

PEDRAZZOLI

MACHINE TOOLS

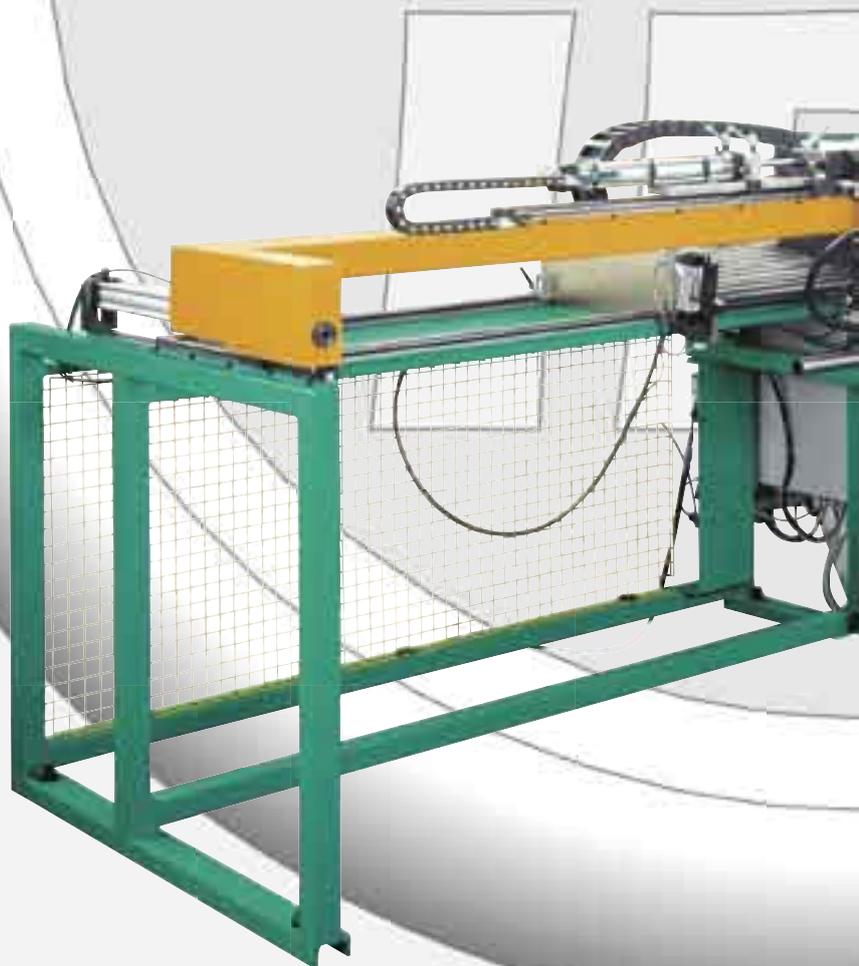


END FORMING



A COMPLETE RANGE OF END FORMING MACHINES

PEDRAZZOLI has a many decades experience in producing tube end-forming machines. JARISTON BROWN swaging machines were introduced in 1948 soon followed by the STERN BROWN end-forming machines. Today available models use sophisticated but easy-to-use controls with Pentium processors PCs, touch screen, last generation controlled axis and multiple translation and rotary work stations. The advanced multi-station models can carry out all types of end-forming such as ring-forming, flaring, diameter reduction, tube closing, dome forming, punching and threading. PEDRAZZOLI IBP SpA can also supply models with different control versions to adapt to customer's operative requirements whilst keeping the robust mechanical structures which, together with machine's versatility, are the main features of PEDRAZZOLI end-forming and swaging machines.



IMS 2000

CONTROL CONCEPT



Simplicity of use is the most evident feature of the PEDRAZZOLI IMS multi-axis control. Programming is intuitive and guided by explanatory help pages which describe in a very detailed manner all the available features. Using the latest version of TOUCH SCREEN the operator only needs to indicate the shape of parts he wishes to produce and the tools and type of material he is using; the machine will optimise all other parameters thus reducing to a minimum the actual duration of work cycle.

