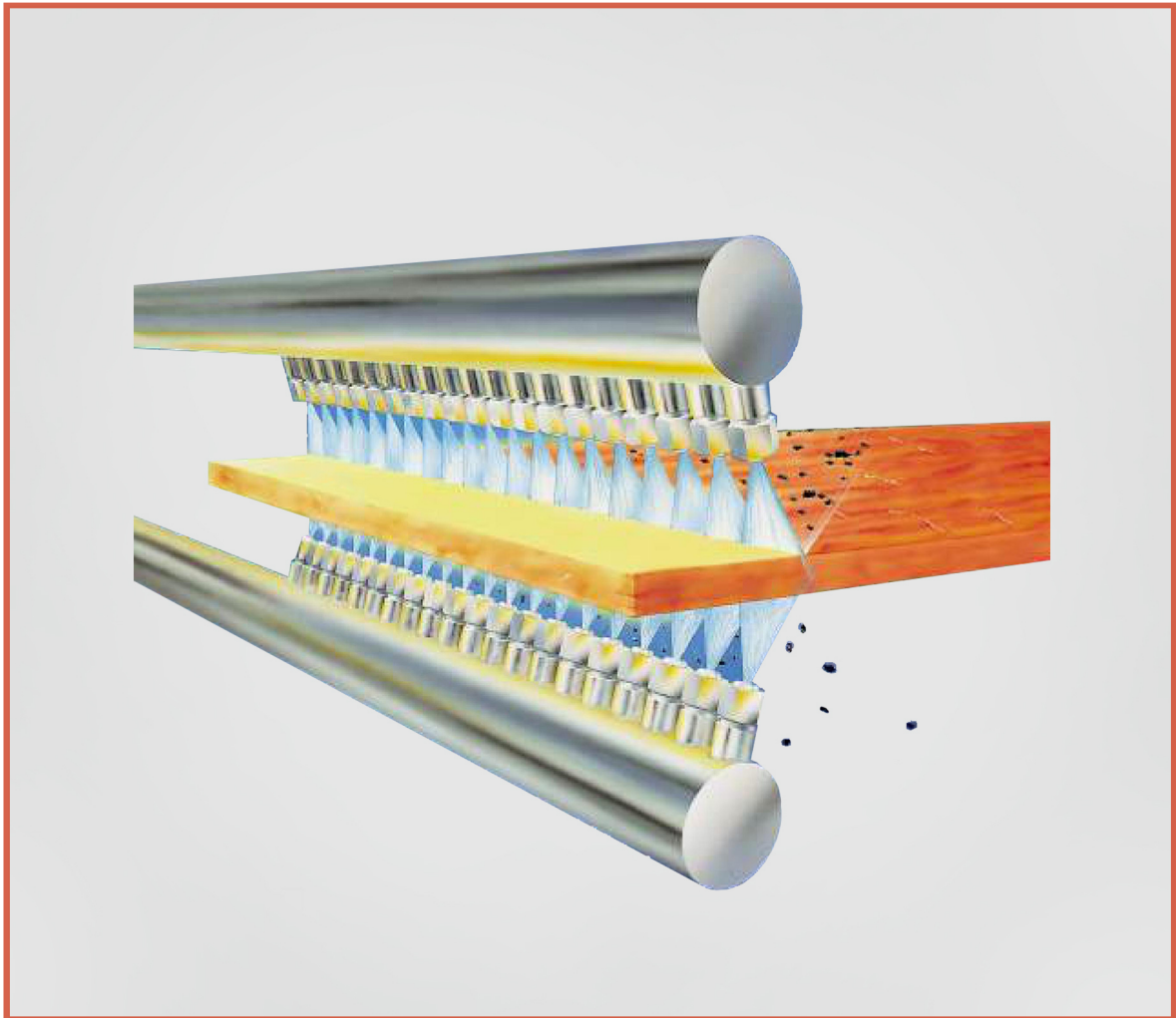


## ShortSCALEMASTER®

**Advanced Descaling for  
Thin Slabs & Net Shape Profiles**



# ShortSCALEMASTER® Small Nozzle – Advanced Impact

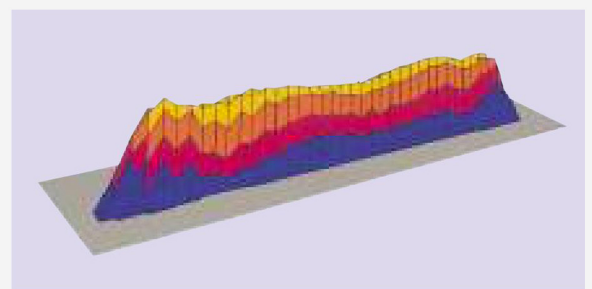
Mitsuda has developed ShortSCALEMASTER to eliminate overcooling within descaling processes of thin slabs and small cross sections. Thanks to its small holder and low profile, you can place a header into the tightest roll stands. By this way, an advanced descaling and surface quality are guaranteed. The ShortSCALEMASTER has the same orifice designs with our other Scalemaster series; so, you can get same pressures with them. The ShortSCALEMASTER provides perfect descaling for thin slabs, beams, and billets.



