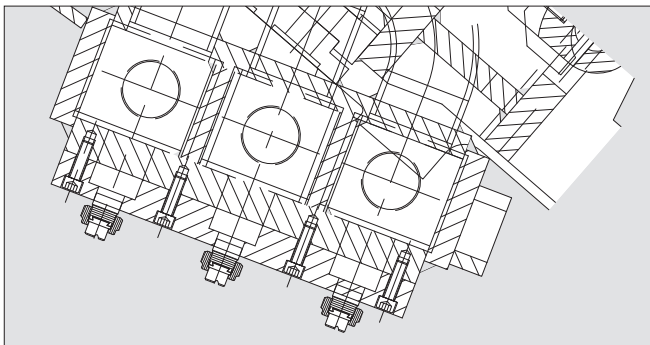
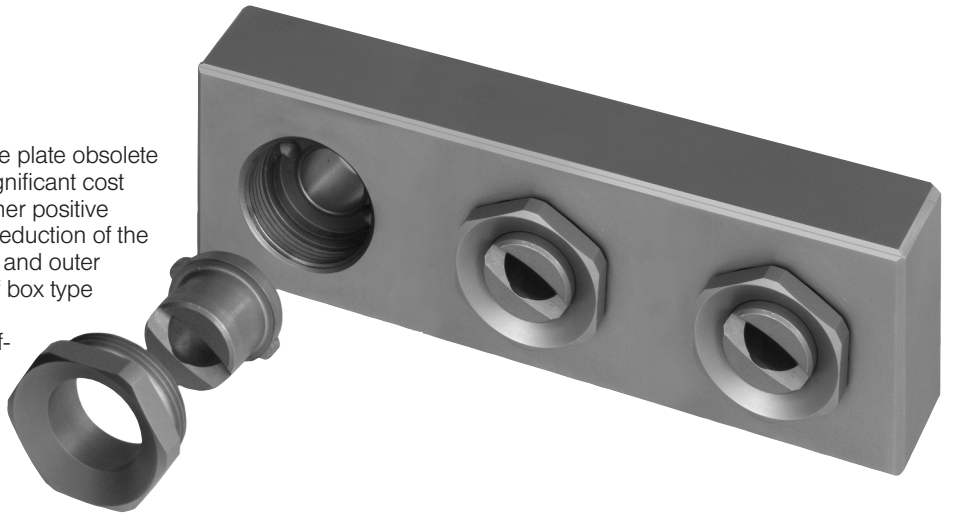


# ROLL COOLING FLAT JET NOZZLE

**NEW!**  
Patent Pending

The correct alignment of the roll cooling nozzles on the spray header is essential for optimal roll cooling. Flat jets are the preferred spray pattern for roll cooling, therefore only a self-aligning nozzle design provides the operation safety required in a modern rolling mill.  
All flat jet nozzles of the Lechler series 6E4 and 6E5 come with an automatic self-aligning feature which ensures that every nozzle will always be installed under the correct spray offset angle towards the roll center line.

mediate nozzle plate obsolete resulting in significant cost savings. Another positive aspect is the reduction of the overall weight and outer dimensions of box type headers.  
The correct off-set angle is machined directly into the header front plate and does not depend on the nozzle tip. The two keys on the nozzle tip are always in line with the flat jet spray axis.



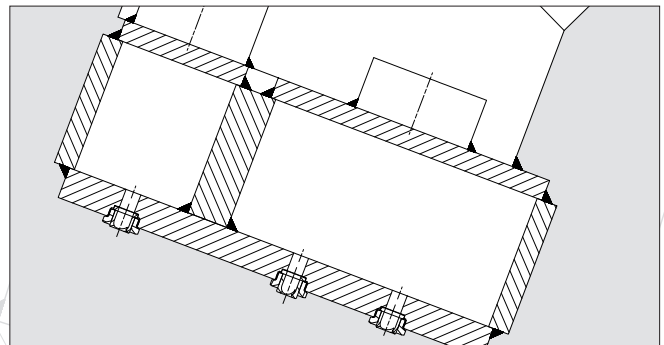
Example of conventional box type header

No welding nipple is required for the 6E nozzle series because the tip geometry can be machined directly into a front plate of a box type spray header. A hollow nozzle nut holds the nozzle tip in place. This simple but innovative design does make all the welding nipples and the inter-

This prevents wrong fabrication caused by design mistakes.

