

Fog Cooling Systems

Knowledge

The effect of spray cooling is dependent on *the fog, the cooling target, the environment and the cooling medium.*

IKEUCHI measures each aspect of fog spraying performance and uses CFD simulation to create plans for the optimum cooling conditions.

*For a summary of IKEUCHI's CFD simulations please refer to P.1.

Hardware

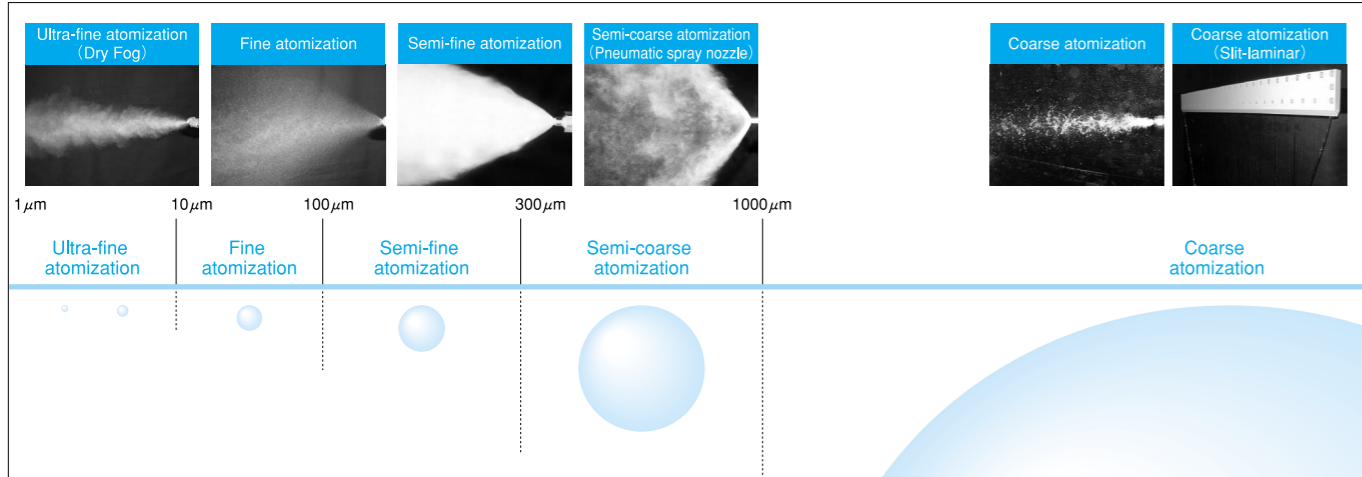
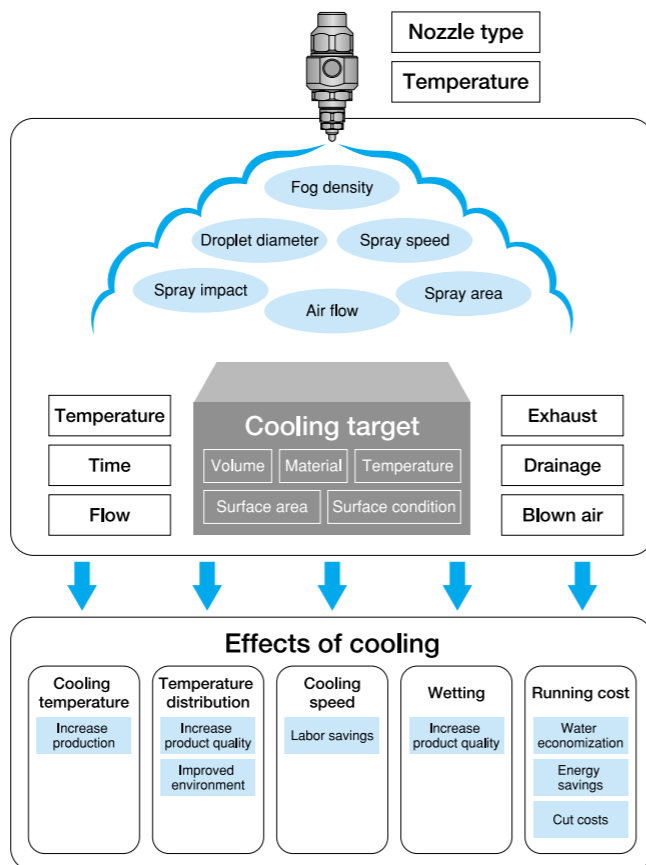
Non-wetting Dry Fog nozzles produce a spray of 10 μ m and under which is dry to the touch.

