FINN-POWER

- PUNCHING
- LASER CUTTING
- **BENDING**
- INTEGRATED PUNCHING & SHEARING
- INTEGRATED PUNCHING & LASER CUTTING
- FLEXIBLE MANUFACTURING SYSTEMS

H SERIES PRESS BRAKE

PROVEN PRESS BRAKE TECHNOLOGY WITH STATE-OF-THE-ART SOLUTIONS

***FINN-POWER H** press brakes are designed and built for high-precision performance in demanding sheet metal working.They are a combination of decades-long experience and the latest in machine construction and control technology.*

*The **FINN-POWER H** series press brake technology derives from experience, commitment to sophisticated manufacturing technology, the well-known **FINN-POWER** tradition of innovation, as well as close cooperation with leading international technology partners.*

Attaining the Highest level of quality with FINN-POWER H-Brake

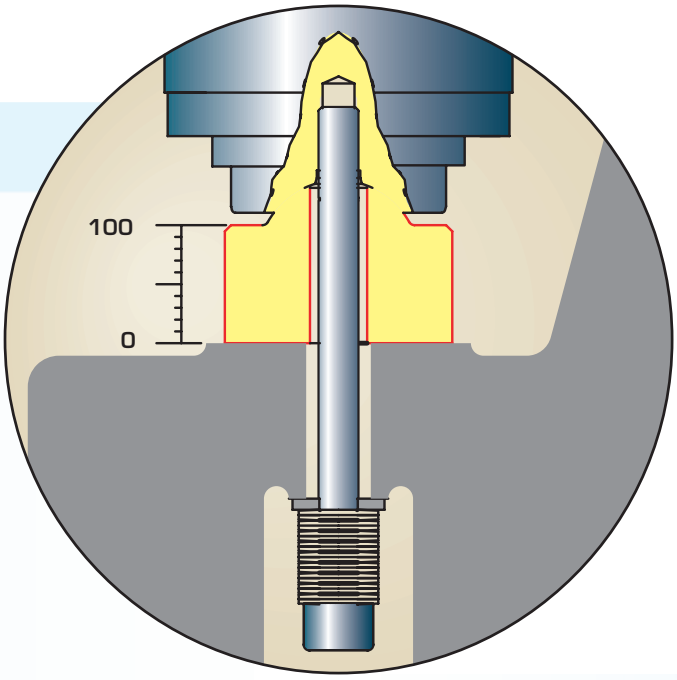
The H of H-Brake not only stands for Hydraulic but also for the Highest quality in all respects. There are many reasons why FINN-POWER H-Brake can achieve high productivity when performing precision work, including a construction in which the measuring devices are mounted independently of the side frame. Other distinctive features are the large daylight opening, the variable beam opening (Q dimension), the application of highly dynamic servo valves, the long slide ways and a stable and fast back gauge system.

Anyone making the highest demands on safety and uninterrupted operation, can select the new FINN-POWER H-Brake equipped with a programmable light screen. It offers a great advantage, as this system includes a floating blanking function as well as 1 and 2 cycle operation as standard accessories.

The TS press brake control, offers all the advantages of a PC with Touch Screen operation in which a network connection has already been installed.

The FINN-POWER H-Brake provides an extensive selection of various options from which to choose.

