INTELLiVENT-ASV Quick Guide

HAMILTON-G5/S1

HAMILTON MEDICAL

Intelligent Ventilation since 1983

This Quick Guide is based on evaluations by clinicians within and outside Hamilton Medical and is intended to serve as an example. This Quick Guide does not replace either the official *INTELLiVENT-ASV Operator's Manual* or the clinical judgment of a physician. This Quick Guide should not – on its own – be used for clinical decision making. The information in this guide applies to adult and pediatric patients.

The use of INTELLiVENT-ASV requires a good understanding of mechanical ventilation. Understanding the working principles of Adaptive Support Ventilation (ASV) is also very helpful.

INTELLiVENT-ASV is available on the HAMILTON-G5/S1 and HAMILTON-C3 ventilators. Note that illustrations in this Quick Guide may look different from your device display.

We provide free and open e-learning modules on the basics of mechanical ventilation, and on Hamilton Medical products and features. The modules target operators and users of mechanical ventilators in a critical care setting. Register now at
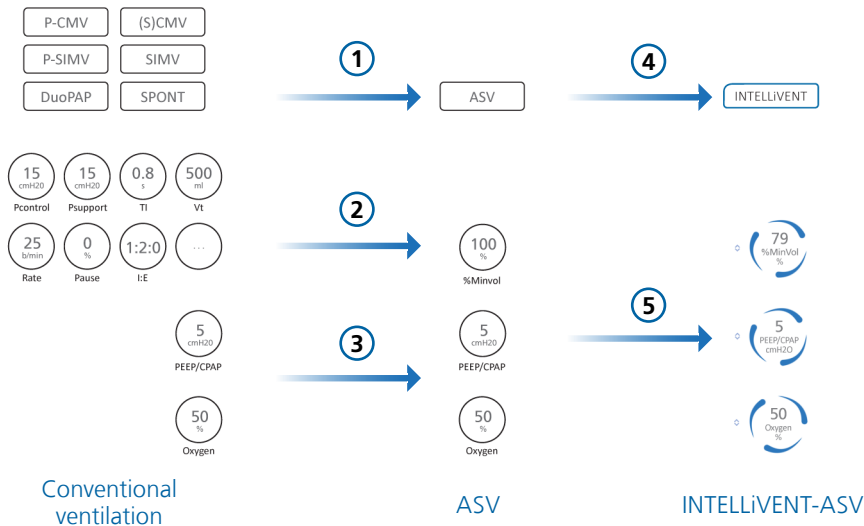www. http://college.hamilton-medical.com/

Table of contents

1. INTELLiVENT-ASV basics


Conventional ventilation

ASV

INTELLiVENT-ASV

INTELLiVENT-ASV is based on the proven Adaptive Support Ventilation (ASV), which simplifies ventilation by

1. Eliminating separate modes for passive and active patients.
2. Reducing controls relevant for CO_2 elimination to %MinVol.
3. Adding direct access to controls relevant for oxygenation (PEEP/CPAP and Oxygen).
4. With INTELLiVENT-ASV, the clinician sets targets for PetCO2 and SpO2 for the patient.
5. INTELLiVENT-ASV then automates the controls for CO_2 elimination (%MinVol) and oxygenation (PEEP/CPAP and Oxygen) based on the set targets and on physiologic input from the patient (PetCO2, SpO2).

INTELLiVENT-ASV continuously monitors patient conditions, and automatically and safely adjusts parameters to keep the patient within target ranges, with minimal clinician interaction, from intubation until extubation. INTELLiVENT-ASV also provides tools to promote early, automated weaning (Quick Wean).

2. Preparing and calibrating for ventilation
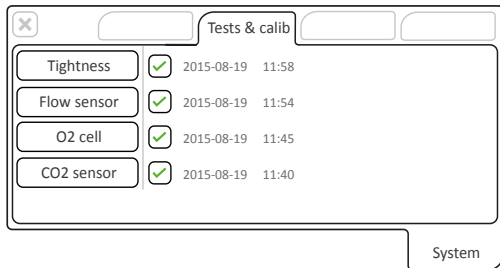
2.1 Enabling and calibrating sensors
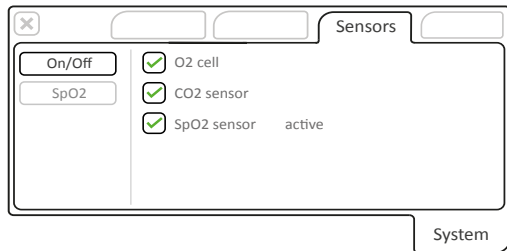
Before starting INTELLiVENT-ASV, you must enable the oxygen cell and the CO_2 and SpO_2 sensors, and perform the required calibrations.

For details about calibrating the components, see your ventilator *Operator's Manual*.

