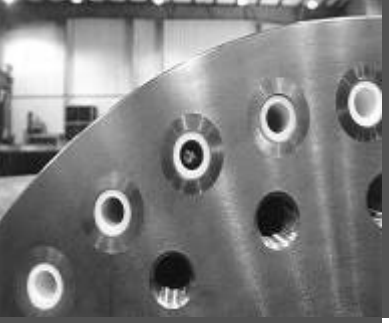
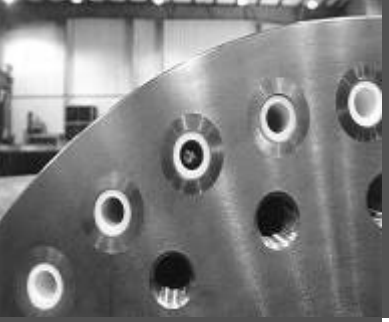


SHW 1365
Casting Technologies

Chilled Cast Iron Rolls & Shells

SHW 1365
Casting Technologies

SPINNAKER CORPORATION
EQUIPMENT AND PROCESS SOLUTIONS

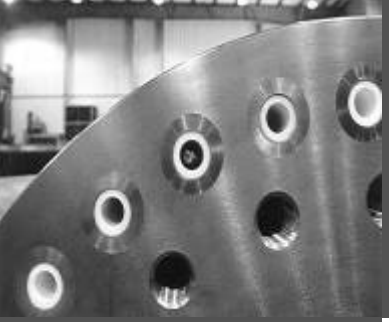


Chilled Cast Iron Characteristics

SHW Casting Technologies

Superior Hardness:

- **Standard chilled cast iron = 550 V hardness**
- **AISI 4100 Steel = Avg. 302 V hardness**
- **> Hardness = > Wear Resistance = Longer Time Between Grinds + Better Roll Profile**



Chilled Cast Iron Characteristics

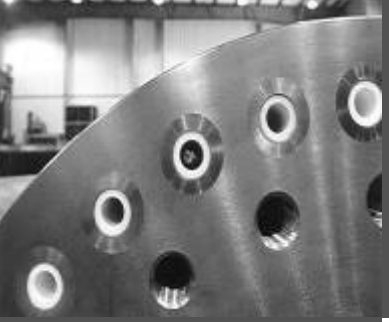
SHW Casting Technologies

Higher Beam Strength

- **Greater Resistance to Deflection**

More Uniform Heat Transfer

- **Better Roll Profile & Paper Properties**



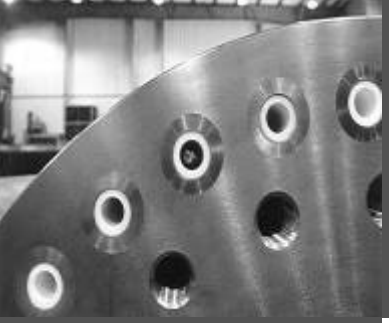
Chilled Iron Rolls

- Iron prepared in furnaces
- Poured into a pit (similar to casting a dryer)
- Chills stacked on the outside
- Centrifugal forces force high quality material to the outside, displacing impurities to the center
- Difference in solidification
  - Chilled iron on outside, grey on inside

SHW 1365 Casting Technologies

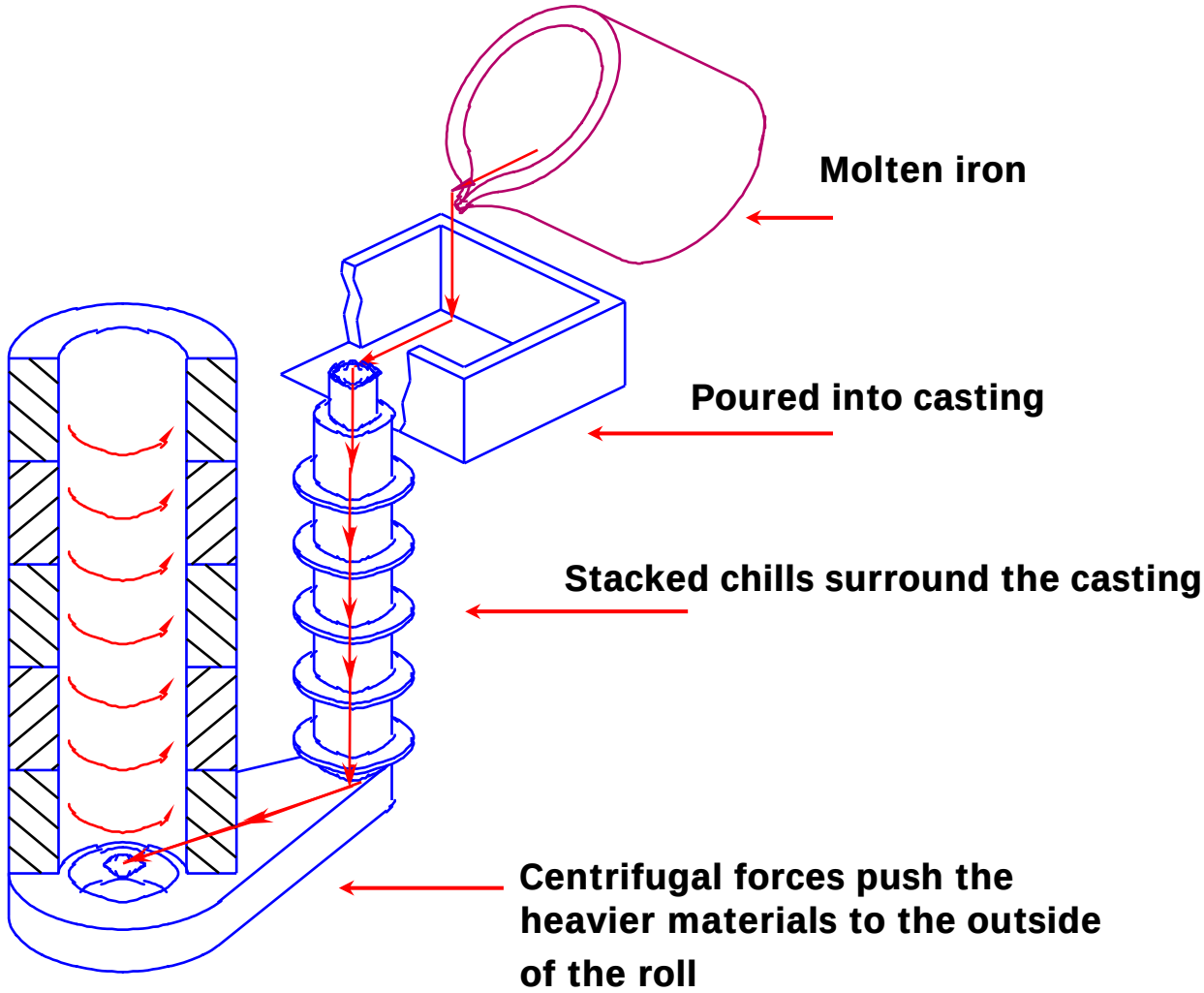
Foundry Workers Stacking Chills Preparing for a Pour

SHW 1365
Casting Technologies



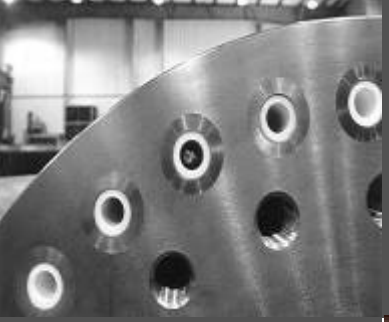
Pouring Chilled Iron Rolls

SHW Casting Technologies

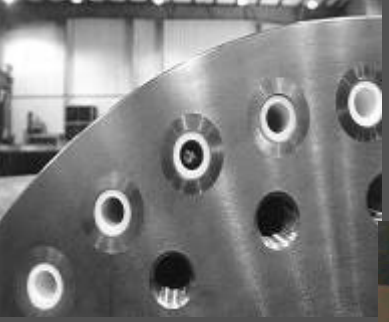


Pouring of Molten Iron

Molten Iron poured from two ladles on opposite sides



SHW 1365
Casting Technologies



Roll Body“As-Cast”

