- It is a highly efficient automatic,band-saw with multiple material feed.
- Bandsaw is designed for performance cutting very hard and tough materials.
- This bandsaw is using extremely robust construction optimized with target to get maximum rigidity of machine and minimum vibrations.
- Stroke of frame and feeder stroke is realized by sharpen ball screws. Machine guarantees maximum possible power a precision.
- The machine is designed for vertical cuts.
- It is suitable for serial production in industrial premises. The machine is designed to saw steel materials, but also non-ferrous and light metals. However, we recommend consulting the manufacturer about this option.
- **No other materials may be sawn without approval from the manufacturer.**
- Conception of bandsaw is FCV= feeder-cut-main vice. Conception FCV enable cut material in automatic cycle with shortest possible end. Don´t need to measure and cut ends of bar in semi-automatic cycle.

Control system:

- Machine is equiped with programmable PLC SiEMENS SIMATIC S7-1200. Drive of band blade, movement of arm and movement of feeder are completely controlled and drive by SIEMENS technology.
- The coloured touch screen HMI SIEMENS TP 700 COMFORT enables easy communication with an operator. It shows working conditions (blade speed, moving to the cut, cutting parameters etc.)
- The machine enables to work with two modes:
  - SEMIAUTOMATIC CYCLE: The machine cuts the material immediatelly in a semiautomatic mode. The operator uses the feeder of the machine for the manipulation with the material and for the exact feed of the material into the cutting zone. The movement of the feeder is realized by manual buttons or by GTO function. After starting GTO function the operator sets the position of the feeder, presses START GTO button and feeder goes to the set position.
  - AUTOMATIC CYCLE: the feeder feeds the material according to the set programm. The operator sets the cutting programm, machine realizes these programms, it is possible to make thousand different programms.The part of one programm is a complete setting of the cut: blade speed, feed speed, setting of an automatic regulation, setting of the hight of the bar to be cut, setting of the lenght of the bar, angles values and number of pieces. The lenght and number of pieces it is possible to set in 20 lines, the machine feeds differently set lenghts automatically.
- Bandsaw is using ATB system=automatic transport of new bar exactly to cutting zone. Operator of bandsaw doesn´t need to cut the face off. Minimizes time and costs
- Cutting feed rate is regulated by control system leaded by servomotor, ball screw and KM nut enabling very precise feed rate. The operator sets in the program needed feed rate (mm/min) and the machine will set it up.
- Two basic regimes of automatic system regulation (ASR): ARP a RZP.
  - RZP = Zone regulation. System enable to cut material in 5 zones, because of setting optional cutting feed and blade speed according on blade position..
  - ARP = System of the automatic regulation of the cutting feed rate depending on the cutting resistance of the material or blunting the blade. Systém offers two basic modes of ARP: BIMETAL and CARBIDE.
    - CARBIDE mode is suitable for cutting of full bars. If the blade is old (blunt), loaded is the cutting feed reduced Reaction time is slower than in mode BIMETAL.
    - BIMETAL mode is suitable for optimalization of the cutting feed when cutting profiles by bimetal blades. The cutting feed is higher if the blade cuts sides of the profile. As the blade reaches the full material, the system reduces the cutting feed automatically so that teeth gap of the blade would not be filled.
- KKR= check of cut perpendicularity.. Directional system measure vertical position of band blade. If cutting feed is too fast, then bandsaw automatically reduced feed and wait until band blade get into optional position. When blade go back into optional position then system automatically increase cutting feed.

- Safety module with autodiagnostics.

Construction:

- Construction of band saw is solved for maximized use of carbid band blades. Machine have got robust construction allowing extremely stress in manufacturing conditions. All components of machine are constructed and optimized with target minimized vibrations and enable maximized cutting power.
- Frame is going up and down through 3 rails linear guideways with 6 carts storing balls. Linear guideway is mounted on robust column. Location of linear guideway: 2 rails near column at drive of band blade and 1 rail is on column at tensioning mechanism of band blade.
- The arm of the machine is robust, heavy weldment and it is designed so that a toughtness and a precision of cut was ensured.
- Movement of frame by linear guideway, sharpen ball screw, preloaded nut, flexible clutch, worm gear and servo-drive.
- Robust cast iron pulleys are perpendicular to sectional plane. Driving pulley is directly on output shaft. Pulley is both sides supported by bearings=minimized press on shaft. Tensioning shaft is on both ends fixed by two hydraulice cylinders=significant reduced press and life extension. Tensioning plate is moving by linear guideway=increased accuracy and eliminates vibrations. Fit of tensioning pulley is anti-backlash =two row spherical bearings fasten by KM nut.
- Frame using measuring system for evaluate frame position over material. Frame top position is defined by optical ray (emissive and receiver sensor). Working position can be set by operator numerically into program.
- Bandsaw use for identify position absolute rotational encoder= Isn´t requirement to reference position when machine is switched on. Down position can be set in software freely.
- Main vice is robust steel weldment. Fixes material behind the cut. Position vice enable optimized movement of chips through solid part of vice directly into chip extractor.
- Carbide grooved jaws provide safe clamping of material. Fixed jaw is short-stroke (leaving position while feeding material, then material don´t damage jaw and slip through.) Short-stroke jaw= contactless feeding of crooked material.
- Jaw in main vice is moving by rail in linear guides,actuated it by hydraulic cylinder. One jaw is long-stroke and second is short-stroke.
- Regulation valves for setting a vice pressure in hydraulic system.
- The movement of the feeder is realized by linear guides, ball screw, conversion by belt and servo-drive.
- The movement of the feeder is till band blad and enable residue-free feeding material in automatic cycle.
- Operator manually choose one from 5 speeds of feeder in dependence on weight and accuracy of feeding material.
- Precise positioning of feeder solve automatically frequency inverter SIEMENS including setting acceleration and slowdon of movement of feeder before the target position. Incremental rotational sensor for indication position of feeder is part of servo-drive.
- Indication of material in the feeder: optic sensor- it notices that there is a material in the feeder. If there is no material in the feeder, the signal reflects on the glass that is situated on movable jaw and it goes back to the sensor. The machine stops feeding and waits for another bar.
- There is a roller conveyer which supports material in whole feeded lenght.
- The feeder clamping vice is a robust steel weldment. Jaws ensure safe clamping of the material.
- Jaws in feeder are moving in two rails by linear guideway by hydraulic cylinders. One jaw is long-stroke (feed long-stroke hydraulic cylinder). Second jaw is short-stroke (feed short-stroke hydraulic cylinder). Short-stroke jaw release position while feeding bar so jaw is not getting damaged and material is not sliping. Short-stroke jaw= contactless feeding of the crooked material.
- Bandsaw in standard execution offers open zone of cutting in both sides- contactless movement band blade from down position to upper when the cut is finished. This function provides longer service life of band blade. Movement open the zone of cutting is realize by return movement of feeder and rebound of the vidia plates in guides are made hydraulically.

