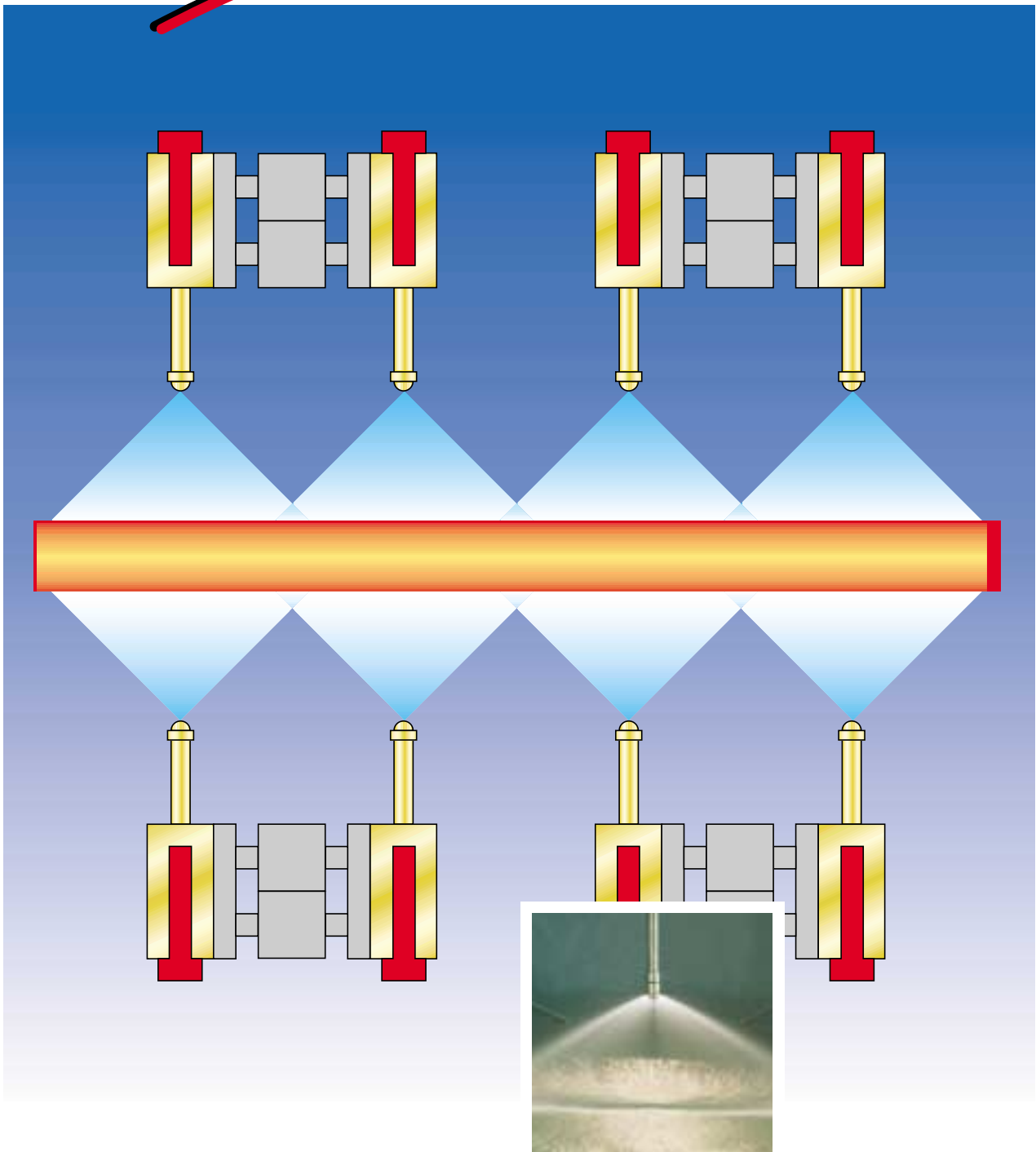




*New*

**MasterCooler SMART<sup>®</sup> Cartridge**  
Air Mist Nozzle for Slab- and Beam Blank Casters



# MasterCooler SMART<sup>®</sup> Cartridge

## The latest air mist technology and user benefits

### The problem

Having the air mist nozzles mounted very close to the strand makes maintenance (cleaning or adjustment) impossible unless the segment is removed from the machine. Air mist nozzle bodies are sometimes difficult to clean because of their internal geometries.