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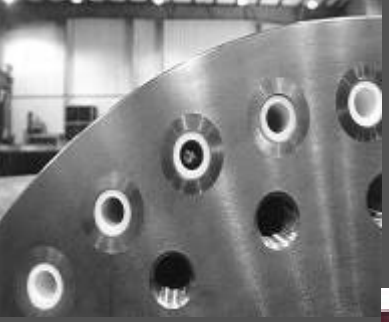
Casting Technologies

Roll is lifted from Casting Pit after one-to-two week cooling period



Roll Cast as a Solid Body

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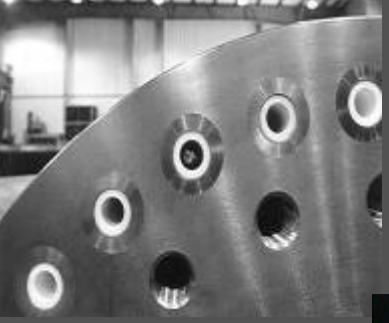
Casting Technologies



Chill Depth

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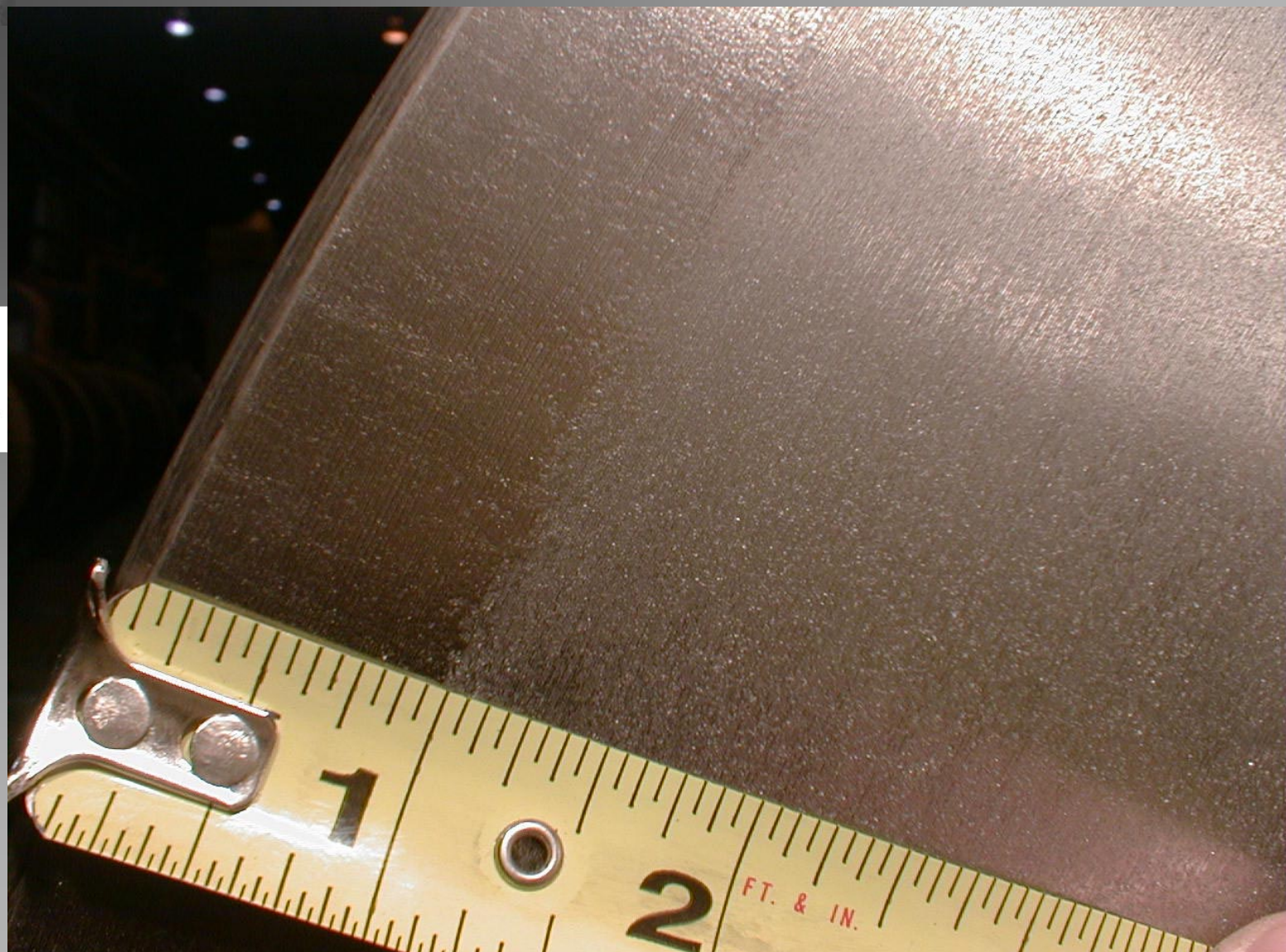
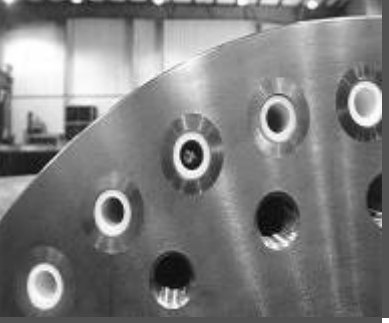
Casting Technologies