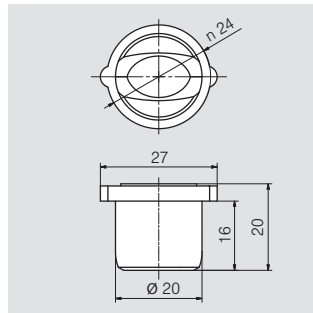
The nozzle tip seals metallicaly against the bottom of the header plate machined surface.

The Spray has a parabolic liquid distribution which is ideal for a multi nozzle header arrangement

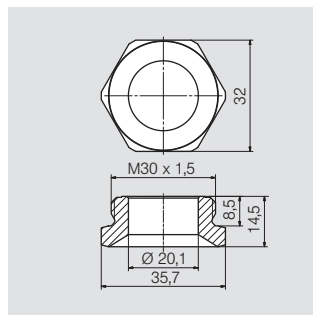
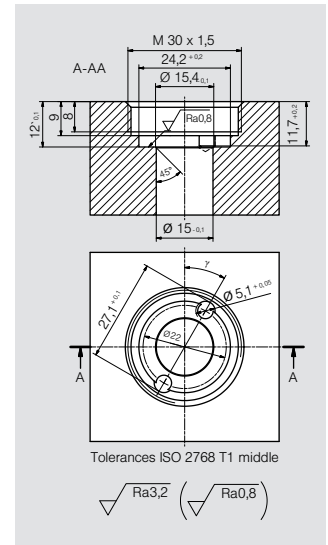


Example of new box type header with 6E series nozzle

- Parabolic liquid distribution
- Automatic nozzle alignment
- High operation safety
- No welding nipples required
- Simplifies the design of boxtype headers because:
  - No welding nipples required
  - Reduces header weight
  - Reduces outer header dimension
  - Reduces header costs significantly



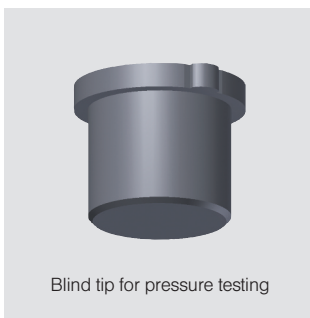
Spray width [B] at p=3 bar			
B	H	H	
		250 mm	500 mm
6E4.721 - 6E4.921	100	200	
6E4.941 - 6E5.201	115	210	
6E4.722 - 6E4.962	150	300	
6E4.982 - 6E5.202	160	310	
6E4.723 - 6E4.963	220	440	
6E4.983 - 6E5.203	250	490	
6E4.724 - 6E4.964	330	630	
6E5.984 - 6E5.204	340	640	



**Hollow-core screw**

Ordering-no.  
**06E. 400. 11** (AISI 430 F)  
**06E. 400. 17** (316 SS)  
**06E. 400. 30** (brass)

