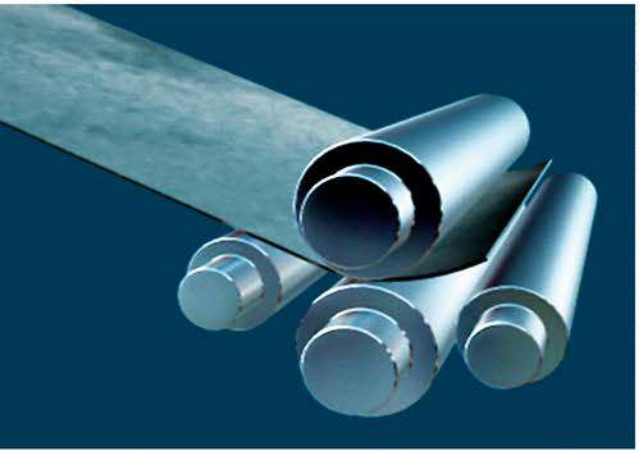
ROUNDO
4-Roll Plate Bending Machines
Type PAS/PASS



ROUNDO

Highest Demand on Performance and Reliability meets lowest overall Cost

1. Align the plate against the raised rear side roll. Raise the lower roll to pinch the plate. Return the plate to prebending position.

PAS 700

PAS 360
Support rolls

PAS 360

ROUNDO is the world's leading manufacturer of plate and section bending machines. The company was formed in 1964, and has delivered more than 16,000 machines to satisfied customers around the globe. ROUNDO machines are world-renowned for outstanding performance, reliability and quality.

Wide range of Machines

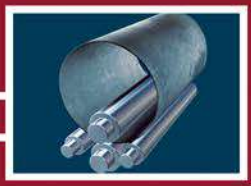
The standard range of 4-roll plate bending machines covers plate thicknesses from 3 mm to 70 mm and widths from 1,000 mm to 3,500 mm. All machines have unique features needed for high precision and high output rates:

- Outstanding prebending capacities. In many cases, the remaining flat end is as short as one time the plate thickness.
- Fully hydraulic, infinitely variable speed drive and adjustment of the rolls.
- Highest drive torque of any competitive machine.
- Frames made of high-strength steel, fully welded and stress relieved before machining to have sufficient strength to absorb bending forces and to achieve highest possible accuracy.
- Built as standard with such mechanical precision and rigidity that all machines can be equipped with CNC-control.
- Excellent for cone bending, including prebending of cone plate.
- Easy to integrate into a production line when equipped with automatic infeeding of the plates, automatic ejection and down-line transport of the finished cylinder.

2. Raise the front side roll. Prebend and roll.

3. Lower the front side roll and raise the rear side roll until it reaches the prebent edge.

4. Continue to roll the plate.



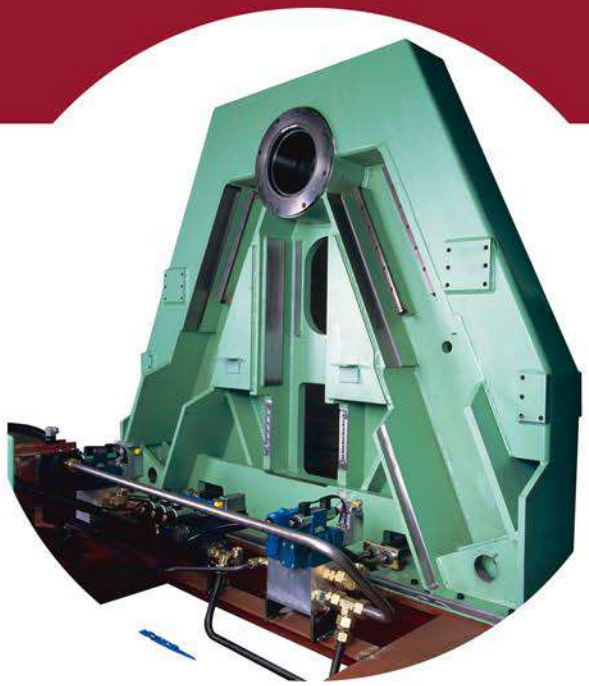
5. The cylinder is finished.