Note that the displays shown here are from the HAMILTON-C3. Those for the HAMILTON-G5/S1 are similar.
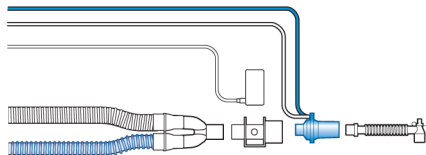
3. Preparing for ventilation with INTELLiVENT-ASV

3.1 Set up

During setup, pay attention to the following:

- Place the CO2 and flow sensor/airway adapter assembly at the proximal end of the airway circuit as shown.
- **Position the airway adapter assembly in a vertical**, not a horizontal, position. This helps keep patient secretions from pooling in the sensors. If pooling occurs, remove the airway adapter from the circuit, rinse with water, and reconnect it to the circuit.
- Check that everything is properly connected by verifying the presence of a proper CO2 waveform (capnogram) on the ventilator display.

Active humidification
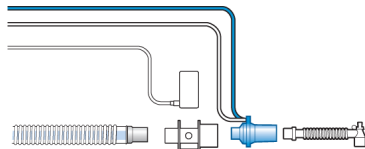
Passive humidification

3. Preparing for ventilation with INTELLiVENT-ASV
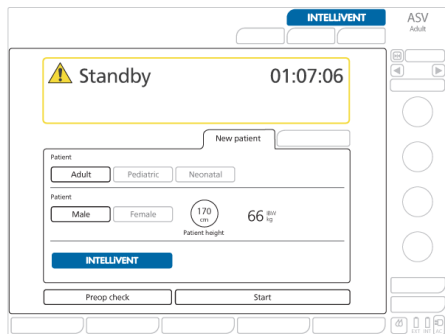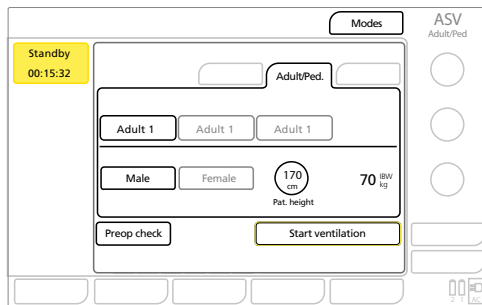
3.2 Startup

HAMILTON-G5/S1

HAMILTON-C3

1 Review the patient height and gender, and adjust if needed.

Be sure this data is accurate. It is used to calculate the patient's ideal body weight (IBW), which is used by the INTELLiVENT-ASV controllers to regulate ventilation parameters. This information can also be adjusted during ventilation using the Patient window.

2 Open the INTELLiVENT Settings window.

To select the INTELLiVENT-ASV mode

HAMILTON-G5/S1. Touch the **INTELLiVENT** button in the Standby window or at the top right of the main display to display the INTELLiVENT Settings window.

HAMILTON-C3. Touch the **Modes** button at the top of the display. In the Modes window, touch the **INTELLiVENT** button, then touch **Continue**. The INTELLiVENT Settings window opens.

4. INTELLiVENT-ASV initial setup

4.1 Settings

1 Automatic adjustments

%MinVol	Automatic	Manual
PEEP/CPAP	Automatic	Manual
Oxygen	Automatic	Manual

3 Quick Wean

Automatic | Disabled

2 Patient conditions

☐ ARDS   ☐ Brain injury

☐ Chronic Hypercapnia

4 Oxygen limit
%

30

5 PEEP limit control
cmH2O

15

5

6 ☑ Auto-recruitment

7 ☐ HLI

1. Automatic adjustments: Set the %MinVol, PEEP, and Oxygen controllers to Manual or Automatic, as appropriate.

2. Patient conditions:
   - *Normal lungs:* Do not select anything
   - *ARDS:* Initial settings are adjusted
   - *Chronic Hypercapnia / Brain injury:* Initial settings, including default target range are adjusted, automatic PEEP adjustment is deactivated

3. Quick Wean: Activate Quick Wean and SBT, if appropriate

4. Oxygen limit: Define the lower limit for the Oxygen controller (21% to 30%[*])

5. PEEP limit control: Define high and low limits that the PEEP controller cannot exceed or go below

6. Auto-recruitment: Enable/disable as needed

7. HLI: Enable/disable PEEP limitation according to HLI, as appropriate[**]

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[*] Not available in all markets.
[**] HLI is only available on the HAMILTON-G5/S1 with the use of Nihon Kohden sensors. For details about HLI, see page 45.

4. INTELLiVENT-ASV initial setup

4.2 Checking the target range
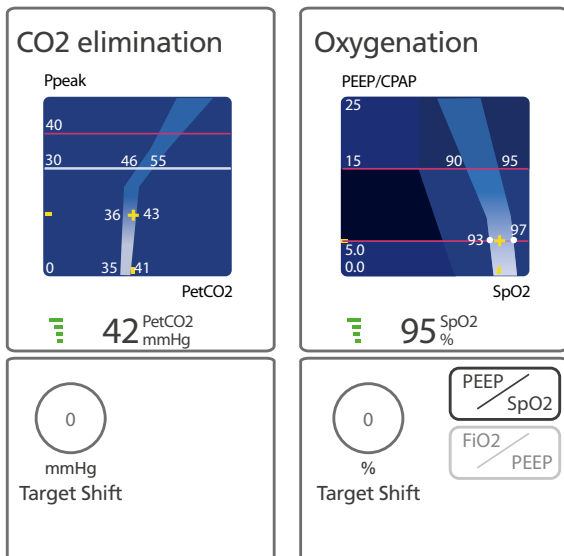
Check target and adjust according to the patient condition

INTELLiVENT-ASV continuously monitors patient conditions and automatically and safely adjusts parameters to keep the patient within target ranges.

