

# 2

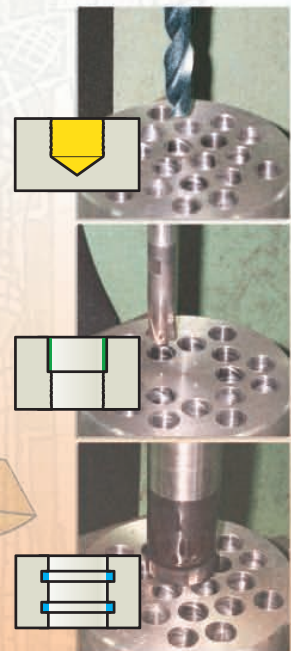
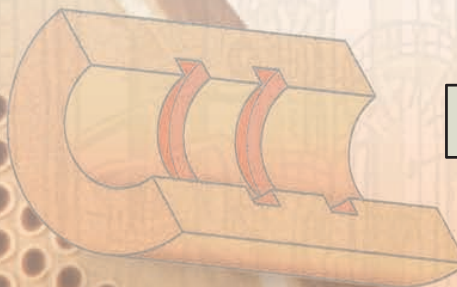
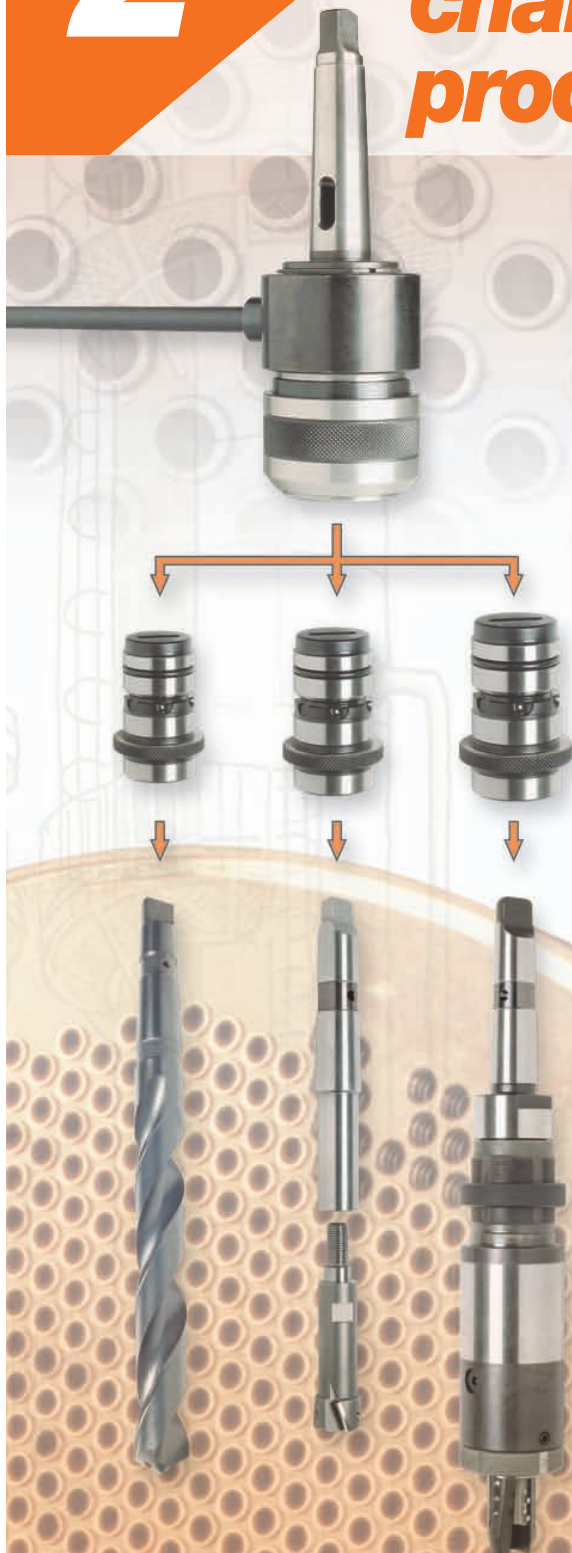
## Holetool Tools with coolant channel for hole processing



The initial stage of the heat exchanger manufacturing cycle is among the most critical ones: the processing and preparation of the tube sheet holes before the assembly.