Descaler in front of a rolling mill of a thin slab casting mill



Beam partially descaled



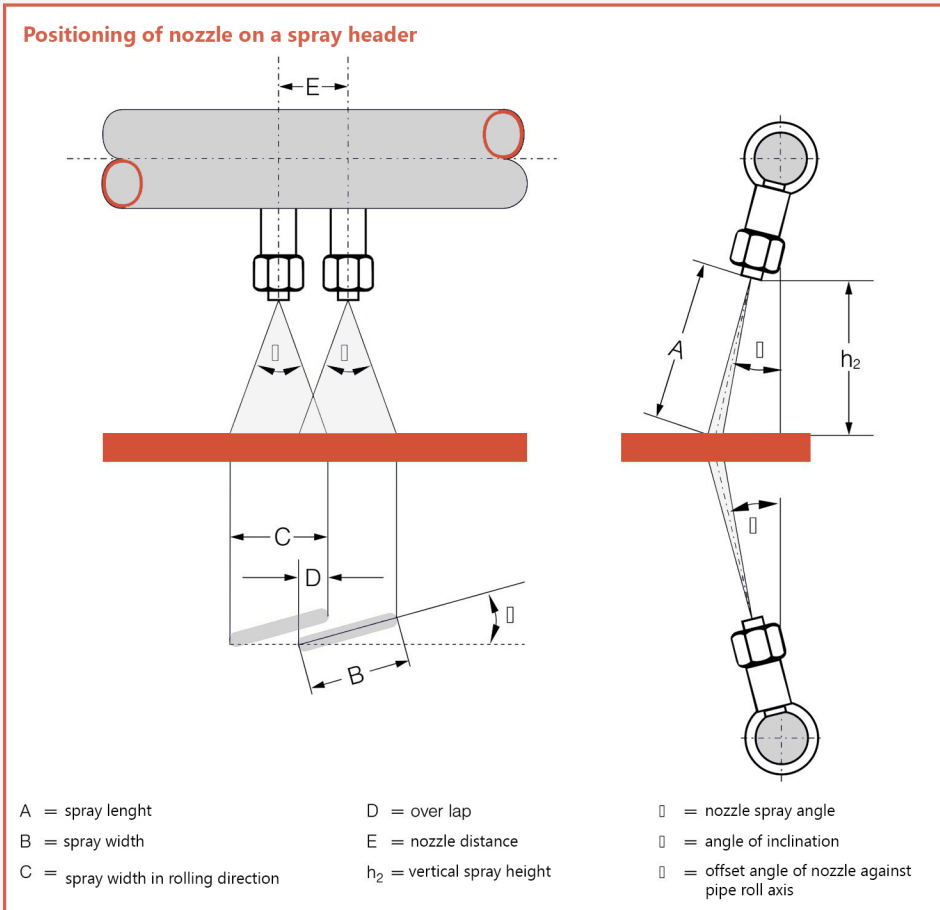
Three-dimensional representation of jet impact distribution

## Small headers can be placed into tight spaces between stands

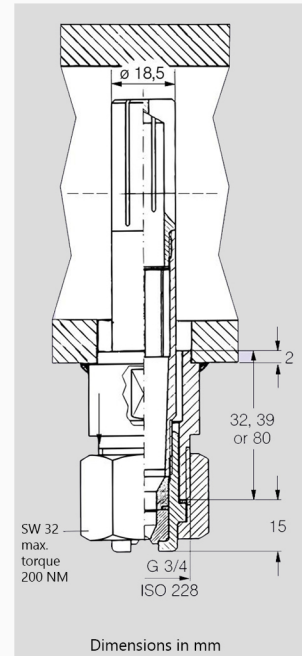
Increased water and energy saving through short spray distances

