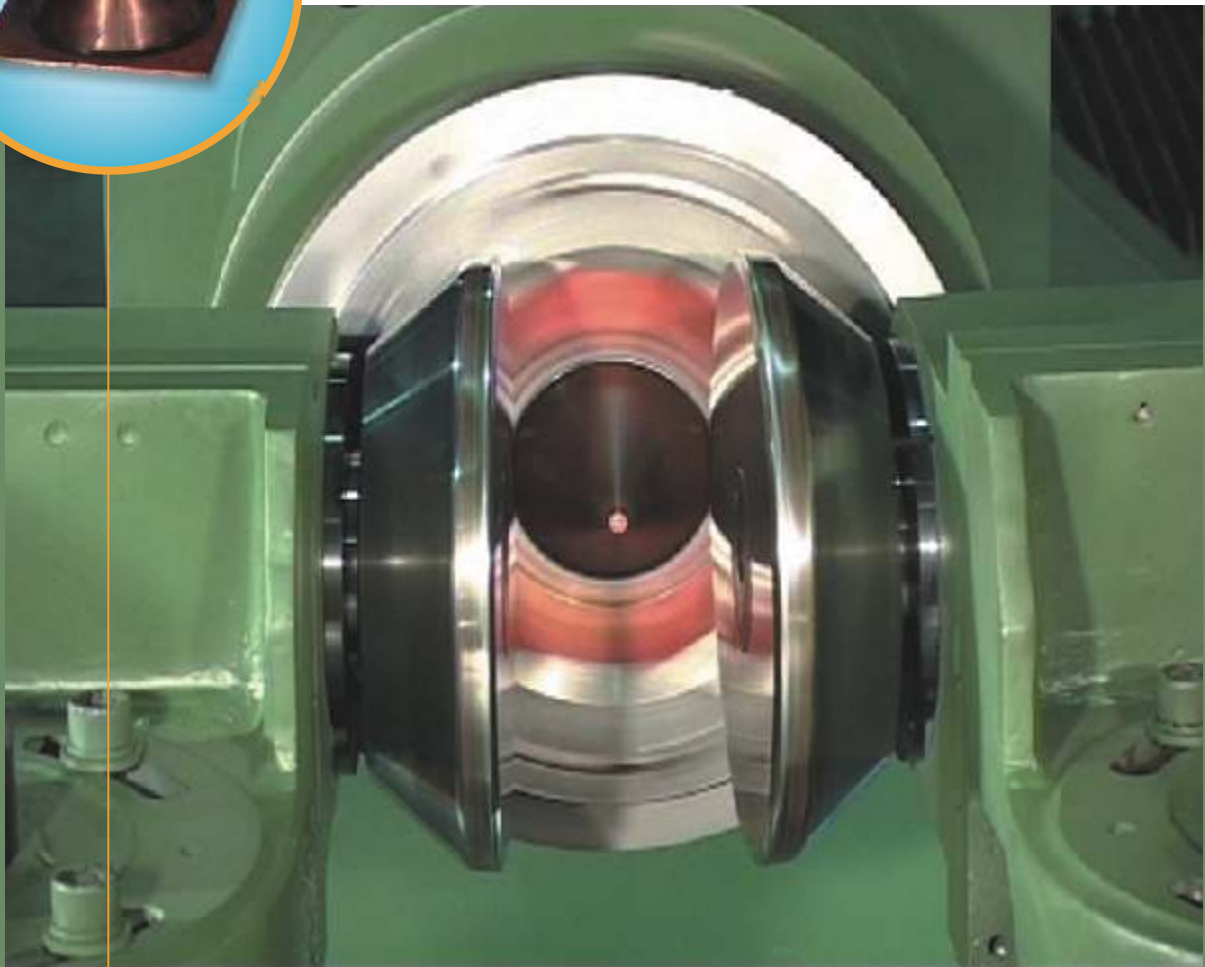
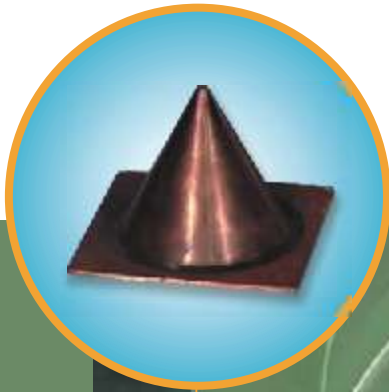


## CNC, 2-Roller Flow Forming Machine



Ideally suitable for metallic conical liners

# CNC, 2-Roller Flow Forming Machine

Ideally suitable for metallic conical liners

Electronica has been manufacturing highest quality machines for more than 30 years. These machines, required in Tool Rooms and for production, are proving their worth at thousands of installations in India & Overseas. Now Electronica proudly presents its latest achievement in technology - a CNC, 2-Roller Flow Forming Machine for manufacturing metallic conical liners.

