

## *Pneumatic rolling machines*

Torque-control pneumatic rolling machines  
for tube bundle heat exchangers manufacture  
and maintenance

Production

Tube rolling system



## A winning story since 1961

### The Beginning

At the end of the 1950s, Domenico Franco Agostino became the Italian representative of Albert Otto, a German manufacturer of tube expanders. In 1961 Franco Agostino's Albert Otto Italiana was founded and in 1972, after purchasing an area of 10,000 square metres in the municipality of Bagnolo Cremasco, Maus Italia Sas was established.

### The Growth

In 1976 his son Stefano, a mechanical engineer, joined the company. Together with his father, he studied products, introduced new machinery onto the market and filed the first patents by Maus Italia. Above all, Stefano was firmly convinced that people are the very heart of a company's success. Therefore, he invested in human capital by valuing people and roles, and he surrounded himself with skilled operators as well as technical, commercial and administrative collaborators. The result was a winning, competent and proactive team.

His daughter Anna - also a mechanical engineer - has been working in the company since 2016, giving new impetus and energy to the business her father and grandfather had built.

Father and daughter work together side by side every day to guarantee the excellence of Maus Italia and support all customers worldwide with competence and passion: the company's distinctive traits.



**Stefano Agostino**

*CEO - Mechanical Engineer*

**Anna Agostino**

*COO - Mechanical and Management Engineer*



## ***In-house production of each component*** ***Workshop 4.0 and 24/7 production control***

The production of Maus Italia branded items is entirely carried out in Bagnolo Cremasco, in the heart of an Italian industrial area 30 km southeast of Milan.

The company boasts a 4.0 workshop equipped with state-of-the-art machinery, an in-house heat treatment room and a final inspection department that allow Maus Italia to independently manage every phase of the manufacturing process of its wide range of products whilst maintaining high quality standards.



## ***Quality first.*** ***Design and development***

One of Maus Italia's strengths is its willingness to understand its customers' needs.

Our technical department is always ready to find operational solutions to the most complex applications, even via feasibility studies. We develop accurate work processes, draw with FEM analyses to verify our mechanical-structural performance and optimise the manufacturing process of each component.

## ***Ready To Deliver***

A well-stocked and complete warehouse of finished products enables Maus Italia ship quickly to customers all over the world according to a ready-to-deliver logic.

The warehouse is fully located within our premises in Bagnolo Cremasco at controlled temperatures and conditions to guarantee the maximum safety and quality of Maus Italia products for all our customers.

## ***Quality, environment and safety policy***

Research, quality and safety are the watchwords of Maus Italia Spa.

Maus Italia has several projects underway aimed at increasingly sustainable development and integrates environmental concerns into its business model. The company's actions, behaviour and development choices are focused not only on the short run but rather mainly on a medium and long-term horizon.



## ***Every day in over*** ***80 country*** ***worldwide***

Find an official distributor  
in your country



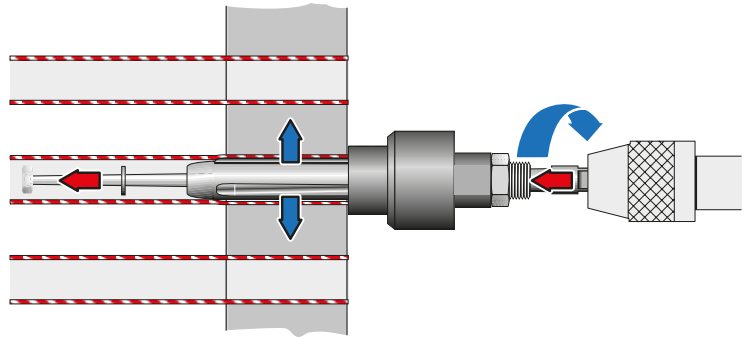
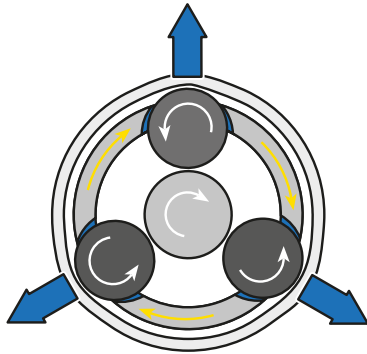
# Tube rolling

Tube rolling is a cold mechanical deformation process to achieve a sealing coupling between the tube and the tube sheet.

The process is achieved by enlarging the tube and reducing the wall thickness against the surface of the tube sheet hole by using a special tool: the tube expander. The expander is introduced into the tube by the operator with its mandrel fully retracted until the collar touches the tube sheet.

The mandrel is then pushed forwards and comes into contact with the rolls. Due to friction the rolls rotate and come into contact with the tube, giving to the cage a rotary movement, causing the forward feeding of the mandrel.

The rolls expanded by the forward feeding of the mandrel, expand the tube until it is in contact with the tube-sheet hole and, by the further process of rolling, they crush the tube thickness against the tube-sheet hole wall.



# **Torque control pneumatic rolling machines**

*for tube bundle heat exchangers manufacture and maintenance*

By its Minirol, Fastrol, Macrol and Masterol series, Maus Italia offers a flexible and cost-efficient solution to use tube expanders. The Maus Italia pneumatic rolling machines are swift, light, and safe and they are the ideal solution for both manufacturers who are equipping themselves to expand tubes for the first time and maintenance operators who want to operate on-site in a safe and high quality environment.