Maus Italia offers a **comprehensive range of tools produced with materials featuring extremely high quality and wear resistance**, capable of withstanding high speeds thanks to coaxial drills with coolant fluid feed channel.

Maus Italia's **technical staff** are at your disposal to recommend the optimum solution for each situation.





## Coolant distribution

Combined systems consisting of single-size **F12** Maus Italia rotating distributors and **F13** reduction sleeves, available in three sizes, allowing connection to all **Holetool** tools.

It allows the coolant fluid to flow in; as it reaches the cutting point directly from the inside, it guarantees the **Holetool** tools will be long lasting and will always provide high performances.



Holetool

Holetool

Holetool

Holetool

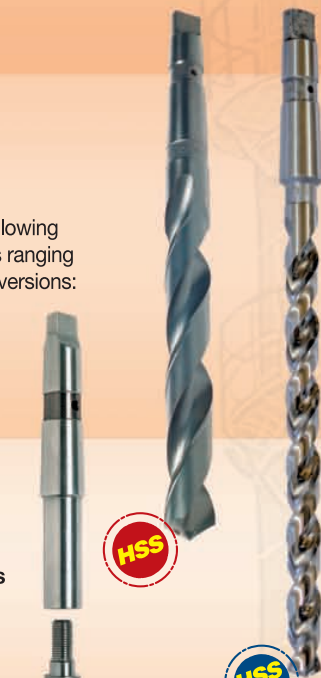


## Drilling



A comprehensive range of **twist drills** with channels allowing coolant fluid to flow through. They are offered for holes ranging between 9,00 and 50,00 mm (**0.354" to 1.969"**) in two versions:

- **F10** for depths up to 277 mm (**10.906"**) in HSS
- **F11** for depths up to 305 mm (**12.008"**) in HSS with 5% of cobalt.



## Boring



A comprehensive set of **reamers for tube sheet holes** with **Tungsten Carbide** inserts and channels allowing coolant to flow through.

- **F20** for holes ranging between 9,75 and 51,50 mm (**0.384" to 2.028"**) and depths of up to 195 mm (**7.677"**).

They are manufactured in **two modular pieces**, significantly reducing production cost.



## Grooving



- **F26** Self-centering grooving tool, with adjustable **B** depth for holes ranging between 9,75 and 51,50 mm (**0.384" to 2.028"**)

Supplied equipped with tools designed and manufactured by Maus Italia technical staff members according to customer's specifications. They are suitable to create multiple channels/grooves or to perform multiple special processes at the same time.

Like the other **Holetool** tools, the **F26** is equipped with channels allowing coolant to flow through and can be used on radial drills or numerical control machines (**MA-2501** by Maus Italia).



## Universal grooving tools

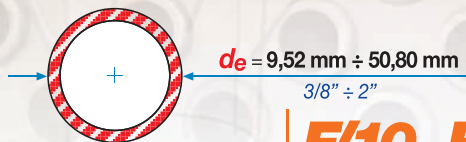
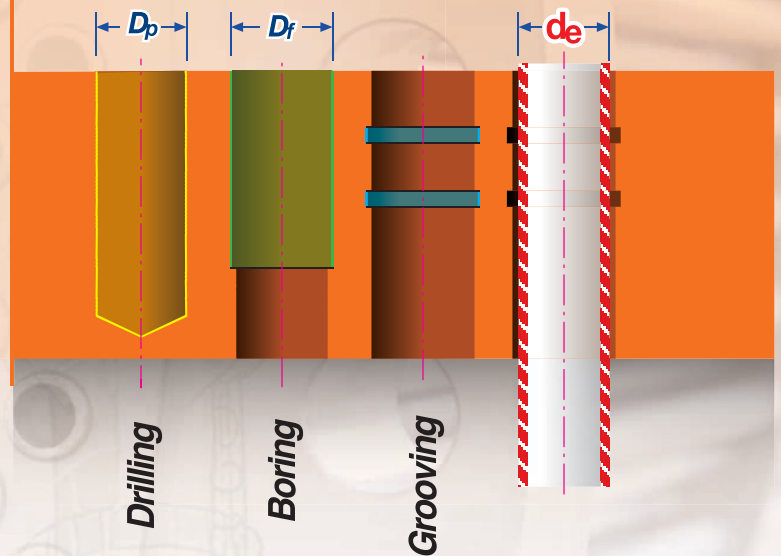
We offer two **universal grooving tools without channels for coolant flow through**:

