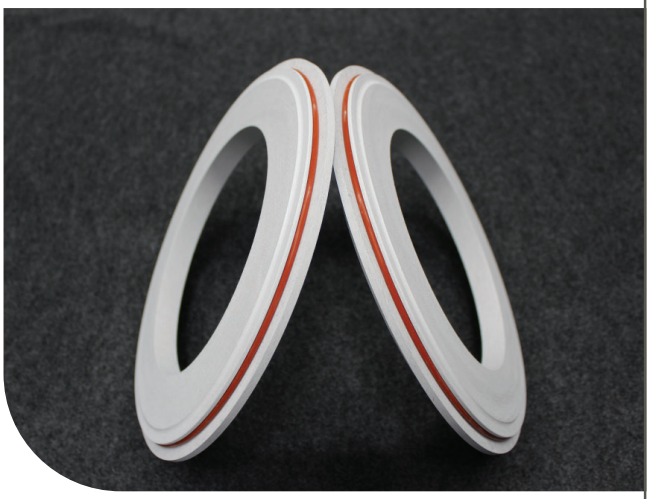
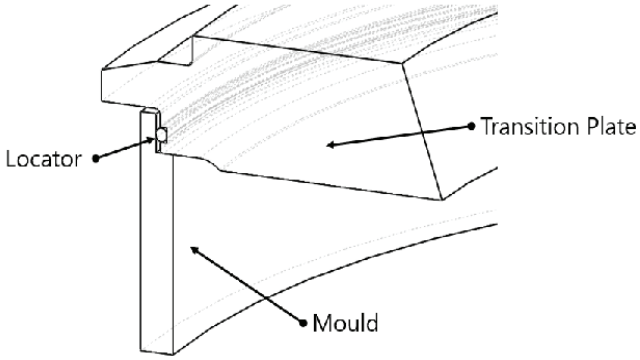
PYROTEK RING-FIT T-PLATE

FOR DIRECT CHILL BILLET CASTING

Pyrotek Ring-Fit Transition Plates are replaceable ceramic components installed in direct chill (DC) billet mould assemblies. They create the leading boundary of the mould before primary solidification at the casting ring.

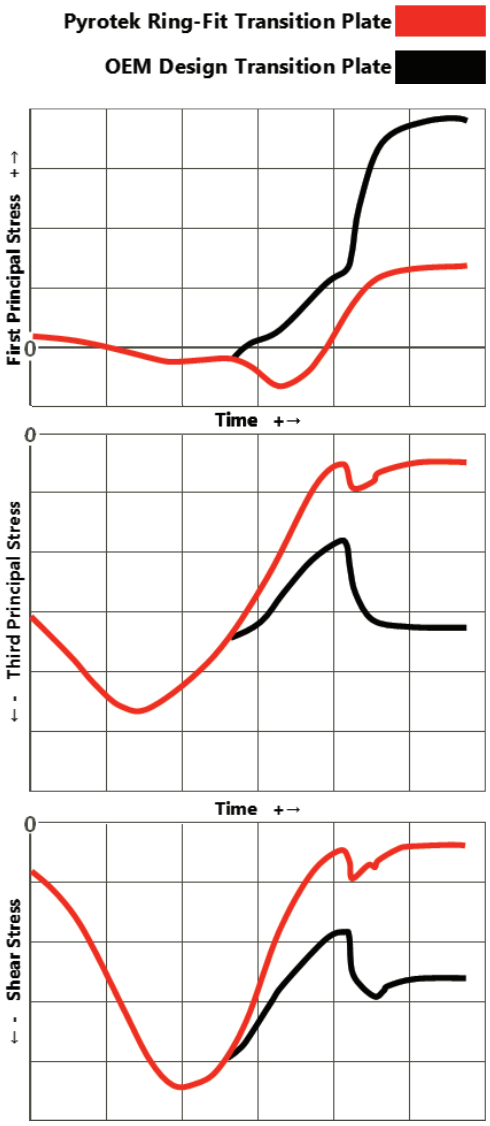
Unlike traditional transition plates, concentricity to the mould bore during installation is automatic with Pyrotek Ring-Fit Transition Plates since they have a locator installed on them.