Variable Q-dimension



FINN-POWER H-Brake: Efficient for high precision and productivity

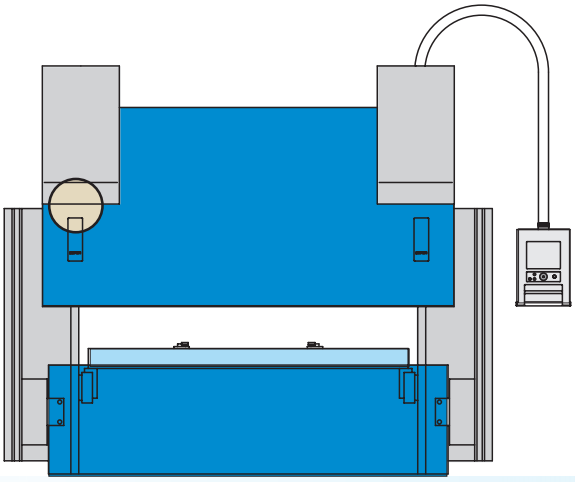
The first impression of the FINN-POWER H-Brake is dominated by its robust construction. This includes a large space between the side frames and a large daylight opening, enabling the machine to be put to optimum use along its entire working length. The concept was developed in order to ensure high productivity of faultless, precision work. All machining of the large mechanical components is completed in one session, so that the machined surfaces are perfectly parallel and square.

The position of the top beam is measured and controlled with the greatest accuracy. The measurement is made by two linear sensors that are installed on a robust measuring device independent of the side frame. The construction is such that the side frame assembly does not have any influence on the angle being bent. Both press brake cylinders are individually controlled by an electronic servo-hydraulic system.

The adjustable and maintenance-free slideways have a long, flat surface, making it possible to set the top beam at an angle, so that parallelism corrections can be easily made. Moreover, the long guides, in combination with a well-designed cylinder construction, make a large and flexible beam opening (Q dimension) possible.

The surfaces for installing tools on both the top and lower beam are universally designed, so that a large variety of upper and lower adapters can be implemented.

Working with the FINN-POWER H-Brake is easy and comfortable in all respects. The same holds true for the servo hydraulic drive, due to the very quiet internal gear pump.



FINN-POWER FEATURES FOR PRODUCTIVITY

FINN-POWER H-Brake scores high in ergonomics

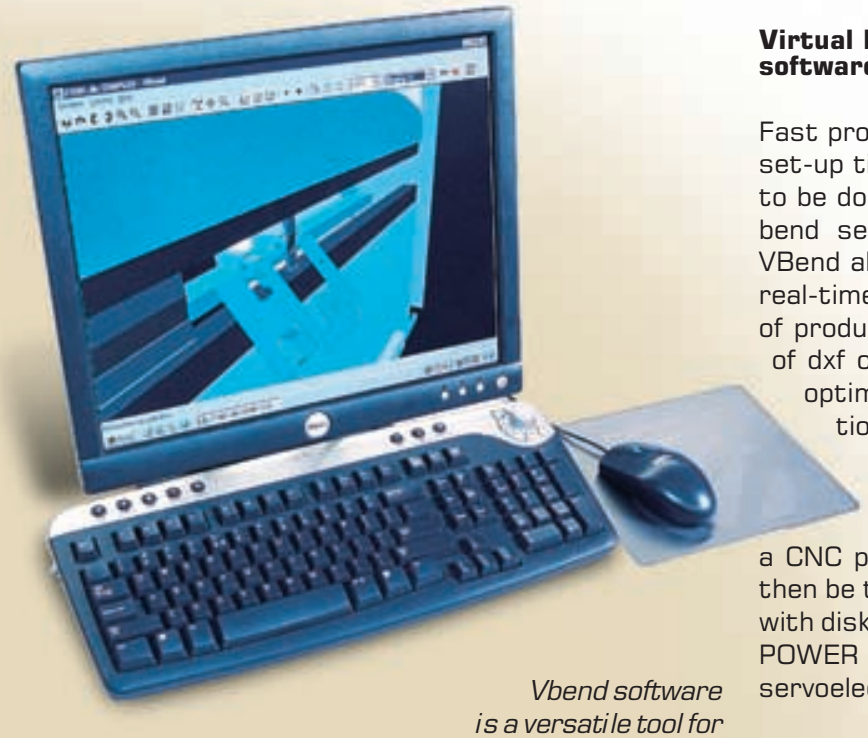
Electronic Mode control and operation by means of a Touch Screen control has been a revolutionary innovation. This control device has set a new standard for press brake control equipment. The FINN-POWER TS Touch Screen control is most probably the simplest and most efficient the simplest and most efficient human machine interface currently available and consequently a paragon of the electronic evolution in sheet metal working. The control operates on a PC running Microsoft Windows®.