The Rolls and Bearings

The rolls are manufactured of high carbon-content steel forgings for maximum surface hardness. The rolls are crowned to fit the largest possible thickness range within the capacity of the machine. To increase the thickness range further, the machines can be equipped with support rolls for the lower roll.

For bending stainless steel or for frequent cone bending, hardened and ground rolls are recommended.

All rolls on ROUNDO plate bending machines are journalled in spherical roller bearings of the highest quality, resulting in minimal friction losses and longer service life.



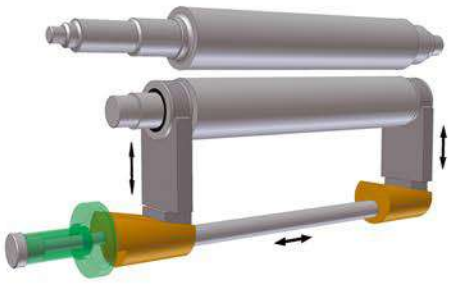
PAS 500
during assembly

Ensured Parallelism

The parallelism of the rolls is one of the most crucial factors in achieving good bending results and is absolutely essential for optimal use of CNC controls. This is ensured on all ROUNDO machines, even under maximum load.

On PASS machines, the lower roll is adjusted by wedge blocks and a hydraulic cylinder, as shown to the right. This adjustment is very accurate and guarantees perfect parallelism of the rolls.

On PAS machines, the parallelism of the lower roll and both side rolls is electronically regulated by the digital control system. A precision glass-scale linear encoder, fitted to each end of the rolls, monitors the exact position of the roll.

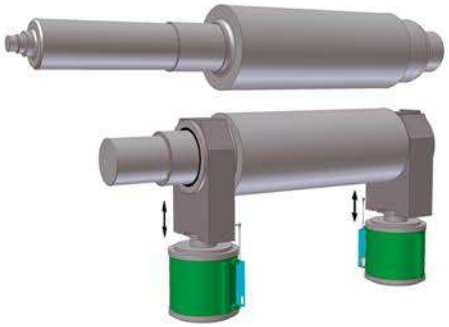


Ensured parallelism on PASS with wedge blocks adjusted by a hydraulic cylinder

Hydraulic Drive and High Drive Torque

All machines have fully hydraulic roll rotation, side roll and lower roll adjustment and drop end control. Combined with infinitely variable speed adjustment, the operator will have full control of the process in any bending situation.

The high drive torque makes it possible to prebend with maximum capacity and to bend a plate with maximum plate thickness down to a small radius in only one pass. All ROUNDO 4-roll plate bending machines have precise control of the speed difference between top roll and lower roll.



Ensured parallelism on PAS with linear encoders connected to the master controller

New User-Friendly
ROUNDO wCNC[4]

PASS 255

PASS with lifting roll
to avoid double plate

PASS 150

For Maximum Performance

Efficient multiple production of simple cylinders or complex parts is the main advantage of a CNC control. ROUNDO's CNC system can control not only the rotation and the positioning of the rolls, but also the crowning effect of the support rolls, material support and lifting devices, and even tilt the side rolls during the bending operation, a feature unique to the ROUNDO CNC control. Where automatic infeeding of the plates and automatic ejection are required, the whole automatic process can be controlled by the CNC system.

Precise Positioning

The CNC system controls the machine and positioning of rolls with the highest possible precision. We guarantee a positioning within 0,1 mm (0,004") of the side rolls and lower roll, even under varying load. These tight tolerances, unmatched by any competitive machine, are a direct result of the high mechanical precision and rigidity of the machine.

