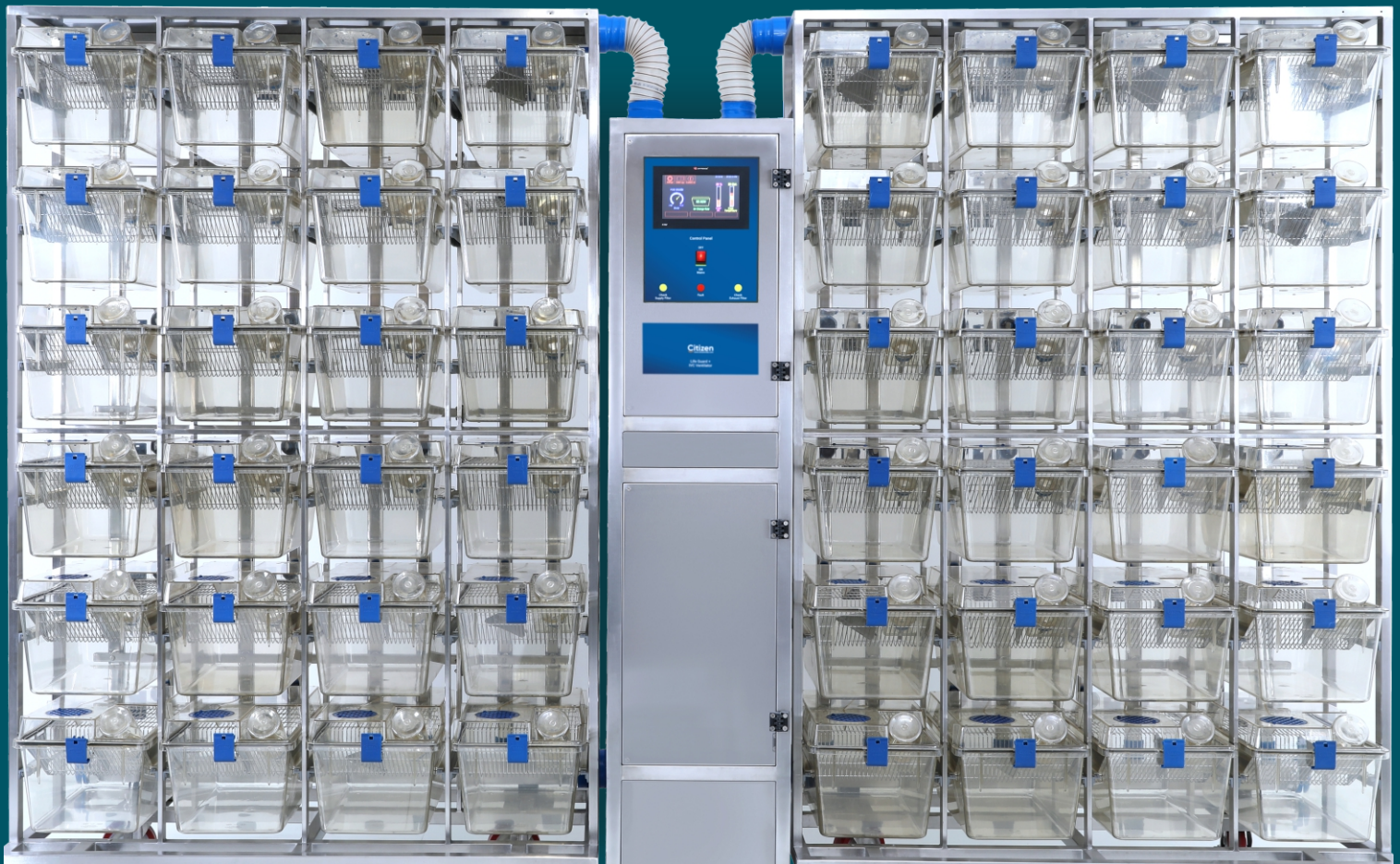


Citizen

Individually Ventilated Animal Caging System

Proudly Made in **INDIA**



Individually Ventilated Animal Caging System for rats, mice and guinea pigs



What is Individually Ventilated Animal Caging System?

