



## RAGOS HG SERIES

Electric-Hydraulic HYBRID Press Brakes

### Technical Specifications



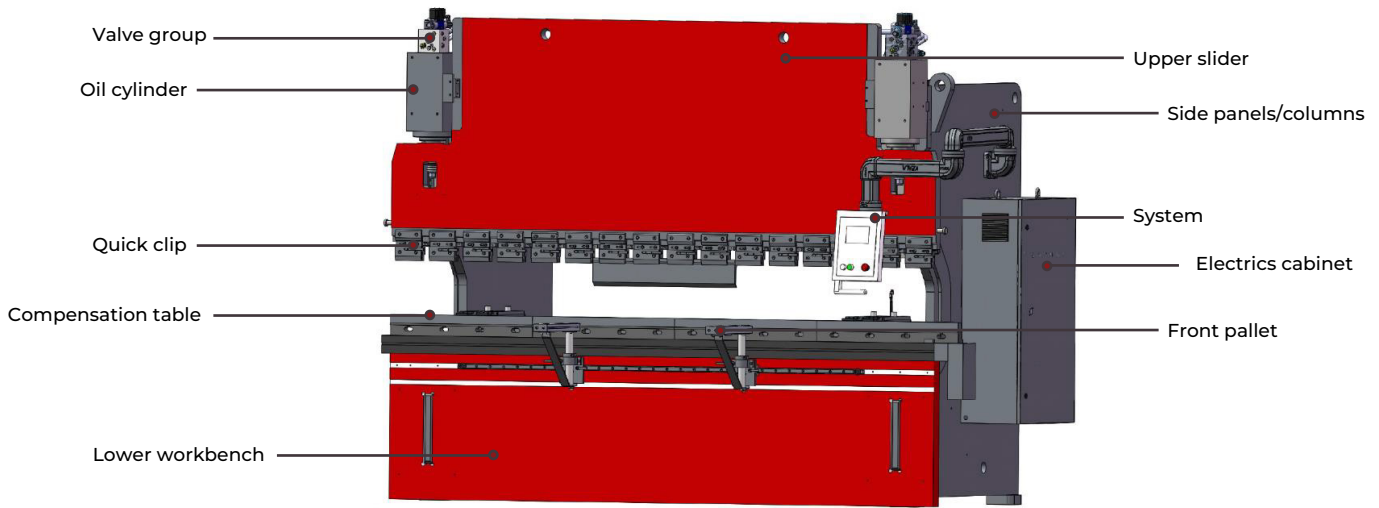
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# STRUCTURAL CHARACTERISTICS



## FRAME

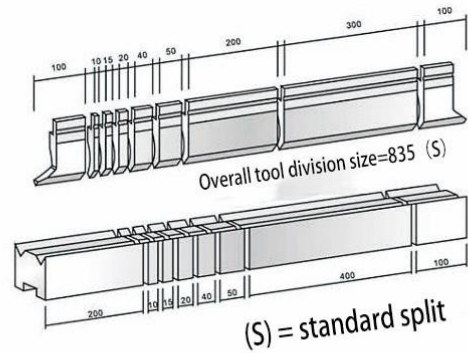
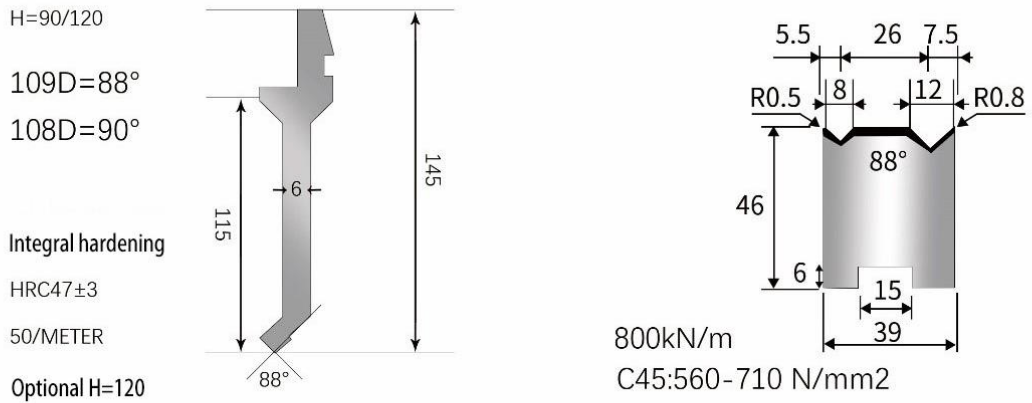
1. The frame consists of left and right side plates (side columns), working platform, fuel tank, connecting beam, etc.
2. The rack adopts one-piece structure, the four major parts of side wall plate, middle link plate and slide plate are all made of Q235 material, compared with the welded rack, the one-piece will not be skewed and deflected to ensure the accuracy of bending.
3. Four castings welded structure, all using triangle inside the round three-sided reinforcement welding, the use of triangle solid stability design, so that the rack more stable, balance a variety of welding tension, to reduce rack deformation.
4. All four castings are subjected to high-temperature annealing and aging treatment process to eliminate welding stress and ensure the accuracy and stability of the parts after processing.
5. The machining of the frame is done at one time using a large floor boring and milling machine and a dynamic gantry machining center for clamping to ensure the machining accuracy of the parts.



