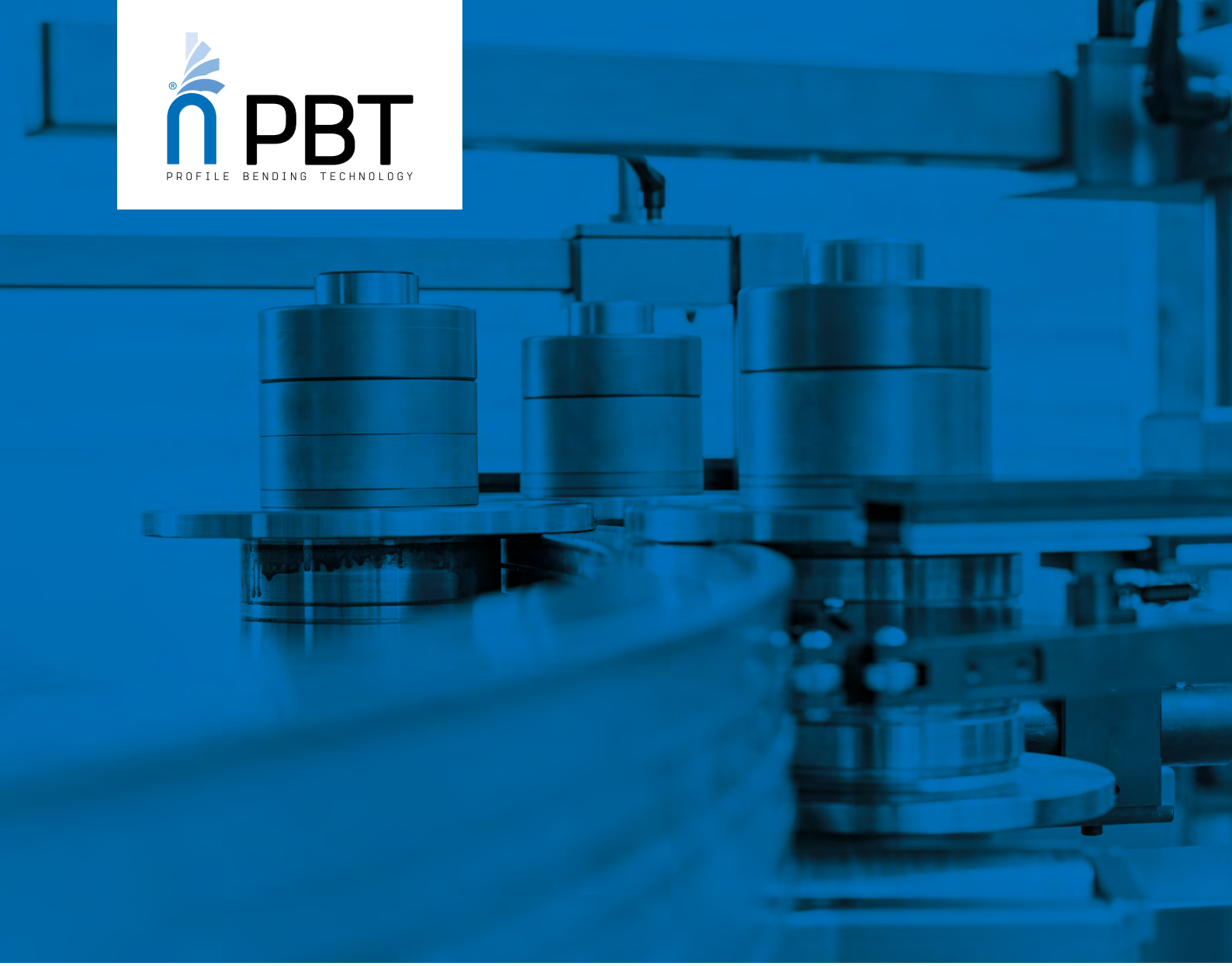
PBT
PROFILE BENDING TECHNOLOGY



High-precision **profile bending machines** for the most challenging applications

Made in Switzerland.

Innovative bending technology for more than 30 years

At the Swiss company PBT AG, we develop and produce profile bending machines and digital control systems that satisfy the highest requirements in quality and technical performance. Through the use of intelligent processes, our technologies have been setting industry standards since 1991, and are used in practically all segments of the metalworking industry: automotive, aerospace, window and building façade engineering, conveyor technology, and much more.

