

1 Technical description

1.1 HD 615 drilling line

A complete, state-of-the-art, CNC-controlled system for efficient and rapid fabrication by drilling of almost all types of structural sections and flat bar.



1.1.1 Technical capacities

Maximum length of bars 12 m / 15 m (bars up to 15 m loaded with raised gripper)

Usable section 600 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*	600
IPE	mm	80*	600
IPN	mm	80*	600
UAP	mm	80*	300
UPN	mm	80*	400
HEA HEB	mm	100	600

** depending on gripping way, can be reduced to 50 mm*

Energy supply:
 electricity 3 phases 380/400 Volts 50 Hz
 40 KVA
 Compressed air pressure 7 bars
 3 m³/hour of free air

Hydraulic power unit (included in machine frame)
 - Flow rate: 15 l/min.
 - Pressure: 130 bars
 - Capacity: 100 l
 - Power: 4 KW

1.1.3 General characteristics of the equipment

 *Chain transfer systems for infeed conveyor*

The 5 chains (2 m usable width) 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 through a joystick from the remote control desk.



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

✓ Infeed conveyor

Constructed of steel sections providing a working length of 12 m, it includes:

- Cylindrical rollers (diameter 114.3 mm) 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 (diameter : 118 mm, width : 60 mm), 8 guiding rollers and the propelling system. The carriage is driven by a brushless DC motor with integrated resolver (for measurement of both position and speed).

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 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.

For longer bars (up to 15 m), loading is done as follows:

- the carriage lifts up for enabling bar loading
- then the first infeed table meters are powered in order to move the beam in the area where the gripper can catch it.
-

✓ HD 615 drilling unit:

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 for easy removal of swarfs and chips
- 1 upper frame

These 2 subassemblies constitute a heavy portal system (around 10 T), that gives the machine a very good stability.

Guiding rails of vertical units, horizontal unit and clamp are fixed on this frame.

Horizontal drilling units:

The 2 horizontal drilling units are made in heavy welded steel. They are guided on their bottom, through ball bearings carriages and prismatic rails.

The horizontal translation of this frame provides the drilling stroke. It is controlled through a ball screw drive with DC moto-resolver. For each assembly, the drilling unit itself moves vertically according to the gage line, the guides are constituted of ball bearings carriages and prismatic rails; the vertical motion is controlled through ball screw drive and DC moto-resolver.

The space between the clamps enables to machine small and largest sections from 50 mm up to 600 mm.

Max. linear speed: 20 m/min

Vertical drilling unit:

A welded steel frame moves horizontally through ball bearings carriages and prismatic rails. This horizontal motion enables to reach the gage lines up to 600 mm.

The unit itself moves vertically inside this frame. It is also guided through ball bearings carriages and prismatic rails.

Both motions are controlled through ball screw drive and DC moto-resolver.



Each unit is equipped with a 9.2 KW motor controlled by a servo-converter enabling to reach the speed from 200 to 2 500 RPM.

Special cycles:

- Tapping cycles.
- Pop marking cycles: this ensures the possibility to mark some points on the beam (upper face of the web and both flanges), for instance where further elements will be welded.

Tool changing system

Each unit is equipped with an automatic tool changing system. The selection is made according to the program. The tool changing system can work separately or at the same time. Each system includes a fixed magazine with 5 stations.

These tool changers are located within the machine frame, which enables an easier access around the machine.



For the horizontal units P1 and P3, vertical tool holders are equipped with a hydraulic cylinder to present the tool in front of the drilling unit. During tool changing, after backward movement of the drilling unit, the tool holder is positioned in front of the unit: tool changing includes releasing of the original tool, the hold of the new tool and the backward movement of the tool holder.

For the vertical unit P2, the tool holder is located in the longitudinal axis of the machine and upper than the max. profile, which enables tool changing of this unit without any risk of collision with horizontal drilling units. Tool changing includes releasing of the original tool, the hold of the new tool and the backward movement of the tool holder.

According to the tool selected through the program, the unit will go automatically (through its gage line control) to the right position, in front of the selected drill level in the magazine. Tool changing can be done in hidden time, while drilling operations of other units.

