

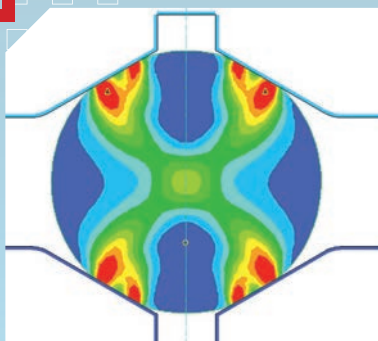
AUBERT&DUVAL



Non-magnetic retaining rings

Enhancing your performance

A proven process and material



Since the 70's, Aubert & Duval produces non-magnetic retaining rings. With its strong experience, the company is one of the main actors on the market, supplying the biggest OEM's and various actors worldwide. Aubert & Duval is committed to continuous innovation by spending more than 4% of its added economic value to Research & Development.

NMF18 a High Performance Steel

For more than 20 years, non-magnetic retaining rings have been exclusively produced in X8CrMnN18-18 (Aubert & Duval NMF18). Aubert & Duval participated in the design and development of this steel grade.

This grade offers an optimum combination of characteristics:

- Very good corrosion resistance
- High yield strength
- Low magnetic permeability
- Low coefficient of thermal expansion

Typical NMF18 steel grade chemical analysis is:

C	Cr	Mn	Ni	Si	P	S	N
0.1 max	18.0 average	18.0 average	0.5 average	0.5 min	0.05 max	0.015 max	0.5 min

HPS

High-Performance Steels:

A range of alloyed steels with tightly controlled characteristics offering optimum value for customers.

Quality & Certifications

From process design to manufacturing, the Aubert & Duval Quality Management System is integrated into all fields of the company and guarantees the quality of our products.

Aubert & Duval is certified ISO 9001 and ISO 14001.



Retaining rings process flow

Production of retaining rings is organized in an in-house continuous flow, from melting of material to machining profile delivery.

M manufacturing process



Melting & Remelting HPS

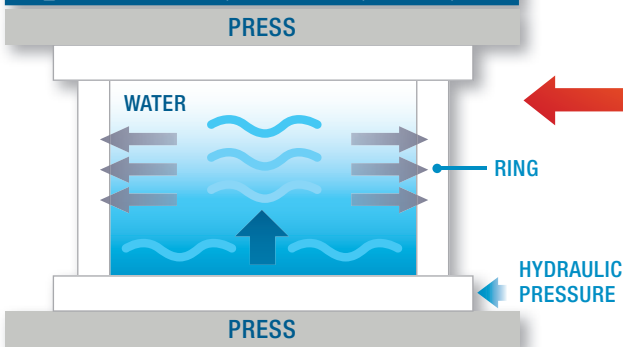


Forging



Heat treatment

Hydraulic expansion principle



Most of the manufacturers use mechanical expansion. Aubert & Duval is mainly using the hydraulic expansion for:

- Homogeneity of mechanical properties throughout the forging
- Production flexibility

This operation is performed with 40,000 tons or 65,000 tons presses according to the required sizes of non-magnetic retaining rings.



Stress relieving and final machining

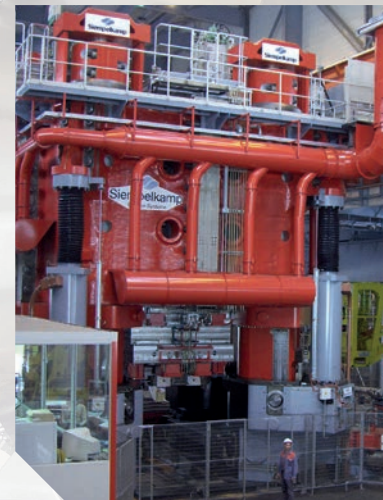


Destructive and non destructive testing

Applications

With more than 20,000 rings produced, Aubert & Duval is a leading supplier for:

- Nuclear power plant generators (900 to 1450 MW)
- Medium sized alternators for thermal power plant
- Small generators assembled to gas turbines or diesel engines



Product

Example of Aubert & Duval's current experience:

DELIVERY DIMENSIONS

Outer diameter	Up to 2000 mm
Height	Up to 1000 mm
Weight	Up to 3500 kg

MECHANICAL PROPERTIES

0.2% Yield Strength	Up to 1450 MPa
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Beyond the above data, Aubert & Duval can propose a wide variety of sizes and levels of mechanical properties to meet our customers' specific requirements

AUBERT & DUVAL



Design by makheia affinity - Aubert & Duval - 12-2014

Printed in France - PEFC 10-31-1592

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