INTELLiVENT-ASV uses PetCO2 and SpO2 as monitoring inputs for regulation of ventilation and oxygenation. These parameter values are used to track PaCO2 and SaO2, respectively.

Target shift refers to:

1 Readjustment of the PetCO2 target range to have the measured PetCO2 value be in accordance with a measured PaCO2 value from blood gas analysis (BGA). This is referred to as the PaCO2-PetCO2 gradient.

2 Readjustment of the SpO2 target range to have the measured SpO2 value be in accordance with a measured PaO2 value from blood gas analysis.

4. INTELLiVENT-ASV initial setup

4.3 Controls
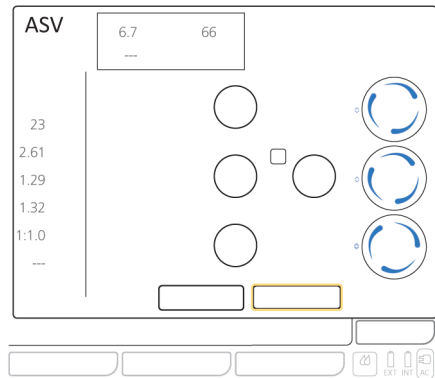
HAMILTON-G5/S1

HAMILTON-C3
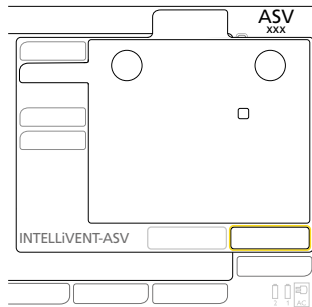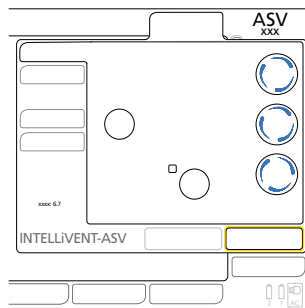
In the Controls window, check the following default settings:

- Pressure ramp (P-ramp)
- Expiratory trigger sensitivity (ETS)
- Trigger
- P ASV limit

If required, adjust one or more values depending on the patient's condition or as indicated by your protocol, as with conventional ventilation. Otherwise, use the default values.

For more details about control settings, see the *INTELLiVENT-ASV Operator's Manual*.

4. INTELLiVENT-ASV initial setup

4.4 Alarms

HAMILTON-G5/S1
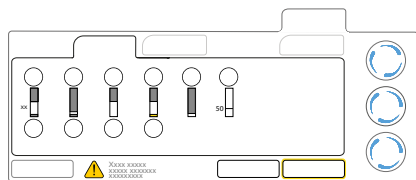
HAMILTON-C3

Set your alarm limits for ventilation and monitoring parameters as in conventional ventilation.

Note the Caution statement in yellow in the window: *When using INTELLiVENT-ASV, you must have additional ventilator-independent patient monitoring in place.*

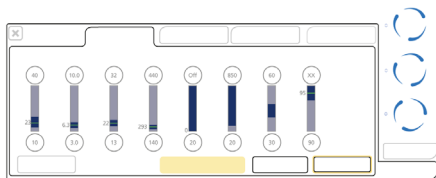**The following alarms are particularly important for INTELLiVENT-ASV:**

High Pressure
The maximum pressure delivered in INTELLiVENT-ASV (P ASV limit) is *10 cmH2O below the preset high pressure limit.*

P ASV limit limits the pressure delivered for the breath. Exceeding the high pressure limit immediately terminates the breath.

Oxygen % (HAMILTON-G5/S1) or Oxygen msg (HAMILTON-C3)

When the Oxygen controller is set to Automatic, you can specify an oxygen level that, when exceeded, generates a medium-priority alarm message. The Oxygen message control is only a notification tool; it does not affect the percentage of delivered oxygen.

SpO2

If either limit is reached, a medium-priority alarm is generated. The SpO2 alarm setting is independent of the SpO2 target range settings.

PetCO2

If either limit is reached, a medium-priority alarm is generated. The PetCO2 alarm setting is independent of PetCO2 target range settings.

Tidal volume (Vt)*

When the delivered Vt is > 1.5 times the set Vt high alarm limit, an Inspiratory volume limitation alarm is generated. In this case, the device aborts the breath and reduces the pressure to the PEEP level.

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* HAMILTON-C3 only.