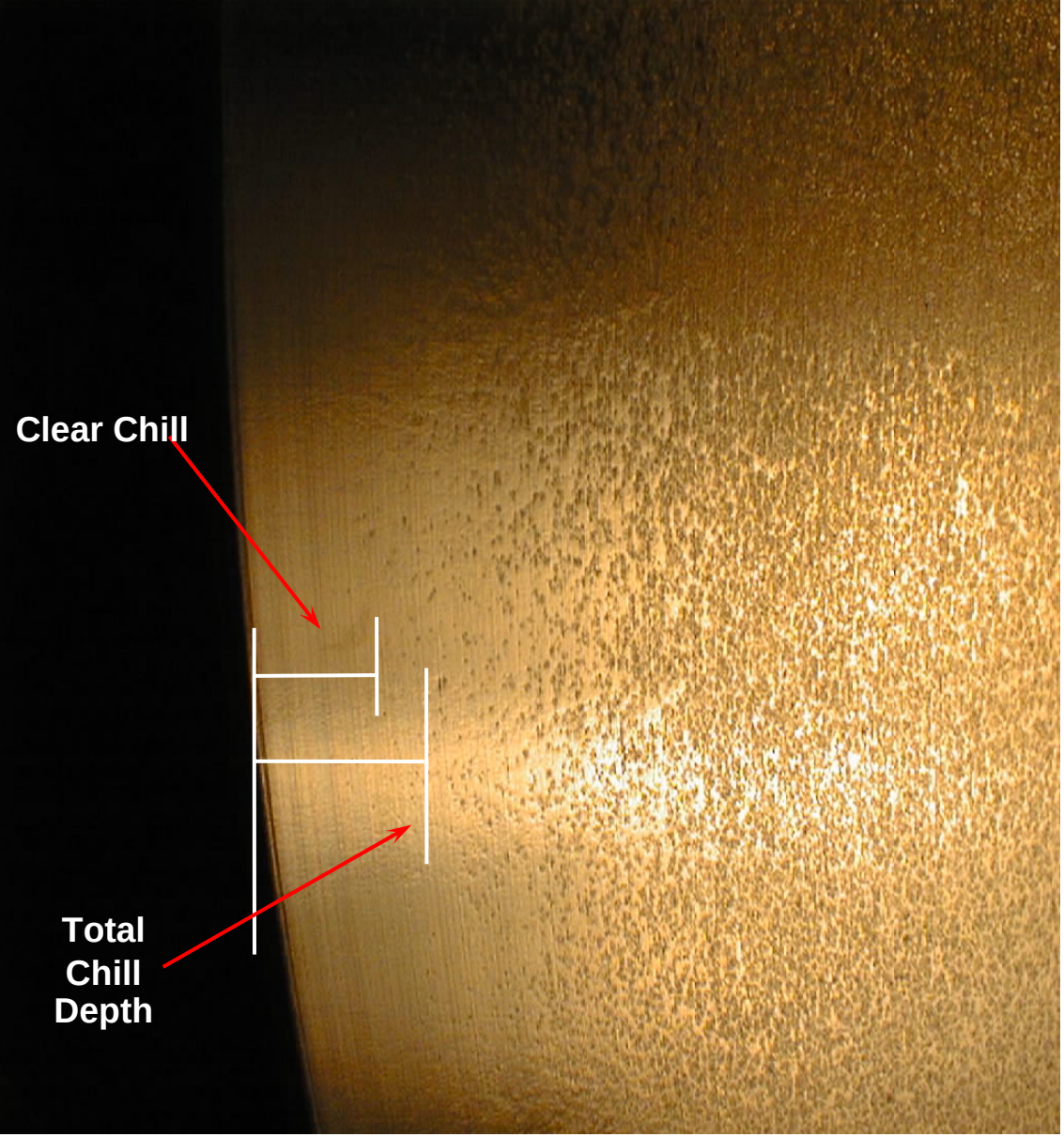




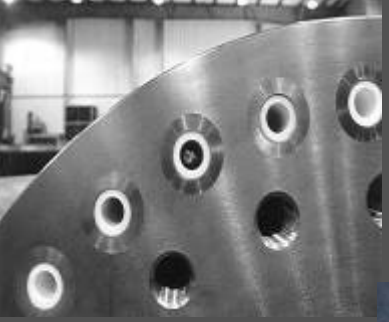
Chill Depth Chart

SHW 1365 Casting Technologies

	NOMINAL DIAMETER			USABLE CHILL DEPTH
	From		To	
mm	150	-	300	~ 10
inches	6	-	12	~ 3/8
mm	300	-	600	~ 12
inches	12	-	24	~ 1/2
mm	600	-	1200	~ 16
inches	24	-	47	~ 5/8

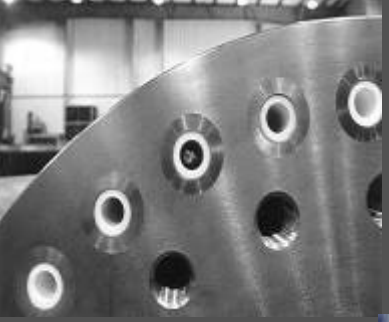

Clear Chill
Total
Chill
Depth


Grey Iron
Chill Layer
Trepan Center



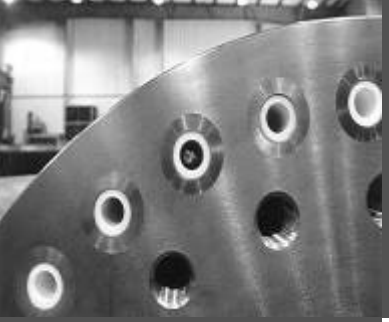
Roll Head Forgings

SHW 1365
Casting Technologies



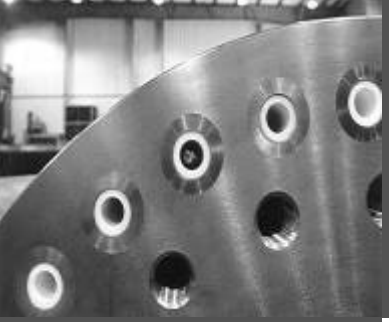
Head Machining Center

SHW 1365
Casting Technologies



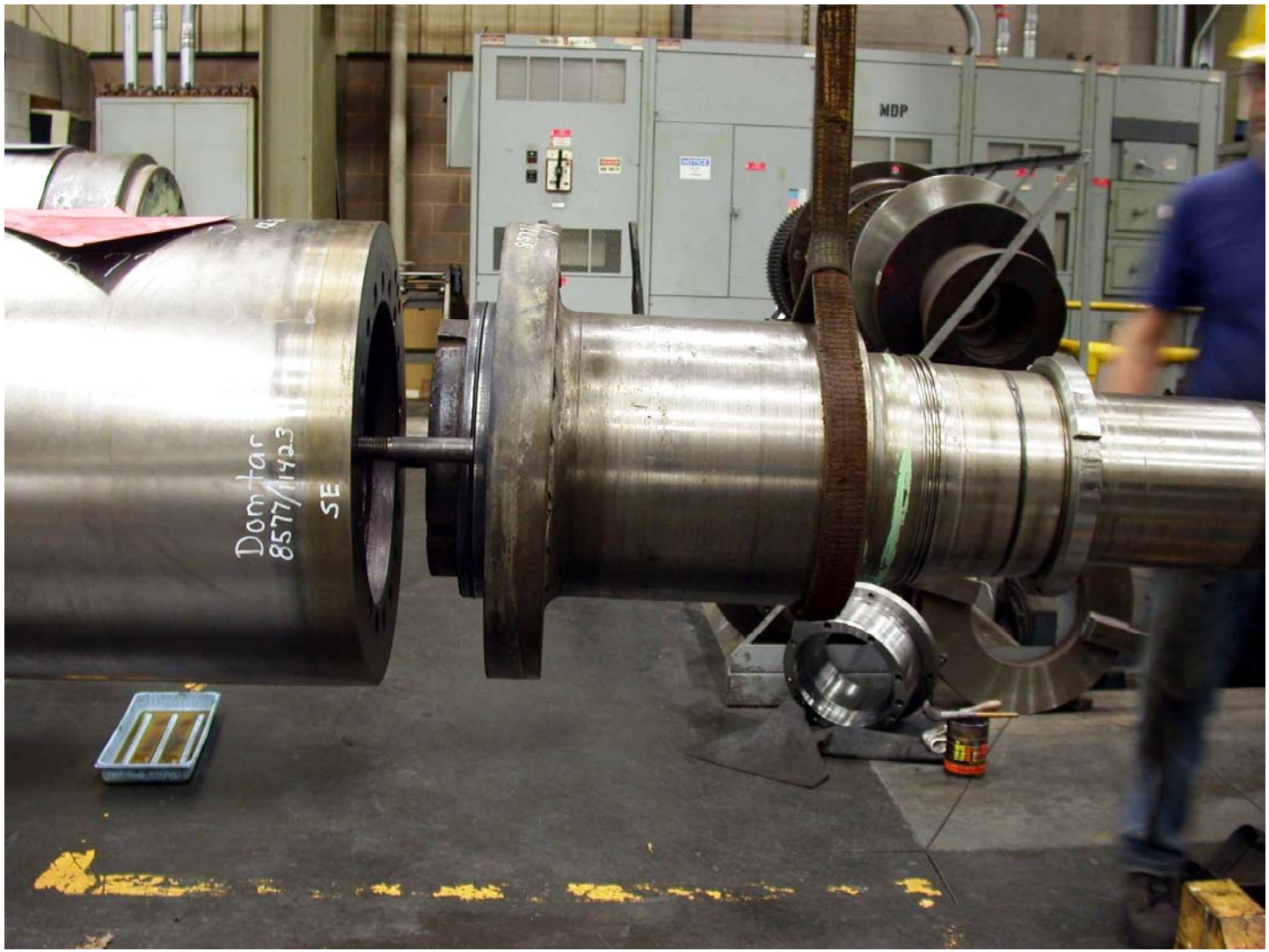
Roll Shell

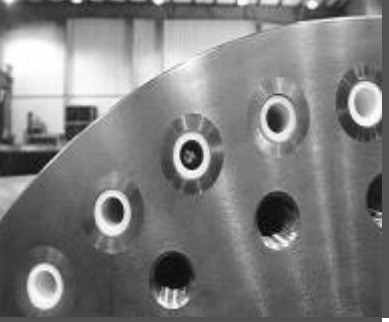
SHW 1365
Casting Technologies



Heads are Inserted

SHW 1365
Casting Technologies





And Bolted

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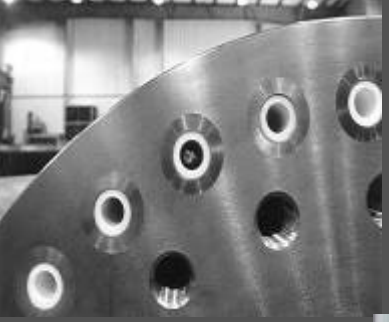
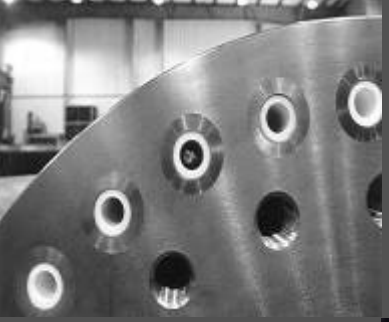
Casting Technologies