It is the first time that such an innovative-technology machine is being manufactured indigenously. This novel CNC machine has electro-mechanical design, vector control drives and AC induction motors for the spindle and axes. The machine, ideal for non-cutting shaping and forming, does not make use of any hydraulic systems.

The robust, ergonomically designed, state-of-the-art machine offers a unique solution for conical liner forming. It assures precision, consistency, flexibility and productivity.



## Flow Forming Process

Metallic conical liners are formed by using the flow forming process. In this process, the material which is in the form of metallic square blanks, is pressed against a mandrel with enormous force ( approx. 6000 kg to 8000 kg ). The material is made to flow onto the mandrel. Thus, its plastic deformation / flow of the material reduces the thickness of the blank, keeping the volume same. The process achieves a perfect alignment of grains along the axis of the metallic cone.



## Machine Units - Features



### Headstock

Sturdy design to take on huge forces in the flow forming process

Spindle with imported, precision bearings to take axial & radial loads

Spindle bearings of the headstock have automatic lubrication



### Longitudinal Slide ( Z Axis )

Movement over a pair of hardened, ground guide rails

Sturdy cross-section of guide rails take heavy loads

Precision ball screws ( Ø 63 mm, pitch 16 mm )

Dynamic & static load capacity for longer life



### Cross Slides

Mounted on the longitudinal slide, opposite to each other

Independent servo control, with infinitely variable speed

Precision ball screws ( Ø 50 mm x 16 mm pitch )

All slides fitted with Turcite B strips with excellent stick/slip characteristics

Automatic, self-lubricating systems

Axial/Radial bearings for ball screws, stretched through precision lock nuts



### Indexing Head Assembly

Two indexing head assemblies mounted on the cross slides

Roller head mounted on the indexing headstock

Internal and external gear mechanism swivels the roller heads through 15° in steps of 5° in both the directions

### Roller Heads

Two roller heads mounted on the indexing heads

Roller Spindle housed in a casting with precision bearings

Sturdy bearings to take heavy loads



### Lubrication System

Two types of automatic lubrication systems

Axes lubrication : Offers smooth motion to the slides. Activated in programmed interval of time.

Spindle lubrication : Starts when the spindle is 'ON' and continues till it is 'OFF'.



# CNC, 2-Roller Flow Forming Machine

Ideally suitable for metallic conical liners



## Control Panels

Consist of the Operator Panel, CNC Panel, Drive Panel, Switchgear Panel and the stabilizer. Advanced, open architecture multi axes DSP - based CNC Controller with 'G', 'M' code programming feature.

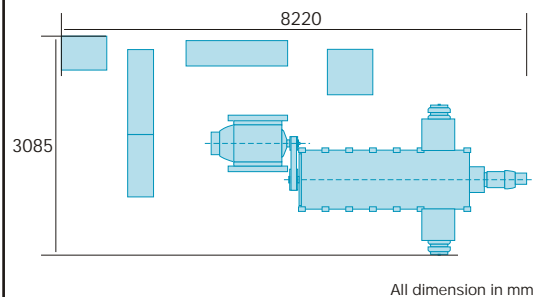
CNC Controller offers the 3 axes a simultaneous control of closed loop axes. The feed for the longitudinal and two cross slides and the spindle has an infinitely variable speed control.

The axes feed required by this machine is a high power Servo drive. These are very very costly and difficult to procure off the shelf. Instead, we use the latest technology of vector control, inbuilt into our CNC Controller.

## Technical specifications

Base dia. of conical liners	30 mm to 300 mm
Minimum full cone angle to be formed	40°
Maximum blank thickness of the workpiece for flow forming of cones	Copper : 6 mm EDD steel : 4 mm
Longitudinal stroke	500 mm
Cross slide stroke for each slide	300 mm
<b>Feed / speed</b>	
Spindle speed infinitely variable	25 to 1000 rpm.
Longitudinal feed infinitely variable	2500 mm/min.
Longitudinal rapid travel	5000 mm/min.
Cross slide feed infinitely variable	2500 mm/min.
Cross slide rapid travel	5000 mm/min.
<b>Forces</b>	
Longitudinal slide	80 KN / 8000 kg.
Cross slide	60 KN / 6000 kg.

General layout for Flow Forming Machine



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