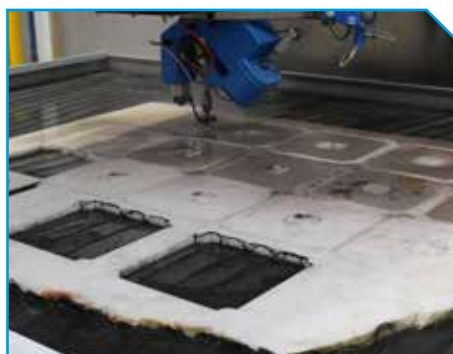


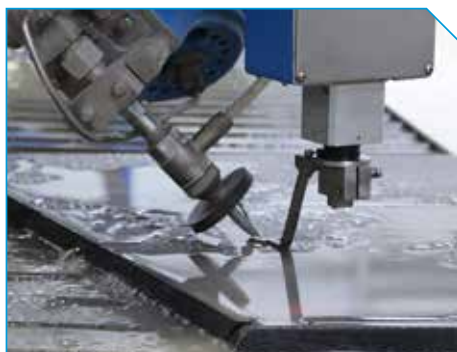
TWJ 4020 / TWJ 3317



3 OR 5 AXIS WATER JET CUTTING CENTER

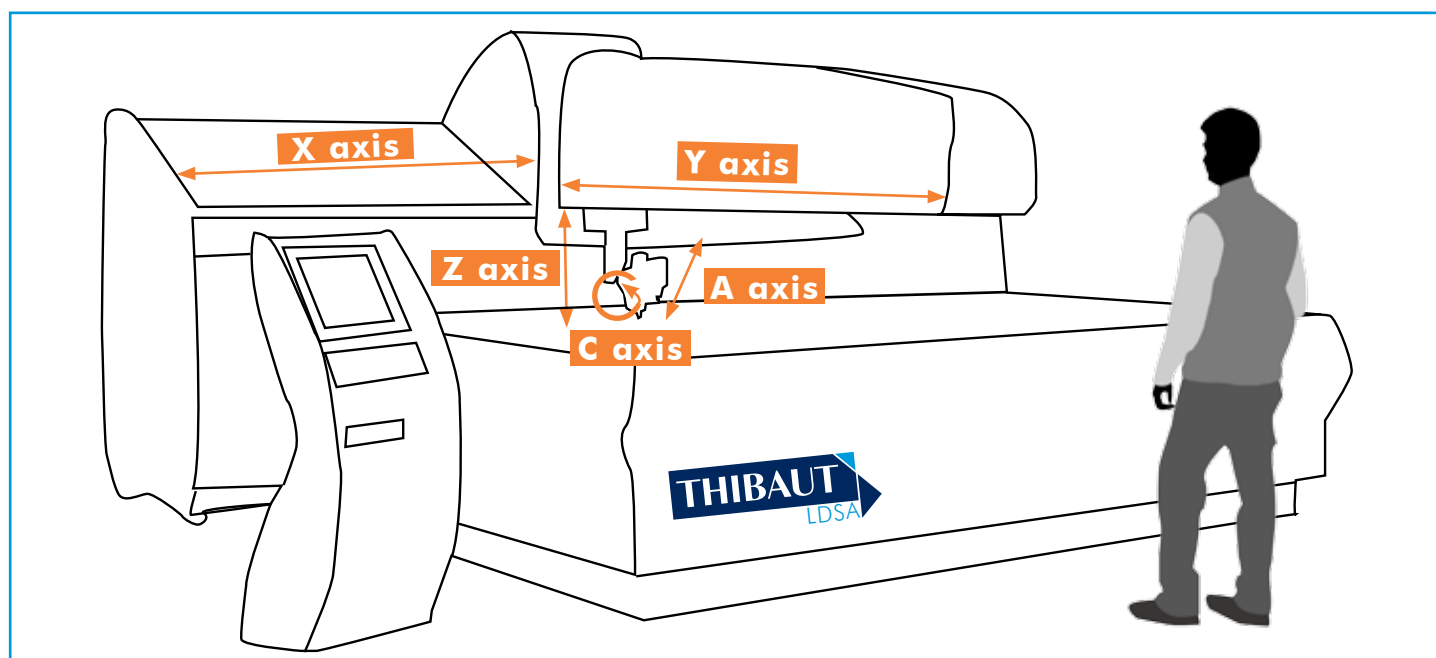
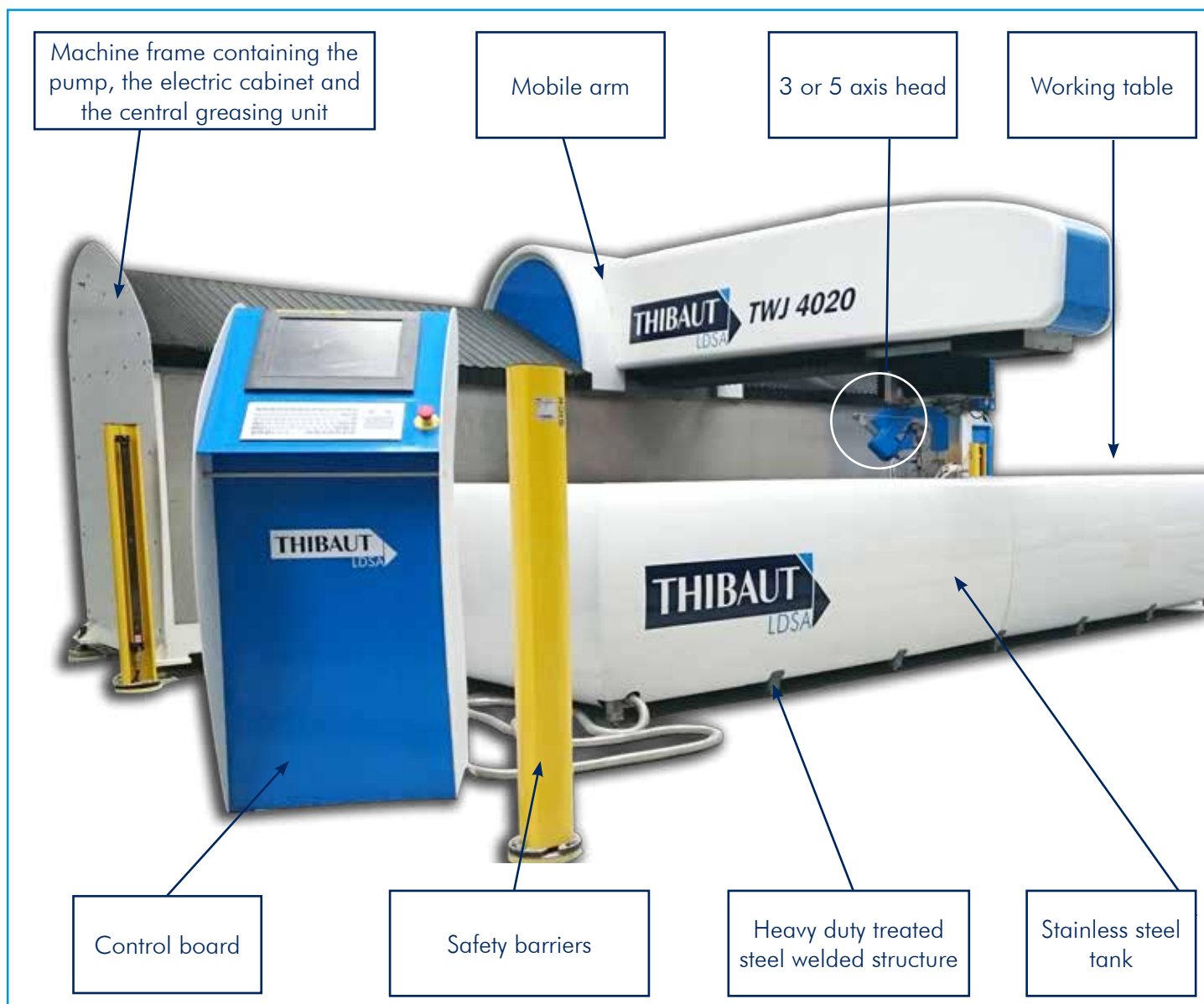


Straight, curved or inclined cut ...