Easy-to-Use

With clear commands and preset functions, the operator can create programs in a simple, yet logical way. Programs can also be created via the "Teach-in" function. Our unique geometry program enables users to create programs directly from drawings, and to quickly calculate the position of the side rolls to achieve a given radius. The interpolation function allows the machine to simultaneously rotate and change position of one of the side rolls, achieving varying radii and smooth transitions on the plate. For detailed information about our CNC system, ask for our separate CNC leaflet.

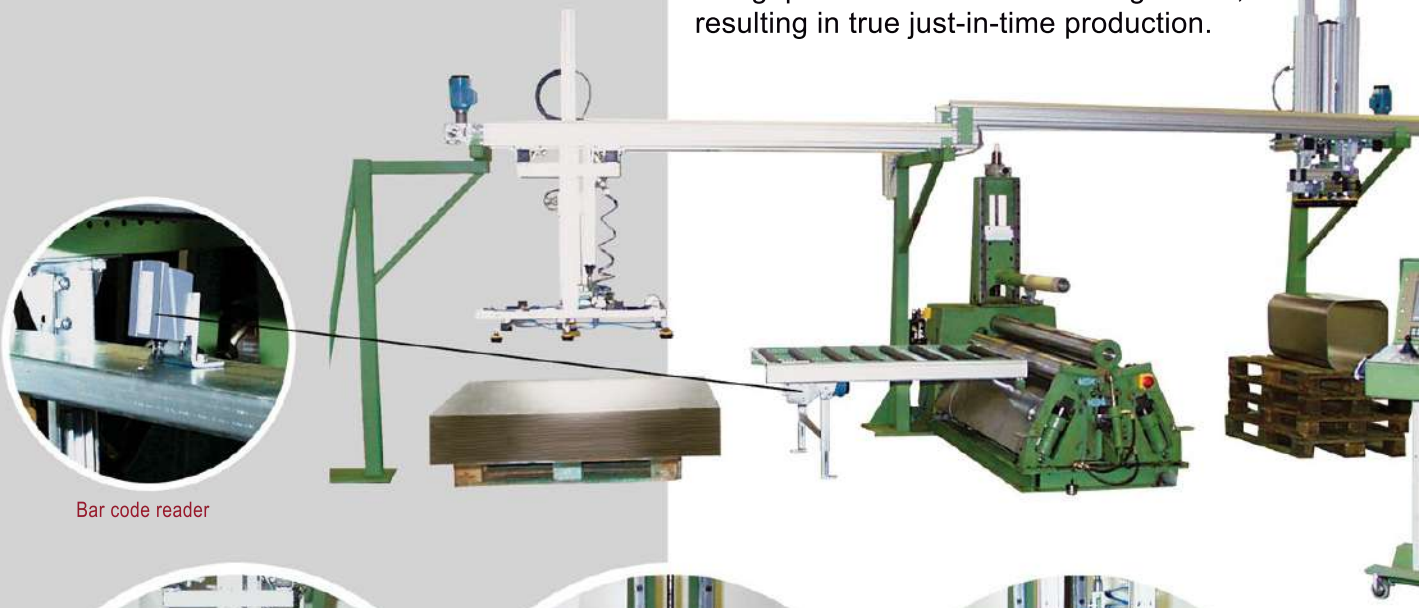
Machines ideal for Serial Production

PAS 700 producing wind mill towers

ROUNDO 4-roll plate bending machines equipped with CNC control and lifting roll with ejection device are ideal for manufacturing of cylinders, ovals and square shaped objects. With the lifting roll, overlap of the leading plate edge during the last part of the bending sequence is effectively avoided. After completion of the bending process, the part can be automatically ejected from the machine.

Larger 4-roll machines are successfully used for production of all types of cylinders, for tanks, boilers etc.
Towers for wind mills with a slightly conical shape are often produced in ROUNDO PAS machines.

