

Mill Solutions



INSTAclamp™
Chock Retention Rings

Advanced Chock Retention Solution
Providing a Safer, More Repeatable
Roll Change Process



Enabling more effective metal shaping and forming of metal since 1964, HYSON Metal Forming Solutions designs and manufactures precision force and motion control solutions for critical applications. Our solutions, integrated into mills, presses and stamping tools, help master the complexity of metal forming by providing the **right solutions for your application**. HYSON offers both off-the-shelf and custom-designed products and incorporates the highest level of safety into our solutions.

Our engineering and manufacturing teams, paired with our state-of-the-art products, help drive:

- Safety
- Repeatable and efficient processes
- Reduced maintenance and repair costs
- Higher quality output

HYSON Mill Solutions

Driving innovation and technology in the metal market, HYSON supplies mill-duty products and services enabling improved safety and repeatability in rolling and roll change through:

- Innovative customer focused products
- On-site application engineering to ensure proper selection and system specification
- Global service, local partners and technical service centers
- Comprehensive and individualized product installation and safety training
- Local inventory management



INSTAclamp™ Chock Retention Rings

Next generation retention solution improving safety and repeatability of the roll change process



Roll Balance Cylinders

A self-contained drop-in solution providing consistent force and improved speed during roll change



Steady Stand Systems

Provides enhanced shock absorption in the rolling process compared to Belleville washer stacks.

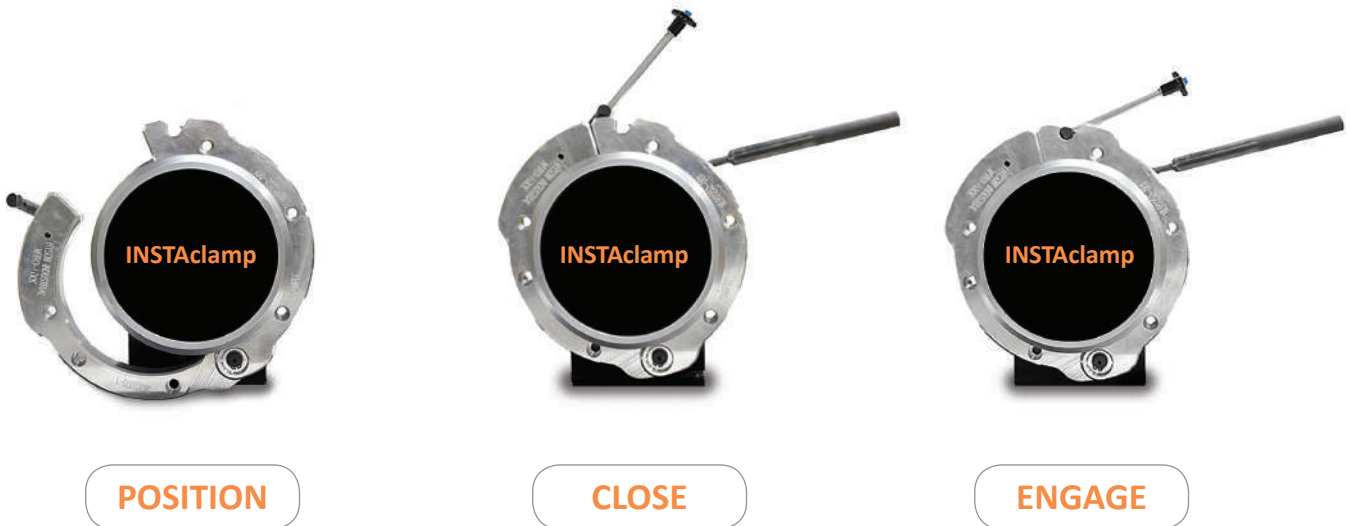


INSTAclamp™ Lock Ring

INSTAclamp™ is a next generation retention solution providing a safer and more reliable lock on roll neck assemblies. Differing from traditional locking mechanisms, HYSON's INSTAclamp solution features an advanced single-action locking latch that requires no special tools to engage. This patented locking mechanism provides repeatable clamping force, optimizing the installation and removal process, and eliminates failures associated with thread and bolt style lock rings.