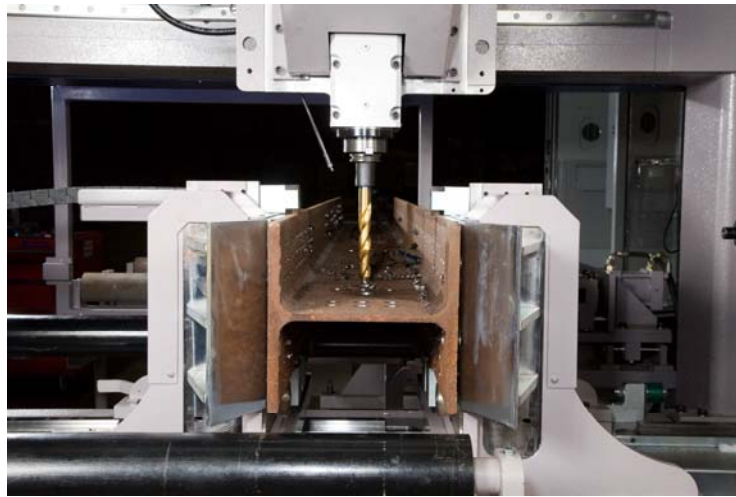
Clamping system:

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.



Outfeed conveyor

Composed of separate welded frames, 4,5 m long, fully motorized with free wheels. A hydraulic ejector ensures a fast unloading (controlled from the control panel)

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



✓ **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.

✓ **Tooling package:**

- 15 HSS drills
- 12 ISO 40 attachments (3 CM1, 3 CM2, 3 CM3, 3 CM4)
- 9 extensions (3 for CM1, 3 for CM2, 3 for CM3)

✓ **Software package:**

- PRO.NC2 programming software and DRIVER for HD machine, as described here under
- DSTV Import
- Network connection (cable supplied and installed by customer)

PRO NC Office programming software

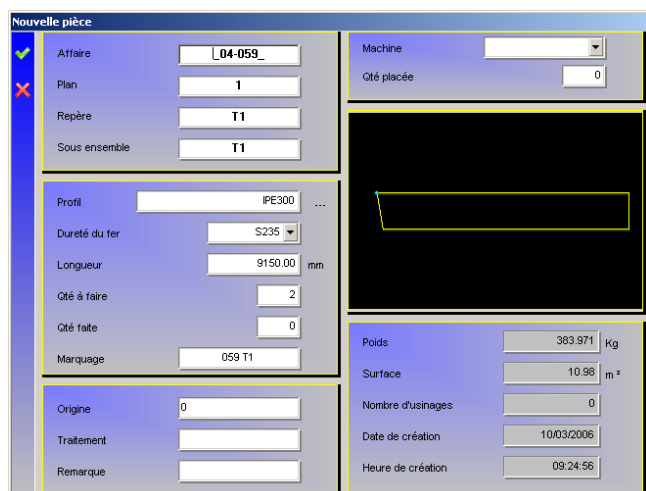
✓ **Generalities**

- Assistant software for N.C. programming
- Interface between engineering and workshop
- Client / Server Application SQL Database
- Compatibility with previous Vernet software (APROMAV, WinApro, ProNC32)
- More information on the same screen

✓ **Parts**

✓ **Manual creation of part**

- Unique part identification
- Selection of the profile in the database or creation if new
- Input of the length and the quantities
- Input of secondary information about the part



The screenshot shows a software window titled "Nouvelle pièce" with several input fields and a central preview area. The fields are organized into sections:

- Top Left:** "Affaire" (L_04-059_), "Plan" (1), "Repère" (T1), "Sous ensemble" (T1).
- Top Right:** "Machine" (dropdown), "Qté placée" (0).
- Middle Left:** "Profil" (IPE300), "Dureté du fer" (S235), "Longueur" (9150.00 mm), "Qté à faire" (2), "Qté faite" (0), "Marquage" (059 T1).
- Middle Right:** A large black area with a yellow rectangular outline representing the part's profile.
- Bottom Left:** "Origine" (0), "Traitement" (empty), "Remarque" (empty).
- Bottom Right:** "Poids" (383.971 Kg), "Surface" (10.98 m²), "Nombre d'usinages" (0), "Date de création" (10/03/2006), "Heure de création" (09:24:56).

- ✓ **Parts list saved in database**
 - Displaying of the parts with many possibilities of sort (Customer, profile, length or personalized)
 - Direct access of other information about the parts (graphic, works, ...)
 - Adjustment of information displayed on the screen

