GRANLUND

GRANLUND
Machinery

Universal Bending Machine

GRANLUND Bending achine, type KUB-6
High flexibility. Easy to operate. PLC-controlled

Designed for bending tubular elements

Although there are many types of bending machines on the market, only one is specifically designed for bending tubular elements - GRANUND KUB-6 universal bending machine.

High flexibility

The machine can be used for bending oval, square or finned elements of any length and in the diameter range 4 to 20 mm. Bending radius from 7 to 60 mm.

Easy to operate

KUB-6 is hand operated and bending angles are programmed in the PLC.
It is also possible to bend coils.
The machine indicates in which sequence the operator is through the bending programme. If mounted on wheels, the KUB-6 can easily be moved around the factory for in site use.

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11. BENDING, ASSEMBLY... KUB, KOB, Dispenser

Kanthal Machinery markets a wide range of bending machines, from the small hand operated universal bending machine KUB-6, to large CNC machines.

Four common types are:

- the hand operated universal machine, KUB-6,
- the multiple bending unit universal machine, KOB-3.0,
- the semiautomatic machine for circular shaped elements, KOB-C
- the fully automatic KUB-CNC single head bending machine

Sales Catalogue

KUB-6
Universal Bending Machine

Unlike many other types of bending machines on the market, the KANTHAL KUB-6 is a universal bending machine, specifically designed for bending tubular elements.

KANTHAL KUB-6 is a development of KANTHAL KUB-4. Major improvements are:
• The single-chip computer control system is replaced by a modern PLC system
• The drive unit (motor and control) is improved

The machine can be used for bending round, oval, square, of finned elements, of any length and in the diameter range of appr Ø4 to 20 mm (depending of tube material). Bending mandrels from Ø7 to 60 mm.

KUB-6 is hand operated and programmed on a PLC.

If mounted on wheels, it can easily be moved around in the factory for in site use.

- specifically designed for metal sheathed tubular elements
- easy to operate
- flexible, may be used for various applications
- more than one element may be bent simultaneously
- PLC controlled

Technical data

		KUB-6
Width		appr 900 mm
Length		appr 900 mm
Height		appr 1150 mm
Weight		appr 300 kg
Tube diameter	min	4 mm
	max	20 mm
Inner bending radius	min	7 mm
	max	60 mm
Torque		250 Nm
Bending angle	max	see below

Note: with standard tooling, the max bending angle for KUB-6 is 210°. With different tooling set-up, there is no max bending angle.
KUB-6: the No of angles per cycle can be set and stored in PLC

Bending speed	max 90°/second (can be set) KUB-6

Number of elements that can be bent at the same time:

stainless steel Ø6,4 mm	max 4 pcs
stainless steel Ø8,2 mm	max 3 pcs
stainless steel Ø14,0x1,0 mm	max 1 pce

Motor	0,55 kW
Standard electrical connection	single-phase / 2,7 A
Equivalent sound level	less than 70 dB(A)

Options

- Possibility to make coiled elements
- Centralizing equipment

Required information when ordering

- mandrel size
- electrical connection

Sales Catalogue

KOB-3.0

Bending Machine with Multiple Bending Heads

KOB-3.0 is a universal bending machine for up to 12 bending heads. It is equipped with 8 heads as standard.
The units can be mounted on two guides of a vertical bench with inclined work top. It is mainly used for bending resistances in one plane with 2-4 elements at a time. Normal element types are such as for grills, ovens and washing machines, also for larger series.

It comprises:
- supporting bench for elements up to 3,0 meters
- locking vice
- 8 bending units (heads) shaped for bending to the left and to the right. Prearranged for bending four elements 6/6,25 and two elements 8/8,5.
- electropneumatic system
- automatic removal of elements after bending operation
- centralizing device for 2-4 elements (option)

Equipment for bending longer elements is available, as well as feeding device.

Technical data

Dimensions	4 200 x 1 800 x 1 000 mm
Weight	800 kg (incl 12 heads, centralizing device and vice)
Weight of one bending head	35 kg
Max element length	3 000 mm (standard version, KOB-3.0)
Thickness locking vice	50 mm
Thickness standard head	80 mm
Thickness smaller head	58 mm
Power supply	2x220 V
Pneumatic pressure	6 bar

The tooling time for changing settings (depending on complexity of shape) is normally 0,5-1,5 hours. The cycle time for making a 180° bend, including down time, is 3 seconds.

Required information when ordering

• No of bending heads required
• element max length
• bending radii
• centralizing device (option) required?