As product name indicates, Individually Ventilated Animal Caging system is a system in which all cages are ventilated individually. The contaminated air in the cages is also exhausted individually. This system is designed for extra ordinary care and safety of small lab animals and also care takers of the animals.

The system has a facility to regulate quantities of supply air and exhaust air according to requirement. The inner pressure of the cages can be maintained positive or negative. Forced air circulation system ensures the required number of air changes in each cage.

Advantages of I.V. Caging System

- **Isolation and better control over infection spreading** : Animals of different microbial status can be stored in the same rack as they are housed in isolated cages. Also the isolation provides better control over infection spreading.
- **Environmental Enrichment** : Species specific physiological environment can be maintained very well through the facility to control both supply & exhaust air quantity.
- **Hygienic environment within the cage** : The cages can be provided with an excellent rate of air changes as high as 70 to 90 air changes per hour. This provides much better environment within the cage and drier animal beddings.
- **Better light intensity** : Transparent cages allow sufficient light irrespective of their position in the rack.
- **Safety of personnel** : The environment is safer for experimentalists and animal care personnel as there is a rare chance of direct contact with animals stored in isolated cages.
- **Extra-ordinary Energy saving** : The actual amount of fresh & clean air required is reduced to approximately 10% compared to the same required in traditional system. The running cost & initial cost as well as cost of air-conditioning system is reduced to the tune of 60 to 70%.
- **Space Saving** : The IV Animal Caging system stores larger number of animals in lesser space. Also the minimum requirement of space between two cages reduces to great extent due to the facility of forced ventilation. The required space is reduced to a great extent compared to the traditional caging system.
- **Easier disinfections** : The entire rack along with cages can be autoclaved, which provides better cleanliness and more reliability of disinfections.
- **Lesser Frequency of cage changing** : Forced ventilation inside the cage and drier animal bed reduces the frequency of cage changing.
- **Easy to handle** : Both, the caging system and air handling system are compact and light in weight having better mobility.
- **Environment protection** : The exhaust air passes through HEPA filter before release to environment. The environment remains free from hazard of harmful microbiological elements.
- **Aesthetic Looks of Laboratory** : The elegant design and finish of caging system adds to the aesthetics of the interior of the Animal house & provides better working environment for the concerned personnel.
- **Lesser Maintenance** : Minimization in clean air requirement reduces the maintenance hassles to a great extent.

Description and General Specifications of Citizen make IVC system



IVC Cages

IVC Cage assembly consists of following :

- **Cage bottom** in high grade plastic construction is provided with mounting rail on two sides for exact positioning of the cage when installed in rack. Necessary ribs are provided for strengthening of the cage and stacking stoppers are provided for storing the cages in compact stacked position. Cage bottom is symmetrical in dimensions to allow the positioning from any side (front or back).
- **Cage lid** in the construction same as cage bottom consists of air supply port (valve), air exhaust port (valve), water bottle port (valve), breather filter, filter retaining grill, lid clamps and depression for housing water bottle. Exhaust and air supply port mounted on rear top of the cage opens when the cage is placed in position and gets connected to supply and exhaust nozzles. Overall design is such that the rubber nozzles fixed on supply and exhaust ducts have minimum entry inside the cage to avoid cross contamination. Water bottle port opens when the bottle is placed in position. Conical shape of water bottle port ensures self-centering of the bottle and proper sealing with bottle cap. Lids are provided with high efficiency particle arresting breather filters of microbial and bacterial grade.
- **Cage grill (wire lid)** fabricated out of SS 304 is provided with nylon/silicon gasket on the periphery for sealing between cage lid and cage bottom.
- **Water bottle** made out of high grade plastic is provided with a gasket in special grade silicon rubber construction and conical shaped bottle cap with nozzle in SS 316 construction. The nozzle is with a calibrated size hole to ensure leak proof functioning. The bottles are provided with calibration marks for the water quantity.
- **Card holder** in autoclavable plastic construction provided with grooves on three sides for inserting the card and hanger clip in SS 304 construction for easy hanging and removal of the card holder from cages.