Liste de pièces

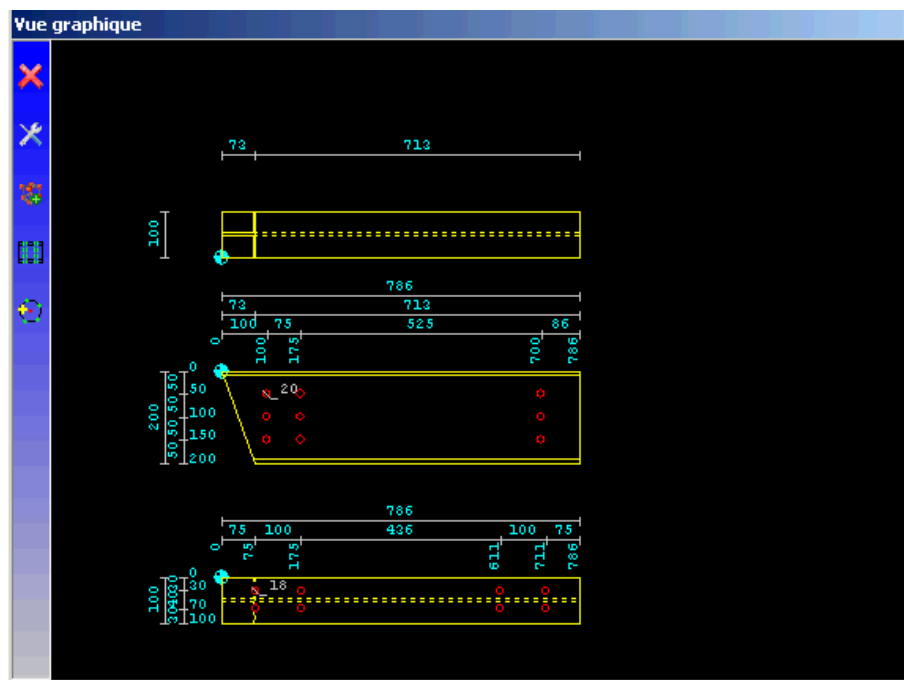
Alf. 04-000 Plan Repère Profil Forme Sous ensemble Machine

Drag a column header here to group by that column

Affaire	Plan	Repère	Sous ensemble	Profil	Longueur	Marquage	QAF	QTF	QTP	Poids	Traitement	Dure
04-000	1	P109	P109	HEA160	663.75	000 P109	2	0	0	0		S23F
04-000	1	P9	P9	UPN120	267.85	000 P9	12	0	0	0		S23F
04-000	1	P8	P8	HEA160	5859	000 P8	1	0	0	0		S23F
04-000	1	P7	P7	HEA160	5879	000 P7	1	0	0	0		S23F
04-000	1	CR110	CR110	PL50*50	10775	000 CR110	2	0	0	0		S23F
04-000	1	CR105	CR105	PL50*50	9615	000 CR105	1	0	0	0		S23F
04-000	1	CR104	CR104	PL50*50	9565		1	0	0	0		S23F
04-000	1	CR7	CR7	HEA340	10748	000 CR7	1	0	0	0		S23F
04-000	1	CR6	CR6	HEA340	10748	000 CR6	1	0	0	0		S23F
04-000	1	CR3	CR3	UPN180	363	000 CR3	2	0	0	0		S23F
04-000	1	CR2	CR2	HEA340	9983	000 CR2	1	0	0	0		S23F

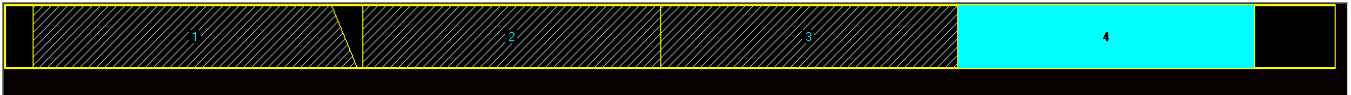
Nb : 15 / 1334 Lg : 103.3m / 11948.4m Sel : 0 / 1334

- ✓ **Graphic view of parts**
 - Graphical view of contours and works
 - Zoom with the mouse
 - Personalized appearance (Colors, font, ...)
 - Display useful information only (faces, measurements, ...)
 - Displaying of a title bloc
 - Creation of group of whole
 - Interruption mode



✓ **Beams**

- The notion of « Beam » means many different parts or several times the same one
- Gains of production time (Only one nesting performed in engineering)
- Gains of materials with optimized algorithms to reduce the remain
- Less intermediate so less errors (the operator receive the nesting from the engineering and send it to the machine)



✓ *Manual creation of beams*

- Definition of the beam (identification, length, quantity,...)
- Selection of the profile
- List of free parts with the selected profile
- List of added parts (by Drag-and-Drop or by selection)
- Graphic view of the beam

✓ *Stock management*

- Allow to add or delete profile for the nesting
- Definition of the profile (length, quantity...)
- Actions :
 - Add,
 - Delete,
 - Check or uncheck for the nesting.