SAFER AND SIMPLER

resulting in time savings, a more repeatable process and a safer working environment for your team members.



(optional installation tools shown)

The difference between a traditional lock ring and INSTAclamp is *everything...* from its materials to its latching system.

Features

When compared to traditional lock rings, HYSON's INSTAclamp offers advanced clamping force that retains the chock, AND brings additional:

- SAFETY
- SIMPLICITY
- REPEATABILITY
- TIME SAVINGS

The longevity of the clamping force, provided by the patented single-action locking latch, ensures that the roll stays engaged with the chock during rolling process and roll changes.



Reduces Risk

Advanced Retention System provides a pre-set consistent positive clamping force on the roll neck

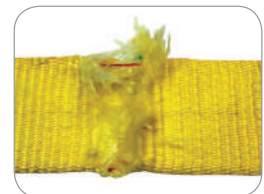
- Efficient one-snap closure eliminates the need of wrenches and air tools to install or remove, subsequently removing the potential of retention failure due to operator variability
- Hands-free mating surfaces reduce the risk of pinch points and the opportunity for injury



Increases Plant Safety

Smooth outer diameter provides ideal fit and reduces interference with lifting devices

- Eliminates the potential for damage to lifting straps or cables caused by protrusions on traditional bolt-on style rings



Improves Employee Health

Manufactured from Military Grade Aluminum offering 66% weight reduction

- Easier handling improves efficiencies and reduces damage due to mishandling
- Reduces strain to employees during roll change
- Reduces fatigue on operators
- Reduces need of multiple operators for installation



Calculate Your Potential Savings

Typical installation time for the IC Series INSTAclamp is 15 seconds – how does that compare to your current install times?

Step 1: Calculate Number of Ring Changes Per Day

1

$$\begin{array}{c} \text{\# of Mill Stands} \\ \square \end{array} \times \begin{array}{c} \text{\# of Lock Rings} \\ \text{Per Stand} \\ \square \end{array} \times \begin{array}{c} \text{\# of Mill Stands} \\ \text{Roll Changes} \\ \text{Per Day} \\ \square \end{array} = \text{Number of Ring Changes Per Day}$$

Example: 8 Mill Stands x 4 Lock Rings per Stand x 4 Roll Changes per day = 128 Ring Changes per day

Step 2: Determine Time Saved by Switching to INSTAclamp

2

$$\begin{array}{c} \text{Current} \\ \text{Installation Time} \\ \text{(in seconds)} \\ \square \end{array} - \begin{array}{c} \text{INSTAclamp} \\ \text{Installation Time} \\ \text{(in seconds)} \\ \square \\ \text{15} \end{array} \times \begin{array}{c} \text{Ring Changes} \\ \text{Per Day} \\ \text{(Calculated in Step 1)} \\ \square \end{array} = \text{Time Saving (in seconds) Per Day by Switching to INSTAclamp}$$

Example: With a 90 second installation time: $(90-15) \times 128 = 9600$ seconds
160 minutes per day | 2 hours and 40 minutes per day

*Multiply x2 to include savings for removal

Step 3: Calculate ROI

3

$$\begin{array}{c} \text{Time Saved} \\ \text{(in seconds)} \\ \text{(Calculated in Step 2)} \\ \square \end{array} \div \begin{array}{c} \text{Conversion} \\ \text{of Seconds} \\ \text{to Hours} \\ \square \\ \text{3600} \end{array} \times \begin{array}{c} \text{Hourly} \\ \text{Labor Rate} \\ \square \end{array} = \text{Daily ROI} \times \begin{array}{c} \text{Work Days Per Year} \\ \square \end{array} = \text{Annualized ROI}$$