TWJ 4020 / TWJ 3317

The purpose of this chapter is to give you technical and functional information on the machine as well as on the options and accessories. You will find in this document the different selected quantities and options. We are continuously improving the quality of our machines, the characteristics given in these pages may change at any moment and without previous notice. All the pictures and sketches of this document are used for information only.



TWJ 4020 / TWJ 3317

ASSETS AND EXCLUSIVITY

Using a waterjet system enables cutting of complex shapes in 2D flat materials with extreme accuracy.

Some of the added benefits are:

- **Good finishing aspect of the workpieces cut,**
- **No area affected by the heat,**
- **Very little waste.**

Moreover, the waterjet is environment friendly. This machine was developed in partnership with a leading company with more than 25 years of experience in the manufacture of waterjet machines with very high pressure.

Reliable, high efficiency machines with a modern design.

WATER JET CUT ASSETS

Enables cutting of all materials even the non smooth materials :

- Investment with high productivity
- Cold cut process which does not alter the molecular material structure
- Possible cut of big thickness
- Reduced water consumption
- Cheap consumables
- Optimization of chutes and raw materials
- Excellent precision and nice cut
- Easy loading of the piece to be processed

HIGH PRECISION HIGH PRESSURE WATERJET

The cutting system is a high pressure water jet up to 4150 Bar/ 60 000 PSI (optional : 6000 Bar / 87 000 PSI) generated by an intensifying pump. This high pressure water is concentrated into a fine but very powerful water jet after going through an orifice.

In a mixing chamber just after the orifice, abrasives are added to the jet which reach a speed of 900 m/s almost MACH 2. It then goes in a focalization tube to be projected onto the work-piece. The result is an abrasive jet of less than one millimeter diameter capable of cutting the hardest materials.



WORKING TABLE OF LARGE DIMENSION

A large working table enabling to cut the pieces of dimension 2000 x 4000 mm (78.7 x 157") TWJ4020 / 3300 x 1700 mm (130 x 67") TWJ3317.

Thanks to the mobile machine arm, access to the table is eased. The operation can lay the slabs from all the table sides.

The working table is composed of galvanized vertical blades (S shape), stainless steel frame and grates on tank bottom for recovering of waste material which might have fallen.

Water level variation by Ballast system (quick and ecological). By raising slightly the water level above the slab one can cut with the same efficiency yet reducing drastically the sound level.

AUTOMATIC SYSTEM CONTROLLED BY NC

The NC controls the head movement following the program written into the NC or on PC. The T'CUT software is identical to the software of the THIBAUT NC sawing machines.

Work-pieces are positioned on the working table. The table is in a stainless steel tank full of water.

Most of the materials do not require any clamping. The water in the tank absorbs the jet residual energy. The working table as well as the abrasive suction pipes positioned in the tank bottom (only with option abrasive muds evacuation) can be damaged or worn out by the jet if left idle a certain using time but can be replaced easily.



TWJ 4020 / TWJ 3317

ASSETS AND EXCLUSIVITY

VERY HIGH PRESSURE PUMP

The VHP pump is integrated in the machine frame (back side) for a space optimization. It is entirely controlled by the NC. The pressure is **variable** from 500 to 4150 bar / 7250 to 60000 PSI via IHM (option 6000 bar / 87 000 PSI).

This enables to drill with low pressure to avoid any splash or material breakage when jet is opened in full material. Then, the NC controls high pressure automatically.



EXCLUSIVE SYSTEM TO ADJUST THE HEAD

The cutting head (tool) is mounted on a mechanically adjustable support which enables to adjust the geometry of the head.

This design enables a perfect and natural alignment of the head without needing a NC software correction.

This design also enables to recover the original adjustment of the head with precision if an incident or a collision occur.



WATER TREATMENT

Our machines are delivered in standard version with a treatment system of the water : softening device, guaranteeing a high life duration of the high pressure pump and of the components.

In most of the cases, a softening system is enough : depending on the water nature, an osmosis unit might be required. A water analysis must be made on order.