✓ *Automatic nesting*

- Automatic generation of bars depending of the profile and free parts
- Adjustments
- Profiles list
- Parts list
- Statement of stock (the stock status is automatically updated after a nesting)
- Composition of each beam

✓ **Import/Export**

- Allow the transfer of the data (parts, nesting,...) from a station to another via a support (floppy disk, network, USB key,...)
- Several format files:
 - PRONC2 (*.PN2): Vernet Behringer new format file. Between two PRONC2 stations only
 - Apromav.dat / PNF : From or to another VERNET BEHRINGER station (Apromav or PRONC32)
 - D.S.T.V / CAM / DXF : From an engineering drawing station (Xsteel, WinSteel, Bocad, AutoCAD, ...)

Mise en barre automatique

Profil Machine Arrasage (mm) : 100.00
 Nuance acier : 100 / 300 Largeur trait découpe (mm) : 2.00
 Incrément coupe (mm) : 20.00
 Reste minimum (mm) : 200.00

Chute totale [%] : 20.3 Nb de barre générée : 47
 Chute réutilisable [%] : 19.4 Nb de barre brute utilisée : 29
 Nb de pièce traitées : 5084 Nb de barre recyclée utilisée : 18
 Nb de pièce placées : 83 Nb de barre recyclée générée : 47

Liste des barres
 Déplacer une colonne ici pour le groupement par colonne

Nom MEB	Profil	Nom	Longueur	Reste	T...	N
2006_03_14/1	IPE240	100452	16000	1620	0	S
2006_03_14/1	IPE240	100453	16000	1620	0	S
2006_03_14/1	IPE240	100454	16000	1620	0	S
2006_03_14/1	IPE240	100455	16000	11140	0	S

Liste des pièces

Fait	Affaire	Plan	Repère	Profil	Nuance
04047	1	EH4	ECH80_D17935	S235	
04047	1	EH3	ECH80_D17935	S235	
012	13	E2	HEA100	S235	
012	13	E3	HEA100	S235	
069	7	P1	HEA100	S235	
069	7	P2	HEA100	S235	

Liste des pièces dans barre

P...	Affaire	Plan	Repère	Sous en...	Longueur	Retournem...
1	04065	1	S4	S4	4760	0
2	04065	1	S86	S86	4760	0
3	04065	1	S87	S87	4760	0

Liste du stock

S...	Profil	Longu...	Qté	Nuanc...	id
✓	IPE240	252	1	S235	
✓	IPE240	252	1	S235	
✓	IPE240	255	1	S235	
✓	IPE240	332	1	S235	
✓	IPE240	341	1	S235	
✓	IPE240	404	1	S235	
✓	IPE240	431	1	S235	
✓	IPE240	431	1	S235	
✓	IPE240	432	1	S235	

Nb : 1292 / 0 Num_MEB : 2006_03_14/1

✓ Configuration

✓ Software

- Personalization of the work station:
- Choice of drawing faces for each profile
- Choice of information displayed in the grids
- Colors, fonts, ...

✓ Choice of the language

- Several languages are already available in the software
- It is possible to add a new one (specify it before order to make an offer)
- Database of labels and messages editable (it is easy and quick to change a label if necessary)

✓ Import / Export

- Adjustment of the importation or exportation for each type of file depending of the source or the destination
- Example: inversion of Y value, inversion of flange ...
- Possibility to define several sources by king of file
- (example: various engineering for DSTV import)

✓ Users management

- Creation of many users for the same station
- For each user : lock or unlock the access to the different windows or parameters
- Read/write access for all the windows of the software

1.2. HBP 310/523 G band sawing machine




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 or comparable plastics.

 *Technical capacities / cutting range*

	Mini	Maxi
Straight cut	50 x10 mm	520 mm x 300 mm
Mitre cut left 75° 60° 45° 30°		(w x h) = 520 x 300 mm (w x h) = 450 x 300 mm (w x h) = 350 x 300 mm (w x h) = 200 x 300 mm Or 230 x 200 mm
Mitre cut right 75° 60° 45°		(w x h) = 500 x 300 mm (w x h) = 420 x 300 mm (w x h) = 270 x 300 mm

Minimum = 50 x 8 mm

 **Technical data (without any accessories)**

Weight..... ca. 1 900 kg

Total power ca. 6 kW

Electric equipment according to German VDE regulations
Voltage: 400 V \pm 10%, 50 Hz with neutral wire
(Earth-leakage circuit breakers which are installed in the
main power supply must be the type all-current sensitive
with 300mA); control and valve voltage: 24 Volt DC

Color Basic machine: platinum grey RAL 7036
Safety hoods and covers: blue RAL 5002

Saw band size 5 000 x 34 x 1.1 mm

Saw Drive Power of motor: 4 kW frequency regulated
Cutting speed variable adjustable from 20 - 140 m/min

Micro pulverization, free cut included.