

INTERSTOP®

STEEL

# INTERSTOP® Flow Control Technology



# There for you, wherever you need us



The more closely we work with our customers, the greater the impact we can make for them. So a global network of offices, research centers, and production sites is important to us, and to them. We are continuously extending our global reach to be closer to even more customers.

Being closer to customers doesn't just mean we can be more responsive to their needs. It also helps us to listen better — to understand their concerns, cultures and ways of working. It makes us alert to new ways of thinking and ideas that enable us to deliver even better advice, services, and solutions.

Our exceptional resources and expertise extend far beyond making and selling products. We provide solutions to customers worldwide for cover projects, material specifications, thermal studies, numerical simulations, follow-ups and technical support in application of minerals, and maintenance and electromechanical services for refractory equipment.

**35**  
Main production and  
raw material sites

**70**  
Sales offices

**180**  
Countries shipped  
to worldwide

**North  
America**

3 COUNTRIES  
1 R&D CENTER

**South  
America**

6 COUNTRIES  
1 R&D HUB

**Europe**

17 COUNTRIES  
1 R&D HUB  
1 R&D CENTER

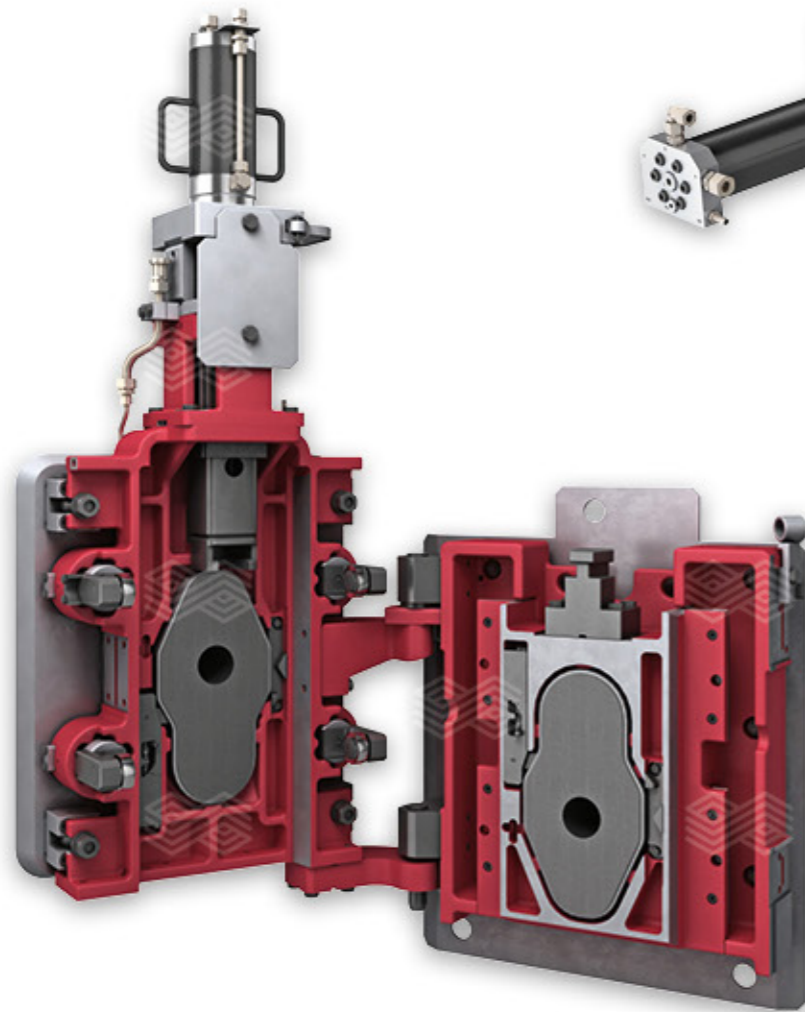
**Middle East/  
Africa**

2 COUNTRIES

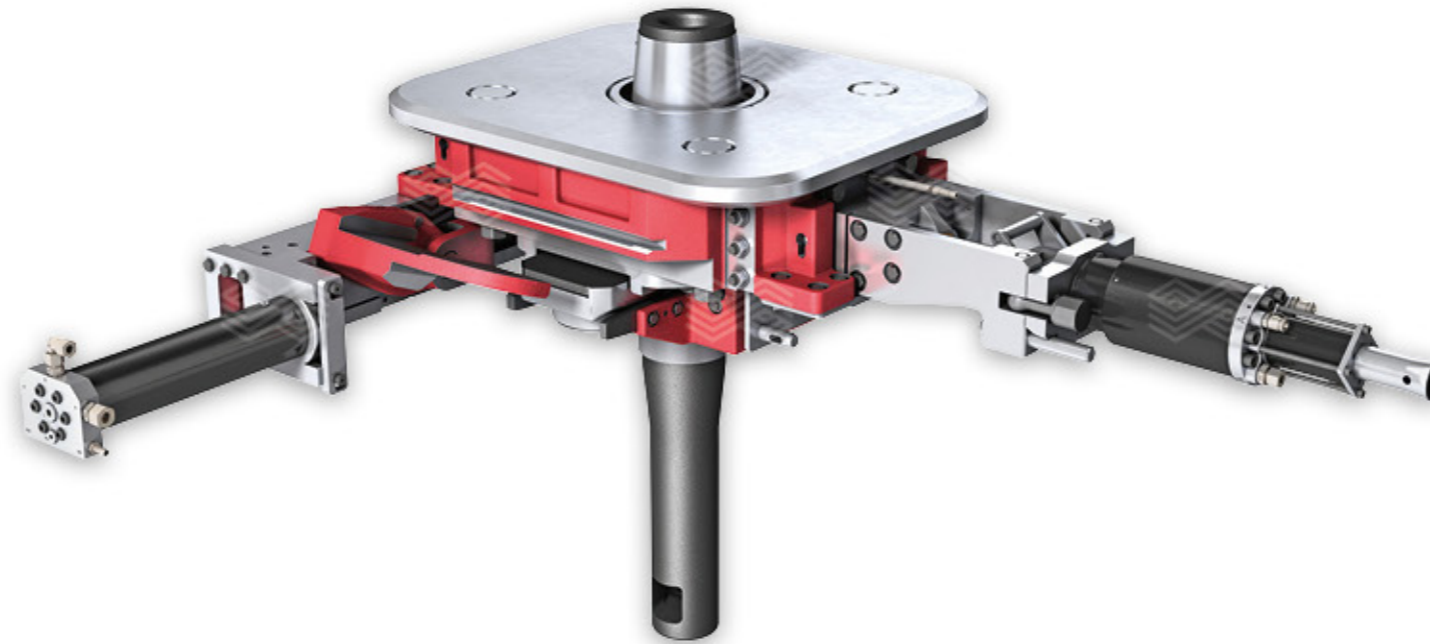
9 COUNTRIES  
3 R&D CENTERS

**Asia  
Pacific**

# INTERSTOP® — Your Partner for Flow Control Technology



Ladle Gate INTERSTOP® S



Tundish Gate Submerged Nozzle  
Changer INTERSTOP® STG 33



INTERSTOP® Automation &  
Robotic Solutions

Content



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# Ladle Gate INTERSTOP® S

## Overview

- Size selection according to specific customer requirement
- User-friendly design for safe, fast and simple operation
- Automatic system tensioning
- Easy handling at preparation area with “open-check” feature
- Support for clean steel production and ready for automation

## System Characteristics

- Two main components only, housing and slider
- Possibility for horizontal and vertical mounting
- Automatic tensioning
- Easy and comfortable handling
- Unique cylinder handling at preparation area for high operator comfort
- Easy integration of gas shielding and EMLI slag detection systems

