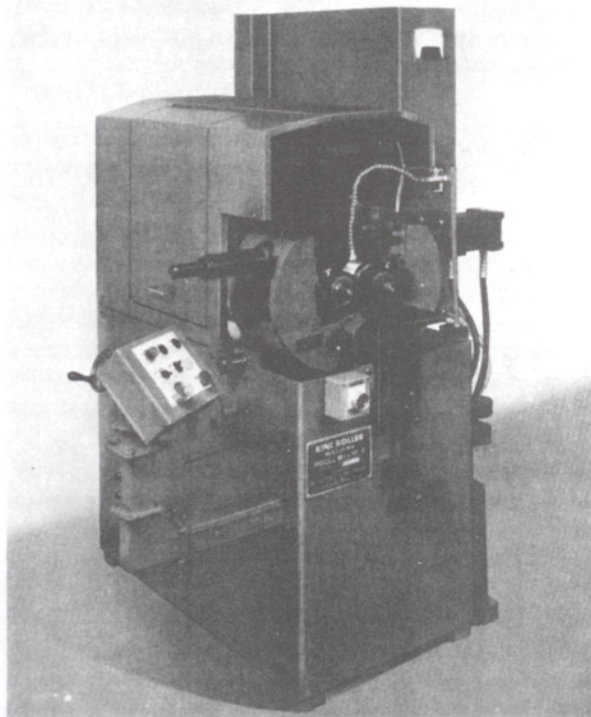


EQUIPMENT

MC-10-F Kine-Roller
Two Cylindrical Die
Rolling Machine

FUNCTION

Annular, Axial and Helical Roll Forming and Roll Finishing within its torque, radial die load and geometric capacity. Typical capabilities, assuming correct die design, setup and tooling, and suitable material rollability and form, are listed below:



MC-10-F T/I Kine-Roller with standard hydraulic power unit.

Primary Operations—Thrufeed and Cut Off

- Simple shafts and pins 1/16" x 3/4" long to 1/4" x 1 3/4" long
- Ball blanks 1 mm to 1/4" diameter
- Roller blanks 1/16" x 1/2" long to 1/4" x 1 1/2" long

Bar Processing—Thrufeed—Unlimited Length

- Threaded rod up to 1 3/4" diameter
- Worm rolling up to 1 1/4" diameter x 16 diametral pitch
- Annular forms up to 1 3/4" in diameter
- Shallow involute forms up to 1 3/4" in diameter
- Knurled or shallow finned bar up to 1 3/4" in diameter

Secondary Rolling Operations—Infeed

- UNC threads to 1 1/2" diameter x 3 1/2" long
- UNF threads to 2" diameter x 4 1/4" long
- Worms to 1 1/2" diameter, 12 diametral pitch x 2 1/2" long
- Knurls and shallow involute forms to 2 1/2" diameter x 4 1/2" long
- Annular forms to 3" diameter, depending on depth and length of form

Roll Finishing and Denicking

- Thrufeed to 1 3/4" diameter and unlimited length
- Infeed to 3 1/2" diameter and 4" long

