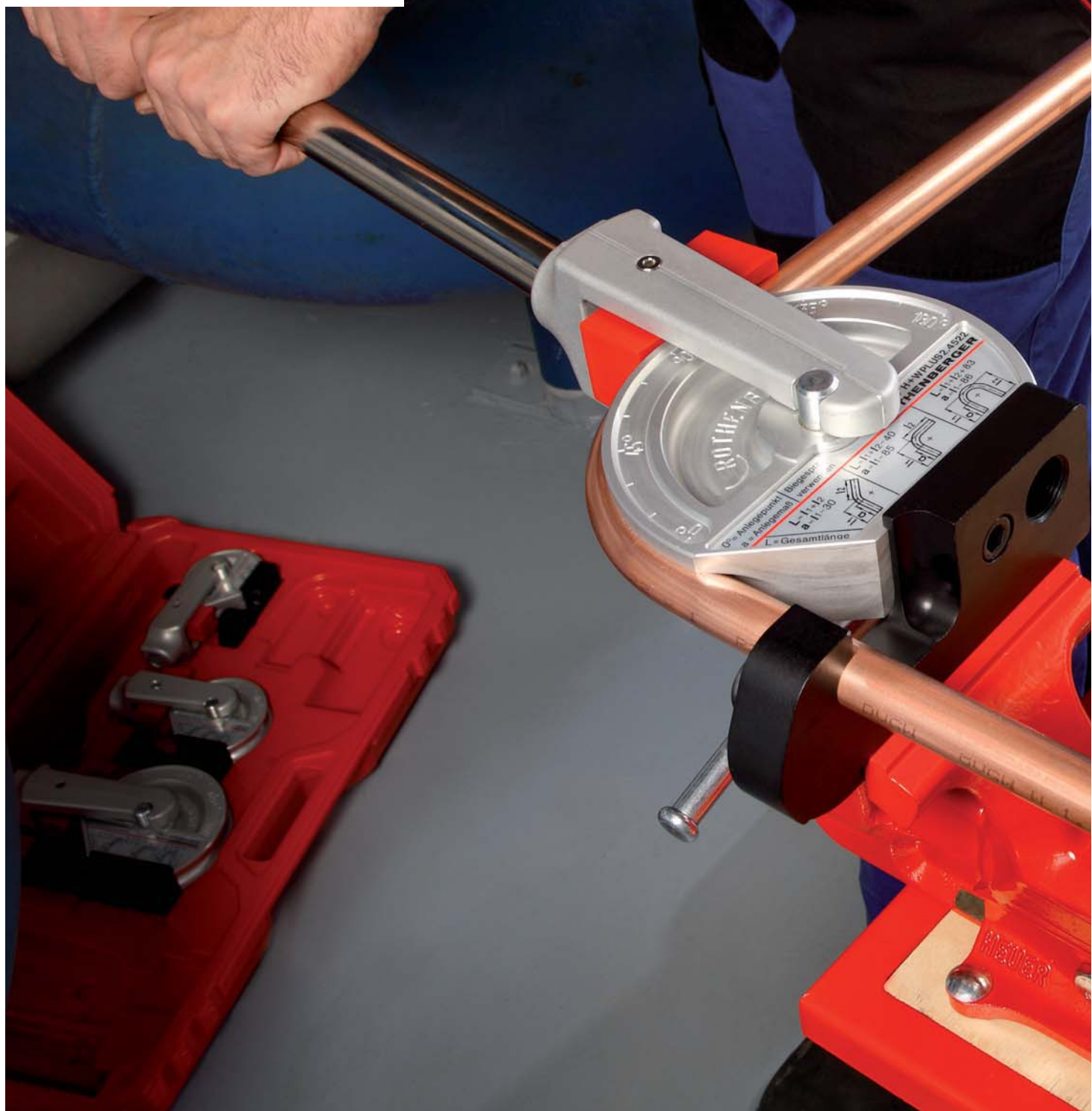


**ONE**  
**of**  
**6.000**

**Premium tools for  
professionals!**

3





# Bending

<b>System Overview Bending</b>	56 - 57
<b>Manual</b>	
One Handed Bender	58 - 60
Bending Pliers	61 - 62
Tube Bending Springs CU	63
Internal Bending Springs MSR	63
Vice Bender	64 - 65
<b>Manual Hydraulic</b>	
Bender Manual Hydraulic	66 - 67
<b>Electric Hydraulic</b>	
Bender Electric Hydraulic	68 - 69
<b>Electric</b>	
Bender Electric	70 - 72
<b>Bending Tables</b>	



Do you want to  
know more about  
our products?  
Please scan the  
QR-Code!

# Bending

## System overview

3

### Push bending

**TUBE BENDER**



**TUBE BENDER Maxi**



**TUBE BENDER Maxi MSR**



<b>Method:</b>	Manual 90°	Manual 90°	Manual 90°
<b>Working Area:</b> Copper	Ø 5-12 mm (1/4-1/2"), •⌀ 1 mm, soft	Ø 12-22 mm (3/8-7/8") •⌀ 1 mm, soft	–
<b>Working Area:</b> Aluminium	Ø 5-12 mm (1/4-1/2"), •⌀ 1 mm, soft	Ø 12-22 mm (3/8-7/8") •⌀ 1 mm, soft	–
<b>Working Area:</b> Precision steel	Ø 5-12 mm (1/4-1/2"), •⌀ 1 mm, soft	Ø 12-22 mm (3/8-7/8") •⌀ 1 mm, soft	–
<b>Working Area:</b> Stainless steel	–	Ø 12-18 mm (3/8-5/8") •⌀ 1 mm, soft	–
<b>Working Area:</b> MSR	–	Ø 14-26 mm (5/8-7/8") •⌀ 1 mm	Ø 14-32 mm •⌀ 2 mm

Page

58

59

60

### Pull bending

**Standard Two Handed Bender 90°**



**MULTIBEND**



**MINIBEND**



**Standard Bender 180°**



<b>Method:</b>	Manual 90°	Manual 180°	Manual 180°	Manual 180°
<b>Working Area:</b> Copper	Ø 12-22 mm •⌀ 1 mm, soft, semi-hard	Ø 10-18 mm (1/4 - 5/8") •⌀ 1 mm, soft	Ø 6-10 mm (1/4 - 3/8") •⌀ 1 mm, soft	Ø 6-18 mm (1/4 - 5/8") •⌀ 1 mm, soft
<b>Working Area:</b> Aluminium	–	Ø 10-18 mm (1/4-5/8") •⌀ 1 mm, soft	Ø 6-10 mm (1/4 - 3/8") •⌀ 1 mm, soft	Ø 6-18 mm (1/4 - 5/8") •⌀ 1 mm, soft
<b>Working Area:</b> Precision steel	–	Ø 10-18 mm (1/4-5/8") •⌀ 1 mm, soft	Ø 6-10 mm (1/4 - 3/8") •⌀ 1 mm, soft	Ø 6-18 mm (1/4 - 5/8") •⌀ 1 mm, soft
<b>Working Area:</b> Stainless steel	–	–	–	–
<b>Working Area:</b> MSR	–	–	–	–

Page

61

61

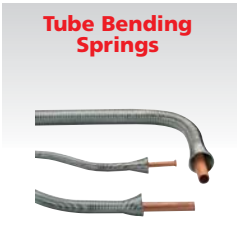



62

62

### Push bending

	ROBULL Typ E	ROBULL MSR Typ E	ROBULL Typ ME	ROBULL MSR Typ ME
				
<b>Method:</b>	Manual hydraulic 90°	Manual hydraulic 90°	Hydraulic 90°	Hydraulic 90°
<b>Working Area:</b> Copper	–	–	–	–
<b>Working Area:</b> Aluminium	–	–	–	–
<b>Working Area:</b> Precision steel	Ø 3/8"-2"	–	Ø 3/8"-2"	–
<b>Working Area:</b> Stainless steel	–	–	–	–
<b>Working Area:</b> MSR	–	Ø 40-63 mm	–	Ø 40-63 mm
<b>Page</b>	66, 67	66, 67	68, 69	68, 69

### Pull bending

	Tube Bending Springs	Internal Bending Springs MSR	ROBEND® H+W PLUS	ROBEND® 4000
				
<b>Method:</b>	Manual 180°	Manual 180°	Manual 180°	Manual 180°
<b>Working Area:</b> Copper	Ø 8-16 mm (1/4-5/8")	–	Ø 8-22 mm (5/16 - 7/8") •⊖ 1 mm, soft, semi-hard, hard	Ø 12-35 mm (1/2 - 1.3/8") •⊖ 2,0 mm, soft, semi-hard, hard
<b>Working Area:</b> Aluminium	–	–	Ø 8-22 mm (5/16 - 7/8") •⊖ 1 mm, soft	Ø 12-35 mm (1/2 - 1.3/8") •⊖ 2,0 mm, soft, semi-hard, hard
<b>Working Area:</b> Precision steel	–	–	Ø 10-22 mm (3/8 - 5/8") •⊖ 1 mm, soft	Ø 12-35 mm (1/2 - 1.3/8") •⊖ 2,0 mm, soft
<b>Working Area:</b> Stainless steel	–	–	Ø 8-22 mm (5/16 - 7/8") •⊖ 1 mm, soft	Ø 12-35 mm (1/2 - 1.3/8") •⊖ 2,0 mm
<b>Working Area:</b> MSR	–	Ø 6-20 mm	–	Ø 12-35 mm (1/2 - 1.3/8") •⊖ 2,0 mm
<b>Page</b>	63	63	64, 65	70 -72