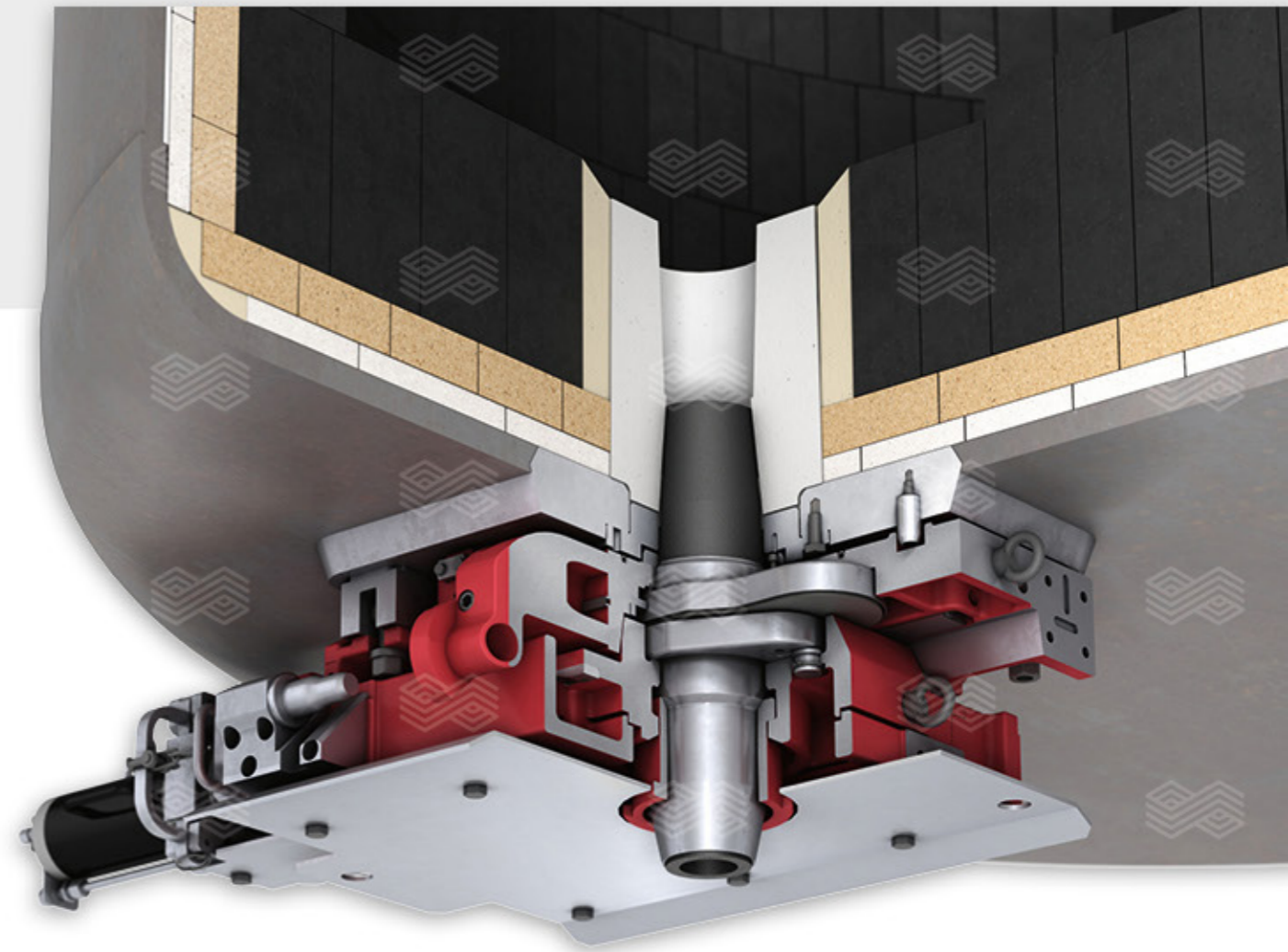
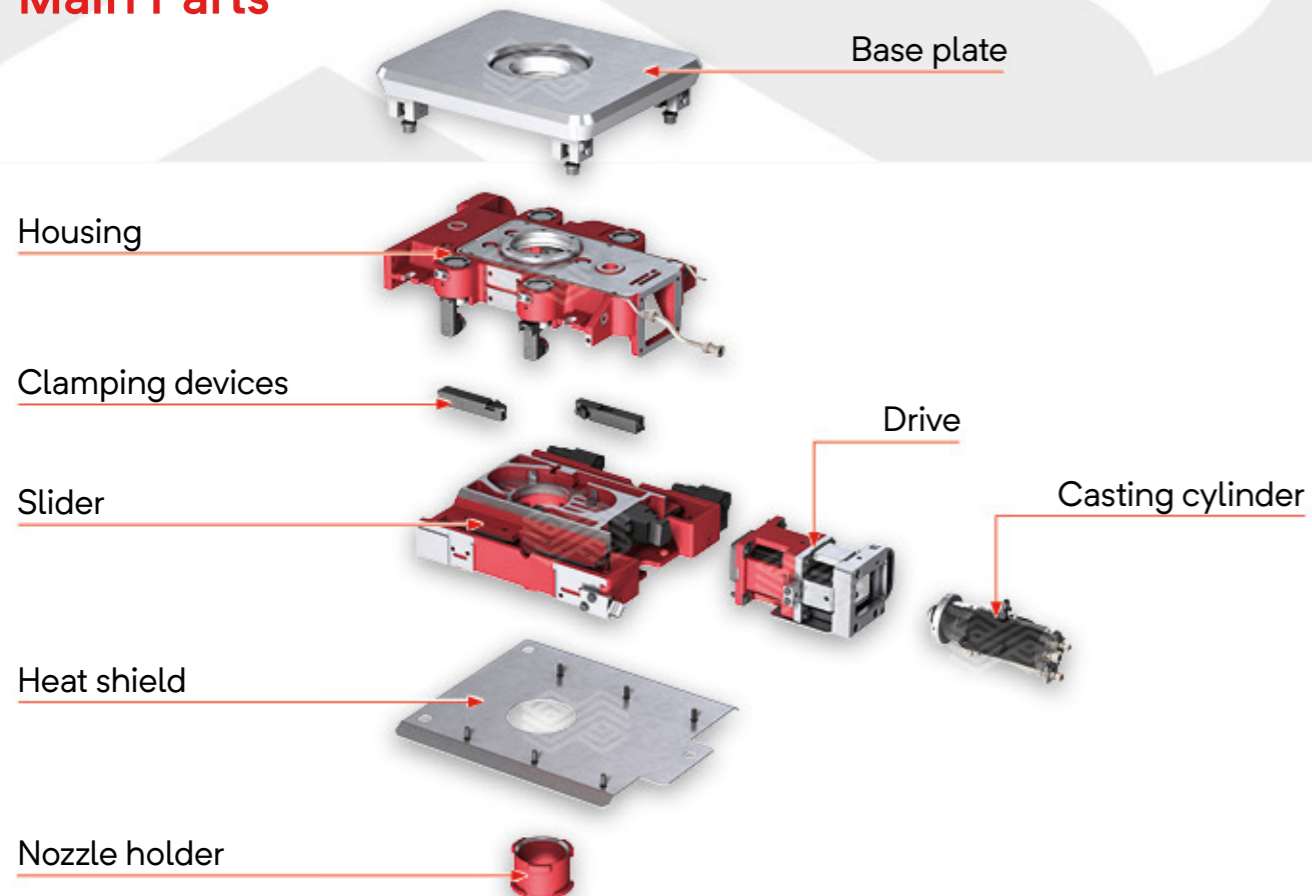
## Refractory Parts

- Flexible plate sizes
- Clamping and self-centering of plates
- Positive effect on plate wear zone
- Controlled crack pattern of plates
- Wide refractory portfolio

## Maintenance and Support

- Minimal maintenance work required
- Long lifetime of parts
- Long inspection intervals, short inspection time
- INTERSTOP® after sales service

## Main Parts



Content



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# Ladle Gate INTERSTOP® SO

## Overview

- Designated for small ladles
- User-friendly design for safe, fast and simple operation
- Easy handling at preparation area
- Compact dimensions

## System Characteristics

- Designated for small ladles
- Ergonomic gate preparation
- Easy handling
- Compact dimensions
- Two main components only, housing and slider
- Possibility for horizontal and vertical mounting
- Simple tensioning and clamping of plates

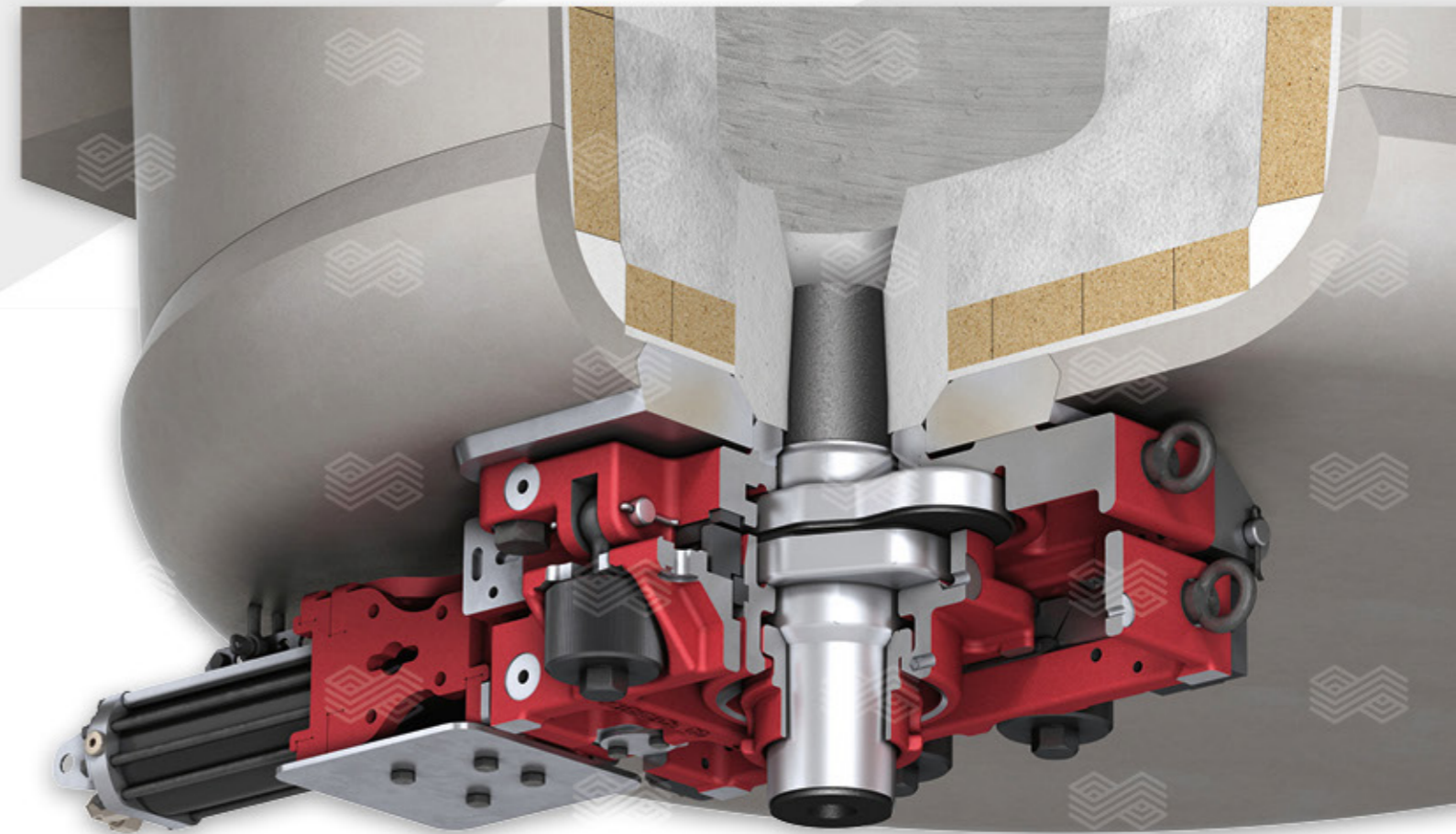
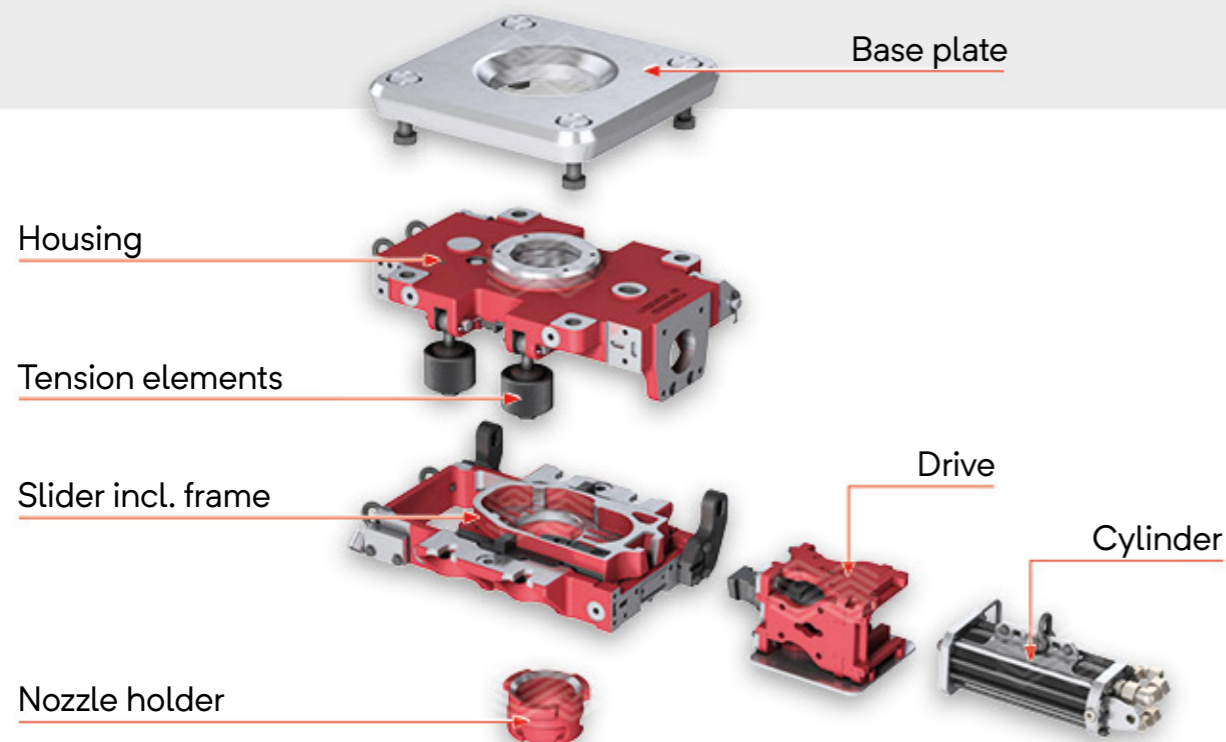
## Refractory Parts

