

CERTIFICATIONS OF CODIPRO'S LIFTING RINGS

CODIPRO pays particular attention to the quality of its swivel lifting rings throughout the manufacturing process. These safety rings comply with the new **European Regulation 2023/1230** and the **Machinery Directive 2006/42/EC**.

All stages of the production process are strictly controlled by an **ISO 9001** and **ISO 14001**-certified quality management system.

Long before they are assembled, the components that will become a lifting ring are subject to very strict specifications.

For each forged part, 100% of the surfaces are subjected to magnetic particle or dye penetrant testing in accordance with **EN 10228-1** and **EN 10228-2**, latest edition. For unforged parts, the steel bars used all undergo ultrasonic testing. Engravings, threads, clamping devices and the rotation of moving parts are tested individually.

Before being released onto the market, each new CODIPRO ring reference must undergo a type examination. For this examination, CODIPRO refers to EN 1677-1, the closest and most stringent standard.

The various aspects are tested and validated according to the following criteria:



TYPE	TEST	CRITERIA
Deformation	Manufacturing proof force = $2.5 \times \text{WLL}$ (stainless steel : $2 \times \text{WLL}$)	Each sample shall sustain the manufacturing proof force without permanent deformation
Static tensile test	Breaking force = $\text{WLL} \times \text{safety coefficient}$	Each sample shall have a breaking force at least equal to the minimum value specified
Fatigue	Maximum force applied during each cycle = $1.5 \times \text{WLL}$ Minimum force applied during each cycle = 3kN Force application Frequency of force applications $\leq 25 \text{ Hz}$	Each sample shall be able to withstand at least 20 000 cycles of the force

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CODIPRO's lifting rings are also tested after each production run and before they are put on the market. As CODIPRO's production process is ISO 9001 certified, and as recommended by standard 1677-1, tests are carried out according to the following criteria:

TYPE	SAMPLE	TEST	CRITERIA
Deformation	3% of the components in the batch	Manufacturing_proof_force = 2.5 x WLL	Each shall sustain the manufacturing proof force without permanent deformation
Non destructive	100% of the components in the batch	Magnetic particle or dye penetrant examination on forged surfaces of components acc to EN 10228-1 or EN 10228-2	Indications greater than 2 mm in length shall not be permitted



Based on all these indications, CODIPRO considers that its lifting rings are also in line with **UKCA** regulations (by equivalence to CE) and ASME B30.26.

To guarantee even greater safety, CODIPRO has recently acquired traction benches up to 150t, enabling it to carry out in-house tests up to 150t. This bench is calibrated every year.

CODIPRO also works with a number of external certification bodies, which validate the tests carried out in-house, and test larger tonnages (notably for fatigue tests).