- **F112** Universal grooving tool, with fixed **B** depth for tube sheet holes ranging between 7,00 and 30,00 mm (**0.276" to 1.181"**)
- **F120**, universal grooving tool with hydraulic power expansion and fixed **B** depth, specifically designed with the **boiler sector** in mind, for tube sheet holes up to a 120,00 mm (**up to 4.724"**).



Preliminary choice of the **Holetool** series tool according to the diameter of the tube used for the manufacturing of the tube sheet

The table in this page is aimed at helping customers to select the appropriate **Holetool** series tool before referring to the specific tables, where the larger amount of technical details will allow to fine tune the selection.



Tube to be assembled		Twist drills		Reamer		Grooving tool
$d_e$		$D_p$		$D_f$		Code
inches	mm	mm	inches	mm	inches	
3/8"	9,52	9,00	0.354	9,75	0.384	F26-00
	10,00	9,50	0.374	10,20 - 10,25	0.402 - 0.404	F26-00a
	12,00	11,50	0.453	12,20 - 12,25	0.480 - 0.482	F26-1a
1/2"	12,70	12,00	0.472	12,90 - 12,95	0.508 - 0.510	F26-1b
	13,00	12,50	0.492	13,20 - 13,25	0.520 - 0.522	F26-1c
	14,00	13,50	0.531	14,20 - 14,25	0.559 - 0.561	F26-1d
	15,00	14,50	0.571	15,20 - 15,25	0.598 - 0.600	F26-1e
5/8"	15,87	15,50	0.610	16,10 - 16,20	0.634 - 0.638	F26-2a
	16,00	15,50	0.610	16,20 - 16,25	0.638 - 0.640	F26-2a
	17,00	16,50	0.650	17,25 - 17,30	0.679 - 0.681	F26-2as
	18,00	17,50	0.689	18,25 - 18,30	0.718 - 0.720	F26-2b
3/4"	19,05	18,50	0.728	19,25 - 19,30	0.758 - 0.760	F26-2c
	20,00	19,50	0.768	20,25	0.797	F26-3a
	22,00	21,50	0.846	22,25 - 22,30	0.876 - 0.878	F26-3b
7/8"	22,22	21,50	0.846	22,50	0.886	F26-3b
	25,00	24,00	0.945	25,25 - 25,30	0.994 - 0.996	F26-3c
	25,40	24,50	1.000	25,65 - 25,70	1.010 - 1.012	F26-3d
3/4" GAS	26,90	26,00	1.024	27,20	1.071	F26-4a
	27,00	26,00	1.024	27,30	1.075	F26-4a
1.1/4"	31,75	31,00	1.220	32,10	1.264	F26-4b
	32,00	31,00	1.220	32,25	1.270	F26-4b
1" GAS	33,70	33,00	1.299	34,00	1.339	F26-5a
1.1/2"	38,10	37,00	1.457	38,50	1.516	F26-5b
1.1/4" GAS	42,40	41,00	1.614	42,80	1.685	F26-6a
1.3/4"	44,45	43,00	1.693	44,80	1.764	F26-6b
1.1/2" GAS	48,30	47,00	1.850	48,80	1.921	F26-6c
2"	50,80	50,00	1.969	51,50	2.028	F26-6d

# F/12

Rotating coolant distributor to be coupled with the **F/13** sleeves for use with the **Holetool** series tools

Fully designed and manufactured by Maus Italia with high quality materials, it allows the coolant to flow from the inside directly to the cutting point; this guarantees the **Holetool** series tools will be long lasting and will always provide high performances.