# Bending

## Manual

### TUBE BENDER

For accurate one handed bending up to 90°,  
Ø 5 - 12 mm (1/4 - 1/2")



#### Product Profile

##### APPLICATION AREA

Suitable for pipes made of:  
**Copper (soft) and aluminium:** Ø 5 - 12 mm, 1/4 - 1/2"  
**Precision steel (soft):** Ø 5 - 12 mm, 1/4 - 1/2"

##### KEY FEATURES

- Accurate bending even in restricted spaces
- Production of U-bends, counter bends, swan-neck bends and connecting bends possible at all levels
- Quick and simple change of the bending formers
- Fast release and removal of the bending formers
- One handed operation through the ergonomic design
- Fast and accurate bending

**Ratchet arm with bayonet coupling**

Quick change of the bending formers

**Release lever**

Quick release and reset of the bending formers

**Ergonomic design**

One handed operation

**Compact design**

Accurate bending even in restricted spaces

**Mechanical ratchet feed**

Quick and accurate bending

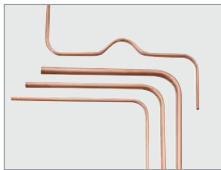
**Open bending frame**

Production of U-bends, counter bends, swan-neck bends and connecting bends possible at all levels



Fig. TUBE BENDER Set

*Various bends possible*



**TUBE BENDER**  
(No. 24130)



*Bending formers (No. 24048)*



*Back plates (No. 24049)*



*Bending segments*



TUBE BENDER sets includes: basic tool complete with bending segments, back plates, in plastic carrying case (No. 24025)

Model	kg		No.
Basic set (basic tool, back plates plastic case)	1.00	1	<b>24010</b>
TB Set 5 - 6 - 8 - 10 mm	2.84	1	<b>24131</b>
TB Set 6 - 8 - 10 - 12 mm	3.03	1	<b>24132</b>
TB Set 8 - 10 - 12 mm	2.82	1	<b>24133</b>
TB Set 1/4 - 5/16 - 3/8 - 1/2"	2.92	1	<b>24134</b>
Plastic carrying case	0.60	1	<b>24025</b>
Basic tool without bending segments	0.36	1	<b>766004016</b>
Support segment	0.05	1	<b>24048</b>
Back plate without support segment	0.14	1	<b>24049</b>

### TUBE BENDER Bending

Model	Size	g	No.
Bending segments	5 mm	190	<b>24001</b>
Bending segments	6 mm	210	<b>R2403200</b>
Bending segments	8 mm	250	<b>R2403300</b>
Bending segments	9 mm	360	<b>24004</b>
Bending segments	10 mm	390	<b>24005</b>
Bending segments	12 mm	390	<b>24007</b>
Bending segments	1/4"	210	<b>24002</b>
Bending segments	5/16"	250	<b>24003</b>
Bending segments	3/8"	270	<b>24006</b>
Bending segments	1/2"	380	<b>24008</b>

Previous bending segments and back plates including support segments from earlier models are compatible!

## TUBE BENDER MAXI

For accurate one handed bending up to 90°,  
Ø 12 - 26 mm (3/8 - 7/8")



### Product Profile

#### APPLICATION AREA

For the bending of pipes made of soft copper and aluminium, coated copper and precision steel pipes, as well as multi-layered composite pipes (only in MSR-Sets) and stainless steel (soft)

Suitable for pipe made of:

<b>Copper (soft) and aluminium:</b>	Ø 12 - 22 mm, 3/8 - 7/8"
<b>Copper (coated):</b>	Ø 12 - 18 mm, 3/8 - 5/8"
<b>Precision steel (soft):</b>	Ø 12 - 22 mm, 3/8 - 7/8"
<b>Stainless steel (thin-walled, soft):</b>	Ø 12 - 18 mm, 3/8 - 5/8"
<b>MSR (Multilayer):</b>	Ø 14 - 26 mm, 5/8 - 7/8"

#### KEY FEATURES

- Eliminates the cost for bending formers, storage and purchase
- Quick release and reset of the bending segments
- Bending segments are easily exchanged
- Optimum bending results

#### Safe transport

Handle will not open during transport

#### Optimum bending results

Plastic bending segments and support segments with increased conductivity

#### Mechanical ratchet feed

Quick precise bending

#### Release lever

Quick release and reset of the bending former

#### Adjustable bending frame

Production of U-bends, counter bends, swan-neck bends and connecting bends possible at all levels



Fig. TUBE BENDER MAXI Set

TUBE BENDER MAXI Sets include: basic unit (No. 766100016), back plate support with segments (Cu Set No. 23001) (MSR Set No. 23001), (MSR-Set No. 24022), plastic carrying case (No. 23097)

Model	kg		No.
TB MAXI set 12 - 15 - 18 - 22 mm	3.5	1	<b>023020X</b>
TB MAXI set 12 - 14 - 16 - 18 - 22 mm	3.5	1	<b>023021X</b>
TB MAXI set 3/8 - 1/2 - 5/8 - 3/4 - 7/8"	3.3	1	<b>023022X</b>
TB MAXI set MSR 14 - 16 - 18 - 20 - 25 mm	3.3	1	<b>023090X</b>
TB MAXI set MSR 14 - 16 - 18 - 20 - 26 mm	3.3	1	<b>023091X</b>
Basic tool without back plate support	1.0	1	<b>766100016</b>
Back plate support without support segment	0.5	1	<b>R2301500</b>
Support segments R/L 10 - 25 mm	0.5	2	<b>23008</b>
Support segments R/L 12 - 22 mm	0.1	2	<b>23047</b>
Plastic carrying case	1.1	1	<b>995866100</b>

Previous bending segments and support segments from earlier models are compatible!

## TUBE BENDER MAXI Bending segments

Model	Size	max. mm	g	No.
Bending segments	12 mm	1.0	80	<b>23002</b>
Bending segments	14 mm	1.0	80	<b>23003</b>
Bending segments	15 mm	1.0	90	<b>23004</b>
Bending segments	16 mm	1.0	100	<b>23005</b>
Bending segments	18 mm	1.0	140	<b>23006</b>
Bending segments	22 mm	1.0	170	<b>23007</b>
Bending segments	3/8"	1.0	70	<b>23010</b>
Bending segments	1/2"	1.0	80	<b>23011</b>
Bending segments	5/8"	1.0	100	<b>23012</b>
Bending segments	3/4"	1.0	120	<b>23013</b>
Bending segments	7/8"	1.0	170	<b>23014</b>

TUBE BENDER MAXI MSR Set

One-handed bending tool for precision bending of multi-layered composite pipes (MSR), Ø 14 - 32 mm



3

Product Profile

APPLICATION AREA

Universal bending tool. Increases safety by reducing the number of joints. Eliminates the costs for bending formers, storage and purchase

KEY FEATURES

- Ideal in confined spaces
- Quick release and resetting of bending formers
- Bending formers easily changed
- Optimal bending results
- Reduction of pressure-loss in the unit due to the low cross-sectional constriction as compared to prefabricated form pieces

Adjustable bending frame

Production of U-bends, counter bends, swan-neck bends and connecting bends possible at all levels

Ratchet arm with bayonet coupling

Bending formers easily changed

Plastic bending formers and support segments with increased conductivity

Optimum bending results

Mechanical ratchet feed

Quick operation

Smooth running feed lever

Ideal for use in confined spaces and for one-handed operation

Release lever

Quick release and resetting of bending formers

Body made of resistant die-cast steel

Sturdy and long-lasting

Fig. TUBE BENDER MAXI MSR

Universal field operation



Sets (No. 23065 / 23095) include: TUBE BENDER MAXI MSR (No. 23076), support brackets (No. 23080), bending formers in plastic carrying case (No. 995867300)

Model	Description	No.
TUBE BENDER MAXI MSR Set	14 - 16 - 18 - 20 - 25 - 32 mm	23065
TUBE BENDER MAXI MSR Set	14 - 16 - 18 - 20 - 26 - 32 mm	23095

ACCESSORIES



Description		No.	Description		No.
Bending segment 14 x 2.0 mm	80	23003	Bending segment 26 x 2.0 mm	200	23053
Bending segment 16 x 2.0 mm	100	23005	Bending segment 32 x 2.0 mm	380	23051
Bending segment 18 x 2.0 mm	140	23050	Basic tool 32 without support brackets	1280	23076
Bending segment 20 x 2.0 mm	150	23052	Support brackets with support segments R/L 23076	790	23080
Bending segment 25 x 2.0 mm	180	23009	Support segments	200	23083

### Standard Two Handed Bender 90°

For accurate bending up to 90° for pipes made of semi-hard copper according to DIN EN 1057  
Ø 12 x 1.0 - 22 x 1.0 mm

#### KEY FEATURES

- Universal bender for sanitary and heating installations refrigeration and air-conditioning systems
- Long handles allow for better leverage in the bending of semihard copper pipes
- Bending pliers with sliding carriage for millimetre-exact bending
- Accurate adjustments between the bending radius and handle length reduces effort required

Size	mm	R Radius mm	L mm	kg	No.
12 mm	1.0	43	460	1.4	462212
15 mm	1.0	60	600	2.3	462215
18 mm	1.0	74	860	3.2	462218
22 mm	1.0	87	900	4.3	462222