Complete production line for production of fuel tanks. Includes PASS 150, automatic infeeding of plates off a stack and automatic outfeeding of the finished tank body. Equipped with bar code reader for automatic change of CNC program to correspond to the actual plate being placed on the infeeding table, resulting in true just-in-time production.

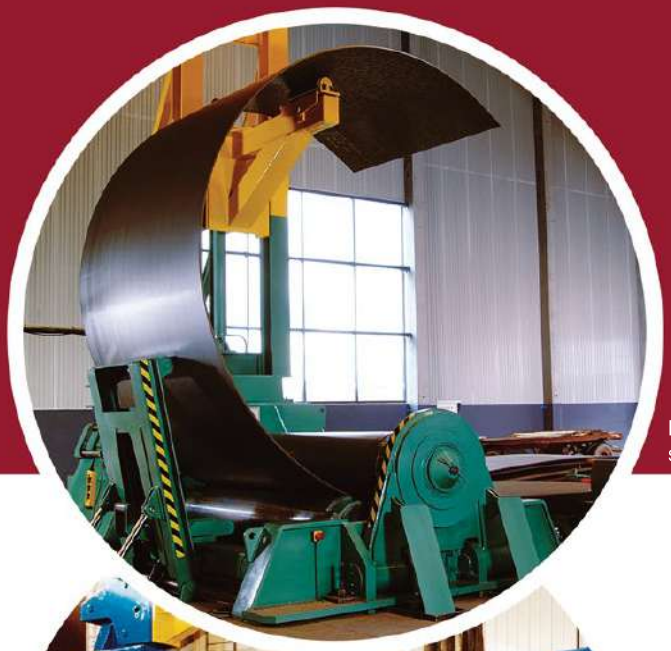


Bar code reader

Automatic infeeding of plate

Bending process

Automatic outfeeding of finished tank body



PAS 700 with top support and side support

PAS 420 with rolls for bending of corrugated plates

Interchangeable top roll

Accessories

All ROUNDO 4-roll plate bending machines can be equipped with a wide range of accessories to increase the versatility of the machine:

- Hydraulically operated side support (can be mounted on one or both sides of the machine)
- Electro-mechanically or hydraulically operated top support
- Lifting roll
- Ejection device
- Cone bending device
- Interchangeable top roll
- Adjustable support rolls for the lower roll
- NEW ROUNDO RLC/4 logic control
- Full CNC control under PLC
- Electronic positioning system
- Infeeding systems
- Other customized accessories

