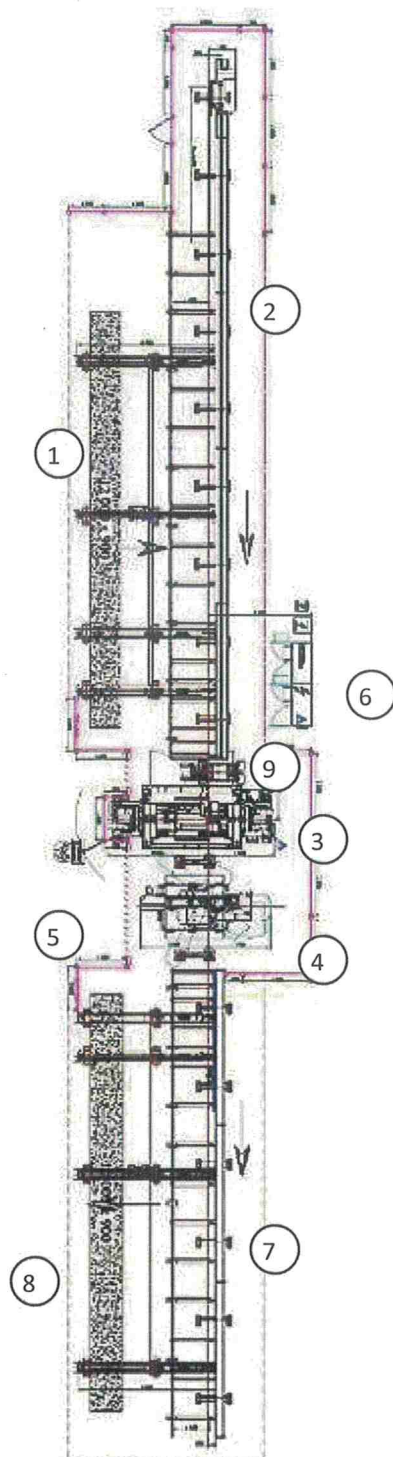


1 Layout principle

The diagram below shows the architecture of a standard line and does not necessarily correspond in every points to the line described in this quotation. The paragraph "Commercial conditions" lists the equipment actually quoted.



Standard Line HDM – HBP

COMPOSITION

- 1- Storage and loading system *by transfer chains with retractable fingers (option)*
- 2- Infeed table with CNC carriage
- 3- Mono Spindle drilling machine HDM
- 4- HBP band sawing machine
- 5- Control panel with 15" TFT flat screen and tight keyboard
- 6- Electrical cabinet with Industrial PC, software PLC and air conditioning system
- 7- Exit table motorized on 4.5 m
- 8- *Storage and unloading system by transfer chains with retractable fingers (option)*
- 9- *CNC disk marking unit (option)*

The photos in this document do not necessarily correspond in every points to the machine described. They are, therefore, not contractually binding.

As part of the continuous improvements made to its equipment, Vernet Behringer reserves the right to change the design of the machines without prior warning and without reducing the machines' capacities.

2 Technical description



2.1 *Technical capacities*

Maximum length of bars.....18 m

Maximum weight of bars.....5 tons

Maximum linear weight of bars.....400 kg/m

Maximum opening of gripper30 mm

Usable section.....900 mm x 400 mm

Type of profile	Measurement	Minimum	Maximum
Angles	mm	80 x 80 x 8	250 x 250 x 30
Flat bars	mm	80 x 10	900
IPE	mm	80	900
IPN	mm	80	900
UPE	mm	80	300
UPN	mm	80	400
HEA HEB	mm	100	900

Sawing capacities

Section	850 mm x 400 mm
Mitre cut left	
75°	flat (w x h) = 850 x 400 mm
60°	flat (w x h) = 750 x 400 mm
45°	flat (w x h) = 600 x 400 mm
30°	flat (w x h) = 400 x 300 mm
Mitre cut right	
75°	flat (w x h) = 850 x 400 mm
60°	flat (w x h) = 750 x 400 mm
45°	flat (w x h) = 600 x 380 mm

2.2 Drilling machine

Dimensions of working unitH=3200 L=5100 W=1800

Weightapprox. 6 tons

Drilling power11.7 KW

Rotating speed200 to 4000 RPM

Drilling diametermax. 40 mm with HSS or carbide drills
Mini 8 mm

Drillshelical high speed steel or carbide

Coolingexternal lubrication or by centre cooled drills

Stroke adjustmentCNC control

Feed speed adjustmentautomatic transfer from fast approach to working speed

Gage line adjustmentCNC controlled - ball screw drive
Brushless servomotor

Pop marking, countersink, tapping cycles

Automatic tool length measuring

2.3 Sawing machine

Machine sizeLength: 1 850 mm swivel range 3500 mm
Width: 3 300 mm swivel range 3500 mm
Height: 2 600 mm

