

Retubing

After washing it may be necessary **to retube the tube bundle partially or completely.**

The operations shown below give a summary of the use of our tools, equipments and machines used together in the various steps of retubing (*remaking of the tube bundle*):

- tube cutting
- tube pulling

In this chapter the machines and tools for tube cutting and tube pulling are presented

For other subjects listed below consult the related documents:

- tube sheet refurbishment
- tube bundle assembling
- tube rolling
- tube facing
- tube to tube sheet TIG orbital welding.

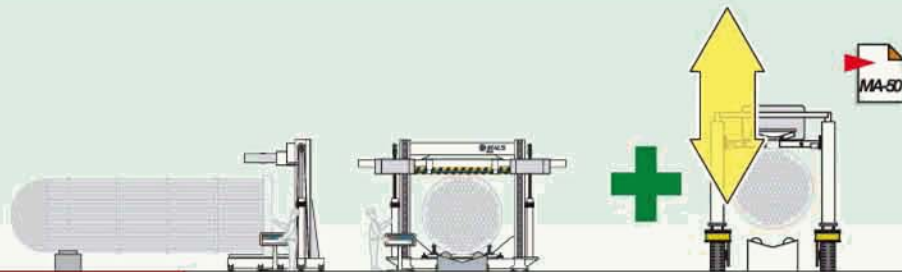
4



BundleCut

Bundle saw machine

Maus Italia offers **BundleCut**, the new band saw for the **dismantling and recovery** of heat exchanger tube sheets. Available in the standard version for tube bundles of \varnothing 2000 mm (79") and the larger version up to \varnothing 3000 mm (118").

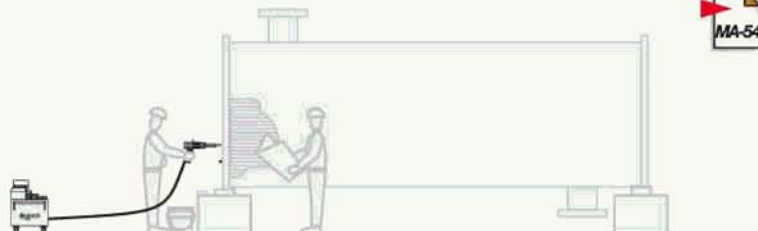


Kattex

Hydraulically operated single internal tube incising/cutting

Innovative pending patented parting tool for instantaneous internal cutting of tubes, particularly useful for fixed tube sheet-type heat exchangers.

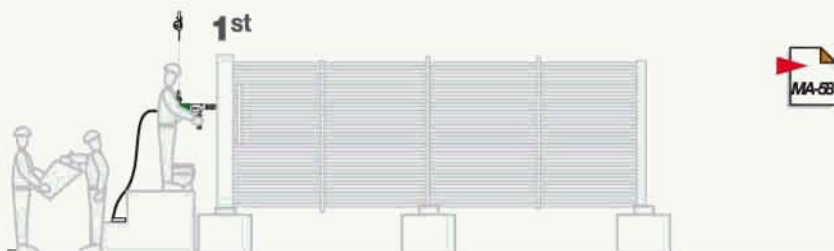
New
pending patented



F/794

Motor operated single internal tube cutting.

Tube cutter model **F/794** is the traditional solution offered for **internal tube cutting**.



Grippul

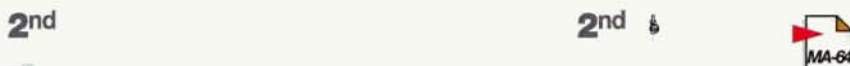
Quick attaching gripper tube pullers

Grippul series **quick attaching gripper tube pullers** is designed and built for rapid extraction of tube stubs from tube sheets. Associated with **BundleCut** or **Kattex**, facilitates and highly speeds up the recovery of the tube sheets.