The unique design also assists with steady state operation when thermal stability of the system is achieved. By engineering the optimal allowance for thermal expansion, thermal stress is significantly reduced to extend service life and reduce the risk of premature failure. This allowance also changes heat transfer modes at the casting ring interface to convection from conduction to reduce heat loss and improve control of primary solidification. It also reduces maintenance requirements by minimizing distortion that abrades and strains joints to thimbles and decreasing compression of joints to tabletop refactory.

Pyrotek's primary research of Ring-Fit Transition Plates compared to original equipment manufacturer (OEM) designs reveals a significant reduction in stress starting 12 seconds after a cast begins. First principal stress is reduced by 65%, third principal stress is reduced by 80%, and a 90% decrease in shear stress was predicted as shown (AT RIGHT) in the respective plots.



Pyrotek

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Pyrotek Ring-Fit Transition Plates are made from Pyrotek N-17 carbon fiber reinforced calcium silicate and include a high-temperature silicone locator, a Unifrax Fiberfrax® 970J ceramic paper gasket, and factory-coated ZYP Boron Nitride Lubricoat EAS-25 protective coating. Other configurations are available. Contact a Pyrotek sales engineer for product information to meet specific application requirements.

BENEFITS

- Reduced stress design to extend service life
- Reduced distortion during casting to minimize joint maintenance
- Reduced heat loss at casting ring interface to improve solidification control
- Integrated locator to ensure proper installation
- Machined to stringent tolerances
- Low thermal conductivity
- High toughness
- Thermal shock resistant
- Non-wetting

APPLICATIONS

Pyrotek Ring-Fit Transition Plates are applicable to all billet casting machine technologies where transition plate expansion at the interface to the casting ring/mould is unconstrained (GRAPHIC AT RIGHT).

Applicable mold technologies include, but are not limited to:

- Wagstaff® AirSlip®
- Wagstaff® NuMax™
- ALMEC TECH

INSTALLATION

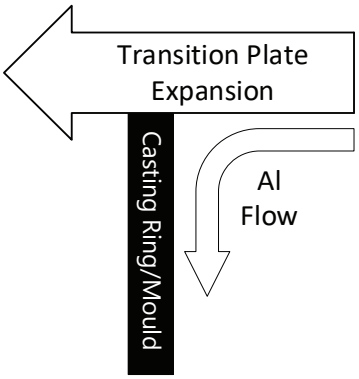
Pyrotek Ring-Fit Transition Plate installation requires a low-friction surface below the retaining nut/ring and a Pyrotek specified optimal clamping force. Clamping surface specifics, maximum retaining nut torque values, and additional installation procedures are provided in the Pyrotek Ring-Fit Transition Plate Manual.

ADDITIONAL INFORMATION

Pyrotek Ring-Fit Transition Plates are patent pending.

This Technical Datasheet (TDS) does not constitute a specification.

Unconstrained



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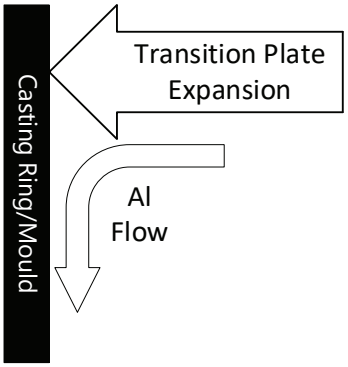

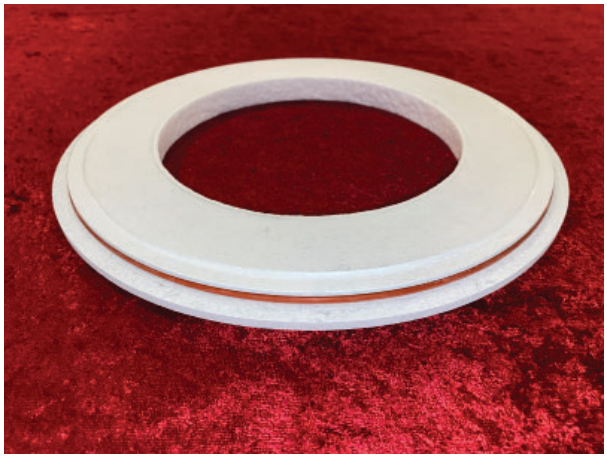

Note: The physical and chemical properties listed represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice.