



SERVO CONTROLLED ADULT & PAEDIATRIC VENTILATOR

Model: Shreeyash 900DV





About Shreeyash:

Shreeyash Electro Medicals is in to manufacturing New Born life saving devices since last 30 years in Pune with an established sales & service network all across India.

The manufacturing activity is carried in 3 facilities in Pune in an ISO 13485 certified premises.

Shreeyash was the First company in India to manufacture:

- Bubble CPAP in 2003
- Neonatal Ventilator in 2004
- High Frequency Oscillatory Ventilator in 2006
- Conductive Patient Warming Blankets in 2013, and
- A fully Automatic Human Milk Pasteurizer in 2017.

With this strong background of clinical & technical expertise, Shreeyash Ventured into Manufacturing the Adult Ventilator in 2020.

The features of Shreeyash 900DV are at par with any contemporary Ventilators across the globe. The Auto Mode provided in the Ventilator makes it a unique life saving device.

The said ventilator is clinically validated & is also certified by Sr Intensivist, Pulmonologist, Anesthetics from various hospitals in India. The said Ventilator has also passed the EMI & EMC test & IEC60601-1 & other electrical & safety related parameters from an Accredited Lab.

Awards | Achievements | Approvals



Critical care & Anesthesia department of KEM Hospital Pune, honored Dr. Sudhir Waghmare as "Honorary Student" of their department for his work in Ventilation



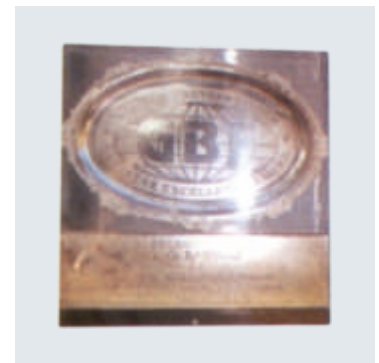
He is also honored by Camden University USA, by offering him Doctorate for his work in the field of Ventilation.



Best Ventilator Award by Marico Innovation Foundation with a monetary grant for ramping up the Production.



Best Small- Scale Industry Award from Govt. of Maharashtra.



Prestigious Parkhe Award from Chamber of commerce, Pune.



"Forbes" the world's famous magazine did a cover story on him for his dedicated work In medical equipment field.



Invited as A **TED** Talk Speaker.



CEO & Founder, Dr Sudhir interviewed on India's most Prestigious TV Channel CNBC in July 2020



Success story of Shreeyash published on front page by the Corporate Citizen Magazine.



"Kimie" our Patented Human Milk Pasteurizer was Nominated for the Prestigious "Thomas Edison Award" in USA.



First Indian company to Publish Research Papers on Human Milk Pasteurizer in **India, Sri Lanka, USA & France**



Shreeyash 900DV, A Simple & Reliable Ventilator:

Shreeyash 900DV is a Volume & Pressure Controlled Ventilator with advanced modes of Invasive & Non- Invasive Ventilation to treat the patient suffering from various lung diseases. The PRVC, MMV, APRV, CPAP Plus PS mode & the HFNC mode puts it in the category of the most updated ventilator.

"Shreeyash 900DV is intended for Adult & Pediatric use.

A large Fifteen inches Touch screen is provided that indicates various settings, alarms & graphical representation of scalar wave forms & Loops & Curves. It performs a self-diagnosis test each time the ventilator is put ON. Facilities like Suction, Nebulizer & ETCO₂ are provided at an Extra Cost. The rotary knob for setting the parameters, the touch screen features, the easily detachable Expiratory Valve ensures **Simplicity**.

A battery back- up of 240 minutes, Apnea alarm with Back up ventilation, Auto mode facility in ACMV & CPAP+PS mode, Selectable Inspiratory Rise Time, 48 hours trend facility & above all the **Auto Shifting of FIO₂ to 100% in case of Air supply Failure & Auto Shifting of FIO₂ to 21% in case of Oxygen Failure ensures Reliability**.

The Shreeyash 900DV display's the ongoing mode of ventilation. the scalar graphics of Pressure - Time, Volume - Time & Flow - Time graph. It also indicates Pressure- Volume, Flow- Volume & Flow - Pressure loops. The set ventilator parameters are displayed at the bottom of the screen while the delivered parameters are displayed on right side of the screen. Screen 2 indicates various information like the RSBI index, static & dynamic compliance, MAP, Auto PEEP, battery voltage etc.

