

INDUSTRY ADVICE

CONTROLLING SHEAR LINE NOISE

Advice on compliance with the Control Noise at Work
Regulations 2005 - Noise control and purchasing



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Disclaimer

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The British Association of Reinforcement (BAR) is the industry focal point and trade association for UK manufacturers and fabricators of steel reinforcement products including cut and bent bar, mesh and reinforcement accessories.

BAR aims to add value to the reinforcement industry through product and market development, the promotion of good industry and health and safety practices and forwarding the development and use of reinforced concrete.

BAR is a member of CARES and all BAR members are CARES approved.

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CONTENTS

Introduction.....	1
Duties and responsibilities.....	2
Noise control methods.....	3
Working with suppliers to reduce shear line noise.....	6
References.....	7

INTRODUCTION

Shear line machines with no noise control can produce noise levels of around 95dB(A) at the shear-line operators position. This means that anyone operating a shear-line with no noise control is likely to be above The Control of Noise at Work Regulations 2005 [1] action limit value after 45 minutes of operation.

This advice note attempts to answer three key questions:

1. What are my duties under the Control of Noise at Work Regulations 2005 when dealing with shear-line noise?
2. What are the credible means of control for noise from shear-lines so as to limit risk to as low as is reasonably practicable?
3. How can I encourage my suppliers to provide me with built in noise control when replacing all or part of my shear-line?

This guide has been produced in association with the Health and Safety Executive. Particular thanks go to Chris Steel, HM Inspector of Health and Safety (Noise and Vibration Specialist)

EMPLOYERS' DUTIES AND RESPONSIBILITIES

The Control of Noise at Work Regulations 2005 (CONAWR) sets out six key requirements:

1. Assess your noise risk

Existing shear-lines are likely to produce noise above the daily personal lower exposure action value of 80dB(A) so you probably need to undertake a noise risk assessment. You could use the noise level given in the introduction and put this into the HSE's online calculator (2) to estimate your employees typical daily exposure based on how long you use your shear-line. Once you have established there is a risk concentrate your efforts on control and elimination of noise.

2. Control or eliminate your noise risk

This is where you should concentrate most of your effort. Make a list of credible noise control options that you could use as well as any actions you have taken in the past. It is useful to log the control work you have undertaken, the dates it was complete and your expected dates for implementing new control methods (this can form part of your risk assessment documentation). Some control methods may be simple (for example, ensure that you have a maintenance schedule for the shear-line to reduce noise from badly maintained moving parts) while others may be a significant cost (for example, install an automatic shake out). The HSE expects you to order control actions based on what is reasonably practicable. If you were already thinking of replacing a shear-line it is reasonably practicable for you to ask your suppliers for a machine which is quieter. It is not expected that you would replace a serviceable shear-line just because it is noisy. It is however expected that you would make efforts to introduce control which is reasonably practicable.

3. Provide information, instruction and training to your staff

Make sure your employees who are affected by noise from the shear-line understand that there is a noise risk.

Make sure your employees understand the harm that can be caused through exposure to noise and why they may need to undertake health surveillance.

Make sure they understand how to operate the shear-line correctly, if they are tasked with maintaining the shear-line as part of your noise control actions then make sure they understand how to do this correctly.

Finally, if you have to issue hearing protection make sure that your employees understand when and where to wear the hearing protection, where to get hearing protection, how to wear the hearing protection and how to maintain it.

4. Maintain any noise control equipment you have installed

If you have spent money on noise control systems then you will have to ensure that they are maintained and used correctly. This could be ensuring that any enclosure or noise refuges you have built are in good order or that any rubber rollers you have installed are not beginning to wear out.

5. Provide health surveillance

If your risk assessment indicates that noise levels for your employees are above the upper daily exposure action value, LEP,d 85dB(A) then you will need to provide health surveillance for those employees at risk. Health surveillance provides you with a backstop to check that your control methods are working as it will identify any employees whose hearing may be deteriorating. Well maintained health surveillance records are also useful for defending against any civil claims.

6. Provide hearing protection

If your risk assessment shows that noise levels are between lower and upper daily exposure action value, LEP,d 80 -85dB(A), then you must make hearing protection available upon request. Where noise levels exceed the upper daily exposure action value LEP,d 85dB(A) then you must provide hearing protection to employees who are exposed and demarcate designated hearing protection zones.

NOISE CONTROL METHODS

Employers have a duty to reduce noise to as low a level as is reasonably practicable. If you have an existing shear-line that is noisy then the following are credible methods of noise control. They are indicative of the sorts of measures that an HSE Inspector may expect to see being implemented as part of your reasonably practicable controls.