As soon as control obtains this basic information it will also automatically check feasibility and show any possible critical points on component in work. The programmes can be saved or recalled from floppy disk, Hard Disk and from company's mainframe through Ethernet connection. The SW suggest various functions to operator by means of visual language making use of machine immediate and learning process very simple. This way all the possibilities of the IMS control can be used to the outmost. Here below we list main features:

- Control based on PC with PENTIUM microprocessor.
- Extremely intuitive machine/user interface, thanks to accurate graphic representation and use of touch screen.
- Work programming carried out by each of the available steps.
- Programming of the sequence of steps.
- Programming of vice opening cycles (left vice and right vice with independent movements).
- Advance and rotation of the plate and tools carried out by means of axis cards which allow the control of position and setting of accelerations, decelerations and speeds.
- Possibility of programming multiple sequences.
- Production report.
- Online and offline graphical representation for feasibility verification of memorised programmes and search of possible collisions between moving and stationary parts.
- Cycle time evaluation in simulation.
- Ethernet connection and connection to phone lines by means of modem to allow remote programming of work cycle, visualisation of machine functioning and servicing.
- The axis control cards allow the execution of complex work with very simple parameter settings by interpolating the advance movement to the tooling rotation movement. Threading and punching are carried out by simply inserting the punch's diameter or the tap's pitch; the control will automatically calculate the ideal advance and rotation speed for the tool.



STERN 25 IMS

The new, sophisticated model **STERN 25 IMS** offers, on a strong and multifunctional structure, all the flexibility which PEDRAZZOLI's IMS control can give: it is studied to rapidly control by means of brushless motors all the machine axes and, at the same time, guarantee a simple use even when making extremely complicated end-forming. STERN 25 IMS is complete with 15 work stations which can be motorised, placed upon a semicircular support which disappears inside machine base. This means dimensions are reduced to a minimum and maximum speed is obtained both in

tool change and in work execution. By means of an intuitive programming process on TOUCH SCREEN in a same work cycle it is possible to flare, reduce, end-form, roll-form, face, chamfer, close and thread tubes. Machine carries out automatic optimisation of the work cycles reducing production times to minimum. In addition the rapid tool change, double vice closing system, automatic lubrication of mechanical organs and fast programme management make the STERN 25 IMS perfectly suited even to the most exacting productive conditions.



END FORMING MACHINE



15 different tools can be fitted on the STERN 25,
each designed for a specific endforming of the tube.





STERN 50 IMS

The **STERN 50 IMS** completes the range of IMS controlled end-forming machines. Machine features are very similar to the Stern 25 IMS but in addition it offers a much wider range of use, as machine has been designed to work tubes up to OD 55 x 4 in steel and light alloys. Machine is complete with Pentium processor PC, touch screen, fast controlled axis and 8 multiple translation/rotary work stations. The STERN 50 IMS is designed to give constant performance and repeatability in time and to ensure minimal operator intervention. Machine structure guarantees efficiency and sturdiness in all its parts from machine movements carried out by recirculating ball slides, pushing cylinder driven by proportional valve, axis position read by magnetic scale sensors to the brushless motors used both to change work station and to motorise the actual tools.

Once again the automatic optimisation of the work cycles, easy programming, rapid tool change, double vice closing system, automatic lubrication of mechanical organs make STERN 50 IMS suitable for even the most complex end-forming operations.



END FORMING MACHINE





STERN BROWN 30 R-P

END FORMING MACHINE

The **STERN BROWN 30 R-P** is designed to carry out shaping of tube extremity by means of rolling to obtain a flat or rounded closing. Ease of use, extremely fast work speed and quality of result are the main outstanding features of this end-forming machine. The central unit comprises a motor which keeps rotation of tool constant at 800 rpm, while control of hydraulic thrust cylinder controls the approach and the deformation

by means of two combined mechanical movements. Main machine structure and movements upon slides make STERN BROWN very rigid so that closing operation on tube can be carried out in just 10 seconds. The rotating tool also self-centres on the vices during approach so that perfect axially of work and excellent repeatability are guaranteed.



