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Guarding of Planetary Mixers

003

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1. General

Planetary mixers are generally distinguished and described by their bowl capacity, and they can range from 5 litres to 500 litres, although these very large mixers are likely to be found only in larger bakeries and other industrial premises. In commercial catering, we are unlikely to encounter any over 100 litres. Small table top models are usually between 5 and 10 litres; the 20 – 40l models can often be found located on a reduced height workbench; whilst from 40l upwards they tend to be floor mounted, although these distinctions in location are very general. The images below give some idea of the varying designs, although they are not to scale. Prices can range from less than £300 for a 5 litre mixer to around £5000 for the largest models. There can be, therefore, significant financial considerations involved.



2. BS EN 454: 2000 Planetary Mixers

This British Standard, published in March 2000 (and costing £150!), requires different levels of guarding dependant on the capacity of the mixing bowl.

For a Class 1 mixer (bowl size => 5l but < 10l) a bowl extension ring is required, or a minimum distance from top of beater to top of bowl of 120mm. The “extension ring” would presumably include the non-interlocked plastic collars we often see on smaller mixers. In the absence of a copy of the Standard, the “distance from the top of the beater to the top of the bowl” is rather vague, but can be taken to indicate, again, that physically smaller mixers are involved in this group.

For a Class 2 mixer (bowl size => 10l but < 150l) a trip bar or a fully interlocked guard is required. Again, without the Standard, one would presume a “trip bar” indicates a rudimentary interlocked device of some description which will trip the power supply when operated, whereas a “fully interlocked guard” we are all familiar with.



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For a Class 3 mixer (bowl size => 150l but < 500l), a fully interlocked guard is required.

I would suggest we are only likely to be involved with Class 1 and Class 2 mixers.

HSE inspectors are advised that machines supplied after March 2000 must meet the requirements of EN 454, or achieve an equivalent level of safety. The standard is not retrospective. For machines supplied prior to 2000, therefore, PUWER 1998 will apply (as it will to later models too). It is in deciding what standard of guarding to require on pre-2000 machines that queries most often arise, as large planetary mixers are extremely robust and can last as long as 40 years. Guidance to HSE inspectors is reproduced below;

The Food Section's view is that any upgrading of existing machines to meet the requirements of BS EN 454 is not justified on the basis of the current very low accident history. However, for Class 2 and 3 machines, a number of companies offer retrofitting of interlocked guards and we would encourage fitting of these where a risk assessment shows that there may be special risk factors associated with the work, for example the use of the machines in training establishments.

Most accidents which do occur happen when people reach into the bowl with the mixer arm still revolving, eg to scrape down the sides, or when the machine is accidentally switched on during cleaning of either the bowl or the beater arm. HSE published guidance has in the past asked for the use of bowl extension rings wherever possible. Whilst bowl extension rings make access to trapping points slightly more difficult and may offer a marginal improvement in safety, their primary purpose is to prevent spatter when processing products whose volume increases during mixing. For this reason, extension rings on existing machines should only be pressed for where the employer's risk assessment indicates a clear reduction in injury risk. It is important that training and supervision emphasizes that employees should never try to 'feel' the mix, never try to scrape down the bowl when the machine is running and never reach into the bowl when adding ingredients.

PUWER 1998 reg 11 (1) states "Every employer shall ensure that measures are taken in accordance with para (2), which are effective to prevent access to any dangerous part of machinery". Judicial decisions have established that if a piece of work equipment could cause injury when used in a foreseeable way, it can be considered a "dangerous part". Beaters on a planetary mixer would clearly be a "dangerous part". Paragraph (2) outlines a hierarchy of control measures ranging from (a) fixed guards, (b) other guards or protection devices, (c) protective appliances (eg jigs and push sticks), to (d) information, instruction, training and supervision. Appendix 2 of the ACOP accompanying the Regulations does indicate that within the hierarchy of controls, the foreseeability and severity of injury will influence the choices to be made. This may go some way to explaining the HSE statement above with regard to the upgrading of existing machines not being justified given the very low accident history. They seem to prefer a combination of encouraging retro fitting of guards for Class 2 and 3 machines, coupled with thorough training of operatives.

3. Manual Handling.

It is worth noting that with the larger models, EN 454: 2000 Planetary Mixers – Safety and Hygiene Requirements, states that a bowl truck should be used for moving a filled bowl whose weight exceeds 25kg.

End.