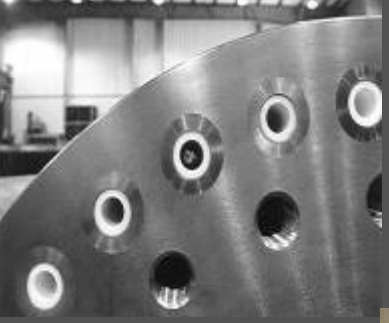
#81 Roll Grinder

SHW 1365
Casting Technologies



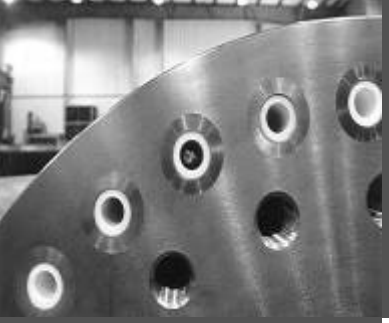
3-Plane Balancing

SHW 1365
Casting Technologies



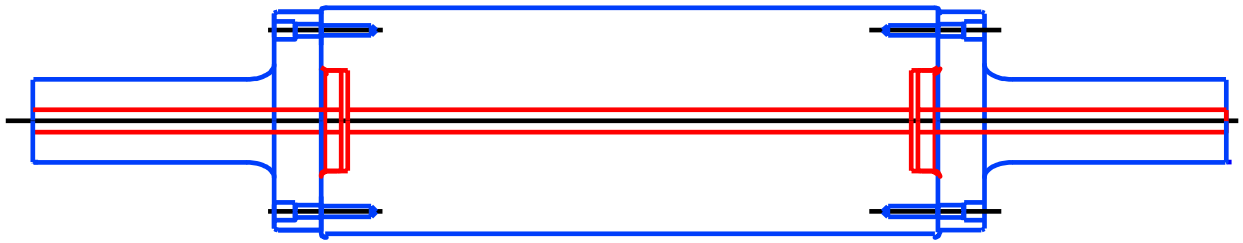
Final Polish

SHW 1365
Casting Technologies

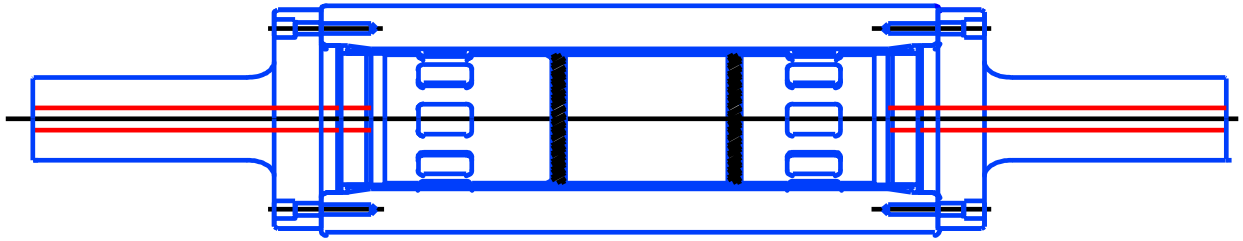


The Three Basic Roll Designs

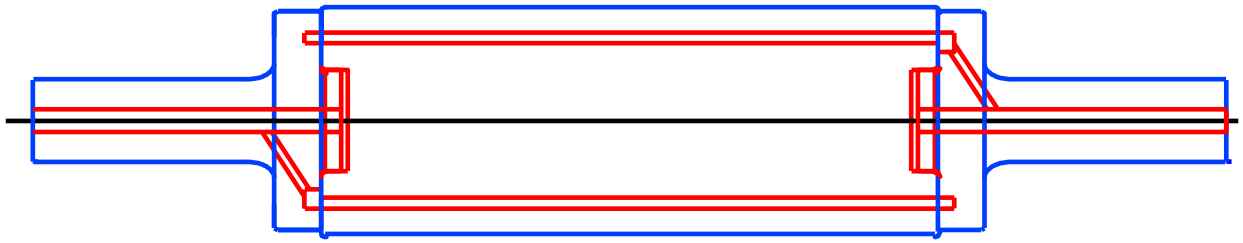
SHW Casting Technologies



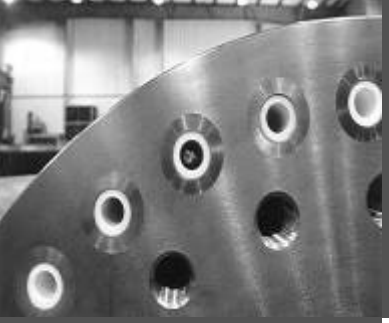
STANDARD (Non-Heated)