The cage bottom and lid can be offered in three different constructions, all of which are suitable for standard autoclave conditions and can be cleaned with soft disinfectants generally used in animal houses.

- **High heat grade polycarbonate:** This can withstand more than 150 autoclave cycles; temperature withstanding capacity upto 130°C. Having moderate chemical resistance and moderate scratch resistance.
- **Polysulphone:** This can withstand more than 450 autoclave cycles; temperature withstanding capacity upto 155°C. Having good chemical resistance and good scratch resistance.
- **Polyetherimide:** This can withstand more than 1500 autoclave cycles; constant temperature withstanding capacity upto 180°C. Having extraordinary chemical resistance, extraordinary scratch resistance and prolonged transparency life.

Cage Type	Cage Floor Area	Effective Cage Height	Recommended use
A	360 sq. cm	13.2 cm	Mice Breeding
B	530 sq. cm	14.0 cm	Mice Breeding /Housing
C	800 sq. cm	18.5 cm	Rat Housing
D	1360 sq. cm	21.0 cm	Guinea Pigs Housing

IVC Rack

IVC racks mainly consist of :

- Frame structure
- Supply air network consisting of square horizontal plenum and oval shaped vertical ducts in SS 304 construction with nozzles.
- Exhaust air network consisting of square horizontal plenum and oval shaped vertical ducts in SS 304 construction with nozzles.

The rack structure is fabricated out of ANSI 304 grade stainless steel and cage runners in high grade plastic construction (GFN). The runners are designed with built-in stoppers to hold the cage in exact position. The rack is also provided with special design docking indicators (optional) in high grade plastic construction which will provide a clear visual indication for the cage which is not docked properly in its position

Supply and exhaust air duct network are designed to distribute clean air to the cages and evacuate the contaminated air from cages. The horizontal plenum on the top of the system is connected to vertical ducts to supply clean air to the cages and horizontal plenum at the bottom of the network is connected to vertical exhaust ducts. The top plenum can be easily detached for washing or other purpose. The system design is such that there will be hardly any clogging in supply or exhaust air path.

The whole rack structure is mounted on 4 nos. castor wheels having the housing in SS 304 construction and the wheels in glass filled nylon construction for desired strength and heat resistance to withstand autoclave condition. Two wheels are free moving type and two wheels are provided with pad locks.

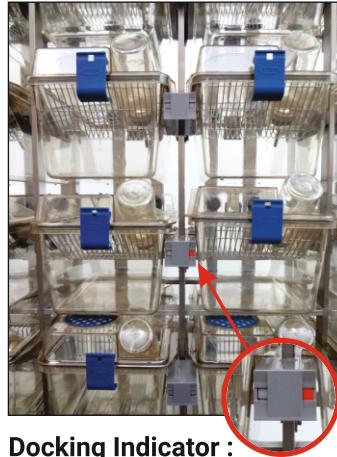
The standard design racks are available in following sizes. However, the racks can also be designed and offered for lesser or higher number of cages to meet certain requirement of customers.



IVC Rack with duct network



Double Sided Rack



Docking Indicator :
Window turns red if
the cage is not placed
properly



Single Sided Rack

Standard Rack Model:

Rack Model	Access Sides	Suitable cage model & cage floor area	Housing capacity
CRA-64-SS	Single	360 sq. cm Cage Type A	64 Nos.
CRA-128-DS	Double		128 Nos.
CRB-48-SS	Single	Cage Type B 530 sq. cm	48 Nos.
CRB-96-DS	Double		96 Nos.
CRC-30-SS	Single	Cage Type C 800 sq. cm	30 Nos.
CRC-60-DS	Double		60 Nos.
CRD-20-SS	Single	Cage Type D 1360 sq. cm.	20 Nos.

