

DOUBLE COLUMN BAND SAW GZ4265



INSTRUCTION MANUAL

Characteristics and application areas of machine

Horizontal metal band sawing machine of GZ4265 is kind of special cutting equipment, which is metal saw blade as cutting tool and for cutting metal materials, mainly used for cutting square stock and round stock of ferrous metal and various profiles, and also used for non-ferrous metal and non-metal materials. Due to sawing machine cut narrow, cutting speed, section formation, low energy consumption, it is a kind of efficient energy, saving material effect cutting equipment.

The machine main transmission using worm gearbox, through adjusting belt cone to change saw blade process linear speed; Hydraulic stepless speed regulation adjust saw stands feed speed, to meet cutting different materials' needs. Work piece clamping using hydraulic methods, dramatically reduce labor intensity and increase the security of work, so that the system has a compact, convenient operation and maintenance, and other characteristics.

I. Main technical parameter of machine

NAME \ MODEL	GZ 4265
Type	Double-column horizontal
Maximum cutting capacity(mm)	Round stock:φ650 Square stock:□650*650
Flat height(mm)	590
Machine rough weight(kg)	2600
Cutting speed(m/min)	Stepless inverter control
Saw blade size(mm)	41*1.3
Main motor power (Kw)	5.5
Oil pump motor power(Kw)	1.5
Water pump power(Kw)	0.12
Band saw blade tension	hydraulic
Clamping	hydraulic
Hydraulic pump flow(L/min)	15

II. Machine mechanical structure overview

1. Bed, Bench: Bed using welding box-type structure, mainly used to support other parts, lumen using hydraulic pressure oil box and cooling lubrication water tank, Bench is casting, used for platform material, install clamping device and saw frame.
2. Main transmission device: Main transmission using wear gearbox transmission mode, it is consist of motor, worm gearbox and wheels, mainly using torque transferred, driving saw blade rotary to achieve cutting movement. For the user to select. Through two kinds of stepless speed
3. Saw blades tension mechanism: It is consist of passive wheel, slider, screw lever and nut, through moving passive wheel, let saw blade are tight to ensure form certain pressure between saw blades and saw wheel flange, generate enough friction to drive saw blades for rotary action to achieve cutting.
4. Work clamping mechanism: Work clamping adopts hydraulic pressure clamping to cylinder alternative screw nut, and through manual rotary valve operation for clamping to realize clamping and release.
5. Saw blade guide device: Guide device: It is consist of left and right guide arm and orient head, orient head is consist of guide bearing and guide block, and it's main use is to saw blade rotate certain angle, make it vertical with work surface, to ensure saw blade correct position, improve cutting accuracy.
6. Cooling System: It is consist of coolant tank, cooling water pump, pipes and nozzles, to ensure cutting effect and saw blades using life and cutting section accuracy, also used to clean tooth scraps and saw blade guide block and bed rust.

III. Hydraulic pressure transmission system of machine

1. Machine hydraulic pressure system overview: The system is consist of tank, motor, pump station, oil pipe and actuation element—cylinder and control system, used to realize saw stands feed and lift and work piece clamping, through adjusting can realize feeding speed stepless speed regulation to ensure different work piece normal cutting.

2. Hydraulic pressure system operation principle and specification. (Refer to Graph Ten Hydraulic principle)

After opening oil pump, let rotary valve to clamping position, hydraulic pressure system pressure is usually 1.8-2.4MPd. It's pressure can be adjusted through overflow valve. Pressure can be read out from manometer. Feed speed is adjusted by speed regulation valve handle on the control panel to realize stepless, saw stands rise and drop is controlled by corresponding button on the control panel and through solenoid valve.