STERN BROWN 40

END FORMING MACHINE



The tube reducing and flaring machines of the series STERN BROWN, have been designed for end forming, flanging, swaging, reducing and bombing of tubes for toys, furniture, light tubular scaffolding industries. The machine base in thick steel plate holds the working groups and contains two oil tanks for the hydraulic circuit and punches lubrication. The cylinder head, which holds the punches, slides on guides. The vice group, elbow joint type, guarantees a perfect clamping of the tube. The automatic working sequence is determined by hydraulic valves. The automatic working cycle, with equipment

for two operations passages in sequence, is the following: clamping and (adjustable) lubrication of the tube, length stop displacement, forward stroke of the first punch and return at the end of the working operation. Positioning, lubrication and working stroke of the second punch, length stop return, vice opening and return of slide holding punches to the initial position. The STERN BROWN 40 can be supplied in two versions 1° version with equipment for two operations in sequence 2° version with equipment for four operations in sequence.



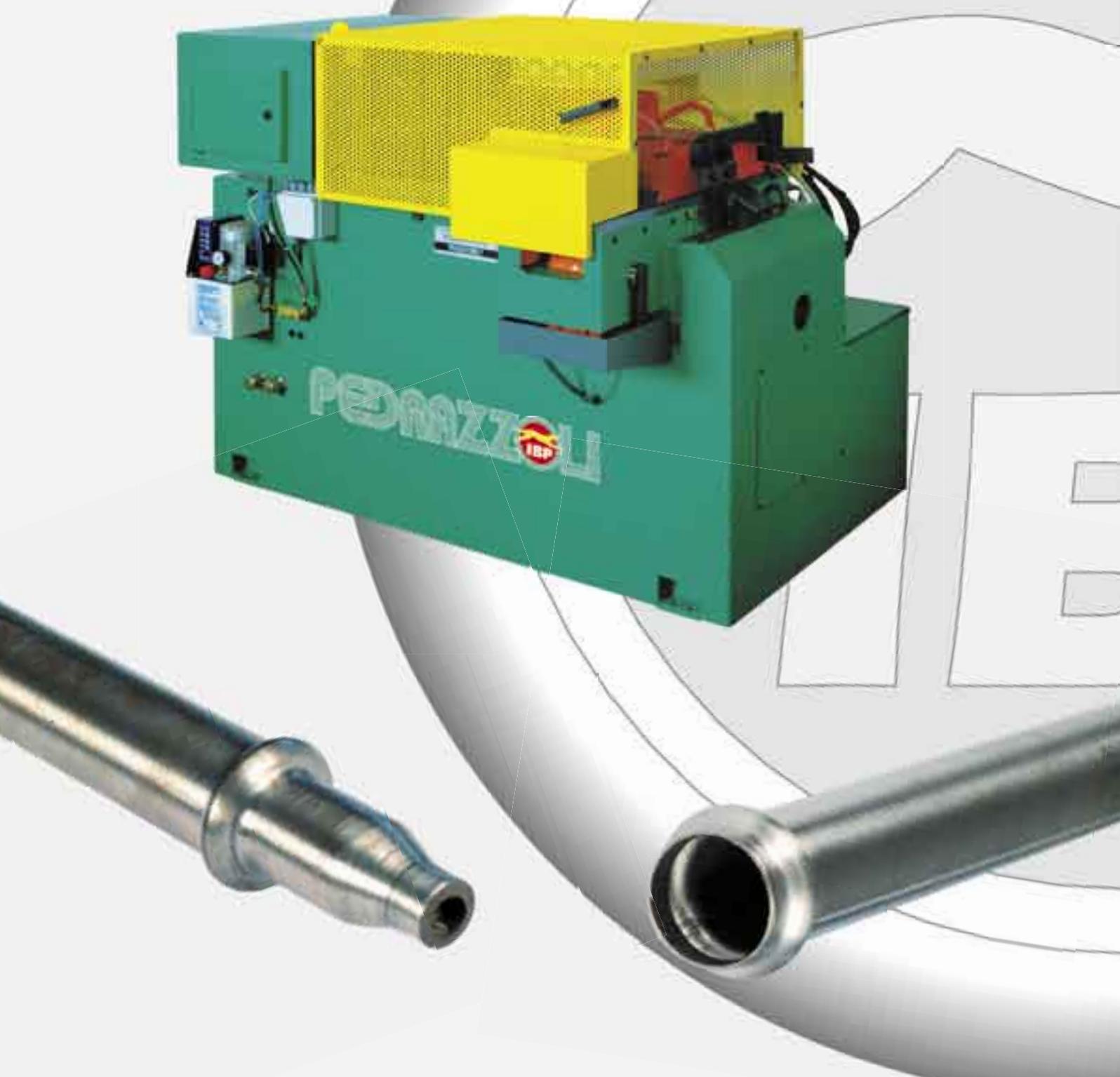


STERN BROWN 65

END FORMING MACHINE

This model of tube end forming machine is particularly indicated for working tubes to be used in automotive or tubular industries. The vice has a toggle closing system. A non-return valve, guarantees the clamping of the tube even in case of pressure loss in the hydraulic circuit. The working pressure, established by a pressure limiting switch, is reduced when the hydraulic oil arrives to the length stop,

clamping vice and punches translation control cylinders. In case of particularly exacting work, the return of the head, is assured by an air pressure switch instead of the standard head stroke limit switch. The STERN BROWN 65 is available in 2 versions: one with equipment to execute two working operations in sequence and one with equipment to execute three working operations in sequence.



STERN BROWN 102

END FORMING MACHINE



This machine has the same technical and structural features as the model 65. It is different in regards to the clamping, which is specially studied for large and medium tube diameters (max. 102 mm.). This machine, as the previous models, is constructed with a large margin of safety as for the mechanical, electrical and hydraulic functions. The motor-pump group for slide and link-works lubrication consists of an electro-pump and of an electronic control equipment. The centralised & cyclical automatic lubrication assures

maximum smoothness to all operating components. Further features:

- quick change of tools
- high-performance machine without employing skilled personnel
- various working possibilities

The STERN BROWN 102 is available in 2 versions: one with equipped for two working operations in sequence and one with equipped for three working operations in sequence.





