Appeal

To those who wish to join and actively participate in State Government's efforts to prevent spread of COVID 19 i.e. Corona virus

To prevent the spread of Corona, the Government of Maharashtra has taken major policy decisions and has been implementing different initiatives in that direction.

The State Government is receiving requests from individuals and organisations to give them opportunity to participate in the Government's efforts.

The State health machinery needs some medical equipment and devices to tackle the situation. Those who wish to help in the drive of preventing the spread of Corona may arrange to make available following equipment to the Government hospitals –

1. N-95 Masks
2. Personal Projective Equipment
3. Ventilato**rs**

(The detailed specifications are attached.)

For any query please send email to ccrmaharashtra.aid@gmail.com

EQUIPMENTS

S.No	Equipment	Specifications
1.	**HOOD with garment**	● Single use ● Fluid-resistant ● Adjustable and should stay securely in place once adjusted ● Facial opening constructed without elastic· Cover reaches the upper part of the gown or coverall Heavy-duty non-woven apron Straight apron with bib ● Fabric: 100% polyester with PVC coating, or 100% PVC, or 100% rubber, or other fluid-resistant material ● Waterproof, sewn strap for neck and back fastening Minimum basis weight: 300 g/m2 ● Covering size : approximately 70-90 cm width x L2&I50 cm length Reusable (provided that appropriate arrangements for decontamination are in place)
2.	**N95 Mask**	● Shape that will not collapse easily ● High filtration efficiency ● Good breathability ● Quality compliant with standards for surgical N95 respirators ● NIOSH N95, EN 149 FFP2 or equivalent ● Fluid resistance: minimum 80mm Hg pressure based on ASTM F1862, ISO 22609 or equivalent

3.	**Surgical Masks**	● High fluid resistance ● Good breathability ● Internal and external faces should be clearly identified ● Structured design that does not collapse against the mouth (e.g. duckbill or cup shape) ● Quality compliant with standards, including for fluid resistance level and breathability (differential pressure): o EN 14683 Type IIR performance, or o ASTM F2J00 level 2 or level 3,or equivalent
4.	**Boot Cover**	● Use waterproof boots
5.	**Surgical Gloves**	● Use double gloves
6.	**Face Shield**	● Made of clear plastic and provides good visibility to both the wearer and the patient ● Adjustable band to allow good fit around the head and snug fit against the forehead ● Fog-resistant (preferable) ● Completely covers the sides and length of the face May be reusable (made of material that can be cleaned and disinfected) or disposable ● Quality compliant with standards: • EU standard directive 86/686/EEC, EN 166/2002, or • ANSI/ISEA Z87.1-2010 or equivalent

7.	**Goggles**	● Good seal with the skin of the face ● Flexible frame that easily fits all face contours without too much pressure ● Cover the eyes and surrounding areas and accommodate prescription glasses ● Fog- and scratch-resistant adjustable band that can be firmly secured and does not become loose during clinical activity ● Indirect venting to reduce logging ● May be reusable (provided appropriate arrangements for decontamination are in place) or disposable ● Quality compliant with standards: • EU standard directive 86/686/EEC, EN 166/2002 or ANSI/ISEA z87.1-2010 or equivalent

S. No.	Name of the Item	Specification
1.	**Personal Protective Kit**	• Viral barrier properties, should protect against bacteria, virus and fluids • Soft knitted • Kit should be full cover and disposable • Micro porous fabric, two hand towels • Highly breathable • Should be non-hinting durable, fluid and ignition resistant • Kit should be non-woven • Protection from particulate matter and liquids • Breathe through material • Should have shoe covers, 1 pair latex gloves and 1 clinical waste bag • 3 ply layer mask with external layer with 25gsm, length 180 mm, thickness 3 mm, and width 90 mm • Punk goggle 1 piece • Protective clothing material thickness should be 120 micron

Details about Protective Suits

S.no	Protective Suits	Specifications	Physical Properties
1.	**DuPontTM Tyvek® 400 , TY122S WH** (packaging 25 pieces per case)	1. Comfort fit design 2. Respirator Fit Hood 3. Elastic Wrists 4. Attached skid-resistance boots 5. Serged Seams 6. White	1. Basis Weight: 1.2 oz/yd_2 2. Breaking Strength - Grab (CD): 22 lb_f /in 3. Breaking Strength - Grab (MD): 18 lb_f /in 4. Burst Strength - Mullen: 50 psi 5. Hydrostatic Head: 45 inches H O 6. Seam Strength: > 19 lb_f 7. Surface Resistivity (25°C / 55& RH): < 6.3 x 10^9 ohms/square 8. Thickness: 5.9 mils 9. Wearing Apparel Flammability: Class 1