Special Functions:

- Auto Mode provided in this Ventilator will be of utmost help to the clinician & attending staff which ensures safe Ventilation of the Patient.
- The Auto mode can be activated in ACMV & CPAP+PS mode.
- CPAP plus Pressure support. This specialty mode puts the ventilator in the category of the most updated ventilators & is a boon for patients with "FLAIL" Chest. The setting of background ventilation in CPAP mode, ensures effective ventilation of the patient in case of Apnea.
- HFNC mode.
- APRV Mode (Airway Pressure Release Ventilation)
- MMV Mode (Mandatory Minute Ventilation)

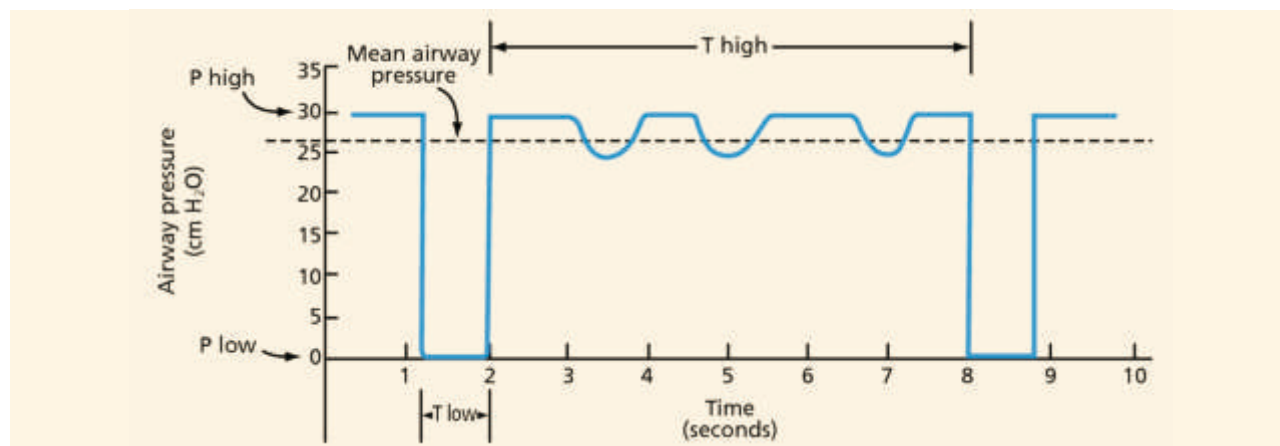


APRV Mode (Airway Pressure Release Ventilation):

APRV is a time cycled, pressure limited mode that allows spontaneous breathing throughout the ventilator cycle.

In APRV, the patient's spontaneous breathing takes place at the upper level **P high**. This pressure level **P high** is maintained for the duration of **T high**.

To achieve active expiration, the pressure is reduced to **P low** for the **T low** time. The alternation between the two pressure levels is machine triggered & time cycled.



MMV Mode (Mandatory Minute Ventilation):

Functioning of MMV Mode:

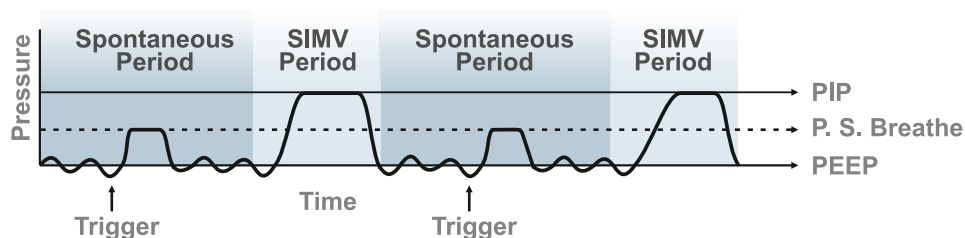
In VC-MMV, the mandatory breathes are only delivered if spontaneous breathing is insufficient & falls below the set minute volume. If spontaneous breathing increases, fewer mandatory breathes are administered. This ensures that the patient always receive the set minute volume ($MV = V_t \times f$).

If the patient's spontaneous breathing is sufficient to achieve the set MV, no mandatory breathes are administered.

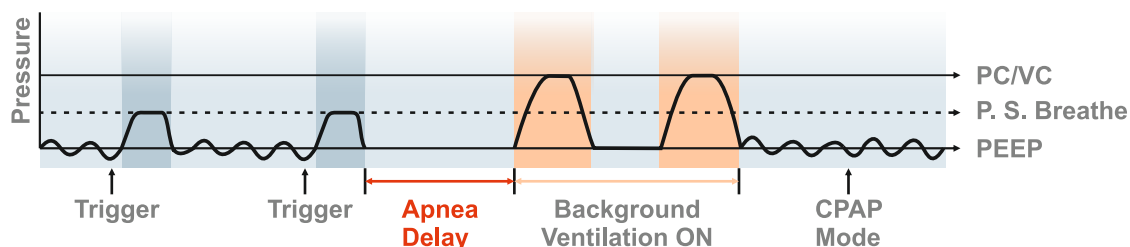
Once the Inspiration time, Tidal Volume, & Minute Volume is set, the ventilator calculates the Respiratory Rate automatically & displays the same on screen.