JARISTON BROWN 80 - 50

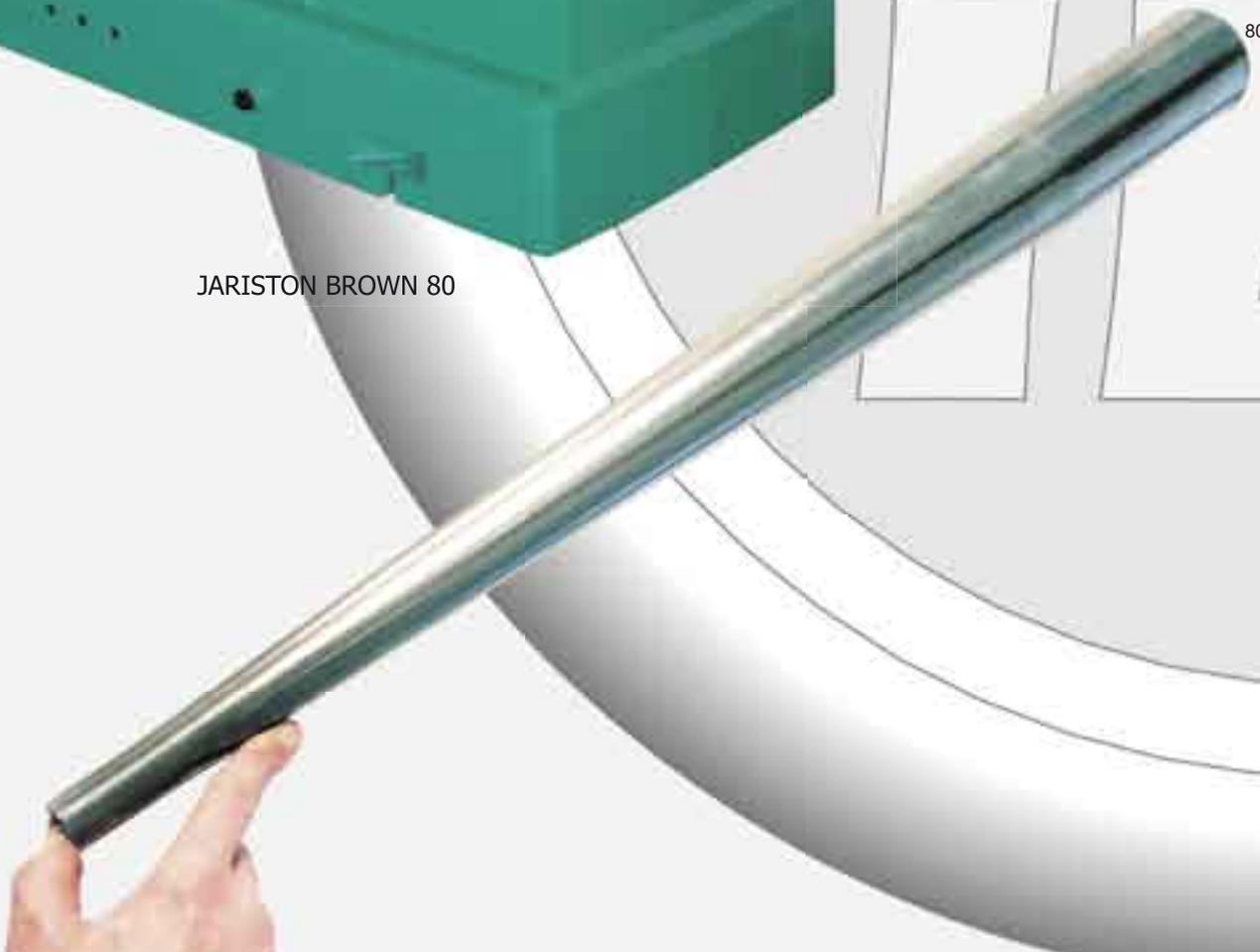
SWAGING MACHINE

Pedrazzoli IBP, thanks to its wide experience in all kinds of metal tube forming, produces 4 models of swaging machines the JARISTON BROWN 18-35-50-80. Each figure means the maximum outer diameter in mm. which each model can either swage or taper.

These machines are equipped with the best precision devices, they are strong, powerful and perform their task very rapidly. They are reliable, and ensure very high production. The wide range of models can meet all requirements for both swaging and tapering.