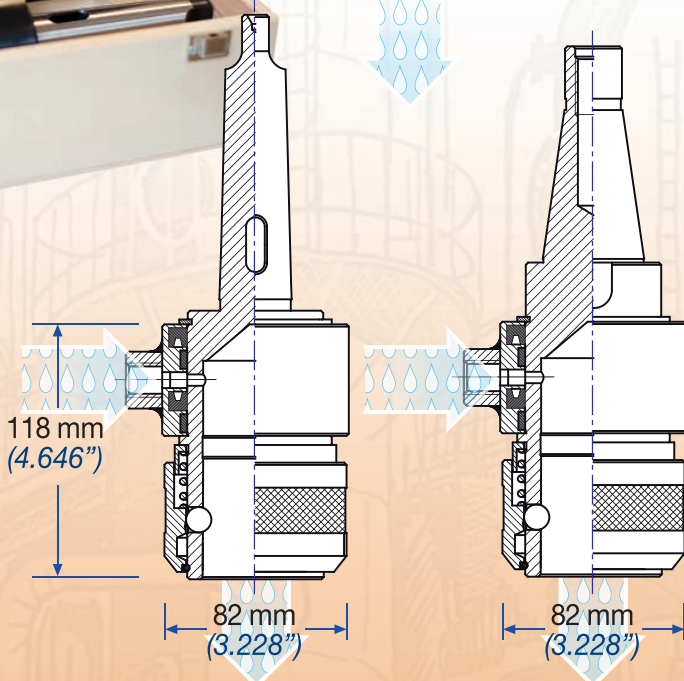
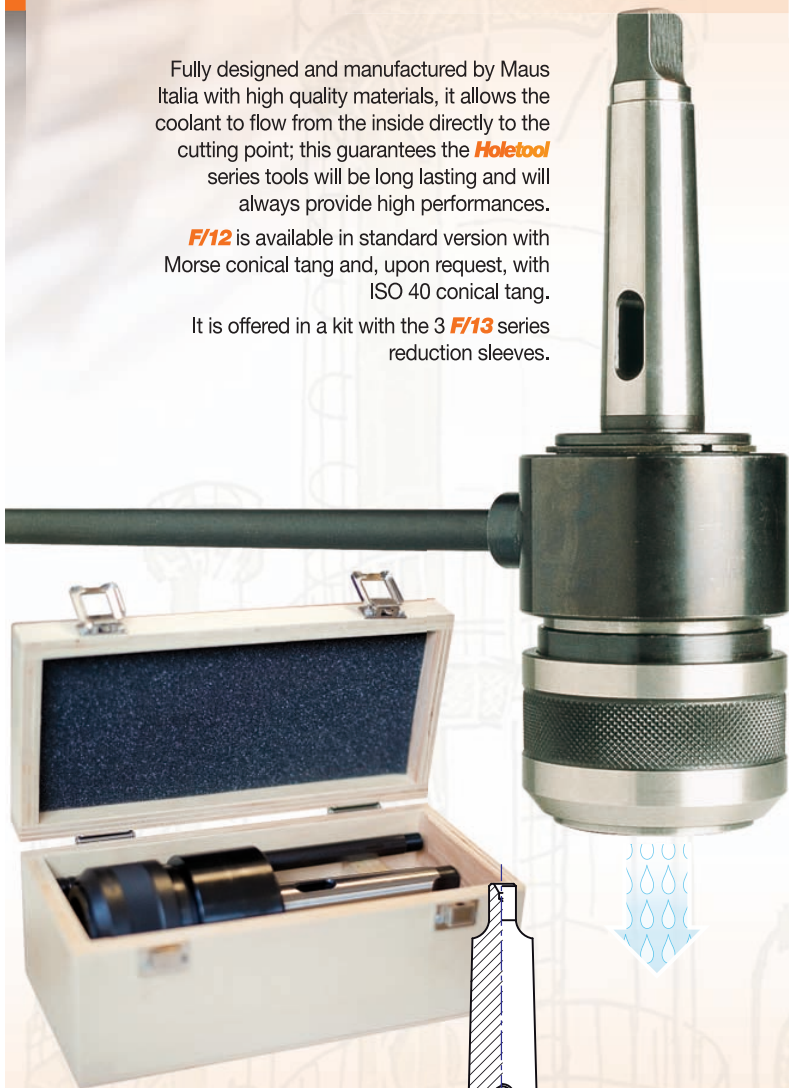
**F/12** is available in standard version with Morse conical tang and, upon request, with ISO 40 conical tang.

