



Rated Capacity Indicators (RCI) for Excavator Lifting Operations

UK legislation, the three tiers of device, and what to require — quick reference

The bottom line: The law requires only an overload *warning* device. UK construction best practice requires a Rated Capacity Indicator (RCI) giving live load, radius and height. Proximity / exclusion-zone lifts require a Rated Capacity Limiter (RCL) with height and slew limiting.

Trigger threshold: object-handling capacity over 1,000 kg, or overturning (load) moment over 40,000 Nm.

1. What the legislation actually requires

There is no UK regulation that names “RCI” as a mandatory device. The requirement is built up from several instruments that bite once an excavator is used for lifting (object handling) rather than excavating:

- **LOLER 1998** – the machine is now lifting equipment. Reg 4 (adequate strength & stability for each load), Reg 7 (marking of SWL), Reg 8 (every lifting operation planned by a competent person, supervised, carried out safely), Reg 9 (thorough examination – 12-monthly machine / 6-monthly accessories).
- **PUWER 1998** – suitability, maintenance, and the requirement for protective devices and warnings (Regs 4, 5, 24).
- **Supply of Machinery (Safety) Regs 2008** – forces the hardware onto new machines via the harmonised standards BS EN 474-1 / BS EN 474-5 and ISO 8643.

Where object-handling capacity exceeds 1,000 kg or the moment exceeds 40,000 Nm, BS EN 474-5 / ISO 8643 require: (a) an acoustic or visual overload warning device; (b) a boom/dipper load-holding (check / hose-burst) valve; and (c) a rated lifting capacity (load) chart. Note (a) is only a warning — it need not display numbers, know the radius, or stop the machine.

2. The three tiers of device

| Tier / device | What it does | Status & examples |
|--|---|--|
| 1. Overload warning device | Audible / visual alarm when the rated capacity or load moment is reached. No live readout, does not stop the machine. | Legal minimum under BS EN 474-5 / ISO 8643. Rarely fitted alone on a genuine lifting machine. |
| 2. Rated Capacity Indicator (RCI) | Live in-cab display of load on hook, radius, height and % of rated capacity against the programmed load chart; green → amber → red, alarms ~90%. Indicates and warns — does not cut motion. | UK construction best-practice expectation — what a lift plan usually means by “an RCI.” e.g. Xwatch RCI Lite / XW1, GKD, JFP, SMIE, Prolec. |
| 3. Rated Capacity Limiter (RCL) + zone limiting | Everything the RCI does, plus physically cuts / limits machine motions to prevent the unsafe condition, with height, slew and zone / exclusion limiting. | Specified for proximity work (rail, highways, structures, OHL, confined slew). e.g. Xwatch XW2 (height), XW5 (height + slew); GKD equivalents. |

3. What to require — and worked example

- **Standard lift > 1 t:** calibrated RCI (Tier 2) showing live load / radius / height, plus check valves and a matching load chart.
- **Proximity / exclusion-zone lift:** RCL (Tier 3) with height and slew limiting set to the zone.
- **Dedicated lifting point:** lifting eye (not bucket teeth), load-rated quick hitch or pinned bucket, attachment weight in the rated capacity.

Worked example: a 13 t 360° excavator slinging a 1.5 t drainage chamber is above 1 t, so EN 474 means it must at least have the overload warning device and check valves. To sign it off, the contractor will want a calibrated RCI showing the 1.5 t load against the chart at that radius. If the same lift is alongside a live railway or under OHL, specify an RCL (e.g. Xwatch XW5) with slew and height limiting set to the exclusion zone.

Review stopper: for any lift above 1 t, absence of a functioning RCI or of hose-burst / check-valve protection should be treated as a stopper. Older / imported / retrofitted machines may lack either — verify before sign-off.

Key references

- LOLER 1998; PUWER 1998; Supply of Machinery (Safety) Regulations 2008.
- BS EN 474-1 & BS EN 474-5 (hydraulic excavators); ISO 8643 (boom-lowering control). BS 7121 (Safe use of cranes) – planning benchmark.
- [SFPSG / CPA – Lifting Operations with 180° and 360° Excavators](#)
- [HSE – LOLER guidance](#)

Guidance note for RMT lift plan reviews — not a substitute for the full regulations or a competent person's assessment. Issued June 2026.