3

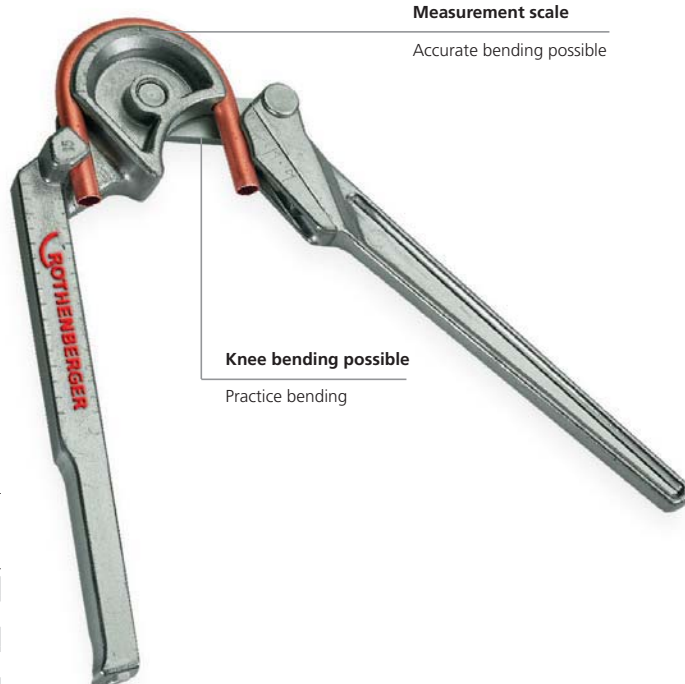
### MULTIBEND Standard Bender 180°

For accurate bending up to 180° of pipes made of soft copper, aluminium and precision steel Ø 10 - 18 mm  
(1/4 - 5/8")

#### KEY FEATURES

- Bending radius display of 0 - 180° for accurate bending
- Clamp mechanism for better pipe hold allows the bending of shorter pipe pieces
- Light construction allows for fatigue-free hand operation

Size	max. mm	R Radius mm	kg	No.
10 mm	1.0	30	0.37	25401
12 mm	1.0	36	0.64	25402
14 mm	1.0	42	0.98	25403
15 mm	1.0	48	1.45	25404
16 mm	1.0	48	1.46	25405
18 mm	1.0	54	2.00	25406



Measurement scale

Accurate bending possible

Knee bending possible

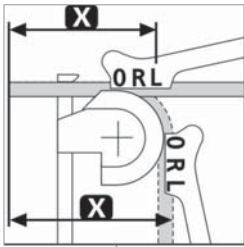
Practice bending

# Bending

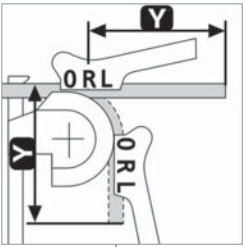
## Manual

3

Method L



Method R



Accurate bending

Minimum size chart and bending radius display on measurement scale

### MINIBEND

For accurate two handed bending up to 180° of pipes made of soft copper, brass, aluminium and precision steel Ø 6 - 10 mm, (1/4 - 3/8")

#### KEY FEATURES

- Suitable for use in refrigeration and air-conditioning, oil supply, automotive, hydraulic and pneumatic industries

##### Method L- Determination of the length of L - Left:

O: Reference to bending scale (0-0) and/or start/end of the bending radius  
L: Used to determine/indicate the final dimension desired from the left (pipe beginning) up to top edge of the pipe (Measure X)

##### Method R: Determination of the length of R - Right:

O: Reference to bending scale (0-0) and/or start/end of the bending radius  
R: Used to determine/indicate the final dimension desired from the right (pipe beginning) up to top edge of the pipe (Measure Y)

Model	Size	g	No.
MINIBEND	6 - 8 - 10 mm	420	25150
MINIBEND	1/4 - 5/16 - 3/8"	420	25151



Accurate bending

Minimum size chart and bending radius display on measurement scale

### Standard Bender 180°

For accurate bending up to 180° of pipes made of soft copper, aluminium and precision steel Ø 6 - 18 mm (1/4 - 5/8")

#### KEY FEATURES

- Bending radius display of 0 - 180° for accurate bending
- Clamp mechanism for better pipe hold allows the bending of shorter pipe pieces
- Light construction allows for fatigue-free hand operation

Size	R Radius mm	L mm	g	No.
6 mm	18	305	550	25130
10 mm	30	390	970	25132
12 mm	36	390	980	25133
14 mm	47	450	1,580	25134
15 mm	54	450	1,830	25135
16 mm	58	450	1,830	25136
18 mm	66	480	2,110	25137
1/4"	18	305	560	25140
5/16" / 12 mm	24	305	640	25131
1/2"	30	390	1,680	25142
5/8"	58	450	1,830	25136

#### ACCESSORIES



Description	No.
Internal / External deburrer	27 1500000236
Bending spray, 150 ml	61 25120

### Copper Tube Bending Springs

For free-handed bending of soft copper pipes  
Ø 8 - 16 mm (1/4 - 5/8")

#### KEY FEATURES

- Coiled cone for ideal handling even with longer pipes
- Tough and long lasting with the cadmium-plated spring steel
- Optimal spring form prevents buckling in bending radius area

Size	g	No.
8 mm	70	25181
10 mm	80	25182
12 mm	160	25183
15 mm	220	25185
16 mm	220	25186



Size	g	No.
5/16"	70	25181
1/2"	130	25190
5/8"	220	25186

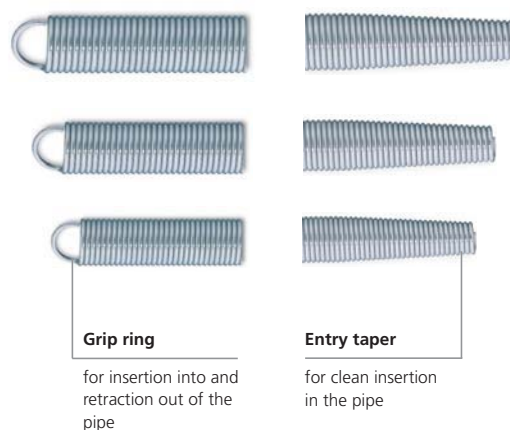
### MSR Internal Bending Springs

For hand bending of aluminium multi-layer pipes (MSR)  
Ø 6 - 20 mm

#### KEY FEATURES

- Ideal operation even with longer pipes:  
Grip ring for retraction out of the pipe
- Entry taper for clean insertion in the pipe
- Sturdy and long lasting: NIROSTA spring steel
- Pipe will not buckle due to optimal spring form

Model	Bending spring	Pipe	g	No.
MSR-internal-bending spring	6.0 mm	12.0 mm	90	25441
MSR-internal-bending spring	8.0 mm	14.0 mm	120	25442
MSR-internal-bending spring	10.0 mm	16.0 mm	150	25443
MSR-internal-bending spring	12.0 mm	18.0 mm	180	25444
MSR-internal-bending spring	13.5 mm	20.0 mm	220	25445
MSR-internal-bending spring	19.0 mm	25/26 mm	380	25446



### Bending Spray

For bending copper and steel pipes

#### KEY FEATURES

- Combination of slide and bending oil
- Because of the special viscosity even copper and steel pipes are able to be bent easily

Model	Contents	No.
Bending spray, 150 ml	150 ml	25120



Fig. Bending spray

#### ACCESSORIES



Description	No.
Internal / External deburrer	27 1500000236

# Bending Manual

## ROBEND® H+W PLUS

For accurate cold bending up to 180°,  
Ø 8 - 22 mm (5/16 - 7/8")

Made in Germany



### Product Profile

#### APPLICATION AREA

For accurate bending up to 180° on pipes made of:

<b>Copper (soft, semi-hard, hard thin-walled):</b>	Ø 8 - 22 mm,	5/16 - 7/8"
<b>Copper (coated, also thin-walled):</b>	Ø 10 - 18 mm,	3/8 - 5/8"
<b>Aluminium and brass:</b>	Ø 8 - 22 mm,	5/16 - 7/8"
<b>Precision steel (also coated):</b>	Ø 10 - 22 mm,	3/8 - 5/8"
<b>Seamless stainless steel:</b>	Ø 8 - 22 mm,	5/16 - 7/8"

#### KEY FEATURES

- Exact bending to the mm on continuous pipe
- Retains shape and remains stable
- Two-hand bending possible with the additional handle up to Ø 18 mm / 5/8"
- Eliminates the costs of purchase and storage of bending formers
- Easy bending through clamping on a vice
- Exact bending with the minimum size chart and bending radius display

