

Guidance Notes for Citizen Machines fitted with Firetrace CO₂ Fire Suppression Systems

Your new Citizen supplied machine incorporates a fire suppression system supplied by Firetrace Ltd utilising a pressurised cylinder of CO₂ gas. When a fire is detected inside the machine cabin, the heat sensitive tubing melts and allows the trigger gas to discharge. This in turn triggers the cylinder to discharge through indirect pipework in to the machine cabin area. The machine additionally is fitted with a manual activation switch and a sounder to draw attention. A dual activation detection switch forces the machine and accessories to power down.

As with any fire extinguishing or detection equipment, routine inspection and maintenance is essential and may be a requirement of your insurers, especially for unattended operation of your machines. **It is the customer's responsibility to ensure the fire suppression system is fully maintained and serviced.**

The fire suppression system requires annual maintenance and inspection by a competent person or organisation: the cylinder should be weighed to make sure that it contains the correct amount of gas, the pipe work should have a visual inspection and also checked for correct gas pressure. The activation dual detection switch should also be checked for correct operation as this is essential to shut the machine down in the event of a fire being detected and, unless this shutdown takes place, the system could be ineffective.

We recommend this system is serviced by Firetrace Ltd, alternatively, your normal fire extinguisher services company should be able to undertake this work for you with some additional training from Firetrace Ltd.

As the fire suppression system uses CO₂ as an extinguishant it is important that the machine is not operated in a restricted space or a basement without adequate ventilation. High concentrations of CO₂ can cause respiratory distress and asphyxiation and care needs to be taken to make sure that in the event of activation of the fire suppression system that the machine operator door is left closed, that the area is cleared immediately of all personnel and that personnel do not return to the area until it has been ventilated to reduce the level of CO₂ to a safe level. Work should not be undertaken with the machine door open (for example inspecting the damage) until the machine enclosure has also been ventilated. This is no different from discharging a portable CO₂ fire extinguisher in a restricted space. Staff training should always take account of the procedure to be taken in the event of fire and the importance of ventilating the area of extinguishant discharge.

Factories incorporating large workshop floor areas should not be an issue, but for example, a CO₂ cylinder of 2kg needs a volumetric area of 100 cubic metres (m³) to prevent danger and, because carbon dioxide is heavier than air, when calculating this area only the volume of the room within two metres of the floor should be taken into account. For a 2Kg cylinder, This equates to a floor area of just over 7 metres by 7 metres with a ceiling height of at least 2 metres. Information about this is given below, please check with us if you are unsure about this.

For use as guidance only

2kg cylinder	100m ³ or equivalent floor space of 7m x 7m with a height of at least 2 metres
5kg cylinder	250m ³ or equivalent floor space of 10m x 12.5m with a height of at least 2 metres
9Kg cylinder	450m ³ or equivalent floor space of 15m x 15m with a height of at least 2 metres

When undertaking the calculations above you should not take account of any room height above 2 metres.

Following any discharge the area should always be well ventilated and care taken to ensure that any low lying areas are also ventilated such as pits or basements where carbon dioxide can accumulate. In the event of activation, the fire suppression system will need to be repaired before the machine can be reused. This will require an exchange cylinder, heat sensitive tube and pressurisation of the system. This work can be carried out by Firetrace Ltd.

In the event of no activation the cylinder has a service life of 10 years before needing to be exchanged.

If there is any doubt or you need further advice then please contact Citizen Machinery UK Ltd, Firetrace Ltd, or a specialised fire protection company.

Attached you will find our reference document, which should be read in conjunction with the above: 'CNC Metal Cutting Mill-Turn Centres Guidance and Good Practice in Prevention of Flash Fires'.

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