AQUITHERM-V, DISPLACER TYPE



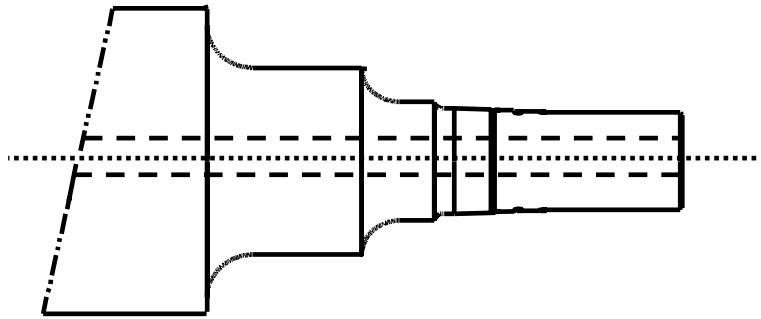
AQUITHERM-P, PERIPHERALLY DRILLED TYPE



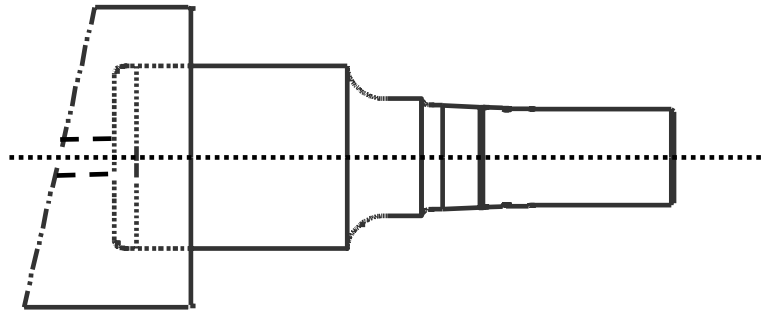
Journal Designs

SHW 1365
Casting Technologies

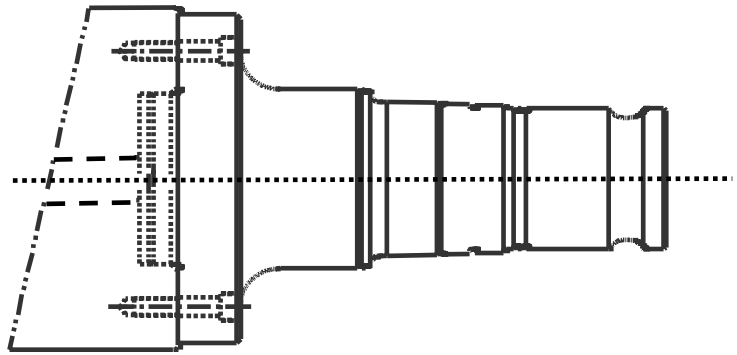
Integral



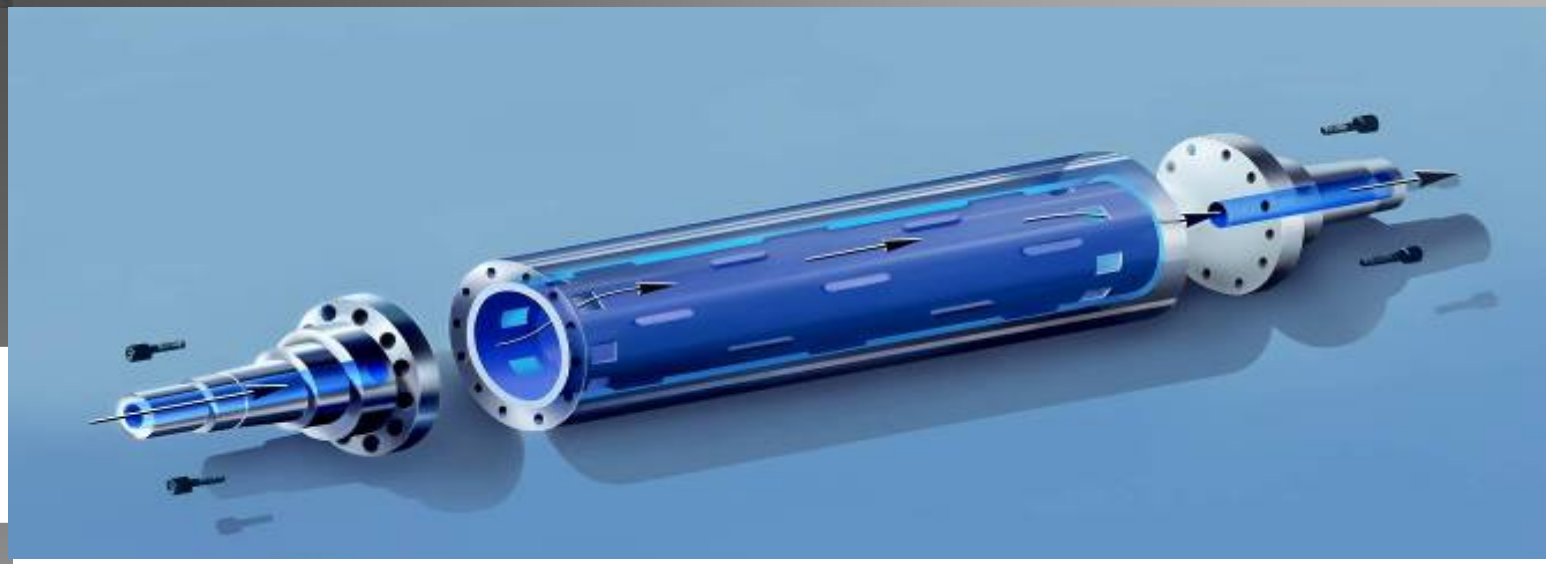
Inserted



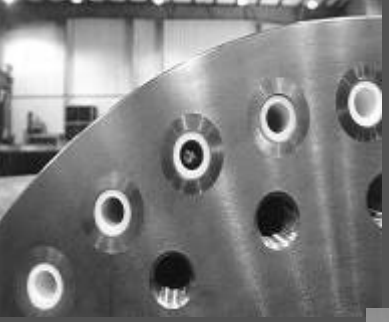
Bolted



Aquitherm-V Displacer Type



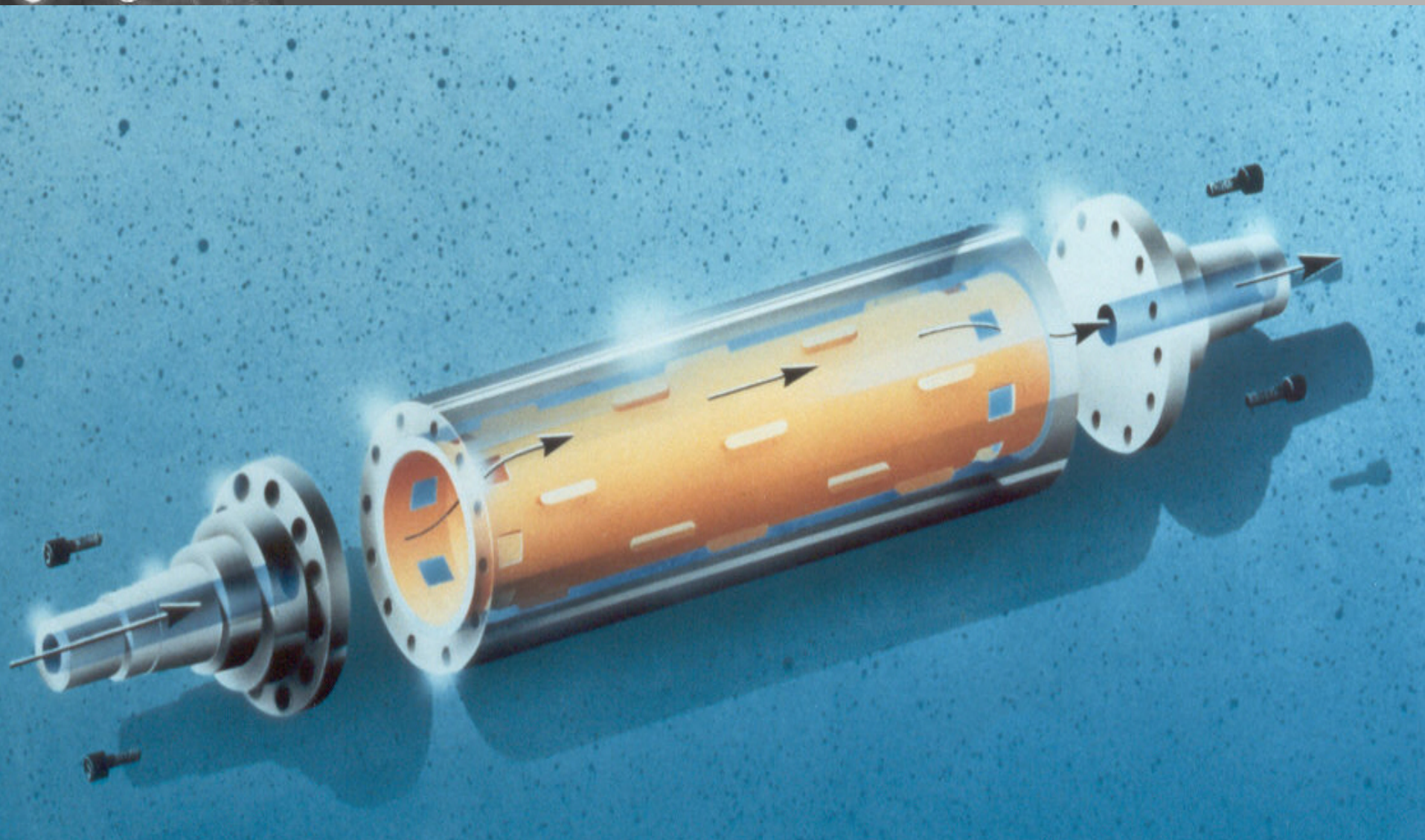
- Water Heated
- Chilled Cast Iron Body
- Shrunk Fit Steel Displacer Body/Can
- Operating Temperatures < 250 Degrees F
- Mass Centering
- Excellent S/C Application
- Great for High L/D Applications