5. INTELLiVENT-ASV views and indicators

5.1 CO2 elimination and oxygenation maps
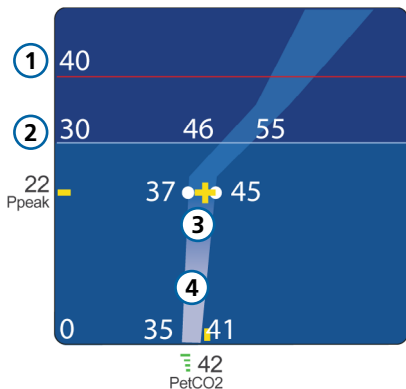
CO2 elimination map

1 High pressure alarm limit

2 Pressure limitation: P ASV limit

3 Yellow patient symbol (cross): Shows the current measured PetCO2 value at current Ppeak

4 Target zone

5 When %MinVol is increasing (^) or decreasing (v), the appropriate indicator appears above the map. When the arrows are the same size, %MinVol is in the target zone.

Oxygenation ◇ **6**
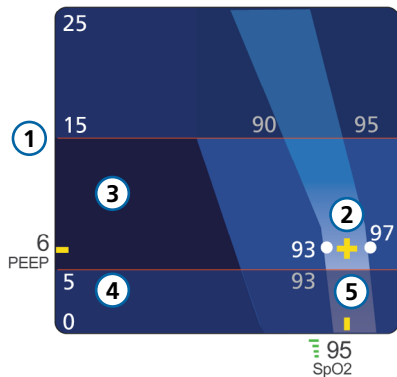
Oxygenation map: (PEEP/SpO2 view)

1 Upper PEEP limit

2 Yellow patient symbol (cross): Shows the current measured SpO2 value and current PEEP

3 Dark blue emergency zone

4 Lower PEEP limit

5 Target zone

6 When PEEP or Oxygen is increasing (^) or decreasing (v), the appropriate indicator appears above the map. When the arrows are the same size, SpO2 is in the target zone.

5. INTELLiVENT-ASV views and indicators

5.2 Oxygenation map and controls

Oxygenation map: (FiO2/ PEEP view)

1 Lower PEEP limit

2 Upper PEEP limit

3 Yellow patient symbol (cross): Shows current **Oxygen** (FiO$_2$) and PEEP values

4 Lower **Oxygen** limit

5 When PEEP or **Oxygen** is increasing (^) or decreasing (v), the appropriate indicator appears above the map. When the arrows are the same size, SpO2 is in the target zone.
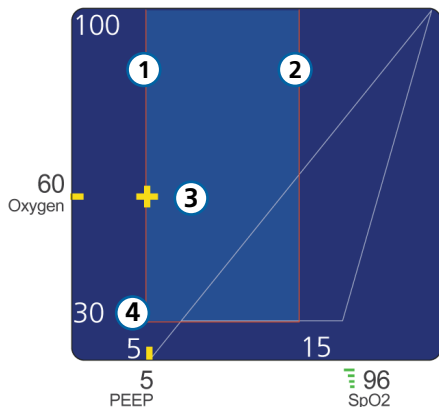
For details, see section 6.3 and *the INTELLiVENT-ASV Operator's Manual.*

Solid blue circle (manual management)
Indicates that the operator must manually manage the control and change the settings as needed.

Blue circle rotating to the right (automatic management)
Indicates that INTELLiVENT-ASV is managing the patient and treatment has been increased. A faster rotation provides a visual indication of ongoing or recent changes.

Blue circle rotating to the left (automatic management)
Indicates that INTELLiVENT-ASV is managing the patient and treatment has been decreased. A faster rotation provides a visual indication of ongoing or recent changes.

Red circle (no automatic management)
No appropriate signal is available. Controller is in a frozen state. Check the position and connection of the sensor to ensure optimal signal quality.
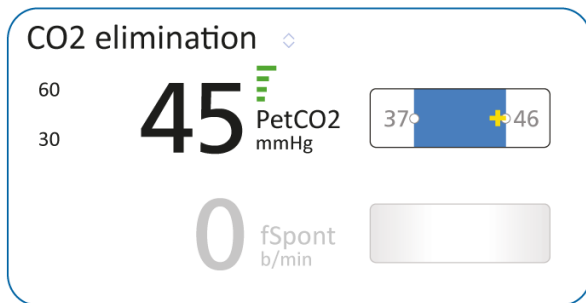
Green circle
Oxygen enrichment in progress.

6. Working principles of INTELLiVENT-ASV

6.1 Management of %MinVol based on PetCO2

Ventilation horizon

Target of the ventilation controller

Keep the patient in the middle of the target range for PetCO2.

- The patient condition is defined as *passive* when *any* of the following occur:
    - The ventilator delivers five consecutive mechanical breaths without the patient triggering a breath
    - PetCO2 exceeds the upper limit by at least 3 mmHg (0.4 kPa)
    - The Brain Injury patient condition is chosen
- Management based on PetCO2.
- The ventilation controller adjusts %MinVol breath by breath in proportion to the difference between the current PetCO2 and the target value. The bigger the difference, the bigger the step size of the %MinVol adjustments (maximum 1% per breath). The range of %MinVol settings is 70% to 200%.
- When the patient symbol is within the target zone, %MinVol is fine-tuned to get the patient to the middle of the target range.
- When the patient symbol is to the right of the target zone (in the increase zone, PetCO2 is too high), the %MinVol setting increases.
- When the patient symbol is to the left of the target zone (in the decrease zone, PetCO2 is too low), the %MinVol setting decreases.

