

# Except for LOLER

The Kinks didn't have LOLER in mind when they penned the immortal lyrics of their hit song, but Brian Tinham finds some interesting resonance nevertheless

**A**greed, it's not Lola, as in that seminal '70s song, but there's little doubt it would be 'a mixed up, muddled up, shook up world, except for LOLER' – the all-encompassing Lifting Operations and Lifting Equipment Regulations 1998. They provided the first comprehensive legal framework for 'thorough examination' – and ultimately also installation, operation and maintenance – for everything to do with lifting, from passenger lifts to vehicle tail lifts, cranes and hoists.

Most important, a lot of lifting equipment that had not previously been covered was brought into the fold and, just as significant, LOLER was far more prescriptive than PUWER (Provision and Use of Work Equipment Regulations), recognising the specific risks involved in lifting operations and lifting equipment. Hence all the published guidance by HSE (Health and Safety Executive) and others aimed at owners, users and competent persons.

But where passenger lifts and escalators are concerned, LOLER is far from the end of the story. As Allianz Engineering lifts standards engineer Vince Sharpe says, LOLER specifies regulation for users of the equipment and what constitutes a thorough examination. Beyond that lies all the detail in the codes of practice. He should know: Sharpe sits on the BSI and SAFed (Safety Assessment Federation) committees and works with the HSE, updating guidance documents and the codes.

It's important to get this right. SAFed says 14,000 serious defects were found on lifts alone in 2005 (the latest year for which figures are available), and that's with just under 300,000 examinations (two per year per lift). Take it how you want: it could be an indication that some lift owners still don't pay as much attention to maintenance as they should, or that the legal environment averted 14,000 incidents. Either way, if you're an engineer involved in the installation, operation or maintenance of lifts or escalators, let's revisit what you need to know.

First, escalators – and Sharpe indicates that these are not, in fact, subject to LOLER: they are only mentioned in the Workplace regulations.

"Owners and operators should have a six-monthly thorough examination done on escalators, but the detail for this is under HSE guidance document PM45, not LOLER," he says. And be aware that both PM34, which covers safe functioning of the user environment, and PM45, which looks after thorough examination, are currently being rewritten. "We're looking at providing one document to replace 34 and 45, and bring them both up to the current standards with extra guidance that wasn't given in the original documents," he explains.

Why? Because equipment has changed, and so have design and safety features. Also, since 1995 escalators have been manufactured to BS EN 115 (not BS 5656), the build standard harmonised with

## Pointers

- In general, on both escalators and lifts, look for shorted-out safety trip switches
- On escalators, watch for broken combs and damaged flutes, check for an increase in running clearances, damage to skirting brushes and step chain wear
- Be aware of the requirements for ingress and egress, and factors to prevent user accidents
- For clarity go to: <http://www.hse.gov.uk/LAU/lacs/25-1.htm>
- On lifts, check for oil leaks on driving gear, which can leak into the motor room and on to the car roof
- Examine the lift equipment, as well as the landings, access to the machine room etc, for people working on the lift as well as those using it



## Simple guide for tail lift operators

SOE, with SAFed, HSE and leading vehicle tail lift manufacturers, has now published the Simple Guide for Tail Lift Operators, aimed at walking operators through relevant aspects of LOLER and clarifying legal obligations. While having no legal status, it does answer frequently asked questions and provides a best practice summary, as well as notes on reading and contacts.

Eddie McIver, sales and marketing director at Ratcliff Palfinger, says it's long overdue: "The legislation has been out there for years, but not all end users realise they have legal obligations in terms of maintenance... LOLER clearly states that inspection has to be carried out by a competent engineer twice a year – and

that's beyond the manufacturer's maintenance intervals."

As for who is a competent engineer, McIver warns: "We would argue that a competent engineer is someone with experience in maintenance and installation of tail lifts. We offer training courses and so do our competitors, but there are different levels." And he adds that some insurers and commercial dealers' are offering inspection work, but without the necessary competence.

Peter Collingwood, quality and after sales manager at Ray Smith Group, agrees: "We come up against insurers sending engineers out to do checks – and they haven't been on training courses to see what matters." RSG recommends three service visits per year – so more than the LOLER 'MOT' – and says that improves preventive maintenance.

As for problems to watch for, the industry speaks with one voice: most are those caused by operator misuse. Top of the list are damage due to overloading, off-centre loading, and forklift trucks driving over them and using them as bridges.

the Machinery Directive, now in the final stages of revision and due for re-release next year. The new guidance is currently being prepared by the Escalator Review Committee, comprising HSE, SAFed and LEIA (Lifts and Escalator Industry Association), with enforcement officers and big users, including London Underground and BAA.

"That's very important," says Richard Hulmes, CEO of SAFed, "because, there are specific risks on escalators, mostly associated with fingers and toes getting trapped, people falling off because their attention has wandered, trolleys getting stuck and so on. So there are specific issues around design for ingress and egress, lighting, warning messages, but also inspection and maintenance."

### Shorted safety circuits

The new guidelines, however, won't be available until the back end of next year. So for now Sharpe suggests that engineer surveyors still use PM45, while maintenance engineers initially follow the manufacturer's specification and BS EN 13015 'Maintenance for Lifts and Escalators (Rules for Maintenance Instructions)', "even though the standard focuses more on lifts than escalators". That covers risk assessments, requirements for engineers and areas they should be covering.

And if you're wondering what those ought to include, Sharpe says look out for shorted safety circuit switches. "Sometimes, service engineers short-out troublesome switches, rather than replace them. Usually, it's individual switches – for example a step sag switch that monitors vertical movement on the steps. If one is set a bit critical, it can trip and, instead of adjusting it, they just short it out." And the same applies to speed monitoring switches – which is fine, until they're needed.

