



The Fire Brigades Union

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**HEALTH
SAFETY &
WELFARE**

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Health, Safety and Welfare Fire Crew Cab Guidance

May 2008



Introduction

In 2000 The Fire Brigades Union published a Policy Document on Appliance Crew Cab Safety. In 2004, the Central Fire Brigades Advisory Committee (CFBAC) was disbanded along with all the various sub-committees, which spelt the demise of the Joint Committee for Design and Development (JCDD).

The result meant that the specification for fire appliances remained unchanged until 2001 when the draft European Normative prEN 1846 became **BSEN 1846 part 1 and 2**, the, and future standard for all pumping Fire Appliances.

Because of the implementation of this BSEN, a review of the FBU Policy document was required taking into account the 'new' specification notwithstanding the requirement for a general overhaul to re-establish applicability.

Although the policy takes account of the aforementioned specification, it was determined the 'new' specification incorporated numerous issues the FBU Policy detailed. Consequently the FBU take the view that the policy moves away from being one of a prescriptive nature, to one of setting attainable goals with regards personnel and vehicle safety.

It is intention of the FBU to review this policy document annually or when the relevant regulations dictate.

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Part 1 - Glossary of Terms

- 1.1 Operational Vehicles** – Includes all crew carrying Fire Service Operational vehicles irrespective of age, crew numbers, or particular duties the appliance is detailed to undertake.
- 1.2 'New' Appliances** – All crew carrying Fire Service Operational vehicles purchased by a Fire & Rescue Service be they by registration 'New' or 'Used' and are compliant with, or exempted from BSEN 1846 requirement.
- 1.3 'Other' Appliances** – All crew carrying Fire Service Operational vehicles that may be exempt, or outside the scope of BSEN 1846. This would include vehicles of less than 2 tonne are not exempt from this policy document.

Part 2 - Appliances

2.1 Doors and Door Locks

- 2.1.1** All door locks must be capable to withstand applied external forces (e.g. a side impact), applied internal forces (e.g. the impact of a crew member) and any movement of the cab (e.g. Torque).
- 2.1.2** All doors must have door locks, which incorporate a means to activate an **Audio and Visual** warning. The 'door-open' warning light(s) should be so positioned to be readily noticeable by the appliance driver and without causing undue distraction whilst driving, especially at night.
- 2.1.3** All other stowage must comply with BSEN 1846 part 2 section 5.1.1.
- 2.1.4** All appliance crew-cab doors must be fitted with a substantive, properly constructed internal door handle affixed to the internal face of the crew door thus allowing a person closing the door to obtain sufficient and adequate purchase to pull what is a swinging weight of approximately 44Kg, door handles must also be constructed in such a manner to enable the person closing the door to obtain sufficient purchase with a gloved hand conforming to BSEN 659.

2.2 Door Release Mechanisms

- 2.2.1** Door release mechanisms must be designed to prevent unintentional release by crew members, and their associated equipment (PPE).

2.3 Central Locking

- 2.3.1** Central Locking on 'modern' vehicles is becoming the norm. Whilst this type of mechanism may be designed for personal safety it can provide a hindrance in the event of a Road Traffic Collision (RTC). In addition, there are several appliances currently in use that on application of central locking; this not only locks the appliance crew cab, but also the external lockers. This factor must be considered as the security of external lockers could prevent/restrict crew members accessing vital equipment to enable self-rescue.
 - 2.3.2** Consideration therefore should be given (should central locking deem to be required) to the fitting of vehicle motion locks, whereby all doors/ lockers lock when the appliance reaches a designated speed (e.g. 10-15mph) and deactivates below this speed. The system must be failsafe in the event of the appliance being involved in an RTC thus enabling the crew or rescuers to open the appliance doors manually.
 - 2.3.3** The manual activation of any central locking mechanisms for the crew cab should only be used as a means to protect the crew at times where crew protection is required (attacks or assault).
 - 2.3.4** Central locking on appliance crew cabs and lockers should also be able to be engaged/ disengaged from outside the appliance with the engine running and the PTO in operation.
- ### 2.4 Appliance Glazing
- 2.4.1** While the appliance windscreen may be laminated to prevent shattering it is important to ensure all other windows of the crew cab provide sufficient protection to the crew from shattering or penetration from projectiles.
 - 2.4.2** All operational appliances should have 'suitably protected glazing' type glass fitted to all windows (with the exception of the windscreen). As recommended in Fire Service Circular 14/2007.