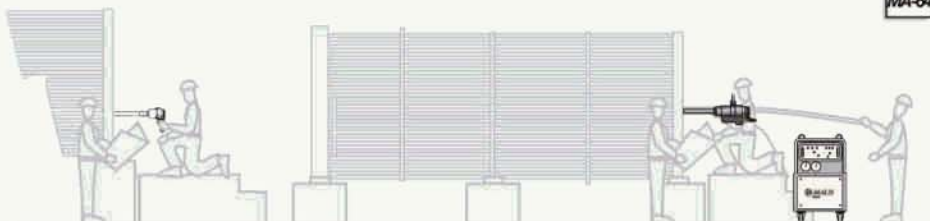
Onlypul

Semi-automatic hydraulic tube pulling for small scale maintenance



Runpul

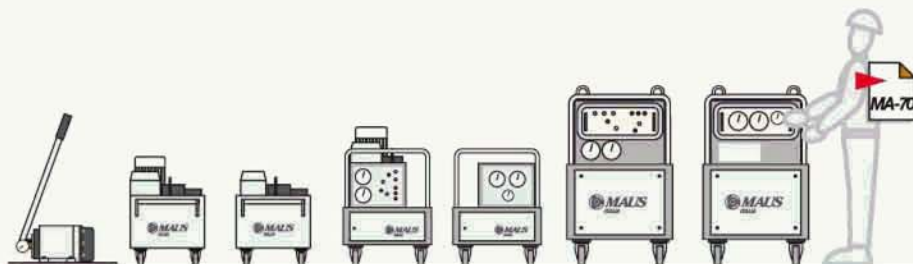
Automatic hydraulic tube pulling complete with **automatism for continuous high speed extraction** of tubes suitable for large scale maintenance work.



TP

Hydraulic units

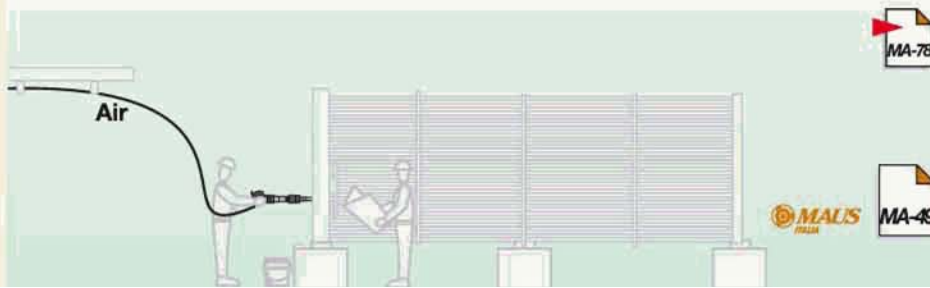
Complete range of hydraulic units capable of satisfying various needs depending on the type of use: from the simple replacement of a tube to the more demanding applications of large scale maintenance work.



Cheaptool

Equipment for the manual maintenance of the tube in heat exchangers

Cheaptool is the complete system that Maus Italia produces for the manual, **low-cost** maintenance of tubes in heat exchangers in oil refineries, condensers in electric power stations, boilers, etc.



Cutting equipments

Pulling equipments

Hand tools

New
pending patented

Single internal tube incising/cutting

To use with
TP10-E



Kattex

Hydraulically operated tube incising/cutting (pre-**Grippul**)



Innovative patented tool for **instantaneous internal cutting**

of tubes, particularly useful for fixed plate-type exchangers.

Use of the **Kattex** ensures a clean result and in very little time for the purpose of dismantling or partially retubing a tube bundle during maintenance.

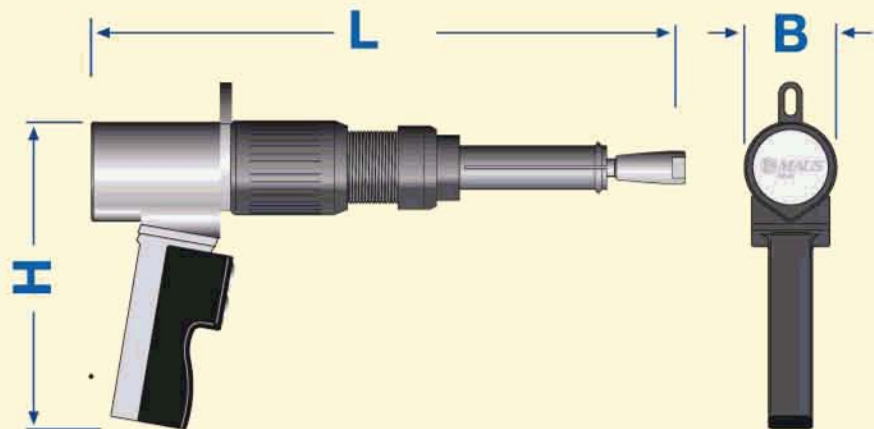
The concept is to incise into the tube before using the stub puller (**Grippul** equipment).