VENTILATOR SPECIFICATIONS TYPE 1

1. Should be high sophistication dual microprocessor control with integrated screen
2. External Medical Air Compressor Design (no turbine, blower or piston driven) and it should automatically activate in the event of wall air supply loss and switch off on detection of appropriate pressure. It should be US FDA approved and of the same make as that of the ventilator (no OEM)
3. Should be suitable for ventilation of acutely ill pediatric and adult patients
4. Should have advanced proportional solenoid (PSOL) valves and in-built Anemometer technology reusable flow sensors
5. Should have LCD color display of size 15 inches or more with dual view, both for patient monitoring parameters and for setting patient parameters, both in numerical and graphical form
6. Should have advanced modes like Bi-level. APRV, Pressure regulated volume ventilation, automatic tube compensation, NIV, automatic leak compensation
7. Should have an advanced feature like ASV/NAVA/Proportional assist ventilation plus

● **Should have Tidal volume**	25 ml to 2500 ml
● **Respiratory rate**	1.0 to 80 breaths per minute (BPM)
● **Pressure support**	0 to 70 cmH2O
● **PEEP level**	0 to 45 cmH2O
● **Peak inspiratory flow**	3 to 150 L/min
● **Flow pattern**	Square or descending ramp
● **Flow acceleration percent**	1% to 100%
● **Expiratory sensitivity**	1% to 45%
● **Disconnect sensitivity**	20% to 95%
● **Plateau time**	0.0 to 2.0 seconds
● **Oxygen percent**	21 to 100%
● **Trigger type**	Pressure and flow triggering. For neonates only flow triggering
● **Trigger sensitivity**	a. Pressure sensitivity: 0.1 to 20 cmH2O below PEEP

	b. Flow sensitivity: 0.5 to 20 L/min
● **Inspiratory pressure**	5 to 90 cmH2O
● **Inspiratory time**	0.2 to 8.0 seconds (0.20 to 8.00 seconds in neonates)
● **I:E ratio**	1:3 ─ 4:1
● **Expiratory time**	>0.2 seconds

8. Should have facility to set Rise time factor from 1% to 100% in Pressure Control and Pressure Support
9. Should have Trending of more than 50 parameters for 72 hours
10. Should have user selectable breath termination criteria with exhalation sensitivity
11. Should have user selectable apnea back up ventilation in PC and VC
12. Should have detection of severe patient occlusion to protect patient against excessive airway pressure, terminate normal ventilation and allow patient to exhale through inspiratory limb by opening safety valve
13. Should have safety ventilation when circuit connection detected before setup complete
14. It should have leakage compensation of 65 LPM
15. It should have ET Tube compensation
16. Should have a tactility to measure NIF, Vital capacity and P0.1
17. Should monitor Cdyn, Cstat, Rdyn, RSBI, PSF, EEF, Auto PEEP, Pplat, etc.
18. Should have reusable inspiratory and N100 approved expiratory filter autoclavable and expiratory filter efficiency should be 99.97%
19. Should have smart alert alarm system that displays the alarm message, details of the alarm and possible remedy for following alarms:
    - Peak airway pressure
    - O2 supply loss
    - Air supply loss
    - Expired minute volume
    - Apnea
    - Respiratory rate
    - Occlusion alarm
    - Battery

20. Should have alarm log given extensive history
21. Should have different color codes for different breaths
22. Ventilator should be supplied with 2 each adult and pediatric reusable patient circuits
23. The ventilator should meet the following minimum safety standards:
    - IEC 60601 – 1/EN-60601-1
    - US FDA approval for both ventilator and compressor
    - The manufacturer should have EN ISO 13485:2003
24. System configuration, scope of supply:
    - Ventilator with compressor- 1
    - Adult and Paediatric Reusable Circuit- 2 each
    - Reusable masks (small, medium and large)- 1 each
    - Reusable expiratory filter or cassette- 2 nos.
    - Test lung- 1

VENTILATOR SPECIFICATION TYPE 2

Equipment: Ventilator (Adult and Pediatric)

Specifications:

1. **Ventilation Modes**

- VC-CMV / VC-AC
- V-SIMV
- VE-MMV (optiarial)
- PC-APRV (optional)
- PC-BIPAPI) / PC-SIMV (optional)
- PC-AC (optional)
- SPN-CPAP