- Clamping and self-centering of plates
- Positive effect on plate wear zone
- Controlled crack pattern
- Wide refractory portfolio

## Maintenance and Support

- Minimal maintenance work required
- Long lifetime of parts
- Long inspection intervals, short inspection time
- INTERSTOP® after sales service

## Main Parts



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# Sealed Ladle Gate INTERSTOP® SLG

## Overview

- 3-plate ladle gate designed for ingot casting
- Size selection according to specific customer requirement
- Fully sealed steel flow into the mold
- User-friendly design for safe, fast and simple operation
- Easy handling at preparation area
- Compact dimensions

## System Characteristics

- Only few main components
- Possibility for horizontal and vertical mounting
- Simple tensioning and clamping of plates
- Easy and comfortable handling

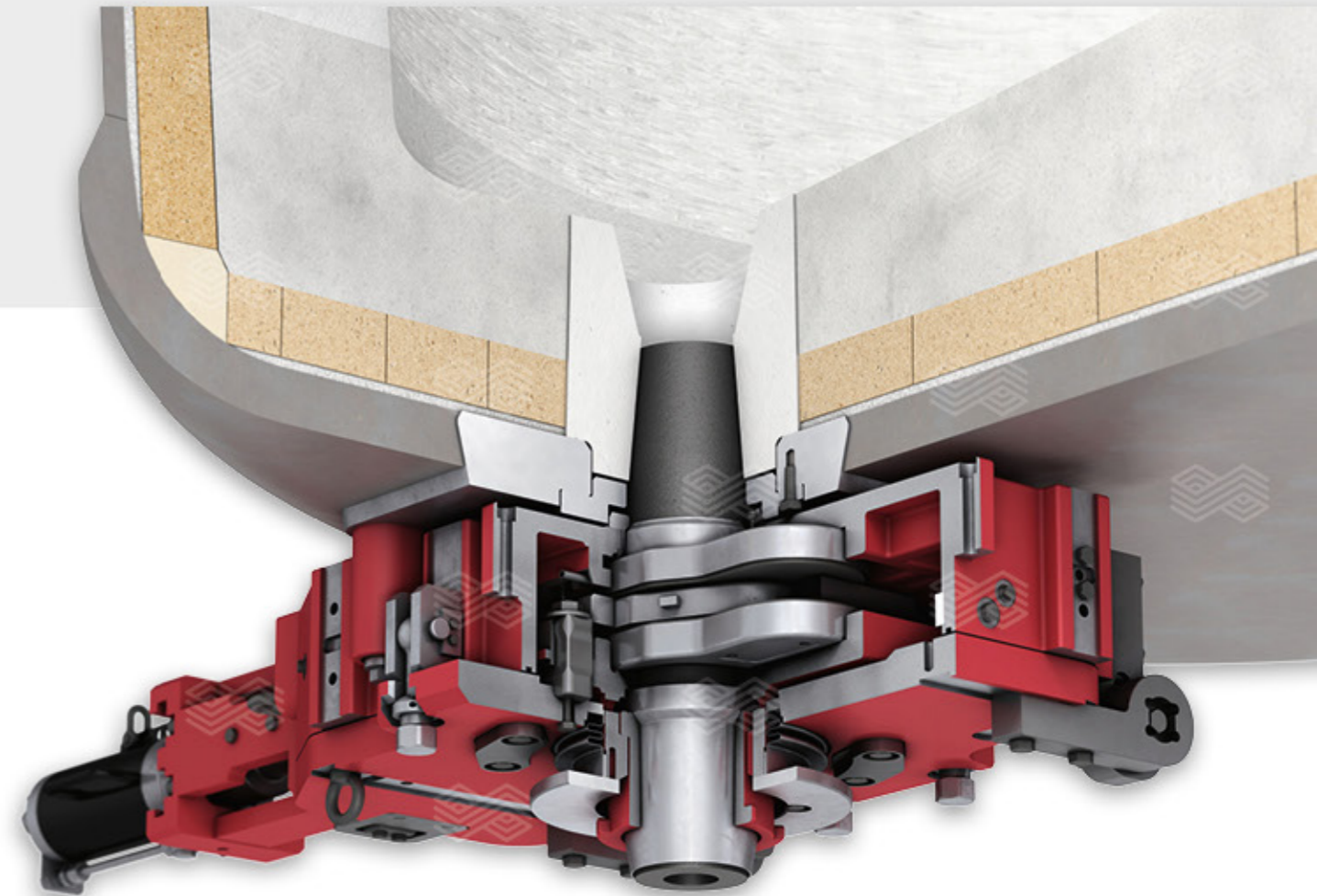
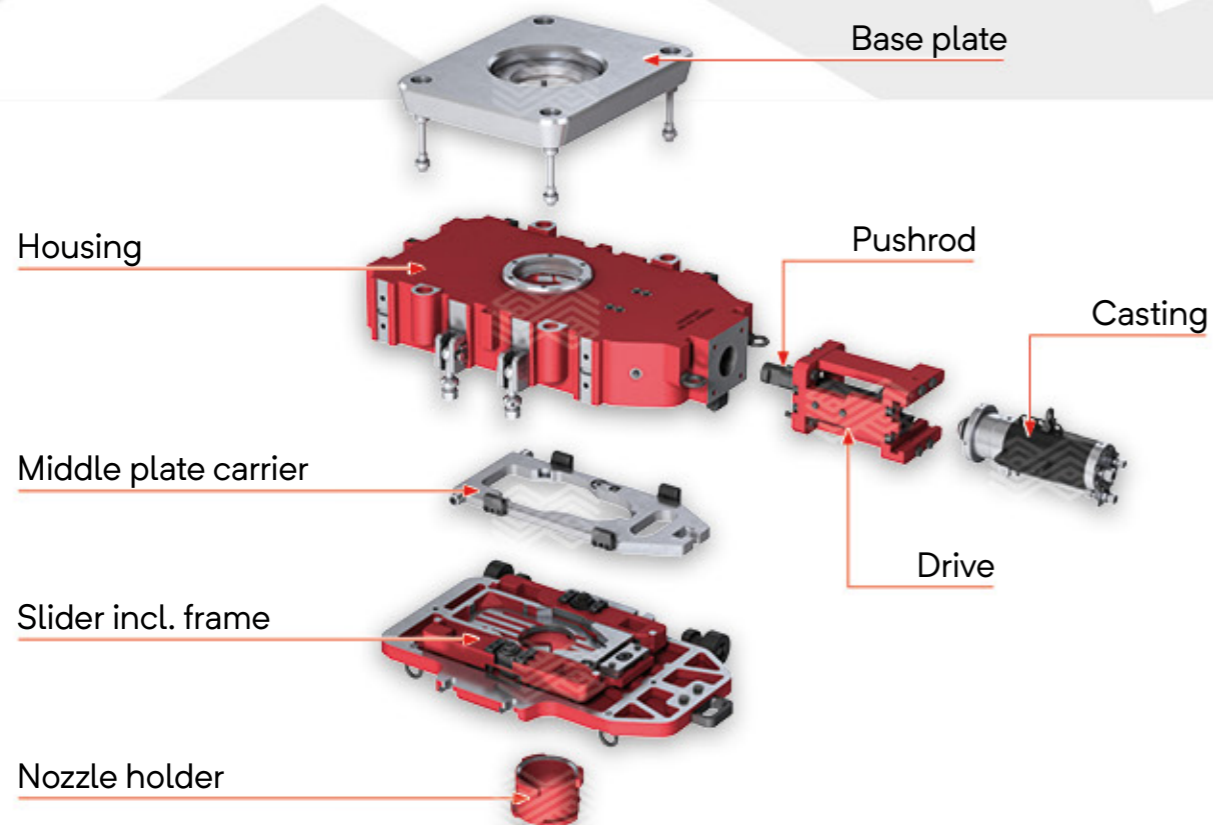
## Refractory Parts