Precise

Simple to use

Rapid

Low cost



Kattex

6-E

Length	L	mm	"	60	2.36
Width	B	mm	"	340	13.39
Height	H	mm	"	200	7.87
Maximum operating pressure		bar	psi	350	5076
Maximum incising/cutting force		T	Lb	6	13240
Cutting speed - INSTANTANEOUS!		sec.		3 sec. Max	
Weight		Kg	Lb	3,5	7.71
Protection level		IP		55	
Controls - low voltage - A.C.		Volt		24	



Cutting off without shaving

Cutting procedure

The **Kattex** is both simple to use and innovative. The four steps for rapid cutting of a tube are given here. The timeline shows the speed with which the operation is carried out and thus ensuring very high productivity.

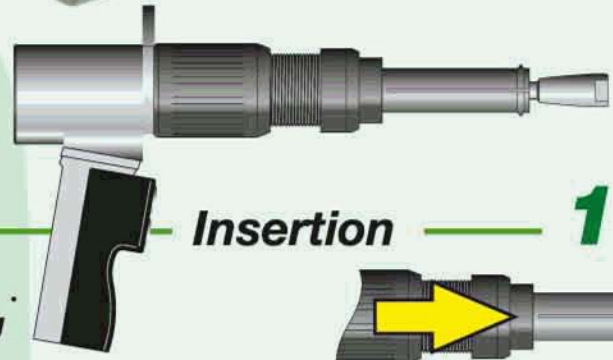
The simulation is for: Tube:
25,4 mm (1") x 13 BWG
stainless steel 304

Time: 9 seconds



Insert the **Kattex** in the tube to be cut until it comes up against the collar

2"

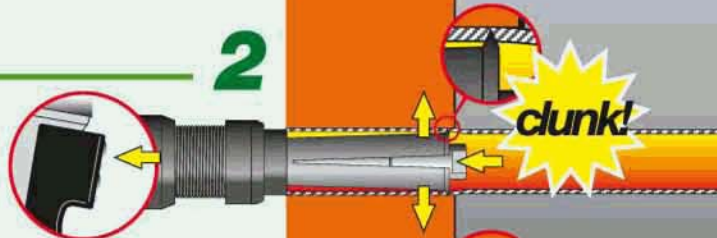


Insertion — **1**

Press the switch on the handle and wait until you hear the "clunk" on contact with the collar.

4"

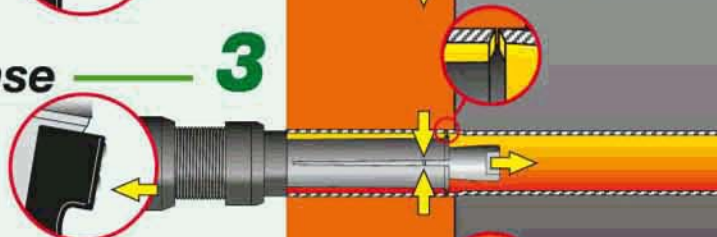
Quick cut — **2**



Press the switch on the other side and wait for the complete release of the tube

2"

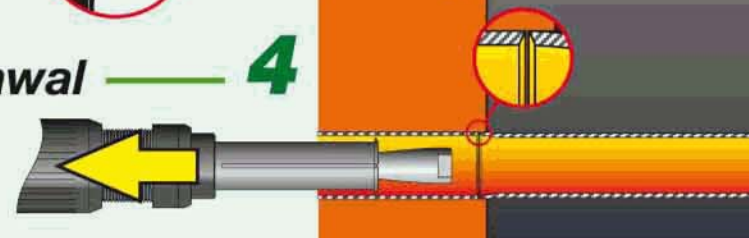
Release — **3**



Extract the **Kattex** from the cut tube and proceed with the next cut or extraction of the stub using a tube puller of the **Grippul** series

