

# 2

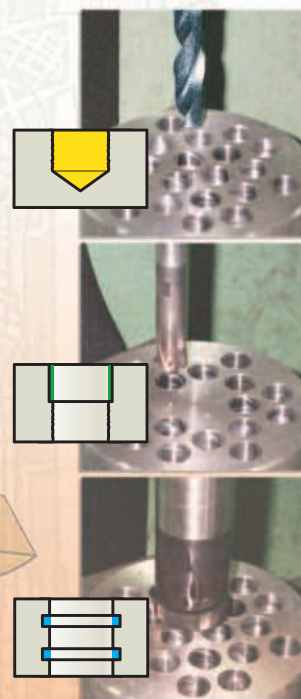
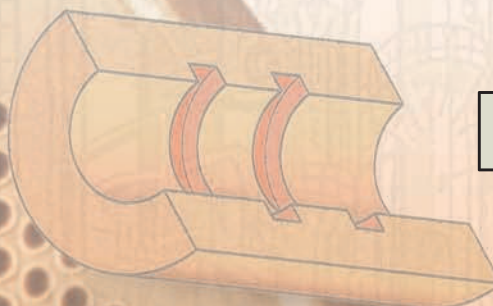
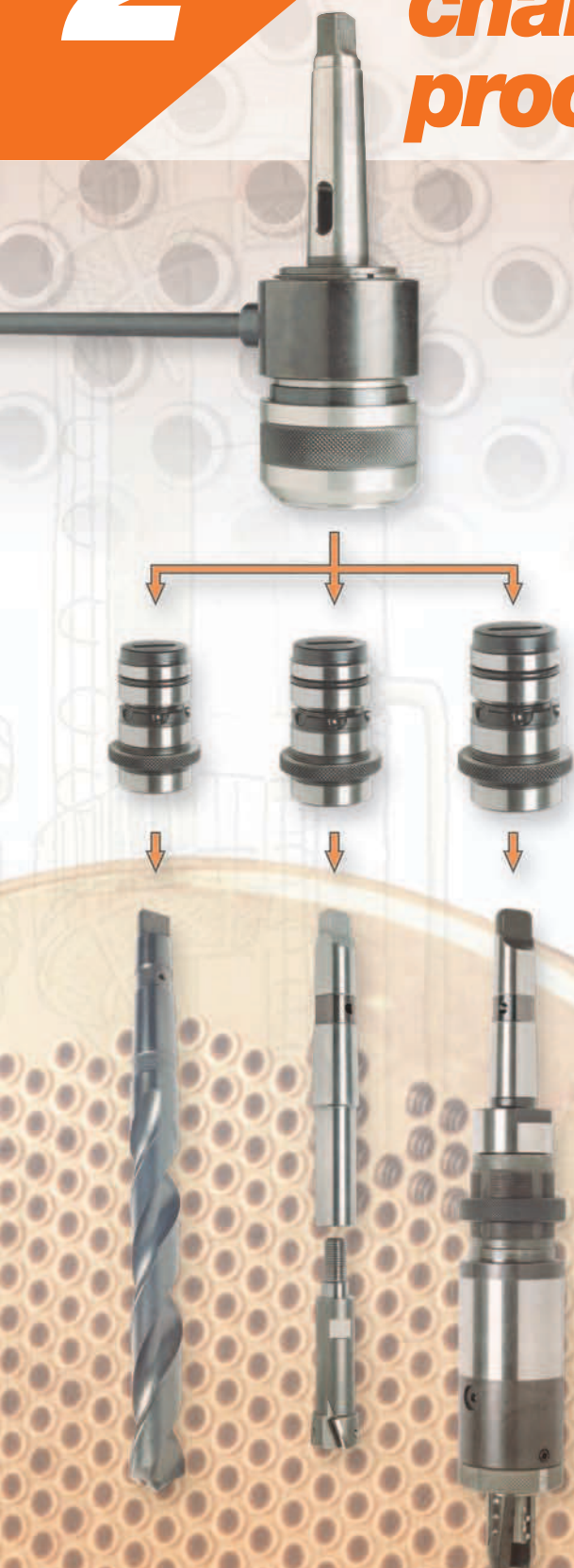
## Holetool Tools with coolant channel for hole processing



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 **F/12** Maus Italia rotating distributors and **F/13** 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.

AC-15



## 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:

- **F/10** for depths up to 277 mm (**10.906"**) in HSS
- **F/11** for depths up to 305 mm (**12.008"**) in HSS with 5% of cobalt.

AC-16



## Boring



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

- **F/20** 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.

AC-18



## Grooving



- **F/26 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 **F/26** 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).

AC-20

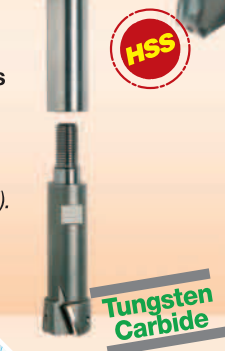


## Universal grooving tools

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

- **F/112 Universal grooving tool, with fixed B depth** for tube sheet holes ranging between 7,00 and 30,00 mm (**0.276"** to **1.181"**)
- **F/120, 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"**).