Weightabout 3 000 kg

Material support height800 mm

Total powerca. 9 kW

Electric equipmentaccording to German VDE regulations
Voltage: 400 V $\pm 10\%$, 50 Hz

Saw band size.....6.700 x 41 x 1.3 mm

Saw drive.....Power of motor: 7.5 kW frequency regulated
Cutting speed: 17-110 m/min.

2.3.1 Foreseen renovation on sawing machine

Machine frame paint

Consumables replacement:

- Central pivot for saw rotation
- Drawn bar of material table
- Carbide guides and guiding rollers of the saw blades

Replacement of the cable tray of the machine frame

Replacement of the saw rotation encoder for angle cut

2.4 **Main characteristics**

Programmingindustrial PC

Bar feed speedvariable speed from 0 to 54 m/min.

Carriage return speed54 m/min.

Transfer speed of drilling unit.....gage line, feed : maxi 50 m/min.
Rotation : 180° in 2 s

Measurementmetric or inch measurement

Accuracy.....+ or - 0.5 mm

Energy supply :

electricity3 phases 380/400 Volts 50 Hz
40 KVA

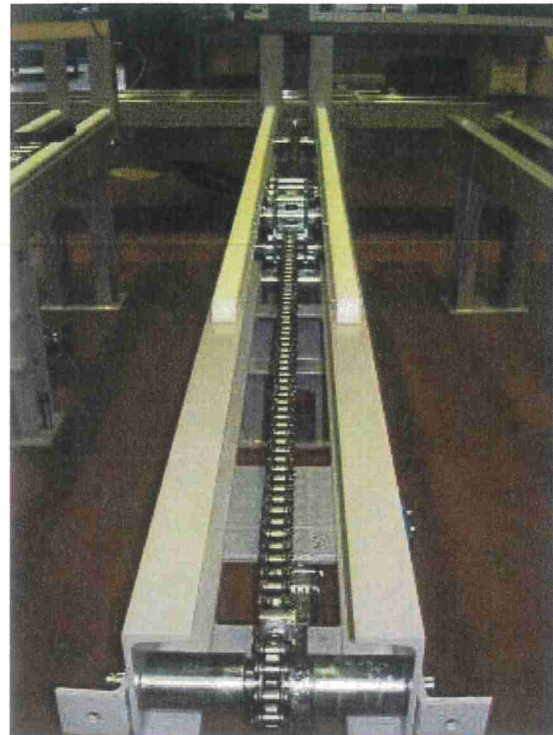
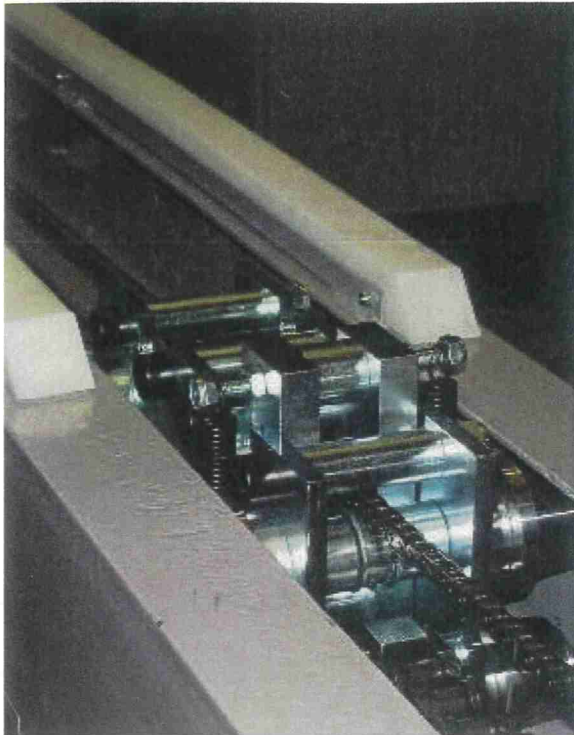
Compressed air.....pressure 7 bars with mini 6 bars
3 m³/hour of compressed air

3 **General characteristics of the equipment**

3.1 **Lateral transfer systems for infeed table**

The chains are driven by a one speed brake motoreducer, giving a traversing speed of approximately 13 m/min.