6. Working principles of INTELLiVENT-ASV
6.2 Management of %MinVol based on fSpont

Ventilation horizon
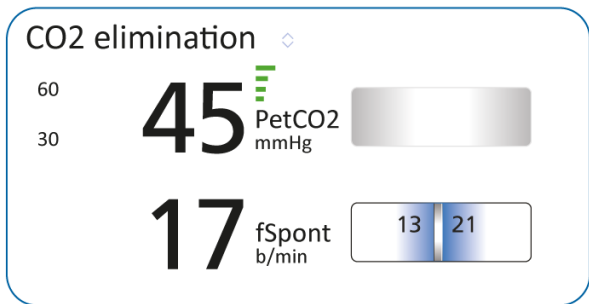
* Quick Wean activated, ASV rate + 3.
** d=%MinVol x 0.10   Quick Wean activated, d=%MinVol x 0.15.
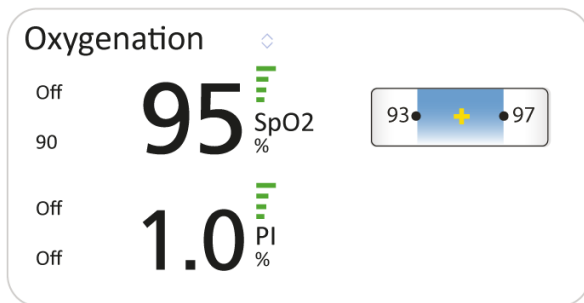
Target of the ventilation controller

Keep the active patient in the target range for spontaneous respiratory rate (fSpont) and keep PetCO2 below the upper limit.

- The patient condition is defined as *active* when *ALL* of the following occur:
  – The patient takes five consecutive spontaneous breaths
  – PetCO2 is below the upper limit
  – Brain injury is not selected

- Management based on Rate starts when the patient takes five consecutive spontaneous breaths AND PetCO2 is below the upper limit (exception: if Brain Injury is chosen).

- The lower limit of the range of an acceptable spontaneous respiratory rate is equal to the ASV rate + 2[*]. The upper limit of the range is equal to the ASV rate + d[**].

- The controller adjusts %MinVol breath by breath in proportion to the difference between the current rate and the target rate. The bigger the difference, the bigger the step size of the %MinVol adjustments (maximum 1% per breath).

- When the patient's respiratory Rate value is within the target range, no change in %MinVol (except when Quick Wean is disabled).

- When the patient's respiratory Rate is above the upper limit (danger of patient fatigue), %MinVol increases.

- When the patient's Rate is below the lower limit, %MinVol decreases.

- When a reliable PetCO2 measurement is not available, the ventilation controller suspends automated management and the %MinVol control is frozen. The Ventilation adjustment OFF alarm is generated.

6.3 Oxygenation management

Oxygenation horizon

Target of oxygenation controller it to keep the patient in SpO2 target zone

- When the patient symbol is within the target zone, Oxygen is fine-tuned to get the patient to the middle of the target range.

- When the patient symbol is to the right of the target zone (in the *decrease* zone, indicating that the treatment[*] is more than sufficient), the treatment is decreased.

- When the patient symbol is to the left of the target zone (in the *increase* zone, indicating oxygenation is inadequate), the treatment is increased.

- If the patient symbol is to the far left of the target zone in the *emergency zone* indicating hypoxemia, Oxygen is immediately increased to 100%.

- For details about oxygenation rules, see page 44.

[*] Treatment = PEEP and/or Oxygen

6. Working principles of INTELLiVENT-ASV

6.4 Oxygenation management
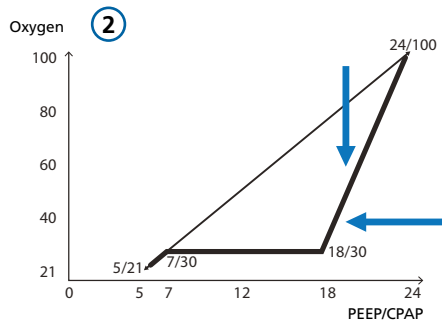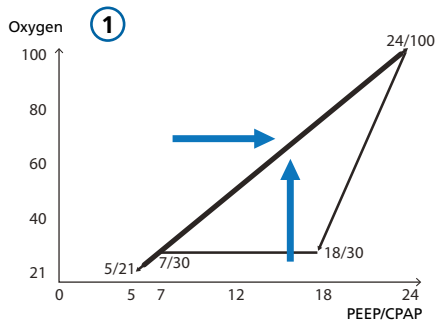
Target

Keep the patient in the target range for SpO2. Adjust the PEEP/Oxygen combination according to evidence-based protocols.

Controller rules

- Depending on patient conditions and the actual combination of PEEP and Oxygen on the PEEP/Oxygen curve, the PEEP/Oxygen controllers decide whether PEEP, Oxygen, or both are increased or decreased.

- The PEEP/Oxygen controllers adjust PEEP and/or Oxygen in proportion to the difference between actual SpO2 and the target.