## **Minirol**

Torque control pneumatic rolling machine with automatic reverse from 1/4" to 1/2" ( 6.3 to 12.7 mm ) tubes

**Up to 1/2" (12,7 mm)**



## **Fastrol** **PUSH PULL**

Pneumatic torque-controlled tube rolling system for tube diameters from 3/4" to 1.1/4" ( 19,0 mm to 31,8 mm )

**Up to 1.1/4" (31,8 mm)**



## **Macrol**

Wide range of torque control pneumatic rolling machines suitable from 3/4" to 2.1/4" ( 19,0 to 58,0 mm ) tubes

**Up to 2.1/4" (58 mm)**



## **Masterol**

Right angle torque control pneumatic rolling machines suitable for boiler tubes up to 4" ( 101,6 mm )

**Up to 4" (101,6 mm)**



# Minirol

*Torque-control pneumatic rolling machine with automatic reverse for tube diameters from 6,3 mm to 12,7 mm ( from 1/4" to 1/2" )*

The Minirol series torque control rolling machines with automatic reverse are designed to expand small diameter tubes. They are extremely ergonomic, productive and of high quality, and particularly suitable for manufacturers for the assembly of tube sheet to be used in refrigeration and air conditioning field.

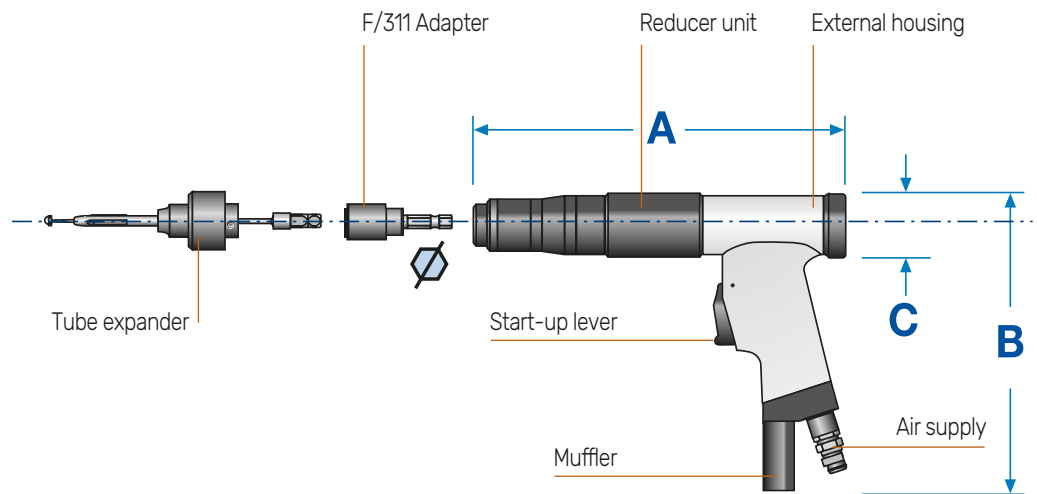
**Self-reversible**



## **Focus**

- *In aluminium*
- *Light and heavy-duty*
- *Handy*
- *Built-in adjustable torque control*
- *Automatic rotation reverse*
- *Extraordinary weight/power ratio*
- *Torque control independent from air pressure*





## Minirol models

### Model

Rotation speed	Rpm
Minimum torque	Nm - Ft Lbs.
Maximum torque	Nm - Ft Lbs.
Inlet pressure	Bar - Psi
Air consumption	l/min - c.f.m.
Hex drive	mm / inches
Air feeding threaded attachment	

### Tube max ø outside - Ferrous

### Tube max ø outside - Not ferrous

Adapter	Code
Dimension Length	mm / inches
Dimension Height ø	mm / inches
Width	mm / inches
Weight	Kg / Lbs.
Colour	Code

### Minirol 2400

2400
0,2 (0.15)
2,4 (1.77)
6,3 / 92
380 (13.4)
6,3 (1.4)
1/4" G / 19 BSP

<b>6,3 mm (1/4")</b>
<b>12,7 mm (1/2")</b>

<b>F/311 - 1/4"</b>
240 (9.5)
50 (2)
193 (7.6)
1,24 (2.74)
RAL 7035

### Minirol 1100

1100
0,3 (0.22)
5,2 (3.84)
6,3 / 92
420 (14.8)
6,3 (1.4)
1/4" G / 19 BSP

<b>9,5 mm (3/8")</b>
<b>15,9 mm (5/8")</b>

<b>F/311 - 1/4"</b>
260 (10.2)
50 (2)
193 (7.6)
1,36 (3.00)
RAL 7035

### Minirol 600

600
0,4 (0.30)
9,5 (7.01)
6,3 / 92
420 (14.8)
6,3 (1.4)
1/4" G / 19 BSP

<b>12,7 mm (1/2")</b>
<b>19,0 mm (3/4")</b>

<b>F/311 - 3/8"</b>
310 (12.2)
50 (2)
193 (7.6)
1,80 (3.97)
RAL 7035



## **Standard supply**

- > Carrying case
- > Minirol tube rolling system
- > Instruction manual
- > F/311 quick release adapter
- > Lubricator
- > Flexible air supply tube:  $\varnothing$  12x8 mm / L 10 m
- > Air inlet 1/4" GAS tube attachment
- > Silencer
- > Set of blades for motor
- > Screwdriver for torque adjustment
- > Auxiliary handgrip



### **Lightweight and convenient**

The Minirol tube rolling system is easily transportable in its convenient carrying case