An intelligent feature of the FINN-POWER Touch Screen control is the fact that it only displays those buttons that are required by the operator at any given moment. The system is so simple that, in a manner of speaking, a child could make the bend. A standard accessory of the control is a 100 MB Ethernet UTP network connection. The instructions from the FINN-POWER TS control are sent to a central processor, which then adjusts the various axes by means of a CAN-BUS (Control Area Network). The advantage of this is that the electronics can be built in modular form requiring fewer components. This enhances flexibility and interchangeability, as well as operational reliability. The FINN-POWER TS control can be programmed quickly and accurately on account of its 'self-learning' database of materials, tools and earlier, previously-corrected bending operations. The TS1 control works with numeric entry and display of bending parameters

TS1 control

TS1 is a numerical control which has been developed aiming to maximum simplicity and meeting the operator's needs. Applying a PC with Touch Screen monitor has resulted in a very user friendly press brake control. Programming takes place by touching the chosen field in the screen and subsequently adding the required data. This fast data input method contributes to substantially shortened programming time.

OFFLINE PROGRAMMING WITH VBEND



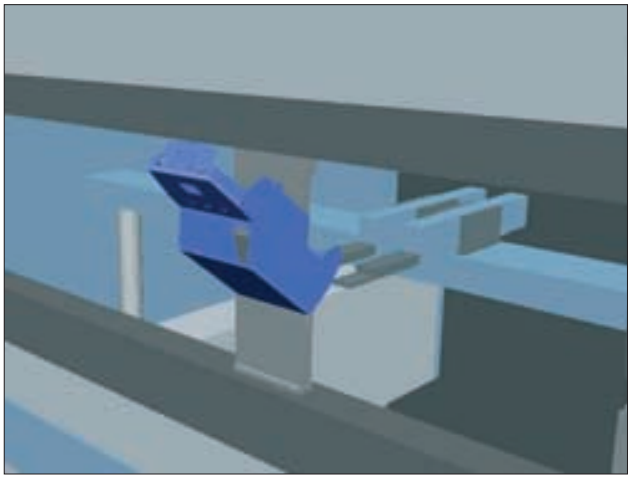
Vbend software is a versatile tool for efficient offline programming

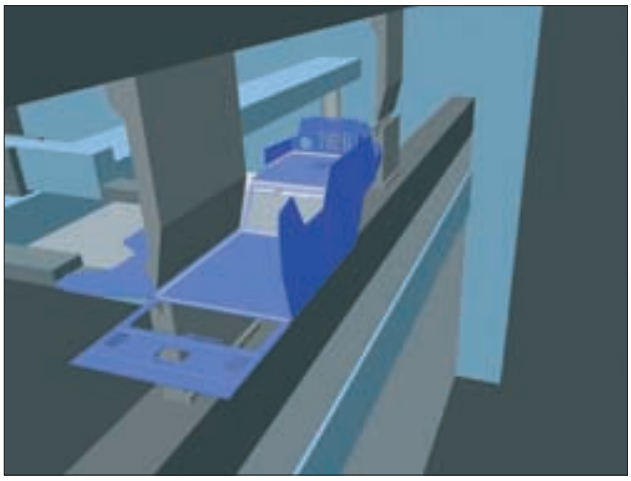
Virtual bend sequence and bend simulation software Vbend