- The relationship between PEEP and Oxygen is based on the ARDSnet guidance for increasing therapy (**1**) and the Open Lung concept for decreasing therapy (**2**). See the *INTELLiVENT-ASV Operator's Manual* for details.

- The Oxygen controller adjusts Oxygen between 21% and 100% (when not limited by the minimum Oxygen limit setting).

- The PEEP controller operates between 5 and 24 cmH2O (when not limited by the PEEP limit settings or HLI*).

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* HLI is only available on the HAMILTON-G5/S1 with the use of Nihon Kohden sensors. For details about HLI, see page 45.

6.5 Auto-recruitment maneuver
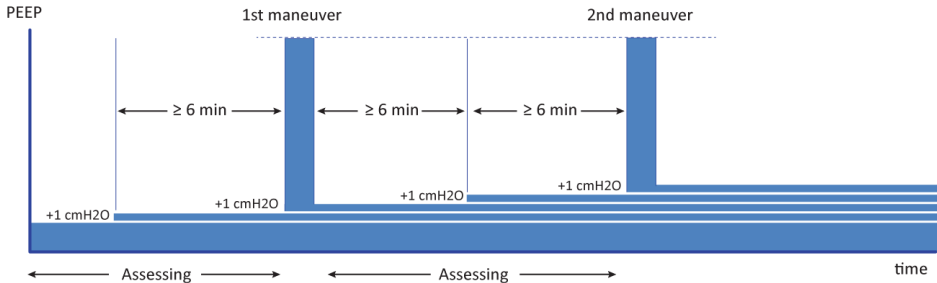
Target

Re-expand collapsed lung tissue and then maintain higher PEEP to prevent subsequent "de-recruitment" in passive patients.

ℹ️ Auto-recruitment is only performed when *ALL* of the following conditions are met:
- The patient is passive
- PEEP management is set to Automatic
- Auto-recruitment is enabled
- SpO2 is below the target range

Controller rules

- The auto-recruitment maneuver in INTELLiVENT-ASV consists of 20 seconds of sustained inflation with a pressure level of 40 cmH2O.

- Recruitment maneuvers occur after two consecutive automatic increases of *PEEP* of 1 cmH2O every 6 minutes. This means that the recruitment maneuver cycle occurs at a maximum every 12 minutes (see illustration). A notification message appears on the display as soon as a recruitment maneuver is performed.

7. Adjusting INTELLiVENT-ASV during ventilation

While INTELLiVENT-ASV is running, the ventilator automatically adjusts the control settings for ventilation (%MinVol) and oxygenation (PEEP and/or Oxygen).

At any time during ventilation with INTELLiVENT-ASV, you can check and/or modify settings by touching the **INTELLiVENT**, **Controls**, or **Alarms** buttons.

As the patient conditions change, be sure to regularly monitor the patient and ventilation settings.

1 Re-evaluate patient condition

2 Reconsider activating Quick Wean

3 Reconsider activating automated SBTs

4 Reconsider the minimum Oxygen limit

5 Reconsider PEEP limits

6 Reconsider auto-recruitment

7 Adjust the PetCO2 target range (target shift) according to PaCO2 values from BGA[*]

8 Adjust the SpO2 target range (target shift) according to PaO2 values from BGA[*]

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[*] By checking the blood gas analysis (BGA), always keep in mind that respiratory drive is strongly linked to the metabolic status of the patient.

8. Quick Wean and SBT (spontaneous breathing trial)

8.1 Basics
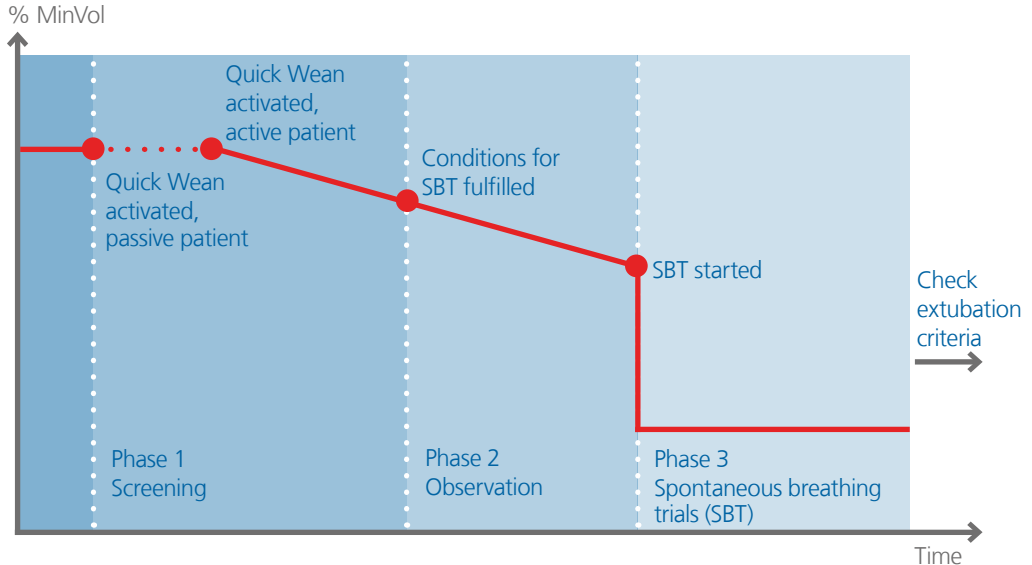
Quick Wean is integrated with INTELLiVENT-ASV, and when activated, provides continuous dynamic monitoring and control of patient conditions to evaluate the patient's potential readiness for extubation, including the possibility of conducting fully controlled automated spontaneous breathing trials (SBT).