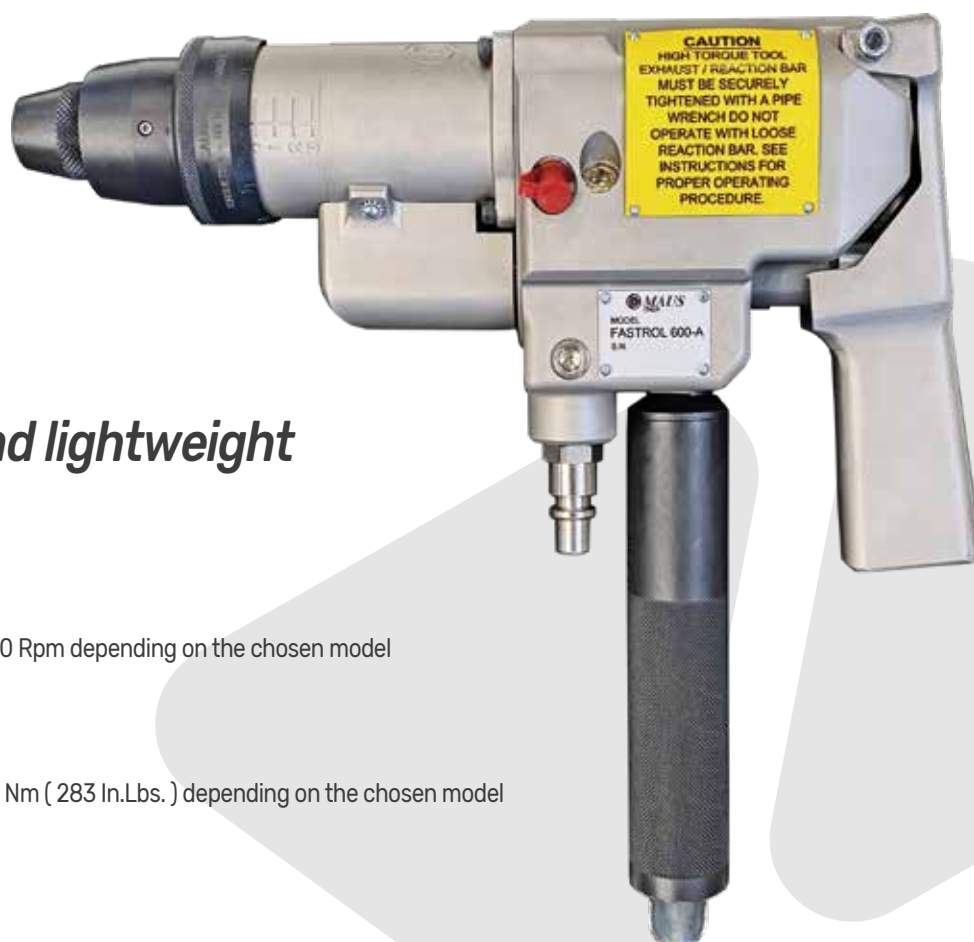
# Fastrol

**PUSH PULL**

*Pneumatic torque-controlled tube rolling system  
for tube diameters from 19 mm to 31.8 mm ( from 3/4" to 1.1/4" )*

The pneumatic torque-controlled tube rolling system of the Fastrol series is designed to be used on construction sites and in tube bundle repairs directly on chemical and petrochemical plants.

The Fastrol series comes in 3 different versions to cover a wide range of tubes, providing the motor spindle with great sensitivity or power, depending on the chosen version.



## **Practical and lightweight**

It weighs less than 5 kg



## **Quick**

Maximum speed up to 1100 Rpm depending on the chosen model



## **Powerful**

Maximum torque up to 32 Nm ( 283 In.Lbs. ) depending on the chosen model



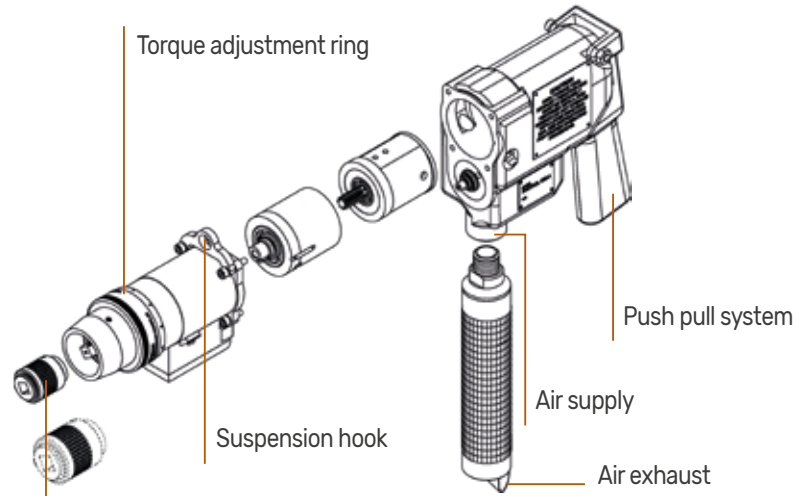
## **Handy**

Push-Pull System

## Added values

- > Made of aluminium
- > Lightweight and robust
- > Compact and easy to handle
- > Built-in adjustable torque control  
(with automatic stop at set threshold)
- > Guaranteed uniformity of processing
- > Reversible





Quick coupling FST-3/8" ( standard ),  
( 1/2" optional )

## Fastrol models

### Modello

Rotation speed  
Minimum torque  
Maximum torque  
Air pressure  
Air consumption  
Square drive male

Air supply connection  
Air exhaust connection  
Minimum recommended air hose ø  
*Maximum length 7.6 m (25 feet)*

### Max ø outside tube expandable

Dimension L  
Dimension H  
Side to center distance  
Weight  
Balancer  
Sound pressure level  
Vibrations