Our claim

Individual requirements in production technology call for specific solutions. In close cooperation with our customers, we design technical solutions for efficient manufacturing of even the most complex bending tasks. From the planning to commissioning, our experts provide support in all project phases: This includes planning, development, prototyping, series production, training of machine operators, and on-site installation. We provide advice and support during every application phase.

Global presence

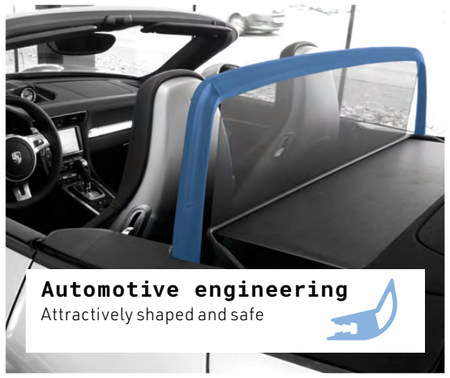
Development, distribution and service for production facilities around the globe.
We deliver our services and products from the two main locations of PBT AG – Weinfelden in Switzerland and Siegen in PBT Germany GmbH (formerly INDUMASCH GmbH).
Selected service partners in many European, American and Asian countries supplement our requirement for the highest service quality.

Made in Switzerland.

R 6278

Industry solutions

Custom-fit solutions for efficient production of curved profiles.
Various industries and sectors that require the highest production quality components put their trust in the precision of PBT profile bending machines.
See an overview of application examples here.

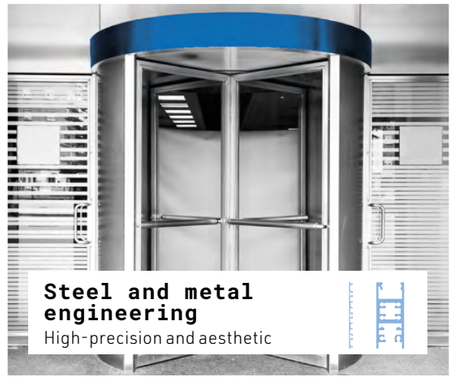


Automotive engineering
Attractively shaped and safe

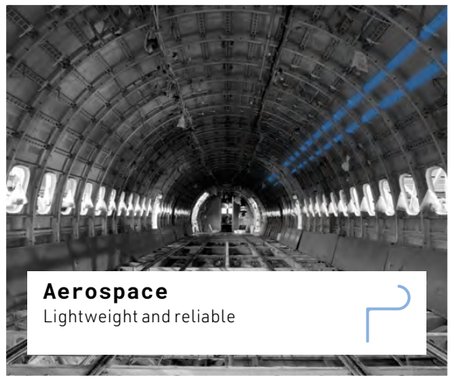
Utility vehicle engineering
Stable and dependable

Window and façade engineering
Creative and stylish

Conveyor technology
Efficient and economical

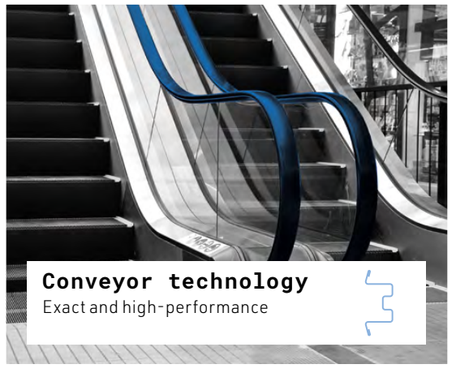


Steel and metal engineering
High-precision and aesthetic

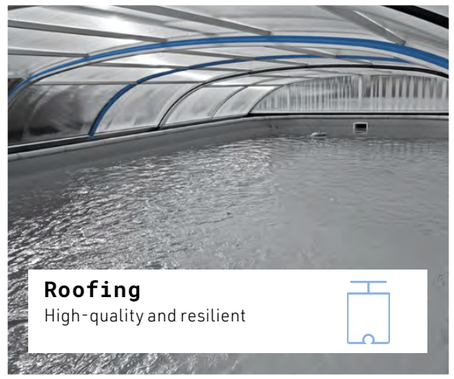


Aerospace
Lightweight and reliable

Automotive engineering
Lightweight and durable



Conveyor technology
Exact and high-performance



Roofing
High-quality and resilient

Contract manufacturer
Individual and trustworthy

R1011

Our profile bending machines

- Are flexible, high-precision, economical, fast and efficient
- Stand out for their high performance and versatility
- Allow fast programming without the need for programming skills, increase productivity and flexibility, and are intuitive to operate
- Permit uncomplicated tool changes
- Allow the use of special tools for steel, stainless steel and aluminium profiles
- Offer numerous additional equipment and expansions
- Can be produced as individual custom machines where required