2. **Optional Enhancements**

- Automatic adaption of the inspiratory flow in volume orientated ventilator modes
- NIV-Non Invasive Ventilation with optimized alarm systems and automatic leakage compensation
- Mainstream CO2 measurement
- Loops, Trends. user Logbook
- LPO - Low Pressure Oxygen. Independent oxygen supply
- Nurse call - Connection for transmitting alarm signals to a central, alarm system

3. **General**

- Patient type: Adult, paediatric
- Respiratory rate. 2/min to 80/min
- Inspiration time: 0.2 to 10 s
- Tidal volume: 0.05 to 2.0 L, (with option Paediatric 0.02 to 2.0 L)
- Inspiratory pressure. 1 to 99 mbar (or hPa or cmH2O)
- PEEP/interm. PEEP 0 to 50 mbar (or hPa or cmH20)
- Pressure support/APsupp: 0 to 50 mbar (or hPa or cmH20) (relative to PEEP)
- Flow acceleration: 5 to 200 mbar/s (or hPa/s or cnH20/s)
- O2-concentration: 21 to 100 Vol %
- Trigger sensitivity (Flaw trigger): 1 to 15 L/min
- Inspiratory termination criterion: 5 to 75 % PIF (peak inspiratory flow)
    - PC-APRV (optional):
    - Inspiratory time Thigh 0.2 to 22.0s
    - Expiratory time Tow 0.1 to 22.0 s
    - Inspiratory pressure High 1 to 95 mbar (or hPA or cmH2O)
    - Expiratory pressure Plow O to 50 mbar (or hPA or cmH2O)

4. Displayed Measured Values

- Airway pressure measurements Max. airway pressure, plateau pressure, mean al pressure, PEEP O to 99 mbar (or hPa or cmH2O)
- Minute volume (MV): Total MV, spontaneous MV 0 to 99 L/min, BTPS
- Tidal volume: Inspiratory VT, expiratory VTe, VTspon 0 to 3999 mL, BTPS
- Total respiratory rate: Total and spontaneous respiratory rate, 0 to 150/min
- Inspiratory 02-concentration: 21 to 100% Vol.
- End-tidal CO2 concentration: EtC02 0 to 100 mmHg (or 0 to 13.2 Vol % or 0 to 13.3 kPa)
- Breathing gas temperature: 18 to 48℃ (64.4 to 118.4 ℉)
- Curve displays: Paw (t), Flow (t), Tidal volume (t), CO2 (t)
- Ventilation ratio (I:E): 1:150 to 150:1
- Compliance C:05 to 200 mL/mbar or (mL/hPa or mL/cmH2O)
- Resistance R: 3 to 300 mbar/L/s (or hPa/L/s or CH2O/L/s)
- Leakage minute volume MVIeak: 0 to 100%
- Rapid shallow breathing RSB: 0 to 9999 (1/min/L)
- Special Manoeuvres (optional):
    - Intrinsic PEEP PEEPi 0 to 100 mbar (or hPa or cmH2O)
    - Exp. Hold

5. Alarms

- Airway pressures high/low
- Expiratory minute volume: high / low
- Tidal volume. high / low
- Apnea-alarm time: 15 to 60 sec
- Spontaneous breathing frequency: high
- Inspiratory 02-concentration: high/low
- Inspiratory breathing gas temperature: high
- EtCO2: high/low

6. Performance Data

- Maximum (continuous) inspiratory flow: 250L/ min
- Valve response time T0.90: ≤5 ms
- Control principle: time-cycled, volume-controlled pressure limited
- Safety valve opening pressure: 120 mbar (or hPa or cmH20)
- Emergency valve: automatically enables spontaneous breathing with filtered ambient air if air and 02 supply should fail
- Automatic gas switch-over function if O2 supply fails
- Output for pneumatic medication nebulizer: synchronized with inspiration
- Leak compensation:

- Optimized patient-ventilator synchrony adjusts the flow trigger and the inspiration termination criteria for leaks
- tube application: up to 10L/min
- NIV VC-modes: up to 25 L/min
- NIV PC-mods: unlimited

7. Operating Data

- Mains power connection. 100 V to 240 V, 50/60 Hz
- Current consumption: max 1.3 A at 240 V, max. 3.4 A at 100 V
- Battery: internal typically 45 min (optional extension up to 5 h)
- Turbine exchange interval: 8 years, with no limit in operating hours during this interval

8. Gas Supply

- Air Turbine Technology
- O2 gas supply 3bar (43.5 psi)- 10% up to 6bar (87 psi)

9. Dimensions and Weights

- Dimensions WxHxD (without trolley) 460x383x364± 2mm (18.11x15.08x14.33 ± 0.08 inch)
- Weight (basic device) approx 26kg (57.3lbs) without trolley
- Diagonal screen size 12” TFT colour touch screen

VENTILATOR SPECIFICATION TYPE 3 (FOR E-115)

Ventilator Adult & Pediatric / Ventilator with accessories / Ventilator / Invasive Ventilator / Mechanical Ventilator / High End Ventilator.