### Fastrol PUSH PULL **1250-A**

1100 Rpm  
2,5 Nm ( 22 In.Lbs. )  
13 Nm ( 115 In.Lbs. )  
6,3 Bar / 92 Psi  
1360 l/min ( 48 c.f.m. )  
9,5 mm ( 3/8" )

3/8" GAS  
1/2" GAS  
9,5 mm ( 3/8" )

### **19,5 mm ( 3/4" )**

311 mm ( 12.1/4" )  
307 mm ( 12.3/32" )  
36,5 mm ( 1.7/16" )  
4,76 Kg ( 10.5 Lbs. )  
TPB1  
83 dB(A)  
0.89 m/s<sup>2</sup>

### Fastrol PUSH PULL **600-A**

500 Rpm  
3,5 Nm ( 31 In.Lbs. )  
21,7 Nm ( 192 In.Lbs. )  
6,3 Bar / 92 Psi  
1360 l/min ( 48 c.f.m. )  
9,5 mm ( 3/8" )

3/8" GAS  
1/2" GAS  
9,5 mm ( 3/8" )

### **25,4 mm ( 1" )**

311 mm ( 12.1/4" )  
307 mm ( 12.3/32" )  
36,5 mm ( 1.7/16" )  
4,76 Kg ( 10.5 Lbs. )  
TPB1  
83 dB(A)  
0.89 m/s<sup>2</sup>

### Fastrol PUSH PULL **400-A**

350 Rpm  
4,5 Nm ( 40 In.Lbs. )  
32 Nm ( 283 In.Lbs. )  
6,3 Bar / 92 Psi  
1360 l/min ( 48 c.f.m. )  
9,5 mm ( 3/8" )

3/8" GAS  
1/2" GAS  
9,5 mm ( 3/8" )

### **31,8 mm ( 1.1/4" )**

311 mm ( 12.1/4" )  
307 mm ( 12.3/32" )  
36,5 mm ( 1.7/16" )  
4,76 Kg ( 10.5 Lbs. )  
TPB1  
83 dB(A)  
0.89 m/s<sup>2</sup>



## **Standard supply**

- Carrying case
- Fastrol tube rolling system
- Instruction manual
- Quick coupling FST-3/8"
- Lubricator
- Flexible air supply tube:  $\varnothing$  23x13 mm / L 6 m
- Set of blades for motor
- Set of service keys



## **Lightweight and convenient**

The Fastrol tube rolling system is easily transportable in its convenient carrying case

# Macrol

Wide range of torque control pneumatic rolling machines suitable for tube diameters from 19 mm to 58 mm ( from 3/4" to 2.1/4" )

The Macrol series torque controlled pneumatic rolling machines are designed to be used at yards as well as to repair tube sheets directly on-site in chemical and petrochemical plants.

The Macrol series is produced in 5 different versions able to cover a wide range of tubes, guaranteeing to the main driving shaft an extreme sensitivity or power depending on the version chosen.

**Suitable for tubes up to 58mm ( 2.1/4" )**

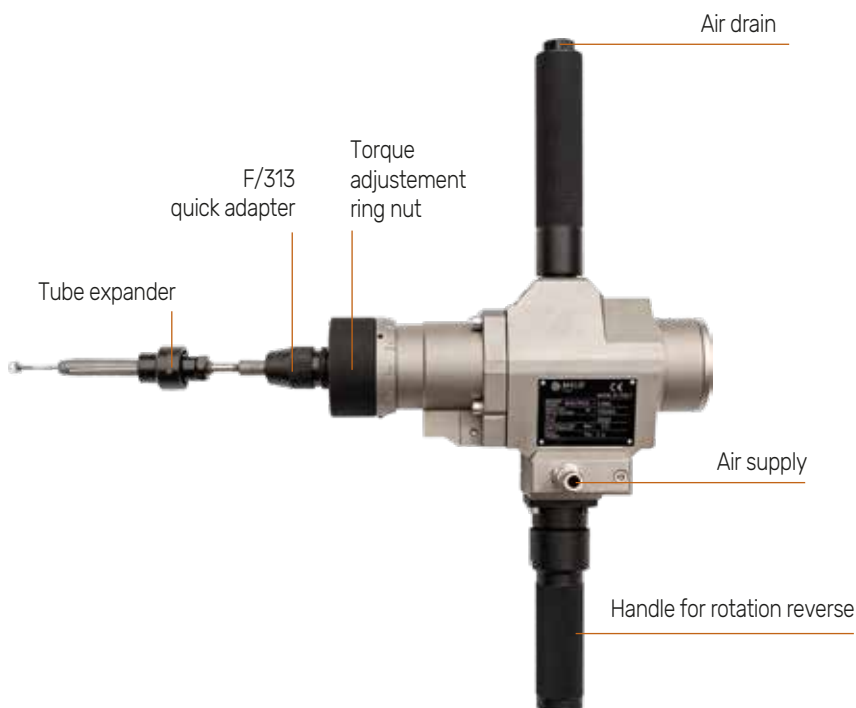
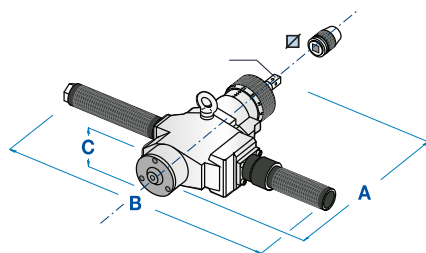


## Focus

- In aluminium
- Light and heavy-duty
- Compact and handy
- Built-in adjustable torque control  
( with automatic stop at the set torque )
- Uniform tooling guaranteed
- Repeatability with +/-3% tolerance
- Reversible
- Torque control independent from air pressure