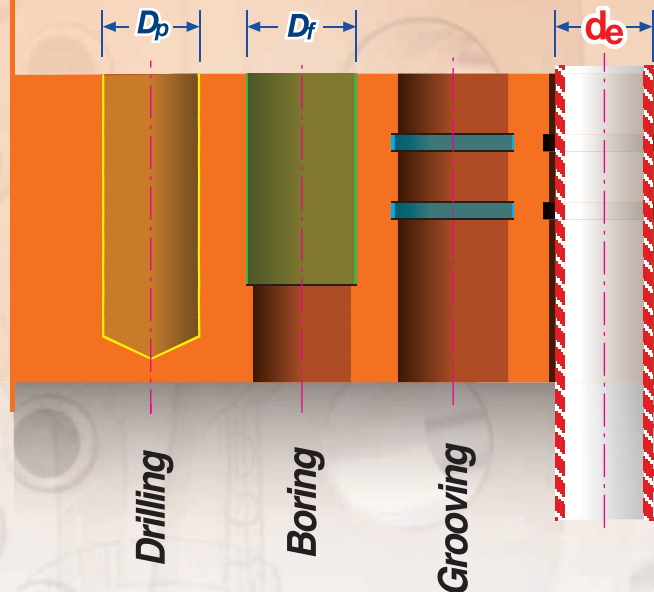
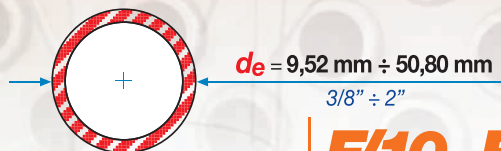
AC-24





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		F/10 - F/11		F/20		F/26
$d_e$		Twist drills		Reamer		Grooving tool
$d_e$		$D_p$		$D_f$		
inches	mm	mm	inches	mm	inches	Code
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
1"	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.

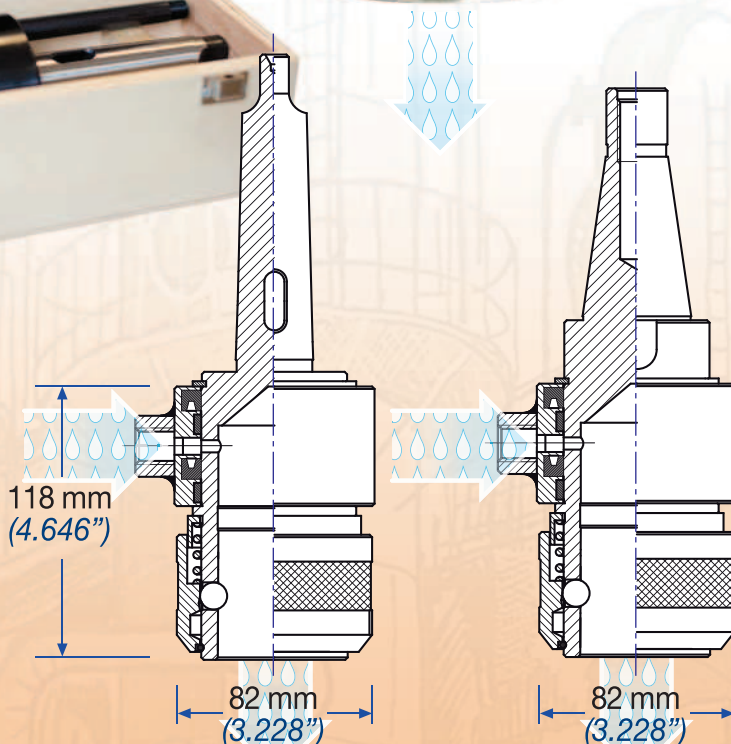
**F/12** is available in standard version with Morse conical tang and, upon request, with ISO 40 conical tang.

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.



