



## CPA Safety Guidance

### Excavators Used as Cranes

Two new European Standards that became effective in 1996 and the new Lifting Equipment and Lifting Operations Regulations 1998 (LOLER) have changed the requirements to fit controlled lowering devices (check valves) and Automatic Safe Load Indicators (ASLI's) on excavators used as cranes.

The two standards are:

- BSEN 474-4:1996 "Requirements for Backhoe Loaders." Implemented on 15 July 1996.
- BSEN 474-5:1996 "Requirements for Hydraulic Excavators." Implemented on 15 Nov 1996.

These two European (harmonised) Standards give guidance on how to satisfy the "Essential Safety Requirements" as listed in the "Supply of Machinery (Safety) Regulations 1992" which implements the European "Machinery Directive" in the UK.

All excavator owners throughout Europe must be guided by the Regulations and Standards and machines fitted in accordance with the Standards can be used in all EU countries.

It also means that the old UK requirements to fit check valves and ASLI to excavators are now null and void, although machines fitted with these devices can still be used. It should be remembered that these previous requirements were the HSE's interpretation of the Construction (Lifting Operations) Regulations 1961 and these old regulations were replaced by LOLER on 5<sup>th</sup> December 1998.

The following extracts from the text of the two new European Standards are reproduced below:

#### ***BSEN 474-4 Backhoe Loaders***

##### *4.10.2.2.3*

*The backhoe portion used in object handling operations, with a maximum rated object handling capacity > 1000kg or an overturning moment > 40,000 Nm (Newton Meters) shall be equipped with:*

- *an acoustic or visual warning device which indicates to the operator when the rated object handling capacity / corresponding load moment is reached and continues as long as the load or load moment is exceeded.*

- *a boom lowering control device on the raising boom cylinder(s) which meets the requirements of ISO 8643: 1988.*

*These devices may be deactivated while the backhoe equipment is performing operations other than object handling. The activation shall be clearly indicated. The control(s) of deactivation shall be within the operator's zone of comfort according to ISO 6682: 1986.*

### ***BSEN 474-5 Requirements for Hydraulic Excavators***

#### ***4.1.7.3.2 - Rated object handling capacity table***

*A table of the rated object handling capacities established by the manufacturer shall be provided. The table(s) shall be available at the operator's station.*

#### ***4.1.7.5 - Load safety devices***

*Excavators intended for use in object handling operations and with a maximum rated lift capacity > 1000kg, as defined by ISO 10567: 1992, or an overturning moment > 40,000 Nm, shall be equipped with:*

- *an acoustic or visual warning device which indicates to the operator when the object handling capacity or corresponding load moment is reached and continues as long as the load or load moment is exceeded. The rated load is defined in the rated object handling capacity tables. This device may be deactivated while the excavator equipment is performing operations other than object handling. The activation shall be clearly indicated. The control of the deactivation shall be within the operator's zone of comfort according to ISO 6682: 1986.*
- *a boom lowering control device on the raising boom cylinder(s) and which meets the requirements of ISO 8643:1988.*

#### **Note:**

Nm = Newton Meters.

> = greater than.

Maximum rated object handling capacity = Safe Working Load (SWL).

Lowering control device = check valve.

Within operator's zone of comfort = within the operator's reach and sight when sitting at the controls.

These two new European Standards make the old CPA/FMCEC booklet "Guidance for Excavators Used as Cranes" out of date. Many will be familiar with the chart that was published in 1991 in the booklet and reproduced by many manufacturers in their own manuals.

Using the same format we have updated this chart which is shown below. The requirements are now much simpler than the previous HSE requirements.

### **Implications of the Changes**

- The "acoustic or visual warning device" is a much cheaper alternative to an ASLI. Most manufacturers seem to be offering the two alternatives because, despite the low cost of the new warning devices, they do have a disadvantage in that they reduce the Safe Working Load (SWL) of the machine. This reduction is greatest at the shorter reaches and can be critical. The larger the machine, the more exaggerated the reductions become.
- The old HSE rules allowed excavators to operate as cranes with a Certificate of Exemption CON/LO 1981/82 instead of a 4 yearly Test and Thorough Examination. The European Standards change all this and all machines must now be tested and be fitted with check valves on the boom (only).
- Those machines with SWLs of 1 tonne or less still do not need to be fitted with check valves or acoustic or visual warning devices.
- The HSE and the CPA advise that all excavators used as cranes should continue with 4 yearly testing, 12 monthly (previously 14 monthly) thorough examination and weekly inspection.
- Similarly, excavators that are used for digging alone (ie not used as cranes) should be thorough examined every 12 months and the inspected weekly.
- The HSE have withdrawn their standard report forms for inspection and thorough examination and certificates of test. LOLER permits companies to record the results in any way that is convenient to them. However, the information that must be contained in a report of thorough examination is laid down by the regulations and is listed in Schedule 1 of LOLER.

The HSE have published an Approved Code of Practice and Guidance on LOLER that covers all industry sectors. They are currently writing further specific guidance for a number of different industries. The CPA are deeply involved with the construction industry guidance.

## References

"Safe use of Lifting Equipment", L113, published by the HSE and available from HSE Books, PO Box 1999, Sudbury, Suffolk, CO10 6FS. Tel: 01787 881165, Fax: 01787 313995.

European Standards BS EN 474-4 and BS EN 474-5 available from BSI Sales Department, 389 Chiswick High Road, London W4 4AL. Tel: 0181 496 7000, Fax: 0181 496 7001.

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Construction Plant-Hire Association  
52 Rochester Row

London  
SW1P 1JU  
Telephone: 020 7630 6868  
E-mail: [enquiries@c-p-a.co.uk](mailto:enquiries@c-p-a.co.uk)

# CPA GUIDANCE CHART

## EXCAVATORS /BACKHOE LOADERS USED AS CRANES

JUNE 2000

- ✓      REQUIRED  
 ✗      NOT REQUIRED

ACCORDING TO:  
 LIFTING OPERATIONS AND LIFTING EQUIPMENT REGS (LOLER),  
 EUROPEAN STANDARDS BSEN 474 - 4 AND BSEN 474 - 5.

	EXCAVATORS USED AS CRANES WITH A RATED LIFT CAPACITY GREATER THAN 1 TONNE OR AN OVERTURNING MOMENT GREATER THAN 40,000 N.m.	EXCAVATORS USED AS CRANES WITHOUT ANY RESTRICTIONS AND WITH A RATED LIFT CAPACITY OF 1 TONNE OR LESS, OR AN OVERTURNING MOMENT OF 40,000 N.m OR LESS.	EXCAVATORS NOT USED AS CRANES.
A. LOWERING CONTROL DEVICE(S) TO CONFORM TO ISO 8643 FITTED ON RAISING BOOM CYLINDER(S).	✓	✗	✗
B. RATED OBJECT HANDLING CAPACITY TABLE IN THE CAB.	✓	✓	✗
C. ACOUSTIC OR VISUAL WARNING DEVICE.	✓	✗	✗
D. CRANE SAFETY HOOK OR LIFTING SHACKLE WITH SWL MARKED & TEST CERTIFICATE.	✓	✓	✗
E. SIX MONTHLY THOROUGH EXAMINATION OF LIFTING GEAR.	✓	✓	✗
F. FOUR YEARLY TEST & THOROUGH EXAMINATION; FORM.	✓	✓	✗
G. TWELVE MONTHLY THOROUGH EXAMINATION.	✓	✓	✓
H. WEEKLY INSPECTION OF EXCAVATOR.	✓	✓	✓