PBT15©
Compact and versatile

ARKUS12©
Compact and precise

PBT25©
The universal solution

PBT35 Servo Wide©
Quiet and powerful

Helix Servo©
The power package

R 1950

Our control systems

Our control systems

Manual

The manual version has a Siemens panel, which serves as the basis for the retrofit-compatible tablet versions TEACH-IN and TABLET350. This panel shows the operator the current X-axis position of the feed roller, with a position detection precision of 0.01 mm. The speeds of the feed roller and the rolling speed can be modified by the operator as required, from crawling speed to rapid traverse. As an additional function, the Siemens panel allows a variable front stop to be set on the X-axis.
This simplifies the implementation of a recurring bending radius in series production.
All axes are operated using touch controls.

TABLET Teach-in

The TABLET Teach-in control system allows small and large series to be manufactured automatically. The programming takes place in teach-in mode, i.e. the operator teaches the machine a single time using touch controls, and then the program can be repeated as often as desired. The program directory allows existing data to be accessed and changed.
This TABLET Teach-in control system shows the operator the current X-axis position of the feed roller with a position detection precision of 0.01 mm, as well as the Y-axis position for the corresponding component length. The speeds of the feed roller and the rolling speed can be modified by the operator as required, from crawling speed to rapid traverse.

Tablet350

The PC-based control system for 3-roller bending machines was developed by PBT, and in 1995 it was the first to offer the capability of controlling bending tasks using software.

The TABLET350 was derived from the uncompromising PC400 control system, and offers its main functions in an elegant format: bending programs can be created, managed and controlled using the tablet, without the need for programming skills. Illustrated control elements facilitate intuitive operation during everyday work, while the graphic display of the programmed workpiece with bending radii and bending lengths allows visual inspection of the programmed data. The communication with the bending machine takes place via WiFi. Data backups take place using a convenient USB port located on the outside of the control unit.

The tablet can be mounted on the machine using the supporting arm supplied, and can be adjusted for optimal operation. If greater freedom of movement is required, the wireless data transmission makes it possible to move around freely in the room with the TABLET350.

PC400

A detailed description of the full version of the control system variant PC400 can be found on the following pages.

PC400

Convenient creation and saving of bending programs

The PC-based control system for 3-roller bending machines was developed by PBT, and in 1995 it was the first to offer the capability of controlling bending tasks using software. The PC400 is currently the most advanced and flexible control system on the market, and offers countless advantages for small and large series production processes.

Whether integrated into a network or as an individual work station, as a 3D version or with the addition of a mandrel, the new PC400 control system can be individually configured.

On the basis of a high-performance Windows PC with a state-of-the-art multi-touch display, bending programs can be created, managed and controlled intuitively on the moveable control terminal, without the need for programming skills. Here the graphic display of the programmed workpiece allows visual inspection of the programmed data. The hardware is network-compatible and can easily be integrated into the existing IT infrastructure.

Flexible, efficient and economical

The control programs generated allow up to 25 different segments to be arranged in any sequence and bent in one or more passes. Subprograms for the creation of ellipses, handrails for spiral staircases, "Napoleon curves", S-curves or special shapes are already available as standard.

By means of precise control of the X and Y-axis, perfect transitions are achieved between radii and straight sections. Non-conformances caused by the machine are excluded through the continuous regulation of the axis position during bending, from individual parts to large-scale series production. Unavoidable non-conformances in programmed data, which can result e.g. from different material elasticities, are corrected in the software by entering actual manufactured values – consistent repeat precision and low reject rates are thus ensured.

Open and expandable

With the PC400 control system, an open system has been created, such that the control system can be individually expanded through the use of standard components.