Material AISI 430 F:  
Non austenitic stainless steel



Ordering-no. **06E.490.1Y**

Ordering no.						E Ø [mm]	V̇ [l/min]							
Type				Mat. no.			p [bar]							
↘ 20°	↘ 30°	↘ 45°	↘ 60°	17 316 SS	30 Brass		0,5	1,0	2,0	40* psi	3,0	5,0	7,0	10,0
6E4. 721	6E4. 722	6E4. 723	6E4. 724	○	○	2,1 - 2,5	3,15	4,45	6,30	1,95	7,72	9,96	11,79	14,09
6E4. 761	6E4. 762	6E4. 763	6E4. 764	○	○	2,3 - 2,8	4,00	5,66	8,00	2,48	9,80	12,65	14,97	17,89
6E4. 801	6E4. 802	6E4. 803	6E4. 804	○	○	2,6 - 3,2	5,00	7,07	10,00	3,10	12,25	15,81	18,71	22,36
6E4. 841	6E4. 842	6E4. 843	6E4. 844	○	○	3,0 - 3,6	6,25	8,84	12,50	3,88	15,31	19,67	23,39	27,95
6E4. 881	6E4. 882	6E4. 883	6E4. 884	○	○	3,4 - 4,0	8,00	11,31	16,00	4,96	19,60	25,30	29,93	35,78
6E4. 921	6E4. 922	6E4. 923	6E4. 924	○	○	4,1 - 4,4	10,00	14,14	20,00	6,20	24,49	31,62	37,42	44,72
6E4. 941	6E4. 942	6E4. 943	6E4. 944	○	○	4,6 - 5,0	11,20	15,84	22,40	6,94	27,44	35,42	41,91	50,09
6E4. 961	6E4. 962	6E4. 963	6E4. 964	○	○	4,2 - 5,3	12,50	17,68	25,00	7,75	30,62	39,53	46,77	55,90
6E4. 981	6E4. 982	6E4. 983	6E4. 984	○	○	4,2 - 5,1	14,00	19,80	28,00	8,68	34,29	44,27	52,38	62,61
6E5. 001	6E5. 002	6E5. 003	6E5. 004	○	○	4,8 - 5,6	15,75	22,27	31,50	9,76	38,57	49,80	58,92	70,43
6E5. 011	6E5. 012	6E5. 013	6E5. 014	○	○	4,9 - 5,8	16,75	23,69	33,50	10,40	41,03	52,97	62,67	74,91
6E5. 041	6E5. 042	6E5. 043	6E5. 044	○	○	5,5 - 6,6	20,00	28,28	40,00	12,41	48,99	63,25	74,83	89,44
6E5. 061	6E5. 062	6E5. 063	6E5. 064	○	○	5,8 - 6,7	22,50	31,84	45,00	13,96	55,15	71,20	84,24	100,69
6E5. 081	6E5. 082	6E5. 083	6E5. 084	○	○	6,6 - 7,4	25,00	35,36	50,00	15,50	61,24	79,06	93,54	111,80
6E5. 121	6E5. 122	6E5. 123	6E5. 124	○	○	7,4 - 8,3	31,50	44,55	63,00	19,56	77,16	99,61	117,86	140,87
6E5. 161	6E5. 162	6E5. 163	6E5. 164	○	○	8,3 - 8,4	40,00	56,57	80,00	24,80	97,99	126,50	149,68	178,90
6E5. 181	6E5. 182	6E5. 183	6E5. 184	○	○	8,9 - 10,3	28,50	63,64	90,00	27,90	110,23	142,30	168,37	201,24
6E5. 201	6E5. 202	6E5. 203	6E5. 204	○	○	9,6 - 10,5	50,00	70,71	100,00	31,04	127,47	158,11	187,08	223,61

E = Narrowest free cross section. \* US gal/min.

Subject to technical modifications.

Example Type + Material-no. = Ordering no.  
for Ordering: 6E4. 721 + 17 = 6E4. 721. 17

Conversional formula  
for the above series:

$$\dot{V}_2 = \dot{V}_1 \cdot \sqrt{\frac{p_2}{p_1}}$$

# ROLL COOLING FLAT JET NOZZLE

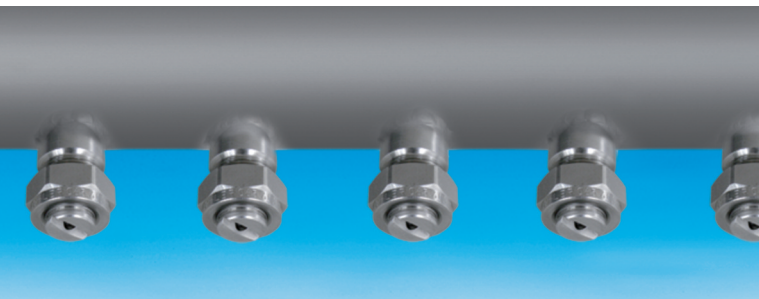
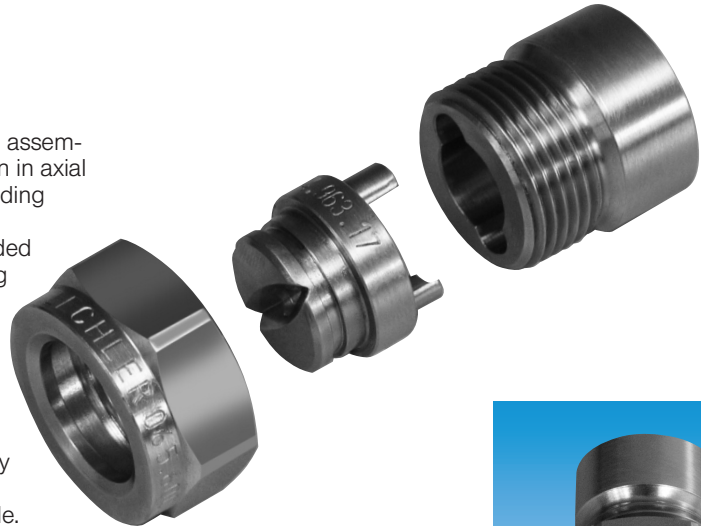
**NEW!**  
Patent Pending