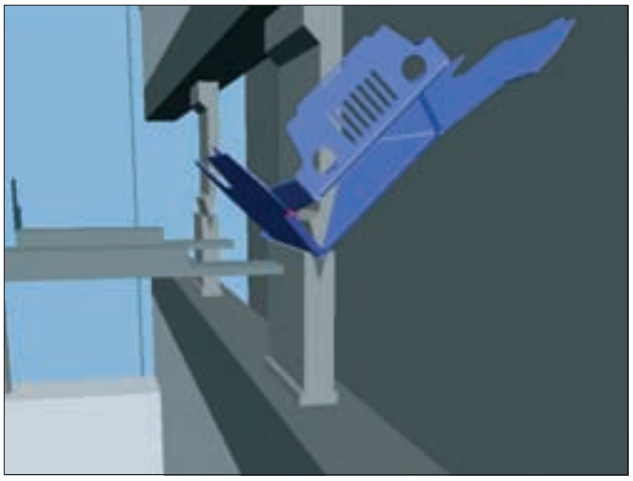
Fast product development and short production set-up times require that some of the work has to be done in office in offline enviroment. Virtual bend sequence and bend simulation software VBend allows bend sequence calculation and 3D real-time simulation already at the design stage of product development. The software consists of dxf converter, automatic tool selection and optimatization module and automatic generation of bend sequence with complete collision study of the product itself or machine parts. When simulation is completed succesfully, Vbend creates a CNC program for machine control, which can then be transferred to shop floor via Ethernet or with diskettes. Vbend can be used both for FINN-POWER hydraulic H series press brakes and for servoelectric E press brakes.

TS2 control

In addition to the functions of TS1 it is possible with TS2 control to visualize bending sequences graphically of programs made with off-line programming SW (V-Bend).







TS3 control

The TS3 control contains all possibilities of the TS2 control. However, 2D/3D simulation software is now integrated in the TS control, as well as the keyboard. Thus it is possible to establish the bending order graphically at the press brake. During production, a choice can be made between graphical and numerical description of the bending process.

TS 3 control

FINN-POWER FEATURES FOR PRODUCTIVITY

Wide range of front supports contributes to the ergonomics

Adjustable movable support arms

FINN-POWER H Brake features a modular support-arm programme for both lighter and heavier sheet metal work. With this technology, the appropriate solution for every use can be quickly implemented. In this way, ergonomics and efficiency can be combined in an ideal manner.

- movable along the machine
- equipped with brushes
- adjustable height
- fitted with (fine adjustment) stops
- programmable height adjustment
- suitable for use with a safety light guard

NC front supports

FINN-POWER provides the operator with a tireless, exceedingly strong and utterly precise aid for the bending of heavy and/or very accurate products. The powerful servo-hydraulic bending aid can support products weighing up to 500 kg during bending. The servo-mechatronic bending aid provides suitable support for products with weights up to 150 kg requiring an accuracy of 2°, while products weighing 50 kg or less are monitored to an accuracy of 0.5°.

Above:
Adjustable moveable support arms

Below:
Servo-hydraulic bending aid

Built-in quality

Outstanding precision is one of the most characteristic features of the FINN-POWER press brakes. However, variations in sheet metal material can negatively affect the work piece quality. With real time angle measurement systems of FINN-POWER a constant production quality can be reached even under circumstances where material thickness and microstructure have large tolerances. Two different solutions are available, **E-Bend L** and **E-Bend M**.

E-Bend L is based on a system using laser beams. Two sensors are equipped with magnets and are placed in pairs on the back and front of the standard bottom tool. E-Bend L assures constant quality in terms of angle tolerances. It does not measure the angle in degrees, but it always keeps the next part angles equal to those of the previous, independently of differences in sheet thickness and rolling directions.

E-Bend M is a 'first-part-correct' angle measurement system. It can be used like E-Bend L for assuring constant quality as well as satisfying high precision needs in single piece production. E-Bend M consists of two pneumatic sensors on a rail that can be programmed to measure at any position over the bending length. Both sensors are in contact with the material during the bending cycle. Before the final angle is bent, the spring back of the sheet is measured. This measurement is used to make a calculation to reach the correct angle with the final bent

Right, top:
E-Bend L uses a laser beam in measuring.
Right, bottom:
E-Bend M has sensors to assure constant quality.

