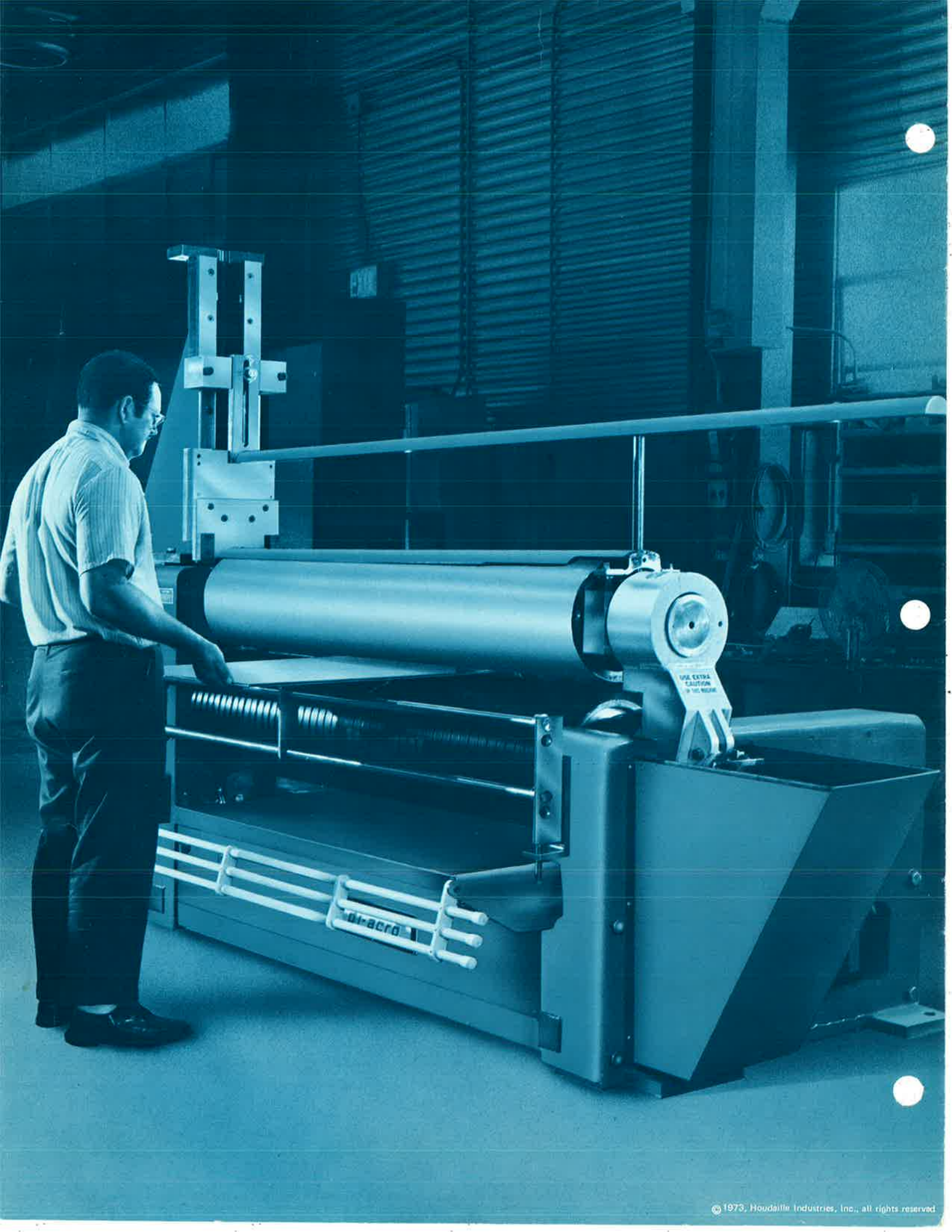


the Art of Forming with 1-PASS ROLL-BENDING AND CURVING MACHINES





bi-acro

1-PASS/UNIQUE DESIGN AND ACTION

One-pass roll-bending and curving make Di-Acro K-Line machines unique in a number of ways. They use two rolls (not three), the top roll made of steel and the lower roll covered with K-Prene® urethane. The steel roll acts as a male punch, forcing the material to be formed into the K-Prene roll. These machines, in effect, combine the features of a power roller and the forming pressures of a press brake, to produce high-quality rolled or curved parts.

The K-Prene urethane covering of the bottom roll deflects with a tremendous amount of pressure, one of urethane's chief characteristics. This controlled deflection literally forces the blank to conform to the diameter of the top steel roll.