Each system is equipped with a carriage with retractable fingers which allow pushing the beams in both directions: to the drilling unit table or back to the storage area.



The loading of infeed conveyor with the chains transfer system occurs during the carriage return, gripper raised.



The system is controlled from the remote control desk.

NOTA: This equipment is designed such as supporting the shocks of a traveling crane feed.

3.2 Infeed conveyor

Constructed of steel sections, it includes:

- Cylindrical rollers mounted on roller bearings, on which the section to be operated is placed
- Rectangular tube on which is mounted the tracks for the carriage, and under this is located the precision rack for guiding
- Cable tray set on the base is used to connect the cables from the carriage to the control desk
- Lateral guiding device at the entrance to the drilling unit consisting of rollers to control lateral guidance and to insure easy and proper feed of the material into the drilling unit

The standard CNC measuring carriage includes a heavy and rigid welded steel frame on which are fixed 2 bearing rollers, 8 guiding rollers and the propelling system. The carriage is driven by a brushless servomotor.

The transmission between the motor and the pinion is ensured by a set of 2 timing belts; the contact of the pinion onto the rack is accurate, without clearance. Furthermore, the level of the carriage can be easily adjusted through the bearing rollers supports to perfect the rack/pinion contact during the machine life if necessary.

The gripper arm is adjustable, the gripper itself can be rotated manually to clamp the sections on the web or flange.

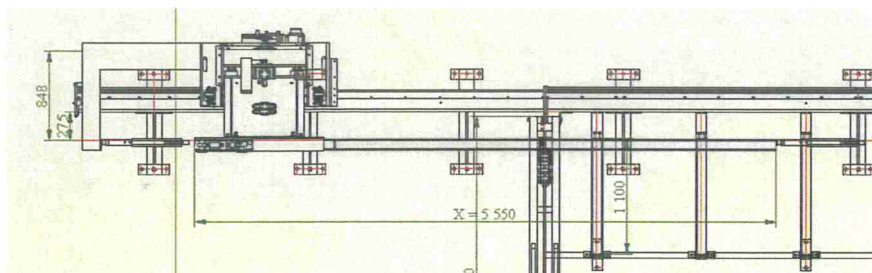
The gripper is equipped with a sensor in order to detect that the profile is properly gripped.

The carriage is equipped with a lifting system which lifts the gripper arm during its return to back position and allows loading the next section in spare time.

Nota: chain transfer systems can be added later on the infeed conveyor

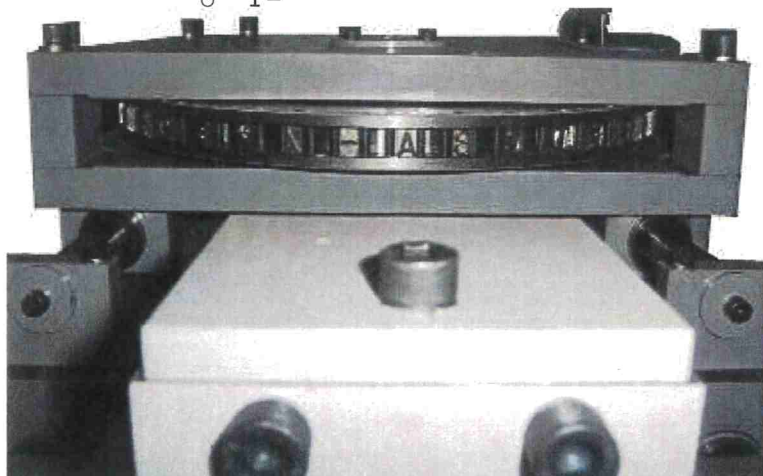
3.3 Double gripper system

The carriage is equipped with a second gripper located at its back side: this enables to grip a bar by the back side of carriage and begin the machining. When there is enough place, the back gripper releases the bar, the carriage goes back and grips the bar by the long gripper so as to be able to bring the bar up to the sawing machine.