Example: With a \$75/ hour labor rate:
 $9600 / 3600 \times \$75 = \200 savings per day. Working 260 days per year = \$52,000

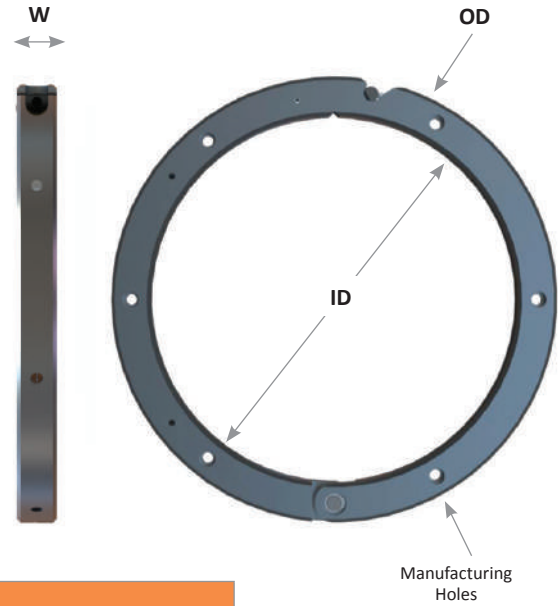
Hot Strip Mill CASE STUDY

Looking for a safer, easier and sustainable solution for roll retention, a fully integrated steel mill partnered with HYSOON to integrate INSTAclamp rings into 72 chock assemblies for their 8 finishing stands.

HYSOON's INSTAclamp retention system was selected after initial try-out when they went from 90 second installation time per ring to a mere 15 seconds! With 4 roll changes per day, the operators were fully supportive of the simplified process. Beyond the installation and removal time savings, the INSTAclamp ring provided an ergonomical, repeatable roll change process with reliable clamping force on their roll neck assemblies.

IC – Series

The INSTAclamp IC Series is predesigned for retention of chocks with roll neck groove diameters from 100 mm to 650mm. The IC Series is the most common mounting style, is designed with a precision fit and spins with the roll.



IC Series Product Specifications	
Standard Material	Military Grade Aluminum 6061-T6
Minimum ID – Standard	100 mm
Primary Latching Feature	Spring Powered
Features and Material Options	See Page 5

Model Number	Dimensional Information (mm)			Weight (kg)
	ID +/-0.05	OD +/-0.5	Width +/-0.05	
IC0100	100	200	30	2.0
IC0150	150	250	35	3.0
IC0200	200	300	40	4.0
IC0250	250	350	50	6.0
IC0350	350	450	50	8.0
IC0450	450	550	50	9.5
IC0550	550	650	50	13.0
IC0650	650	750	50	17.0

Optional Features for the IC Series

Optional features can be added to our INSTAclamp Rings for ease of upgrading existing roll stands without modifications in addition to assisting with handling or proper alignment. A lock ring drawing identifying critical feature specifications is required.

01 – Handling Holes*

Often not necessary as INSTAclamp™ offers 66% reduction in weight compared to steel rings. Machined on face or edge of ring



02 – Face Keyways*

Machined on the face of the ring



03 – Edge Keyways*

Machined on the edge of the ring



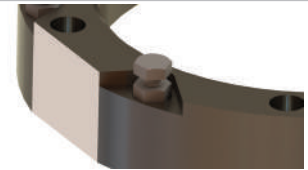
04 – Dowel Holes*

Machined anywhere on the face of the ring



05 – Threaded Holes*

Machined on the face or edge of the ring



06 – Flange Mounted

Flange mounted to the chock set. Stays with the chock during roll change, enabling reduction in handling



07 – Material Option

†Standard

Material	Tensile Strength (Yield)
†6061-T6	270 MPa (39,000 PSI)
7075-T6	480 MPa (69,000 PSI)
A36 Steel	290 MPa (40,000 PSI)

08 – Safety Handle

Attached to edge



09 – Latch Assembly

Replacement latch assemblies are available. Please reach out to your Regional Sales Manager for more information.