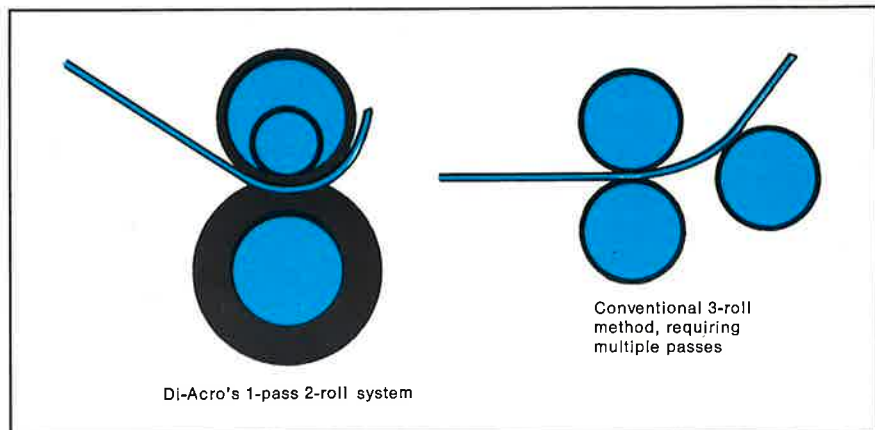
This action means superior control in rolling and curving. The radius of the rolled part is determined by the diameter of the top steel roll plus the *natural springback* of the material involved.

But what are the advantages of the K-Line two-roll system over a conventional three-roll operation? With a three-roll machine you must take into account the larger number of operating parts, and the large number of subsequent adjustments necessary to roll a perfect part. Blanks must be preformed on the ends to eliminate flats. Numerous passes and roll adjustments are necessary to get parts accurately up to standard. The steel rolls involved in this operation can scratch and mar material surfaces; they can result in fluting and kinking of the material. And of course blanks

with cutouts or perforations cannot be three-rolled because of malformation.

With a K-Line two-roller, these problems are eliminated. In one pass through the machine, you get an accurate, continuous curve that starts almost instantly. In fact, you get an absolute minimum of flat spots on the leading and trailing edges of the part, approximately one to four *metal thicknesses*, depending on the type of material being rolled. Because of the high pressures involved, K-Line two-roll machines have the ability to roll over perforations, cutouts, even embossed material without kinking or fluting. The deflectable K-Prene preserves all types of finishes and polished surfaces — there's no marring. And the patented anti-deflection feature

of the upper roll means you form all sizes of material accurately, without bowing. To insure that the pressure for each pass is constant and without variance, Di-Acro K-Line roll-benders utilize a mechanical toggle system, actuated manually, pneumatically, or hydraulically, depending on model. This system produces the same pressure for forming the part each time the machine operates.



Di-Acro's 1-pass 2-roll system

Conventional 3-roll method, requiring multiple passes

1-PASS/UNIQUE EFFICIENCY AND PRODUCTIVITY

The unique design and action of Di-Acro K-Line roll-bending and curving machines yield unique efficiency and productivity.

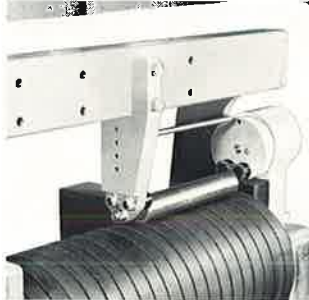
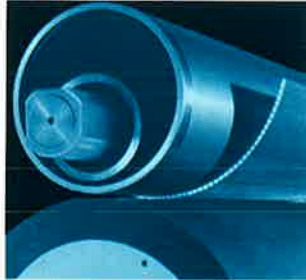
One advantage is in tooling. The radius of a rolled part is determined by the diameter of the top steel roll plus the natural springback of the material. To change the diameter of the rolled part, the diameter of the top roll must be changed. With K-Line machines, this is quickly and easily done by the use of "Slip-on Tubes," another unique Di-Acro feature.

A Slip-on Tube is normally available from commercial tubing; and it is simple and inexpensive to make. The part number of the part to be rolled with a particular slip-on tube, and the counter reading that indicates roll position, can be stamped on the end of the tube for future reference. This process virtually eliminates setup time and scrap problems the next time around for that piece: the operator need only select the proper slip-on tube, quickly slide it onto the machine, and set the correct roll position on the digital readout. Fast and easy — and the first part rolled is normally a usable part, provided the material springback is the same as before.