- Clamping and self-centering of plates
- Positive effect on plate wear zone
- Controlled crack pattern of plates
- Wide refractory portfolio
- Flexible plate sizes

## Maintenance and Support

- Minimal maintenance work required
- Long lifetime of parts
- Long inspection intervals, short inspection time
- INTERSTOP® after sales service

## Main Parts



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# Stopper Rod Mechanism INTERSTOP® SRM-L

## Overview

- Designed for casting ladles
- Automatic or manual operation
- Easy installation and operation
- Locking system for safe ladle transfer

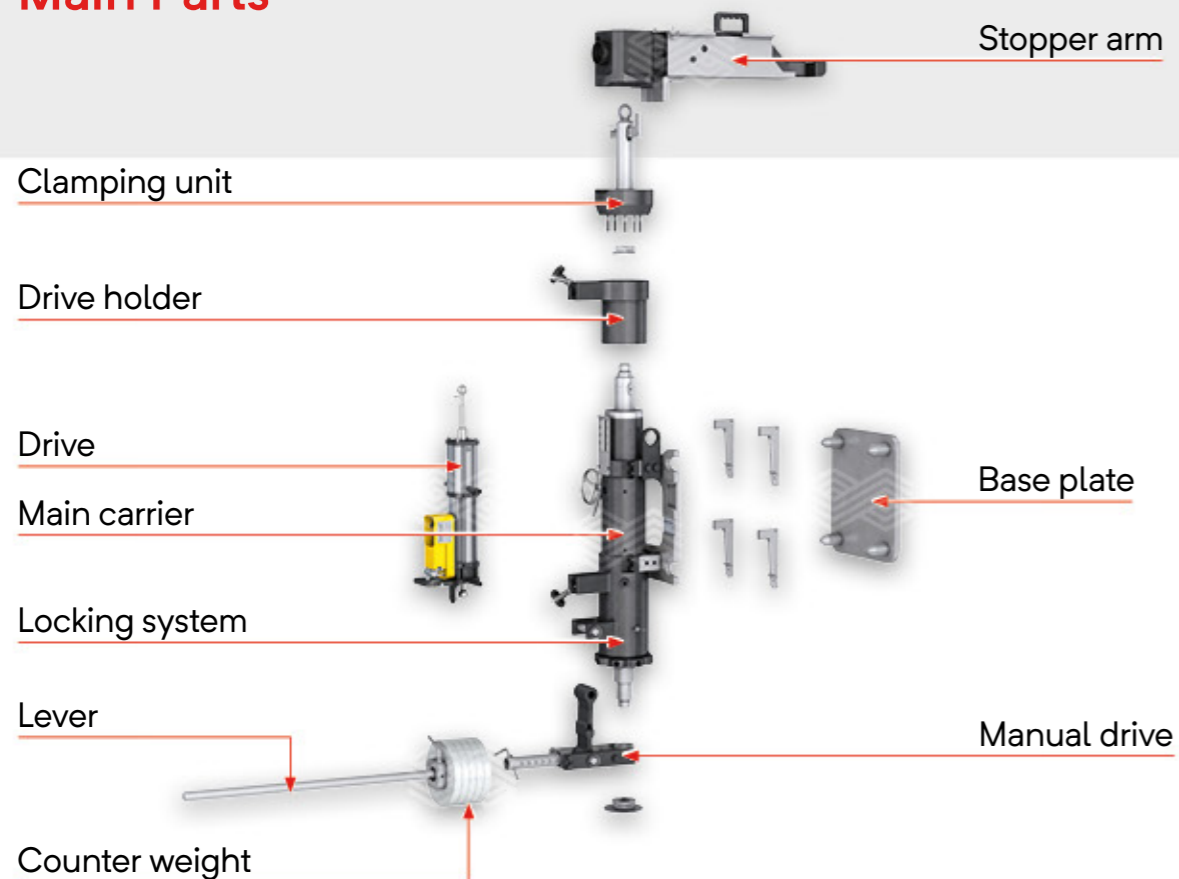
## System Characteristics

- Tight mechanical play for precise flow regulation
- Reliable locking system
- Stopper alignment by horizontal guidance (2-axis)
- Designed for stopper rod assembly into a preheated casting ladle
- Electric or hydraulic driven actuators

## Maintenance and Support

- Minimal maintenance work required
- Long lifetime of parts
- Long inspection intervals, short inspection time
- INTERSTOP® after sales service

## Main Parts



Mounting example



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# Metering Nozzle Changer INTERSTOP® MNC-AS

## Overview

- For reliable and safe long sequence casting
- Sliding drive arrangement
- Same plate fixation as tundish and cut off gate
- Optional submerged nozzle application

## System Characteristics

- Mechanical fixation of upper nozzle
- Sliding drive arrangement
- Clear view to the nozzle & mold
- Springs well protected for long service life
- Compact dimensions
- Optional submerged nozzle application

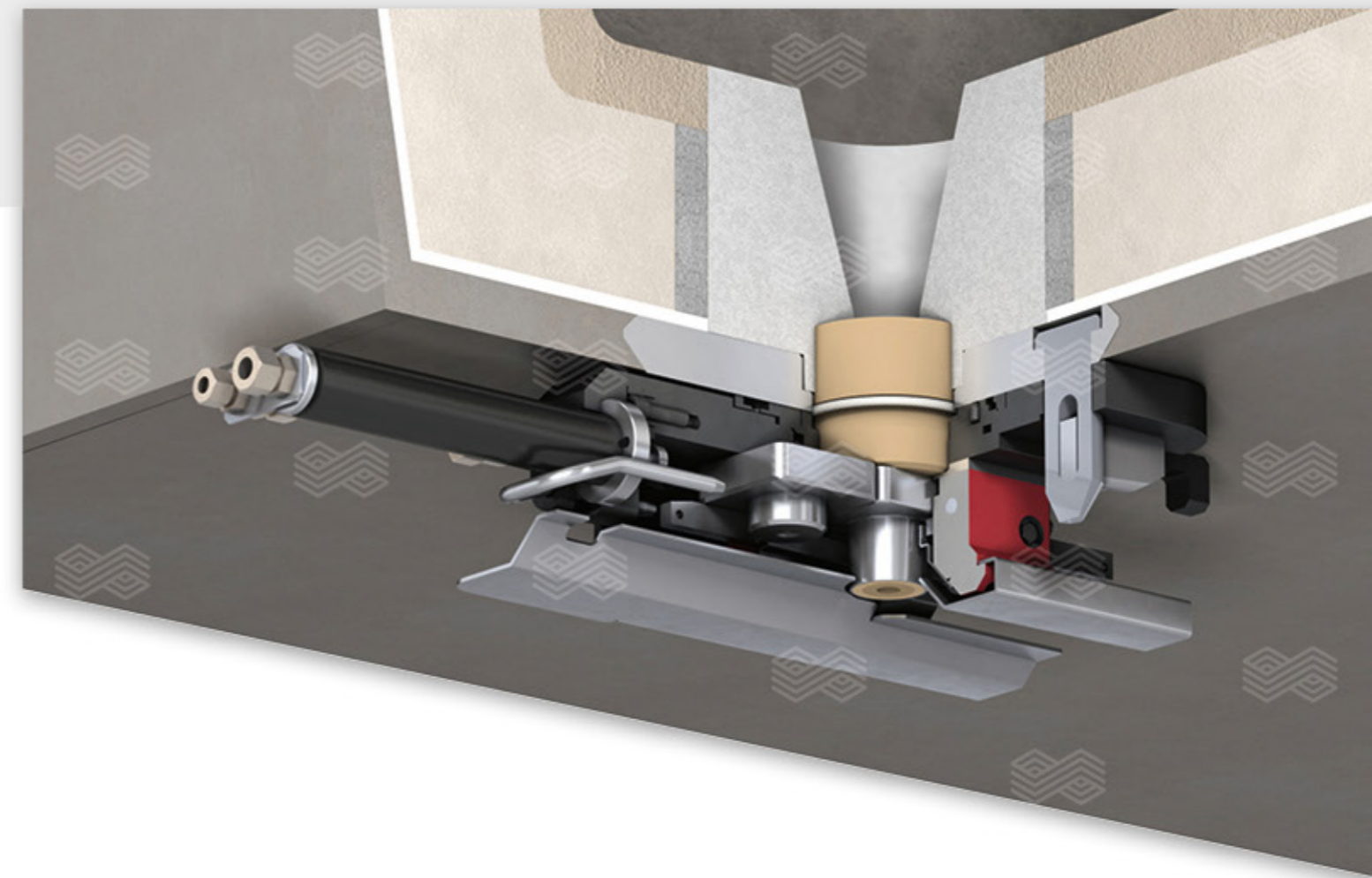
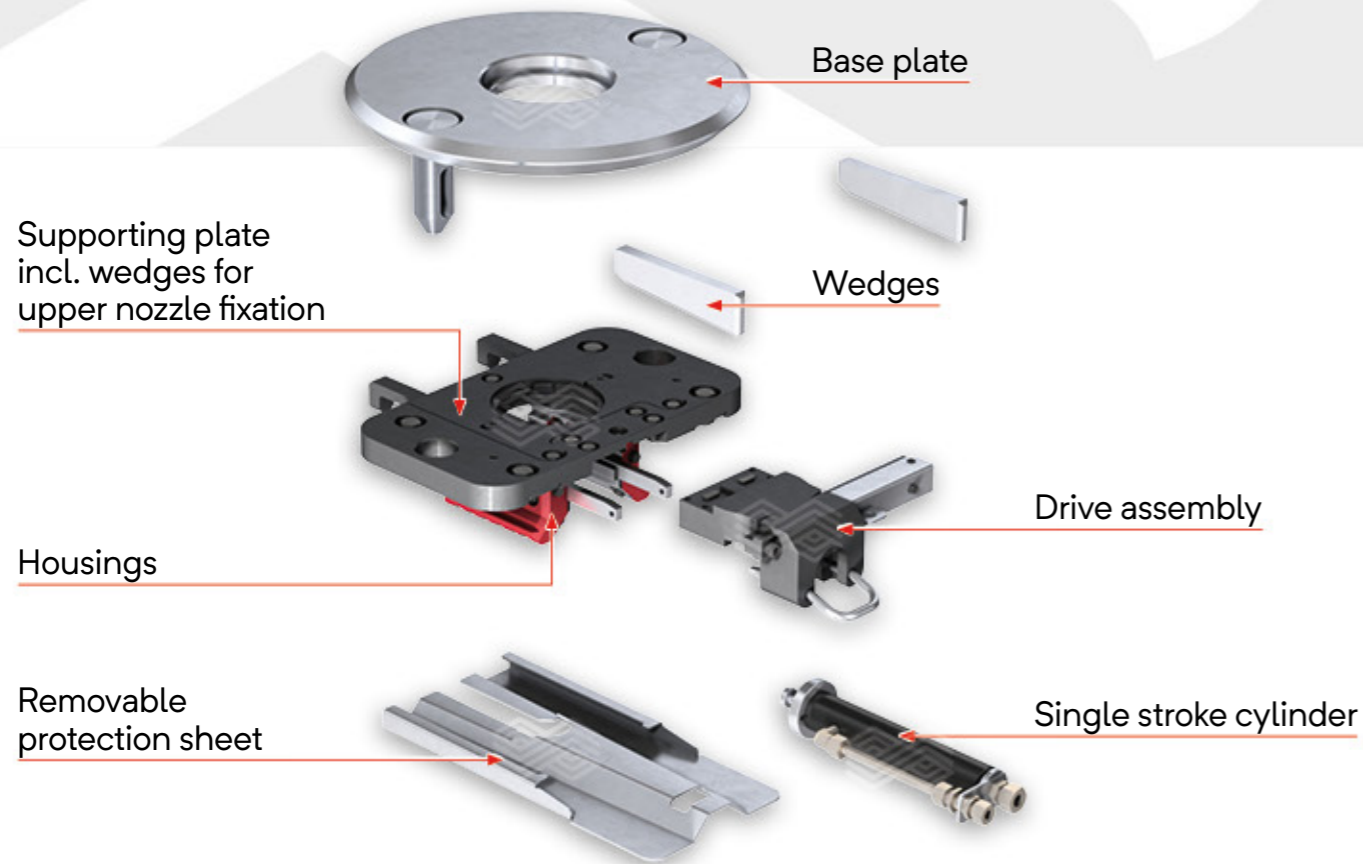
## Refractory Parts