## Macrol models

Model		<b>Macrol 1350</b>	<b>Macrol 750</b>	<b>Macrol 450</b>	<b>Macrol 200</b>	<b>Macrol 130</b>
Rotation speed	<i>Rpm</i>	1350	750	450	200	130
Minimum torque	<i>Nm - Ft Lbs.</i>	1,0 (0.7)	2,0 (1.4)	3,0 (2.1)	5,0 (3.6)	10,0 (7.3)
Maximum torque	<i>Nm - Ft Lbs.</i>	15,00 (11.0)	26,0 (19.2)	38,0 (28.0)	80,0 (59.0)	125,0 (92.2)
Inlet pressure	<i>Bar - Psi</i>	6,3 / 92	6,3 / 92	6,3 / 92	6,3 / 92	6,3 / 92
Air consumption	<i>l/min - c.f.m.</i>	840 (30.0)	840 (30.0)	840 (30.0)	840 (30.0)	840 (30.0)
Square drive	<i>mm / inches</i>	12 (0,47)	12 (0,47)	12 (0,47)	12 (0,47)	12 (0,47)
Air feeding threaded attachment		3/8" X 19	3/8" X 19	3/8" X 19	3/8" X 19	3/8" X 19
Air drain threaded attachment		1/2" X 14	1/2" X 14	1/2" X 14	1/2" X 14	1/2" X 14
<b>Tube max ø outside - Ferrous</b>		<b>19,0 mm (3/4")</b>	<b>25,4 mm (1")</b>	<b>31,8 mm (1.1/4")</b>	<b>44,4 mm (1.3/4")</b>	<b>57,1 mm (2.1/4")</b>
<b>Tube max ø outside - Not ferrous</b>		<b>25,4 mm (1")</b>	<b>38,1 mm (1.1/2")</b>	<b>44,4 mm (1.3/4")</b>	<b>57,1 mm (2.1/4")</b>	<b>69,8 mm (2.3/4")</b>
Adapter	<i>Code</i>	<b>F/313 - 3/8"</b>	<b>F/313 - 3/8"</b>	<b>F/313 - 3/8"</b>	<b>F/313 - 1/2"</b>	<b>F/313 - 1/2"</b>
Dimension Length	<i>mm / inches</i>	490 (19.3)	490 (19.3)	490 (19.3)	800 (31.5)	800 (31.5)
Dimension Height ø	<i>mm / inches</i>	70 (2.8)	70 (2.8)	70 (2.8)	70 (2.8)	70 (2.8)
Width	<i>mm / inches</i>	330 (13.0)	330 (13.0)	330 (13.0)	365 (14.4)	365 (14.4)
Weight	<i>Kg / Lbs.</i>	7,0 (15.6)	7,0 (15.6)	7,0 (15.6)	8,6 (19.1)	8,6 (19.1)
Balancer recommended	<i>Code</i>	TPB 2	TPB 2	TPB 2	TPB 2/A	TPB 2/A



## **Standard supply**

- > Carrying case
- > Macrol pneumatic rolling machine
- > Instruction manual
- > F/313 quick release adapter
- > Lubricator
- > Air inlet flexible tube: 23x13 mm L=6m
- > Coiled tube for air drain: L=2.5m
- > Service wrenches set
- > Set of blades for motor

### **Lightweight and convenient**

The Macrol tube rolling system is easily transportable in its convenient carrying case



# Masterol

*Right angle torque control pneumatic rolling machines suitable for boiler tubes up to 101,6 mm ( 4" )*

The Masterol right angle torque control pneumatic rolling machines are particular suitable to expand tubes in boilers. The 360° manoeuvrability enables to use them in hardly reachable areas. The torque selection is made easier thanks to a graduated adjustment ring nut.

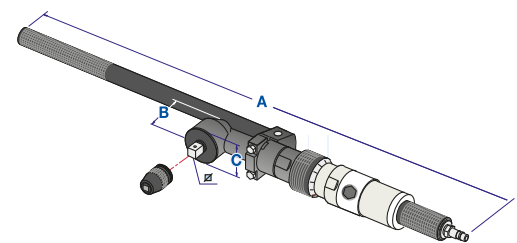
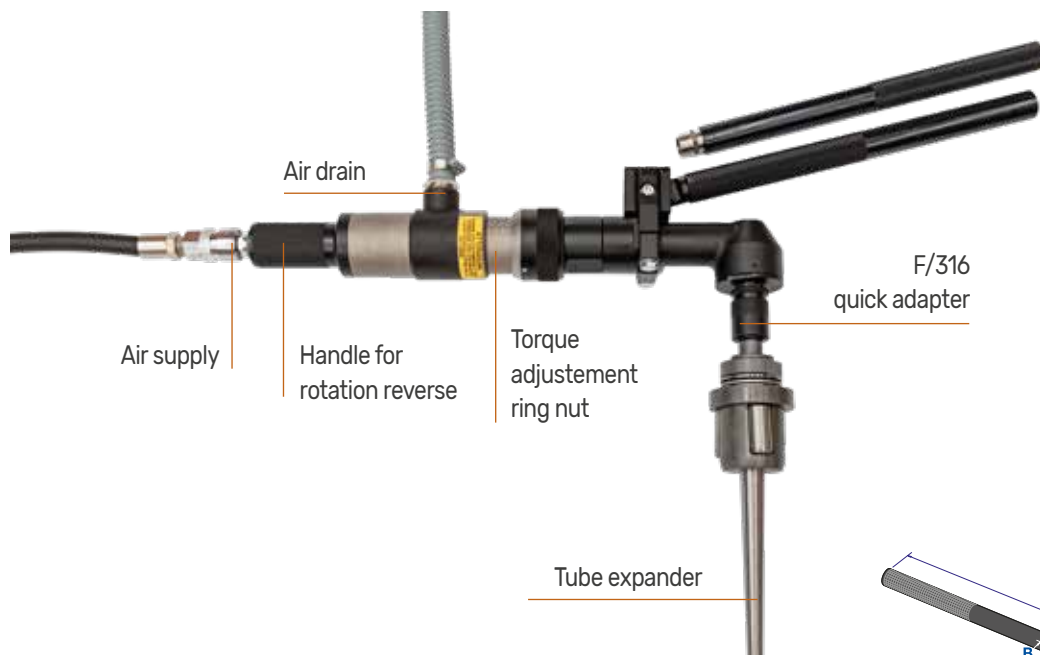
*Suitable for difficult access areas*