The correct alignment of the roll cooling nozzles on the spray header is essential for optimal roll cooling. Flat jets are the preferred spray pattern for roll cooling, therefore only a self-aligning nozzle design provides the operation safety required in a modern rolling mill.

All flat jet nozzles of the Lechler series 6F4 and 6F5 come with an automatic self-aligning feature which ensures that every nozzle will always be installed under the correct spray offset angle towards the roll center line. The nozzle tip has two locating lugs for self

Unlike the dove tail assemblies the tip is put in in axial direction of the welding nipple.

Safe and one-handed nozzle tip mounting is guaranteed because thread engagement does not take place before the two location lugs have been correctly positioned on the opposite nipple side. The 6F nozzle series is available with a wide variety of standard offset angles which simplifies spray header fabri-

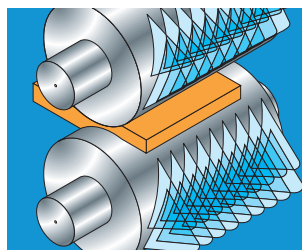


alignment and seals metallically with a circular surface against the welding nipple when the nut is tightened. No torque is applied on the lugs themselves preventing mechanical damage due to over tightening of the nut. The 6F nozzle series are ideal for mounting when space is limited.

cation significantly. It also helps to prevent wrong fabrication of headers.

The spray has a parabolic liquid distribution which is ideal for a multi nozzle header arrangement

- Parabolic liquid distribution
- Automatic nozzle alignment
- High operation safety
- Secure one-handed axial mounting
- Mechanical damage prevented
- Variety of standard offset angles
- Design and fabrication errors prevented





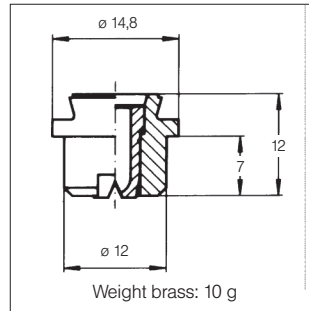
# FLAT FAN DOVETAIL NOZZLES

The 660 series nozzles come with the conventional, automatic self aligning dovetail connection which ensures that every nozzle will always be installed under the correct spray offset angle towards the roll center line.

The small tip dimensions make this nozzle series ideal for roll cooling and strip cooling headers when space is limited especially in small rolling mills for non ferrous metals.

All tips have an automatically built in 5° offset angle if the welding nipple is welded in line with the centre line of the spray header. Any other offset angle has to be compensated for by welding the nipple under a different angle (minus the 5° inbuilt offset angle).

The spray has a parabolic liquid distribution which is ideal for a multi nozzle header arrangement.