*Available in metric and imperial dimensions

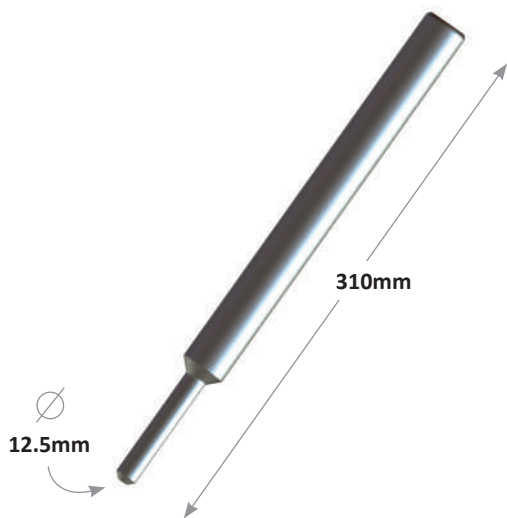
Installation Tools

HYSON's INSTAclamp is designed to support installation and removal without the need for power tools. We offer the following hand tools for gaining leverage during the latching and disengagement processes:

Leverage Bar Order Number: 11673-1

Provides the most leverage when opening and closing the latch, reducing the amount of operator force required.

Note: See page 1 for demonstration of use.

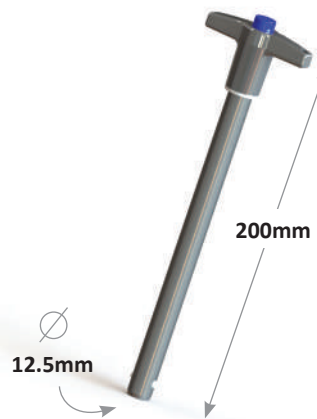


T-Handle Extender Order Number: 11609-6T

Positively engages the latch via a ball detent handle, extending the handle to simplify the installation.

During disengagement process, provides ease of positioning and leverage for disengagement.

Note: See page 1 for demonstration of use.



Ordering Instructions

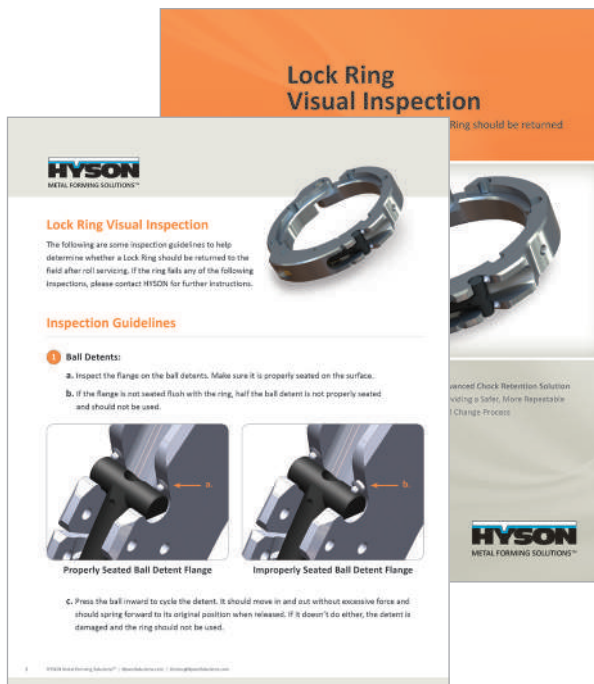
Series	x	ID	x	Optional Features	Description
IC		0450		01 – 03 – 04	IC Series INSTAclamp, 450mm ID with Handling Holes, Edge Keyways, and Dowel Holes
IC		0250		01 – Handling Holes	
		0350		02 – Face Keyways	
		0450		03 – Edge Keyways	
		0550		04 – Dowel Holes	
		0650		05 – Threaded Holes	
				06 – Flange Mounted *	
				07 – Material Option	
				08 – Safety Handle	
				09 – Latch Assembly	