**Traction motor bearings manufactured by NSK are used in the fastest lifts in the world on the tallest building in the world: the Taipei 101 in Taiwan, which rises to 508 metres**





As for common defects, he suggests engineers look out for broken combs at the entry and exit points, and damaged step flutes, which need to be replaced to avoid trapping points. "The escalator is manufactured with running clearances to the build standard. But, if there are broken teeth or damaged flutes, those clearances will increase, and that means dangerous trapping points." Other problems to watch include: damage to skirting brushes, designed to prevent feet from being drawn down the escalator sides; step chain wear on the driving gear, which again leads to expanding running clearances; and similar issues with hand rails.

What about lifts? From the design perspective, everything is covered in the Lift Regulations 1997. "That sets the goals," explains Sharpe, "and it's a lot more in-depth than the other Build Directive. Then the build standards are BS EN 81 series, which have been in their current form since 1998 and are harmonised with the Lift Regulations. And for thorough examination, you're back to LOLER, supported by the SAFed LG1 lift guidelines."

### Bizarre exclusions

There is, however, something of a loophole here: lifts in residential blocks of flats are not covered by LOLER. As SAFed's Hulmes points out: "It's a bit like having a MOT for commercial transport, but not applying it to private cars. Lifts whose primary use is not work related, such as those in shopping centres and airports, don't come under the regulations – although they still come under the overarching Health and Safety at Work Act, and the best way to comply with that is through LOLER!" He suggests that non-workplace escalators should be treated in the same way.

Note that SAFed's lift guidelines were revised last year to bring in risk-based assessments. "The changes reflect the fact that a 30-storey lift in an office block with 5,000 people will be going up and down like a jack hammer, while a small lift in a block of flats will only be in use a few times a day," explains Hulmes. "Now, rather than following a prescriptive timetable, a lift owner has to be given reasons for a supplementary test request by a competent person. So, for example, if a gearbox is whirring nicely, cool to touch and so on, it shouldn't need to be opened up and examined because it's unlikely to cause a failure." The result: inspections tailored to real usage, increased health and safety, and cost savings for lift owners.

Beyond that, SAFed and LEIA have also introduced guidelines governing car-top controls that allow engineer surveyors or lift maintenance engineers to ride on the lift car roof. "Car-top controls and emergency stops should now be fitted to all lifts," says Hulmes, "so that engineers can isolate the controls and look at the ropes or carry out maintenance without the risk of someone on

## Going up in the world

Driving forces in lifts currently fall into five broad categories. First, there's the ongoing move towards machine room-less (MRL) lifts. Second, and related, is the increasing dominance of traction lifts over hydraulic. Third is uptake of gearless, permanent magnet type motor-driven (rather than induction) lifts for energy-saving. Fourth is the introduction of cleverer lift controls to improve lift operations. And fifth is the increasing requirement for disabled access lifts.

MRL lifts have been around for a decade and are increasingly popular. As Nick Mellor, engineering services manager at Pickerings Lifts, says: "There's a real push for these space-saving lifts, except in areas where there is a distinct advantage for having a machine room." He sees four exceptions: high speed elevators that need greater clearances; large goods lifts where space-saving is not an issue; non-standard lift projects; and low-cost lifts.

But energy saving is today's bigger deal. "There's been a huge change in recent years, with the widespread introduction of gearless traction machines driven by permanent magnet motors. There are some nice benefits. Because there's no gearbox, lift efficiency is high and energy waste is low. They're also more robust: I don't expect failures with these, whereas gearboxes on lifts need fairly frequent maintenance and intervention."


Moving on to smarter controls, Pickerings' man says it's a response to requirements for high-speed, high-rise buildings, but also retrofit projects. "A building that's 30 years old will have a certain number of lift shafts. If its usage changes you can't bolt on extra lift shafts, and there are physical constraints on speed to do with clearances, deceleration and safety. So improved controls are driving most performance improvements by optimising lift cycles."

As for disabled access, this is less about technology and more about social awareness and compliance with the trail of tightening European codes of practice. For lift manufacturers like Pickerings and Kone, it means more business – building lifts for installation where they simply wouldn't have been considered before. For operations engineers and technicians, it means more proliferation of lifts and a clear requirement for engineering know-how.

ground zero pressing for the lift. We wouldn't work on a lift without car-top controls unless it was only two or three stories high and the lift engineer could see what was happening."

As for common problems, again they relate to shorted safety switches. "I've had an email about a typical horror story today," says Sharpe. "One of our engineer surveyors found a top floor lift call push button disconnected. No doubt the lift ropes had stretched so, if the car travelled to the top floor, the counterweight would buffer. Instead of fixing it, the service engineer had disconnected the button. Suspension rope stretch is quite common."

More worrying is lock circuits shorted-out, meaning, for example, that doors, which should be protected by daisy chain safety circuits, can open to intending users while the lift sails past. Then there are oil leaks on driving gear, which can leak into the motor room and on to the car roof, making the surface dangerous for engineers carrying out maintenance work.

"An engineer surveyor would check all the safety circuit switches, look down the structure itself, and watch for wearing parts, doors and running clearances," says Sharpe. "Also, his examination wouldn't just be on the lift equipment: it would always include the landings, access to the machine room and so on – for people working on the lift, as well as those using it." 

**Space-saving, machine room-less lifts are in the ascendency – except in areas where there is a distinct advantage for having a machine room**