1"

Withdrawal — **4**

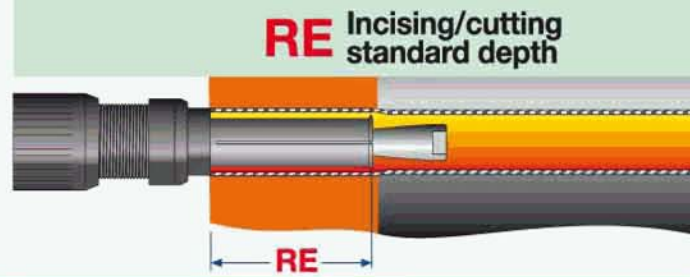


All done in just **9** sec. in a few seconds!



Precise cutting results with the **Kattex**

Single internal tube incising/cutting



Kattex

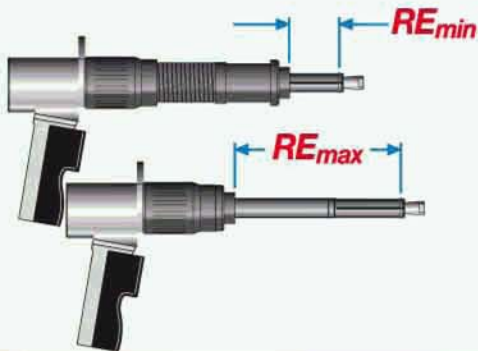
Incising/cutting depth

Assembling for reaching shown standard depth.
On request special deep are available.

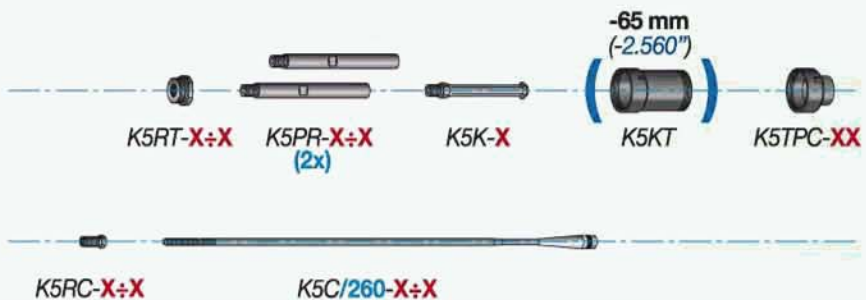
$$RE = 10 \text{ mm } (0.394") \div 75 \text{ mm } (2.953")$$



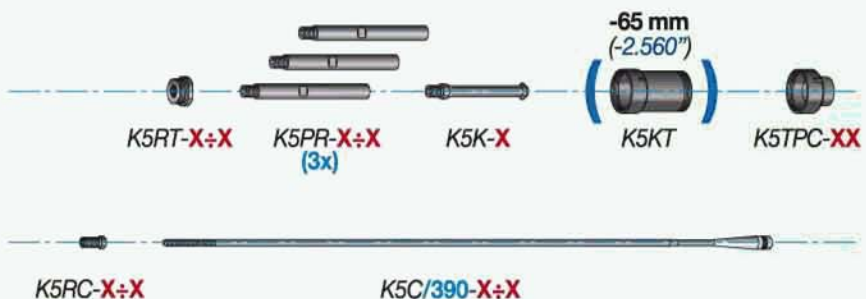
$$RE = 75 \text{ mm } (2.953") \div 205 \text{ mm } (8.071")$$