3

#### ROLUB-Anti-block-System

Less effort due to lower friction and optimum distribution of the bending spray

#### ROLUB-Antiblock-System!

Optimum combination of ROLUB guide shoe and the bending former

Perfect bending results without friction marks

Minimum size chart and bending radius display

Accurate bending

Bending formers with base plate

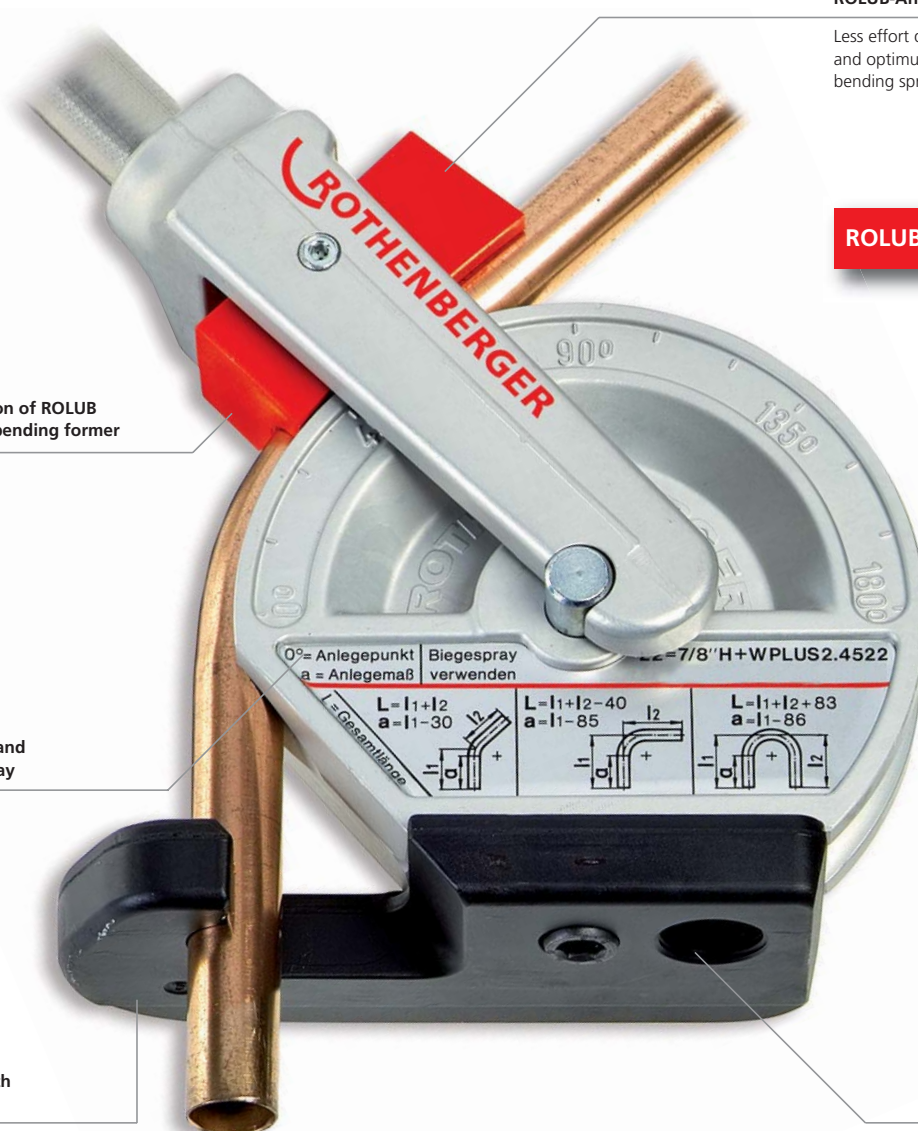
Easy bending through clamping on a vice

Made from high quality forged aluminium

Retains shape and remains stable

Thread for the attachment of the additional lever (accessories)

Free-hand bending possible



### ROBEND® H+W PLUS Bender

Universal hand bender complete with bending former, fork with ROLUB guide shoe and handle. Universal application in sanitary and heating installations, refrigeration and air-conditioning systems and industrial systems



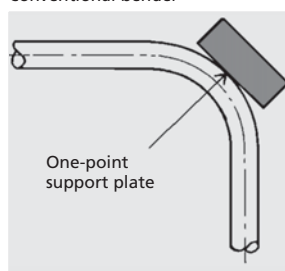
### ROBEND® H+W PLUS Bender

Size	max mm	R Radius mm	g	No.
8 mm	1.0	22	660	24508
10 mm	1.0	32	1,180	24510
12 mm	1.0	38	1,110	24512
14 mm	1.0	45	1,370	24514
15 mm	1.0	45	1,370	24515
16 mm	1.0	64	2,620	24516
18 mm	1.0	64	2,620	24518
22 mm	1.0	81	3,800	24522
5/16"	1.0	22	660	24508
3/8"	1.0	32	1,185	24551
1/2"	1.0	38	1,110	24552
5/8"	1.0	64	2,620	24516
3/4"	1.0	81	3,850	24519
7/8"	1.0	81	3,800	24522

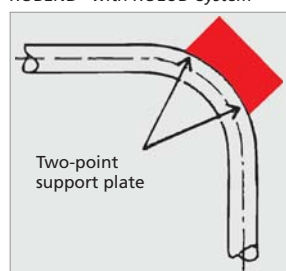
#### ACCESSORIES (additional lever for two-hand bending)

Lever (short) for bending formers Ø 8 mm / 3/8"	25075
Lever for bending formers Ø 10 - 15 mm	25076
Lever for bending formers bigger than Ø 15 mm	25078
Bending spray 150 ml	25120

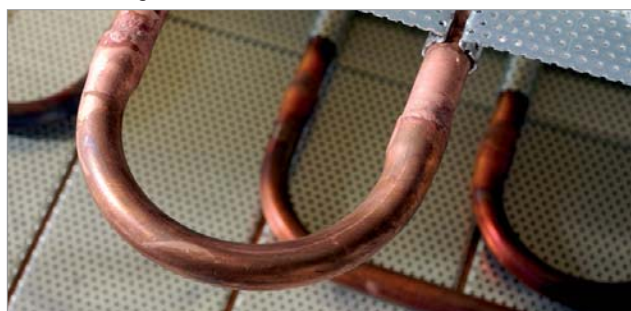
Conventional bender



ROBEND® with ROLUB-System





Accurate bending



### ROBEND® H+W PLUS Bending Sets

Sets include: Steel carrying case for a maximum of 5 bending formers, 2 levers for vice bending and bending spray (No. 25120). Bender corresponds to the respective pipe dimensions.

### ROBEND® H+W PLUS Bending-Sets

Model	Description	 mm	 kg	No.
ROBEND® H+W PLUS	12 - 15 - 18 - 22 mm	1.0	16.5	<b>24500</b>
ROBEND® H+W PLUS	10 - 12 - 14 - 16 mm	1.0	16.3	<b>24501</b>
ROBEND® H+W PLUS	12 - 14 - 16 - 18 mm	1.0	13.6	<b>24502</b>
ROBEND® H+W PLUS	15 - 18 - 22 mm	1.0	14.9	<b>24505</b>
ROBEND® H+W PLUS	1/2 - 5/8 - 3/4"	1.0	13.6	<b>24503</b>
ROBEND® H+W PLUS	1/2 - 5/8 - 7/8"	1.0	13.7	<b>24504</b>

### ROLUB Anti-Block Special Guide Shoe

Nennmaße	g	No.
8 mm	20	25308
10 mm	20	25310
12 mm	30	25312
14 mm	30	25314
15 mm	30	25315
16 mm	50	25316
18 mm	50	25318
22 mm	90	25322
5/16"	20	25308
3/8"	25	25310
1/2"	30	25313
5/8"	50	25316
3/4"	90	25319
7/8"	90	25322

### ROLUB Anti-Block Special Guide Shoe

Especially adapted to the ROBEND® H+W bender the ROLUB guide shoe with two-point lubricating chamber system

#### Elastic honeycomb construction

Up to 42% less effort due to less friction



ROLUB Special Guide Shoe made of high-quality polyamide

Perfect bending results without friction marks

Two-point lubricating chamber system

Ensures optimum distribution of lubrication

# Bending

## Manual-Hydraulic

### ROBULL Type E / ROBULL MSR Type E

For precise, manual hydraulic cold bending up to 90°



#### Product Profile

##### APPLICATION AREA

Broadly applicable, universal portable hydraulic bending system for plumbing, sanitary and heating installation on construction sites, for apparatus and boiler construction and for industrial use. Also suitable for aligning tubes.

##### ROBULL Type E:

For accurate bending up to 90° on pipes made of:

**Carbon steel suitable for welding and thread-cutting** Ø 3/8 - 2"

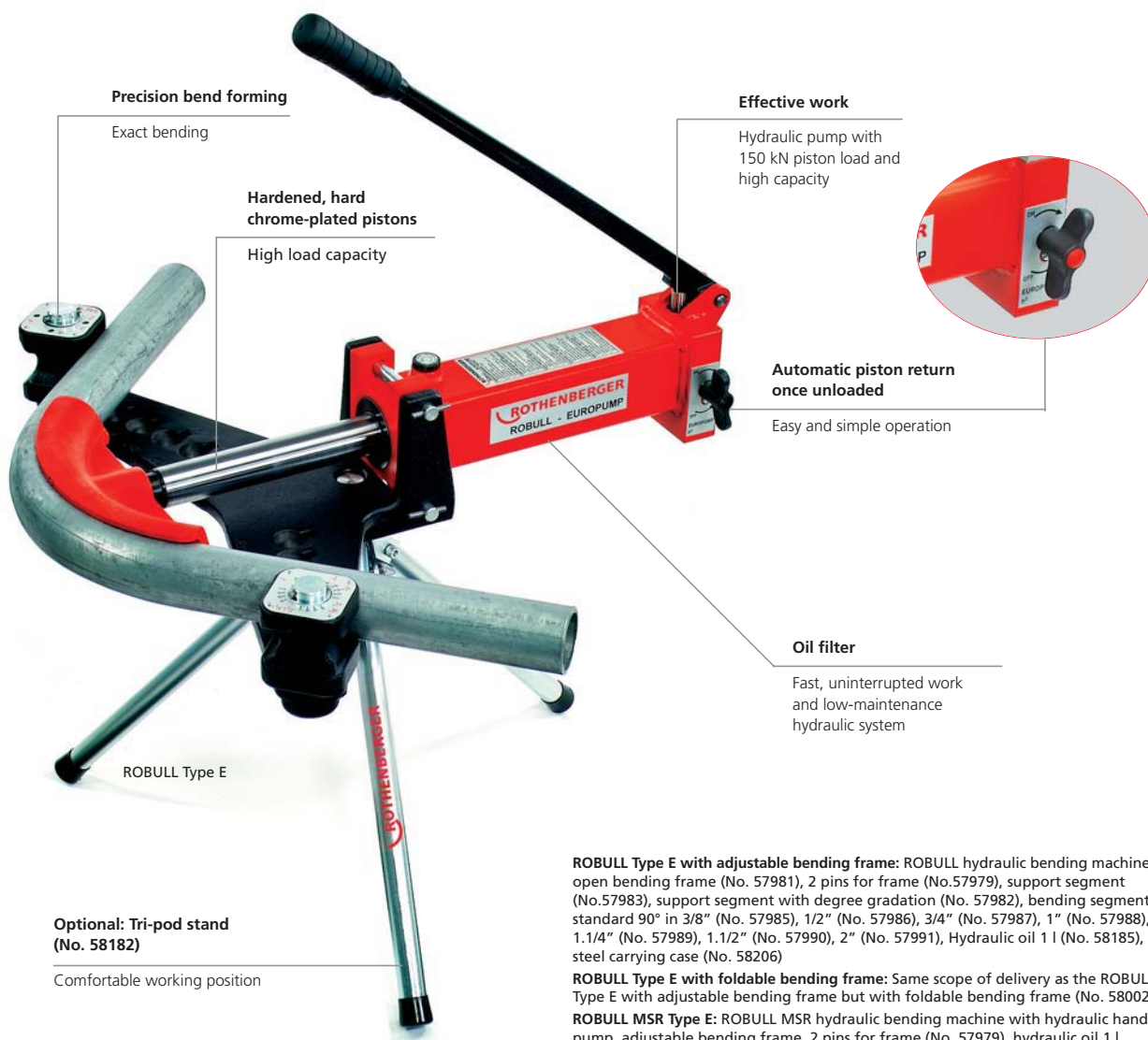
##### ROBULL MSR Type E:

For accurate bending up to 90° on pipes made of:

**Multi-layered composite pipe (MSR)** Ø 40 - 50 - 63 mm

##### KEY FEATURES

- Precise bending with the angle scale on the support brackets (not with ROBULL MSR type E)
- Reduces welded joints
- No pre-warming of pipe is required
- No bending forms needed
- Works quicker with the 150 kN piston strength
- Easy and simple operation
- Closed, low-maintenance hydraulic system with a mono-block design and with quick, automatic piston retraction
- Comfortable working position with the tripod stand (opt.)
- With foldable and adjustable bending frame



**ROBULL Type E with adjustable bending frame:** ROBULL hydraulic bending machine, open bending frame (No. 57981), 2 pins for frame (No.57979), support segment (No.57983), support segment with degree gradation (No. 57982), bending segment standard 90° in 3/8" (No. 57985), 1/2" (No. 57986), 3/4" (No. 57987), 1" (No. 57988), 1.1/4" (No. 57989), 1.1/2" (No. 57990), 2" (No. 57991), Hydraulic oil 1 l (No. 58185), steel carrying case (No. 58206)

**ROBULL Type E with foldable bending frame:** Same scope of delivery as the ROBULL Type E with adjustable bending frame but with foldable bending frame (No. 58002)

**ROBULL MSR Type E:** ROBULL MSR hydraulic bending machine with hydraulic hand-pump, adjustable bending frame, 2 pins for frame (No. 57979), hydraulic oil 1 l (No. 58185), steel carrying case (No. 58206) (bending segments and support segments not included)

Model	Description	kg		No.
ROBULL Type E	without accessories	16.8	1	<b>057950X</b>
ROBULL Type E	with adjustable bending frame and accessories (see above)	59.8	1	<b>057966X</b>
ROBULL Type E	with foldable bending frame and accessories (see above)	72.6	1	<b>057961X</b>
ROBULL MSR Type E	without bending segments and support segments (see above)	54.0	1	<b>57900</b>

### ROBULL Type E



ROBULL Type E with  
foldable bending frame

### ROBULL MSR Type E



Set 40 - 50 - 63 (No. 58020) includes:  
Bending segment 40 mm (No. 58021),  
Bending segment 50 mm (No. 58022),  
Bending segment 63 mm (No. 58023),  
Support segments 40 mm (No. 57921),  
Support segments 50 mm (No. 57922),  
Support segments 63 mm (No. 57923)

### ROBULL Type E Bending Segments

Small bending radius (red)

inch	mm	Wall thickness max. mm	r mm	kg	No.
3/8"	17.20	2.35	45	0.7	57985
1/2"	21.30	2.65	49	0.7	57986
3/4"	26.90	2.65	65	0.8	57987
1"	33.70	3.25	89	1.3	57988
1.1/4"	42.40	3.25	115	1.6	57989
1.1/2"	48.30	3.25	137	2.4	57990
2"	60.30	3.65	200	3.2	57991

### ROBULL Type E Bending Segments

Large bending radius (black)

inch	mm	Wall thickness max. mm	r mm	kg	No.
3/8"	17.20	2.35	56	0.8	58010
1/2"	21.30	2.35	85	0.9	58011
3/4"	26.90	2.65	115	1.2	58012
1"	33.70	2.65	145	2.1	58013
1.1/4"	42.40	3.25	180	3.5	58014
1.1/2"	48.30	3.25	214	4.3	58015
2"	60.30	3.65	245	5.6	58016

### ROBULL MSR Type E Bending Segments

mm	Wall thickness max. mm	r mm	kg	No.
40	2.35	138	1.2	58021
50	2.65	173	1.7	58022
63	2.65	218	2.3	58023
40 - 50 - 63	see above	see above	9.0	58020



### ACCESSORIES



Model	kg	No.
<b>ROBULL Type E</b>		
Bending frame, adjustable	15.2	57981
Support segment for adjustable bending frame, with degree gradation (1 piece)	2.6	57982
Support segment for adjustable bending frame, without degree gradation (1 piece)	2.6	57983
Bending frame, foldable	12.5	58002
Support segment for foldable bending frame (1 piece)	2.2	58004
Locking pin	0.3	57979



Model	kg	No.
<b>ROBULL MSR Type E</b>		
Support segments, 40 mm (2 piece)	1.9	57921
Support segments, 50 mm (2 piece)	3.2	57922
Support segments, 63 mm (2 piece)	3.9	57923
<b>ROBULL Type E / ROBULL MSR Type E</b>		
Hydraulic oil, 1 litre	1.0	58185
Tripod stand	3.0	58182

# Bending

## Electric Hydraulic

### ROBULL Type ME / ROBULL MSR Type ME

For precise, power hydraulic cold bending up to 90°



#### Product Profile

##### APPLICATION AREA

Various uses, mobile hydraulic bending machine for use on the building site in gas, sanitary and heating installations

##### ROBULL Type ME:

For accurate bending up to 90° on pipes made of:

**Carbon steel suitable for welding and thread-cutting** Ø 3/8 - 2"

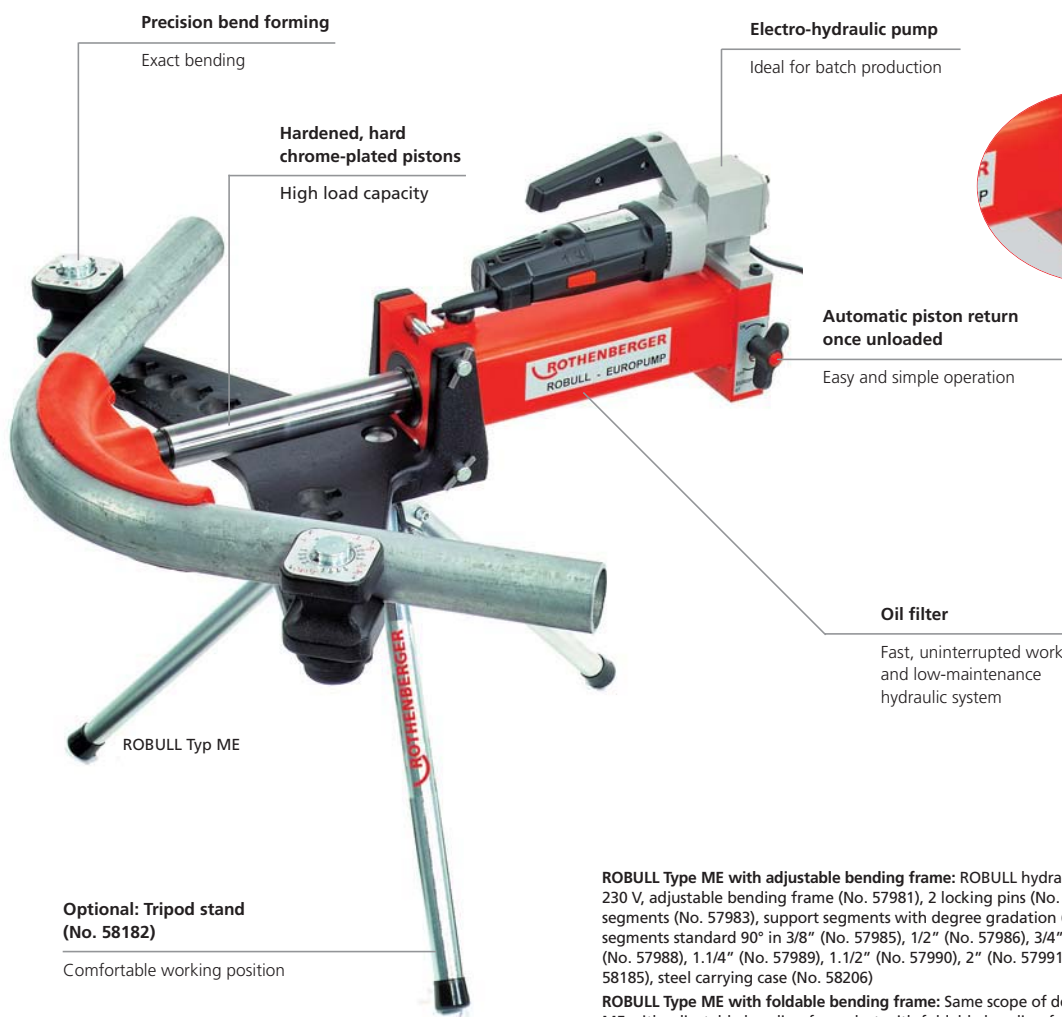
##### ROBULL MSR Type ME:

For accurate bending up to 90° on pipes made of:

**multi-layered composite pipe (MSR)** Ø 40 - 50 - 63 mm

##### KEY FEATURES

- Precise bending with the angle scale on the support segments (not with ROBULL MSR type ME)
- Reduces welding joints
- Pre-warming of the pipe no longer necessary
- No bending forms are necessary
- Effective use with the 150 kN piston strength
- Easy and simple operation
- Closed, low-maintenance hydraulic system with a mono-block design and with quick, automatic piston retraction
- Comfortable working position with the tripod stand (optional)
- With foldable and adjustable bending frame



**ROBULL Type ME with adjustable bending frame:** ROBULL hydraulic bending machine 230 V, adjustable bending frame (No. 57981), 2 locking pins (No. 57979), support segments (No. 57983), support segments with degree gradation (No. 57982), bending segments standard 90° in 3/8" (No. 57985), 1/2" (No. 57986), 3/4" (No. 57987), 1" (No. 57988), 1.1/4" (No. 57989), 1.1/2" (No. 57990), 2" (No. 57991), hydraulic oil 1 l (No. 58185), steel carrying case (No. 58206)

**ROBULL Type ME with foldable bending frame:** Same scope of delivery as ROBULL Type ME with adjustable bending frame but with foldable bending frame (No. 58002)

**ROBULL MSR Type ME:** ROBULL MSR hydraulic bending machine 230 V, adjustable bending frame, 2 locking pins (No. 57979), hydraulic oil 1 l (No. 58185), steel carrying case (No. 58206) (bending segments, support segments not included)

Model	Description	kg		No.
ROBULL Type ME	without accessories	17.8	1	<b>057969X</b>
ROBULL Type ME	with adjustable bending frame and accessories (see above)	59.8	1	<b>057973X</b>
ROBULL Type ME	with foldable bending frame and accessories (see above)	72.6	1	<b>057972X</b>
ROBULL MSR Type ME	without bending segments and support segments (see above)	54.0	1	<b>57915</b>

### ROBULL Type ME



ROBULL Type E with  
foldable bending frame

### ROBULL MSR Type ME



Set 40 - 50 - 63 (No. 58020) includes:  
Bending segment 40 mm (No. 58021),  
Bending segment 50 mm (No. 58022),  
Bending segment 63 mm (No. 58023),  
Support segments 40 mm (No. 57921),  
Support segments 50 mm (No. 57922),  
Support segments 63 mm (No. 57923)

### ROBULL Type ME Bending Segments

Small bending radius (red)

inch	mm	Wall thickness max. mm	r mm	kg	No.
3/8"	17.20	2.35	45	0.7	57985
1/2"	21.30	2.65	49	0.7	57986
3/4"	26.90	2.65	65	0.8	57987
1"	33.70	3.25	89	1.3	57988
1.1/4"	42.40	3.25	115	1.6	57989
1.1/2"	48.30	3.25	137	2.4	57990
2"	60.30	3.65	200	3.2	57991

### ROBULL Type ME Bending Segments

Large bending radius (black)

inch	mm	Wall thickness max. mm	r mm	kg	No.
3/8"	17.20	2.35	56	0.8	58010
1/2"	21.30	2.35	85	0.9	58011
3/4"	26.90	2.65	115	1.2	58012
1"	33.70	2.65	145	2.1	58013
1.1/4"	42.40	3.25	180	3.5	58014
1.1/2"	48.30	3.25	214	4.3	58015
2"	60.30	3.65	245	5.6	58016

### ROBULL MSR Type ME Bending Segments

mm	Wall thickness max. mm	r mm	kg	No.
40	2.35	138	1.2	58021
50	2.65	173	1.7	58022
63	2.65	218	2.3	58023
Set 40 - 50 - 63	see above	see above	9.0	58020



### ACCESSORIES



Model	kg	No.
<b>ROBULL Type ME</b>		
Bending frame, adjustable	15.2	57981
Support segment for adjustable bending frame, with degree gradation (1 piece)	2.6	775004000
Support segment for adjustable bending frame, without degree gradation (1 piece)	2.6	57983
Bending frame, foldable	12.5	775504100
Support segment for foldable bending frame (1)	2.2	58004
Locking pin	0.3	57979

Model	kg	No.
<b>ROBULL MSR Type ME</b>		
Support segments, 40 mm (2 piece)	1.9	57921
Support segments, 50 mm (2 piece)	3.2	57922
Support segments, 63 mm (2 piece)	3.9	57923
<b>ROBULL Type ME / ROBULL MSR Type ME</b>		
Hydraulic oil, 1 litre	1.0	58185
Steel carrying case	10.0	58206
Tripod stand	3.0	58182

# Bending

## Electric

### ROBEND® 4000

Portable, sturdy and powerful. The successor of the proven ROBEND 3000, now with a higher bending radius: Cold bending up to 180°, Ø 12 - 35 mm (1/2 - 1.3/8").

#### Product Profile

##### APPLICATION AREA

Universal application in sanitary and heating installations, in pipe-line construction, refrigeration and air-conditioning systems as well as industrial systems and batch production. Fewer joints means less potential for leaks. Safety implies less likelihood of injury.

##### Suitable for pipes made of:

**Copper (hard, semi-hard and soft DIN EN 1057):** Ø 12 - 35 mm, (1/2-1.3/8")

**Copper and precision steel (coated):** Ø 12 - 35 mm, (1/2-1.3/8")

**Precision steel (soft DIN 2391 / 2393 / 2394):** Ø 12 - 35 mm, (1/2-1.3/8")

**Threaded steel (DIN 2440 / 2441):** Ø 3/8 - 3/4"

**Seamless stainless steel (GW 541):** Ø 12 - 35 mm, (1/2-1.3/8")

**Multi-layered composite pipe (MSR):** wall thickness 1,0 - 2,0 mm

#### KEY FEATURES

- Quick return on investment through the savings from joints, soldering material and energy
- Universal application: U-bends, counter-bends, swan-neck bends and connecting bends possible at all levels
- Retains shape and remains stable: bending formers made of high-quality forged aluminium
- Top-quality, precise and simple to use
- Bending without deformation or ripples due to less friction
- Motor rating: 1010 Watt



Forged aluminium former with bending radius scale

Easy to use

Pre-adjustment of the bending angle without tools

Fast and precise bending

Special ROLUB Guide Shoe

Bending without deformation or ripples due to less friction

High-performance 1010 W motor

Ideal for continuous operation

Automatic switch-off when preset bending angle is obtained

Fast batch production possible

#### Bending technology

Simplified work preparation, eliminates costs of purchase and storage of fittings

Bending of pipes made of various materials possible



Seven-fold drive



Comfortable carry handle



ROBEND® 4000 with stand



## ROBEND® 4000 Sets

Sets include: Basic 230 V Unit (No. 025740X), bending formers and guide shoes for respective pipe diameters, guide shoe axle (No. 25743), adaptor for tripod (No. 25748) in basic unit (tripod optional), carrying case