The upper beam (slider) is connected to the piston rod in the two cylinder assemblies and supported on the left and right wall plates by the cylinder base plate, and the main and pay guide rails provide guidance for the up and down movement of the slider. The piston rod is connected to the slider with a spherical cushion to ensure reasonable force distribution on the beam and good alignment of the piston rod.

# STRUCTURAL CHARACTERISTICS

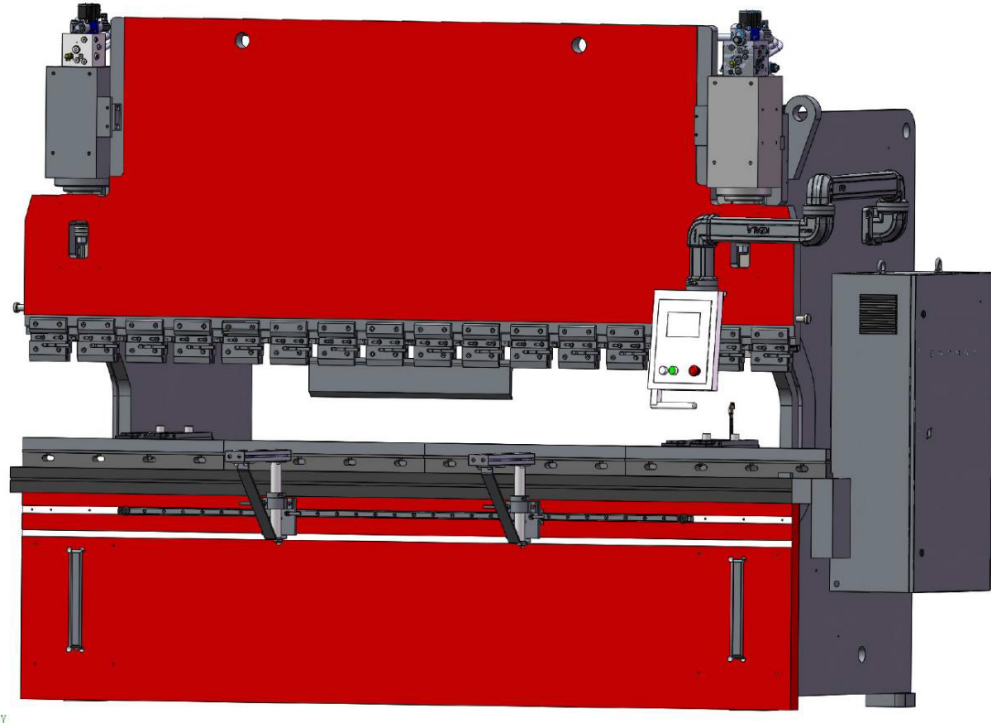
## MOULD



## WORKBENCH

1. The hydraulic deflection compensation table with intermediate shaft pressurisation automatically adjusts for deflection. This system maintains pressure evenly in the middle and on both sides, eliminating the need for electrical pressure adjustments. It is both precise and easy to use.
2. Mechanical deflection compensation device 100mm.