Pneumatic spray nozzles maintain spray angles, flow distributions and diameter distributions largely unchanged over a wide range of flow rates.

High-capacity semi-fine fog nozzles for gas cooling produce a large amount of fine fog spray.

Pneumatic slit nozzles create a short-distance spray with even flow and impact force distributions.

are among the thousands of high-quality spray nozzles and control systems and knowledge that IKEUCHI provides to create optimized sprays.



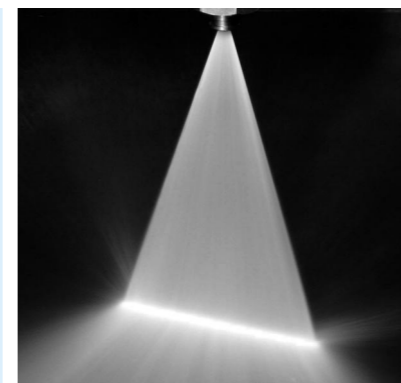
How to order

Please contact our local sales for details.

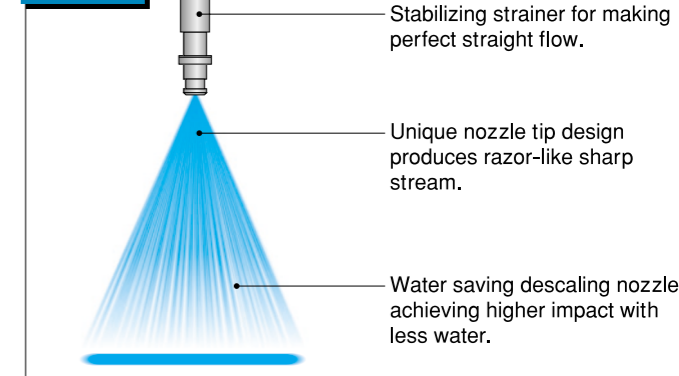
TDSS series Descaling Nozzles

Patented

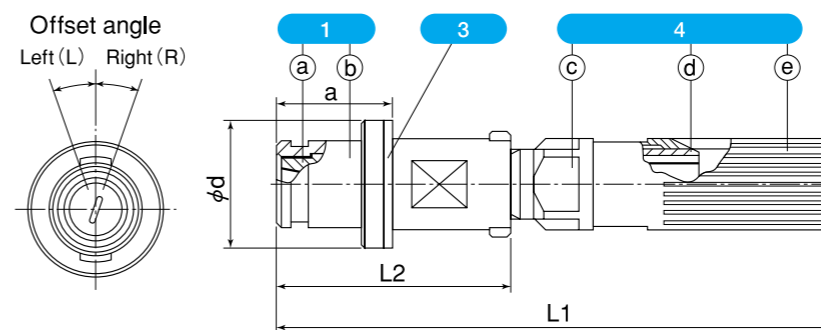
Rolling Mills Descaling



FEATURES



TDSS series



MATERIALS

- Nozzle tip**
 - Standard nozzle tip/Tip with cover
 - Tip: Tungsten carbide
 - Tip body: S303
 - Long nose nozzle tip
 - Tip: Tungsten carbide
 - Tip body: S304
- Packing: Copper**
- Stabilizing strainer**
 - Standard/Long strainer
 - Strainer adaptor: Brass (C3604)
 - Strainer: Brass or S316L (for $\phi 1$ only)
 - Stabilizer: S316L
 - Strainer with check valve
 - Strainer adaptor: Brass (C3604)
 - Check valve adaptor: S403
 - Piston valve: S303
 - Spring: S304
 - Strainer: Brass or S316L (for $\phi 1$ only)
 - Stabilizer: S316L

- Nozzle tip** (Ⓐ Tip Ⓑ Tip body)
- Packing**
- Stabilizing strainer** (Ⓒ Strainer adaptor Ⓓ Stabilizer Ⓔ Strainer)