Modern slab casters having "Edge/margin Control" often require bent nozzle extension pipes. This leads to a very large number of different tailor made nozzle varieties which must be kept in stock as spares.

Moreover, in case of a breakout nozzles must be replaced completely which is very costly.

Because of their internal mixture, air mist nozzles require two separate feed pipes for compressed air and water. Until recently small diameter hydraulic pipes were used to feed the fluids from the headers and to hold the nozzles in place. The conventional air mist nozzles mounted on these small pipes are hidden inside the segment framework and are difficult to access and are often misaligned and out of position.

Strand surface defects can often be traced back to misaligned spray nozzles. Due to the nozzle mounting position on the segment rear side it is not unusual that the overall nozzle length becomes 1000mm and longer. A strand breakout could lead to an expensive replacement of a number of complete long nozzles.

### The solution

#### MasterCooler SMART<sup>®</sup> Cartridge

The mixing chamber for air and water is no longer machined directly into the nozzle body but has been integrated into a new component which is the **cartridge**.

Since the **cartridge** can be removed from the nozzle block "On Line Maintenance" for cleaning can be carried out where the nozzles are accessible inside the cooling chamber.

The air mist nozzles are now equipped with a body bolted vertically onto an adaptor plate. Small diameter fluid feed pipes are no longer necessary. All nozzles are mounted outside of the framework at the rear side of the segment with only the nozzle pipe, carrying the spray tip, reaching down to the spray position. A very rigid header pipe and a nozzle self alignment is the result. The nozzle spray position is always secured. A "Hoseless" fluid supply system becomes also possible.

The mixture between compressed air and water takes place away from the hot zone inside the mixing chamber which is an internal part of the vertical plate. Hence, only one single nozzle pipe, exempt of any restrictions, supplies the premixed fluids to the nozzle tip.

**Patent application pending.**

#### MasterCooler SMART<sup>®</sup> Cartridge Split Pipe design

It is recommendable to install nozzles of the "Split Pipe" version allowing to separate the front part carrying the nozzle tip and nut only. A "Modular" component handling system becomes possible. Except the nozzle tip and the extension pipe all components are standard items quickly available. Reduced costs for spare parts stocking is the positive effect.

The nozzle's vertical plate together with the remaining part of the pipe can be retained. The position of the joint between the two pipe ends can be designed as per request. A self aligning design identical to the one of the nozzle tip also secures the correct spray direction at this point.

# MasterCooler SMART<sup>®</sup> Cartridge

## Nozzle features and typical nozzle arrangement

### MasterCooler SMART<sup>®</sup> Cartridge



MasterCooler SMART<sup>®</sup> Cartridge, complete nozzle, front side

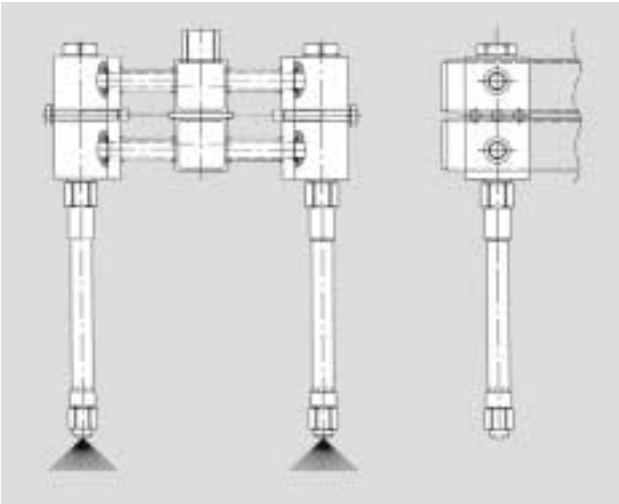
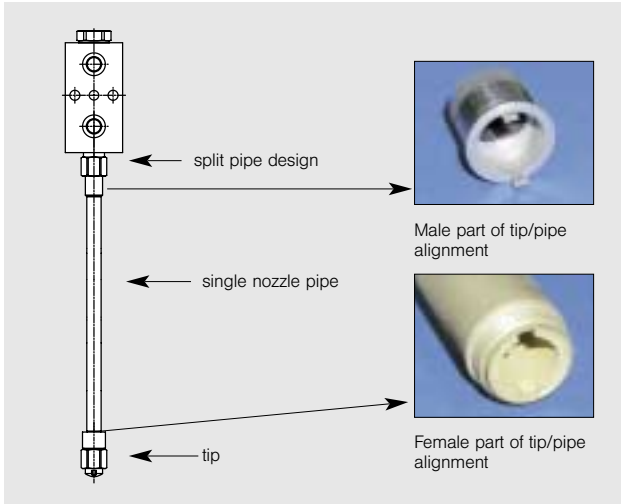


