensure EDi catheter is firmly pushed into the cable (Pic 13) and attached to the EDi block on the ventilator (Pic14)

For invasive mode **the tubing is now all connected**

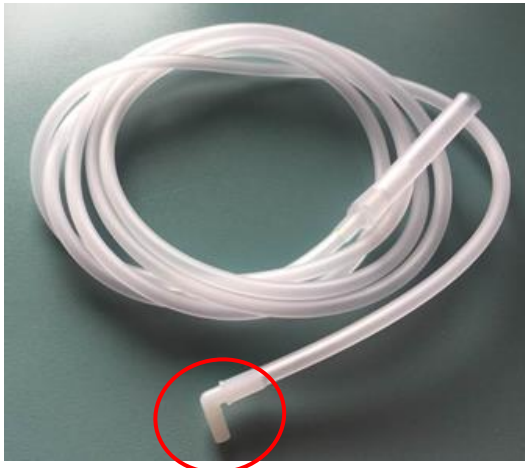


Picture 7



Picture 8

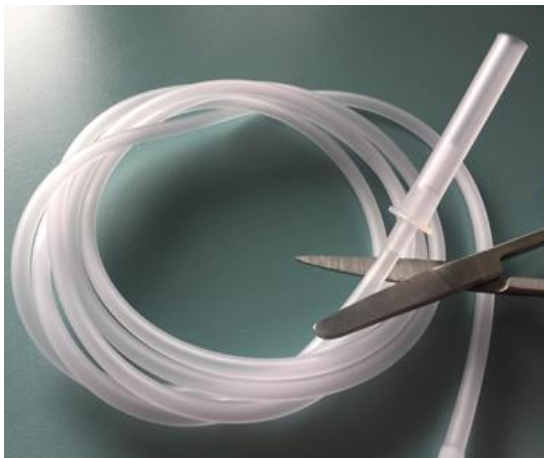
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Picture 9



Picture 10



Picture 11



Picture 12



Picture 13



Picture 14

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13. Non-invasive ventilation
 - a. Attach Fisher Paykel bubble CPAP patient interface to ventilator circuit (50mm/70mm/100mm)
 - b. No flow sensor required
 - c. Ensure EDi catheter is attached to EDi block on the ventilator.

For non-invasive modes **the tubing is now all connected.**

14. Turn on the machine. The on/off button can found at the back of the ventilator, behind a hinged door. To turn on/ off the button must be pulled down and then across. (Pic 15)
15. Perform **pre-use checks** following the prompts on the ventilator. The thick grey tubing will be required for this. This will take approximately 4 minutes. (Pic 16)
 NB. Recalibration must occur with each tubing change and when changing from non-invasive to invasive mode to take into account the introduction of the opaque pressure tubing.



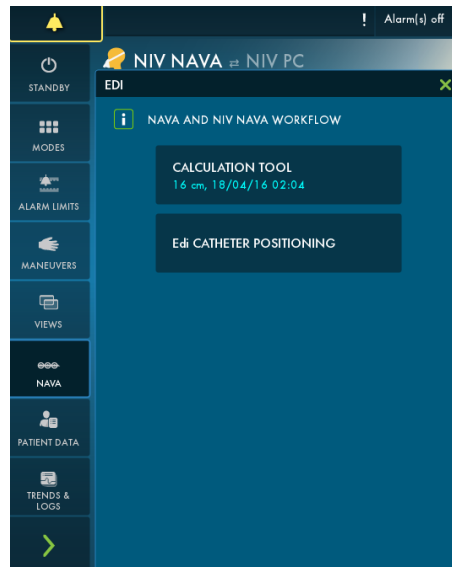
Picture15



Picture 16

16. **Patient circuit checks** may be completed at this time only if the circuit is wet (R3).
17. Select non-invasive or invasive ventilation
 NB. The machine is touch screen, all selections must be confirmed with the rotary knob.
 To change between non-invasive and invasive modes the machine will need to be in 'standby'.
18. Set up EDi Catheter by selecting NAVA. The Calculation Tool and the EDi positioning tool will appear to assess and observe the catheter positioning. (PIC 17)
19. Select ventilation modes and adjust settings. Controlled/ Set Values can be found along the bottom of the screen. Measured Values are down the right hand side of the screen as you face it. (PIC 18)
20. Check and adjust alarm limits.
21. Start ventilation and connect ventilation system to patient

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Picture 17



Picture 18

5. DOCUMENTATION

- Integrated Clinical Notes
- Observation Chart

6. EDUCATIONAL NOTES

Please refer to NAVA clinical guidelines.

7. RELATED POLICIES/PROCEDURES/CLINICAL PRACTICE LOP

- Maquet SERVO-n 'NAVA' Ventilator- Nursing care in invasive mode
- Maquet SERVO-n 'NAVA' Ventilator- Nursing care in non-invasive mode
- NAVA Clinical Guidelines

8. RISK RATING

- Low

ROYAL HOSPITAL FOR WOMEN
 LOCAL OPERATING PROCEDURES
NEONATAL SERVICES DIVISION

Approved by
 Quality & Patient Care Committee
 Date: November 2016

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9. NATIONAL STANDARD

- CC – Comprehensive Care

10. REFERENCES

- Maquet Gentinge Group (2015) *SERVO-n Self-Guided Education Presentations*. Maquet. Rastatt (Germany)
- Maquet Gentinge Group (2015) *Neurally Adjusted Ventilatory Assist (NAVA) - Synchrony redefined*. [online] available from www.maquet.com (Accessed on 3/12/15)
- Maquet Getinger Group (2013) *Ventilation Servo-I for Neonates. Synchrony for those who need it most*. Maquet. Solna (Sweden)

11. ABBREVIATIONS AND DEFINITIONS OF TERMS

NCC	Newborn Care Centre	NG	Nasogastric
EDi	Electrical Activity of the Diaphragm	OG	Orogastric
NAVA	Neurally Adjusted Ventilatory Assist		

12. RATIONALES

R1	Inserting the catheter prior to commencing the device enables the practitioner to make an assessment of the patient's readiness for extubation and/or ventilation requirements. The device can then be configured to meet the patient's needs. Nasal catheter is less mobile, more secure and Edi waveforms less variable.
R2	Wetting the Edi catheter prior to insertion activates the outer coating and ensures more accurate Edi measurement. Use sterile water NOT K-Y Jelly as this may have a petroleum base that is damaging to the catheter.
R3	If patient circuit checks are not correctly performed there may result inaccurate or NO volume measurements.

13. AUTHOR:

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