Roll Straightening

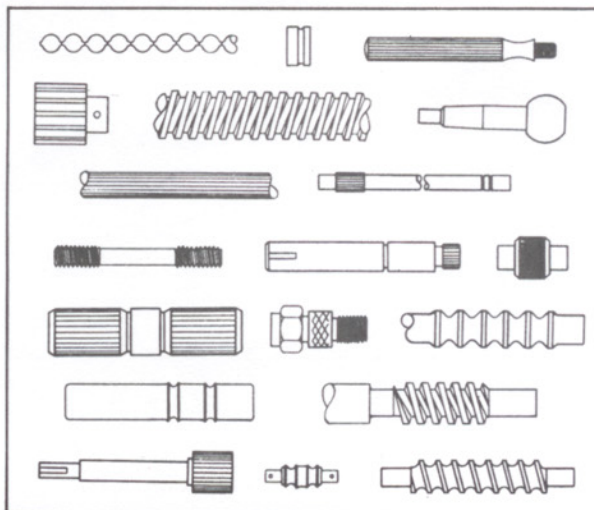
- Thrufeed to 3/4" diameter

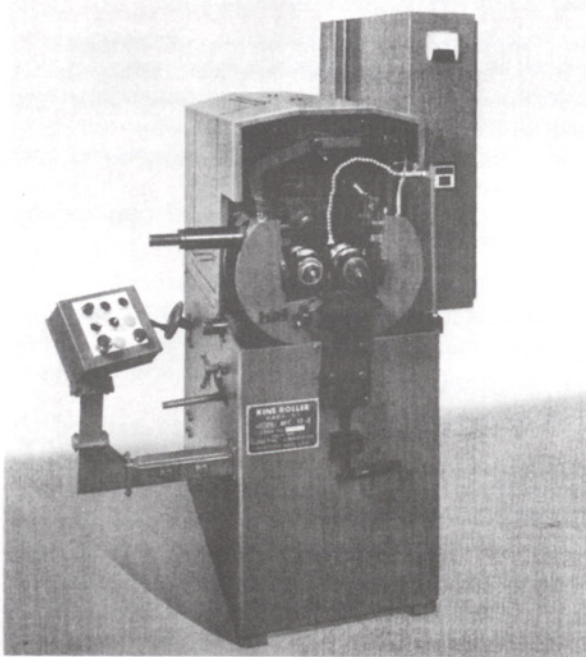
PRODUCTIVITY
Thrufeed Production Rates

- 3/8"-16 UNC 1018 steel threaded rod—97 feet per minute
- 1"-8 UNC B-7 studs—8 feet per minute
- 1 1/2" diameter, 20 TPI knurled bar 1045 steel—10 feet per minute
- Roll finished 1 1/2" diameter 303 stainless steel bar—12 feet per minute
- Roll straightened 3/4" diameter 4140 steel—20 feet per minute

**Infeed Rolling Times (No Handling)
with Standard Hydraulic Infeed Actuation**

- 5/8"-11" thread x 4" long, 4340 heat treated steel—.75 seconds
- 2"-8" thread x 3 1/2" long, 8620 steel—5 seconds
- 1 1/2" diameter 12 diametral pitch worm x 2" long, 1018 steel—5 seconds
- .375" diameter 40 TPI Kine-Grip serration x 3 1/2" long, stressproof steel—.5 seconds





MC-10-FT Kine-Roller for thrufeed rolling only.

BUILDING BLOCK SPINDLE UNITS

Standard Skewable Spindle Unit

- Spindle Diameter—2"
- Die Length—to 4½"
- Die Diameter Range—3¾" to 5"
- Skew Range ± 10°
- Key—3/8"
- Die Center Distance Range—4" to 6¾"
- Dies—can be made interchangeable with MC-5 Kine-Roller dies

Overhung Die Parallel Axis Spindle Unit

Available for rolling parts with large shoulder near rolled area

Four Die Parallel Axis Spindle Unit

Available for hollow infeed rolling applications

DIE DRIVE TRAIN

A spur gear drive system with ground and hardened gears, roller bearing universals, and a torque capability of 700 foot pounds, provides high efficiency performance. The sealed gearbox with a 2¼" diameter pass through hole has self contained oil bath lubrication. For normal operation a 1.888 to 1 ratio is used. For high speed operation a 1.08 to 1 ratio is available.

DIE DRIVE UNITS

20 HP Adjustable Speed Unit

with speeds ranging from 155 to 558 RPM

Optional 20 HP Electronic Variable Speed Unit

with infinite adjustment over 4:1 maximum to minimum selected speed range

Optional High Speed 25 HP Unit

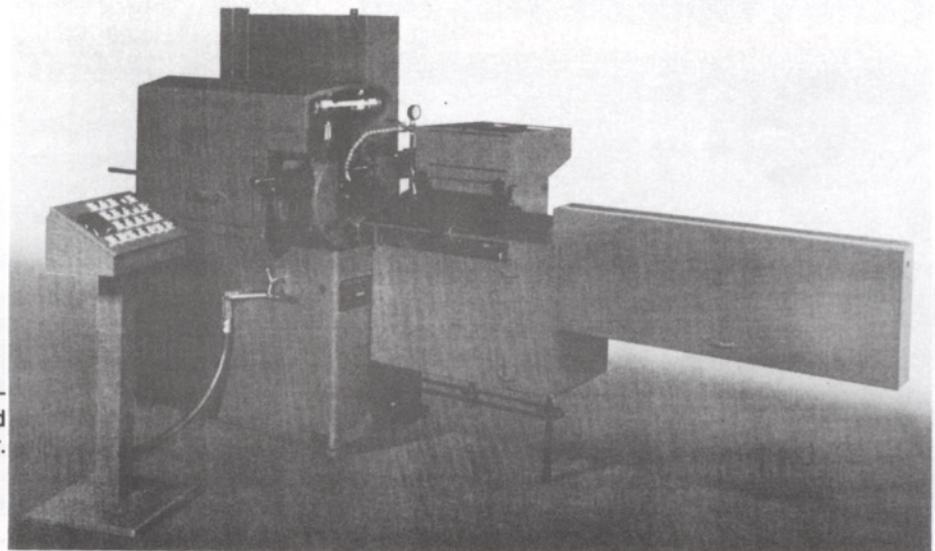
with selected die speeds to 1200 RPM

Optional Low Speed 10 HP Unit

with speeds ranging from 70 to 200 RPM

HIGH SPEED INFEEED ROLLING DIE ACTUATION

To achieve infeed production rates of 30 to 120 parts per minute, die actuation is provided by a continuously variable speed electric motor driven cam system. This affords outstanding penetration rate repeatability through the full range of cycle speeds.



