

CHANGES

- 1/2017 CONTROL PANEL SIEMENS
- 1/2017 POWERFUL BAND DRIVE (5,5Kw) + CONE GEARBOX
- 1/2017 STRONGER MECHANISM OF BLADE TIGHTENING (130 mm)
- 1/2017 ROBUST TURNTABLE AND VICE JAWS
- 1/2017 UNIFIED GUIDES

It is a highly efficient automatic hydraulically controlled band-saw with multiple material feed.

The band saw machine is designed for cutting in semiautomatic cycle perpendicularly as well as angularly. It enables angle cuts to the left (60 grades) and to the right (60 grades).

The band saw machine suitable for cutting of steel constructions and profiles with a longstep feeder L=2000mm. The machine is constructed for automatic cutting of long bars. Whenn the machine is cutting Automatic programm with angle cuts and with lengths shorter than 500mm, the machine automatically interrupts the automatic cycle and is waiting.

It is suitable for serial production and thanks to its robust construction enables to cut wide range of materials including stainless steels and tool steels both profiles and full materials.

Control system:

- Machine is equipped with programmable automatic PLC SIEMENS SIMATIC S7-1200. Drive of band blade, movement of arm and movement of feeder are completely controlled and drive by SIEMENS technology.
- Colored touch display – HMI SIEMENS TP 700 COMFORT enable easy communication with operator.
- The machine enables to work with two modes:
- SEMIAUTOMATIC CYCLE: The machine cuts the material immediately 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 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 programs, it is possible to make 1000 different programs. The part of one programm is a complete setting of the cut: blade speed, feed speed, setting of an automatic regulation, setting of the height of the bar to be cut, setting of the length of the bar and number of pieces. The length and number of pieces it is possible to set in 20 lines, the machine feeds differently set lengths 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
- Regulation of cutting feed is realized by controlled system by the servo-motor and throttle valve hydraulics. Then is reached very precise cutting feed. Operator will input into program required cutting feed (mm/min) and bandsaw this cutting feed precisely set. Two basic regimes of automatic system regulation (ASR): ARP a RZP-2.
- RZP-2: cutting zones regulation. System enables to set of optimal shift speed (movement to cut) and blade speed in 5 different zones depending on blade position. An operator choose two ways of djustment: DEFENSIVE - suitable for cutting of very hard materials with carbide blades. The shift speed is slowed down on beginning and end of cut. OFFENSIVE - for productive cutting of solid round bars. Shift speed and blade speed are raised on beginning and end of the cut. It is a similar principle as ARP system. Advantage is a possibility of blade speed regulation.
- ARP = System of the automatic regulation of the cutting feed rate depending on the cutting resistance of the material or blunting the blade.
- System offers two basic modes of ARP: BIMETAL and CARBIDE.
- BIMETAL mode is suitable for optimization 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.
- 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.
- Safety module with autodiagnosics.

Construction:

- The machine is constructionally designed in that way, so that it corresponds to extreme exertions in productive conditions. A robust construction of machine includes vice allows to take advantage of bimetal blades maximally.
- The arm of the machine is robust, heavy weldment and it is designed so that a toughness and a precision of cut was ensured.
- The arm moves along two columns using a four row linear leading with a high loading capacity. Arm movement using two hydraulic cylinders.
- Drive pulley and tighten pulley are both metal castings.
- Arm uses the incremental encoder and the magnetic tape to evaluate a position over material and an end stop for setting the down position. Main vice with divided jaw that clamps the material in front of as well as behind the cut. The jaws allow a safe grip. The optimization of the chip movement through the fixed jaw directly to the chip extractor.
- Jaws of the main vice move in steel leading using hydraulic cylinder. One jaw is longstroke (the movement by longstroke hydraulic cylinder), one is fixed.
- Regulation valves for setting a vice pressure in hydraulic system.
- Drive of the blade by conical gearbox.
- Very rigid feeder is placed on the basement with rollers by the linear leading.
- Feed step 2000mm, Multiple feed (max. length 30m)
- Transporter is driven by electromotor and conical gearbox, transmission by cog wheel and rack bar, frequency converter.

- The feeder moves the material to be cut to the main vice according to the set length that was adjusted by the operator in the controlling panel. The position of the feeder is indicated by incremental encoder.
- Operator choose one from 5 feeder speeds.
- 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.
- The feeder clamping vice is a robust steel weldment. Jaws ensure safe clamping of the material.
- Jaws move on two rails of linear system thanks to hydraulic cylinder. One jaw is longstroke (the movement by longstroke hydraulic cylinder). Second jaw is fixed.
- Turn table is massive weldment. Turn table for angular cuts with milled leading parts of base. Turn table enables comfortable clamping of cutted material.
- Turning of the table for angle cuts is ensured by the hydraulic cylinder and the rack and pinion gear, hydraulic fixing at turn. RTO function (rotate to position) with the automatic setting of the desired position.
- The angles indicated on the digital display on the control panel. Reading of angle by incremental sensor and magnetic tape.