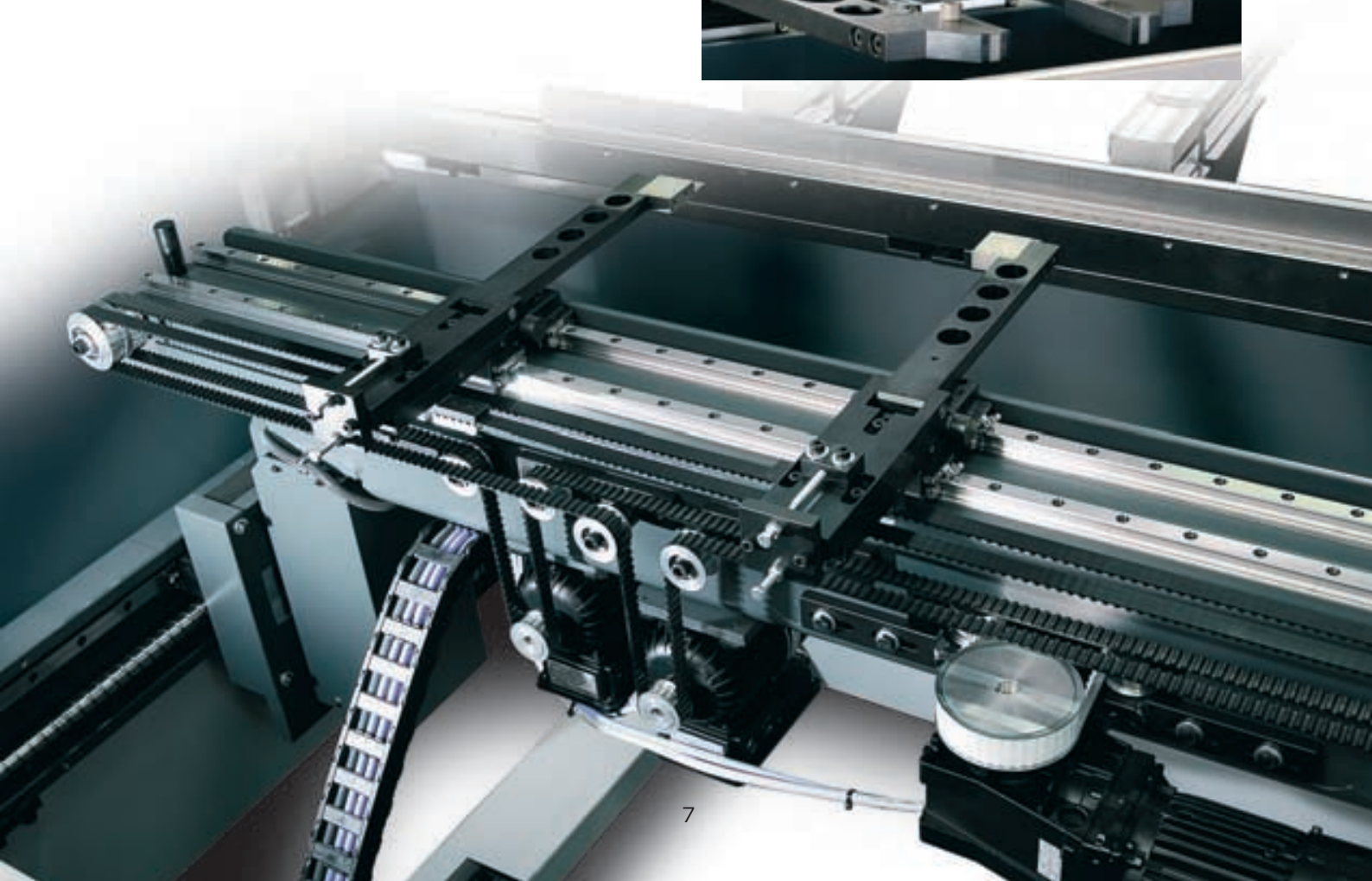
Heavy-duty back gauge with large oprerating range

The FINN-POWER H-Brake is equipped with a heavy-duty CNC controlled back gauge system fitted with recirculating ball screws and precision linear ball-bearing guides. The basic model comes complete with CNC controlled X axis.