- Pressed and fired upper nozzle designed for long sequences
- Mechanical fixation of the upper nozzle
- Wide refractory portfolio

## Maintenance and Support

- Minimal maintenance work required
- Long lifetime of parts
- Long inspection intervals, short inspection time
- INTERSTOP® after sales service

## Main Parts



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# Tundish Gate INTERSTOP® 13QC/A

## Overview

- Tundish slide gate for billets and blooms
- Air tight system
- Play-free drive
- Process control technology for automatic casting
- Compact design

## System Characteristics

- Three-plate gate system
- Play-free drive
- Fully automatic casting operation
- Inert gas application on tundish nozzle and joints
- Gate assembly online or off-line
- Minimized number of components
- Easy assembly and maintenance
- Fastening with wedges or bolts

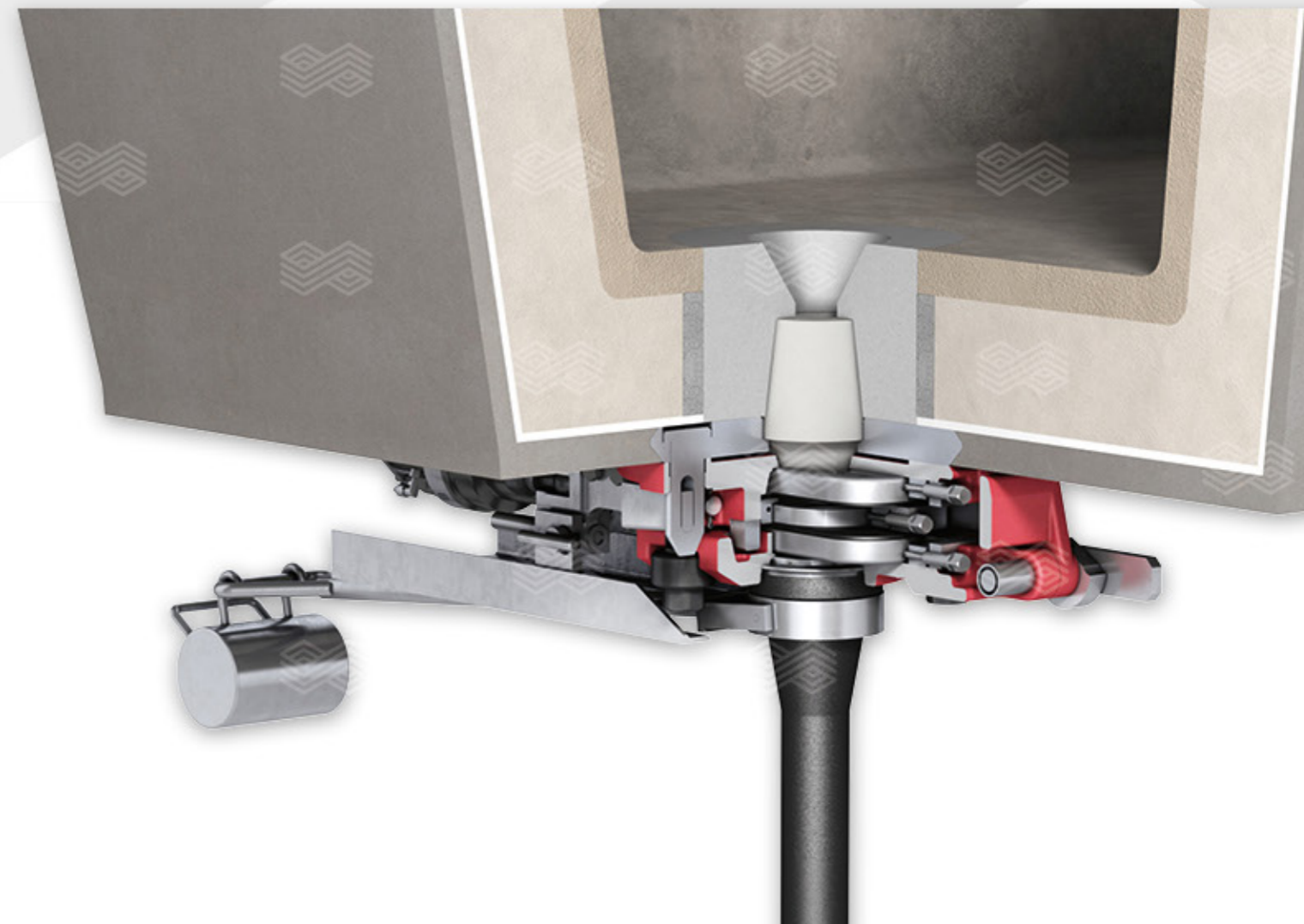
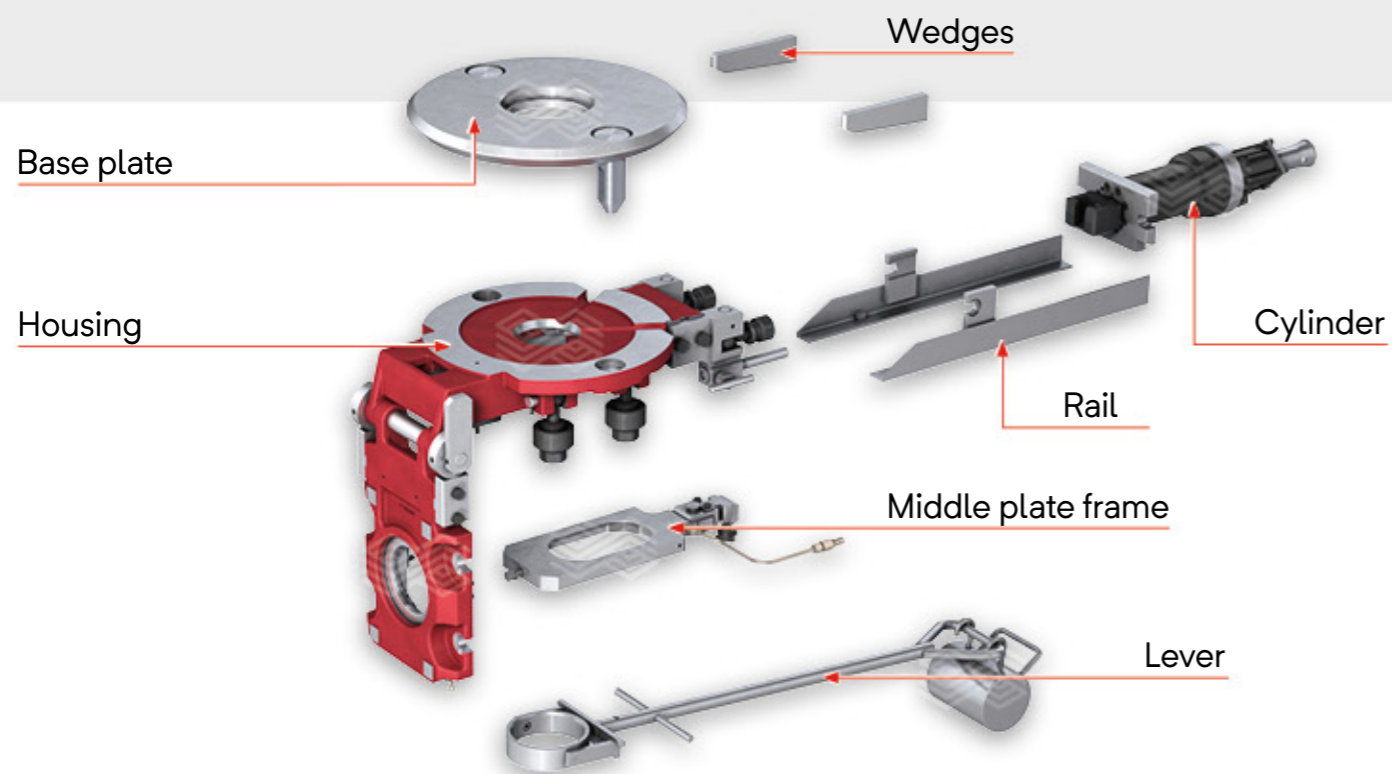
## Maintenance and Support