Series	Types of Strainers	Dimensions (mm)			
		L1	L2	a	ϕd
TDSS	Standard strainer (type B)	126	52	25	30
	Long strainer (type E)	173	52	25	30
	Strainer with check valve (type LCV)	178	52	25	30

TDSS series nozzle selection chart

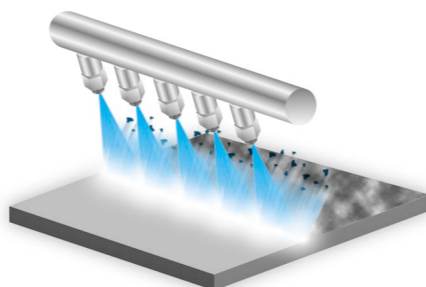
Conversion of unit [Pressure] 0.1MPa \approx 14.50psi [Flow rate] 1 ℓ (liter) \approx 0.264 US gal.
10psi \approx 0.689MPa 1US gal. \approx 3.79 ℓ (liter)

Spray capacity code	015	016	022	027	037	044	056	065	074	083	087	089	111	138
Spray capacity (ℓ /min)	15.0	16.5	22.0	27.7	37.0	44.0	56.0	65.0	74.0	82.8	87.0	89.0	111	138
Spray angle														
65°					○		○							
45°	○													
44°										○		○		
40°				○						○			○	
38°											○			
35°										○			○	○
32°				○		○	○	○		○			○	
28°		○	○							○			○	
25°								○		○			○	○
20°										○			○	

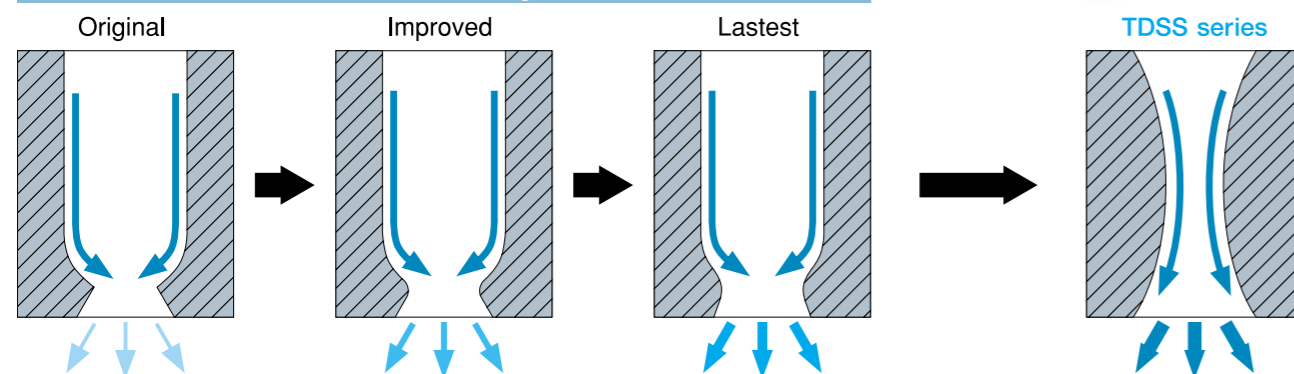
*The above figure indicates spray capacity and spray angle at standard pressure (15MPa)

Uniquely designed descaling nozzle

TDSS series is designed to have no sharp protrusions inside its orifice, which minimizes energy-losses and maximizes the speed and spray impact of water flow, as well as the tip lifespan, even under high-pressure spraying.

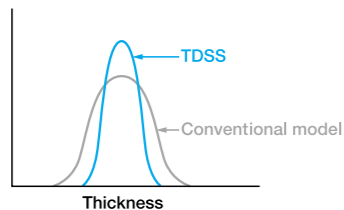


Conventional descaling nozzles



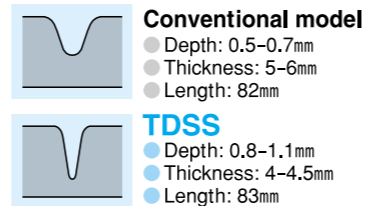
Three features of its unique design

Razor-like Thin Stream



TDSS's razor-like thin stream has 20% higher impact compared to conventional nozzles. TDSS is designed to have more uniform spray impact across its thickness.