Basic equipment of machine:











- The blade leading in guides with hardmetal plates and leading bearings and along cast iron pulleys.
- The blade is sloped regarding the level of the vice => higher performance when cutting, profiles, longer bladeflife, higher performance when cutting full materials.
- 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.
- The guide beams of the blade are adjustable in the whole working range. A guide moving is connected with a vice-jaw movement so that to achieve the minimum distance of the guide and material. That is why it is not necessary to set the position manually.
- The guide beam of the blade is placed in linear rails (2 linear rails and 4 bearings) with high loading capacity.
- The saw-band is equipped with a cover, which protects the operator from millings and cutting emulsion.
- Hydraulic tightening of band.
- Automatic indication of blade tension.
- A passive driven cleaning brush for perfect cleaning and function of blade by roller.
- Pulley drive the saw blade is solved by worm gear box with maintenanceless oil filling. Three-phases electromotor with double winding, with a frequency converter for a fluent regulation of the blade speed from 20 to 100 m/min. Sturdy flange with shaft. Termoprotection of engine.
- The cooling system for emulsion, leaded to the guides of the blade and by LocLine system directly to the cut groove.
- Massive base with a tank for chips. Base is designed for manipulation with machine by fork lift and also by any pallet lift or by crane.
- Indication of blade tightening and opening of the cover.
- Controlling 24 V.
- Machine is equipped with hydraulic system which controls all functions of the machine. It pushes the arm to cut, pulls up the arm, opens and closes vices, turns the turntable for angular cuts.

Basic accessories of machine:

- RTS- pressure control vice.
- Two massive cylinders support material to be cut. Movable by linear leading. Placement at the output side.
- Spray gun for chip rinsing
- Lighting of workink space.
- Band saw blade.
- Set of spanners for common service.
- Manual instructions in electronic form (CD).

Operating cycle:

After starting the machine, vices clamp after starting the machine, the machine makes the cut by a set speed, the cutting zone in the down position of the arm is released - the longstroke jaw of the firm vice open, the feeder moves the material to the firm vice, the arm lifts up to the set upper position. The material is moved by the feeder – periodic regime (feeder moves between zero position and the position of the set length of feed) or consecutive regime (feeder moves to the limit position and clamps the material and feed it to the cut consecutively). The main vice clamps the material, the vice of the feeder is still closed and the whole procedure repeats. The operator only loads the material and removes the cut material. It is possible to regulate the cutting speed of the arm and the blade speed during cutting.

Cutting parameters							
		 0°	 45°	 60°	 45°	 60°	 ^b / _a
	D [mm]	500	500	330	500	300	x
	D [mm]	400*	280*	200*	280*	190*	x
	axb [mm]	750x480	500x480	330x480	500x480	300x480	750x260

*recommended values

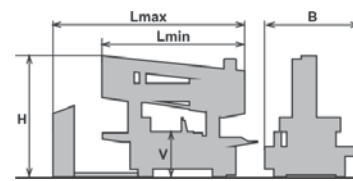
the shortest cutting	mm	3
the smallest divisible diameter	mm	10
the shortest rest during one cut	mm	30
the shortest rest in automatic cycle (angle 90°)	mm	140
one feed step of the material Min	mm	3
one feed step of the material max	mm	2000
multiple feed	mm	30 000

Feed rate		
1	m/min	0,5
2	m/min	1,0
3	m/min	2,1
4	m/min	3,2
5	m/min	4,5

performance parameters		
drive of the blade	kW	5,5
drive of the hydraulic agregate	kW	0,75
pump of the cooling emulsion	kW	0,12
Drive of the feeder	kW	2,2
total input	kW	12
cutting speed – fluently set	m/min	20-100 m/min
diameter of the blade	mm	6500x41x1,3
The blade is sloped regarding the level of the vice	°	6
electric connection		3x400V, 50 Hz, TN-S

control	
Feed of the Frame to the cut	Hydraulically
Feed of the material	Electromotor + gearbox
Clamping of material	Hydraulically
Bend tension	Hydraulically
Cleaning of the blade	Cleaning brush driven by a pulley

Lenght		Width	Height		Height of the table	Weight
[Lmin]	[Lmax]	[B]	[Hmax]	[Hmin]	[V]	(kg)
3300	3600	5880	2400	2150	815	4150



Corrected: Pevná Markéta