- Minimal maintenance work required
- Long lifetime of parts
- Long inspection intervals, short inspection time
- INTERSTOP® after sales service

## INTERSTOP® Flow Control Technology

- Monitoring by process visualization
- Automatic start-up
- Automatic level control
- Automatic emergency functions
- Precise steel flow regulation
- End of casting program

## Main Parts



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# Tundish Gate Submerged Nozzle Changer INTERSTOP® STG 33

## Overview

- Sealed tundish gate (STG) for slabs with integrated monotube changer
- Play-free drive
- Process control technology for automatic casting
- Off-line assembly
- Support of clean steel production and automation

## System Characteristics

- Sealed system concept
- Inert gas application on housing, tundish nozzle and refractory joints
- Blank plate for emergency shut-off
- Compact design
- Minimized number of components

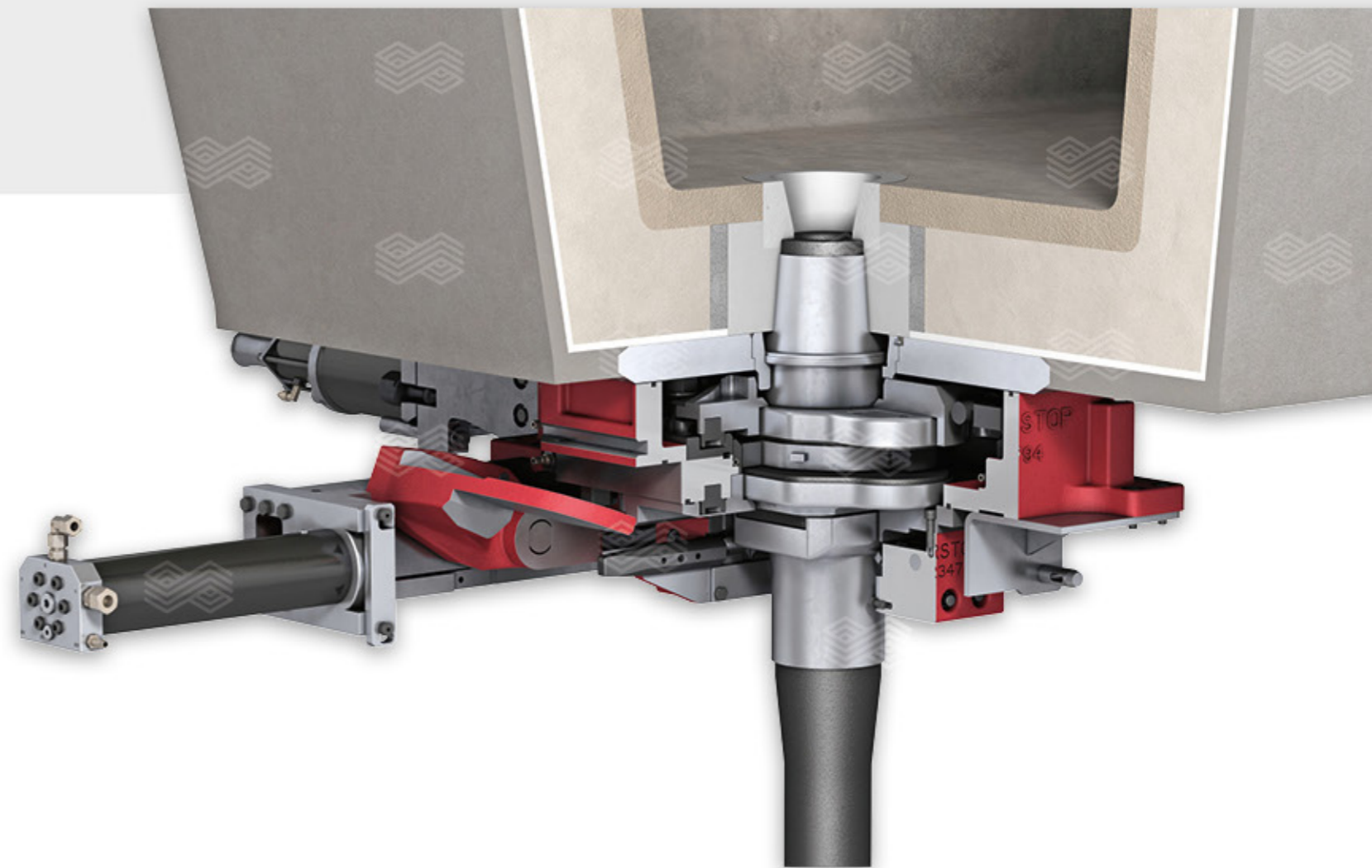
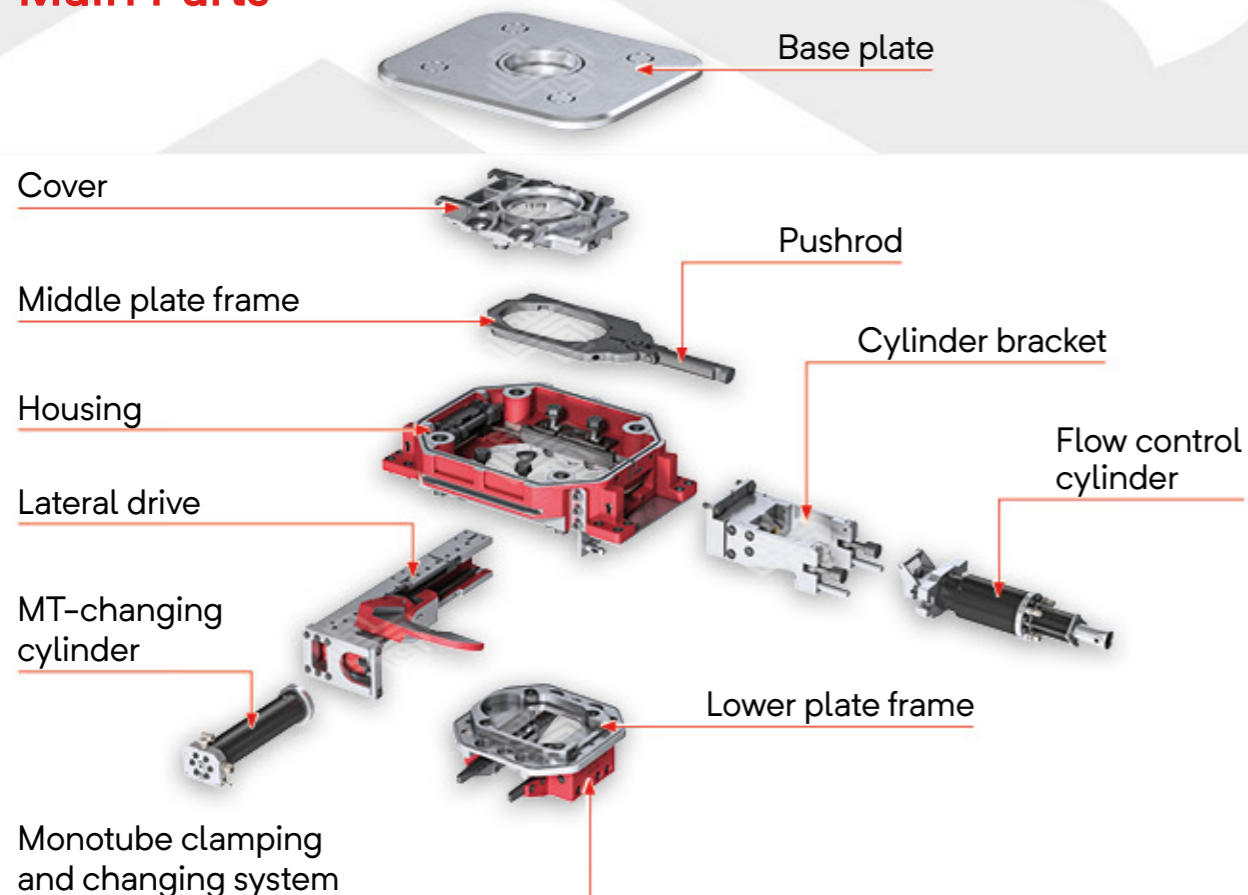
## Integrated System Solution

- Process visualization
- Automatic start-up
- Automatic mold level control
- Automatic emergency functions
- Precise steel flow regulation

## Maintenance and Support

- Minimal maintenance work required
- Long lifetime of parts
- Long inspection intervals, short inspection time
- INTERSTOP® after sales service

## Main Parts



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# Stopper Rod Mechanism INTERSTOP® SRM-T

## Overview

- High-precision tundish stopper gear for accurate flow control
- Electric or hydraulic driven actuators
- Manual operation always possible
- Easy installation and operation
- Integrated solution for precise mold level control

## System Characteristics

- High-precision stopper rod mechanism
- Electrical or hydraulic driven actuators
- Manual intervention possible anytime

