



## How to restart bus operations after a lockdown?

The revitalization of society after a lockdown will be a phased and difficult process. The offer of adapted and safe public transport is extremely important herein. Respect for social distancing and hygienic needs for both passengers and drivers is top priority.

Different practices, solutions and products can be considered to assure passenger health in public transport.

## Social Distancing

### A. Multi door boarding

Multi door boarding allows for faster boarding, shorter stops and increased reliability. It separates passenger flows and avoids drivers and passengers to get in close contact which each other.



Multiple doors or extra wide doors help passengers to maintain their distance.

Three doors are better than one.





## B. Both sides doors

Doors on each side of the bus to separate the boarding passengers from the passengers exiting the bus, help to maintain distance.



## C. Front door behind front axle

Front doors are often positioned in front of the axle. A front door behind the front axle creates a isolated driver compartment. It avoids drivers to get in close contact with passengers.



## D. Driver protection shield

Protection shields avoids drivers to get in close contact with passengers. Anti-microbial film can be applied to the shields.





## E. Off-board bus fare payment

Passengers with passes, magnetic swipe tickets, or mobile tickets board through any door. Passengers paying with cash must board at the front door to pay with the driver.

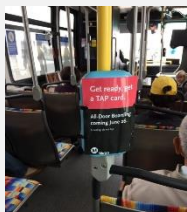


Multi door boarding may mean that front door boarding is not allowed and tickets sales (and cash) with the driver is banned.



Passengers then either travel with their electronic travel cards, pre-buy a ticket at the bus stop or pre-book a ticket online via their mobile phone.

Scanners near the doors validate the passenger tickets and/or pre-booking.





## F. Light marker to indicate entrance or exit

Doors are marked with lights to show the passengers which doors are entrances and which doors are exits on the bus.

It separates passenger flows and avoids drivers to get in close contact with passengers. The driver can dynamically change an exit doors to entrance door by switching these lights and change colour from red to green.

Using LED strips on the door leaves can also mark doors as entrance or exit.



## G. Sign to respect distance

Doors are marked with signs to indicate to passengers how much 1,5 m distance in practice really is, and remind them to respect distance.

## H. Instructions

Passengers are reminded of the restrictions when travelling on the bus. The door leaves have signs with instructions for the passenger.





## I. Interior space

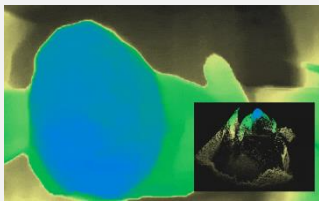
Plug Sliding doors increase interior space and standing area helping passengers to maintain distance and to keep passenger flows more separated .



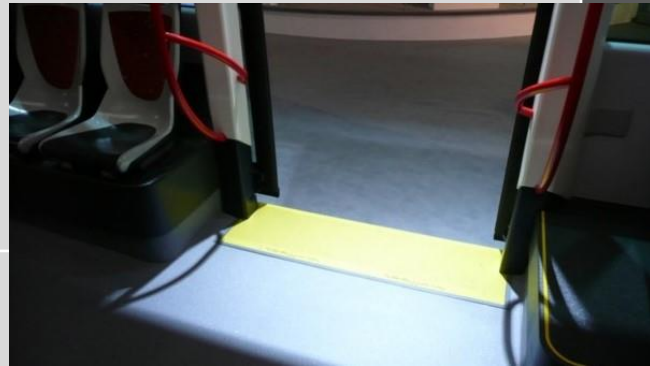
## J. Occupancy

To maintain distance between passengers a maximum percentage of seats may be occupied. Passengers may be required to pre-book and reserve their travel.

Passenger counters, on top of the door calculate the number of passenger on a bus. Seats can be equipped with a sensor to determine if the seat is occupied



Signs installed on the door leaves show to the passengers, before entering the bus, if there are any seats available or how many passengers are on board the bus.