Parameters	Symbol	Unit	Recommendation
Appearance			colourless
pH - Value min./ max.			7.0 - 8.5
Conductivity min./ max.	λ	$\mu\text{S}/\text{cm}$	100 - 450
Total hardness min./ max.		mmol/l (°dH)	0.36 - 1.78 (2-10)
Calcium hardness min./ max.		mmol/l (°dH)	0.36 - 1.78 (2-10)
Carbonite hardness (acid capacity pH 4.3) min./ max.	m - valeur	mmol/l (°dH)	0.36 - 1.78 (2-10)
Chloride	Cl	mg/l	≤ 100
Iron	Fe ₂	mg/l	$\leq 0,2$
Copper	Cu ₂	mg/l	$\leq 2,0$
Silicate	SiO ₂	mg/l	$\leq 5,0$

Inlet temperature for feedwater (min./max.) : +10 / +25°C

Feedwater inlet pressure, with booster pump (min./max.) : 0.1 / 0.3 MPa

ABRASIVE CONTROL

Our machines are supplied with a CNC controlled abrasive measuring system. A precise measurement of abrasive enables abrasive savings (15 to 50% saving).

The measuring device integrates an **automatic clogging detection** and an **automatic detection in case of lack of abrasive**. It avoids to damage the work in process or to destroy the abrasive measuring device.



TWJ 4020 / TWJ 3317

TECHNICAL FEATURES

Working capacity :

- Length : up to 4050 mm / 159" (TWJ4020) or 3350 mm / 132" (TWJ3317).
- Width : 2050 mm / 80" (TWJ4020) or 1750 mm / 69" (TWJ3317).
- Thickness : 1 to 200 mm / 7.8".

X axis (left-right movement) :

- Longitudinal stroke -X axis 4050 mm / 160" (TWJ4020) or 3350 mm / 132" (TWJ3317) (mobile arm)

Y axis (front-rear movement) :

- Traverse stroke -Y axis 2050 mm / 80" (TWJ4020) or 1750 mm / 69" (TWJ3317) (mobile carriage)

Z axis (vertical shifting) :

- Vertical stroke -Z axis 200 mm / 7.8 inches CNC controlled, including flatness controlling system (sensor)

Pneumatic pressure :

- The cutting tool is controlled by a pneumatic activating unit which starts and stops the jet
- The pneumatic system is equipped by a filter, lubrication system and pressure regulator

Technical data :

- Programmable feeding speed : 0-10 m./min - 0-32 feet /min
- Cutting precision : : +/- 0,1 mm (with a constant room temperature 15 Celsius)
- Machine deviation : + 0,05mm on 500mm
- Repeating operation less than + 0,02 mm

3 OR 5 AXIS HEAD

to cut in 5 interpoled axes :

- X, Y, Z axes
- C axis (rotation around vertical axis) +/- 370°, i.e. a little more than 2 complete turns
- A axis (tilting of the cutting head) = +/- 45° in cut (possible +/- 60° maximum).
- Abrasive cutting head IDE II 4000 bar **with diamond nozzle** mounted on a mechanically adjustable support enabling the edges cutting, taper compensation and cutting delay, sensor included.
- Continuous profile following



Head for 3 interpoled axes :

- X, Y, Z axes
- Abrasive cutting head IDE II 4150 bar **with diamond nozzle** mounted on a mechanically adjustable support, sensor included
- Continuous profile following



Feedings

- Voltage : 3 x 400 V - 50 Hz.
- Installed power : 8 KW + 37 KW for high pressure pump i.e.e total 45 KW.
- Compressed dry air : 6 bar.
- Electrical cabinet protection degree IP 55

Automatic centralized greasing :

- Complete centralized system which includes the pressure lubrication level checking located in the tank and allows the automatic lubrication of the components in motion.

Machine automatism and control :

- The main control components, electronic and electrical, as well as the numerical (CNC) control unit, are located in a cabinet which is **integrated to the machine**, equipped with air conditioning.
- Controlled board installed on rollers, equipped with a 15" color touch screen and waterproof keyboard.