The hydraulic generally choose is 30# or 46#. System description rise: Press “up” button, YA1 closed, oil through DSG-02-3C2 solenoid valve and check valve of speed-regulating valve L-10B into feed cylinder

below, keep saw stands rise. Drop: Press “down” button, YA2 closed, oil through solenoid valve DSG-02-3C2 flow back oil pool. Work piece clamping: Let rotary valve to clamping position closed, oil through 340-10 into clamping cylinder rear, front oil through 340-10 flow back oil pool. Release: Let rotary valve to release position, oil through 340-10 into clamping cylinder front, rear oil through 340-10 flow back oil pool.

3. Lubrication: Fill butter or lubrication in the following locations at the appropriate cycle.

Serial number	Refueling position	Catalogue	Cycle
1	Hydraulic pressure	Suitable for 46# in the summer Suitable for 32# in the winter for temperature is low	Replace once each 6 months
2	Cooling water	Soluble cutting fluid	Fuel at any time
3	Gearbox worm 2 places	Butter or similar lubrication	Fuel once every week
4	Steel brush block one place		
5	Passive wheel one place		
6	General unpainted sliding surface	General lubrication	Per day
7	Auxiliary column guide way surface	Butter	Fuel once every month

IV. Machine electrical control system

1. Electrical system overview

Electrical system is consist of electric chest, control panel and limit switch, which used to control different parts movement actuation element (cylinder) ,let it according to a certain orderly program of action to achieve a normal cutting cycle and implement protection to machine at the same time to avoid equipment accidents.

2. Electrical action principle and description.

Refer to Figure 11、 Electrical schematic diagram

Electrical control elements besides limit switch, circuit breaker and solenoid, other operate button all focus

on control panel, when operating ,just according to certain program press corresponding function button that can be normal running, each button has corresponding directions signs . If machine stop running, press button with red mushroom head to achieve a total stop. Saw stands lifted height is adjusted by limit switch with fixed in the top of the saw stands and touch bar so as to achieve the desired height. Saw stands downward limit stroke is controlled by limit switch that installed at the bottom of the table. After stop dropping, automatically rise.

V. Adjustment and operation of machine

i. Preparation before start

1. After machine in place, adjust bed keep level, put in no obvious focus environment.
2. Adjust Entrust Material rack; make it keep level with vise and bed.
3. Machine box fuel tank fills in hydraulic to oil window location. (Attention: Must be adopt premium hydraulic to ensure hydraulic system work stability and hydraulic elements life! usage 46# in the summer and 32# in the winter.)
4. Switch on, adopt 380v power and have great grounding protection.

ii. Machine adjustment

After installed machine, the machine should be adjusted after cutting, read as follows.

1. Switch on oil pump rotary valve to clamping position, let hydraulic system pressure regulate to 1.8-2.4MPa (Through observe pressure gage, generally before leave the factory are all commission.)
2. According to work piece size adjust left and right guide arm distance, make it is close to work piece as soon as possible, guide arms distance minimum to ensure great guide effect. Jaw open distance larger 5-6 than regular work piece, adjusting upper and lower limit switch to proper position.
3. According to technical parameter requirement saw blade length prepare corresponding saw blade, Saw tooth should be selected according to material shapes and materials, **refer to Schedule 1、Saw tooth select comparison table.**
4. According to different materials and work piece shapes, through hydraulic speed-regulating valve to choose proper feed.
5. According to cutting length, adjusting length control device mandrill location and locking Mandrill general should on the work piece center upper edge location.
6. Make ready saw blade hitch two wheels and card into the guide wheel and guide center, then saw blade tension. (Attention: teeth direction toward right)
7. To check power grounding is good or not, oil pump, water pump, saw blade, motor running direction whether correct or not, hydraulic oil box and gear box oil level whether enough or not.

iii. Machine operation:

Before cutting adjusting preparation completed, so that according to the following procedure operating the machine for normal cutting.