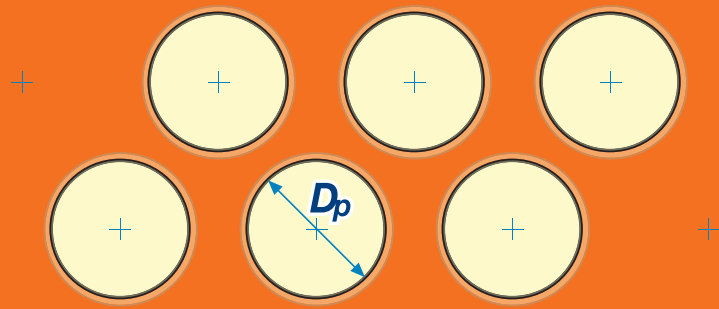
### F/13

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

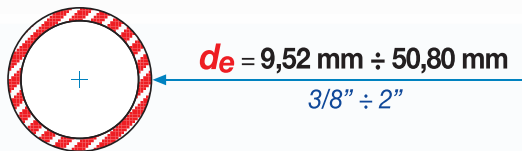
### F/12

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

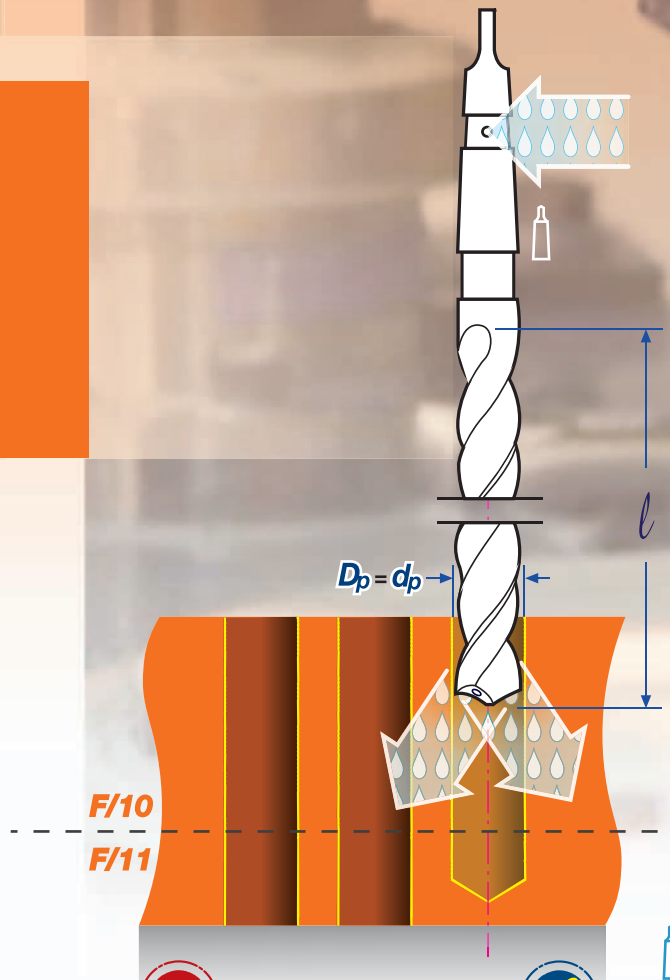





MAX depth =  $l - 10 \text{ mm (0.394")}$



## F/10 F/11



Tube		Pre-hole		Twist drill 			Twist drill 			Shank
				F/10			F/11			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	
	15,87	15,50	0.610	F10-1550	153,00	6.024	F11-1550	230,00	9.055	
	17,00	16,50	0.650	F10-1650	159,00	6.260	F11-1650	230,00	9.055	
3/4"	18,00	17,50	0.689	F10-1750	165,00	6.496	F11-1750	245,00	9.646	
	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	
7/8"	22,22	21,50	0.846	F10-2150	191,00	7.520	F11-2150	270,00	10.630	
	25,00	24,00	0.945	F10-2400	206,00	8.110	F11-2400	290,00	11.417	
	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	11.417	
1.1/4"	31,75	31,00	1.220	F10-3100	239,00	9.409	F11-3100	305,00	12.008	
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 Ø 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 Ø 18.50 mm twist drill; then it shall be widened to 19,25 ÷ 19,30 mm using the **F/20** series reamer.

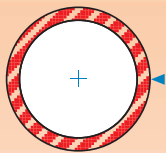
Referring to the twist drill table to the side you can see that the order to be placed for sheet thicknesses beyond 171 mm (6.732") and up to 245 mm (10") shall include:

**F11-1850**



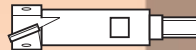



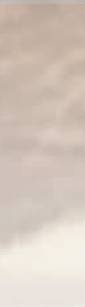
## F/20



$$d_e = 9,52 \text{ mm} \div 50,80 \text{ mm}$$

$$3/8'' \div 2''$$



Tube		Hole		Reamer body		Reamer shank			
$d_e$		$D_f = d_f$		$F20-BDY$	Cutting edges	$F20-SHK$			Morse taper
inches	mm	mm	inches	Code	N	Code	mm	inches	N
3/8"	9,52	9,75	0.384	$F20-BDY-0975- \#$	3	$F20-SHK-1$		2	
	10,00	10,20	0.402	$F20-BDY-1020- \#$					
	10,00	10,25	0.404	$F20-BDY-1025- \#$					
	12,00	12,20	0.480	$F20-BDY-1220- \#$					
	12,00	12,25	0.482	$F20-BDY-1225- \#$					
1/2"	12,70	12,90	0.508	$F20-BDY-1290- \#$		$F20-SHK-2$			
	12,95	0.510	$F20-BDY-1295- \#$						
	13,00	13,20	0.520	$F20-BDY-1320- \#$					
	13,00	13,25	0.522	$F20-BDY-1325- \#$					
	14,00	14,20	0.559	$F20-BDY-1420- \#$					
	14,00	14,25	0.561	$F20-BDY-1425- \#$		$F20-SHK-3$			
	15,00	15,20	0.598	$F20-BDY-1520- \#$					
	15,00	15,25	0.600	$F20-BDY-1525- \#$					
	16,10	0.634	$F20-BDY-1610- \#$						
	16,20	0.638	$F20-BDY-1620- \#$						
5/8"	16,00	16,20	0.638	$F20-BDY-1620- \#$		$F20-SHK-3$			
	16,00	16,25	0.640	$F20-BDY-1625- \#$					
	17,00	17,25	0.679	$F20-BDY-1725- \#$					
	17,00	17,30	0.681	$F20-BDY-1730- \#$					
	18,00	18,25	0.718	$F20-BDY-1825- \#$					
	18,00	18,30	0.720	$F20-BDY-1830- \#$		$F20-SHK-4$			
	19,25	0.758	$F20-BDY-1925- \#$						
	19,30	0.760	$F20-BDY-1930- \#$						
	20,00	20,25	0.797	$F20-BDY-2025- \#$					
	22,00	22,25	0.876	$F20-BDY-2225- \#$					
3/4"	22,00	22,30	0.878	$F20-BDY-2230- \#$		$F20-SHK-4$			
	22,22	22,50	0.886	$F20-BDY-2250- \#$					
	25,00	25,25	0.994	$F20-BDY-2525- \#$					
	25,00	25,30	0.996	$F20-BDY-2530- \#$					
	25,40	25,65	0.010	$F20-BDY-2565- \#$					
1"	25,70	1.012	$F20-BDY-2570- \#$	$F20-SHK-5$					
	26,90	27,20	1.071			$F20-BDY-2720- \#$			
3/4" GAS	27,00	27,30	1.075	$F20-BDY-2730- \#$		$F20-SHK-6$			
	31,75	32,10	1.264	$F20-BDY-3210- \#$					
1.1/4"	32,00	32,25	1.270	$F20-BDY-3225- \#$	$F20-SHK-7$				
	33,70	34,00	1.339	$F20-BDY-3400- \#$					
1" GAS	38,10	38,50	1.516	$F20-BDY-2850- \#$	5	$F20-SHK-7$			
1.1/4" GAS	42,40	42,80	1.685	$F20-BDY-4280- \#$					
1.3/4"	44,45	44,80	1.764	$F20-BDY-4480- \#$	6	$F20-SHK-8$		4	
1.1/2" GAS	48,30	48,80	1.921	$F20-BDY-4880- \#$					
2"	50,80	51,50	2.028	$F20-BDY-5150- \#$					

F/20



## Reamers with Tungsten Carbide inserts for tube sheet holes

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

Made using high-quality materials and with ISO h8 tolerance, they are offered with Morse taper.

They are manufactured in two modular pieces, to significantly reduce production cost.



The Tungsten Carbide cutting inserts are arranged geometrically at the end of the F20-BDY body in order to optimise the cut according to the hole size.

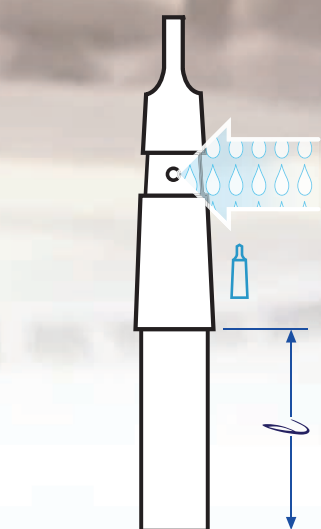
The F20 reamers are designed for holes ranging between 9,75 and 51,50 mm (0.384" to 2.028") and depths of up to 195 mm (7.677").

F20 reamers with customised sizes and cutting edge number available upon request.

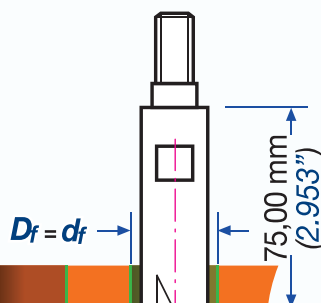
### Cutting edges

The number of Tungsten Carbide cutting inserts is optimised according to the hole diameter, to assure maximum precision during cutting. As indicated in the table to the side:

3		9,75 to 32,25 mm (0.384" to 1.270")
5		34,00 to 44,80 mm (1.339" to 1.764")
6		48,80 to 51,50 mm (1.921" to 2.028")

Tungsten  
Carbide


F20-SHK



F20-BDY



F/20

### 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 Ø 18,50 mm twist drill; then it shall be widened to 19,25 ÷ 19,30 mm using the F20 series reamer.

Referring to the F20 reamer table to the side you will be able to select the following codes:

F20-BDY-1925-C (1 reamer body)

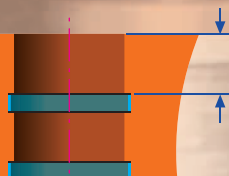
F20-SHK-3 (1 reamer shank)





## F/26

Self-centering grooving tool  
with **adjustable B depth** and  
interchangeable  
**HSS-Co blades**