Spray width [B] at p=3 bar		
b	H	H
	250 mm	500 mm
600.301 - 331	70	125
600.361 - 761	90	175
600.801 - 881	100	200
600.302 - 332	110	210
600.362 - 402	135	260
600.442 - 882	150	300
660.303 - 333	175	350
660.363 - 403	200	400
660.443 - 923	220	440
660.304 - 334	250	470
660.364 - 404	315	600
660.444 - 924	330	630

Ordering no.				E Ø [mm]	V̇ [l/min]										
Type					Mat. no.			p [bar]							
↘ 20°	↘ 30°	↘ 45°	↘ 60°		16 303 SS	17 316 SS	30 Brass	0,5	1,0	2,0	40° psi	3,0	5,0	7,0	10,0
660.301	660.302	660.303	660.304	○	-	○	0,4 - 0,6	0,16	0,23	0,32	0,10	0,39	0,50	0,59	0,71
660.331	660.332	660.333	660.334	○	-	○	0,5 - 0,7	0,22	0,32	0,45	0,14	0,55	0,71	0,84	1,00
660.361	660.362	660.363	660.364	○	○	○	0,6 - 0,8	0,31	0,44	0,63	0,20	0,77	0,99	1,17	1,40
660.401	660.402	660.403	660.404	○	○	○	0,8 - 1,0	0,50	0,70	1,00	0,31	1,22	1,58	1,87	2,23
660.441	660.442	660.443	660.444	○	○	○	0,9 - 1,1	0,62	0,88	1,25	0,39	1,53	1,97	2,33	2,79
660.481	660.482	660.483	660.484	○	○	○	1,0 - 1,2	0,80	1,13	1,60	0,50	1,96	2,53	2,99	3,57
660.511	660.512	660.513	660.514	○	○	○	1,1 - 1,4	0,95	1,34	1,90	0,59	2,32	3,00	3,55	4,24
660.561	660.562	660.563	660.564	○	○	○	1,3 - 1,5	1,25	1,76	2,50	0,78	3,06	3,95	4,67	5,59
660.601	660.602	660.603	660.604	○	○	○	1,5 - 1,7	1,57	2,22	3,15	0,98	3,85	4,98	5,89	7,04
660.641	660.642	660.643	660.644	○	○	○	1,6 - 1,9	2,00	2,82	4,00	1,24	4,89	6,32	7,48	8,94
660.671	660.672	660.673	660.674	○	○	○	1,8 - 2,2	2,37	3,35	4,75	1,47	5,81	7,51	8,88	10,62
660.721	660.722	660.723	660.724	○	○	○	2,1 - 2,5	3,15	4,45	6,30	1,95	7,71	9,96	11,78	14,08
660.761	660.762	660.763	660.764	○	○	○	2,3 - 2,8	4,00	5,65	8,00	2,48	9,79	12,64	14,96	17,88
660.801	660.802	660.803	660.804	○	○	○	2,6 - 3,2	5,00	7,07	10,00	3,10	12,24	15,81	18,70	22,36
660.841	660.842	660.843	660.844	○	○	○	3,0 - 3,6	6,25	8,83	12,50	3,88	15,30	19,76	23,38	27,95
660.881	660.882	660.883	660.884	○	○	○	3,4 - 4,0	8,00	11,31	16,00	4,96	19,53	25,29	29,93	35,77
-	-	660.923	660.924	○	○	○	4,1 - 4,4	10,00	14,14	20,00	6,21	24,49	31,26	37,42	44,72

E = Narrowest free cross section. \* US gal/min

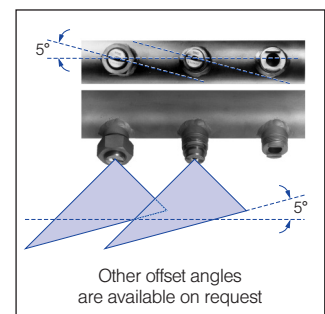
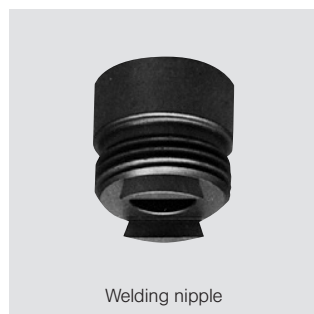
Subject to technical modifications

Example Type + Material-no. = Ordering no.  
for Ordering: 660.301 + 17 = 660.301.17

Conversional formula for the above series:

$$\dot{V}_2 = \dot{V}_1 * \sqrt{\frac{p_2}{p_1}}$$

## Accessories

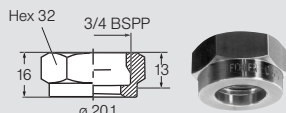


Technical data and ordering data for accessories see page 13.