Part 3 - Cab Design

3.1 Crew Cab Design

3.1.1 There are numerous different types of fire appliances in operation in the Fire and Rescue Service, including Dennis, Man, Volvo, Scania, Mercedes Benz and Leyland Daf. Almost all pumping appliances are an adaptation of commercial vehicle chassis and cabs. The FBU Crew Cab Safety policy takes cognisance of BSEN 1846 part 2 which sets the minimum standards for the cab design.

3.2 Crew Cab Floor

BSEN 1846 part 2 only makes reference to floors having anti-slip surfaces. The crew cab floor should fit flush to the crew cab doors so as to do away foot wells inside the cab. The floor area of the crew cab should be of a sufficient size to allow adequate leg room and to facilitate all normal movements a fire-fighter might normally make prior to and during transit and when entering and exiting the cab.

3.3 Ergonomics

The definition of ergonomics is the interaction between humans and the equipment that they use at work. With this in mind the design of the fire appliance cab should include of all the components, such as the design and positioning of seating, the positioning of switches and buttons that the driver is required to use during driving, the design and positioning of door handles, radio equipment and IT equipment. Crew members should not be required to stretch or twist or unfasten their seat belt to access any switch, button or equipment that he/she may be required to use during transit.

3.4 Seating

The drivers and appliance managers seat should be fully adjustable. This means that there should be a facility to move the seat forward and backwards and up and down. The back of the seat should also tilt forward and backward. So as to afford the best comfort the seating should also incorporate adjustable lumbar support. Each seat should be fitted with a three point inertia seatbelt to the current European standards. There should also be a head restraint on each of the two front seats.

Most fire appliances use a bench type seat in the rear crew cab, one reason for this is because space is utilised under the seat for storage of equipment. Whichever type of seating is provided for the crew it must provide adequate back and lumbar support and

comfort, the crew-member should also be able to position his/her feet on the crew cab floor whilst seated. All appliances must be fitted with three-point inertia seat belts commensurate to the number of seats.

No lap-type seat belts will be acceptable under any circumstances.

The seating should be arranged so that crew members can don their Breathing Apparatus sets without having to stretch or twist their bodies in order to release the BA set from its securing brackets. Head restraints should be provided at the rear of each seat; this means that the wearing of fire helmets on route to incidents must be risk assessed, based on current service provision.

Part 4 - Stowage of Equipment

1. BSEN 1846 part 2 also pertains to crew protection and the security of equipment. The paragraph however does not enter into stowage of personal items such as shoes and clothing that not only could cause injury or harm, but also cause more of a trip hazard on exiting if left loose in the appliance crew-cab.
2. Any equipment permanently stowed in the appliance crew-cab should be concerned with Rapid Deployment for the purpose of saving endangered life. No other non-immediate equipment should be stowed in the crew-cab unless all other stowage possibilities have been examined and justifiably discounted by means of risk assessment.
3. Stowage lockers and facilities in the appliance crew-cab must also include/ incorporate secure stowage of personal items e.g. shoes, water bottles etc. All supplementary equipment must be suitably secured thus creating no additional hazard to crew members.
4. BSEN 1846 part 2. para 5.1.2.2. Crew protection:-

"In the event of an accident or during emergency braking, accidental release of equipment shall be prevented either by physical separation or by equipment securing devices which can resist a deceleration of 10 g in the direction of travel. All exposed sharp objects supplied with the vehicle and edges inside the cabin shall be protected. Head restraints shall be provided for all crew positions".

Part 5 - Crew Safety

5.1 Donning of PPE

5.1.1 Emergency Calls (Stationary at Station/Location) – Fire-Boots, Over-trousers and Fire Tunics must be donned before the vehicle moves off. Fire/Flash Hoods and Gloves can be donned en-route depending on dynamic assessment of the potential incident requirement and nature. The wearing of fire helmets whilst en-route however will remain subject to a local and specific hazard analysis and risk assessment accounting for the design of the seating position and head protection as specified in BSEN 1846 part 2. This could have a bearing on the ergonomics of the rider position in particular the forces applied to the neck.