## MA-2501

### Automatic grooving

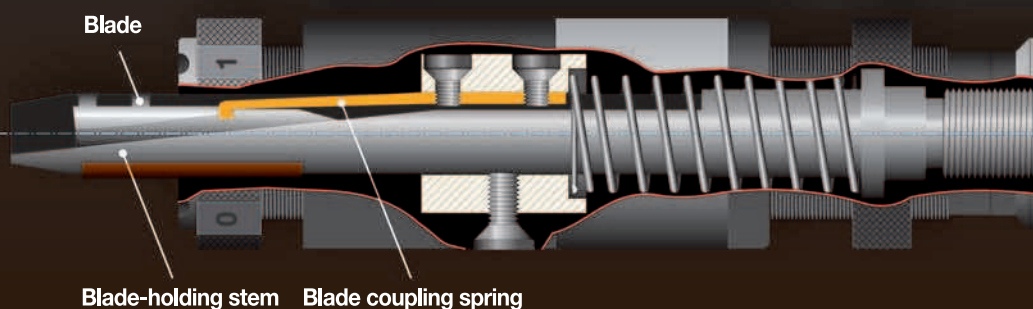
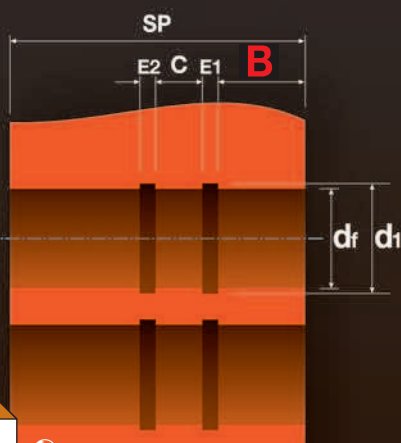
A due reference to the **MA-2501** work centre, the flagship of Maus Italia, the leading company for industrial automation in this market sector (see catalogue "**Automation**")

This **fully automatic** system (single or double axis), can be used for tube expansion, facing and welding and for grooving tube sheet holes.

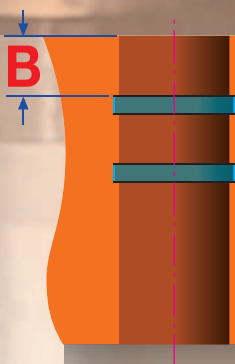
The **F/26** series is designed with a special connector and provides excellent results in large productions.



**900 holes/hr (2 holes in 8 sec.)**



Blade-holding stem Blade coupling spring



## F/26

Self-centering grooving tool with **adjustable B depth** and interchangeable **HSS-Co** blades

The **F/26** self-centering grooving tool creates grooves in tube sheet holes (it is also effectively used for trueing existing grooves) up to a **standard depth B** that can be **adjusted** to a value ranging between 1 and 12 mm (**0.47" to 0.04"**).

**Greater depths**, up to 300 mm (**11.81"**), can be easily reached using the **modular stem, spring and bush kits**, while retaining the ability to perform the adjustment mentioned above.

Equipped with a channel allowing coolant to flow through, like the other drilling tools of the **Holetool** series, the **F/26** is used on radial drills and programmed drilling machines (even with *multiple heads*).

Entirely designed and manufactured by Maus Italia using high quality materials, the **F/26** is offered in 7 sizes, to process holes with diameters ranging between 9,75 and 51,50 mm (**0.384" to 2.028"**).

It is equipped with **HSS blades**, to perform multiple channels/grooves or multiple special processes at the same time.

## Blades



The **F/26** self-centering grooving tool is equipped with interchangeable **HSS-Co 10%** blades, for performing multiple operations.

Blades come in **3 different sizes**.

Maus Italia's technical staff are at the Customers' disposal to design and produce customised blades for special processes.

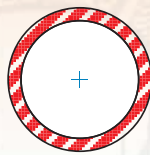






## F/26

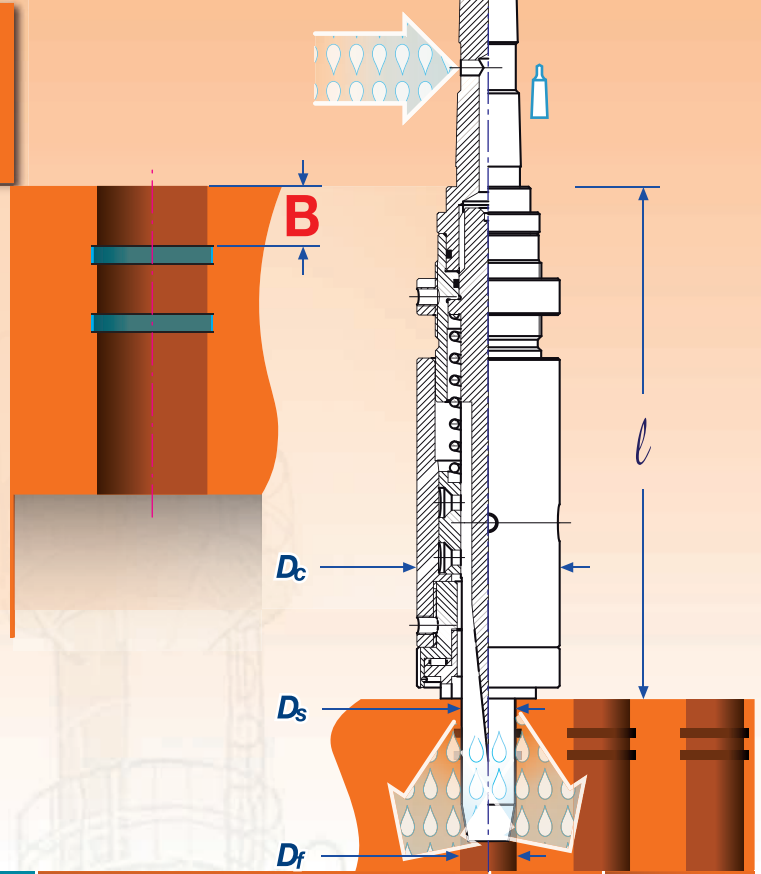
Self-centering grooving tool  
with **adjustable B** depth and  
interchangeable  
**HSS-Co** blades