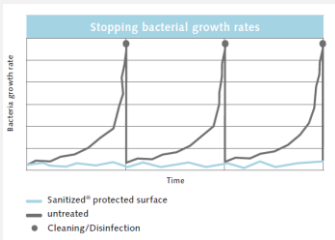




## Hygienic Needs

### K. Anti-microbial coating

Anti-microbial powder coating on door hand rails, door pillars and door frames achieves long-term anti-microbial protection.



It prevents strong germs growth on surfaces between cleaning cycles, and is a complement to regular disinfection measures.



### L. Anti-microbial film

Anti-microbial film achieves long-term anti-microbial protection on large surfaces such as door glass panels.

The Anti-microbial film can be printed with instructions for the passengers.





## M. Non touch passenger buttons

Door leaves can be equipped with buttons for passengers to open the doors by themselves.

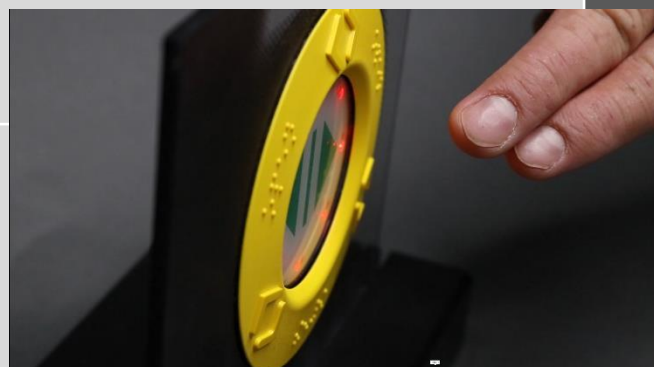
The driver does not open the doors, but only releases the door passenger buttons to the passengers for use by the passengers entering and/or exiting the bus.



The driver decides if a door is provided as entrance and/or exit to passengers. This separates passenger flows and avoids drivers to get in close contact with passengers.

The driver can dynamically change passenger-self operated doors to a door only operated by the driver.

High sensitive buttons provide a hygienic non-touch function to the passengers. Just by wave-to-open passengers open a door.





## Real Practice

Maintaining 1,5 meter distance in public transport is in practice very hard, especially during rush hours.



### N. Instructions

Passengers are reminded of the restrictions when travelling on the bus. The door leaves have signs with instructions for the passenger.



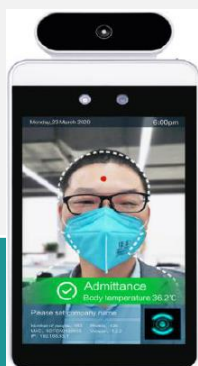
### O. Face masks and sensing

Passengers must wear a face mask when travelling with the bus. On the platform or near the door the passenger are checked if they wear a facemask

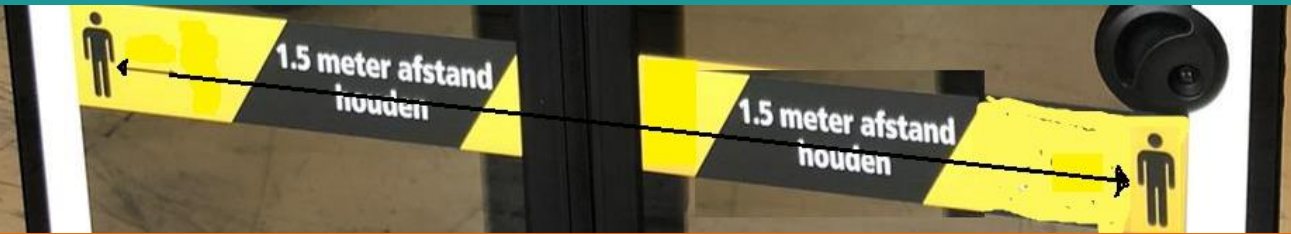


### P. Temperature sensing

Temperature of each passenger is checked at the platform. Near the door a temperature self-check device is available for passengers.







## Q. Sanitary station

At the platform and/or near the doors disinfection and towels are available for passengers.



Ventura Systems  
De Marne 216  
8701 MH Bolsward  
the Netherlands  
Tel. +31 515 577750  
Fax +31 515 577751  
[www.venturasystems.com](http://www.venturasystems.com)