For producing parts with diameters smaller than the top steel roll, a Small-OD Attachment is available.

The Small-OD Attachment permits rolling diameters as small as one inch. It has interchangeable mandrels for a variety of diameter-length combinations. Exclusively on Di-Acro roll-benders.

The combination of constant blank-holding pressure, constant roller pressure, and the constant diameter of the slip-on tube (or Small-OD Mandrel) means that, as far as the machine itself is concerned, the radius of the rolled part will be both exact and perfect every time. There is, however, a fourth consideration. Variation in the free diameter of rolled parts is due to the variation of the natural springback of the ma-



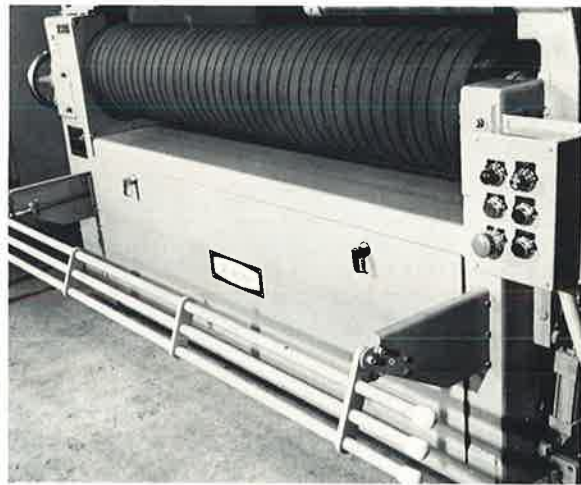
terial being formed. Some steels, for example, have a wider tolerance of springback than others and are therefore subject to more variation than steels with lower carbon in the 1010 range or lower. This change in commercial steel springback will alter the free rolled diameter of the finished part. However, in most cases this is not troublesome. And better quality metal produces better results.

K-Line roll-bending and curving machines can adapt to job-shop operations, prototyping, or full production. The machines will handle pre-ribbed and pre-embossed parts, screening, even accept double thicknesses for overlapping and offsets. And they automatically compensate for variations in material thickness.

Man-hours get saved too. Because of the relative simplicity of K-Line operation, training time is cut to a minimum — anyone can learn to operate these rollers, efficiently, with no need for specialized training. Setup time is easy and fast, without confusion.

Simplicity of tooling . . . flexibility of operation . . . savings in man-hours and machine-hours — it all adds up to significantly increased productivity.

Safety for the operator is important, too. As an extra measure of security, every model in Series A, B, and C is equipped with a Safety Knee Bar.



The Safety Knee Bar provides maximum security for the operator. It permits more control over the machine. Tripping the bar stops roller rotation, lowers the drop arm, and relieves roller pressure.

1-PASS/VARIETY AND VERSATILITY

Di-Acro's standard line provides a wide range of roll-bending and curving capacities, so you can have the right machine for your particular operations.

In addition to the standard models, Di-Acro's engineering and production capabilities build special machines for special requirements. Due to the blank-holding pressure and unique K-Prene properties, the K-Line principle lends itself well to the design of unique roll-bending and curving machines for a wide variety of applications.