Large flow rate selection for total liquid control

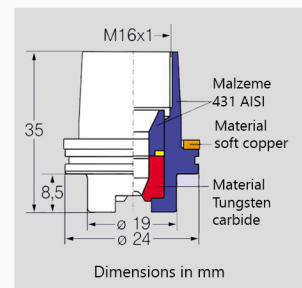
Wide range of operating pressure to fulfill varying production needs



**Jet length (A), jet width (B, C), over laping (D), nozzle distance (E) with vertical spray height ( $h_2$ ), angle of inclination ( $\beta$ ) and nozzle spray angle ( $\alpha$ )**



Assembled ShortSCALEMASTER®



Cross section of nozzle

Vertical spray height $h_2$ [mm]	Angle of inclination $\beta = 15^\circ$ A [mm]	Nominal Nozzle spray angle $\alpha$ at $p = 150$ bar															
		$\alpha = 22^\circ$				$\alpha = 26^\circ$				$\alpha = 30^\circ$				$\alpha = 40^\circ$			
		B [mm]	C [mm]	D [mm]	E [mm]	B [mm]	C [mm]	D [mm]	E [mm]	B [mm]	C [mm]	D [mm]	E [mm]	B [mm]	C [mm]	D [mm]	E [mm]
50	52	28	27	-	-	34	32,6	-	-	38	36,9	-	-	50	47,8	4	43,8
60	62	33	31,9	-	-	40	38,1	4	34,1	45	43,3	4	39,3	58	56,2	4	52,2
70	72	38	36,5	-	-	45	43,4	4	39,4	51	49,4	4	45,4	67	64,4	4	60,4
75	78	40	38,8	4	34,8	48	45,9	4	41,9	54	52,3	4	48,3	71	68,3	4	64,3
80	83	43	41,1	4	37,1	50	48,4	4	44,4	57	55,2	4	51,2	75	72,2	4	68,2
90	93	47	45,5	4	41,5	55	53,1	4	49,1	63	60,9	4	56,9	83	79,8	4	75,8
100	104	52	49,8	5	44,8	60	57,7	5	52,7	69	66,3	5	61,3	90	87,2	5	82,2

Explanation of the table

1. Spray width:  
The convergence of the spray is considered in the listed values.

2. Tolerances of the spray angles:  
 $\alpha = 22^\circ, 26^\circ$  ve  
 $30^\circ$  de  $3^\circ$ ,  $\alpha = 40^\circ$  de  $5^\circ$ .  
Therefore CD are minimum values.

# Technical Data

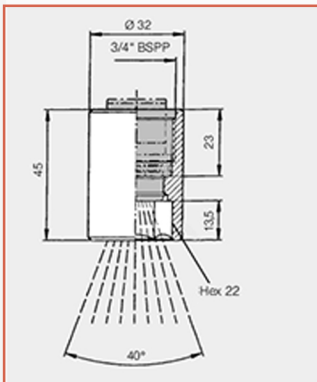
## Flow rate Chart

### Ordering Data

Volume rate conversion formula

$$\dot{V}_2 = \sqrt{\frac{p_2}{p_1}} * \dot{V}_1 \text{ [l/min]}$$

$$p_2 = \left(\frac{\dot{V}_2}{\dot{V}_1}\right)^2 * p_1 \text{ [bar]}$$



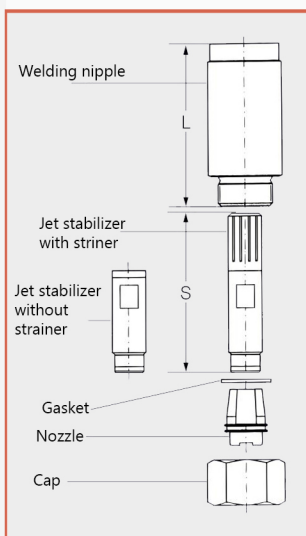
Special version of nut, with hexagon socket. For very short spray heights. M6.64.401.11