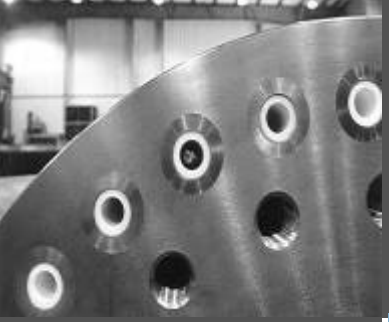
Displacer Body

SHW 1365
Casting Technologies

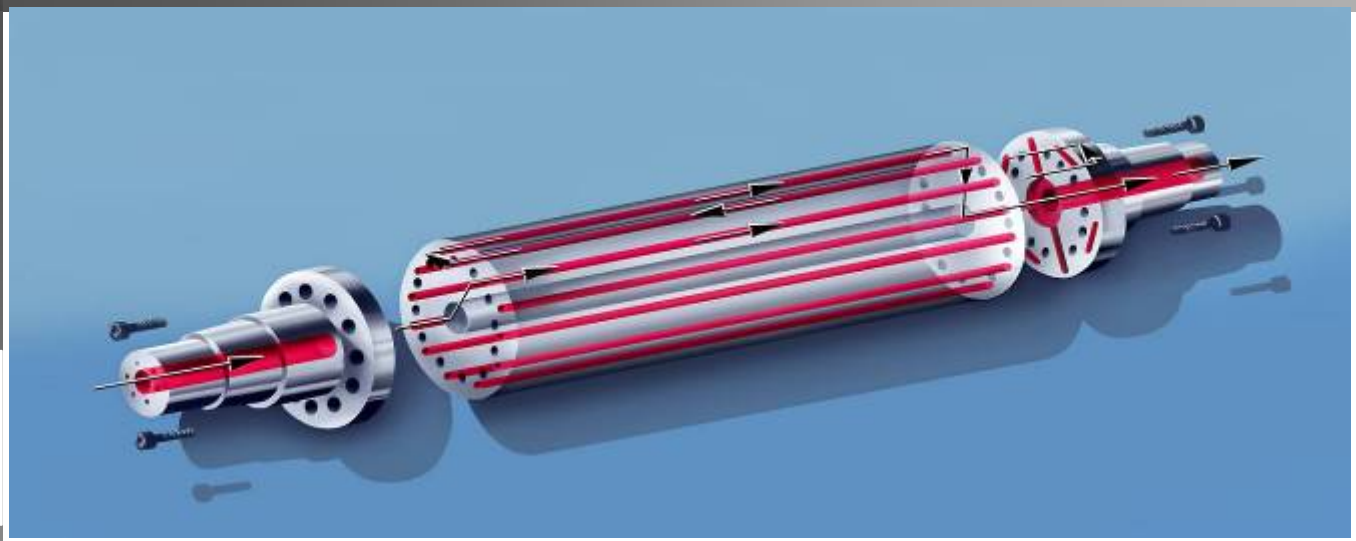
Displacer Schematic



TriPass
Peripherally Drilled Roll

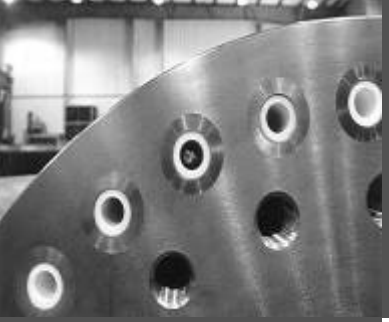


SHW Casting Technologies



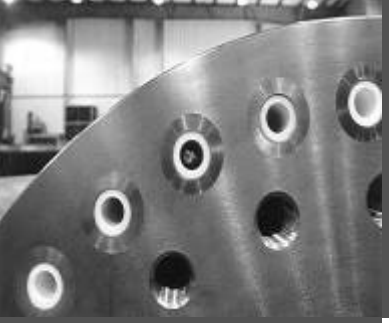
Gun drilled from each end
Holes generally 1.25” (32mm) diameter
Holes just below Chill Layer for maximum heat transfer
Higher operating temperatures
Heating Options

- **Water Heated** **250 Degrees F**
- **Oil Heated** **400 Degrees F (Typical)**
- **Steam Heated** **340 Degrees F**
- **Steam/Water Combo**



Peripheral-Bore Machine

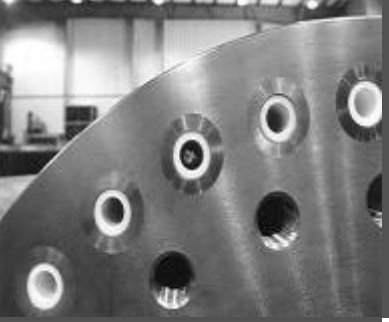
SHW 1365
Casting Technologies



Connecting Channels: Bores in Journals

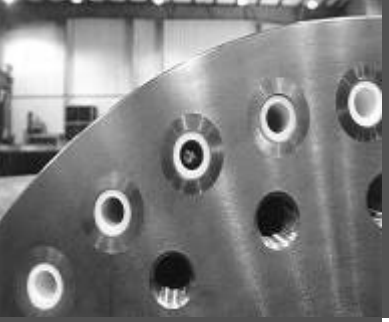
- **Journals more stable, compared to milled slot connections**
- **Avoids Weakening of Roll Body**
- **Allows Triple Seal System**