## **Focus**

- *In aluminium and steel*
- *Light and heavy-duty*
- *Compact and handy*
- *Built-in adjustable torque control  
( with automatic stop at the set torque )*
- *Uniform tooling guaranteed*
- *Repeatability with +/-3% tolerance*
- *Reversible*
- *Torque control independent from air pressure*





## Masterol models

### Model

Rotation speed	<i>Rpm</i>	
Minimum torque	<i>Nm - Ft Lbs.</i>	
Maximum torque	<i>Nm - Ft Lbs.</i>	
Inlet pressure	<i>Bar - Psi</i>	
Air consumption	<i>l/min - c.f.m.</i>	
Square drive	<i>mm / inches</i>	
Air feeding threaded attachment		
Air drain threaded attachment		
<b>Tube max ø outside - Ferrous</b>		

### Masterol 180

Rotation speed	180
Minimum torque	50,0 ( 37.0 )
Maximum torque	220,0 ( 162.3 )
Inlet pressure	6,3 / 92
Air consumption	2000 (70.6)
Square drive	18 ( 0,70 )
Air feeding threaded attachment	1/2" X 14
Air drain threaded attachment	1" X 11
<b>Tube max ø outside - Ferrous</b>	<b>57,1 mm ( 2.1/4" )</b>

### Masterol 90

Rotation speed	90
Minimum torque	100,0 ( 74.0 )
Maximum torque	440,0 ( 325.6 )
Inlet pressure	6,3 / 92
Air consumption	2000 (70.6)
Square drive	18 ( 0,70 )
Air feeding threaded attachment	1/2" X 14
Air drain threaded attachment	1" X 11
<b>Tube max ø outside - Ferrous</b>	<b>101,6 mm ( 4" )</b>

Adapter	<i>Code</i>	
Dimension Length	<i>mm / inches</i>	
Dimension Height ø	<i>mm / inches</i>	
Width	<i>mm / inches</i>	
Weight	<i>Kg / Lbs.</i>	
Balancer recommended	<i>Code</i>	

### F/316- 3/4"

Dimension Length	570 ( 22.5 )
Dimension Height ø	76 ( 3.0 )
Width	96 ( 3.8 )
Weight	9,5 ( 21.1 )
Balancer recommended	TPB 2/A

### F/316- 3/4"

Dimension Length	570 ( 22.5 )
Dimension Height ø	76 ( 3.0 )
Width	96 ( 3.8 )
Weight	9,5 ( 21.1 )
Balancer recommended	TPB 2/A

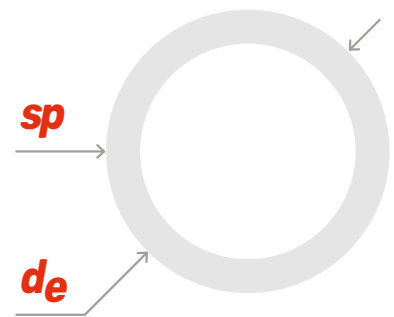
## Standard supply



- > Carrying case
- > Masterrol pneumatic rolling machine
- > Instruction manual
- > F/316 quick release adapter
- > Lubricator
- > Air inlet flexible tube: 23x13 mm L=6m
- > Coiled tube for air drain: L=2.5m
- > Service wrenches set
- > Set of blades for motor