The standard version of the back gauge has two hinging stop fingers that can be manually moved along the bending line (Z axis) as well as adjusted in height (R axis). The stop fingers are provided with interchangeable pins. In optimum use, they permit a maximum back gauge range of 1,100 mm (1,000 mm for 90 tons capacity).

Optional equipment includes back gauge systems with CNC controlled R, Z1, Z2 and delta X axis.

For the most complicated parts FINN-POWER's six-axis back gauge is the optimal solution. It allows numerically controlled independent movement of each axis X1,X2, Z1, Z2, R1, and R2. The constructions are based on linear bearings and precision-ground guide bars axes. X and R axis are transferred with ball screws and Z movements with tooth belt.



TOOLING SYSTEMS FOR PRODUCTIVITY AND PRECISION

Right:
Wila New Standard clamping and tooling
Below:
European style tooling and clamping

Below:
CNC crowning

Crowning table as standard

FINN-POWER press brakes are equipped with Wila crowning table as standard. Crowning is based on moving the wedges in respect to each other.

CNC controlled crowning is optional. It is very easy to adjust the crowning over the control unit in case there are variations in material thickness or rolling direction etc.

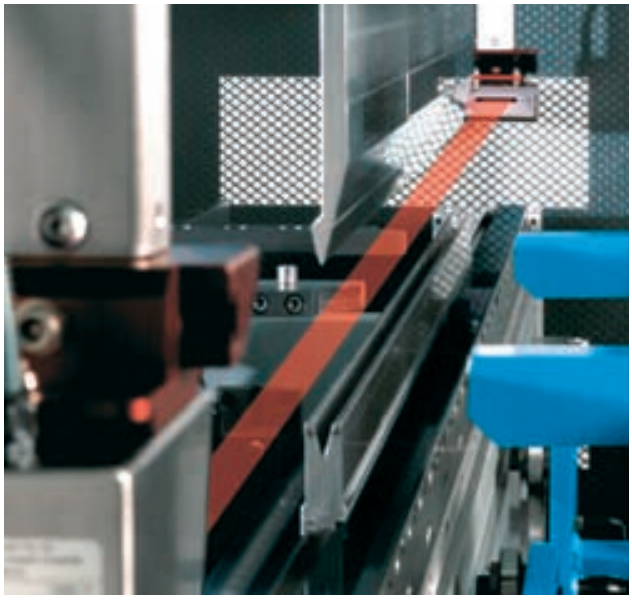
Fast, easy tool clamping

FINN-POWER utilizes Wila clamping for upper and lower tooling. Mechanical tool clamping is standard equipment. Manual tool fastening by tightening of the screws is fast.

Fastening mechanism both centralizes and straightens the tools automatically and allows the operator to start bending right after fastening the tools. Rotating the tool by 180° horizontally is possible because the adaption is symmetrical to the centre line.

Hydraulic clamping system both for upper and lower tooling is offered as option. Hydraulic clamping fastens, straightens and centralizes tools automatically.

FINN-POWER offers also clampings and adapters for European style tooling as an option.



FINN-POWER H-Brake:
An extremely high level of safety

The standard safety features of the FINN-POWER H-Brake fully satisfy European Norm EN 12622.

The drive for the top beam contains block hydraulics with protected and monitored dual valves. The safety circuit is double channelled. The back and both sides are protected by mechanical screens with safety switches. On the left side, the side screen can be opened, so that low-speed bending work can be performed in the opening. The operator has an emergency switch within hand's reach on the control panel.