## STRUCTURAL CHARACTERISTICS



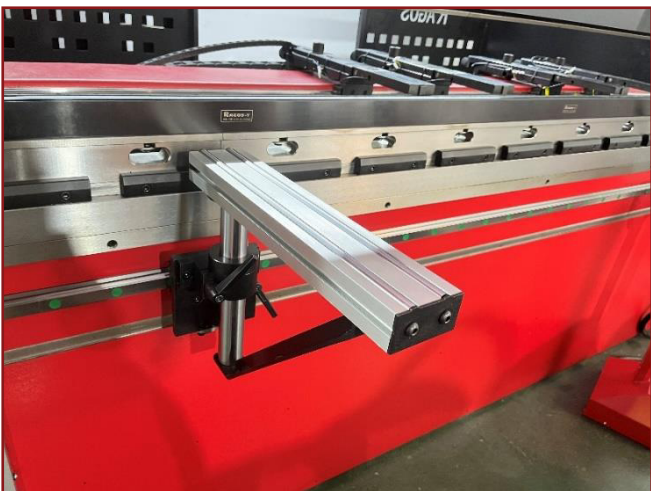
### SLIDER AND GUIDE

The HG series bending machine uses an upper guide structure to control the slider's movement. The guiding plate is attached to the frame's side plate, and the guiding seat is fixed on the slider, ensuring smooth movement as the slider lowers.

The connection between the slider and the cylinder involves an arc pad and a spherical pad that align concentrically. This design allows the slider to tilt slightly if the Y1 and Y2 axes of the two cylinders are not perfectly synchronized during rapid descent, without compromising the machine's accuracy.

The positions of the Y1 and Y2 axes are measured using a Turkish scale and immediately fed back to the CNC system, which adjusts the servo valve control signal accordingly. This setup ensures a slider positioning accuracy of  $\leq \pm 0.02\text{mm}$  and a repeat positioning accuracy of  $\leq \pm 0.01\text{mm}$ . To prevent the slider from moving sideways when out of sync, a side guide is installed on the slider guide.

### PALLETS



Standard linear guide type front pallet

### BACKSTOP CONTROL SHAFT



Ragos produces CNC backstops in two types: 2-axis (X, R) and 4-axis (X, R, A1, A2).

- The X-axis controls the backstopper's horizontal movement, allowing it to move forward and backward.
- The R-axis controls the backstopper's vertical movement, allowing it to move up and down.

The shaft in these machines makes it easier for the backstopper to move up and down, which increases efficiency and reduces the physical effort needed.

In the 4-axis configuration:

- The A1 and A2 axes control two sets of blocking fingers that move horizontally, allowing them to move left and right.

The 4-axis setup is especially useful for tasks that involve frequent changes in board width and diagonal bending, offering superior efficiency.

### MATERIALS

1. The cylinder body is forged with 45# forging steel as a whole, with sufficient rigidity and strength. After forging and forming, it is inspected by non-destructive testing to ensure that the material is free from defects such as loose tissue and annealed to eliminate internal stress and ensure the stability of the material.
2. The piston rod and cylinder head are made of 45# forged steel, and normalized to ensure its good comprehensive mechanical properties.

### PROCESS

1. The cylinder body is mainly machined using a CNC dynamic gantry milling machine, which combines three-axis and five-face machining technology. This ensures that the machined dimensions and form tolerances are accurate. For the cylinder's important mating surface, the bore, fine turning is followed by rolling to improve surface strength. The bore then undergoes precision machining through honing, which achieves a surface roughness of Ra0.4 while maintaining dimensional accuracy and form tolerance. Additionally, the cylinder surface is rough milled and sandblasted to remove surface oxidation and reduce internal stress.
2. The rough machining of the piston rod and cylinder head is carried out on a large lathe, and the guiding surfaces of the piston and cylinder head are molten copper after the rough turning process. The molten copper is brass, which improves the support strength and deflection resistance of the guiding surface, and also creates prerequisites for reliable sealing.



## ELECTRICAL SYSTEM

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The HG Series electrical system consists of a distribution box, Delem DA-58T press brake CNC system, oil pump motor, operation station, deflection compensation mechanism adjustment motor, sensors, limit switches and other parts.

1. The electric control cabinet reaches IP54 protection standard, with standardised arrangement of electrical components and clear labeling, using internationally famous brand components, safe and reliable, long life and strong anti-interference ability.
2. Equipped with mobile operating table and movable foot switch for easy operation.
3. Equipped with an emergency stop function, overload protection and other reliable electrical safety measures to ensure the safety of the operator and reliable operation of the equipment

## CNC SYSTEM FEATURES AND FUNCTIONS

The new generation DA-50T-series offers easy CNC programming based on the Delem graphical touch screen user interface.