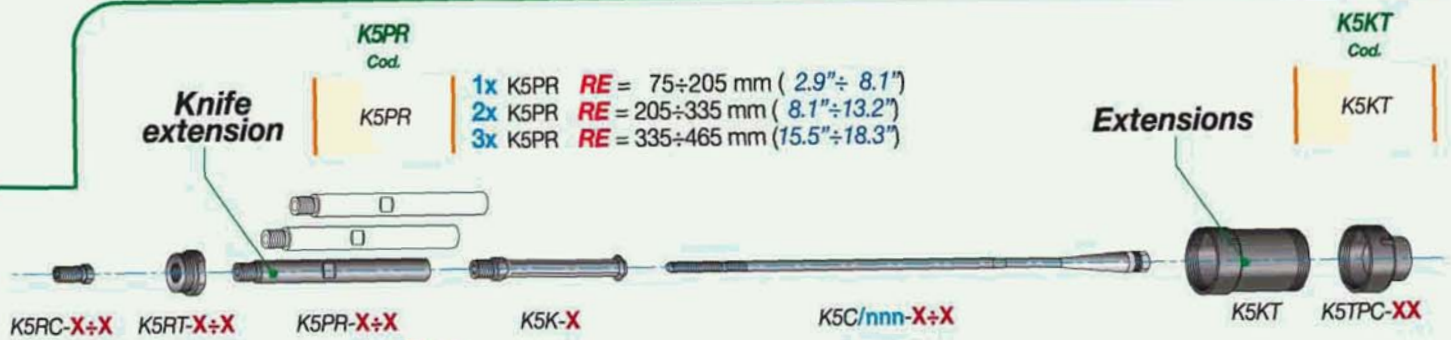


$$RE = 205 \text{ mm } (8.071") \div 335 \text{ mm } (13.189")$$



$$RE = 335 \text{ mm } (13.189") \div 465 \text{ mm } (18.387")$$





Kattex 6-E



$d_e = 12,7 \text{ mm} \div 38,1 \text{ mm}$
 $1/2" \div 1.1/2"$

d_e mm	Tube					Cone reduction K5RC Cod.	Knife reduction K5RT Cod.	Knife extension K5PR Cod.	Knife K5K Cod.	Expansions		Cone K5C/nnn Cod.	Collar K5TPC Cod.
	B.W.G.	mm	sp	mm	di					mm	"		
1/2" (12,7)	16	1,65	0.065	9,4	0.370	K5RC-1÷2	K5RT-1÷2	K5PR-1÷2	K5K-1 K5K-2	9,0÷12,5	0.354÷0.492	K5C/nnn-1÷2	K5TPC-14
	18 ÷ 24	1,24 ÷ 0,56	0.049 ÷ 0.022	10,2 ÷ 11,6	0.402 ÷ 0.456					9,8 ÷ 13,3	0.386 ÷ 0.524		
5/8" (15,9)	14	2,11	0.083	11,7	0.459	K5RC-3÷4	K5RT-3÷4	K5PR-3÷4	K5K-3 K5K-4	11,1 ÷ 15,3	0.437 ÷ 0.602	K5C/nnn-3÷4	K5TPC-18
	16 ÷ 24	1,65 ÷ 0,56	0.065 ÷ 0.022	12,6 ÷ 14,8	0.495 ÷ 0.583					12,1 ÷ 16,3	0.476 ÷ 0.642		
3/4" (19,0)	12	2,77	0.109	13,4	0.532	K5RC-5÷6	K5RT-5÷6	K5PR-5÷6	K5K-5 K5K-6	12,8 ÷ 18,1	0.504 ÷ 0.713	K5C/nnn-5÷6	K5TPC-21
	14 ÷ 24	2,11 ÷ 0,56	0.083 ÷ 0.022	14,8 ÷ 17,9	0.584 ÷ 0.766					14,2 ÷ 19,5	0.559 ÷ 0.768		
7/8" (22,2)	10	3,40	0.134	15,4	0.607	K5RC-7÷8	K5RT-7÷8	K5PR-7÷8	K5K-7 K5K-8	14,6 ÷ 20,6	0.575 ÷ 0.811	K5C/nnn-7÷8	K5TPC-25
	13 ÷ 24	2,41 ÷ 0,56	0.095 ÷ 0.022	17,4 ÷ 21,1	0.685 ÷ 0.831					16,7 ÷ 22,7	0.657 ÷ 0.894		
1" (25,4)	10	3,40	0.134	18,6	0.732	K5RC-9÷10	K5RT-9÷10	K5PR-9÷10	K5K-9 K5K-10	17,8 ÷ 24,8	0.701 ÷ 0.976	K5C/nnn-9÷10	K5TPC-28
	12 ÷ 24	2,77 ÷ 0,56	0.109 ÷ 0.022	19,8 ÷ 24,2	0.782 ÷ 0.956					19,1 ÷ 26,1	0.752 ÷ 1.027		
1.1/4" (31,8)	10	3,40	0.134	25,0	0.982	-	K5RT-11÷12	K5PR-11÷12	K5K-11 K5K-12	24,0 ÷ 31,0	0.945 ÷ 1.220	K5C/nnn-11÷12	K5TPC-34
	12 ÷ 24	2,77 ÷ 0,56	0.109 ÷ 0.022	24,2 ÷ 30,7	1.032 ÷ 1.206					25,3 ÷ 32,3	0.996 ÷ 1.272		
1.1/2" (38,1)	10	3,40	0.134	31,1	1.232	-	K5RT-13÷14	K5PR-13÷14	K5K-13 K5K-14	30,3 ÷ 37,3	1.193 ÷ 1.468	K5C/nnn-13÷14	K5TPC-41
	12 ÷ 24	2,77 ÷ 0,56	0.109 ÷ 0.022	32,5 ÷ 37,0	1.282 ÷ 1.456					31,7 ÷ 38,7	1.248 ÷ 1.524		