5.1.2 Emergency Calls (Mobile) – When safe to undertake the manoeuvre, all appliances will stop to enable the crew to don fire-kit. At any time this is not achievable the driver must reduce speed accordingly to enable safe donning.

5.1.3 Rigging in BA – Should only to be undertaken when the vehicle is stationary at the incident, **never en-route**.

Part 6 - Lighting & Heating

Lighting

Poor lighting will increase the risk of accidents such as slips, trips and falls and so it should be suitable and sufficient for these risks and for necessary operations within the cab, and illuminate all areas. Crew cab lighting should be sufficient to illuminate the crew cab without distracting the driver/OIC, the possibility of a separate flexible reading light for map reading on route is acceptable. The driver should have a master switch to turn off lighting that could be affecting their night vision. Standard lighting can be replaced with LED's (light emitting diode). Standard lights have a short service life, are susceptible to shock and water ingress resulting in bulb failure. LED lights have no bulbs or bulb holders and the electronics are encapsulated in epoxy resin so are much less susceptible to shock and vibration.

Lighting should also be incorporated within the stairwells and door exits to assist with safe access and egress. Light levels are measured in luminance, having units of lux.

References

- *Lighting at work* HS(G)38 HSE Books 1987
ISBN 0 7176 0467 5

- *Workplace (Health, Safety and Welfare) Regulations* 1992

Heating

The temperature should be reasonable within the crew cab with provision for heating and cooling. An acceptable zone of thermal comfort for most people in the UK lies roughly between 13°C (56°F) and 30°C (86°F), with acceptable temperatures for more strenuous work activities concentrated towards the bottom end of the range, and more sedentary activities towards the higher end. All modern appliances will have heating available, but air conditioning should also be considered to help reduce the body core temperature between calls, as new studies have shown this to be a major concern for Firefighters.

References

- L24, *Workplace health, safety and welfare*,
(ISBN 0717604136 - available from HSE Books)
- *The HSE guidance publication, Thermal Comfort in the Workplace*
- HSG194, *Thermal Comfort in the Workplace*,
(ISBN 0717624684 - available from HSE Books)

Part 7 - Risk Assessment

'Risk Assessment' – The Management of Health and Safety at Work Regulations (MHSAW) 1999 Regulation 3 as amended sets out the responsibilities that an organisation carries to its employees, this covers the general duties in the Health and Safety at Work Act (HSW act) 1974. This involves identifying the hazards, evaluating the extent of the risk. This should be consistent with the Analysis contained in BSEN 1846 part 2 on all new vehicles. Any retro fitment of equipment or structural changes to the original vehicle must be subjected to further risk assessment.

The risk assessment must also ensure compliance with all other regulations currently in force, i.e. Provision and Use of Work Equipment Regulations (PUWER) 1998, Noise at Work Regulations etc.

The Management of Health and Safety at Work Regulations (MHSAW) 1999 Regulation 4 as amended sets out the responsibilities that an organisation carries to its employees with regards to principles of prevention from risk using the hierarchy of control, which avoid the risk as the first and foremost method of control.



Part 8 - Communication & Information Technology

IT and Communication

It is important that all aspects of Communication and IT are risk assessed. Carrying out these risk assessments should be taken into account with the various parts of legislation that are in place and cover many different areas.

Communications

Crew Radios

Since the inception of the “modern” fire service, the need to have an efficient means of communication, between the operational incident and command and control centre, has become essential to deal with the effective deployment of resource and support services in order to effectively support front line fire fighters. It is clear that over the passing years this technology has advanced in many areas to today, where a modern fire service strides to bring these advances into the work place.

Main scheme radio systems (analogue) are widely deployed within the services and are the accepted standard, however there are still issues that we should be concerned with looking at the effect to crews while travelling in the crew cab.