1. Make work piece crane to worktable and material rack, let work piece keep parallel with work surface, then move work piece to length control device mandrill contact positions.
2. Open oil pump, rotary valve to clamping position, clamping work piece, press "running" button, when saw blade running, water pump starts at the same time, saw stands drop, saw stands start to drop through speed-regulating valve on the control panel, after finish cutting, limit switch self-insurance, solenoid YA1 relay outage, saw stands stop to rise, rotary valve to loosen position, loosen work piece, then take them out, cutting finished. Repeat the above action can realize cutting cycle.
3. Cutting process, according to cutting shape and color can judge cutting speed and feed is appropriate, the chip is white roll crumbs is appropriate, if the chip hard, short and blue color, the speed is low and feed is large, adjust speed-regulating valve to reduce feed; if the chip is thin diffuse or dusted and color is white, the speed is quick and feed is low, adjust speed-regulating valve to increase feed.

Cutting speed adjustment reference: **Schedule 2、cutting speed comparison table.**

VI. Machine maintenance

To ensure machine good condition and prolong machine service life, note regular maintenance in the process of using.

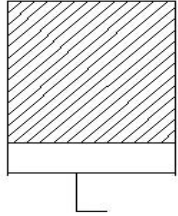
1. During using observe at any time; check each running part whether normal, have abnormal of voice sound or not, if have, should find out cause in time and rule them out.
2. During cutting, if have large chip and piles work surface and saw wheel sieve, should clean in time so as not to choke saw tooth, affect cutting effect and saw blade life.
3. Check cooling liquid and hydraulic cleanness and oil mass regular, to ensure have enough oil and liquid to avoid machine running abnormal caused by hydraulic elements blocking.
4. Guide way and lubrication points need lubricating, passive wheel bearing refuel once within 6 months.
5. After work is finished everyday, saw blade should be relaxed, so as to improve its service life.
6. Worm gearbox lubricant should be replaced periodically, typically replaced semiannually.
7. When machine inactive, guide rail and machined surface should refuel, to prevent work surface rust.
8. In order to improve saw blades application result, when replace new saw blades every time, all should be run-in firstly, that is when cutting first few cuts should adopt reduce speed and decrease feed.

Waiting after removed tooth tip burr, then in the light of normal cutting parameter for cutting.

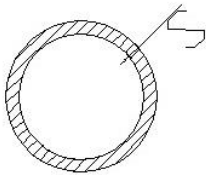
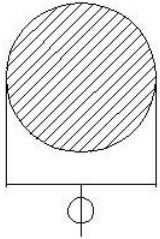
VII. Machine common faults and Elimination methods

Serial number	Fault	Causes	Elimination measures
1	When cutting with screaming	<ol style="list-style-type: none"> 1. Saw blade speed and feed is fast, 2. Cooling liquid improper selection or ratio 3. Guide block too tight. 4. there are hard points in the material 	<ol style="list-style-type: none"> 1. Reduce the speed or feed. 2. replace cooling liquid 3. Adjust guide block interval 4. Work piece rotate certain angle then cutting anew.
2	Cutting material skew	<ol style="list-style-type: none"> 1. saw blade improper selection 2. saw blade tooth separating asymmetric 3. Saw blade tighten not enough. 4. Feed is fast 	<ol style="list-style-type: none"> 1. Select proper saw blade 2. Replace proper saw blade 3. Improve tension 4. Reduce feed.
3	Saw blade slip or interrupted cutting	<ol style="list-style-type: none"> 1. Feed is fast. 2. saw blade tighten not enough 	<ol style="list-style-type: none"> 1. Reduce feed. 2. Improve tension
4	When cutting with drop	Two saw wheels wear	Replace saw wheel
5	When cutting, saw blade smooth.	<ol style="list-style-type: none"> 1. Work piece is unclamped. 2. Feed is fast. 3. Saw blade tooth is large 4. Feed is inhomogeneous 5. Saw blades are crooked, beating badly. 	<ol style="list-style-type: none"> 1. Repeat clamp saw blade 2. Reduce feed 3. Selected small saw blade tooth 4. Check speed-regulating valve feed cylinder 5. Repeat welding saw blades
6	Break saw blades	<ol style="list-style-type: none"> 1. Tension is great 2. Weld junction is not firm. 3. Work piece is not clamp 4. Saw blades quality is bad. 5. Feed is fast. 	<ol style="list-style-type: none"> 1. Reduce tension 2. Repeat welding saw blades 3. Clamping work piece. 4. Replace saw blades. 5. Reduce feed.
7	Electrical control failures	<ol style="list-style-type: none"> 1. AC contactor cores reset spring force is small, without homing position. 2. voltage is low, iron core is not working 	<ol style="list-style-type: none"> 1. Replace spring 2. Improve control voltage.
8	Button failures	<ol style="list-style-type: none"> 1. AC contactor coil burn out or poor contact 2. Button is damaged. 	<ol style="list-style-type: none"> 1. Replace coil. 2. Replace button.
9	Cooling pump supply is small	<ol style="list-style-type: none"> 1. Electric pump rotary direction is incorrect. 2. Strainer is clogged. 3. Pipe is twisted or choked. 	<ol style="list-style-type: none"> 1. Grafting power cord 2. Cleaning strainer. 3. Adjust hose, dredge pipeline.