Thin Stream High Impact



TDSS, with much higher spray impact, increases erosion depth by 20% compared to conventional model. Minimizing remaining scales improves productivity and quality.

High Impact Water Saving

Even with 10~20% less water, TDSS provides the same spray impact as the conventional model.

	Conventional model	TDSS
Erosion depth	1.3mm	1.3mm
Spray capacity	134ℓ/min	110ℓ/min

Water saving effect

Example: Operating 2 hrs a day, TDSS series achieves

Water saving of 3 tons per nozzle per day and 1,100 tons per year.

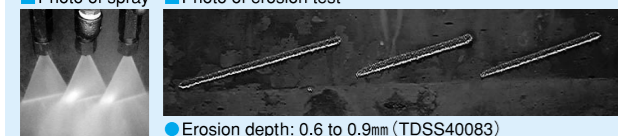
Offset angle and inclination angle change descaling effect

Offset angle

Water sprayed from nozzles often overlaps and weakens the spray impact force at the edges of the spray width. You can prevent scales from remaining by using a suitable offset angle (5~10 degrees).

Offset angle 15°

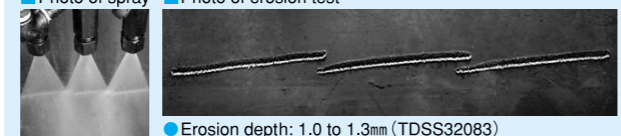
Photo of spray Photo of erosion test



Erosion depth: 0.6 to 0.9mm (TDSS40083)

Offset angle 5°

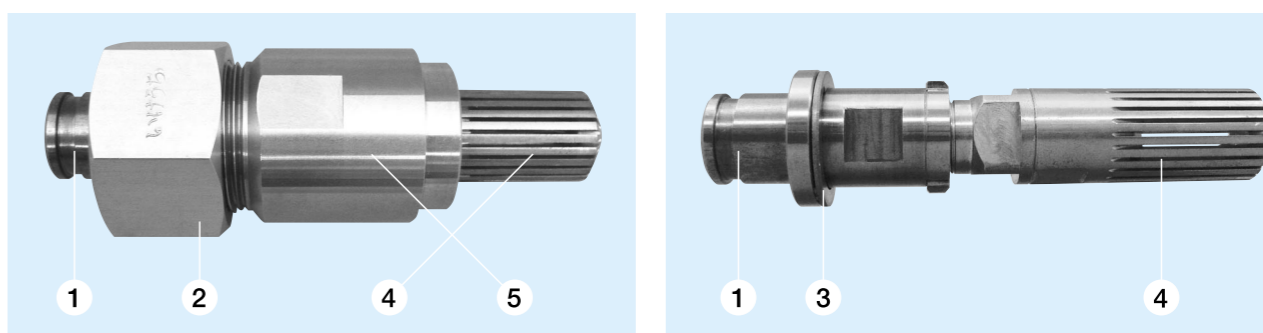
Photo of spray Photo of erosion test



Erosion depth: 1.0 to 1.3mm (TDSS32083)