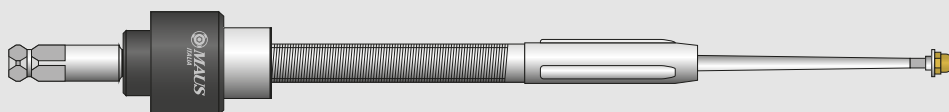


# BWG Table



## Tube dimensions and features

$d_e$	10 B.W.G	11 B.W.G	12 B.W.G	13 B.W.G	14 B.W.G	15 B.W.G	16 B.W.G	17 B.W.G	18 B.W.G	19 B.W.G	20 B.W.G	21 B.W.G	22 B.W.G
<i>inches mm</i> <b>sp</b> →	<i>inches mm</i> 0.134 3.40	<i>inches mm</i> 0.120 3.05	<i>inches mm</i> 0.109 2.77	<i>inches mm</i> 0.095 2.41	<i>inches mm</i> 0.083 2.11	<i>inches mm</i> 0.072 1.83	<i>inches mm</i> 0.065 1.65	<i>inches mm</i> 0.058 1.47	<i>inches mm</i> 0.049 1.24	<i>inches mm</i> 0.042 1.07	<i>inches mm</i> 0.035 0.89	<i>inches mm</i> 0.032 0.81	<i>inches mm</i> 0.028 0.71
1/4" (6,3)	-	-	-	-	-	-	-	-	0,152 - 3,8	0,166 - 4,1	0,180 - 4,5	0,186 - 4,7	0,194 - 4,9
3/8" (9,5)	-	-	-	-	0,209 - 5,3	0,231 - 5,8	0,245 - 6,2	0,259 - 6,5	0,277 - 7,0	0,291 - 7,3	0,305 - 7,7	0,311 - 7,9	0,319 - 8,1
1/2" (12,7)	-	-	-	0,310 - 7,9	0,334 - 8,5	0,356 - 9,0	0,370 - 9,4	0,384 - 9,7	0,402 - 10,2	0,416 - 10,5	0,430 - 10,9	0,436 - 11,1	0,444 - 11,3
5/8" (15,9)	-	-	0,407 - 10,3	0,435 - 11,1	0,459 - 11,7	0,481 - 12,2	0,495 - 12,6	0,509 - 12,9	0,527 - 13,4	0,541 - 13,7	0,555 - 14,1	0,561 - 14,3	0,569 - 14,5
3/4" (19,0)	0,482 - 12,2	0,510 - 12,9	0,532 - 13,4	0,560 - 14,2	0,584 - 14,8	0,606 - 15,3	0,620 - 15,7	0,634 - 16,0	0,652 - 16,5	0,666 - 16,8	0,680 - 17,2	0,686 - 17,4	0,694 - 17,6
7/8" (22,2)	0,607 - 15,4	0,635 - 16,1	0,657 - 16,6	0,685 - 17,4	0,709 - 18,0	0,731 - 18,5	0,745 - 18,9	0,759 - 19,2	0,777 - 19,7	0,791 - 20,0	0,805 - 20,4	0,811 - 20,6	0,819 - 20,8
1" (25,4)	0,732 - 18,6	0,760 - 19,3	0,782 - 19,8	0,810 - 20,6	0,834 - 21,2	0,856 - 21,7	0,870 - 22,1	0,884 - 22,4	0,902 - 22,9	0,916 - 23,2	0,930 - 23,6	0,936 - 23,8	0,944 - 24,0
1.1/4" (31,8)	0,982 - 25,0	1,010 - 25,7	1,032 - 26,2	1,060 ± 27,0	1,084 - 27,6	1,106 - 28,1	1,120 - 28,5	1,134 - 28,8	1,152 - 29,3	1,166 - 29,6	1,180 - 30,0	1,186 - 30,2	1,194 - 30,4
1.1/2" (38,1)	1,232 - 31,3	1,260 - 32,0	1,282 - 32,5	1,310 - 33,3	1,334 - 33,9	1,356 - 34,4	1,370 - 34,8	1,384 - 35,1	1,402 ± 35,6	1,416 ± 35,9	1,430 ± 36,3	1,436 - 36,5	1,444 - 36,7
1.3/4" (44,4)	1,482 ± 37,6	1,510 ± 38,6	1,532 ± 38,8	1,560 - 39,6	1,584 ± 40,2	1,606 ± 40,7	1,620 ± 41,1	1,634 ± 41,4	1,652 - 41,9	1,666 - 42,2	1,680 - 42,6	1,686 - 42,8	1,694 - 43,0
2" (50,8)	1,732 - 44,0	1,760 - 44,7	1,782 - 45,2	1,810 - 46,0	1,834 - 46,6	1,856 - 47,1	1,870 - 47,5	1,884 - 47,8	1,902 - 48,3	1,916 - 48,6	1,930 - 49,0	1,936 - 49,2	1,944 - 49,4
2.1/4" (57,1)	1,982 - 50,3	2,010 - 51,0	2,032 - 51,5	2,060 - 52,3	2,084 - 52,9	2,106 - 53,4	2,120 - 53,8	2,134 - 54,1	2,152 - 54,6	0,166 - 4,1	-	-	-
2.1/2" (63,5)	2,232 - 56,7	2,260 - 57,4	2,282 - 57,9	2,310 - 58,7	2,334 - 59,3	2,356 - 59,8	2,370 - 60,2	2,384 - 60,5	2,402 - 61,0	0,291 - 7,3	-	-	-
2.3/4" (69,8)	2,482 - 63,0	2,510 - 63,7	2,532 - 64,2	2,560 - 65,0	2,584 - 65,6	2,606 - 66,1	2,620 - 66,5	2,634 - 66,8	2,652 - 67,3	0,416 - 10,5	-	-	-
3" (76,2)	2,732 - 69,4	2,760 - 70,1	2,782 - 70,6	2,810 - 71,4	2,834 - 72,0	2,856 - 72,5	2,870 - 72,9	2,884 - 73,2	2,902 - 73,7	0,541 - 13,7	-	-	-
3.1/4" (82,6)	2,982 - 75,8	3,010 - 76,5	3,032 - 77,0	3,060 - 77,8	3,084 - 78,4	3,106 - 78,9	3,120 - 79,3	3,134 - 79,6	3,152 - 80,1	0,666 - 16,8	-	-	-
3.1/2" (88,9)	3,232 - 82,1	3,260 - 82,8	3,282 - 83,3	3,310 - 84,1	3,334 - 84,7	3,356 - 85,2	3,370 - 85,6	3,384 - 85,9	3,402 - 86,4	0,791 - 20,0	-	-	-
3.3/4" (95,2)	3,482 - 88,4	3,510 - 89,1	3,532 - 89,6	3,560 - 90,4	3,584 - 91,0	3,606 - 91,5	3,620 - 91,9	3,634 - 92,2	3,652 - 92,7	-	-	-	-
4" (101,6)	3,732 - 94,8	3,760 - 95,5	3,782 - 96,0	3,810 - 96,8	3,834 - 97,4	3,856 - 97,9	3,870 - 98,3	3,884 - 98,6	3,902 - 99,1	-	-	-	-
4.1/4" (108,0)	3,982 - 101,2	4,010 - 101,9	4,032 - 102,4	4,060 - 103,2	4,084 - 103,8	4,106 - 104,3	4,120 - 104,7	4,134 - 105,0	4,152 - 105,5	-	-	-	-
4.1/2" (114,3)	4,232 - 107,5	4,260 - 108,2	4,282 - 108,7	4,310 - 109,5	4,334 - 110,1	4,356 - 110,6	4,370 - 111,0	4,384 - 111,3	4,402 - 111,8	-	-	-	-