Each radio unit installed into an appliance will have a transmitting power (this is usually measured in watts) when assessing risk it is important to find out in advance what this power is and ensure that these meet with current standards. It’s also important that at least one field strength test is carried out to ensure that correct screening is applied to the crew cab.

The installation of any radio system should be done in such a manner that it deals with all the safety issues, these include ease of use and positioning, safe access at all times that may be required, both en route and at an operational incident.

The use of radios in cabs should also be assessed, as not just standard crewing but when an appliance is crewed with a single person. Areas of concern will be whether there is a need for hands free operation of communication to comply with current legislation or just a safe system of work. This may result in different policy or procedure.

With the introduction of next generation digital radio system all the above will apply but with additional

safety concerns to be taken into account. It’s clear with current technologies that are being introduced within the service (Tetra or O2) that there is a lot of concern of the effects these digital transmissions have on both the body and the brain. Where possible before accepting the use of such equipment, be sure that that you check the latest advice and ensure that the risk assessment carried out, is done so effectively and not just a generic assessment. The advice to date has been conflicting on the possible effects, but this can be done by seeking further advice from the relevant national office or regional health and safety official.

Many brigades, and vehicles supplied by CLG, are being supplied with fitted mobile phones with various additional capabilities (Data faxes). Again the same principle applies here as above, but again there is specific legislation that affects use of such devices while on the move and will apply to fire-service vehicles as well as the general public.

However the guiding principle in all these matters is common sense and the effective use of such.

Information & Technology

In this area technology has and is continuing to advance year by year, and like many other industries the fire service is becoming more and more reliant on information systems. These include but are not exclusive of computers, navigational systems, data recorders and media equipment.

In dealing with computer or data equipment a number of elements should be applied and legislation will apply also.

Core principles should apply while carrying out the risk assessment

1. All equipment should be CE marked.
2. Visual Display equipment will in certain areas have to comply with legislation (therefore it is best to apply all criteria where possible for all uses).
3. Equipment installed must be done so in a safe manner. If there is a need to use it while travelling then it is used only where it is safe to do so and does not distract the driver or other members of the crew carrying out standard operational procedures for a safe system of work. The use of any equipment while travelling is done in the most effective, ergonomically safe way as possible.



4. Installed equipment must be fitted securely and in such manner that all eventualities and possible risks are taken into account and control measures applied to minimise them.
5. Lastly that a manual handling risk assessment, within the current legislation is applied.

It is clear that these guidelines apply not just to standard fire service vehicles but may be extended with and to the application of specialist vehicles and additional thought and control measures will apply, but again the overall principle to be applied is common sense.

All the above areas over reliance on technology should away be borne in mind when assessing use of such equipment, and to ensure that there is always resilience and procedures to support a safe system of work for our members.

Part 9 - Noise

The regulations effecting noise in crew cabs is, Statutory Instrument No, 163, "The control of noise at work regulations 2005".

The legislation came into force in April 2006. It is generally accepted that most of the noise is likely to come from the audible warning systems fitted to the outside of the cab.

Noise Risk Assessment - A noise risk assessment is necessary if there is any reason to believe that noise may exceed the first action level. A rough indication of when this level has been reached is when people have difficulty conducting a conversation at a range of about 2 metres apart. An assessment of the level of noise must be carried out and properly documented. The including the actual exposure calculations were they exceed the first action level. Then an action plan must be produced and the information made available to those who could be exposed to the risks.

First action level: 85 dB (A)

Employers have to provide information and training, and make hearing protection available.

Second action level: 90 dB (A)

Employers also have to take action to control the noise, only relying on hearing protection as a last resort.

Peak action level: 140 dB

This refers to a single loud noise, such as a gunshot.

The main requirements apply where employees' noise exposure is likely to be at or above any of three 'action levels'. Two of the action levels are values of 'daily personal exposure to noise' shortened to LEPd. These depend on the noise levels in the working area and how long people are exposed to the noise.

The values take account of noise exposure over the whole working day or shift.



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Produced by: The Fire Brigades Union

Bradley House, 68 Coombe Road,
Kingston upon Thames, Surrey KT2 7AE

Tel: 020 8541 1765

Fax: 020 8546 5187

Email: office@fbu.org.uk

www.fbu.org.uk