Quick Wean operates in three phases:

- Screening
- Observation
- Automated spontaneous breathing trial (SBT), if selected

While the default parameter values are all based on the currently available literature, you can change the settings if you prefer to use a different protocol, in the Quick Wean Configuration windows (see the *INTELLiVENT-ASV Operator's Manual*).

8. Quick Wean and SBT (spontaneous breathing trial)
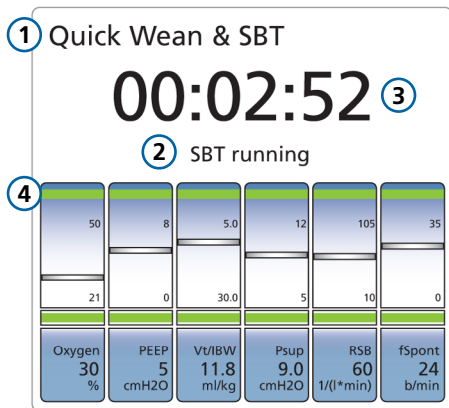
Quick Wean & SBT Status window

When Quick Wean is enabled, the Quick Wean Status window is displayed by default.

1 The window title changes to *Quick Wean & SBT* when automated SBTs are enabled.

2 Text indicating the current status:
- − Verifying conditions
- − Conditions fullfilled/Starting SBT in x min
- − Conditions fulfilled/SBT will not start
- − SBT running

3 Timer
- − When an SBT is running, shows how long it has been in progress
- − Otherwise, shows how long the patient values have been within the target ranges

4 Green bars indicate value is within limits

Target of phase 1 (Screening)

Quick Wean can be enabled at any time during ventilation.

Controller rules

- The PetCO2 range is shifted to the right by up to +5 mmHg (0.7 kPa), depending on pressure, to encourage and support spontaneous breathing efforts.

- When the patient is active and the patient's respiratory rate is below the upper limit of the target range[*], the device gradually reduces %MinVol to no more than 70.

- Quick Wean parameters are continuously monitored in the Quick Wean window.

Patient monitoring

- If the patient is passive, consider decreasing sedation.

- Monitor the Quick Wean parameters.

[*] With active patients, INTELLiVENT-ASV calculates the fSpont target range. For calculation details, see page 25 and the *INTELLiVENT-ASV Operator's Manual*.

8. Quick Wean and SBT (spontaneous breathing trial)

Target of phase 2 (Observation)
Establish whether the patient meets the Quick Wean conditions.

Controller rules

- So long as the patient remains active, the device continues to gradually reduce %MinVol to no more than 70.

- Quick Wean monitors the configured *To start SBT* criteria.

- When the patient meets the criteria, the device starts recording the time the patient is in the weaning zone (if automated SBTs are disabled) or starts a countdown to the next automated SBT (if automated SBTs are enabled).

- Patient conditions for the *To start SBT* parameters must remain within the predefined ranges for the period of time specified in the Time before starting SBT parameter.[*]

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[*] Note that any of the *To start SBT* parameters can be out of range for up to the time specified in the Tolerance time parameter without affecting the countdown.

Target of phase 3 (SBT)

Establish whether the patient is able to breathe with minimal support.

Controller rules

- INTELLiVENT-ASV immediately decreases %MinVol and PEEP to the configured settings (by default, 25% and 5 cmH2O, respectively).

- During the SBT, the *To stop SBT* parameters are monitored (configurable).

SBT history			
PEEP/CPAP:	✓	fSpont:	✓
Oxygen:	✓	Rate inc:	▲
VT/IBW:	♥	RSB:	♥
Psupport:	✓	%fSpont:	✓
PetCO2:	✓	SpO2:	✓

SBT started at 2015-04-11 11:38:00
SBT running

◀ --- ▶

- When an SBT is completed or stopped, the device returns the %MinVol and PEEP to the values in place prior to the start of the SBT, and starts monitoring patient conditions against the *To start SBT* criteria again. The device also takes into account the time interval specified by the Time between 2 SBTs parameter.

- During each phase, an SBT status message is displayed (for example, SBT running, SBT fulfilled, and so on).

9. Spontaneous breathing trial (SBT)

9.1 About the SBT settings, HAMILTON-G5/S1

① SBT controls

--- min Time before starting SBT	30 min Time between 2 SBTs
12 cmH2O Psupport max	35 b/min Rate
5 cmH2O Psupport min	

② SBT time range

08:00 After	20:00 Before

③ Manual start SBT

Start SBT	Stop SBT

ⓘ Enable Quick Wean by selecting **Automatic** in the Quick Wean section of the INTELLiVENT Settings window.