Outside of the three position foot switch, a reset button (release button) has been installed on the operating console. In the range of operating settings, it is possible to block operation by means of a key switch. Additionally, the FINN-POWER H-Brake offers advanced options for extra safety, such as a programmable safety light screen in the retractable side screen, complete with floating blanking,1 or 2 cycle operation, or Laser Guard protection. For both systems, the various operating procedures can be selected by means of a lockable selector switch in the electronic cabinet. Using a light guard, the operator can choose the best (fastest) working procedure for each step in the bending process. The maximum closing speed of the top beam set by the foot control is automatically set to less than 10 mm/sec when no light guard or Laser Guard protection has been activated. Only when one of these safety systems is active, the closing speed of the top beam may be higher than 10 mm/sec. An extra (optional) operator console is prescribed when 2 operators work with the machine at the same time. This operating console can also be programmed in such a way that the operator can control the machine at 2 independent points.

FINN-POWER H-BRAKE: A HIGH STANDARD OF EQUIPMENT

Standard features

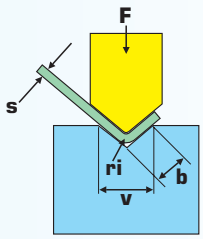
- FINN-POWER CNC TS1 Touch Screen control on a swing arm mounted on the right side of the machine
- CNC controlled servo-electrical adjustment of the bending depth
- CNC controlled back gauge with a long range on the X axis
- Manual linear guide adjustable along the Z axes
- Safety provisions complying with European Machine Directive EN 12622
- 2 hinging back gauge fingers with various gauging surfaces and adjustable in width
- Automatic bending pressure control with ±1 ton accuracy
- Top beam manufactured from ST. 52.3, adjustable Y1-Y2 (+/- 2.5 mm)
- Re-adjustable steel, top-beam guides made of wear-resistant, maintenance free guiding material
- Hardened chrome piston rods
- Universal flat attachment surfaces on top and lower beam for various tool systems
- Optimally adjustable daylight opening
- Finished surfaces on the lower beam on which to mount moveable support arms, etc.
- Support arms
- Automatic star/delta switch
- Lockable main switch
- Foundation plates
- Filled oil tank

Air Bending Tonnage Chart

v mm	4	6	8	10	12	16	20	25	32	40	50	63	80	100	125	160	200	250
b mm	3	4	5.5	7	8.5	11	14	18	22	28	35	45	55	71	89	113	140	175
ri mm	0.6	1	1.3	1.6	2	2.6	3.3	4	5	6.5	8	10	13	16	20	26	33	41
s mm																		
0.5	4	3																
0.8	10	7	5	4														
1		10	8	6	5													
1.2		14	11	9	7	6												
1.5			17	13	11	9	7											
2				24	20	15	12	10										
2.5					31	23	19	15	12									
3						34	27	21	17	13								
4							48	38	30	24	19							
5								60	47	37	30	24						
6									67	54	43	34	27					
8										95	76	61	48	38				
10											119	95	75	60	48			
12												136	107	86	69	54		
15													168	134	107	84	67	
20														239	191	149	119	95

= corresponding tonnage for optimum v-opening

Rm= 42 kN/cm²



F = tons per meter of workpiece
s = material thickness
ri = inside radius of formed part
v = V-die opening
b = minimum flange

FINN-POWER IN BRIEF

***FINN-POWER Oy** and its worldwide network of subsidiaries and representatives specialize in advanced sheet metal working technology. The company was established in 1969.*

*Following the introduction of its first hydraulic turret punch press in 1983 **FINN-POWER** has developed a modular product range for punching, laser cutting and bending, for solutions integrating right angle shearing and laser cutting with punching, and for automation of the entire material flow of your sheet metal working process.*

Flexibly yours®

FINN-POWER

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