*Available only for neck diameters from 250 mm - 650 mm

Service Parts and Repair / Inspection

Lock Ring Visual Inspection Guide

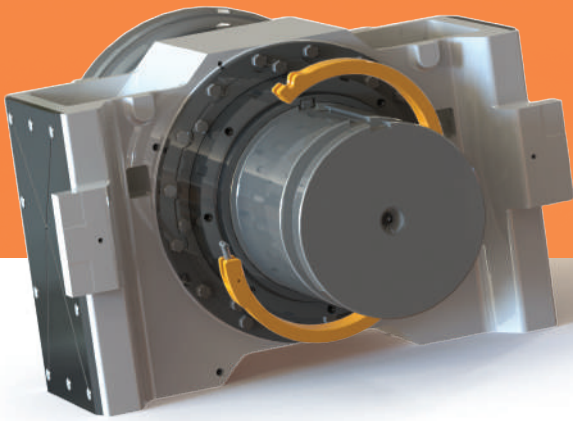
HYSON provides a Lock Ring Visual Inspection brochure and poster upon request. Please reach out to your Regional Sales Manager for more information.



HYSON Lock Ring Visual Inspection Brochure



HYSON Lock Ring Visual Inspection Poster



Customized Solutions

In addition to our standard and mounted series, HYSON offers custom engineered lock rings to fit within your existing geometry constraints.

Customization can include, but not limited to:

- Multiple hinges (3-piece ring)
- Custom profiles
- Alternative materials
- Keys



Product Specifications	
Material	Military Grade Aluminum
Minimum ID – Custom	100 mm
Primary Latching Feature	Spring Powered
Optional Features	<i>See Page 5</i>

To facilitate development of customized solutions and begin design, the following information is required:

- Roll drawing
- Current retention ring drawing
- Roll and Chock assembly drawing
- Any additional design considerations
- Timing for requirement and anticipated quantity needed

A detailed application sheet is also available to aid in documentation of your application.

To develop your custom solution, HYSON application specialists are available, on-site, working directly with your roll shop to ensure a robust, mill-duty solution.

Genuinely HYSON

- > We are committed to operational excellence and conducting business in a manner that delivers **industry leading health and safety** to our employees, customers and the environment.
- > We are dedicated to providing **safer and more reliable products** with worldwide support and service.
- > We are at the forefront of **innovative product design** with forward thinking features and training.
- > We are **precision force solutions** for metal forming. We enable our customers to form standard and complex materials more efficiently and provide innovative products to their markets.
- > We are collaboration partners providing the **right solution for your application**.

Our GENUINELY HYSON mill-duty solutions are designed to reduce the risk of mill damage and injuries with state-of-the-art features:

Safety First!

Throughout our facilities, our think safe, act safe, be safe culture is cultivated by a behavior based safety program that reinforces safe work behaviors and empowers team members to take the responsibility to observe and report hazards, prevent accidents and benchmark best practices.

Safety Features

By using Genuinely HYSON products in your metal shaping processes, you incorporate the latest technologies and features on the market, resulting in improved safety, reliability and performance.

Safety and Product Training

We offer safety and product training at our location or yours, teaching precautions and best practices applicable while working with or maintaining HYSON products.

Safe Handling

Engineered with safety in mind, HYSON not only incorporates industry standard lift holes and product marking onto products, but also engineers longer lasting solutions to help reduce the handling and to help ensure the safety of your team and facility.



INSTAclamp Safety Information

Safe Handling:

- INSTAclamp contains latch under pressure – do not attempt to service
- Hand protection required when installing INSTAclamp

Safety Feature: Patented single-action latch designed with redundant features

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HYSON Metal Forming Solutions™
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