1	**General Description**	Fully Microprocessor controlled having volume cycled & time cycled with Volume & pressure preset with invasive and noninvasive modes & facility to monitor respiratory parameters including ETCO2
2	**Application**	Adult as well as pediatric application up to minimum 5-6 KG weight
3	**Power supply & Operation mode**	a) Electrical with only inbuilt battery backup for minimum 5-6 hours
		b) 220V+/-15%; 50Hz+/- 3%. with inbuilt facility to work over a wide range of voltage fluctuations with True ONLINE UPS with isolation transformer
4	**Driving Gas**	a) In-built/external air source from the same manufacturer as that of a ventilator with USFDA or European CE approved and not OEM.
		b) It should either have facility to connect to external central medical compressed air line with auto switchover facility OR facility to connect to central oxygen pipeline through high pressure hose & low pressure oxygen source like 02 cylinder through flow meter, which is appropriate to the source
		c) The compressor based systems should have a facility to connect to external central medical compressed air lines with auto switchover facility.
		d) Turbine based system must have both facilities to connect to the central oxygen pipeline through a high pressure hose & low pressure oxygen source like O2 cylinder through flow meter. An External Central UPS System of at least 3KV per unit with proper wiring to each bed for smooth operation (Specific for compressed air systems).

		e) Air source compressor based (in built/external) from the same manufacturer as that of a ventilator & not OEM and must be FDA approved.
		f) A trolley should be provided with each unit and the trolley should be of the same make as the manufacturer.
5	**Modes of ventilation**	A. Invasive modes-
		a) Control (Volume & Pressure Controlled Ventilation)
		b) Assist — Control
		c) SIMV fVolume & Pressure Control) + PSV
		d) Spontaneous with CPAP + PSV
		e) PSV (with adjustable cycling time in percentage and max.insp.Time setting)
		f) Volume cycle with demand flow in control, A/C,SIMV modes
		g) PRVC or equivalent with control, A/C,SIMV & with volume limit
		B. Non-invasive modes (NIV) with mask — must be available independent and separate mode
		a) Control,Assist control, SIMV + PSV,CPAP +PSV
		b) Biphasic with PSV on both levels & with adjustable patient synchrony.

6	**Parameter settings with respective ranges**	a. Fio2: Adjustable (21 - 100%) with 100% oxygen flush
		b. ETCO2 with digital value & waveforms
		c. I:E Ratio : Adjustable (1:4 - 4:1)
		d. Insp.Tidal Volume : 50 - 1500 ml

		e. Resp. rate: 5 to 70 BPM.
		f. f) Inspiratory Time: 0.3 - 7 sec
		g. Insp.pause time for X-ray facility: 0.1-2 sec. (Auto) & max 6 sec (Manual)
		h. Insp.Flow rate: 10 to 130 LPM & demand flow upto 180 LPM
		i. Ins0.Flow waveform : User selectable.square & decelerating.
		j. Pressure control : 0-80 cmH2O
		k. Pressure support : 0-60 cmH2O
		l. Flow cycled ventilation : Adjustable for pressure control, PRVC, PSV & Non-invasive modes.
		m. Flow cycle for PSV & PC: 0,5 to 30% 5-70
		n. Bias flow : User adjustable (10-20 LPM) pressure
		o. Trigger Sensitivity : Flow adjustable (1-20 LPM)
		p. Apnea Back-up : Automatic & Interactive, user adjustable with selectable apnea back up time & rate
		q. Apnea time: 10 to 40 sec
		r. Apnea Back Rate : 12 BPM onwards
		s. PEEP : 0-35 cm H2O
		t. Sigh Rate & Volume : 1 per 100 breaths & 1.5 times the set T.V.
		u. Pressure limit : (pop off) : 20-120 cm H2O
7	**Ventilatory Maneuvers**	a. Expiratory hold
		b. Manual Breath
		c. Negative Inspiratory Force Maneuver
8	**Monitored Parameters & Trends on Display**	a. Driving gas supply pressure (Air/Oxygen)
		b. Fio2