JARISTON BROWN 80



80mm

JARISTON BROWN 18 - 35

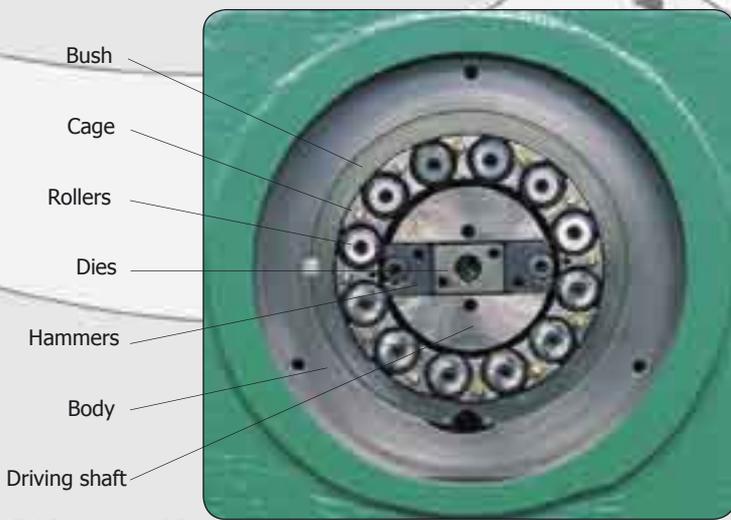
SWAGGING MACHINE



WORKING PRINCIPLES

The electric motor, housed inside the body, drives, through V-shaped belts, a fly-wheel directly keyed on the dies and hammers driving shaft. A longitudinal slot in the shaft is sunk through the rotation centre. Inside this slot a pair of half-dies is housed. They contain in negative form the shape to be reproduced on the workpiece. All around, a pair of hammers rest on the back of the dies. The whole assembly is driven by a shaft. Outside and coaxially to the rotating assembly (shaft, dies, hammers), a bush is mounted, in which a number

of rollers are arranged as if in a bearing. They are kept in position by a cage. When the shaft rotates the centrifugal force pushes outward both dies and hammers. The hammers adhere to the peripheral rollers housed on the bush, and are pushed inwards every time they hit the centre of each roller. This movement controls the simultaneous opening and closing of the dies, which, in turn, perform the hammering operation on the workpiece.



JARISTON BROWN 18



FORM BROWN 80

END FORMING MACHINE

HYDRAULICALLY POWERED TUBE COLD END FORMING MACHINE

Applications: expansion of nominal diameter, chamfering, slotting and flaring. Particular attention has been given to the structure of the machine (heavy duty, vibration free, with precise use of tooling, longer life of tooling and better quality workpiece) with a completely interchangeable tool system. Tooling is interchangeable with tools of other international manufacturers. Rapid manual tool change. A hydraulic tool lifter is supplied with the machine.



Hydraulic unit is located inside machine base. On the top part of the base there are the hydraulic cylinders which activate the tooling operation. The same can operate separately or simultaneously.

The machine is supplied with air/oil heat exchanger for hot climates and when continuous heavy duty work is required. Thanks to its reduced dimensions and the wheels it is equipped with, the "FORM BROWN" can be easily integrated with working centers, where robotized tube movement, or manipulators, transfer tube automatically during loading and unloading phase. This type of machine does not require clamping vices, and since special shaped jaws are not necessary to clamp tubes, the above operations are simplified on bent tubes. Average cycle time, depending on type of production: approx. 1,5 seconds.



NORMAN BROWN 80 - 50

LOADERS



NORMAN BROWN 80

Hydraulically operated and fully automatic feeder, assuring maximum precision, rapidity and efficiency, with almost complete elimination of machining cycle idle times. In fact, if the tubes, placed in the feeder basket, are set obliquely or get entangled, the lifting belts and the conveying chains automatically invert their movement until the tubes are set in

good order. This operation does not interrupt the tube end reducing cycles as the conveying chains preload in the chute tank a given number of tubes which, by falling one at a time on the support forks, are locked by the thrusting unit collet, introduced in the machine, then drawn out and deposited in the tank.



NORMAN BROWN 50

Pneumatically operated automatic feeder (except for the initial loading of tubes in the suitable container all other operations take place automatically). Microvalve controls assure tube feeding. The tube bundle, placed in tank, is aligned by two chains which set in position one tube at a time on two cylinders regulated according to the tube diameter. The download

rotation of the cylinder, allows the tube to fall on the centering forks. The tube is then locked in the clamping unit, introduced in the tube reducing unit and, after machining, is dropped in the collecting tank. NORMAN BROWN 50, can feed tubes ranging from 200 mm up to 1000 mm of length.

**SINCE 1948 MACHINE TOOLS
FOR CUTTING BENDING AND END FORMING
OF METAL TUBES AND SECTIONS**



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