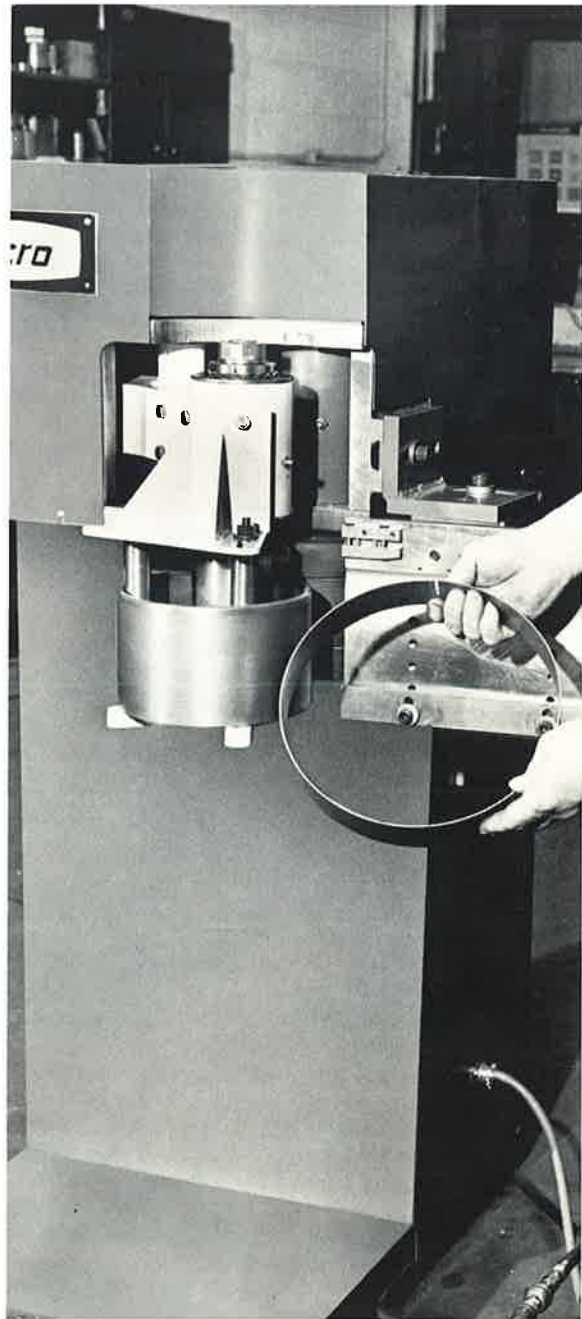
For example, we have developed and produced a horizontal two-roll machine for curving 8-foot wide, 16-gauge missile containers; a horizontal machine for curving 6-foot wide, 1/4-inch cable-reel cylinders; and a vertical machine for curving 14-gauge steel brake bands with punched and countersunk holes, with a production capability greater than 1200 pieces per hour.

A further example is a pneumatically operated cone-rolling machine for accurately forming dryer funnel burners from 20-gauge C.R. in one pass. It was designed for gravity discharge of parts and fool-proof operation. This particular application has been expanded into dozens of machines in many industries.



Another special machine developed by Di-Acro is one for precision curving of printing plates (the Model P). The plate's printing surface never touches metal; it touches only the deflectable K-Prene urethane surface of the lower roller. So there is no surface marring, no flattening of type or dot patterns. These machines are now in wide use in the graphic arts and newspaper industry.

Di-Acro K-Line roll-bending and curving machines can fulfill your needs in metal-fabricating operations, with high accuracy, high productivity, versatility, and simplicity. They are unique. Your Di-Acro representative has complete information on all K-Line rollers, as well as on Di-Acro's problem-solving ability.



VERTICAL FED, MODEL V, ROLL-BENDING AND CURVING MACHINE

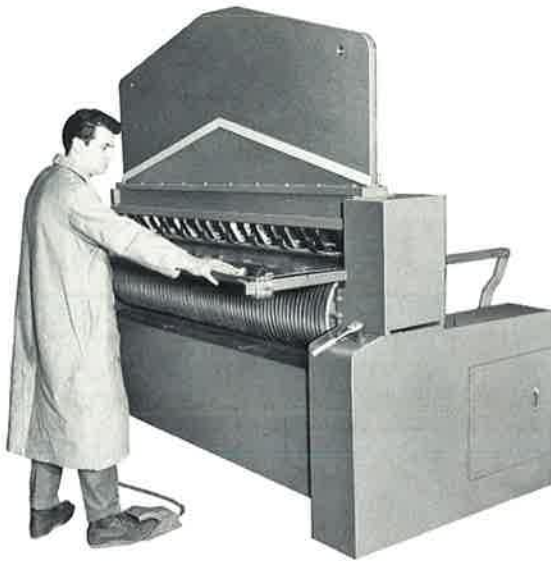
For curving 14 gauge steel brake bands with punched and countersunk holes. Speeds as great as 1200 parts per hour.

DI-ACRO ENGINEERING DESIGNS ROLL-BENDING MACHINES TO SUIT YOUR SPECIAL REQUIREMENTS



HORIZONTAL CONE, ROLL-BENDING AND CURVING MACHINE

Developed especially for the forming of conical shaped projectile components. A one-pass operation, the C.R.S. 16 gauge perforated and embossed blanks are rolled without fluting across holes and cutouts.



SEGMENTED CAM CONTROLLED, HORIZONTAL, ROLL-BENDING AND CURVING MACHINE

Designed exclusively to curve 6 foot wide helicopter blade parts into contoured airfoil shapes.