1. Scheduled Maintenance

Ensuring that machinery is well maintained can limit the increase of noise from existing equipment. Maintenance should help to limit increases in noise from motors, pumps, pulleys, belts, bearings, rollers, compressed air lines, hydraulics and other moving parts.

2. Reduce rebar drop heights

Reduce the impact noise from rebar by installing chains within the storage pockets on the shear line. Chains have been shown to reduce noise by around 9dB.

3. Reduce impact force of rebar falling

Ensure rebar is allowed to pass smoothly over storage pockets by avoiding unevenness. Where chains are not used nylon/rubber facings on the pockets, progressive curves on the pockets or timber battens can reduce initial impact noises.

4. Low noise moving parts

Installing low noise bearings on your conveyor systems or motors when they require replacing or the use of chevron or rubber rollers/roller sleeves to reduce metal to metal contact.



Pockets with uneven fall lines, limited fall reduction and boxed steel posts



Rubber sleeve on Roller and reduced noise bearings

5. Dampen storage pockets

Where box section steel has been used for the stanchions of the storage pockets dampening by filling with sand. This has been shown to reduce noise by 2dB.

6. Screening with plastic strip curtains

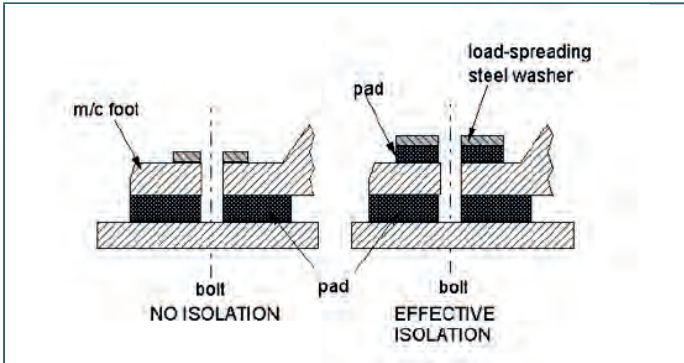
Where it is possible to enclose a room or part of a room so that noise cannot travel over the top or round the sides of a strip curtain, then they can be used to reduce noise break-out from a shear-line. This is a credible way of reducing noise exposure to other workers. 10 mm thick, well lapped curtains have been shown to reduce noise levels by 6dB[A].



10 mm Plastic strip curtains

7. Isolation of shearline

Isolating the shear line from the floor, particularly around motors and storage pockets can reduce the transmission of noise and vibration into the floor.



Isolation of machine and bolts

8. Auto-shakeout

Auto-shakeouts can improve productivity and reduced fatigue and repetitive strain for operators loading a shear-line and as it reduces the number of individual bar drops this in turn can have the effect of reducing overall noise levels.



Auto-shakeout

9. Noise refuge/control rooms

A Noise refuge can reduce noise exposure levels by 30dB(A). Automation of shear-line processes are likely to allow noise refuges to double as control rooms.



Acoustic refuge/control room

10. Hearing protection

Hearing protection can have a place in controlling noise but can be highly dependent on employee training and the management of hearing protection zones. The cost of hearing protection can be as much as £100 per person per year [2]. You will also have to ensure that they are worn correctly and that they do not over-protect as this can lead to safety issues [inability to hear warning signals]. Hearing protection should be seen as the last line of defence.

WORKING WITH SUPPLIERS TO REDUCE SHEAR LINE NOISE

There are a number of steps you can take to encourage your suppliers to provide shear line built-in noise control when replacing all or part of your plant.

1. Expect the correct information from your suppliers

The Supply of Machinery Regulations 2008 (as amended) [4] places duties on the people who manufacturer the shear-lines you purchase. They are expected to:

- Design and construct machinery so that the risk from noise is reduce to the lowest level allowing for technical progress
- Provide you with information to warn you where there are risks from noise
- Provide information on noise produced by the machine at the operator's position.
- Provide information on specific training for operators to ensure low noise exposure.

Under the Machinery Directive 2006/42/EC, they should also provide you with:

- A-weighted sound pressure level at the workstation where it exceeds 70dB.
- C-weighted peak sound pressure level where it exceeds 130dB.
- A-weighted sound power level where it exceeds 80dB.

You should look out for a noise emission declaration which will tell you typical noise level at the work station, this may be indicated by the term “LpA at the work station” or “LAeq at the work station”. This is likely to be the most relevant noise level for you.

Ask your suppliers for this information before you purchase a new shear-line.