Adjustable support rolls for the lower roll

Cone bending

PASS 205

Capacities and Specifications

PAS 700

Roundo Plate Bending Machines Type PASS

Machine size	Prebending capacity	Rolling capacity Bending diameter down to 5 x ø top roll diameter	Diameter of top roll and lower roll	Diameter of side rolls	Motor 1)	Net weight 2)	Gross Weight 2)
	mm	mm	mm	mm	kW	tons	tons
110	1250 x 3	1250 x 4,5	110	110	1.5	1.4	1.7
130	1250 x 4	1250 x 6	130	130	2.2	2.0	2.3
150	1250 x 4,5	1250 x 6,5	150	150	2.2	2.2	2.5
110	1500 x 2,5	1500 x 3,5	110	110	1.5	1.5	1.8
130	1500 x 3,5	1500 x 5	130	130	2.2	2.2	2.7
150	1500 x 4	1500 x 6	150	150	2.2	2.4	2.9
185	1500 x 5	1500 x 7,5	185	150	3.0	3.4	3.9
205	1500 x 6,5	1500 x 11	205	160	4.0	5.0	5.5
230	1500 x 10	1500 x 14	230	195	5.5	7.3	7.8
255	1500 x 12	1500 x 15	255	215	5.5	8.5	9.0
280	1500 x 14	1500 x 21	280	245	11.0	10.0	10.8
310	1500 x 16	1500 x 23	310	265	11.0	10.7	11.5
110	2000 x 2	2000 x 3	110	110	1.5	1.7	2.0
130	2000 x 3	2000 x 4,5	130	130	2.2	2.5	2.9
150	2000 x 3,5	2000 x 5,5	150	150	2.2	2.7	3.2
185	2000 x 4,5	2000 x 7	185	150	3.0	3.8	4.3
205	2000 x 6	2000 x 10	205	160	4.0	5.7	6.2
230	2000 x 8	2000 x 13	230	195	5.5	7.8	8.4
255	2000 x 10	2000 x 14	255	215	5.5	9.0	9.7
280	2000 x 12	2000 x 18	280	245	11.0	10.9	11.7
310	2000 x 14	2000 x 20	310	265	11.0	11.7	12.5
110	2500 x 1,5	2500 x 2,5	110	110	1.5	2.0	2.3
130	2500 x 2,5	2500 x 4	130	130	2.2	2.9	3.4
150	2500 x 3	2500 x 4,5	150	150	2.2	3.1	3.6
185	2500 x 4	2500 x 6,5	185	150	3.0	4.2	4.7
205	2500 x 5	2500 x 9	205	160	4.0	6.4	6.9
230	2500 x 6	2500 x 11	230	195	5.5	8.8	9.4
255	2500 x 8	2500 x 13	255	215	5.5	10.0	10.7
280	2500 x 10	2500 x 16	280	245	11.0	11.9	12.8
310	2500 x 12	2500 x 18	310	265	11.0	12.7	13.6
150	3000 x 2,5	3000 x 4	150	150	2.2	3.5	4.1
185	3000 x 3	3000 x 5	185	150	3.0	4.6	5.2
205	3000 x 4	3000 x 7	205	160	4.0	7.1	7.7
230	3000 x 5	3000 x 9	230	195	5.5	9.8	10.7
255	3000 x 6	3000 x 11	255	215	5.5	11.0	12.0
280	3000 x 8	3000 x 14	280	245	11.0	12.7	13.7
310	3000 x 10	3000 x 16	310	265	11.0	13.7	14.7
255	3500 x 4	3500 x 9	255	215	5.5	12.0	13.1
280	3500 x 7	3500 x 12	280	245	11.0	13.6	14.7
310	3500 x 8	3500 x 14	310	265	11.0	14.7	15.8