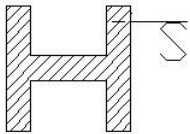
Schedule1 saw tooth choose cross-references



L or ϕ	Recommended Tooth
Below 40mm	10T or 8/12T
40-80mm	6T or 4/6T
80-200mm	4T or 3/4T
200-300 mm	2T、3T or 2/3T
300-500mm	1.25T or 1.4/2.5T
More than 500mm	0.75T or 0.8/1.5T



S	Recommended Tooth
Below 1.5mm	14T or 10/14T
1.5mm-3mm	10T or 8/12T
3mm-6mm	8T or 6/10T
6mm-10mm	6T or 5/8T
10mm-15mm	4T or 4/6T
More than 15mm	3T、4T or 3/4T



Schedule 2 saw cutting speed contrast table

Material	Steels trademark				Saw blade speed (m/min)	Cutting rate (cm ² /min)
	GB China	AISI USA	DIN Germany	JIS Japan		
Mild steel	08	1010	C10	S10C	50-75	70-80
	15	1015	C15	S15C	50-75	70-80
Medium carbon	45	1045	C45	S45C	50-70	60-70
	55	1055	CK55	S55C	50-70	50-60
Carbon tool steel	T10	W1	C75W	SK4	40-50	25-45
	T12	W1	C125W	SK2	40-50	35-45
	T8Mn	W1	C80W	SK5	40-50	35-45
Alloy constructional steel	40CrNi	3140	40NiCr6	SNC236	30-40	30-40
	40CrMoA	4140	42CrM08	SCM440	40-50	34-45
	40CrNiMoA	4340	34CrNiMo8	SNCM439	35-45	30-40
HSS	W18Cr4V	T1	S18-0-1	SKH2	25-35	20-30
	W18Cr4VCo5	T4	S18-1-2-5	SKH3	20-30	15-25
Cold model alloy tool steel	Cr12MoV	D2	X155CrVMo121	SKD11	25-35	20-25
	CrWMn	D7	105WCr6	SKS2	20-30	15-20
	9SiCr	D1	105WCrvmO121	SKS3	25-35	20-25
Hot model alloy tool steel	3Cr2W8V	H21	X30Cr93	SKD5	35-45	30-35
	4Cr5MOVSi	H13	X40CrMoV51	SKD61	30-40	25-30
	5CrNiMo	L6	X55NiCrMOV6	SKT4	25-30	20-25
Alloy spring steel	50CrVA	6150	50CrV4	SUP10	20-35	25-35
	50CrMnVA	6150	50CrV4	SUP10	20-35	25-35
Bearing steel	GCr15	S1200	100Cr6	SUJ2	35-45	30-40
Stainless steel	0Cr18Ni9	304	X5CrNi1810	SUS304	35-45	20-30
	0Cr17Ni12Mo2	316	X5CrNiMo17121	SU316	20-25	15-20
	1Cr17	430	X6Cr17	SU430	30-40	25-35