Scissor Lift overload devices are Dangerous

A few weeks ago we published a web editorial regarding the dangers of Scissor lift overload devices, which arose from user feedback in recent weeks about the unreliability being caused by manufacturer's attempts to meet the overload requirement of EN280. Since its publication we have received an overwhelming flood of input on this issue confirming the dangers we highlighted. We are therefore publishing an edited version here and renewing our call for this dangerous situation to be dealt with.

Varying cantilevers and joint friction make reliable overload measurement difficult.

When EN280 was at the final stages of its approval process, the French government refused to accept practical compromise proposals regarding overload devices for aerial lifts insisting that full overload systems became a mandatory requirement of the new standard.

In spite of the fact that the industry unanimously insisted that overload devices were simply not "state of the art" at that time. The rest of Europe capitulated to prevent years of work on EN280 being lost. Manufacturers had to quickly find ways to fit systems to their new machines, for booms, this was not difficult, thanks to smaller platforms and the fact that a number of suppliers had been working on these products for many years to satisfy an earlier requirement in France.

On scissor lifts, though it has been a disaster. The challenge is far more daunting due to larger platforms, the cantilever effect of roll-out deck extensions with their restricted capacities, huge variations in lift cylinder pressure through the lift cycle and continually changing friction levels within the scissor stack pivot points.

Until now manufacturers have had two choices, either to fit a pressure gauge on the lift cylinder and a platform height detector on the scissor stack, feeding the two pieces of data into a micro processor which then attempts to detect an overload. OR Fit load pins into the four upper points that connect the platform to the scissor stack and feed that data into a processor.

The problem with the first option is that certain point loadings or friction spikes cause false readings that then shut down the machine, often leaving the operator stranded on the platform. The latter design provides a more consistent performance thanks to the fact that it eliminates scissor stack friction from the equation. However it is still subject to point load variations that cause false readings and is disproportionately expensive.

The fact is, that placing too much weight in an elevated scissor lift (most scissors already incorporated pressure relief preventing lift off with an overload) has

It is light but large objects that cause the most danger to a scissor lifts stability, such as this huge banner.

rarely, caused an accident. On the other hand, loading an item that is light and bulky and catches the wind, does cause instability and does cause accidents. In these instances overload devices provide little or no help with this real situation.

When the platform lift capacity is exceeded on a scissor lift, the lift actually becomes more stable (depending on scissor stack rigidity) as the load generally falls within the machine's base area, thus adding to the counterweight effect.

The scissor arms and lift cylinder have no problem coping with the load at this height, as structurally they are hardly stressed compared to the lift off position. As an overloaded scissor platform is lowered it reaches a point near the closed position where the arms may well bend, damaging the machine, but it's rarely a life-threatening situation.

On the other hand, we know of countless cases where the platform has detected a false (or real) overload reading and locked out. Most machines do not then allow the operator to do anything, so he is stuck in the raised position, as far as the machine knows, with an overload on the platform!

Imagine the case where a platform is overloaded, possibly with bulky items and it is blowing a gale; the scissor starts to sway, possibly moving outside of the machine's base, this is hardly safe. Far better to have been able to lower the machine to safety as in the past.

And what of the scenario of an overload connected with an accident in the platform, perhaps an occupant with a heart attack? The machine locks out and cannot be lowered by a co-worker in the platform, nor on some units, from the base until a mechanic resets the overload device.

Or imagine the situation that the UK's HSE has warned about (see page 51,) where an operator hits an overhead beam while lifting, pressing him onto the controls, and preventing him from releasing the controller. The overload device is likely to lock out, preventing the platform from being lowered to save the man's life.

There is an argument that the repeated, excessive overloading of a scissor lift, will cause structural damage and fatigue, resulting in a failure at a later date when the machine might not be overloaded. This can easily be solved by recording any excessive pressures in the lift cylinder, which could create a lockout when lowered, forcing the owner to carry out a structural inspection.

This situation is so dangerous, that a national safety body, such as the HSE, should immediately issue a European machinery directive "Safeguard notification", suspending the overload lockout requirement for scissor lifts, until practical cost effective systems are perfected.

Dear Sir…….

"People should be aware of the fact that in many cases, access hire companies already have immobilized the LS (load sensing) systems because of too many service calls, for non functioning platforms. With the, still, too low rental rates, they can not afford too many service calls and disconnect the systems. Now we have a false safety; another user might think the unit gives a warning when overloaded and not realise that the system is not functioning".

"On booms it sometimes works, on scissors??? And yes, in spite of all promises of vendors of several systems, so far I did not come across a good system".

Typical email responses to our Web editorial