The PC400 can be expanded at any time through the use of options such as the automatic radius measuring system, Z-axes for bending into the third dimension, or the integration of a mandrel bending unit with a feed system.

The control panel communicates with a Siemens S7-1200. This allows the programming of other digitally controlled processes in the manufacturing sequence.

Benefits

- Performance of the bending process in one or more passes - even where there are different radii within a component
- Material catalogue / springback diagrams can be created for all profiles – up to and including automatic radius measurement
- All software tools / subprograms included
- Assignment and access of PDF documentation (image/text) for creation of workpieces using a corresponding program
- Optional interface with CAD software for the creation of programs based on design data
- Workplace-independent creation, management and data backup of programs by means of network integration
- Direct support from PBT experts thanks to the remote maintenance capability

Mandrel bending device
MBD4

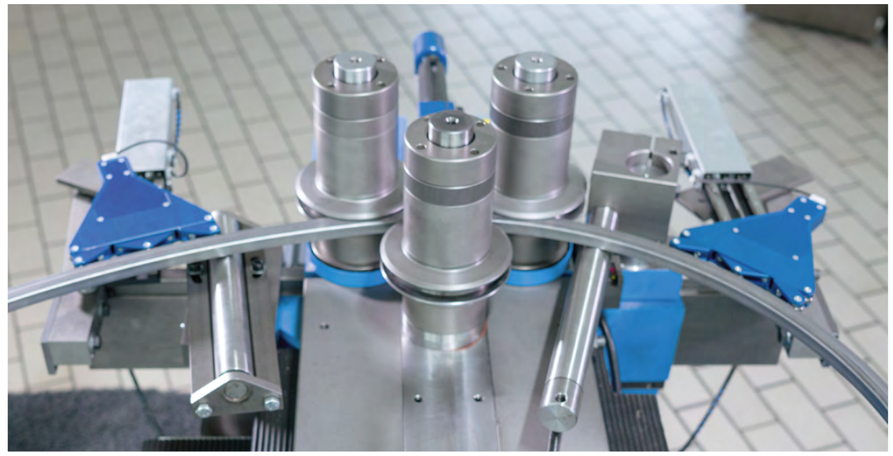
Articulated mandrel

Booster

Mandrel bending device
MBD4 CNC-controlled

- Profile feed unit 6 m version
- Compressive force approx. 4000 kg
- For bending hollow profiles up to approx. 2.5 x profile width in one pass.
- Servo technology with CNC-controlled mandrel and feed unit (booster).
- Guarantees slip-free bending even of small radii in one pass.

R 2202



Automatic radius measurement system

- Fully automatic radius measurement based on our PC400 control systems
- The pneumatic gauge heads can be positioned variably to the right and left of the bending rollers
- Measurement of one or more different radii in the same profile is possible
- Continuous and cyclical measurement of the actual manufactured radius possible
- After measurement of the actual manufactured radius, automatic correction takes place until nominal radius is reached

Supporting roller controlled
(Z-axis) for 3D bending
(right and/or left)

The controlled supporting roller additionally makes it possible to bend with a gradient. With the associated software, it is simple to programme and bend 3D elements.

3D bending/turning device
manual or CNC-controlled
for model PBT25

Allows bending into the third dimension and additional turning of the profiles in two directions.

References

International companies in a wide range of industries benefit from the cost-effectiveness, precision and reliability of our machinery and services.

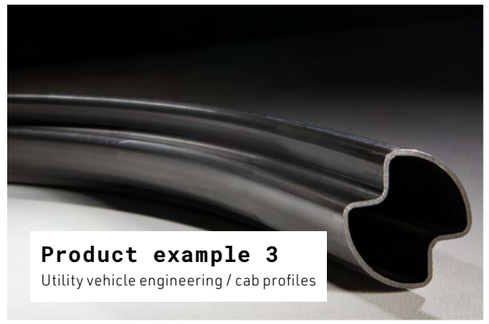
Here are a selection of our customers:

Agrikon, Airbus, Albixon, Alcan, Asas, Audi, Barnshaws, Bestbend, Biegetechnik Steinrücken, BMS, Brökelmann Aluminium, Bürstner, CWA Constructions, Die Bahn, esa, Fendt, Fritzmeier, HMT, Holden, Hydro, Hyundai, Jaguar, Jansen, Kersten Europe, Linde, Lugstein, LS Lederer, Mercedes-Benz, Metallgestaltung Eickhoff, Obru, Pemat, Porsche, Proas, Rexroth, Ronal Group, Sadef, SAPA, Schaeffler Group, Schüco, Siemens, Sjolund A/S, Still, Thyssen Krupp, Voest Alpine, Volkswagen, Walter Mauser, Welser Profile, XAL

AIRBUS · ALBIXON · bürstner · FENDT · FRITZMEIER · HYMER · JANSEN · Linde · sapa: · SIEMENS

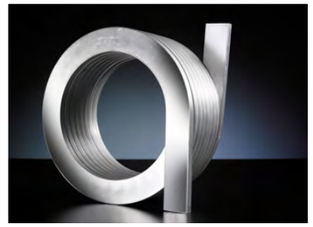
Product example 1
Automotive engineering / wind deflector

Product example 2
Conveyor technology / transport systems

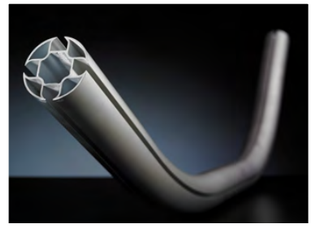


Product example 3
Utility vehicle engineering / cab profiles

Product example 4
Conveyor technology / cladding sheet



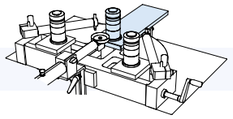
Product example 5
Cooling spiral

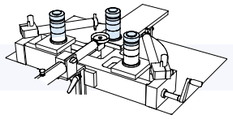


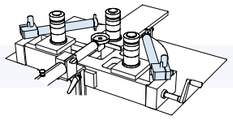
Product example 6
Exhibition stand construction