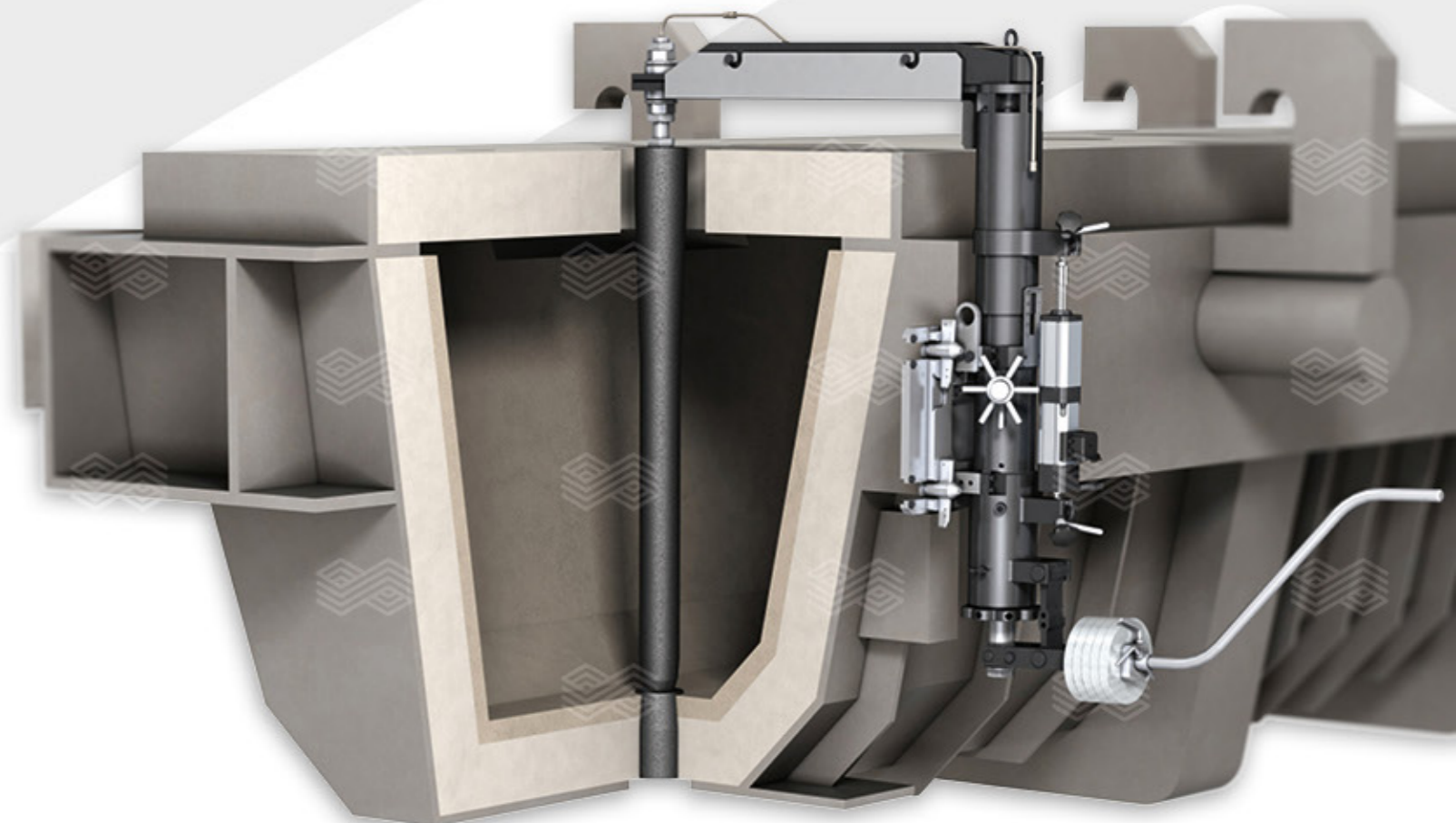
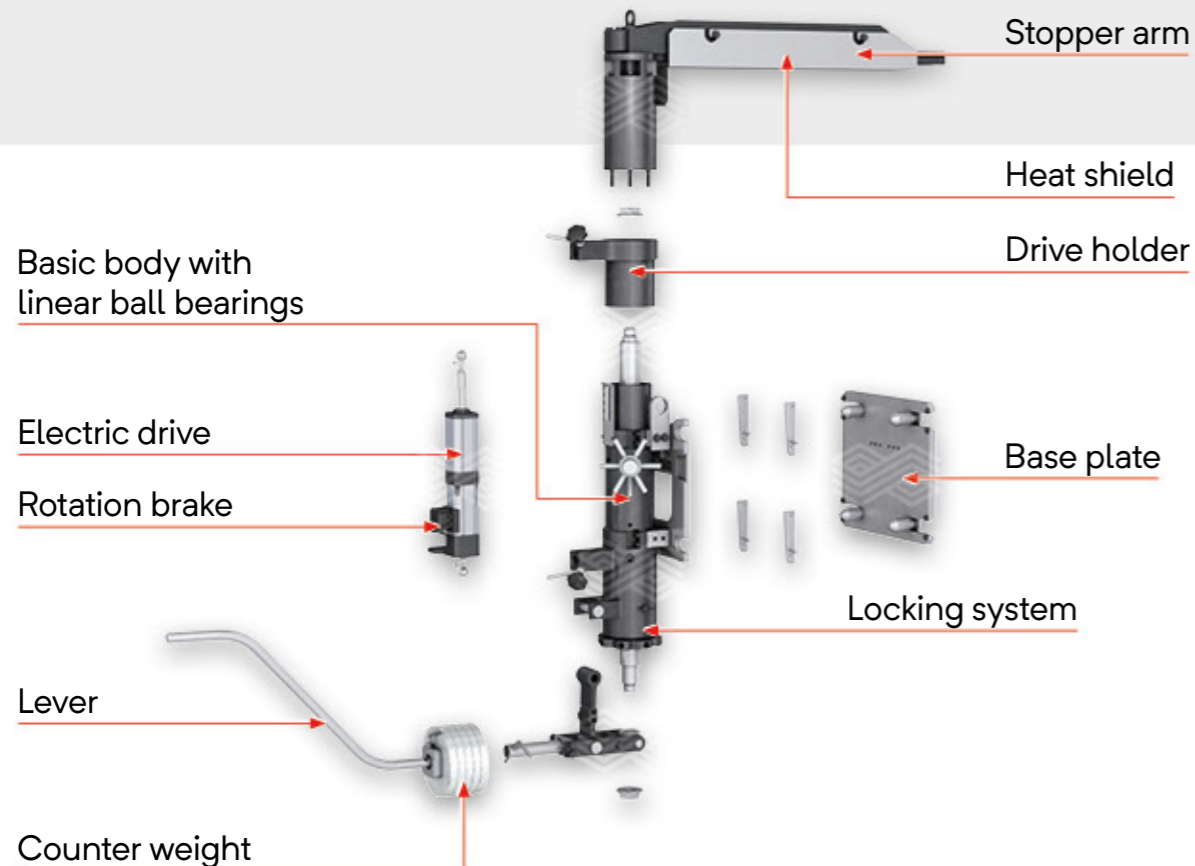
## Integrated System Solution

- Automatic mold level control
- Mono Tube Changer (MTC) and/or Emergency Gate (EG)
- Inert gas
- Tundish level and mold level detection system EMLI
- Customer-tailored refractories solution

## Maintenance and Support

- Minimal maintenance work required
- Long lifetime of parts
- Long inspection intervals, short inspection time
- INTERSTOP® after sales service

## Main Parts



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# Mono Tube Changer INTERSTOP® MTC-ESP

## Overview

- Elevated Safety Plate (ESP)
- No handling of blind plate
- Minimal operator exposure time at mold
- Same fixation as cut off gate
- Nozzle design for improved handling and optimized flow geometry
- Support of clean steel production and automation