Other Rack Model:

Rack Model	Access Sides	Suitable cage model & cage floor area	Housing capacity
CRA-56-SS	Single	Cage Type A 360 sq. cm	56 Nos.
CRA-72-SS	Single		72 Nos.
CRA-112-DS	Double		112 Nos.
CRA-144-DS	Double		144 Nos.
CRB-40-SS	Single	Cage Type B 530 sq. cm	40 Nos.
CRB-64-SS	Single		64 Nos.
CRB-72-SS	Single		72 Nos.
CRB-80-SS	Single		80 Nos.
CRB-81-SS	Single		81 Nos.
CRB-80-DS	Double		80 Nos.
CRB-128-DS	Double		128 Nos.
CRB-144-DS	Double		144 Nos.
CRB-160-DS	Double		160 Nos.
CRB-162-DS	Double		162 Nos.
CRC-24-SS	Single	Cage Type C 800 sq. cm	24 Nos.
CRC-36-SS	Single		36 Nos.
CRC-48-DS	Double		48 Nos.
CRC-72-DS	Double		72 Nos.

IVC Ventilator (AHU)

Overall system configuration

IVC Ventilator fabricated out of SS 304, mainly consists of three major devices.

- Supply air system
- Exhaust air system
- Control panel with necessary instrumentation

Supply and exhaust air system consist of :

- Pre-filter chamber with pre-filter and easily openable cover for removal of filter.
- HEPA filter chamber with H13 / H14 grade HEPA filter with jointless gasket, fixing clamps and openable cover with gasket for removal of HEPA filter.
- Fan section with special construction electrically operated silent duty, energy efficient fans and necessary sensors

Control panel is provided with high quality electrical components, programmable logical controller and instrumentation for operating the unit. All the components used are of best available quality and highly reliable. The electrical configurations and programs are designed according to the functional requirement in different models. The detail of functioning and features of different models are explained in the table below. All the models shown in this catalog are currently operating models and they can be selected as per requirement and desired automation level.

The entire system consisting of all devices mentioned above is mounted on four high quality castor wheels with housing and bearing in stainless steel construction and the wheels in high quality nylon (GFN)/PU construction for easy movement of the unit. Two wheels are provided with pad locks.

Functioning of the unit

Supply air unit extracts the room air through pre-filter chamber, passes it to through HEPA filter chamber and then supplies the clean air to the main supply air plenum of IVC rack which is further distributed to cages installed in the rack, through supply air nozzles installed on vertical ducts.

Exhaust air unit extracts the air through nozzles installed on vertical exhaust ducts, main exhaust plenum, passes it through pre-filter, HEPA filter and discharges through the air discharge port mounted on top of the ventilator. The discharge port is connected with a flexible duct. Integrity of HEPA filter is duly tested and necessary test certificates are provided to the customer for both supply and exhaust units.

The control panel is provided with microprocessor based programmable logical controller for monitoring of basic parameters such as air changes per hour, average cage temperature, average cage humidity and cage pressure mode. Easy setting of critical parameters such as cage pressure mode and air changes per hour can be set within standard range. The parameters can also be set in terms of number of air changes on the basis of type and number of cages entered in the system. High quality sensors are used for the measurement of air quantities, temperature, humidity and pressure. All the models have the facility of data logging of all four basic parameters and audio visual alarm. All the models are also provided with a dry potential free contact for remote alarm. Remote monitoring, controlling and different level of automation can be selected by selecting appropriate model. Necessary external ports are provided as shown in the specifications of different models for connecting the system with Building Management System.

The ventilator (AHU), is provided with two supply air manifolds and two suction manifolds alongwith flexible hoses to connect the rack on both side of the unit. The exhaust manifold provided with thimble connection / flexible hose to connect the unit with main exhaust duct. One ventilator can be connected to two double sided racks or four single sided racks (two racks in series on each side). The ventilator is designed to execute upto 70-90 air changes per hour.