3

### ROLUB-Antiblock-System!

ROLUB Special Guide Shoe made of high-quality polyamide

Perfect bending results without friction marks

Optional:  
Tripod stand

Two-point lubricating chamber system

Ensures optimum distribution of lubrication



Fig. ROBEND® 4000 Set

ROBEND® bending sets



Forged aluminium former with bending radius display



Pre-adjustment of the bending angle without tools



Model	Description	Pipe type	kg	No.
ROBEND® 4000 Set	15 - 18 - 22 mm	Cu, Fe, u.a.	24,12	1000001554
ROBEND® 4000 Set	15 - 18 - 22 - 28 mm	Cu, Fe, u.a.	24,12	1000001550
ROBEND® 4000 Set	12 - 14 - 16 - 18 - 22 mm	Cu, Fe, u.a.	21,90	1000001551
ROBEND® 4000 Set	15 - 22 - 28 mm	Cu, Fe, u.a.	21,10	1000001545
ROBEND® 4000 Set	12 - 14 - 16 - 18 - 22 - 28 mm	Cu, Fe, u.a.	24,10	1000001552
ROBEND® 4000 Set	12 - 15 - 18 - 22 mm	Cu, Fe, u.a.	20,60	1000001548
ROBEND® 4000 Set	12 - 15 - 18 - 22 - 28 mm	Cu, Fe, u.a.	23,50	1000001549
ROBEND® 4000 Set	15 - 18 - 22 - 28 - 35 mm	Cu, Fe, u.a.	32,00	1000001567
ROBEND® 4000 Set	1/2 - 5/8 - 3/4" - 7/8"	Cu, Fe, u.a.	19,60	1000001553
ROBEND® 4000 Set	1/2 - 5/8 - 3/4" - 7/8 - 1.1/8 - 1.3/8"	Cu, Fe, u.a.	29,00	1000001565
ROBEND® 4000 Set	7/8 - 1.1/8 - 1.3/8"	Cu, Fe, u.a.	22,00	1000001566
ROBEND® 4000 Basic unit	in carrying case without bending segments	Cu, Fe, u.a.	14,50	1000001559

### ACCESSORIES



Description	No.	Description	
Bending spray 150 ml	25120	Pipe cutter	14 - 25
Guide shoe axle	25743	Internal / External deburrer	33
ROBEND® carrying case, for 5 segments up to Ø 30 mm	25745	Hard soldering torch (SUPER FIRE 3 with MAPP®-GAS)	152
Tripod stand, foldable	25748	Brazing solder	185 - 18
ROBEND® carrying case, for 32 mm (1.1/4") and 35 mm (1.3/8") 1000001564			

ROBEND® 4000 bending sets can be found on 72

# Bending

## Accessories & Bending Tables

### ROBEND® 3000/4000 Bending Formers

For bending pipes Ø 12 - 28 mm (1/2 - 1.1/8")



Fig. ROBEND® 3000 bending set with ROLUB guide shoe

For steel pipe DIN 2440 and DIN 2441 (except 3/4")

Size	Wall thickness mm	Bending radius mm	No.
1/2"	3,25	88	1,42 <b>25684</b>
3/4"	3,25	112	2,90 <b>25685</b>

For copper pipe DIN EN 1057, aluminium pipe. Precision steel pipe DIN 2391/93/94, stainless steel pipe and others

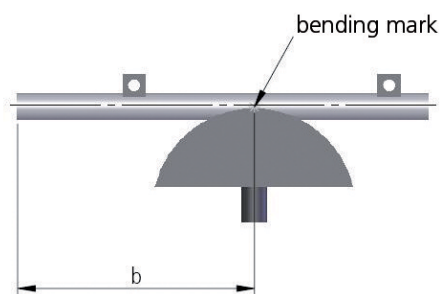
Size	Wall thickness mm	Bending radius mm	kg	No.
12 mm	1,0	42	0,48	<b>25612</b>
14 mm	1,0	49	0,48	<b>25614</b>
15 mm	1,0	52	0,53	<b>25615</b>
16 mm	1,0	56	0,60	<b>25616</b>
18 mm	1,0	72	1,17	<b>25618</b>
20 mm	1,0	80	1,42	<b>25620</b>
22 mm	1,2	88	1,42	<b>25622</b>
28 mm	2,0	112	2,90	<b>25628</b>
32 mm*	2,0	134	3,40	<b>1000001561</b>
35 mm*	2,0	140	3,60	<b>1000001563</b>

For copper pipe DIN EN 1057, aluminium pipe. Precision steel pipe DIN 2391/93/94, stainless steel pipe and others

Size	Wall thickness mm	Bending radius mm	kg	No.
1/2"	1,2	45	0,53	<b>25652</b>
5/8"	1,2	56	0,60	<b>762955300</b>
3/4"	1,2	80	1,42	<b>25619</b>
7/8"	1,2	88	1,42	<b>762955700</b>
1"	1,5	112	2,90	<b>25625</b>
1.1/8"	1,6	112	2,90	<b>25626</b>
1.1/4"*	2,0	134	3,40	<b>1000001561</b>
1.3/8"*	2,0	140	3,60	<b>1000001563</b>

\*Bending Former Sets (No. 1000001561), (No. 1000001563) are only compatible with ROBEND 4000. Only matching with optional plastic carrying case (No. 1000001564).

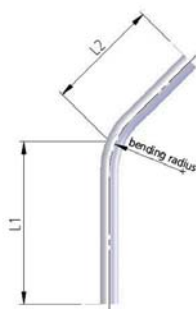
### Push bending



#### Symbols

- L1, L2 = Leg length
- b = Lay out length
- L = Total length of the pipe piece
- L<sub>w</sub> = Distance / pipe end - wall
- A<sub>w</sub> = Distance wall - pipe middle
- L<sub>M</sub> = Minimum Length\*
- L<sub>R</sub> = Reserve Length\*

#### 45°- Arc



$$L = L_1 + L_2$$

$$b = L_1 - L_R$$

#### 90°- Arc



$$L = L_1 + L_2 - L_M$$

$$b = L_1 - L_R$$

### Calculation Examples TUBE BENDER MAXI

#### Specifications:

Installation in corner areas

$L_W = 1200 \text{ mm}$

$A_W = 30 \text{ mm}$

Pipe-Ø 12 mm, 90°-Arch

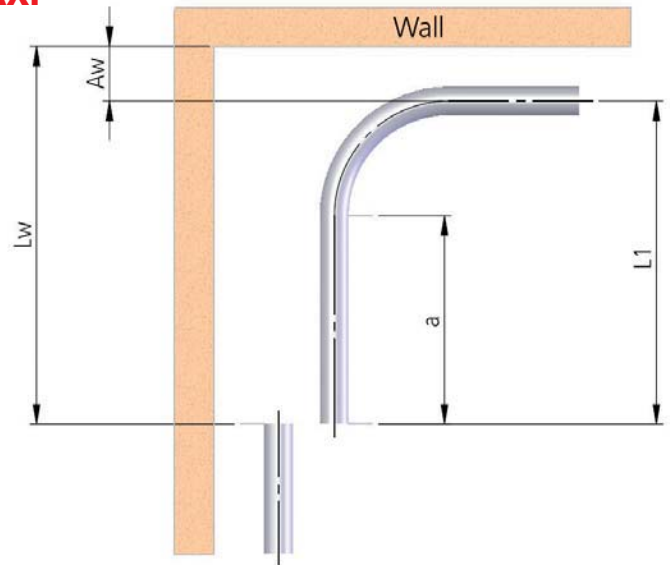
#### Sought after:

Leg length  $L_1$

Applied size  $b$

#### Solution:

Summary from the TUBE BENDER MAXI bending table



Leg length  $L_1 = L_W - A_W = 1200 - 30 = 1.170 \text{ mm}$   
 Applied size  $b = L_1 - L_R = 1170 - 7,5 = 1.162,5 \text{ mm}; L_R \text{ .. Tabular value}$

TUBE BENDER		at 45°		at 90°		at 180°	
for Ø mm / inch	Bending radius R (mm)	Reserve length $L_R$ mm	Minimum length $L_M$ mm	Reserve length $L_R$ mm	Minimum length $L_M$ mm	Reserve length $L_R$ mm	Minimum length $L_M$ mm
4,75/5	20,0	4,5	1,0	4,5	10,0	-	-
6	23,5	5,0	1,2	5,0	11,5	-	-
8	28,0	7,0	1,4	7,0	14,0	-	-
9	30,0	7,0	1,5	7,0	15,0	-	-
10	34,0	7,5	1,8	7,5	17,5	-	-
12	37,5	8,5	1,9	8,5	19,0	-	-
3/16"	20,0	4,5	1,0	4,5	10,0	-	-
1/4"	23,5	5,0	1,2	5,0	11,5	-	-
5/16"	28,0	7,0	1,4	7,0	14,0	-	-
3/8"	34,0	7,5	1,8	7,5	17,5	-	-
1/2"	37,5	8,5	1,9	8,5	19,0	-	-

TUBE BENDER MAXI		at 45°		at 90°		at 180°
for Ø mm / inch	Bending radius R (mm)	Reserve length $L_R$ mm	Minimum length $L_M$ mm	Reserve length $L_R$ mm	Minimum length $L_M$ mm	Reserve length $L_R$ mm
12	35,0	0,8	10,0	7,5	35,0	-
14	42,5	0,9	12,5	9,0	42,5	-
15	48,5	1,1	14,0	10,5	48,5	-
16	49,0	1,1	14,5	10,5	49,0	-
18	74,0	1,7	22,0	16,0	74,0	-
22	87,0	1,9	25,5	18,5	87,0	-
3/8"	35,0	0,8	10,0	7,5	35,0	-
1/2"	35,0	0,8	10,0	7,5	35,0	-
5/8"	49,0	1,1	14,5	10,5	49,0	-
3/4"	74,0	1,7	22,0	16,0	74,0	-
7/8"	87,0	1,9	25,5	18,5	87,0	-