For incising

For cutting

On request also solution for different
 customizing deep are available (RE)

Sample codes for
 ordering accessories:

d_e 3/4"
(19,0) 14 B.W.G. RE 6.69"
170mm

K5RC-5÷6 (1 Cone reduction)
 K5RT-5÷6 (1 Knife reduction)
 2x K5PR-5÷6 (2 Knife extensions)
 K5K-6 (1 Knife)
 K5C/260-5÷6
 K5TPC-21

Motor operated tube cutting

F/794

Tube cutter for medium tube-sheets

This tube cutter is designed for the use in maintenance of heat exchanger and boilers.



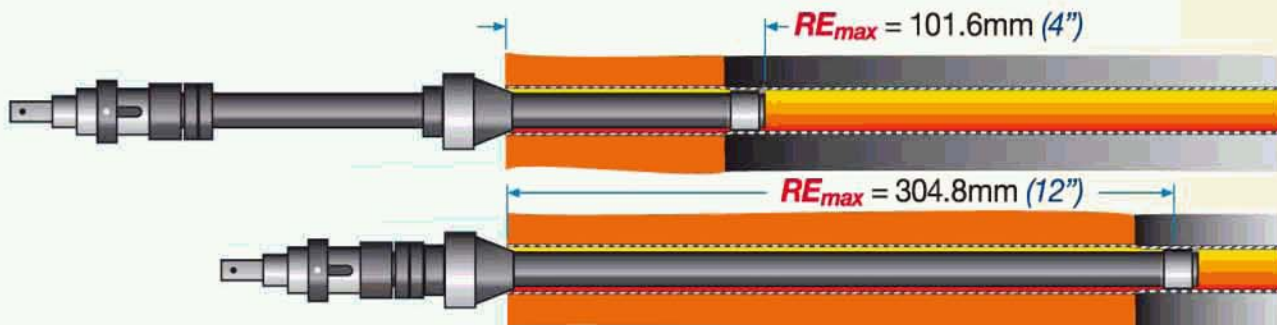
Tube de "	Tube cutter Cod.	Cutting I.D.		Bit Cod.	Tube pilots (not included - order separately) Indicated for B.W.G.	∅ "	Electrical	Suggested motors		
		mm	"					Non ferrous tubes	Pneumatic Steel tubes	Stainless Steel tubes
1/2"	F794-0	8,1 ÷ 15,0	0.32 ÷ 0.59	BIT-F794-0	14 - 16 - 18 - 20 - 22 - 24	3/8" (9,5)	MDse648	MOF 20 R	MOF 20 R	MOF 3
5/8"	F794-1	11,2 ÷ 18,0	0.44 ÷ 0.71	BIT-F794-1	14 - 16 - 18 - 20 - 22 - 24				MOF 3	MOF 3 R
3/4"	F794-2	13,5 ÷ 22,0	0.53 ÷ 0.87	BIT-F794-2÷4	14 - 16 - 18 - 20 - 22 - 24				MOF 3	MOF 3 R
7/8"	F794-3	16,0 ÷ 24,9	0.63 ÷ 0.98		14 - 16 - 18 - 20 - 22 - 24				MOF 3	MOF 3 R
1"	F794-4	18,0 ÷ 26,9	0.71 ÷ 1.06	BIT-F794-5÷6	14 - 16 - 18 - 20 - 22 - 24	1/2" (12,7)	MOF 3	MOF 3 R	MOF 3 R	
1.1/4"	F794-5	23,1 ÷ 34,0	0.91 ÷ 1.34		12 - 14 - 16 - 18 - 20 - 22			MOF 3 R	MOF 3 R	
1.1/2"	F794-6	30,0 ÷ 41,9	1.18 ÷ 1.65		12 - 14 - 16 - 18 - 20 - 22			MOF 3 R	MOF 3 R	