Patent Protected



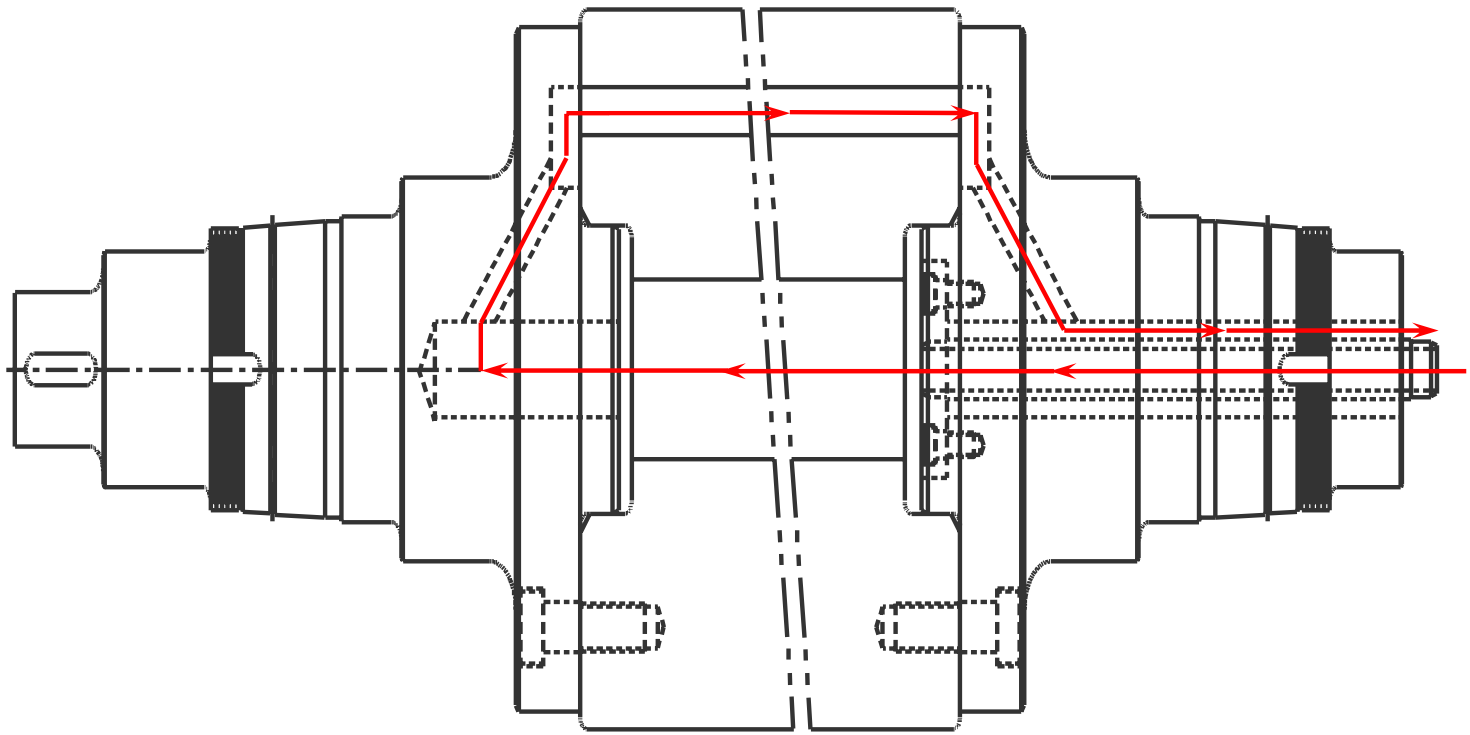
TriPass Typical Design

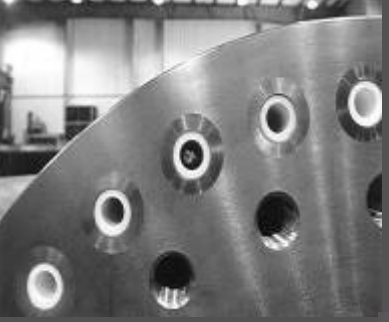
SHW 1365
Casting Technologies



Patented Head Drilling

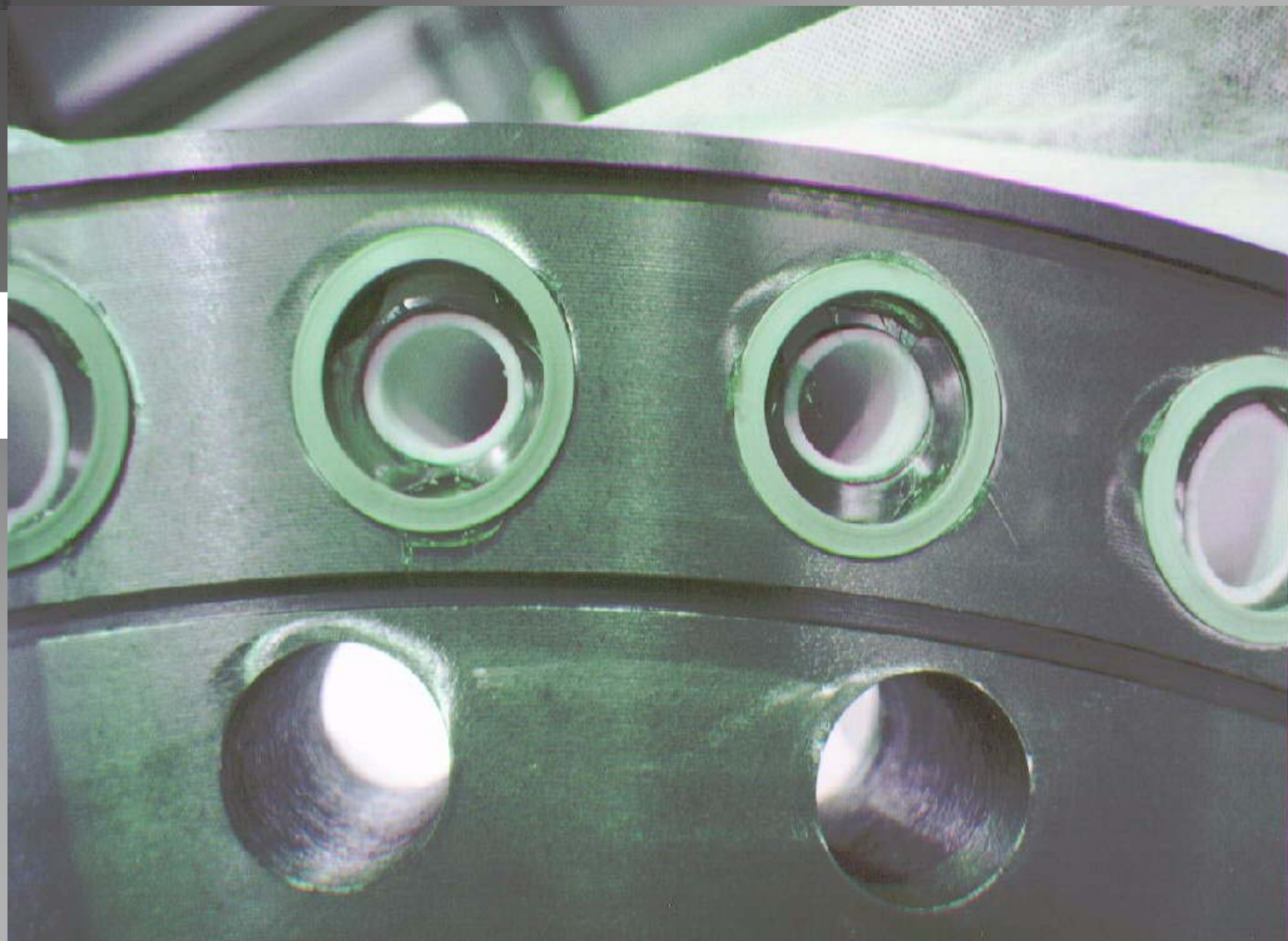
SHW Casting Technologies

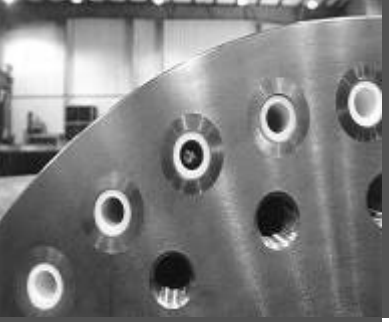




Patented Triple Seal

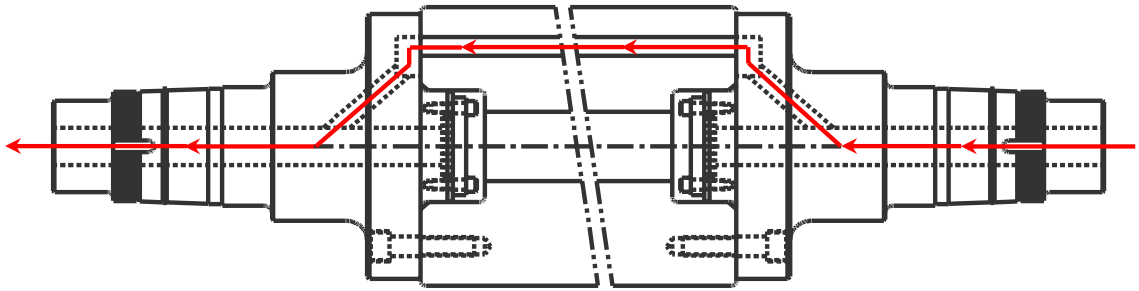
SHW 1365
Casting Technologies



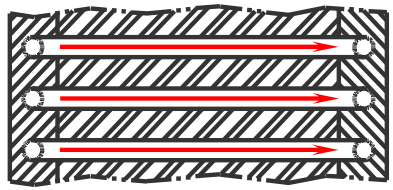


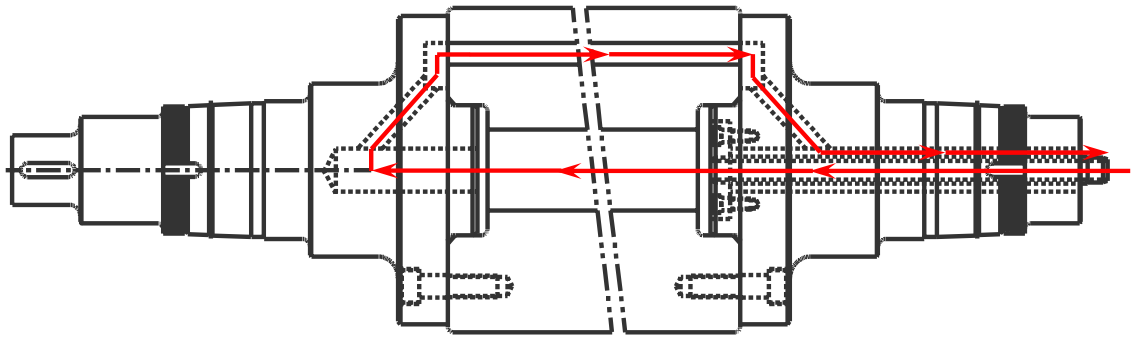
MonoPass Configuration

SHW Casting Technologies

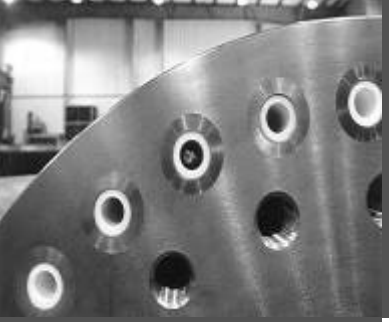


MonoFlow (Non Driven)