Roundo Plate Bending Machines Type PAS

Machine size	Prebending capacity	Rolling capacity Bending diameter down to 5 x ø top roll diameter	Diameter of top roll and lower roll	Diameter of side rolls	Motor 1)	Net weight 2)	Gross Weight 2)
	mm	mm	mm	mm	kW	tons	tons
340	1500 x 20	1500 x 28	340	290	22	14.6	15.6
360	1500 x 25	1500 x 32	360	315	22	16.2	17.2
420	1500 x 35	1500 x 43	420	345	45	22.2	23.8
460	1500 x 40	1500 x 52	460	390	55	29.4	31.0
340	2000 x 18	2000 x 25	340	290	22	15.8	16.9
360	2000 x 22	2000 x 28	360	315	22	17.6	18.8
420	2000 x 30	2000 x 39	420	345	45	24.1	25.9
460	2000 x 35	2000 x 47	460	390	55	31.6	33.3
500	2000 x 43	2000 x 54	500	420	94	38.4	40.2
550	2000 x 50	2000 x 60	550	450	94	45.8	47.8
600	2000 x 60	2000 x 72	600	485	114	62.9	67.0
650	2000 x 70	2000 x 82	650	530	150	67.2	71.2
700	2000 x 80	2000 x 89	700	570	163	82.8	87.8
340	2500 x 15	2500 x 22	340	290	22	17.0	18.2
360	2500 x 20	2500 x 26	360	315	22	19.0	20.2
420	2500 x 25	2500 x 35	420	345	45	26.0	27.8
460	2500 x 30	2500 x 42	460	390	55	33.8	35.6
500	2500 x 38	2500 x 48	500	420	94	41.0	43.0
550	2500 x 45	2500 x 55	550	450	94	48.9	50.9
600	2500 x 52	2500 x 63	600	485	114	66.9	70.5
650	2500 x 60	2500 x 69	650	530	150	72.2	76.2
700	2500 x 70	2500 x 84	700	570	163	88.3	93.3
340	3000 x 13	3000 x 20	340	290	22	18.2	19.5
360	3000 x 16	3000 x 22	360	315	22	20.4	21.7
420	3000 x 20	3000 x 31	420	345	45	27.9	30.0
460	3000 x 25	3000 x 38	460	390	55	36.0	38.0
500	3000 x 32	3000 x 43	500	420	94	43.6	45.8
550	3000 x 40	3000 x 50	550	450	94	52.0	54.2
600	3000 x 50	3000 x 60	600	485	114	70.9	74.4
650	3000 x 55	3000 x 65	650	530	150	77.2	81.2
700	3000 x 65	3000 x 77	700	570	163	93.8	98.8
340	3500 x 10	3500 x 17	340	290	22	19.4	20.9
360	3500 x 13	3500 x 19	360	315	22	21.8	23.2
420	3500 x 18	3500 x 27	420	345	45	29.8	32.0
460	3500 x 22	3500 x 33	460	390	55	38.2	40.4
500	3500 x 26	3500 x 37	500	420	94	46.2	48.6
550	3500 x 35	3500 x 44	580	450	94	55.1	57.5
600	3500 x 45	3500 x 55	630	485	114	75.0	78.5
650	3500 x 50	3500 x 60	680	530	150	82.2	86.2
700	3500 x 60	3500 x 70	730	570	163	99.3	104.3

DATA CAN BE CHANGED WITHOUT PRIOR NOTICE IN CONSIDERATION OF CONTINUING TECHNOLOGICAL IMPROVEMENTS.

1) The motor power is valid for machines in standard execution. For machines with CNC control or other options the installed power will increase.
2) Weight for basic machine without optional equipment.

- Capacities are based on normal steel with yield point 270 N/mm2 (38 000 psi).
- The minimum bending diameter is 1,1 – 1,4 x the top roll diameter depending on plate thickness.
- Remaining straight end after pre-bending 1,5 – 2 x plate thickness.
- Other machine lengths can be delivered on request.

PAS 460 with infeeding table

ROUNDO was founded in 1964 in Sweden and became the world leading brand for profile bending machines and plate rolling with more than 16.000 machines delivered all over the world.

What makes our customers extremely satisfied, are the remarkably high quality, performance, reliability and long service life of ROUNDO equipment, along with our never-ending process of developing and producing superior machines.

Together with Boldrini, ROUNDO is now a division of the Italian Faccin Group, representing the world leaders in designing and manufacturing of angle rolls, plate rolls, dishing and flanging equipment, and special machines. This cooperation has resulted in more than 210 years of experience in metal forming and over 25.000 machines installed worldwide.

By combining organizational skills, the resources of 3 manufacturing sites and more than 100 people devoted to bending machinery and technology, we supply technological advanced new machines and spare parts according to the original ROUNDO design.

ROUNDO division headquarters are located in our new production site in Castiglione delle Stiviere in the North of Italy, an advanced building concerning project, construction technology and dimensions necessary to support our customers' necessities, demanding always bigger and superior machines.

All design and assembly, including wiring and final testing of the machines is done in-house. Our engineers and technicians employ cutting-edge technologies and renowned original ROUNDO experience and know-how. Result are products that represent unique quality, performance and reliability on the global market.

Registered Offices:
Faccin S.p.A. - Via dell'Industria, 19
25010 Visano (BS) - Italy

Headquarters:
Via della Battaglia
46043 Castiglione delle Stiviere (MN) - Italy

www.roundo.com
info@roundo.com | service@roundo.com

Tel.: +39 030 995 8735
Fax: +39 030 995 8771