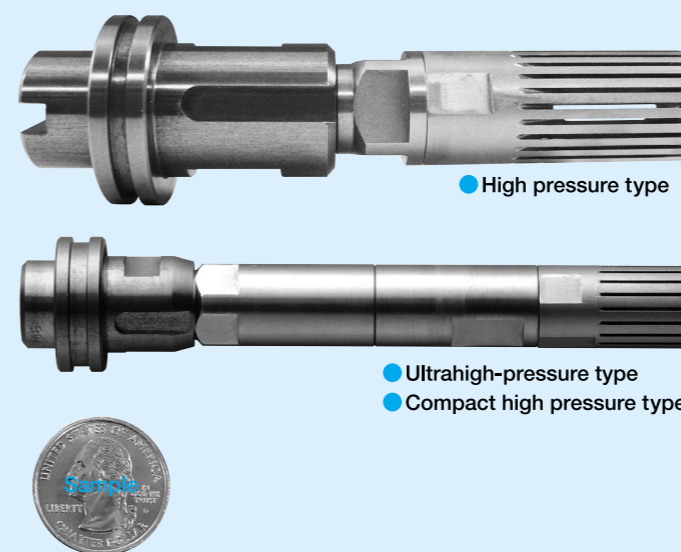
TDSS nozzles lineup

Standard type

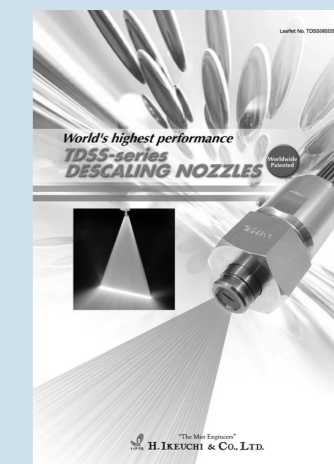


1 Nozzle tip	2 Cap	3 Packing	4 Stabilizing strainer	5 Adaptor
Standard nozzle tip	Standard cap		Standard strainer (type B)	
Nozzle tip with cover	Protective cap		Long strainer (type E)	
Long nose nozzle tip			Strainer with check valve (type LCV)	

Specialized products



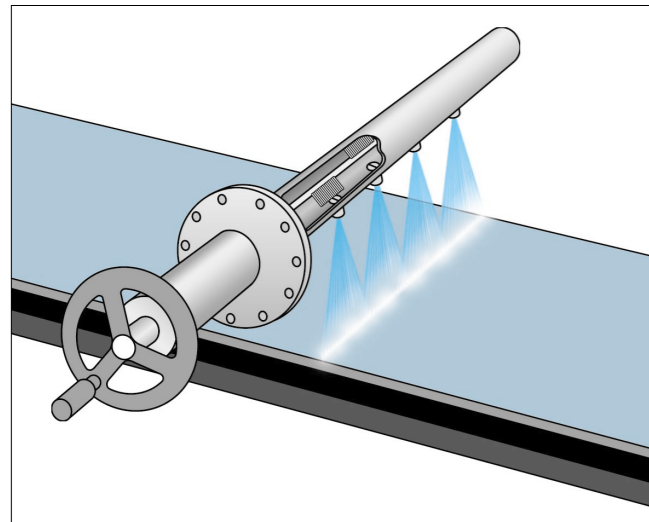
For details, a catalog of TDSS descaling nozzles is available.



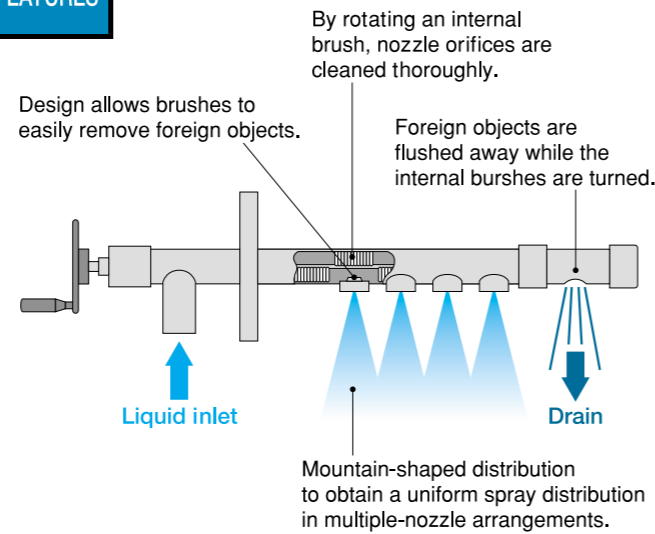
BRASIKan® series Manual Brush-cleaning Nozzle Header