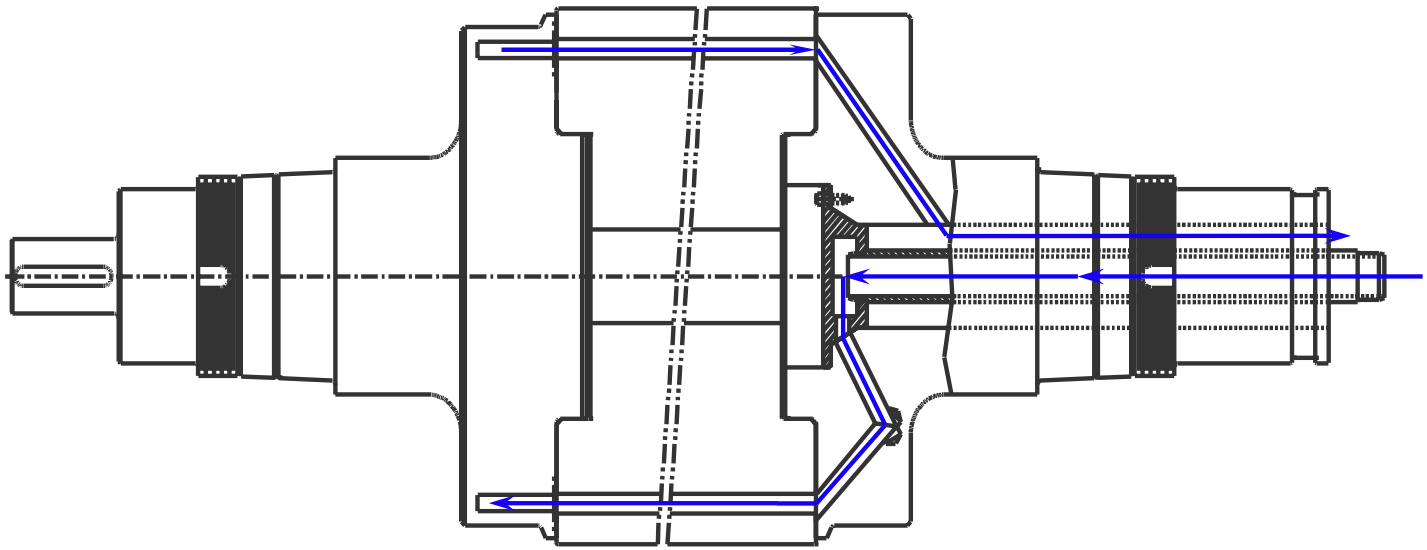


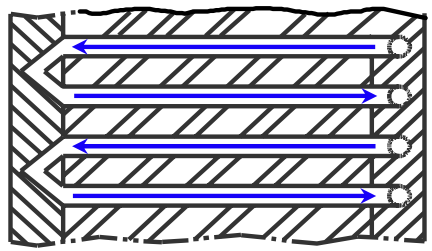
DuoFlow (Driven)



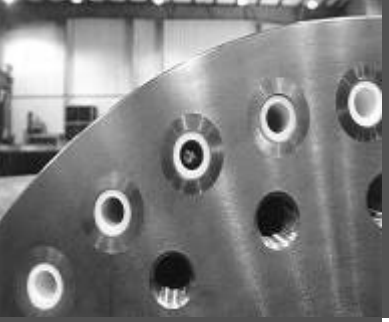
DuoPass Configuration

SHW 1365
Casting Technologies



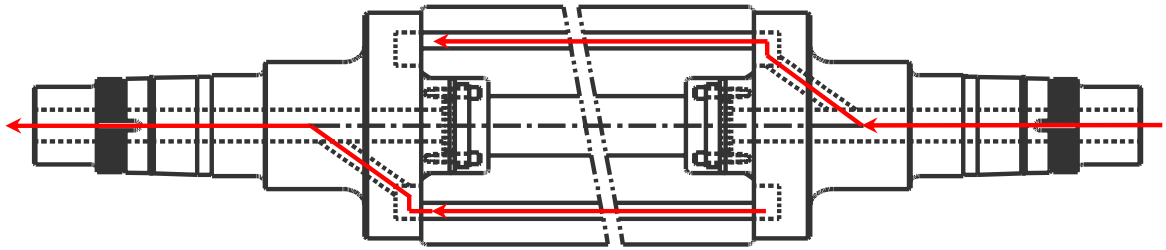


DuoFlow only (Driven or Non-Driven)

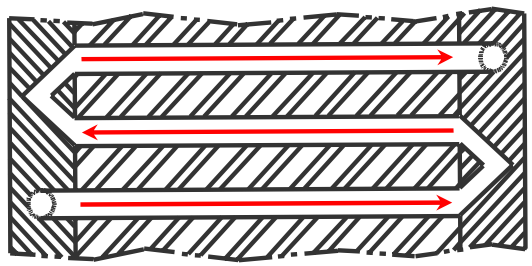


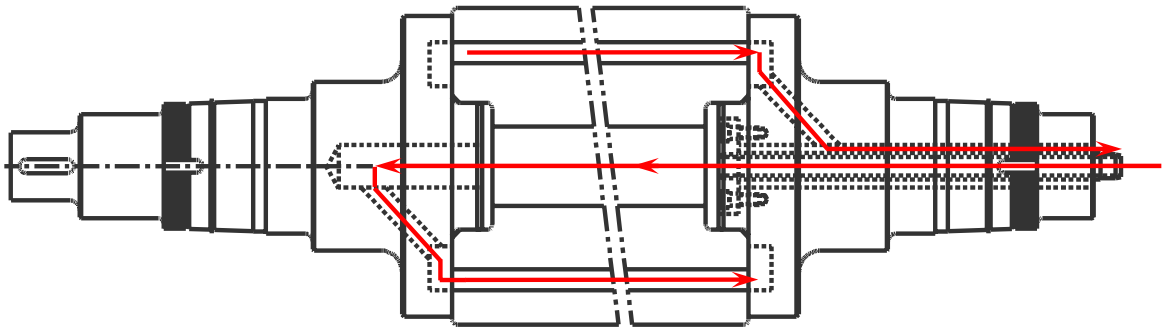
TriPass Configuration

SHW Casting Technologies

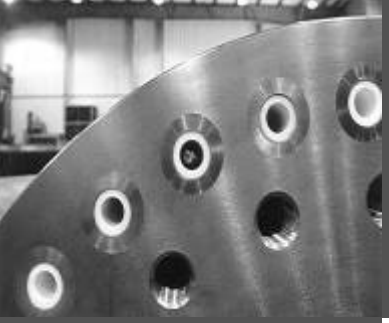


MonoFlow (Non-Driven)





DuoFlow (Driven)

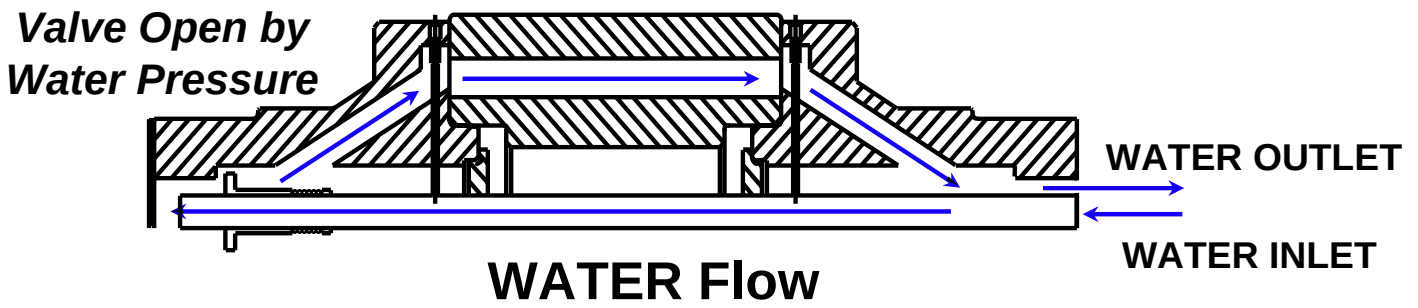


TriPass-PS / W

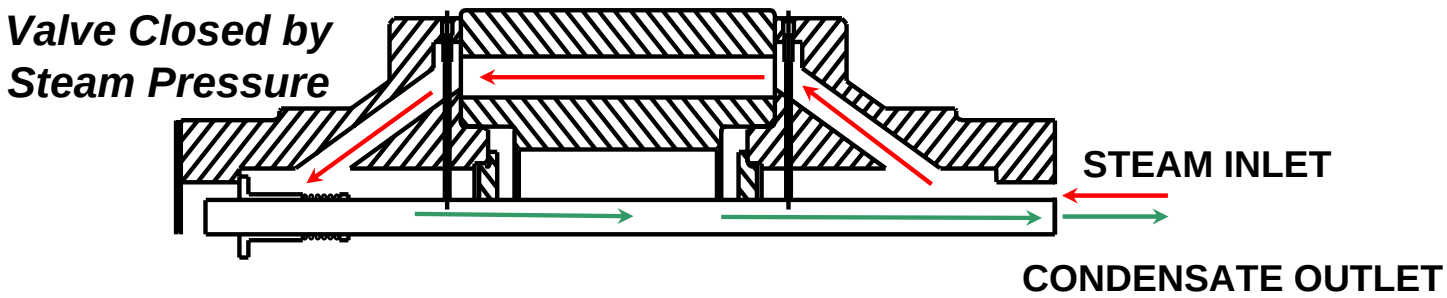
Peripherally Drilled, Steam/Water Heated

SHW Casting Technologies

TRIPASS, DuoFlow Configuration



WATER Flow



STEAM and Condensate Flow