$$d_e = 9,52 \text{ mm} \div 50,80 \text{ mm}$$

$$3/8" \div 2"$$

## F/26



Tube		Finished tube sheet hole		Grooving tool	Stem Ø		Max. body Ø		Length Body		Shank	Blades
$d_e$		$D_f$		F/26	$D_s$		$D_c$		$l$		Morse taper	F/26-BIT
inches	mm	mm	inches	Code	mm	inches	mm	inches	mm	inches	N	Code
3/8"	9,52	9,75	0.384	* F26-00	9,50	0.374						F26-BIT-00
	10,00	10,20 - 10,25	0.402 - 0.404	* F26-00a	10,00	0.394						
	12,00	12,20 - 12,25	0.480 - 0.482	* F26-1a	12,00	0.472						
1/2"	12,70	12,90 - 12,95	0.508 - 0.510	* F26-1b	12,70	0.500	39,00	1.535	180,00	7.087	2	F26-BIT-1
	13,00	13,20 - 13,25	0.520 - 0.522	* F26-1c	13,00	0.512						
	14,00	14,20 - 14,25	0.559 - 0.561	* F26-1d	14,00	0.551						
5/8"	15,00	15,20 - 15,25	0.598 - 0.600	* F26-1e	15,00	0.591						F26-BIT-2÷6
	15,87	16,10 - 16,20	0.634 - 0.638	F26-2a	16,00	0.630						
	16,00	16,20 - 16,25	0.638 - 0.640	F26-2a	16,00	0.630						
3/4"	17,00	17,25 - 17,30	0.679 - 0.681	F26-2as	17,00	0.669	47,00	1.850				
	18,00	18,25 - 18,30	0.718 - 0.720	F26-2b	18,00	0.709						
	19,05	19,25 - 19,30	0.758 - 0.760	F26-2c	19,00	0.748			230,00	9.055	3	
7/8"	20,00	20,25	0.797	F26-3a	20,00	0.787						
	22,00	22,25 - 22,30	0.876 - 0.878	F26-3b	22,00	0.866						
	22,22	22,50	0.886	F26-3b	22,25	0.876	53,00	2.087				
1"	25,00	25,25 - 25,30	0.994 - 0.996	F26-3c	25,00	0.984						
	25,40	25,65 - 25,70	1.010 - 1.012	F26-3d	25,40	1.000						
	3/4" GAS	26,90	1.071	F26-4a	26,90	1.059						
1.1/4"	27,00	27,30	1.075	F26-4a	27,00	1.063	66,00	2.598				
	31,75	32,10	1.264	F26-4b	31,75	1.250						
	32,00	32,25	1.270	F26-4b	32,00	1.260						
1" GAS	33,70	34,00	1.339	F26-5a	33,75	1.329	72,00	2.835				
	1.1/2"	38,10	1.516	F26-5b	38,10	1.500			240,00	9.449	4	
	1.1/4" GAS	42,40	1.685	F26-6a	42,75	1.683						
1.3/4"	44,45	44,80	1.764	F26-6b	44,75	1.762						
	1.1/2" GAS	48,30	1.921	F26-6c	48,75	1.919						
	2"	50,80	2.028	F26-6d	51,75	2.037	92,00	3.622				

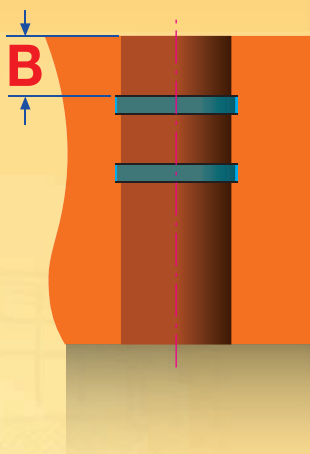
\* F/26 without coolant channels

# F/26

## Sample order codes

If you need to create a 3-6-3 (E-C-E) set of grooves in 3/4" (19,00 mm) holes at a B depth of 10 mm (0.394"), referring to the two tables (on these pages) you can see that the full order to be placed shall include the following items:

**F26-2c** (1 grooving tool)  
**F26-BIT-2- 363** (1 blade)



# F/26



## Components for B depth adjustment (distance between the tubesheet surface and the first groove)

The depth between the tubesheet surface and the first groove, indicated with **B**, can be set to a value ranging between 1 and 12 mm (0.47" to 0.04") through a ring.

Greater depths, up to 300 mm (11.81"), while retaining the ability to perform the ring adjustment, can be easily reached using optional components: stems, blade coupling springs and thrust bushes.

The table below provides easy identification of the appropriate grooving tool and accessory code.