Series	Ordering No.				Mat.-No.		Wolum flow (water)					
	Code				Stainl. Steel hardened	Tungsten carbide	p = 100 bar (1450 psi)			p = 200 bar (2900 psi)		
	Spray angle						[l/min]	[l/sec]	[USGall./min]	[l/min]	[l/sec]	[USGall./min]
	22	26	30	40	11	27						
M6.644	495	496	497	498	○	-	12,00	0,20	3,17	16,97	0,28	4,50
M6.644	535	536	537	538	○	○	15,00	0,25	3,96	21,21	0,35	5,60
M6.644	565	566	567	568	○	○	18,00	0,30	4,76	25,46	0,42	6,73
M6.644	605	606	607	608	○	○	23,00	0,38	6,08	35,53	0,59	9,39
M6.644	645	646	647	648	○	○	28,00	0,47	7,40	39,60	0,66	10,46
M6.644	685	686	687	688	○	○	36,00	0,60	9,51	50,91	0,85	13,45
M6.644	725	726	727	728	○	○	45,00	0,75	11,89	63,64	1,06	16,81
M6.644	765	766	767	768	○	○	58,00	0,97	15,32	82,02	1,37	21,67
M6.644	805	806	807	808	○	○	72,00	1,20	19,02	101,82	1,70	26,90
M6.644	845	846	847	848	○	○	89,00	1,48	23,51	125,87	2,10	33,25
M6.644	885	886	887	888	○	○	112,00	1,87	29,59	158,39	2,64	41,85
M6.644	905	906	907	908	○	○	125,00	2,08	33,03	176,78	2,95	46,70
M6.644	925	926	927	928	○	○	134,00	2,23	35,40	189,50	3,16	50,07

### Dimensions

Type (spray angle 22°)	E ø [mm]	A ø [mm]	Type (spray angle 26°)	E ø [mm]	A ø [mm]	Type (spray angle 30°)	E ø [mm]	A ø [mm]	Type (spray angle 40°)	E ø [mm]	A ø [mm]
M6.644.495	1,20	1,50	M6.644.496	1,17	1,50	M6.644.497	1,16	1,50	M6.644.498	1,11	1,50
M6.644.535	1,40	1,75	M6.644.536	1,30	1,75	M6.644.537	1,30	1,75	M6.644.538	1,20	1,75
M6.644.565	1,60	2,00	M6.644.566	1,50	2,00	M6.644.567	1,40	2,00	M6.644.568	1,20	2,00
M6.644.605	1,80	2,10	M6.644.606	1,70	2,10	M6.644.607	1,60	2,10	M6.644.608	1,50	2,10
M6.644.645	2,00	2,50	M6.644.646	1,90	2,50	M6.644.647	1,80	2,50	M6.644.648	1,60	2,50
M6.644.685	2,20	2,80	M6.644.686	2,20	2,80	M6.644.687	2,10	2,80	M6.644.688	2,00	2,80
M6.644.725	2,40	3,00	M6.644.726	2,40	3,00	M6.644.727	2,30	3,00	M6.644.728	1,90	3,00
M6.644.765	2,50	3,50	M6.644.766	2,50	3,50	M6.644.767	2,40	3,50	M6.644.768	2,30	3,50
M6.644.805	3,00	3,80	M6.644.806	3,00	3,80	M6.644.807	2,90	3,80	M6.644.808	2,70	3,80
M6.644.845	3,50	4,30	M6.644.845	3,50	4,30	M6.644.847	3,20	4,30	M6.644.848	3,00	4,30
M6.644.885	3,90	4,70	M6.644.886	3,90	4,70	M6.644.887	3,70	4,70	M6.644.888	3,40	4,70
			M6.644.906	4,00	5,00	M6.644.907	3,90	5,00	M6.644.908	3,70	5,00
			M6.644.916	4,20	5,20	M6.644.917	4,00	5,20	M6.644.918	3,80	5,20

A = equivalent bore diameter · E = narrowest cross section



Example Series + Code + Mat.- No. = Ordering No.  
for Ordering: M6.644 + 495 + 11 = M6.644.495.11

Composant	Model	Ordering No.	Weight (kg)
<b>Welding nipple</b> Material: AISI 304	Uzunluk L: 32 mm	M6.60. 020. 1C. 01	0,065
	39 mm	M6.60. 020. 1C. 00	0,082
	80 mm	M6.60. 020. 1C. 02	0,192
<b>Jet stabilizer</b> Material: AISI 303	kapaksız	M6.64. 431. 16	0,070
	filtreli S = 110	M6.64. 454. 16	0,093
	filtreli S = 130	M6.64. 455. 16	0,110
<b>Gasket / Material: copper</b>		M6.95. 015. 34. 02. 07.	0,001
<b>Nozzle</b>		M6.644. xxx. xx bkz	0,067
<b>Nut (Hex 32) Material: AISI 431</b>		M6.64. 400. 11	0,085
<b>Alignment tip/Blank tip/Material: Mild steel</b>		M6.64. 490. 01	0,056
<b>Dissaswmbly tool/Material: Mild steel</b>	Date sheet on request	M6.64. 491. 01	0,110
<b>Tip Extractor</b>	Date sheet on request	M6.95. 009. 00. 12. 56. 0	0,950