Abrasives feeding controlled by the NC :

- An abrasive feeding system under pressure (PAA) – Capacity 400 kg / 882 pounds.
- A counter regulator type Feedline V (SDA), onboard on the motion carriage with abrasives dosing apparatus (+/- 5 % accuracy) with flow adjustment, lack of abrasive sensor and blocking

Machine delivered with :

- Replacement pipes THP 1/4 "
- Tooling set dedicated to THP pump
- Mini Kit of spare parts for the THP pump
- 3 spouts
- 2 tons of abrasives 80 MESH

Machine specifications :

- Dimensions: 6520 x 4500 x 2400 mm / 246 x 177 x 94" (TWJ4020) or 5865 x 4200 x 2400 mm / 231 x 165 x 94" (TWJ3317).
- Weight with tank without water : 6 300 kg / 13 890 pounds (TWJ4020) or 4 410 kg / 9722 pounds (TWJ3317) (without the pump of 1100 kg / 2425 pounds).

Remote diagnosis :

Allows our after sales service to intervene at distance on the machine from any computer via an internet connection. The machine is equipped with remote connection software.

Nota : The connection to internet as well as the safety device (Firewall and Antivirus) are chargeable to the customer. No call cost, excepted your internet subscription.



TWJ 4020 / TWJ 3317

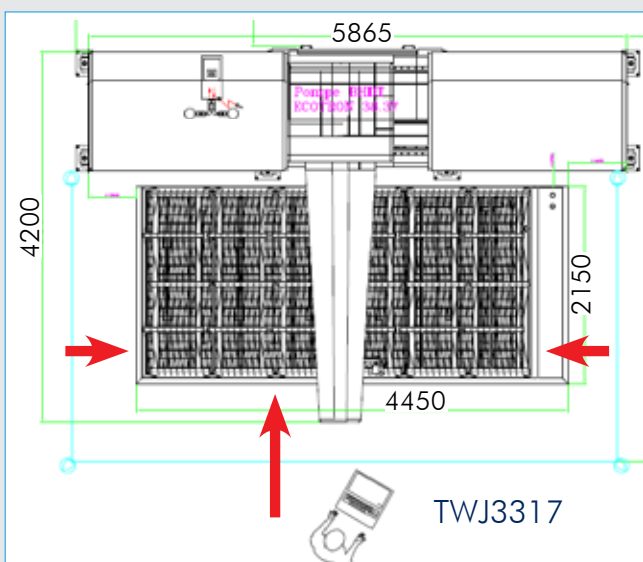
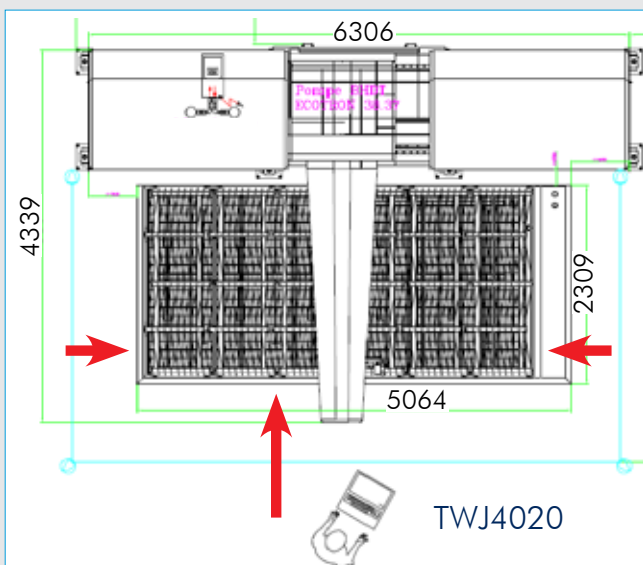
TECHNICAL FEATURES

CUTTING TABLE BY E 40.20 ABRASIVE JET

- Table dimensions : 5150 x 2450 x 900 mm / 203 x 96 x 35 inches (TWJ4020) or 4450 x 2150 x 900 mm / 175 x 85 x 35 inches (TWJ3317).
- Weight (at no-load) of the working surface : 1600 kg / 3527 pounds (TWJ4020) (without water). 1120 kg / 2469 pounds (TWJ3317) (without water).



- Table accessible on three sides :



50 HP 'OEM' PUMP :

- Flow 3,78 l/min -1 gallon/min up to 4150 bar/ 60 000 psi. design new generation.
- Delivered with starting panel, gauge, filtration booster pump (over water pump).
- Enough power to feed a with 0.35 mm nozzle (maxi).
- The pump is integrated in the frame of the machine and directly controlled by the CNC. It is completely covered with housing including its cooling system.