2. Adopt the Buy Quiet policy

You can improve your own purchasing policies by adopting the HSE’s Buy Quiet scheme, see: **www.hse.gov.uk/noise/buy-quiet/index.htm**.

Having a buy quiet scheme in place is viewed favourably by HSE inspectors. Buy Quiet is a simple set of rules to apply when purchasing new machinery so as to avoid introducing or increasing noise risks to your workplace. Those rules are:

- Know the noise level from your existing machinery
- When purchasing or replacing machinery compare noise levels
- Consider a noise specification when purchasing
- Consider asking for suppliers to prove compliance with your noise specification
- Tell suppliers if you have issues.

3. Tell BAR or the HSE about machinery noise problems.

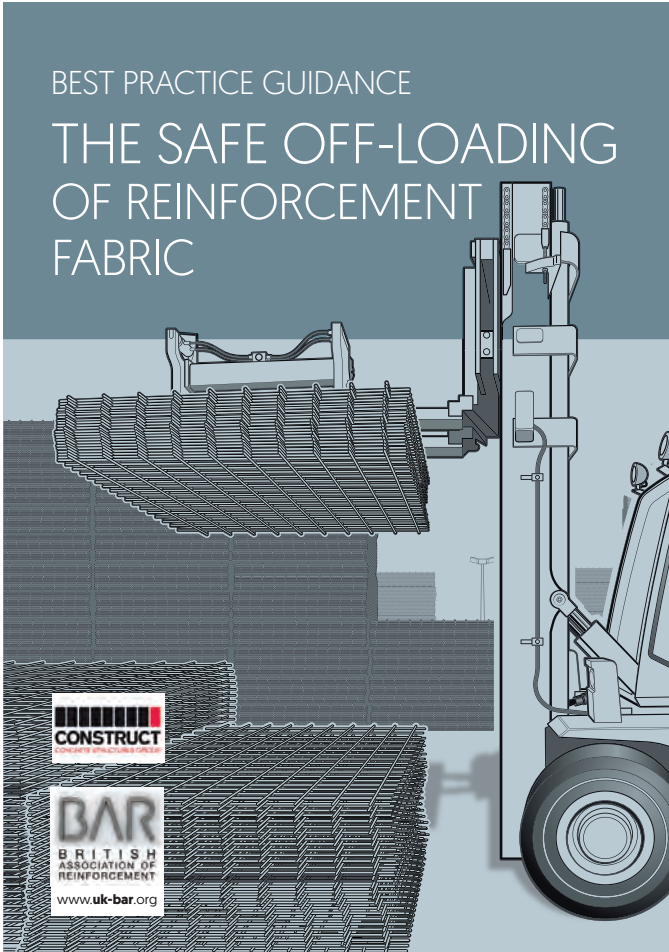
BAR and the HSE will be looking to encourage industry suppliers to help reduce noise in the reinforcement industry. If you have encountered noise problems, particularly with new machinery, then BAR and the HSE would like to know about it.

Your first point of contact would be directly to the BAR health and safety committee who will relay your concerns onto the HSE. However, you can also contact the HSE directly via their on-line concerns from, see: **www.hse.gov.uk**

REFERENCES

1. HMSO. The Control of Noise at Work Regulations 2005. Statutory Instrument. London, UK : HMSO, 2005.
2. HSE. Exposure calculators and ready reckoners. hse.gov.uk. [Online] 03 12, 2018. **www.hse.gov.uk/noise/calculator.htm**.
3. Occupational Noise Control Workshop. Wilson, Peter. London : Seminar Notes, 2017.
4. HMSO. The Supply of Machinery Regulations 2008. Statutory Instrument. London : Stationary Office, 2008.

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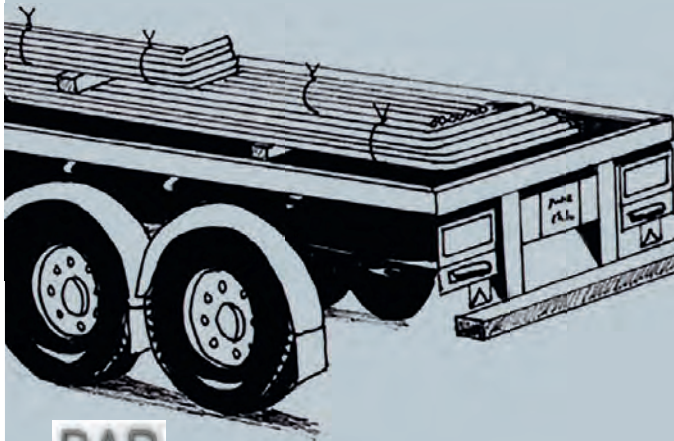


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