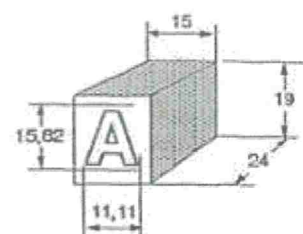
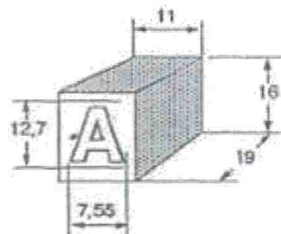
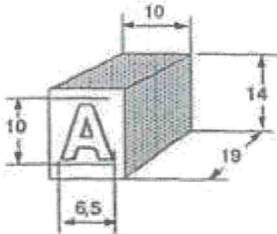


3.4 CNC disk marking unit

- Marking power : 5 to 8 tons
- Character number : 40 =
 - o 1 alphabet : A to Z
 - o 10 figures : 0 to 9
 - o 1 *
 - o 1 /
 - o 1 +
 - o 1 -



- Size : 10, 12.7 or 16 mm high
- Character selection : CNC control according to the program with Brushless servomotor
- Installation of the machine : in line with the drilling or the combined drilling sawing machine
- Marking time : about 2 seconds for 1 character



3.5 Drilling machine:



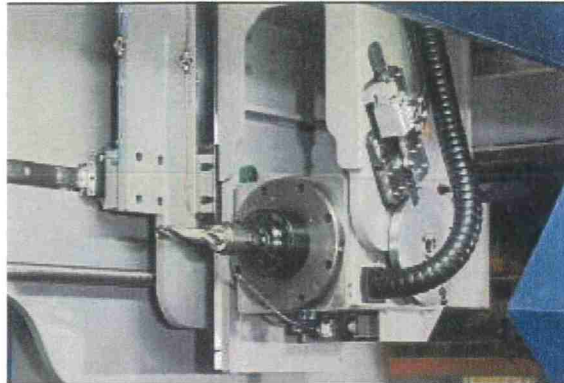
The frame of the machine is made of heavy welded steel. It is constituted of 2 parts:

- 1 lower frame opened in its middle to allow easy removal of swarfs and chips
- 1 upper frame

These 2 subassemblies constitute a heavy portal system, that gives the machine a very good stability.

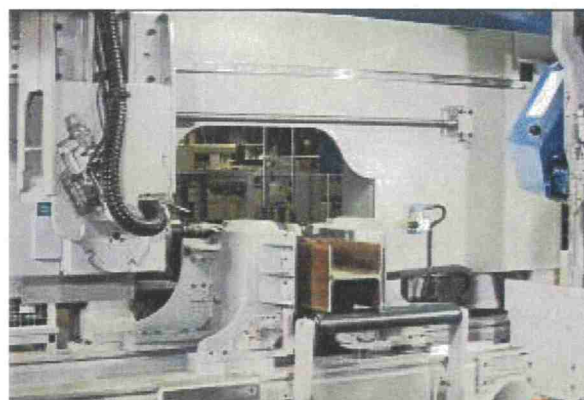
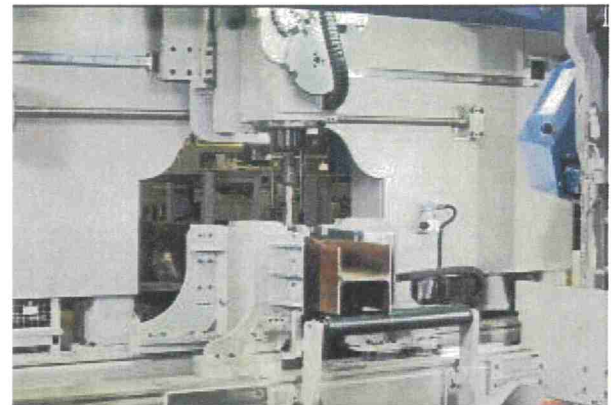
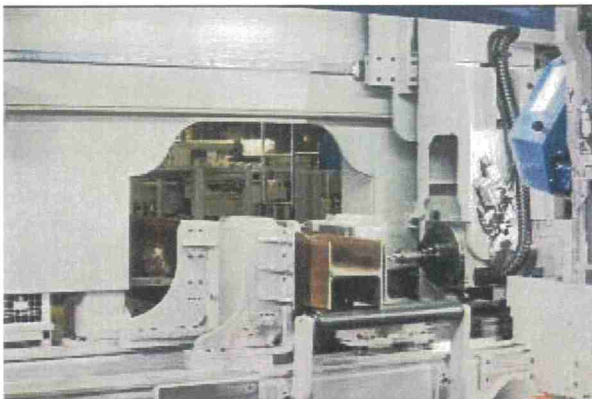
The guiding rails of the drilling unit and clamp are fixed on this frame.