Surface finish

- Rinsing and pickling on the surface of steel plates
- Brush roll cleaning

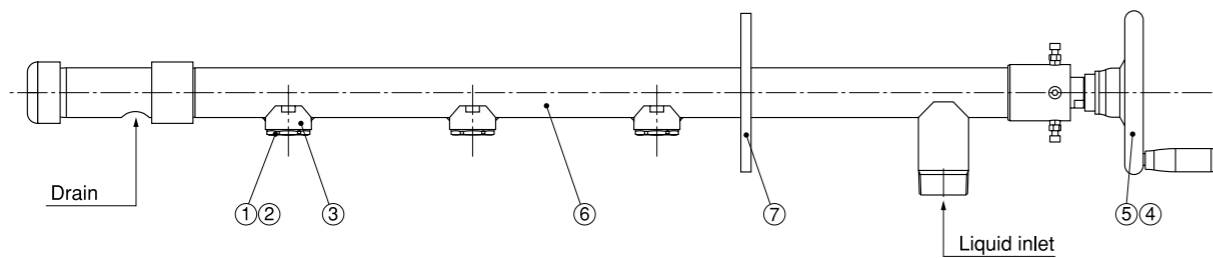


FEATURES



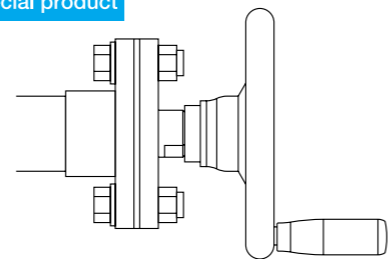
* Brushes are turned by hand.

BRASIKan® series



- 1 Nozzle tip
- 2 Nozzle cap
- 3 Nozzle adaptor
- 4 Brush (installed in inner pipe coupled with handwheel)
- 5 Handwheel
- 6 Pipe
- 7 Flange

Special product



(Bearing part : Flange type)

Materials (depend on the liquid sprayed)

Liquid	Nozzle	Header (pipe)	Brush	Gasket
Water	S303	S304	PP / S304	PTFE
Alkaline / special liquids	S316L	S316 / S316L	S316L	PTFE
Acidic liquid	TN	FRP	PP	PTFE

Pipe

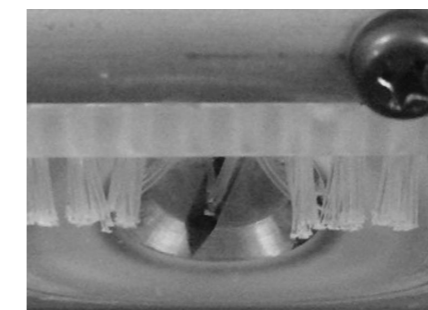
Pipe size
40A, 50A

Nozzle specifications (per one nozzle)

Spray angle code	Spray capacity code	Spray capacity (ℓ/min)				Free passage diameter (mm)
		0.2 MPa	0.3 MPa	0.5 MPa	0.7 MPa	
65°	40	3.27	4.00	5.16	6.11	1.2
	50	4.08	5.00	6.46	7.64	1.3
	60	4.90	6.00	7.75	9.17	1.5
	80	6.53	8.00	10.3	12.2	1.7
	100	8.17	10.0	12.9	15.3	1.9
	120	9.80	12.0	15.5	18.3	2.1
	140	11.4	14.0	18.1	21.4	2.3
	170	13.9	17.0	22.0	26.0	2.5
	200	16.3	20.0	25.8	30.6	2.7

Easily and effectively flush out foreign objects

By turning the handwheel an internal rotating brush scrubs the nozzle orifices to remove debris. Ideal for applications where nozzle clogging is a concern and maintenance is difficult.



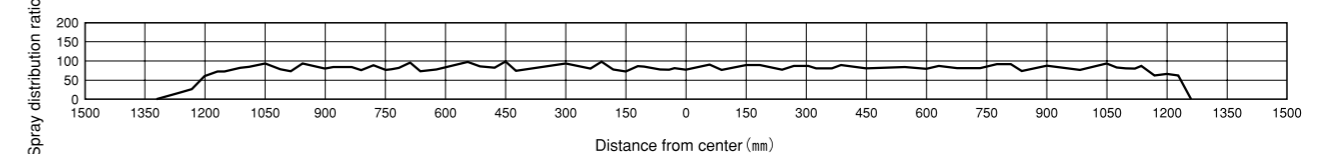
Inner brushes clean the nozzle orifice thoroughly.



Foreign objects inside the pipe are flushed out through the drain.

Even spray distribution

BRASIKan® spray nozzles are designed to produce a mountain-shaped distribution in order to obtain a uniform spray distribution in multiple nozzle arrangements. Thus BRASIKan® is ideal for applications requiring even spray distribution.



■ Measuring conditions: Spray nozzles having 65° spray angle and 12 ℓ/min spray capacity (per 1pc.) at 0.3MPa measured at spray pressure of 0.3MPa and spray height of 275mm, with nozzle spacing 250mm.

How to order

We make inquiry drawing forms available to ensure we can correctly meet the specifications you require. Please inquire with us for details.