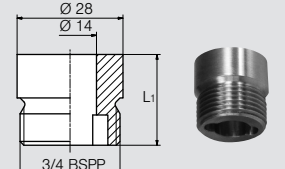


**Series 6F**



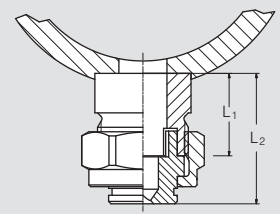
Weight brass 60 g

Retaining nut: **065.600.11** (AISI 430 F)  
**065.600.16** (303 SS)  
**065.600.17** (316 SS)  
**065.600.30** (brass)



Weight 82 g

Welding nipple: **06F.410.17.xx** (316 SS)  
**06F.411.17.xx** (316 SS)



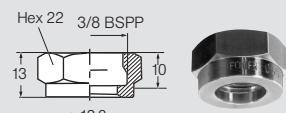
$L_2 = L_1 + 14 \text{ mm}$

**Series 6F**

Nipple length 20 - 99 mm in steps of 1 mm	
Basic type number	Length $L_1$
<b>06F.410.17</b>	<b>xx</b>
<b>xx = nipple length [mm]</b>	
Example for nipple length 35 mm	
<b>06F.410.17.</b>	<b>35</b>

Nipple length 100 - 199 mm in steps of 1 mm	
Basic type number	Length $L_1$
<b>06F.411.17</b>	<b>xx</b>
<b>xx = nipple length [mm]</b>	
Example for nipple length 35 mm	
<b>06F.411.17.</b>	<b>35</b>

**Series 660**



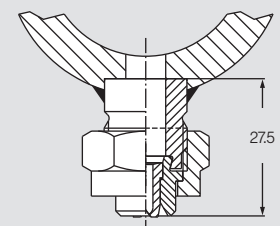
Weight 25 g

Retaining nut: **065.200.16** (303 SS)  
**065.200.17** (316 SS)  
**065.200.30** (brass)



Weight 21 g

Welding nipple: **066.011.17** (316 SS)



27.5

**Other nipple lengths for all nozzle series on request.**

**Alignment tips**

Series 6E: **06E.490.1Y**  
 Series 6F: **06F.490.1Y**

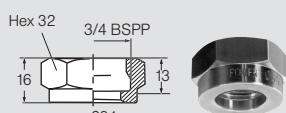
Series 660: **066.090.16**  
 offset angle 5°

Series 664/665: **066.490.16**  
 offset angle 15°

Series 669: **066.990.16**  
 offset angle 15°

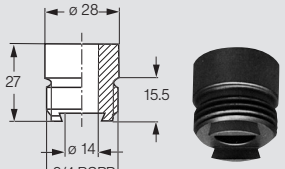
(other offset angles on request)

**Series 664/665**



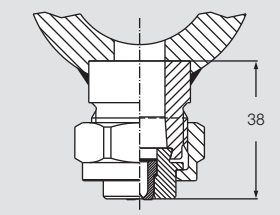
Weight brass 60 g

Retaining nut: **065.600.11** (AISI 430 F)  
**065.600.16** (303 SS)  
**065.600.17** (316 SS)  
**065.600.30** (brass)



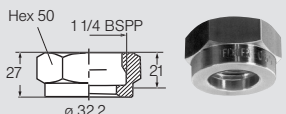
Weight 65 g

Welding nipple: **066.410.17** (316 SS)  
**066.410.03** (1.0570)



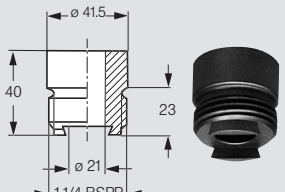
38

**Series 669**



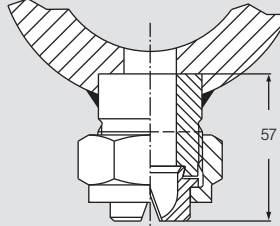
Weight brass 205 g

Retaining nut: **066.900.16** (303 SS)  
**066.900.17** (316 SS)  
**066.900.30** (Brass)



Weight 280 g

Welding nipple: **066.910.17** (316 SS)  
**066.910.02** (1.0159)



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