Depth		Grooving tool
<b>B</b>		<b>F/26</b>
mm	inches	Code
1,00 ÷ 12,00	0.039 ÷ 0.472	<b>F26-##</b>
6,00 ÷ 18,00	0.236 ÷ 0.709	<b>F26-##-CTS06</b>
20,00 ÷ 32,00	0.787 ÷ 1.260	<b>F26-##-EXT20</b>
17,00 ÷ 29,00	0.669 ÷ 1.142	<b>F26-##-THR09</b>
11,00 ÷ 23,00	0.433 ÷ 0.906	<b>F26-##-THR15</b>
2,00 ÷ 14,00	0.079 ÷ 0.551	<b>F26-##-THR24</b>
35,00 ÷ 47,00	1.378 ÷ 1.850	<b>F26-##-EXT35</b>
32,00 ÷ 44,00	1.260 ÷ 1.732	<b>F26-##-THR09</b>
26,00 ÷ 38,00	1.023 ÷ 1.496	<b>F26-##-THR15</b>
17,00 ÷ 29,00	0.670 ÷ 1.142	<b>F26-##-THR24</b>

### F/26 standard

Additional accessory  
extended blade coupling spring

### F/26 extended by 20 mm (0.787")

Additional accessory  
extended thrust bush

### F/26 extended by 35 mm (1.378")

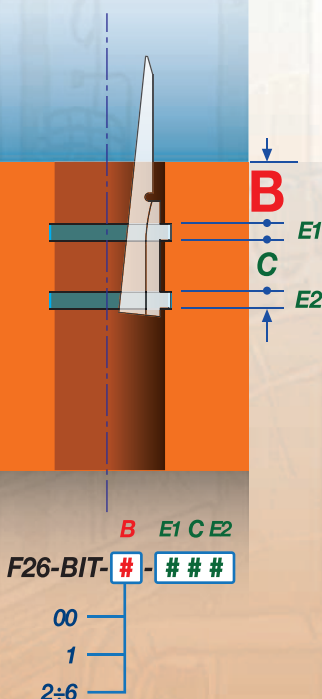
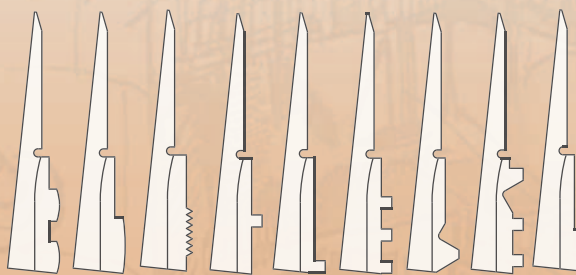
Additional accessory  
extended thrust bush

## Blades



The fixed groove layout is given by the profile of the blades installed on the F/26 model. Maus Italia offers a comprehensive range for the most common tasks.

Special blades are designed and manufactured according to customer's specifications. In case of stainless steel tube sheets we recommend the blades coated with Titanium Aluminium Nitride - TiAlN, whose order code has the CTD suffix



**F26-BIT-#-###-CTD**

00  
1  
2÷6







## F/112

Universal grooving tool, with **fixed B depth** for tube sheet holes ranging between 7 and 30 mm (**0.276"** to **1.181"**)

**F/112** is a **universal grooving tool**, designed and manufactured by Maus Italia using high quality materials, for executing one or more grooves at the same time in tube sheet holes.

**F/112** is used, through a Morse No.3 taper, on radial drills and programmed drilling machines for holes on tube sheets **D<sub>f</sub>** ranging between 7 and 30 mm (**0.276"** to **1.181"**)

For its operation **F/112** uses **centering rings** and **special tools** tailor made by Maus Italia's technical staff.



## F/112

**Order code**

The full order to be placed shall include the following items:

**F112**

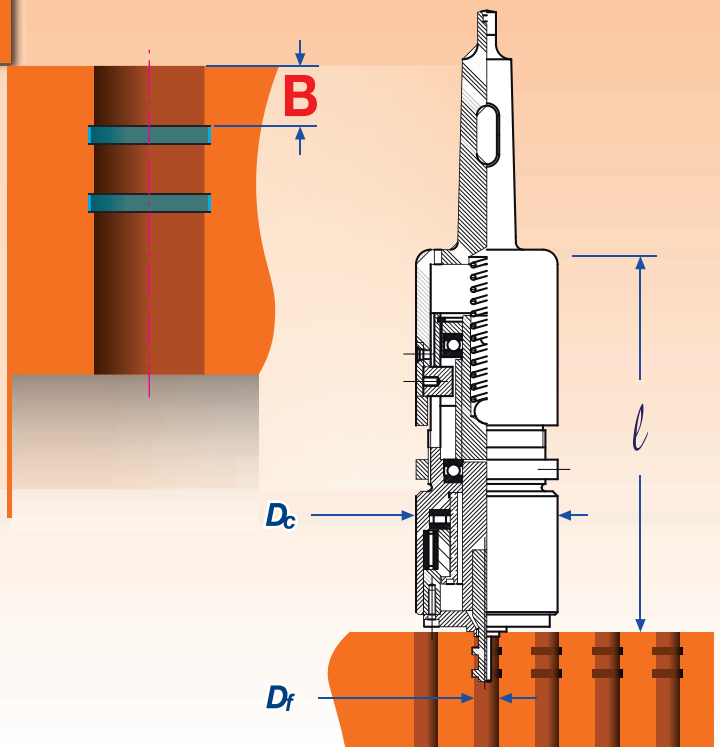
Grooving tool

**F112-AC- D<sub>f</sub>**

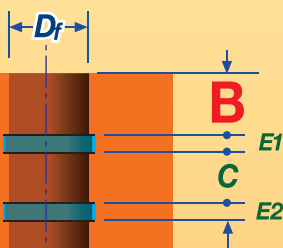
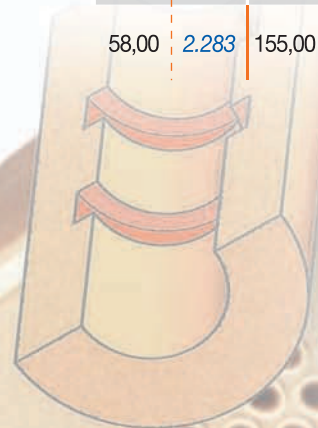
Centering ring

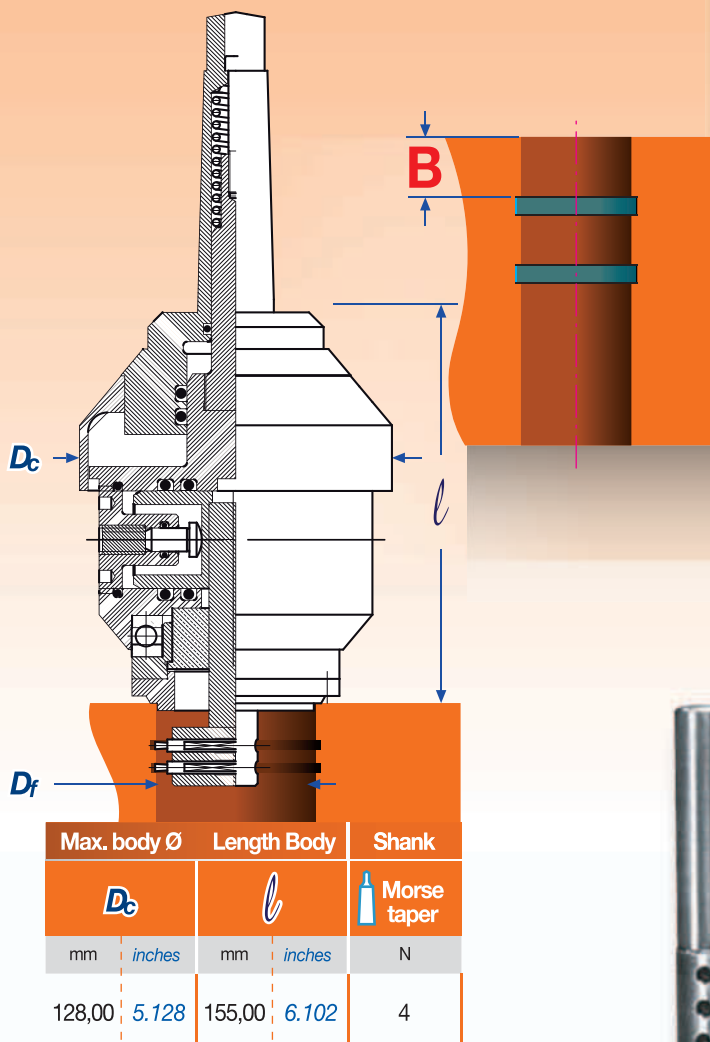
**F112-UT- D<sub>f</sub> - B-E1-C-E2**

Tool



Max. body Ø		Length Body		Shank
<b>D<sub>c</sub></b>		<b>l</b>		Morse taper
mm	inches	mm	inches	N
58,00	2.283	155,00	6.102	3





# F/120

Universal grooving tool with **fixed B depth** and hydraulic power expansion for holes up to 120 mm (4.724")

**F/120**, universal equipment with **hydraulic power expansion** for **executing at the same time one or more grooves** in tube sheet holes ranging between 15 and 120 mm (0.591" to 4.724"), Seeger ring seats, OR rings, drains, etc.

Entirely made of special NiCr steel, cemented, tempered and hardened, it is equipped with a Morse taper no.4. It can be installed on radial drills, parallel lathes (on the mandrel or on the tailstock), boring machines, milling cutters, operating machines in general.

**F/120** is **particularly suitable for executing tasks on boiler tubes** for diameters up to 120 mm (4.724")

It is supplied with a **self-centering ring**, a **tool holder** and **tools tailor** made by the Maus Italia technical staff.

**Tungsten Carbide**

## F/120

### Order code

The full order to be placed shall include the following items:

<b>F120</b>	Grooving tool
<b>F120-AC- <math>D_f</math></b>	Centering ring
<b>F120-PU- <math>D_f</math> - B-E1-C-E2</b>	Tool holder
<b>F120-BIT- <math>D_f</math> - B-E</b>	Blade