The DA-58T is a state of the art complete 2D graphical control solution for synchronized press brakes.

Its 15" high resolution colour TFT, with industrial grade multi touch screen technology, gives access to the proven Delem user-interface. It enables direct navigation between product programming and actual production. Functions are directly located where needed, offering optimised ergonomics throughout the entire application.

Machine adjustment and test bends are reduced to a minimum with a quick and easy program-to-production work sequence. CNC programs are generated with a single touch. You are immediately ready to make the first part since all axes positions are automatically computed and the bend sequence has been simulated with machine and tools in real scale.

The DA-58T offers 2D programming including automatic bend sequence calculation and collision detection.

The production mode of the DA-58T helps the operator in graphically simulating the bend process of the product, guiding them during the press brake operation.

The standard machine control functions are Y1-Y2 and X axis. A second back gauge axis can be used as R or Z axis. Also crowning control is standard on board.

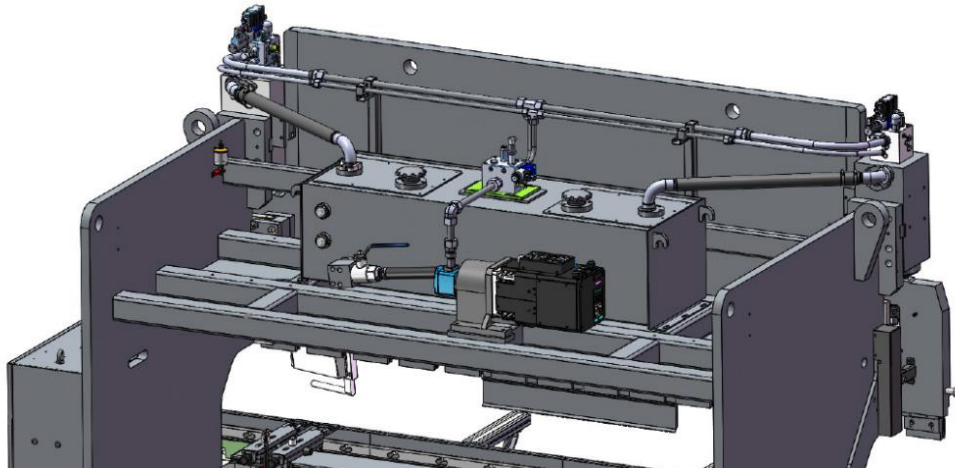
1. Delem DA-58T Compact 4-axes colour graphical CNC system
2. 2D graphical touch screen programming
3. 15" high resolution colour TFT
4. Bend sequence calculation
5. Crowning control
6. Servo and frequency inverter control
7. Advanced Y-axis control algorithms
8. USB, peripheral interfacing
9. Profile-58TL offline software



## HYDRAULIC SYSTEM

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1. This system adopts the bending machine synchronization control system developed jointly with NADIC of Japan. The power component of the system consists of synchronization control block, pressure control block and other hydraulic accessories. The pressure and flow of the system are controlled by electro-hydraulic proportional control, which not only makes the left and right cylinders achieve high synchronization accuracy, but also the whole system moves continuously, smoothly and with stable pressure.
2. Uses Hitech internal gear pump, which has the characteristics of low noise, stable performance and long life.
3. VEICHI servo-hydraulic system control synchronisation.
4. Hydraulic system with two levels of coarse and fine filtration.
5. The overall design of the hydraulic system is safe, environmentally friendly, and easy to maintain.
6. Hydraulic piping system: The hydraulic piping system is made up of German EMB tube fittings and seamless steel pipes from Japan or Parker to ensure a leak-free and clean hydraulic system.