3.5.1 Drilling unit:



The welded steel frame moves horizontally on prismatic rails fixed on the upper frame. Its motion is controlled through ball screw drive and brushless servomotor. The unit itself is vertically guided through prismatic rail; the feed motion is controlled through ball screw drive and servomotor.

The drilling electro spindle is adjusted to allow drilling in both flanges and web of profile.



3.5.2 Clamping system:

It includes a horizontal clamp and vertical clamps. The horizontal clamp is composed of a fixed jaw located on the reference line on the machine and a moving jaw actuated by 1 horizontal hydraulic cylinder.

Horizontal clamping power: 1500 DaN

Each jaw of the horizontal clamp is equipped with a vertical clamp: clamping power of each clamp 1000 DaN.



Between 2 operations, the vertical and horizontal clamping system opens with a small stroke, in order to release the part as well as minimizing clamping times.

3.5.3 V-scoring fast scribing

- | | |
|-----------------------------|---|
| Description and advantages: | <ul style="list-style-type: none"> • Tool installed on the machine drill • Scores shapes for welding identification • Tool with plate thickness compensating device <ul style="list-style-type: none"> ➤ Pin maintained in contact with the plate ➤ Scoring tool without rotation • Computer data sent by a DSTV file (if not manual programming, to be checked with Vernet Behringer) |
| Tooling supplied: | <ul style="list-style-type: none"> • One V-scoring chuck • Three V-scoring cutting tools |



V-scoring spindle

3.6 Behringer band saw HBP 430/854 G (overhauled equipment)

Machine installed in the last quarter of 2000, overhauled before resale.

Heavy duty, fully hydraulic high performance band sawing machine for economic, safe and accurate cutting of profile material and solid materials with difficult cutting qualities of metal

3.6.1 Technical capacities / cutting range

Section	850 mm x 400 mm
Mitre cut left	
75°	flat (w x h) = 850 x 400 mm
60°	flat (w x h) = 750 x 400 mm
45°	flat (w x h) = 600 x 400 mm
30°	flat (w x h) = 400 x 300 mm
Mitre cut right	
75°	flat (w x h) = 850 x 400 mm
60°	flat (w x h) = 750 x 400 mm
45°	flat (w x h) = 600 x 380 mm

3.6.2 Technical Data (without any accessories)

Machine size Length: 1 850 mm swivel range 3500 mm
 Width: 3 300 mm swivel range 3500 mm
 Height: 2 600 mm

Weight about 3 000 kg

Material support height 800 mm

Total power ca. 9 kW

Electric equipment according to German VDE regulations
 Voltage: 400 V $\pm 10\%$, 50 Hz

Saw band size 6.700 x 41 x 1.3 mm

Saw drive Power of motor: 7.5 kW frequency regulated
 Cutting speed: 17-110 m/min.

3.6.3 Foreseen renovation

Machine frame paint

Consumables replacement:

- Central pivot for saw rotation
- Drawn bar of material table
- Carbide guides and guiding rollers of the saw blades

Replacement of the cable tray of the machine frame

Replacement of the saw rotation encoder for angle cut

3.7 Outfeed conveyor

It is welded steel frame, motorized on 4 m with free wheels.

Nota: 1 hydraulic unloading device can be added later on the outfeed conveyor (optional equipment).

3.8 Transfer chains on outfeed conveyor

Transfer chains are installed on the outfeed conveyor.

These chains are modified so that they can push the bars out of the frames in order to transfer them on a moving table (transfer system from the chains to the moving table will be made by customer).

These chains include a removable stop. The stop can be removed manually without tool, one by one.

3.9 Hydraulic power unit (included in machine frame)

- Flow rate : 15 l/min.
- Pressure : 130 bars
- Capacity : 100 l
- Power : 4 KW

3.10 Control panel

Located on the drilling unit, it includes :

- 15" TFT colour flat screen
- 1 tight keyboard
- Pushbuttons, joy sticks and control leds, RESET and EMERGENCY STOP buttons



3.11 Electrical cabinet

It includes :

- an Industrial PC with software PLC
- servo drive
- input/output interfaces
- power supplies and transformers
- switches and fuses

The electrical cabinet is dust tight and equipped with an air conditioning system.

3.12 Set of tooling:

- 5 tool attachments for each size (CM1, CM2, CM3, CM4)
- 3 extensions for each size, except CM4
- 20 HSS drills
- 3 band saw blades

3.13 Software package:

- PRO.NC2 programming software and DRIVER for HD machine
- DSTV Import
- Network connection (cable supplied and installed by customer)
- Telemaintenance for one year (during guarantee period).