If the SBT controls panel is not open, touch the arrow next to the Quick Wean heading.

Select whether to enable SBTs.

By default, automated SBTs are disabled; the Time before starting SBT control is set to ---, indicating that the parameter has no value and no automated SBTs can take place.

1 SBT controls:

- – **Time before starting SBT:** Defines the length of time before an SBT can start. If set to Off (---), automated SBTs are disabled.

- – **Time between 2 SBTs:** The minimum length of time that must pass between two SBTs.

- – **Rate/Psupport max:** When the respiratory rate and pressure support are below the set values, SBT will start. If, during an SBT, either parameter is above the set value for longer than the time defined by the Tolerance time parameter, the SBT will stop.

- – **Psupport min:** Lowest pressure support delivered during an SBT.

2 **SBT time range:** Defines the hours between which an automated SBT can be started.

3 **Manual start SBT:** An SBT can be started manually at any time as soon as the patient is active. An ongoing SBT can be manually stopped at any time.

9. Spontaneous breathing trial (SBT)

9.2 About the SBT settings, HAMILTON-C3

① ✔ Automatic SBT   [SBT settings]

③ SBT time range

(08:00)   (20:00)
After   Before

④ Manually start/stop SBT

[Start SBT]   [Stop SBT]

② SBT settings

(30 min)
Time before
starting SBT

(30 min)
Time between 2
SBTs

(12 cmH2O)
Psupport max

(35 b/min)
Rate

ℹ Enable Quick Wean by selecting **Automatic** in the Quick Wean section of the INTELLiVENT Settings window.

1 Select whether to enabled SBTs. By default, automated SBTs are disabled. To enable SBTs, touch the Automatic SBT checkbox. A checkmark indicates SBTs are enabled. The **SBT Settings** button also becomes available.

2 SBT controls:

– Time before starting SBT: Defines the length of time before an SBT can start.

– Time between 2 SBTs: The minimum length of time that must pass between two SBTs.

– Rate/Psupport max: When the respiratory rate and pressure support are below the set values, SBT will start. If, during an SBT, either parameter is above the set value for longer than the time defined by the Tolerance time parameter, the SBT will stop.

3 SBT time range: Defines the hours between which an automated SBT can be started.

4 Manual start/stop SBT: An SBT can be started manually at any time as soon as the patient is active. An ongoing SBT can be manually stopped at any time.

Appendix I: Oxygenation management

	Definition of action	**Occurs when**
Increase Oxygen stepwise	Increases oxygen by 10% of current Oxygen value every **30 seconds**	• Oxygen automatically managed • Increasing oxygen support
Decrease Oxygen stepwise	Decreases oxygen by 5% of current Oxygen value every **60 seconds**	• Oxygen automatically managed • Decreasing oxygen support **NOTICE.** If a lower limit is specified, Oxygen will not go below the lower limit.
Increase PEEP stepwise	Increases PEEP by 1 cmH2O every **6 minutes**	• PEEP automatically managed • Increasing PEEP support **NOTICE.** If an upper limit is specified, PEEP will not exceed the limit.
Decrease PEEP stepwise	Decreases PEEP by 1 cmH2O every **6 minutes**	• PEEP automatically managed • Decreasing PEEP support **NOTICE.** If a lower limit is specified, PEEP will not go below the lower limit.
Decrease PEEP stepwise quickly	**Exception:** Decreases PEEP by 1 cmH2O every **30 seconds**	• PEEP automatically managed • PEEP is above the upper PEEP limit (if it was manually set above the upper limit) • PEEP limitation by HLI rules

Appendix II: PEEP limitation/HLI

ℹ️ HLI is only available on HAMILTON-G5/S1 ventilators, with Nihon Kohden SpO2 sensors.

PEEP limit control setting by HLI

PEEP can automatically be limited according to the Heart-Lung Interactions (HLI). To continuously assess the hemodynamic effect of mechanical ventilation, the respiratory variation of the pulse oximeter plethysmogram (POP) is analyzed by the ventilator. The HLI is calculated using data from the plethysmogram.

Glossary

Parameter	Definition
FiO2	Fraction of inspired oxygen.
fSpont	Spontaneous breathing frequency, a monitored parameter.
IBW	Ideal body weight.
MinVol	Minute volume, a calculated and monitored parameter used in ASV mode. Based on the operator-set %MinVol, the ventilator calculates the target MinVol in l/min, then measures and displays it in the ASV target window.
%MinVol	Percentage of minute ventilation, a control setting in ASV mode.
PetCO2	End-tidal CO2 pressure, a monitored parameter.
P ASV limit	The maximum inspiratory pressure for INTELLiVENT-ASV is set using the P ASV limit control in the Controls window. Changing the P ASV limit value also changes the high Pressure limit.
PEEP	Positive end-expiratory pressure, a control setting and monitored parameter. PEEP is the constant pressure applied during the expiratory phase.
Rate	Number of breaths per minute (b/min), a control setting, alarm setting, and timing parameter.
SBT	Spontaneous breathing trial.

Notes

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HAMILTON-G5/S1