## ACCESSORIES

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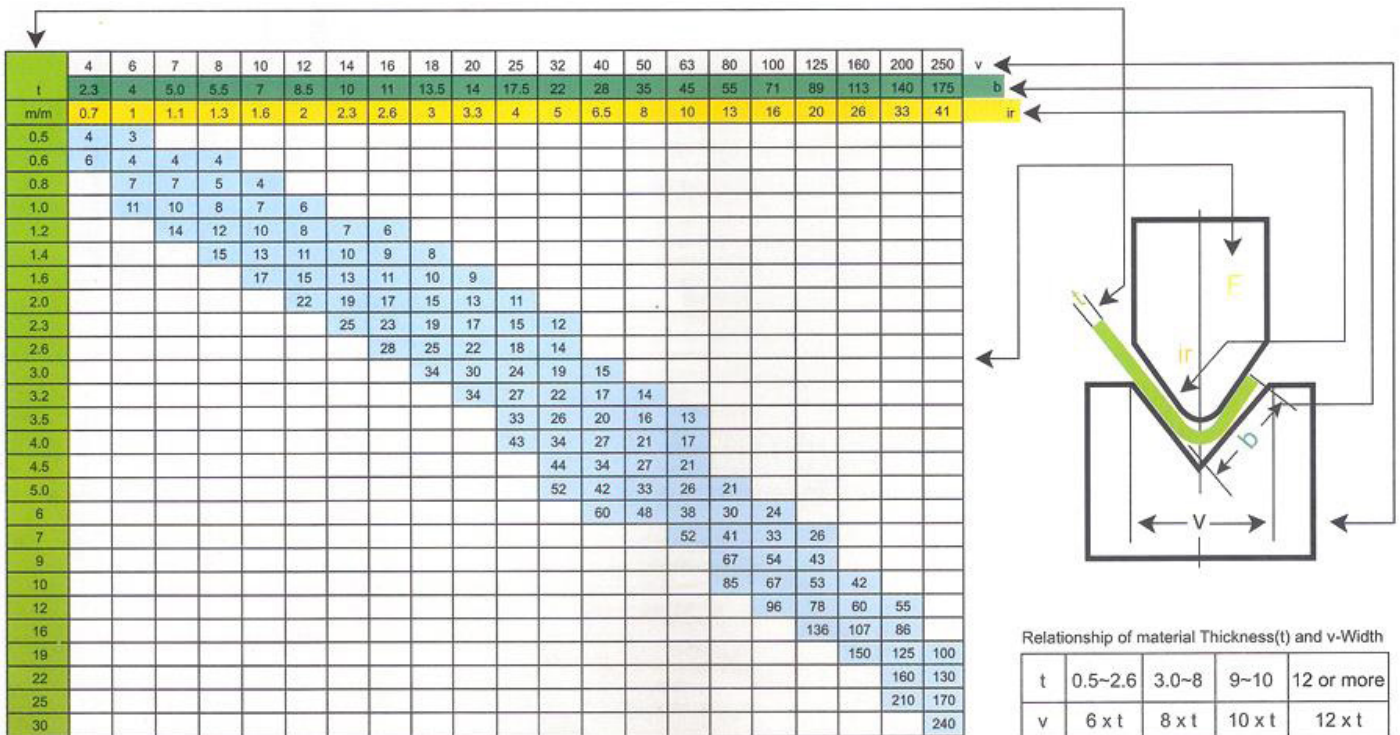
- Open-end wrench 13mm
- Aluminum rod ( $\phi 25 \times 200$ )
- Hexagonal wrench
- One-handed hammer (one pound)
- Angle ruler (100mm)
- Electrical box key
- Machine tool floor 150×150×10t

# SPECIFICATIONS

## Average reference values for product operating conditions and operating noise measurements

- Power requirements: three-phase four-wire system, 380V, 50Hz
- Installation site: clean and dust free
- Maximum temperature: 40°C
- Minimum temperature: -5°C
- Relative humidity: 55-85%
- Elevation: Under 1000M

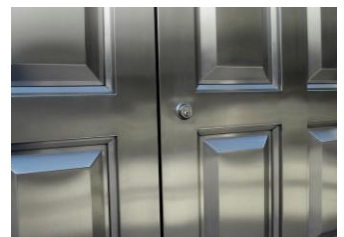
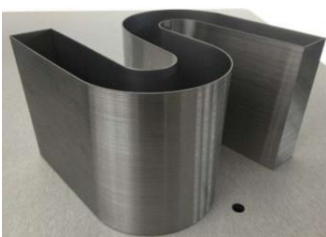
## BENDING PRESSURE GAUGE



## MACHINING CAPACITY

- Mild Steel: 4mm
- Stainless Steel: 2mm

## BENDING SAMPLES



## SPECIFICATION TABLES

Parameter		HG110-2500	HG110-3200	HG110-4000
Nominal pressure (ton)		110		
Workbench length (mm)		2500	3200	4000
Distance between columns (mm)		2000	2700	3500
Slider stroke (mm)		200/250		
Open height (mm)		500		
Throat depth (mm)		400		
Axis number of NC		Y1, Y2, X, R, V		
Main motor power (kW)		11		
Speed of slide (mm/s)	Fast down	200		
	Work	10		
	Return	140		
Dimensions (mm)	Length	3100	3800	4600
	Width	1800		
	Height	2650	2700	2750
Weight (kg)		7200	8000	9000