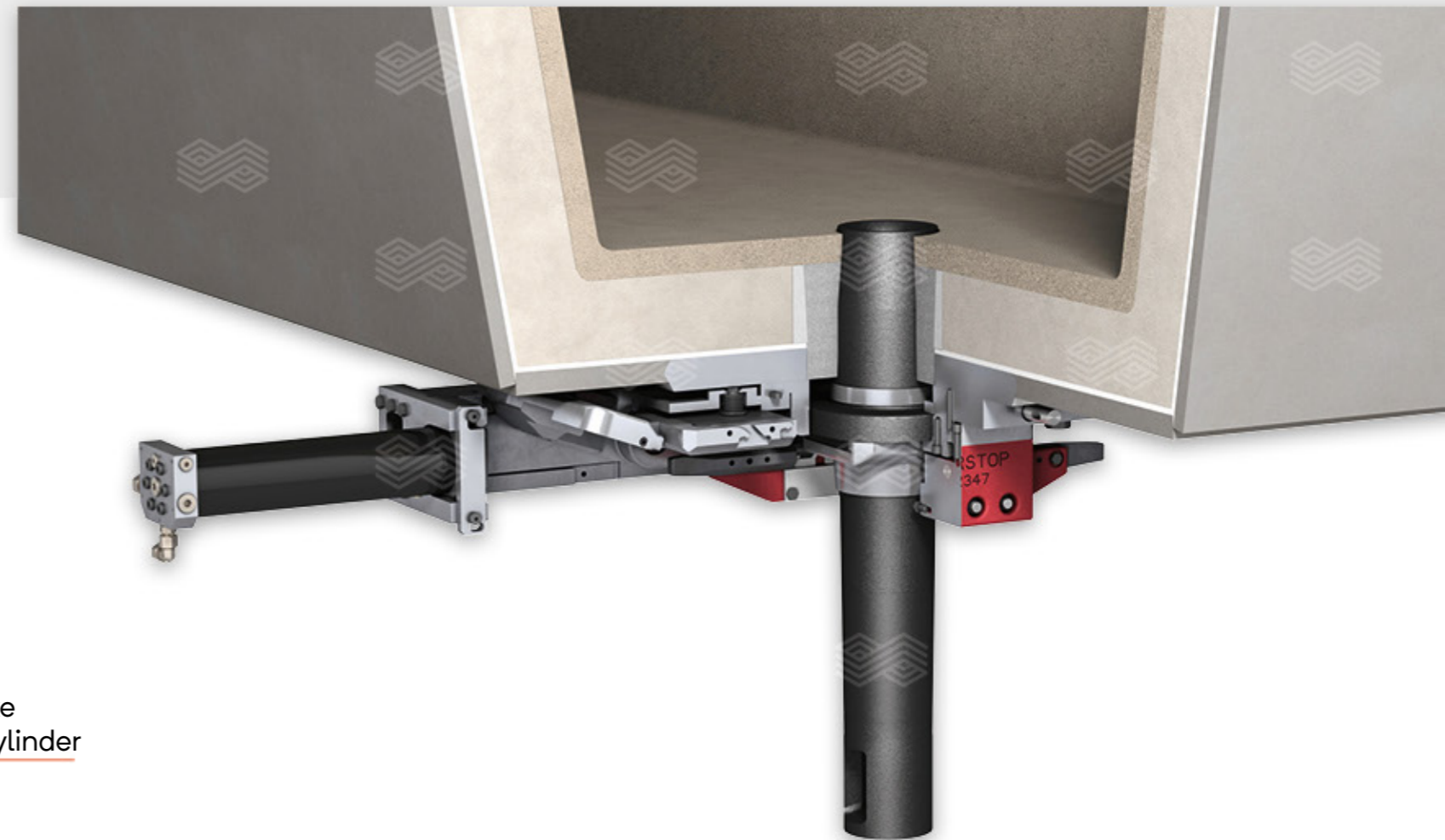
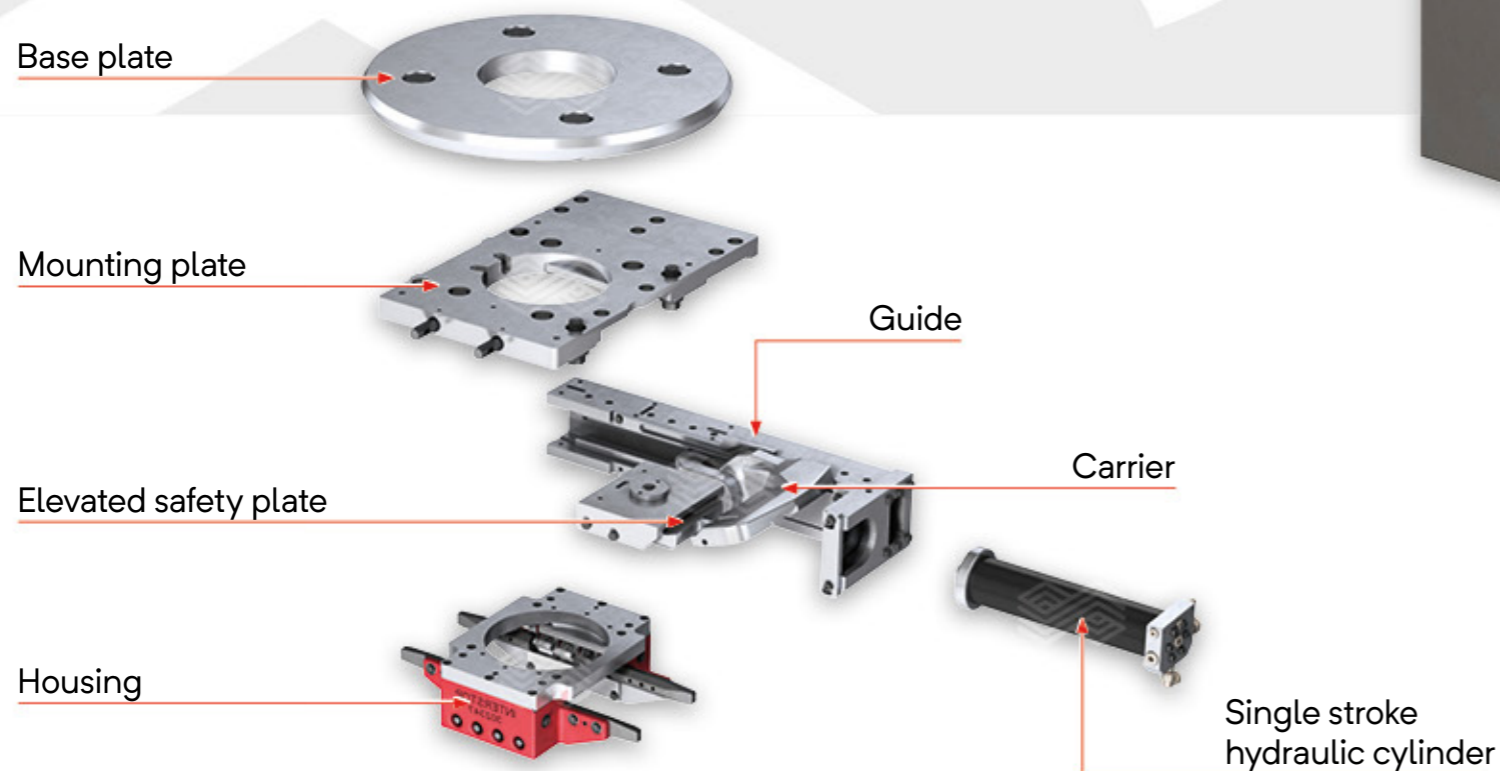
## System Characteristics

- Safety plate is an integrated part of the system always in stand-by position
- No blind plate handling
- No cylinder manipulation necessary
- Minimal time required for mono tube exchange
- Open front and side view into the mold
- Hydraulic cylinder out of direct heat impact

## Clean Steel Technology

- Tight joint between monotube and nozzle
- INTERSTOP® push-edge design
- Reliable argon couplings at the nozzle
- Rapid mono tube exchange

## Main Parts



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# INTERSTOP® Automation & Robotic Solutions

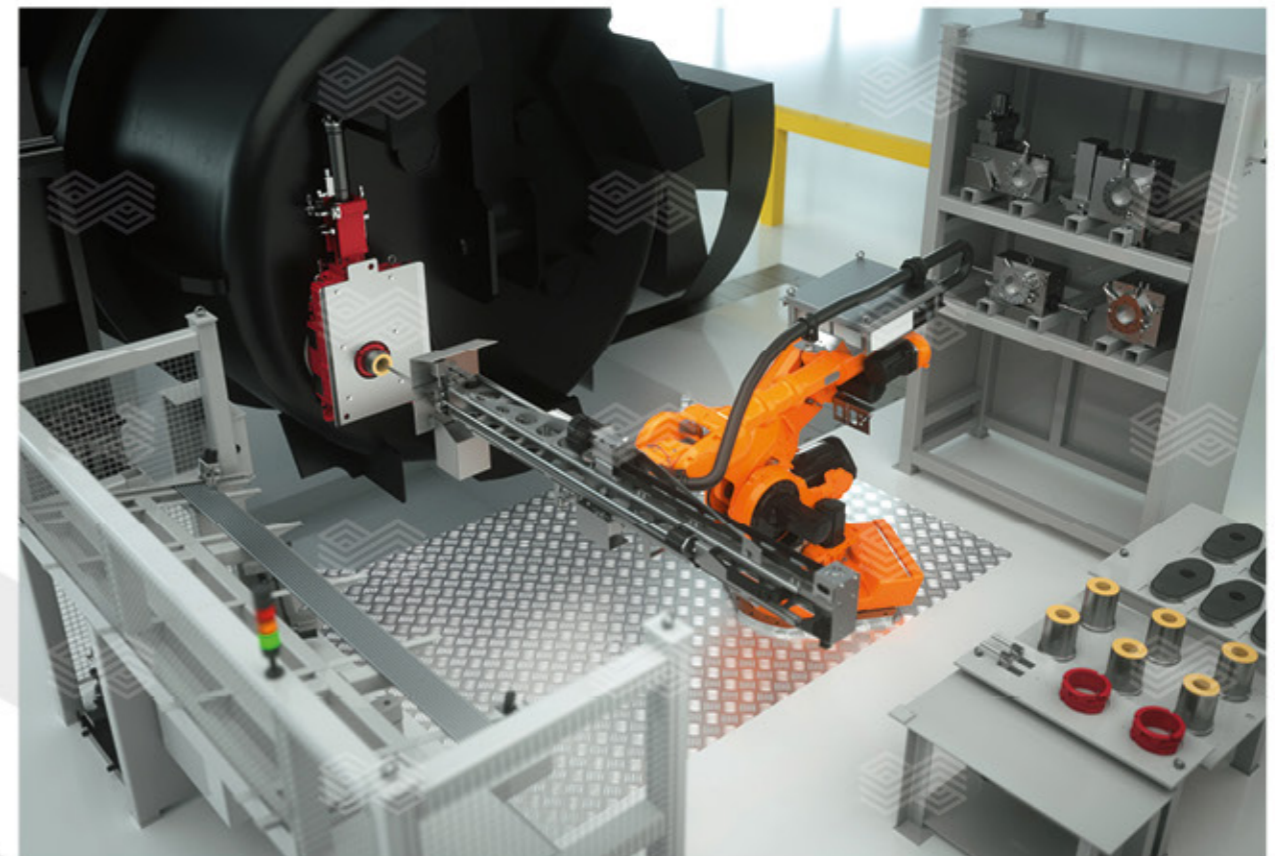
## Robotic Application Ladle to Mold (L2M)

- Automated cylinder handling
- Automated ladle shroud handling including O<sub>2</sub> cleaning & lancing
- Coupling of media (Ar, Air, Electric / slag detection)
- Sample taking and temperature measurement
- Mono tube handling
- Casting powder feeding



## Robotic Application for Ladle Preparation

- Oxygen lancing
- Ready-to-use mortar joints
- Inner nozzle repair
- Inner nozzle surface cleaning
- Optical measuring system
- Cylinder handling
- Handling of slide gate refractory parts



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# INTERSTOP® Process Control Systems

## Overview

- Process control & automation systems for all kinds of flow control applications
- Gas purging technology
- Tundish level control (TLC)
- Mold level control (MLC) for tundish gates, stopper rods and withdrawal speed
- Lab-view software for flow control simulations with on-site CCM parameters

## INTERSTOP® Gas Purging Technology

- Solutions for inert gas applications
- High accuracy and fast response
- Holistic process control
- Low maintenance requirements

## INTERSTOP® Tundish Level Control (TLC)

- Automatic tundish level control using tundish load cells or electromagnetic measurement systems (EMLI)
- Reduced refractory cost by minimized correction steps
- Slow speed for automatic mode
- High speed for manual & emergency mode

## INTERSTOP® Mold Level Control (MLC)

- Fully automatic casting operation and start-up procedure by tundish gates and stopper rods
- Line speed control for open casting
- Strand independent PLC control
- Cast interruptions & SES change
- Overflow protection & breakout detection
- Precise steel flow regulation independent of refractory wear
- Integrated argon gas control
- Radiometric & EMLI systems applicable
- Process visualization & data storage



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