MasterCooler SMART<sup>®</sup> Cartridge, complete nozzle, rear side



Cartridge shown separately

### MasterCooler SMART<sup>®</sup> Cartridge Split Pipe



MasterCooler SMART<sup>®</sup> Cartridge Split Pipe design with self aligning tip and pipe

# MasterCooler SMART<sup>®</sup> Cartridge

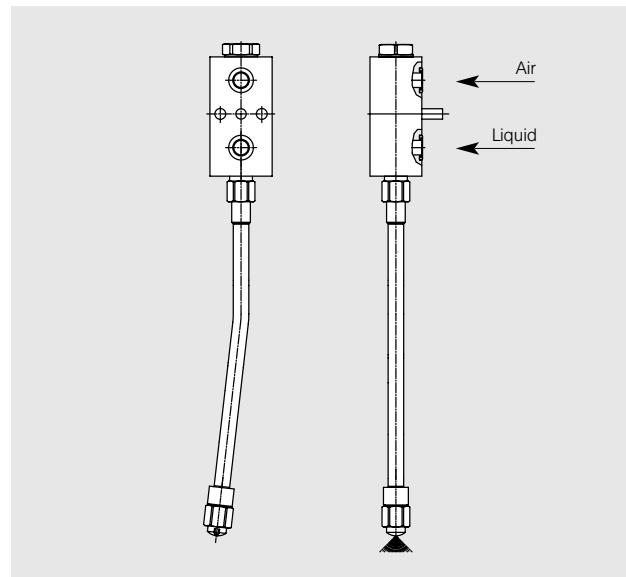
## Technical data



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Standard size	Min. standard water flow at 0,5 bar water pressure	Min. standard water flow at 7 bar water pressure	Max. standard air flow at 0,5 bar water pressure
	All values at 2 bar constant air pressure		
	l/min	l/min	Nm <sup>3</sup> /hr
1,5	0,9	5,7	6,8
2	1,3	7,6	9,1
2,5	1,6	9,5	11,4
3	2,0	11,7	14,0
3,5	2,2	13,2	15,9
4	2,7	16,3	19,6
4,5	3,0	18,0	21,6
5	3,2	18,9	22,7
5,5	3,5	20,8	25,0
6	3,8	22,7	27,3
6,5	4,1	24,6	29,5
7	4,4	26,5	31,8
7,5	4,7	28,4	34,1
8	5,2	31,0	37,2
8,5	5,4	32,2	38,6
9	5,6	33,8	40,6
9,5	6,0	36,0	43,1
10	6,3	37,9	45,4
10,5	6,6	39,7	47,7
11	6,9	41,6	50,0
11,5	7,3	43,5	52,2
12	7,6	45,4	54,5
12,5	7,9	47,3	56,8
13	8,2	49,2	59,0
13,5	8,5	51,1	61,3



- Extension pipe length to suit
- Bent pipes possible (1 or 2 planes)
- Split pipe design recommended
- Material: Body in brass, tip brass nickel plated or SS

Standard spray angles: degrees 50; 80; 90; 110; 120

### The special features

- Vertical plate connection
- Modular design
- Cartridge with metering orifices for air and water
- Uniform water distribution over turn down ratio
- Stable spray angle over turn down ratio

### The benefits

- Very rigid and economical header design
- Component standardisation reduce spare part costs
- Easy ("on line") maintenance
- Uniform cooling over entire slab width
- Prevents transversal cracks and core segregation

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