Parameter		HG130-2500	HG130-3200	HG130-4000	HG130-5000
Nominal pressure (ton)		130			
Workbench length (mm)		2500	3200	4000	5000
Distance between columns (mm)		2000	2700	3500	4100
Slider stroke (mm)		200/250			
Open height (mm)		500			
Throat depth (mm)		400			
Axis number of NC		Y1, Y2, X, R, V			
Main motor power (kW)		11			
Speed of slide (mm/s)	Fast down	180			
	Work	10			
	Return	160			
Dimensions (mm)	Length	3100	3800	4600	5600
	Width	1850			
	Height	2700	2750	2850	2950
Weight (kg)		8000	9000	10000	11500

Parameter		HG170-3200	HG170-4000	HG170-5000	HG170-6000
Nominal pressure (ton)		170			
Workbench length (mm)		3200	4000	5000	6000
Distance between columns (mm)		2700	3500	4100	5000
Slider stroke (mm)		200/250			
Open height (mm)		500	500/550	500	
Throat depth (mm)		400			
Axis number of NC		Y1, Y2, X, R, V			
Main motor power (kW)		15			
Speed of slide (mm/s)	Fast down	170			
	Work	10			
	Return	140			
Dimensions (mm)	Length	3800	4600	5600	6600
	Width	1900			
	Height	2850	2900	3050	3250
Weight (kg)		9800	12000	14000	17000

Parameter		HG200-3200	HG200-4000	HG200-5000	HG200-6000
Nominal pressure (ton)		200			
Workbench length (mm)		3200	4000	5000	6000
Distance between columns (mm)		2700	3500	4100	5000
Slider stroke (mm)		200/250			
Open height (mm)		550			
Throat depth (mm)		400			
Axis number of NC		Y1, Y2, X, R, V			
Main motor power (kW)		18.5			
Speed of slide (mm/s)	Fast down	150			
	Work	10			
	Return	130			
Dimensions (mm)	Length	3800	4600	5600	6600
	Width	2000			
	Height	2950	3050	3200	3350
Weight (kg)		12000	14500	17500	21000

Parameter		HG250-3200	HG250-4000	HG250-5000	HG250-6000
Nominal pressure (ton)		250			
Workbench length (mm)		3200	4000	5000	6000
Distance between columns (mm)		2700	3500	4100	5000
Slider stroke (mm)		250			
Open height (mm)		550			
Throat depth (mm)		400			
Axis number of NC		Y1, Y2, X, R, V			
Main motor power (kW)		18.5			
Speed of slide (mm/s)	Fast down	130			
	Work	9			
	Return	120			
Dimensions (mm)	Length	3800	4600	5600	6600
	Width	2100			
	Height	3150	3300	3450	3600
Weight (kg)		15000	17500	22000	26000

Parameter		HG320-3200	HG320-4000	HG320-5000	HG320-6000
Nominal pressure (ton)		320			
Workbench length (mm)		3200	4000	5000	6000
Distance between columns (mm)		2700	3500	4100	5000
Slider stroke (mm)		300			
Open height (mm)		600			
Throat depth (mm)		400			
Axis number of NC		Y1, Y2, X, R, V			
Main motor power (kW)		22			
Speed of slide (mm/s)	Fast down	110			
	Work	9			
	Return	110			
Dimensions (mm)	Length	3800	4600	5600	6600
	Width	2200			
	Height	3200	3400	3600	3800
Weight (kg)		22500	26000	30000	35000

Parameter		HG400-3200	HG400-4000	HG400-5000	HG400-6000
Nominal pressure (ton)		400			
Workbench length (mm)		3200	4000	5000	6000
Distance between columns (mm)		2700	3500	4100	5000
Slider stroke (mm)		300			
Open height (mm)		600			
Throat depth (mm)		450			
Axis number of NC		Y1, Y2, X, V			
Main motor power (kW)		30			
Speed of slide (mm/s)	Fast down	100			
	Work	7			
	Return	60			
Dimensions (mm)	Length	3800	4600	5600	6600
	Width	2300			
	Height	3500	3700	3950	4200
Weight (kg)		26500	30000	34500	40000