The unit is highly reliable, compact in size, energy efficient and silent in operation (<50Db-A).



Model V7 (#)

Description & specifications

IVC Ventilator (AHU) in SS 304 construction having supply and exhaust ports mounted on left and right panel at suitable locations to serve 4 nos. single sided racks or 2 nos. double sided racks having following features / specifications.

Fan & Motor:

- Silent operation fans with high efficiency motor
- **Easy adjustment of number of air changes on the basis of type and number of cages attached to the system**

Filters: Pre-filter, grade H4 and HEPA filter, grade H14

Control Panel

- Microprocessor based Programmable logical controller (PLC)
- HMI with 178 mm, TFT LCD 16 bit colour display with software controlled white LED backlit illumination, High Intensity Touch screen, virtual keypad.
- Monitoring, programming of set limits, fault indication (with alarm) and data logging of basic parameters.
- Easy selection of positive or negative pressure mode.
- Run Hour Counter with time based change filter' notice
- Alarm on clogging of HEPA filter

External Communication Ports

- Serial Com. port (Rs232)
- Ethernet Com.Port, USB port

Optional Features # (Suffix, G or W)

'G' - Wireless alarm through GSM

'W' - Multiple ventilator connectivity with PC for remote monitoring, control and data download (through wi-fi)

Power Supply: 230 V, Single Ph., 50 Hz, AC supply (can also be supplied alternate power supply options on request)

Noise Level < 50 Db(A)

Castor Wheels 4 nos., 80 dia, SS housing, nylon wheels, 2 wheels with pad lock

Overall Dimensions W 370 x D 570 x H 1680



Note : Sign (#) is for the optional feature selected, i.e. G or W as mentioned in optional features.

* Specifications and dimensions are subject to change without notice.

About the Company

Citizen Industries, established in 1987, is one of the leading manufacturers of high standard lab furnishing equipment for over 30 years.

State-of-the-art manufacturing facilities at Naroda, Ahmedabad and Hoskote, Bengaluru are equipped with latest technology CNC machines, Hi-tech testing facilities and highly skilled manpower. The Citizen corporate house is located at Navrangpura, Ahmedabad, a prime business location in the city. Citizen employs more than 350 personnel & has its own design and development facilities for continuous upgradation of its products.

- Citizen enjoys extraordinary reputation for quality of its products, pre-sales technical support, timely execution of order with fully reliable after-sales services.
- Citizen has been certified with various valuable certifications like ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, TUV Certificate for IVC System, SEFA – 8M 2016 Third Party Certification for Laboratory Furniture, SEFA – 10 - 2016 for Lab Furniture, SEFA – 1- 2010 for Fume Hoods, ASHRAE - 110 - 2016 for Fume Hoods, EN 14175 for Fume Hoods, BIFMA-HCF-8.1 and IGBC Membership.
- Citizen Industries has offices/representatives in major cities across the country like Mumbai, Pune, Bengaluru, Delhi, Mohali, Hyderabad, Trivandrum, Kolkata, Bhubaneswar, Guwahati, Patna, Bhopal and additional manufacturing set up at Hoskote, Bengaluru.

Goal of the Company

- To provide quality products with innovative features & high energy efficiency.
- To offer products, which can help in preserving the environment.
- To serve the society by employing large number of people.
- To serve the nation by offering import substitute.

Product Range for Biotech / Animal House Applications

- Individually Ventilated Animal Caging System for Mice, Rats and Guinea Pigs.
- Conventional Caging System for Mice, Rats, Rabbits, Dogs and Primates and Guinea Pigs.
- Metabolic Caging System for Rats.
- Animal Work Stations / Transfer Stations.
- Bedding Disposal Stations.
- Bio Safety Cabinets, Laminar Air Flow Units.
- All kind of furniture in Stainless Steel construction.

Citizen

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