VHP PUMP :

- Combines every feature of the intensifier of the 3rd generation: completely integrated to the machine and totally controlled by the CNC : incorporated control and progressive starting, 24 VDC inverter, main circuit breaker and safety devices.
- Display on the IHM direct : error messages, repair diagnosis and instruction in case of failure.
- Automatic water cut-off when the intensifier is stopped.
- Booster pump to increase the water pressure, integrated sensor allowing to ensure a good water flush as well as a protection against the overpressure.
- Integrated body and separated leak drains for water and oil (in a small tank in lower part) in accordance with the environment regulation.
- Intensifier with removable HP cylinder body which allows the fast and easy piston change without the hydraulic cylinder being dismantled.
- Hydraulic seal of new generation installed by external thread and clamping rings to ensure an optimized impermeability between the HP hydraulic and the water.

SLAB FLATNESS SENSOR

- Including a mechanical sensor allowing to control the height of the cutting head compared with the piece to be cut. The sensor comes and touches the piece during the downward movement of the head, it can control the material position at regular intervals.



MACHINE DIAGNOSIS

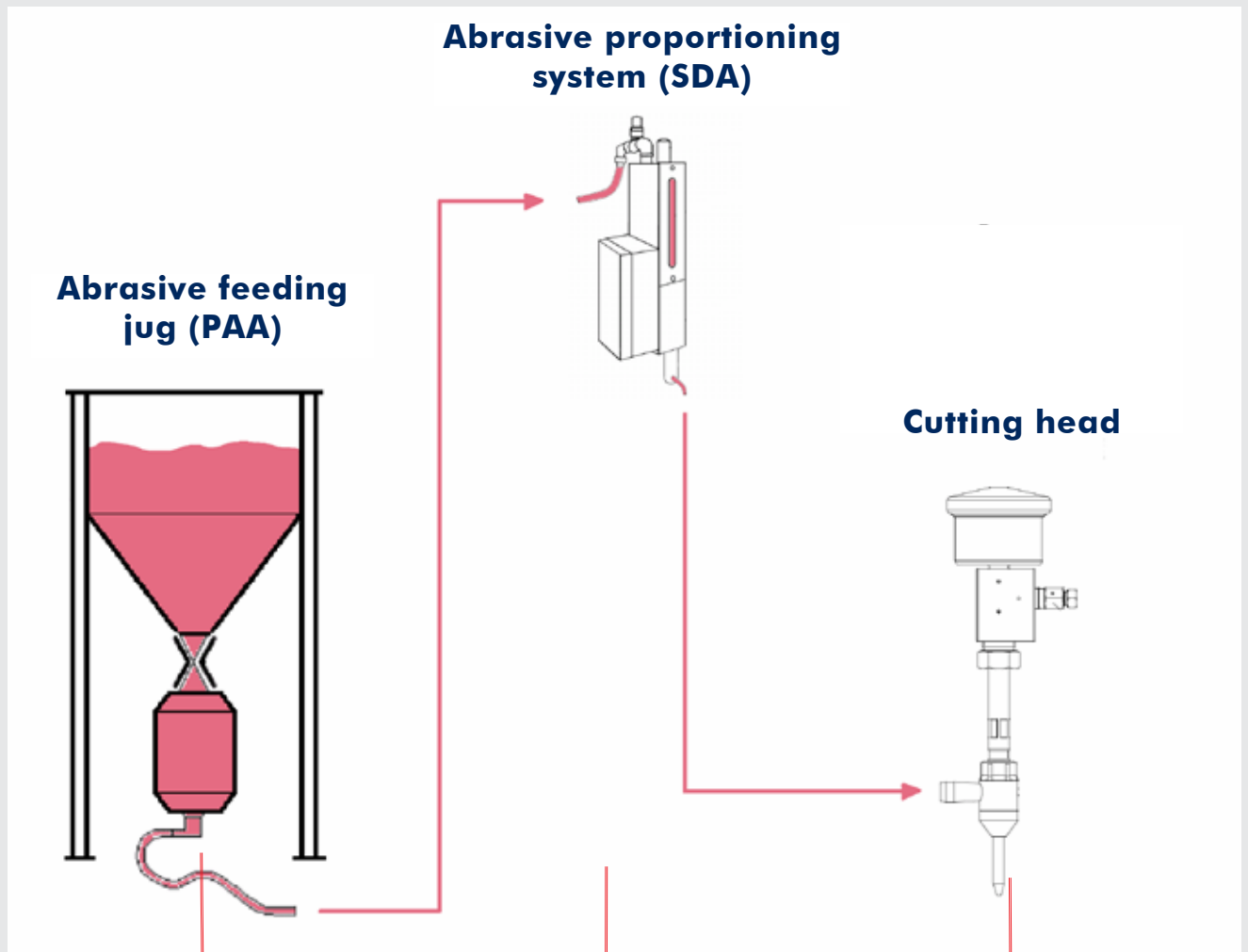
- All the important functions such as start, stop, emergency stop, pressure (high and low) for abrasive cutting, output supervision etc... can be connected to a remote control device via a network ethernet connection and/or via internet.
- Remote control in series.
- Sending of a notification E-mail of the status of the machine if the function « defect by mail » is activated.