- GTO function (goes on position). Bandsaw enable multiple feed of material. Offers 2 basic modes of automatically feeding material. Periodic mode: feeder is moving between zero position and specified position of feed. Gradual mode: Feeder is going on limit value, clamped bar and gradually feed into cut.
- Leading the band blade in guides with carbid plates and guide bearings, afterwards in cast iron pulleys and in upper part (return motion) is blade supported by silencer againts vibrations.
- Hydraulic clamping of the blade in guides, which enables precise without clearance leading and easy blade exchange (hydraulic opening of the guides)
- There is a guide situated on the firm beam on the drive side. On the tightening side there is the guide situated on the moving beam.
- A giude moving is connected with a vice-jaw movement so that to achieve the minimum distance of the guide and material.
- Support guide is moving by linear guide. (2 rails, 4 carts) with high load capacity.
- The saw-band is equipped with a guard, which protects the operator from millings and cutting emulsion.
- Band blade is protected covers, which protects operator and working place before chips and coolant going out of the machine. Bandsaw is equiped with hydraulics tensioning of bandblade. Allows anytime to have ideal conditions of cut. Tensioning power provide 2 hydraulic cylinder.
- Automatic indication the right tensioning of blade by pressure sensor, regulator and barometer.
- Hydraulical press of the blade in guides ensures non tolerance movement of the blade during the cut and easy switch of the blade using hydraulical opening in the guides.
- A cleaning brush is driven by an electroengine and ensures perfect cleaning of a blade.
- There is a planet gear box drive and a three-phase electroengine, a fluent regulation of a blade speed by a frequency converter for a fluent change of blade speed.
- External cooning of electromotor by a fan
- Cooling system on cutting emulsion leading to blade guides by flexible LocLine systém straight to cutting groove.
- Massive base with a tank for chips and with chip extractors. Base is designed for manipulation manipulation with machine by crane.
- Indication of blade tightening and opening of the cover.
- Controlling 24 V.
- Machine is equipped with hydraulic system, which controls opening and closing main and feeder vice, downforce in blade guides, rebound guides.

Basic equipment of the machine:

- Complete body, which cover movement of frame and feeder. Body minimized risk of injury and contamination around machine with chips and by emulsion.
- All the holes, cavities and column are filled by polymer-concrete. Target is maximized absorption high frequency vibrations (sounds) while cutting.
- Chip extractor. Type: Screw pusher without centre bar. Suitable for exalting steel and stainless steel.
- Lighting of workink space.
- Band saw blade.
- Set of spanners for common service.
- Manual instructions in eletronic form (CD)

THOR5

Technical data

Cutting parameters:		
		0°
	D [mm]	550
b / a	a x b [mm]	620 x 550
b / a o	a x b [mm]	620 x 350

o Cutting bundles without vertical clamp. HP = accessory at extra cost. When HP is used, the cutting parameters will be limited.

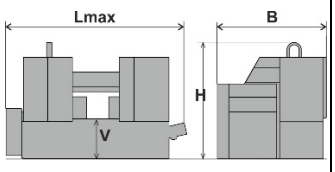
Cutting parameters		
The shortest cutting	mm	10
The smallest divisible diameter	mm	75
The shortest rest during one cut	mm	30
The shortest rest during automatic cut	mm	35
Single step of material feed Min	mm	3
Single step of material feed Max	mm	750
Multiple feed	mm	19999

Performance parameters		
Blade dimensions	mm	7680x54x1,6
Blade speed	m/min	15-150
Blade drive	kW	15
Drive of the hydraulic agregate	kW	0,6
Pump of the cooling emulsion	kW	0,16
Blade cleaning brush motor	kW	0,12
Chip conveyor motor	kW	0,12
Motor of the blade drive cooling	kW	0,09
Frame ballscrew motor	kW	0,5
Feeder ballscrew motor	kW	1,5
Control system	kW	0,5
Electric input Ps	kW	24
Installed power Ps	kW	18,6
Electrical connection		3 x 400V, 50Hz, TN-S

Working movements	
Cutting feed	Servomotor + ball screw - BSB
Material feed	Servomotor + ball screw - BSF
Clamping of material	Hydraulically
Blade tension	Hydraulically
Cleaning of the blade	Electromotor
Cooling	Input by jets directly to the band guides and flexible distribution in space cut.

Saw dimensions

Lenght		Width	Height		Height of the table	Weight
[Lmin]	[Lmax]	[B]	[Hmin]	[Hmax]	[V]	(kg)
3740	3940	2200	2580	2930	800	7735



Note: the dimensions are valid for the saw without optional accessories