Sales Catalogue

KOB-C
Semi-Automatic Bending Machine for Circular Elements

KOB-C is a PLC semi-automatic machine for bending heating elements as spirals or rings on cylinders, with diameters ranging from 20 to 350 mm. It can make spirals with right or left helix, up to 200 mm.

The bending/winding machine is backed by a manual pneumatic bending machine (2 or 3 units), that can bend the extremities up to 120° or more (up to 180° in the centre of the element).

Technical data

Dimensions	2 000 x 1 500 x 1 000 mm
Weight	350 kg
Max element length	2 000 mm
Max tube diameter	6/10 mm
Thickness locking vice	50 mm
Thickness standard head	80 mm
Thickness smaller head	58 mm
Power supply	2x220/380 V; 1,5 kW
Pneumatic pressure	6 bar

The tooling time for changing settings (depending on complexity of shape) is normally 6-10 minutes. An estimation of the productivity is (depending on complexity of shape) 150-200 pieces per hour.

Required information when ordering

Sales Catalogue

KUB-CNC

Semi automatic, single head bending machine, controlled by PC, for small to medium seized lots.

KUB-CNC is a single head universal bending machine, specially designed for tubular elements. It concists of a single bending head controlled by AC.servo motor. The bending head is moveable sideways by a pneumatic cylinder making it possible to bend both right and left bends at the same time. To change bending radius, the bending mandrel can easily be changed. A pneumatic, V-shaped, support makes it easy to to place the elements in the right position.

There is several different methods to bend the elements. One element at a time with invidual lengthmeasurement of each element. The value is transmitted to the PC and the bending starts at a preprogrammed point. Four element at the same time with a centralizing system. One element at a time with a rotating vize, making it possible to bend in several planes. Big bending radius can be achived by putting the bending head in a certain angle and pressing the element through. With this methode only one element at a time can be bend. The PC with key-board is placed in the control-cabinette. The program is Windows NT. As an option the customer can by a special version of the program, making it possible to make different bending programs at his office PC. Up to 10.000 programs can be stored.

Sales Catalogue

Technical Data.

Diameter of element. (mm)	6 - 12
Diameter tolerance. (mm)	+/- 0,1
Minimum length of element. Fixed reference.	200 mm
Minimum length of element. With centering.	250 mm.
Minimum length of element. With rotating vice.	500 mm.
Maximum length of element. Standard.	3.000 mm.
Maximum length of terminal pin.	30 mm.
Maximum bending speed. (°/sec)	400
Estimated time for a 180° bend. Bend+return	1,8 sec.
Estimated time for a 90° bend. Bend + return.	1,2 sec.
Maximum speed of carriage vice. (mm/sec)	1.200
Maximum speed of rotating vice. (°/sec)	1,5
Maximum measuring time. (sec)	2,5
Average time for changing mandrel. (min.)	3
Average time for changing code on bending.	3
Maximum number of bends in one cycle.	100
Maximum diameter of bending mandrel. (mm)	70
Minimum diameter of bending mandrel. (mm)	16
Minimum length of the last straight part. (mm)	50
Electrical supply (V)	3 x 400
Frequency. (Hz)	50
Pneumatic supply (Bar)	6
Electrical power installed (kW)	4
Overall dimensions. (cm)	200 x 400 x 200
Weight. (kg)	500

Sales Catalogue

Mini Shot Dispenser
Automatic dispensing system for end sealing

A perfect unit for the dispensing of silicones for end sealing of the tubular element. It is an ideal and reliable automatic dispenser for applications where an accurate metered quantity of material is required.

The meter and dispense valves are chosen for this specific application. All valves are pneumatically actuated and are controlled by an electric or pneumatic timing device. Latter receiveds an impulse from a foot pedal or hand switch. For automatic applications, it is possible to control the unit by a remot limit switch or an impulse generator (option).

Construction

The Mini Shot Dispensing system consists of:

One control box
complete with electro/mechanical timer with face scale 3 for 3 seconds (changeable to 6 s, 60 s, 6 min, 6 h), pressure reducing valve and manometer, mode control switch, electrical foot switch, timer wrench

One valve holder
complete with base plate, one vertical bar and one horizontal bar with attached mounting plate for the dispense valves

One outlet valve
complete with material block in steel, tungsten carbide valve seat, adapter for hypodermic needle, and needle, double pneumatically actauted

One material container
complete with cartridge, material valve assembly and elbow for connection to outlet valve

One hose kit
consisting of all hoses required to connect the control box with the material container and the outlet valve

Technical data

Min. dispense volume	1 mm^3
Time increment	from 0,1 s
Max. shot cycle rate	100 per min
Capacity container	175 cm^3
Air pressure	5 to 6 bar
Electrical suppy	220/110 V, single phase, 50/60 Hz