It is offered in a kit with the 3 **F/13** series reduction sleeves.

# F/13

Reduction sleeve to be coupled with the **F/12** rotating distributor for use with the **Holetool** series tools

Designed and manufactured by Maus Italia, the **F/13** series reduction sleeve is offered in 3 sizes, allowing it to connect with the Morse taper No.2, No.3 and No.4 of the **Holetool** series tools.

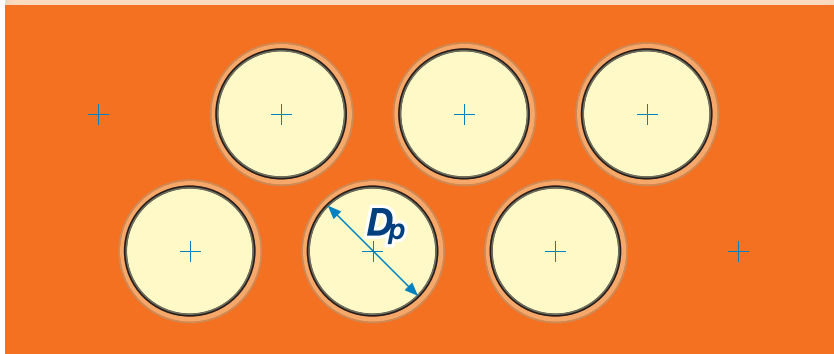


## F/13

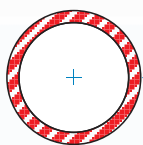
F/13	Morse taper	ℓ	
Code	N	mm	inches
<b>F/13-2</b>	2	25,00	0.984
<b>F/13-3</b>	3	25,00	0.984
<b>F/13-4</b>	4	48,00	1.890

## F/12

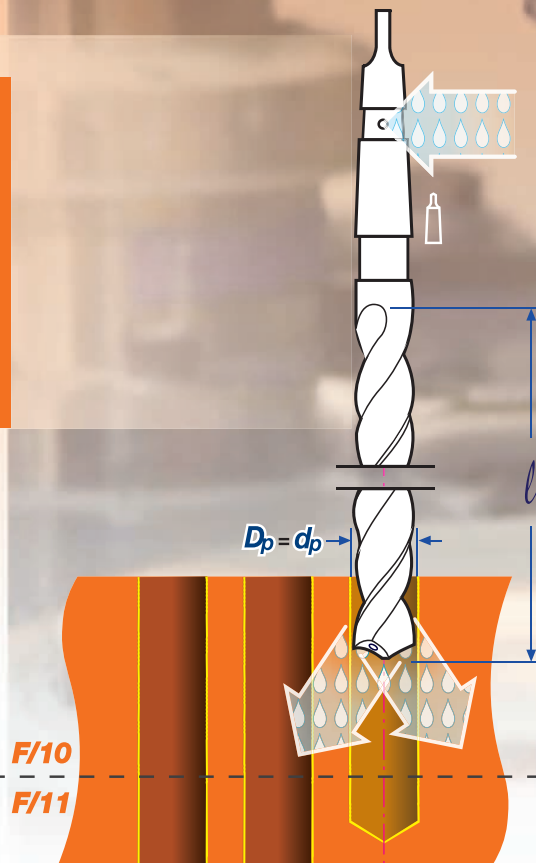
F/12	Morse taper	ISO taper
Code	N.	N.
<b>F/12-4</b>	4	/
<b>F/12-5</b>	5	/
<b>F/12-ISO40</b>	/	40