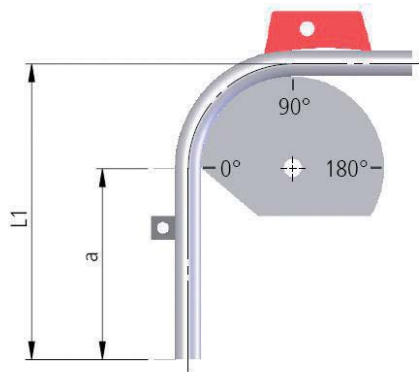
TUBE BENDER MAXI CT		at 45°		at 90°		at 180°
Ø / Ws mm	Bending radius R (mm)	Reserve length $L_R$ mm	Minimum length $L_M$ mm	Reserve length $L_R$ mm	Minimum length $L_M$ mm	Reserve length $L_R$ mm
10 x 0,6	42,5	0,8	12,5	9,0	42,5	-
12 x 0,6	49,0	1,1	14,5	10,5	49,0	-
15 x 0,7	74,0	1,7	22,0	16,0	74,0	-
18 x 0,7	87,0	1,9	25,5	18,5	87,0	-

\*All sizes listed are standards and are dependant on the material and the wall thickness. Bending specific sizes based on the bending radius - tabular value

# Bending

## Bending Tables

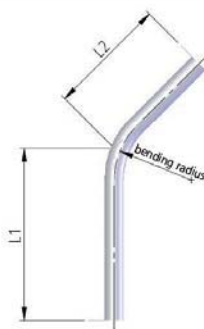
### Pull Bending



#### Symbols

$L_1, L_2$  = Leg length  
 $a$  = Lay out length  
 $L$  = Total length of the pipe piece  
 $L_W$  = Distance / pipe end - wall  
 $A_W$  = Distance wall - pipe middle  
 $L_M$  = Minimum Length\*  
 $L_R$  = Reserve Length\*

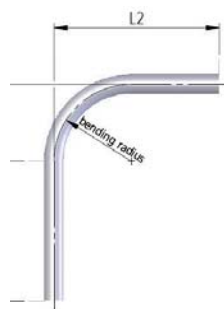
#### 45°-Arc



$$L = L_1 + L_2$$

$$a = L_1 - L_R$$

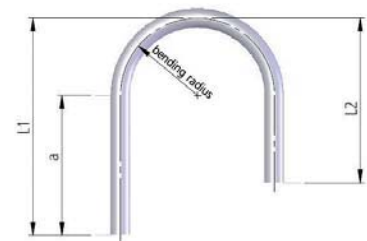
#### 90°-Arc



$$L = L_1 + L_2 - L_M$$

$$a = L_1 - L_R$$

#### 180°-Arc



$$L = L_1 + L_2 + L_M$$

$$a = L_1 - L_R$$

### Calculation Examples ROBEND® 3000 / ROBEND® 4000

#### Specifications:

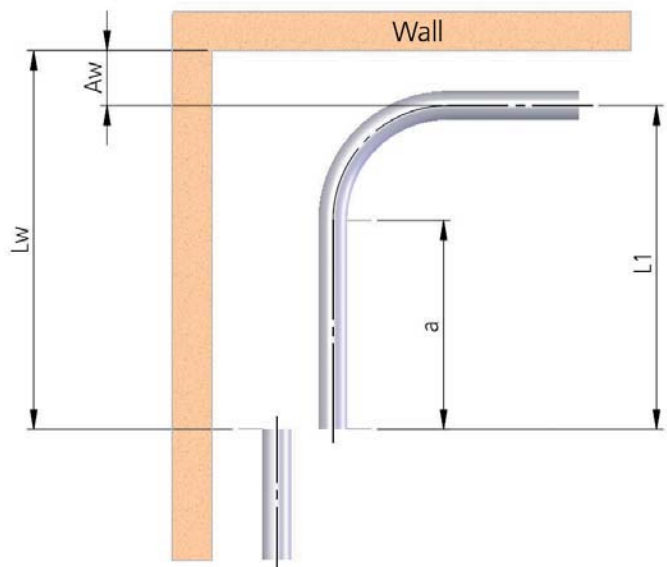
Installation in corner areas  
 $L_W = 1200$  mm  
 $A_W = 30$  mm  
 Pipe-Ø 12 mm, 90°-Arc

#### Sought after:

Leg length  $L_1$   
 Applied size  $a$

#### Solution:

Summary from the ROBEND® 3000/4000 bending table



**Leg length**  $L_1 = L_W - A_W = 1200 - 30 = 1.170$  mm  
**Applied size**  $a = L_1 - L_R = 1170 - 42 = 1.128$  mm;  $L_R$  .. Tabular value

# Bending

## Bending Tables

3

<b>H&amp;W Plus</b>		<b>at 45°</b>		<b>at 90°</b>		<b>at 180°</b>	
Ø / Ws mm / inch	Bending radius R (mm)	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm
8	22	9	-	22	9.5	22	47
10	32	12	-	32	15.0	32	34
12	38	15	-	40	20.0	38	39
14	45	17	-	44	22.0	44	51
15	45	17	-	44	22.0	44	51
16	64	25	-	67	30.0	68	65
18	64	25	-	67	30.0	68	65
20	81	30	-	85	40.0	86	83
22	81	30	-	85	40.0	86	83
5/16"	22	9	-	22	9.5	22	47
3/8"	32	12	-	32	20.0	32	34
1/2"	38	15	-	40	22.0	38	39
5/8"	64	25	-	67	30.0	68	65
3/4"	81	30	-	85	40.0	86	83
7/8"	81	30	-	85	40.0	86	83

<b>MINIBEND</b>		<b>at 45°</b>		<b>at 90°</b>		<b>at 180°</b>	
Ø / Ws mm / inch	Bending radius R (mm)	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm
6	25.0	10.4	1.0	22.0	10.0	22.0	26.0
8	24.0	9.9	1.0	32.0	15.0	32.0	34.0
10	23.0	9.5	1.0	32.0	15.0	32.0	34.0
1/4"	25.0	10.4	1.0	22.0	10.0	22.0	26.0
5/16"	24.0	9.9	1.0	32.0	15.0	32.0	34.0
3/8"	23.0	9.5	1.0	32.0	15.0	32.0	34.0

<b>Standard Bender 180°</b>		<b>at 45°</b>		<b>at 90°</b>		<b>at 180°</b>	
for Ø mm / inch	Bending radius R (mm)	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm
6	18.0	7.0	0.8	18.5	8.0	18.5	20.0
10	30.0	11.5	1.3	30.5	14.5	30.5	34.0
12	36.0	14.0	1.5	36.5	15.0	36.5	37.5
14	47.5	18.5	2.0	48.5	20.5	48.5	52.5
15	54.0	21.0	2.3	56.0	24.5	56.0	58.0
16	58.0	22.5	2.5	64.0	28.5	64.0	67.0
18	66.0	25.5	2.8	68.0	31.0	68.0	72.0
1/4"	18.0	7.0	0.8	18.5	8.0	18.5	20.0
5/16"	24.0	9.5	1.0	24.0	12.0	24.0	27.0
1/2"	42.0	16.5	1.8	49.5	22.5	49.5	53.0
5/8"	58.0	22.5	2.5	64.0	28.5	64.0	67.0

<b>MULTIBEND</b>		<b>at 45°</b>		<b>at 90°</b>		<b>at 180°</b>	
for Ø mm	Bending radius R (mm)	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm
8	24.0	9.5	1.0	24.0	10.0	24.0	26.0
10	30.0	12.0	1.3	30.5	14.5	30.5	32.5
12	36.0	14.0	1.5	36.5	15.5	36.5	37.5
14	42.0	16.5	1.8	42.0	19.5	42.5	44.0
15	48.0	19.0	2.0	48.0	22.0	48.0	53.0
16	48.0	19.0	2.0	48.0	22.0	48.0	53.0
18	54.0	21.0	2.3	54.0	26.0	54.5	58.0

<b>ROBEND® 3000/4000</b>			<b>at 45°</b>		<b>at 90°</b>		<b>at 180°</b>	
for Ø mm / inch	Pipe	Bending radius R (mm)	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm	Reserve length L <sub>R</sub> mm	Minimum length L <sub>M</sub> mm
12		42.0	16	-	42	24	42	68
14	wated	52.5	21	-	53	30	53	87
15		52.5	21	-	53	30	53	87
17	wated	72.0	28	-	72	41	72	107
18		72.0	28	-	72	41	72	107
20	wated	88.5	35	-	89	51	89	121
22		88.0	35	-	88	50	88	119
24	wated	112.0	43	-	110	62	110	144
28		112.0	44	-	112	64	112	148
30	wated	112.0	45	-	114	66	114	152
3/8"	steel	80.0	31	-	80	46	80	103
1/2"	copper	45.0	18	-	45	26	45	74
1/2"	steel	88.0	35	-	88	50	88	119
5/8"	copper	56.0	23	-	56	32	56	93
3/4"	steel	112.0	43	-	112	64	112	148
3/4"	copper	80.0	31	-	80	46	80	103
7/8"	copper	88.0	35	-	88	50	88	119
1"	copper	112.0	44	-	112	64	112	148
1.1/8"	copper	112.0	45	-	114	66	114	152

\*All sizes listed are standards and are dependant on the material and the wall thickness. Bending specific sizes based on the bending radius - tabular value