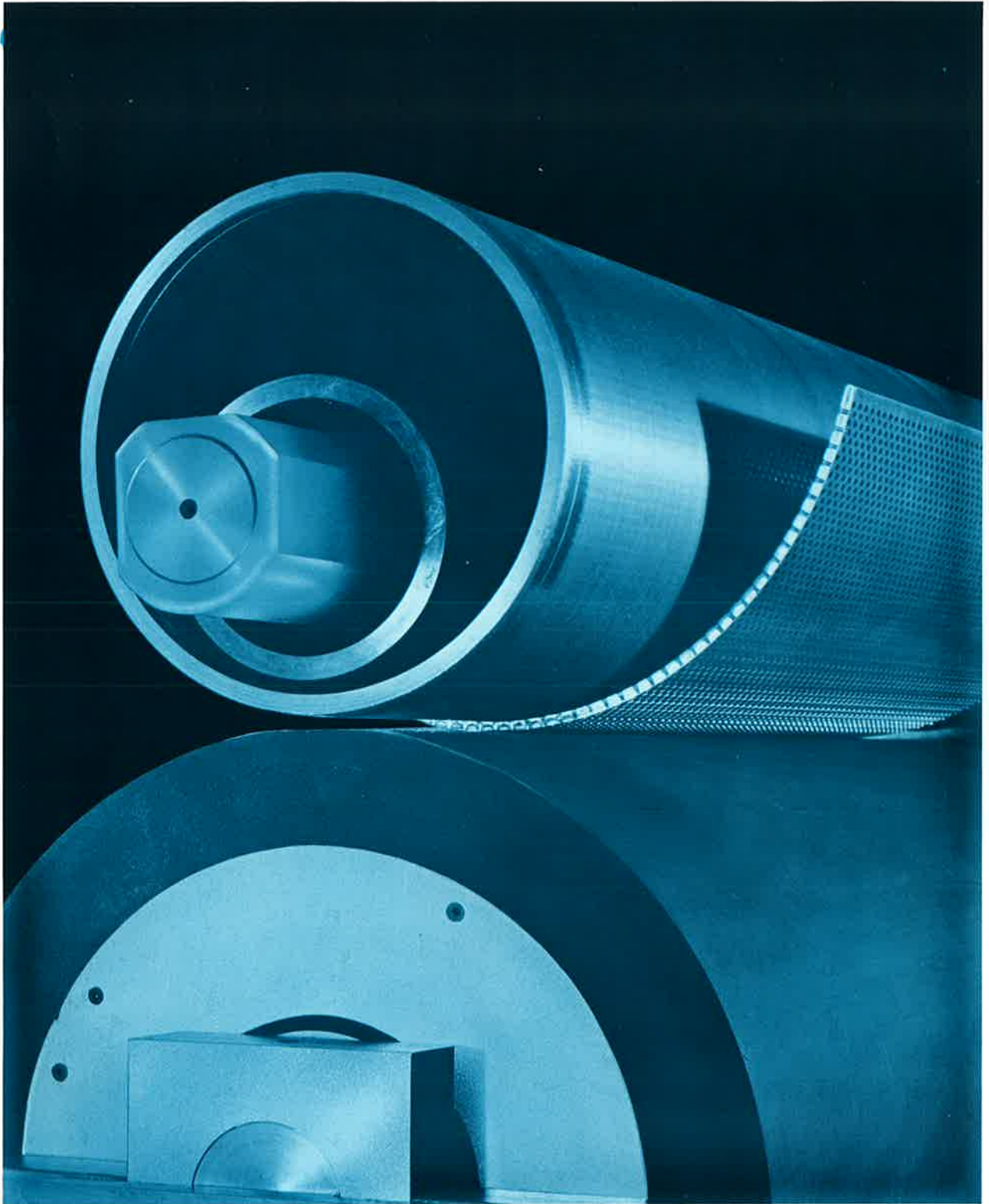
FULLY AUTOMATIC, VARIABLE CONTOUR, ROLL-BENDING AND CURVING MACHINE

Engineered to produce automotive fan blades from .015" thick stainless steel. The magazine fed, roll-bending and curving machine can produce up to 2400 partially curved blades per hour.



All machines shown within this brochure are manufactured under one or more of the following patents:

U.S. Patent Nos. 3304757, 3371513, 3276239, 3438232 and 3478555.
Canadian Patent Nos. 818830, 767956 and 806982. Foreign patents pending.



The unique K-Prene® lower roll design makes possible the forming of a variety of types of material. Parts having cut-outs, punched holes, embossed or perforations; a true radius is consistently achieved without fluting or kinking.

Di-Acro[®]

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Precision metal fabricating through craftsmanship.