If the patient triggers the ventilator, the machine will support the efforts & will deliver assisted breaths. In this case the ventilator will automatically reduce the mandatory breath rate to avoid Hyperventilation.

SIMV + Pressure Support



CPAP Plus Pressure Support, with AUTO MODE (Apnea Ventilation)





Screen 2 that indicates various parameters like MAP, RSBI Index, Static & Dynamic Compliance, Peak Flow, Battery voltage & other important parameters

Settings & Alarms

Technical Specifications of Ventilators

Power	230 Volts AC $\pm$ 10% 50 Hz
FiO2	21 to 100% Selectable
Respiratory Rate	4 to 80 BPM
Inspiratory Time	0.2 to 4 Seconds
Inverse Ratio Ventilation	Range 4:1
Battery Back- up	4 Hours
PEEP	0 to 30 Cm H2O
Peak Inspiratory Pressure	0 to 90 Cm H2O
Tidal Volume range	20 ml to 2000 ml
Minute Volume range	1 to 45 LPM
Apnea delay time	1 to 60 seconds
PS above PEEP	Up to 40 Cm H2O
Inspiratory Rise time	Slow/Medium/High
Online Inspiratory Hold	Yes Provided
Online Expiratory Hold	Yes Provided
Trigger Method Pressure & Flow	1 to 10 Cm H2O, & 1 to 10 LPM
Input Gas Pressure, Air & Oxygen	60 PSIG/4 Bar
Patient efforts in Assist Mode	Displayed below the set RR
Leak Compensation	Yes Provided
Spontaneous time in SIMV	Settable from 60 to 75%
Flow	Up to 130 LPM



Provision for connecting ETCO2 sensor & Nebuliser. (Accessory provided at Extra cost)

Volume Controlled Modes

- Assist Controlled mandatory Ventilation (ACMV)
 - Volume Range 20 to 2000 ml
 - The time of 1st & 100th breathe will be 50% more than the set I.T. in SIGH Mode.
- A C M V with SIGH
 - Spontaneous period is selectable from 60 to 75% of the respiratory cycle time.
- S I M V plus Pressure Support
 - Range 0 to 40 CmH2O
- Pressure Support Ventilation (P S)
 - Range 0 to 40 CmH2O
- CPAP with Pressure Support
 - FIO2 - 21 to 100%, Flow: 60 LPM.
- HFNC
- MMV Mode (Mandatory Minute Ventilation)

Pressure Controlled Ventilation Modes

- Assist Controlled mandatory Ventilation (ACMV)
 - Range 2 to 90 Cm H2O
- A C M V with SIGH
 - 1.5 time of set IT, after each 100 breathe in SIGH Mode
- S I M V plus Pressure Support
 - SIMV & Mandatory breaths, Selectable
- Pressure Regulated Volume Control (PRVC)
 - Automatic Setting of Pressure to 40 Cm H2O. User can adjust the Max pressure limit.
- Pressure Support Ventilation (P S)
 - Range 0 to 40 CmH2O
- CPAP with Pressure Support
 - Range 0 to 40 CmH2O

Non Invasive Modes

- Bi PAP
- APRV
- CPAP + PS
- HFNC

Graphical representation provided for following:

Volume - Time
Pressure - Time
Flow - Time
Pressure - Volume Loop
Flow - Volume Loop
Flow - Pressure Loop

Following Indications are displayed on 15 Inches Screen:

Set Tidal Volume, Delivered Tidal Volume, Expired Tidal Volume, Minute Ventilation Positive End Expiratory Pressure (PEEP), Set Inspiration Time, I:E Ratio, Set Trigger Level, Breathes Per Minute / R.R, Peak Inspiratory Pressure, Patient Efforts Displayed below the set RR MAP (Mean Airway Pressure), Dynamic Compliance, Static Compliance, RSB Index, Auto PEEP, Battery Voltage.

Alarms & Warnings

Volume not Delivered	Audio Visual
Patient in Apnea	Audio Visual
Air/Oxygen Supply Failure	Audio Visual
Leakage in Patient Circuit	Audio Visual
Low Inspiration Pressure	Audio Visual
High Inspiration Pressure	Audio Visual
Power Failure	Audio Visual



Shreeyash 900DV Mounted on Compressor