Our profile bending machines

Our profile bending machines

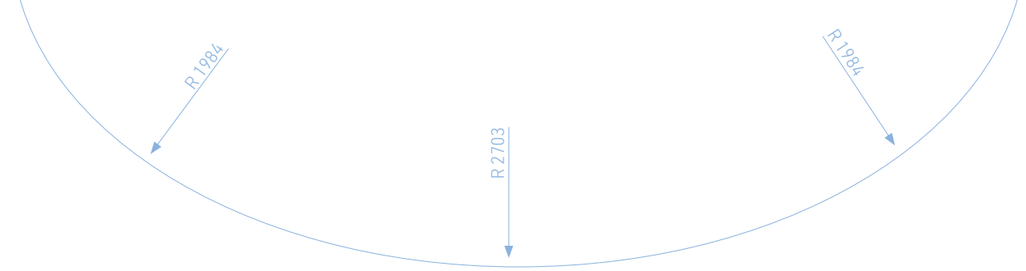






	ARKUS12©	PBT15©	PBT25©	PBT35 Servo Wide©	HELIX Servo©
X-Achse					
Force X-axis	12 t	15 t	27 t	35 t	65 t
Positioning accuracy of the X-axis	0,01 mm	0,01 mm	0,01 mm	0,01 mm	0,01 mm
Drive of X-axis	Valve controlled hydraulics	Valve controlled hydraulics	Valve controlled hydraulics	SERVOHydraulics	SERVOHydraulics
Stroke of X-axis	200 mm	300 mm	265 mm	390 mm	445 mm
Max. insertion width	135 mm with roll ring D105 60 mm with bending device	263 mm with roll ring D105 238 mm with roll ring D130	243 mm with roll ring D150	293 mm with roll ring D150 (optionally 350 mm with roll ring D150)	415 mm with roll ring D220
Hydraulic oil volume	7 litres	17 litres	17 litres	9 litres	9 litres
Y-axis					
Shaft drive; individually driven!	Electric motors, clean and low noise	Electric motors, clean and low noise	Electric motors, clean and low noise	SERVO DRIVE - 100% torque at any speed	SERVO DRIVE - 100% torque at any speed
Dynamic speed control of the shafts	1 – 30 rpm	1 – 20 rpm	1 – 22 rpm	1 – 16 rpm	1 – 8 rpm
Max. torque per shaft	500 Nm	800 Nm	1600 Nm	3000 Nm	9000 Nm
Shaft height	110 mm (optionally 220 mm)	275 mm	300 mm	400 mm	500 mm
Shaft diameter Ø	40 mm	40 mm 65 mm	105 mm	105 mm	130 mm
Shaft supports	optionally	series	series	series	series
Front shaft distance	256 (optionally 80) – 518 mm	110 - 800 mm	200–1000 mm	360–1120/1400 mm	630–1330 mm
Z-axis					
Manuell Z-axis (static)	serie	series	series	-	-
Cranked Z-axis (dynamic)	optionally	optionally	optionally	optionally	-
CNC-controlled Z-axis (dynamic)	optionally 4 t	optionally 2 t	optionally 2 t or 4 t	optionally 4 t	serie 4 t
Control / Software:					
Machine control	Manuell / Tablet Teach-In / TABLET350 / PC400	PC400	Manuell / Tablet Teach-In / TABLET350 / PC400	PC400	PC400
Operating system	Windows 10	Windows 10	Windows 10	Windows 10	Windows 10
General technical data:					
Connection	3 x 400 VAC, 16 A	3 x 400 VAC, 20 A	3 x 400 VAC, 32 A	3 x 400 VAC, 32 A	3 x 400 VAC, 62 A
KW	2 kw	4 kw	7 kw	15 kw	34 kw
Length / width / height	905 mm / 950 mm / 1125 mm	1400 mm / 1450 mm / 1370 mm	1680 mm / 1250 mm / 1390 mm	1970 mm / 1860 mm / 1420 mm	2520 mm / 2240 mm / 1760 mm
Weight	540 kg	1275 kg	1150 kg	2250 kg	5500 kg
Transportability of the machine	Pallet truck	Pallet truck	Pallet truck / Drawbar	Crane	Crane

Production examples



Production examples

ARKUS12©	mm	70/12	100/10	30/30	30	50/50/5	50/50/5	60/60/7	60/60/7	60/60/7	UNP 80	UNP 80	–	1-PE 80	2" [60]	50/50/3	60/30/4	–	–	–	–	Aluminium 30/20/2
	R min.	300	150	150	150	300	400	400	400	400	400	400	–	500	300	300	500	–	–	–	–	200
PBT15©	mm	100/15	200/10	40/40	40	60/60/6	60/60/6	70/70/7	70/70/7	70/70/7	UNP 140	UNP 140	IPE 80	IPE 120	3" [88,9]	100/40/4	100/40/4	Steel 70/50/2	Steel 90/50/2	Aluminium 70/50/2	Aluminium 100/70/2	Aluminium 30/20/2
	R min.	1.500	300	500	500	300	300	400	400	400	800	800	1000	1000	500	1.000	1.000	500	500	200	600	200
PBT25©	mm	120/15	300/15	60/60	60	80/80/8	80/80/8	80/80/8	80/80/8	80/80/8	UNP 180	UNP 180	IPE 120	IPE 160	4" [114]	160/60/4	160/60/4	Steel 70/50/2	Steel 90/50/2	Aluminium 70/50/2	Aluminium 100/70/2	Aluminium 30/20/2
	R min.	1.000	300	500	500	600	1.500	500	500	500	600	600	800	500	600	1.000	1.500	300	300	200	300	200
PBT35 Servo Wide©	mm	120/15	260/20	80/80	80	100/100/10	100/100/10	100/100/10	100/100/10	100/100/10	UNP 200	UNP 200	IPE 160	IPE 180	Ø 180	100/100/10	160/60/4	Steel 70/50/2	Steel 90/50/2	Aluminium 70/50/2	Aluminium 100/70/2	Aluminium 30/20/2
	R min.	600	350	700	700	800	1.000	600	900	750	600	600	1.500	500	1.000	600	1.000	300	300	200	300	200
HELIX Servo©	mm	200/30	260/30	100/100	80	120/120/12	120/120/12	130/130/14	130/130/14	130/130/14	UNP 260	UNP 260	HEA 200	HEB 180	Ø 219	250/150/10	180/80/6	–	–	–	–	–
	R min.	2.000	450	1.000	500	1.000	1.500	750	1.000	750	1.000	1.000	3.000	2.000	2.000	1.750	1.750	–	–	–	–	–

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