TWJ 4020 / TWJ 3317

TECHNICAL FEATURES

SYSTEM OF WATER JET MIXTURE (ABRASIVE VERSION) :

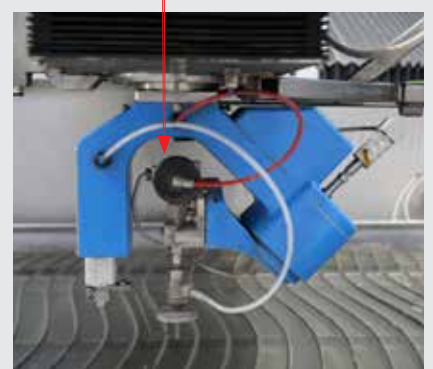
- The device is complete with a abrasive water jet mixture device for a correct proportioning of the sand (+/- 5 %).



1 Tank under pressure (400 kg / 882 pounds).



1 proportioner type Feedline V with a control unit and proportioning of the cutting head abrasive flow. Possible adjustment during the cutting.



1 Auto- aligned cutting head IDE II. Pipes, air pressure reduction valve, manometer, pressure switch...

TWJ 4020 / TWJ 3317

Link-attached control board



The control board can easily move to be positioned either on the right or the left hand of the machine to suit your working site.

Front Protection (immaterial barriers) by photocell



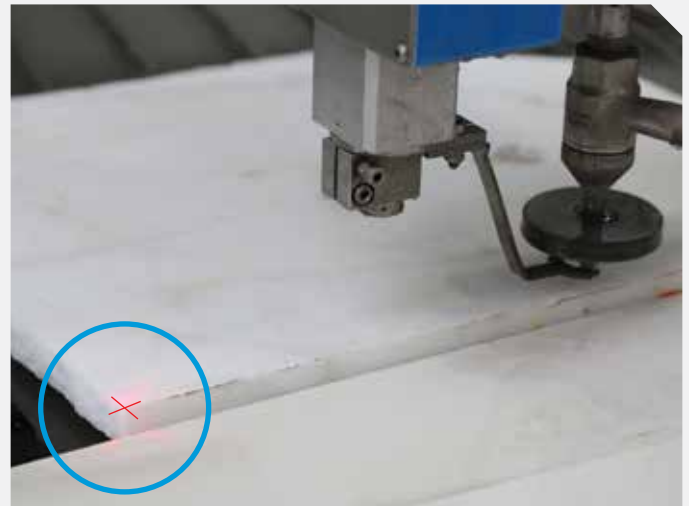
Side protection barriers prevent any access to the table while machining.

Water softener type Simplex



The machine is delivered with its own water treatment system (TH), including the supply of salt, installation and on site configuration. This system allows to lengthen the life duration of the pump and head.
Depending on the results from the water test, an osmosis device can be necessary (not included).

Laser installed on carriage



The machine is equipped standard with a laser that allows to take the origin of the piece and test the tool path.
Side protection barriers prevent access to the table while machine working.

TWJ 4020 / TWJ 3317

PROGRAMMING

A

MANUAL (ON STANDARD MACHINE)

The remote control enables to point piece origin and to consider templates.