On request, tube cutters **F/794** for bigger diameters are available

F/794/L

Tube cutter for thick tube-sheets

This tube cutter is designed for the use in maintenance of heat exchanger and boilers. Dedicated to the maintenance of exchangers with very thick tube sheets.



F/794

Choice of the motorization

Maus Italia gives indications concerning the pneumatic and electric motorizations suitable for the use of the **F/794** as well as advise for the selection of the adaptor to be used.

Portable electric drill

- Mechanical 2 speed gear
- Electronic regulator of the rpm for optimal cutting speed
- Optimal control with ergonomic grip and supplementary grip



Electric

MDse 648

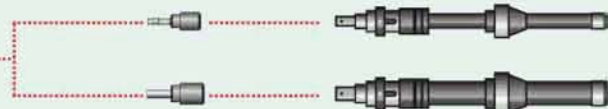
Feed voltage	Volt	220V - 50/60Hz - 1Ph	
Absorbed power	Watt	740	
Speed No-Load	Giri/min	260-600 / 640-1400	
Speed Full-Load	Giri/min	0-360 / 0-860	
Weight	Kg Lb	3,4	7.5
Dimension	mm "	488 x 82	19.2 x 3.2

MDse 648

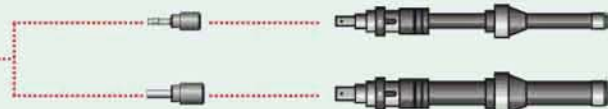


F/311-3/8"

F/794



F/312/CIL-1/2"



Portable pneumatic drill

- With Morse Tape shank

MOF 20 R and **MOF 3R** models are reversible



Pneumatic

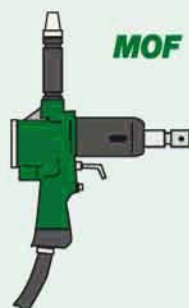
MOF 20 R

MOF 3

MOF 3 R

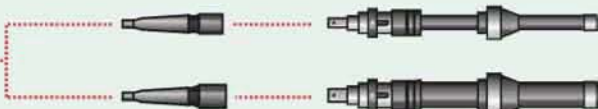
Speed	Giri/min	470	170	140
Power	Watt	745	745	745
Shank	CM	2	2	2
Air Shank	" gas	3/8"gas	3/8"gas	3/8"gas
Air consumption	Lt/sec cfm	14 0.49	14 0.49	14 0.49
Weight	Kg Lb	4,5 8.82	4,2 9.22	4,6 10,10
Dimensions	Ø x L x h - mm	66x236x360	66x272x360	66x241x360
	Ø x L x h - "	2.6"x8.3"x14.2	2.6"x10.7"x14.2	2.6"x9.5"x14.2

MOF



RCM - 2-3/8"

F/794



RCM - 2-1/2"