		c. EtCO2
		d. Resp.Rate: Ventilator & Patient
		e. Time: Inspiratory, Expiratory ,I:E Ratio
		f. Inspired Tidal Volume: Ventilator & Patient
		g. Expired Tidal Volume: Ventilator & Patient
		h. Minute Volume: Ventilator & Patient
		i. Airway Pressures: Pmax,Pmean & Pplateau
		j. PEEP
		k. Auto PEEP
		l. Apnea
		m. Sigh
		n. Compliance - Static
		o. Circuit Resistance
		p. Rapid/Swallow Breathing Index
		q. Events Log Sheet page
		r. Each minute trend of all above mentioned parameters for last 12 hrs
		s. Alarm log time & date stamped
9	**Display Characteristics**	a) In built & incorporated min. 12" active Touch Screen and with TFT
		1. Colour Graphics Display
		2. Adjustable scales & sweep speed
		b) Simultaneously Display of waveforms: Flow, Volume & pressure
		c) Waveforms color coded (for insp. Exp., Spon.) and freezing with movable cursor facility.

		d) Loops: Flow-Volume & Pressure-Volume, both simultaneous, color coded.
10	**Alarms/Indicators**	All alarms & Indicators should have luminous and audible signals priority wise and messages in display.
		a) Apnea.
		b) Airway Pressure: High / Low.
		c) Battery: Fully Charged / low.
		d) Breath Rate: High.
		e) FiO2: High / Low Preset).
		f) Gas Supply Failure For: Oxygen and air.
		g) Minute Volume: Low
		h) Mode of Operation: Mains / Battery.
		i) Pressure / Flow Transducer [Sensor] Failure.
		j) Power Failure
		k) Triggered Breath Indicator.
		l) Unusual / Incorrect settings.
		m) Ventilator Inoperative
11	**Capnography**	Capnography etCO2 monitoring with High and Low etCO2 alarm and etCO2 waveform
		Inbuilt Capnography is with mainstream / side stream technology, tenderer will have to supply EtCO2 adaptor and mainstream etCO2 sensor
12.	**Nebulizer**	Synchronized INBUILT Nebulizer with adjustable Auto OFF timer from 1 to 30 min
13.	**Standard Accessories & Reusable Breathing Circuits**	**a.** Non Proprietary, chemically serializable and steam autoclavable (for minimum 20 cycles), reusable breathing circuit for adult & Pediatrics 2 no.s each

		b. Reusable flow sensor- Easily removable for sterilization by steam autoclaving 2 no.s (3 different sizes of small, medium & Large, Qty. 2 of each size).
		c. Reusable & Autoclavable Exhalation valve Body & Diaphragm, {for min. 30 cycles} 2 No.s each.
		d. Should be supplied with 3 reusable EtCo2 sensor with cable and 2 reusable airway adaptors
		e. Reusable and steam autoclavable bacteria filter (for min. 20 cycles)
		f. Reusable, Autoclavable, Non-Invasive full face mask with harness separate- 1 no. of each 3 different sizes (total 3 masks)
		g. Stand for ventilator and breathing circuit support arm - 1 no. each
14.	**Disposable circuits and accessories**	a. Dual limb non-proprietary disposable circuits to be used- 1 no. each
		b. Disposable HEPA filters with HME- 50 nos.
		c. Disposable Airway adaptor for EtCo2 Sensor- 20 no.s., sample line- 100 nos with each sidestream EtCO2
15.	**UPS**	TRUE ONLINE UPS with isolation Transformer for Complete system including Air source for complete protection against all types of Input supply variations.
16.	**Approval & certification**	Quoted model must be FDA (U.S.) and European CE Approved product - Mandatory & CE
17.	**Literature**	Operating manual, Service Manual and list of installations in state & country should be given
18.	**Post Record**	User friendly with a good past record for after sales service.
19.	**Demonstration**	Physical demonstration of complete system with all accessories as quoted must be given to technical committee well within the time limit prescribed
20.	**Warranty**	Comprehensive warranty: 2 years

21.	**Comprehensive Maintenance Contract**	Should include comprehensive maintenance contract for 8 years
22.	**Installation Base**	a. Should have at least 20 installations of quoted model in use for last one year in India
		b. Cost of consumables should be quote separately and will be frozen for 05 years
		c. Scope of supply should be written in detail otherwise tender documents remain incomplete. The same will be sent to the user with purchase order
		d. For all important Equipment the bidder has to submit bill of entry copy for equipment imported in last 02 years
		e. Successful bidder will be required to submit Custom duty clearance copy along with supplies of equipment or else payment will not be released