MAX depth =  $l - 10 \text{ mm (0.394")}$



$$d_e = 9,52 \text{ mm} \div 50,80 \text{ mm} = 3/8" \div 2"$$



## F/10 F/11

Tube		Pre-hole		Twist drill			Twist drill			Shank
$d_e$		$D_p = d_p$		F/10	$l$		F/11	$l$		Morse taper
inches	mm	mm	inches	Code	mm	inches	Code	mm	inches	N
3/8"	9,50	9,00	0.354	F10-0900	81,00	3.189	F11-0900	107,00	4.213	2
	10,00	9,50	0.374	F10-0950	81,00	3.189	F11-0950	107,00	4.213	
	12,00	11,50	0.453	F10-1150	125,00	4.921	F11-1150	195,00	7.677	
1/2"	12,70	12,00	0.472	F10-1200	134,00	5.276	F11-1200	205,00	8.071	
	13,00	12,50	0.492	F10-1250	134,00	5.276	F11-1250	205,00	8.071	
	14,00	13,50	0.531	F10-1350	142,00	5.591	F11-1350	220,00	8.661	
5/8"	15,00	14,50	0.571	F10-1450	147,00	5.787	F11-1450	220,00	8.661	
	17,00	16,50	0.650	F10-1650	159,00	6.260	F11-1650	230,00	9.055	
	18,00	17,50	0.689	F10-1750	165,00	6.496	F11-1750	245,00	9.646	
3/4"	19,05	18,50	0.728	F10-1850	171,00	6.732	F11-1850	245,00	9.646	
	20,00	19,50	0.768	F10-1950	177,00	6.968	F11-1950	260,00	10.236	
	22,22	21,50	0.846	F10-2150	191,00	7.520	F11-2150	270,00	10.630	
7/8"	25,00	24,00	0.945	F10-2400	206,00	8.110	F11-2400	290,00	11.417	3
	25,40	24,50	1.000	F10-2450	206,00	8.110	F11-2450	290,00	11.417	
	3/4" GAS	26,90	26,00	1.024	F10-2600	214,00	8.425	F11-2600	290,00	
1.1/4"	31,75	31,00	1.220	F10-3100	239,00	9.409	F11-3100	305,00	12.008	4
1" GAS	33,70	33,00	1.299	F10-3300	248,00	9.764	F11-3300	305,00	12.008	
1.1/2"	38,10	37,00	1.457	F10-3700	257,00	10.118	F11-3700	305,00	12.008	
1.1/4" GAS	42,40	41,00	1.614	F10-4100	277,00	10.906	F11-4100	305,00	12.008	
1.3/4"	44,40	43,00	1.693	F10-4300	277,00	10.906	F11-4300	305,00	12.008	
1.1/2" GAS	48,30	47,00	1.850	F10-4700	277,00	10.906	F11-4700	305,00	12.008	
2"	50,80	50,00	1.968	F10-5000	277,00	10.906	F11-5000	305,00	12.008	

# F/10 F/11

**HSS twist drills**  
with channels allowing  
coolant fluid to flow through  
Right hand cutting - N execution

A comprehensive range of twist drills with channels allowing coolant fluid to flow through.

Manufactured using high-quality materials and with ISO h8 tolerance, they are designed to drill the pre-hole, with **right hand cutting, N execution and Morse tang**.

They are offered for holes ranging between 9,50 and 50,80 mm (0.354" to 1.969") in two versions:

- **F/10** for standard drilling depth
- **F/11** for extra drilling depth

## F/10

### Sample order codes

The hole of a tube sheet for  $d_e 3/4"$  (19,05 mm) tube will have an end diameter of 19,25 ÷ 19,30 mm; as a consequence the hole needs to be drilled by means of a  $\varnothing$  18.50 mm twist drill; then it shall be widened to 19,25 ÷ 19,30 mm using the **F/20** series reamer.

Referring to the twist drill table to the side you can see that the order to be placed for sheet thicknesses up to 171 mm (6.732") shall include:

F10-1850

F/10  
F/11

## F/11

### Sample order codes

The hole of a tube sheet for  $d_e 3/4"$  (19,05 mm) tube will have an end diameter of 19,25 ÷ 19,30 mm; as a consequence the hole needs to be drilled by means of a  $\varnothing$  18.50 mm twist drill; then it shall be widened to 19,25 ÷ 19,30 mm using the **F/20** series reamer.

Referring to the twist drill table to the side you can see that the order to be placed for sheet thicknesses beyond 171 mm (6.732") and up to 245 mm (10") shall include:

F11-1850