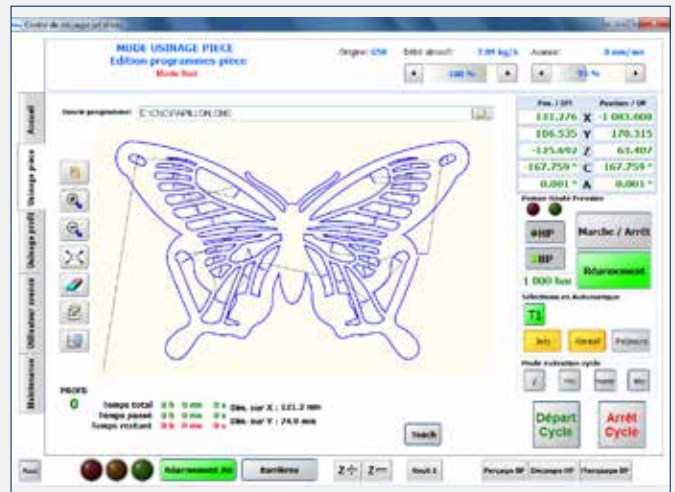


B

T'CUT : 2D 1/2 cutting software

Installed on a computer or on the machine:
A Software fully developed by THIBAUT.

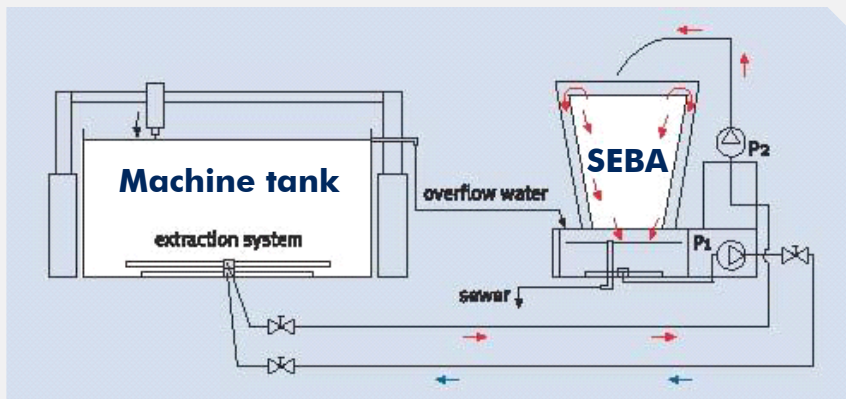
- Take pictures of your slabs to detect and mark the defaults
- Do some vein matching to present your customer a unique realization before
- Create parametric shape or drawing



TWJ 4020 / TWJ 3317

OPTIONS & ACCESSORIES

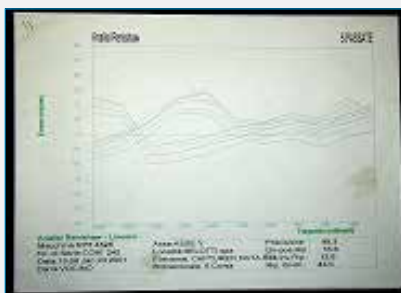
Automatic extraction system of the SEBA abrasive muds



Complete system with water recirculation, including in the bottom of the tank high flow muds suction and discharge pipes system, a high flow mud suction pump, one or two sedimentation tanks with filters type big-bag and stainless steel extractor for filtrated water, one pump for the recirculation of decanted water and 1 system of water level control in the recovery tank. One suction jet tube allows to completely empty the system.



Geometric Control (upon request)



The machine is « geometrically » checked thanks to a LASER measure system that makes the accuracy. The system called « pitch compensation » achieves the calibration of the X and Y axes. Once it has been checked by a certified organization, a calibration certificate is delivered with the machine. This system allows to increase the cutting accuracy.

Storing hopper and abrasive feeding for Big Bag of 1 or 2 T



Replace the standard feeding box and allows a larger system life (40 to 80 hours of cutting). Allows also to save on the cost of the abrasive (because the abrasive in Big Bag is less expensive) and then decrease your pieces manufacturing costs.

TWJ 4020 / TWJ 3317

DECORATION / MARQUETRY APPLICATION



MACHINES RANGE



2018 PROJECT