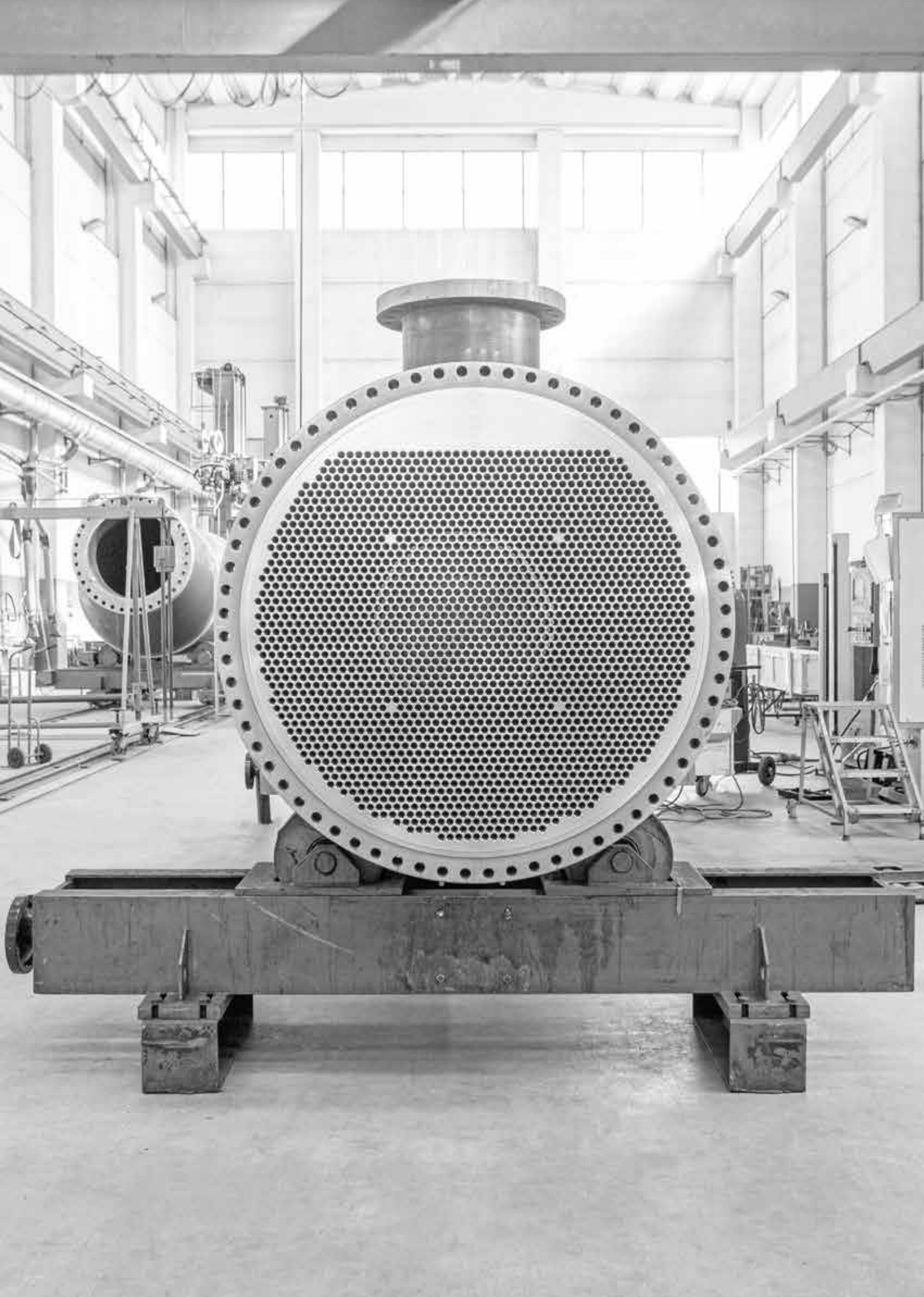


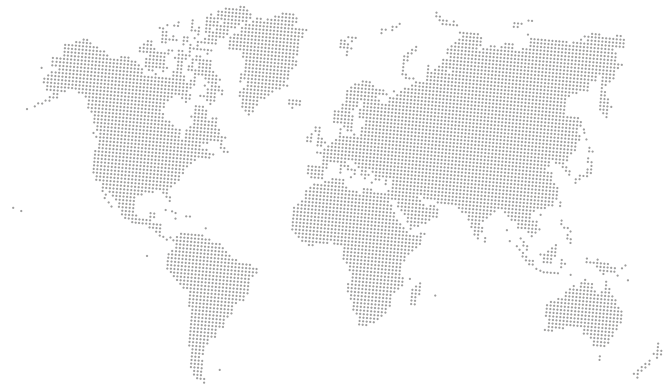
Use tube expanders manufactured by Maus Italia.

Download our general catalogue for tube expanders and choose the right one for you

[mausitalia.it/eng/catalogs](https://mausitalia.it/eng/catalogs)







[mausitalia.it](https://mausitalia.it)