MC-10-FT/I Kine-Roller with standard Kine-Mat shaft feeder.

THRUFEED ROLLING DIE CONTROL

On the thrufeed machine the prestressed drawbar with a micrometer size adjustment nut sets and holds the required die gap to excellent repeatability.

INFEEED AND THRUFEED ROLLING DIE ACTUATION

For combined infeed or in-and-thrufeed rolling, die actuation is provided by a 4" hydraulic cylinder operating through the drawbar. Superior closed die position repeatability is achieved with this cylinder operating up to 3,000 PSI. Operating with a 1.7 mechanical advantage, the 5 HP, 5 GPM power unit provides a peak radial die load capability of 54,000 pounds. Valves and components are externally manifold mounted for easy access.

HIGH STIFFNESS STRESS FRAME

A rugged, cast ductile iron stress frame with ball joint pivots combined with a sturdy drawbar provides minimum deflection under full rated die load.

STANDARD AXIAL MATCH

A micrometer matching dial with matching spring or optional variable backup spacer permits axial die match to within .001".

OPTIONAL ROTARY MATCH

Precise adjustment of the rotational position of the left die to the right is achieved through an adjustable unit mounted to the rear of the left gear box output hub.

REAR WORK SUPPORT UNITS

Guide tubes, stop units, or output fixtures are mounted on a rugged rear work support unit positioned by externally adjustable jackscrews.

FRONT WORK SUPPORT UNITS

Standard units of various sizes are available for mounting a wide range of input and feed devices.

TAPER ADJUSTMENT

A micrometer screw system with direct reading dial provides for single point precision adjustment of die spindle taper.

AUTOMATIC DOUBLE ACTING DIE POSITIONING

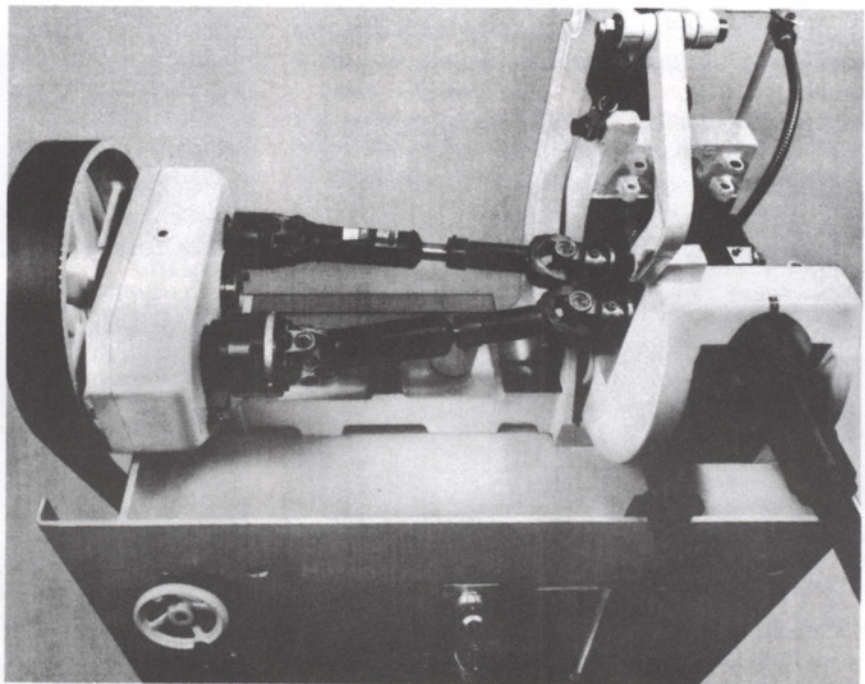
The rolling dies and their support arms are symmetrically stationed about the horizontally fixed rolling centerline by a simple linkage system. This permits both die diameter and die size adjustment without the need to horizontally alter the die location or any work support or feed mechanisms.

EXTERNALLY ADJUSTABLE MICROMETER ROLLING SUPPORT UNIT

The vertical location of the work support blade or other fixture is precisely and firmly positioned by a cam, actuated through a micrometer calibrated handle.

MANUAL WORK HANDLING FIXTURES

Because of the characteristic open work area, easily adjustable front and rear work supports, and fixed horizontal rolling centerline, a variety of simple, standard and semi-standard manual work handling fixtures can be supplied for most common rolling applications.



MC-10-FT/I Kine-Roller with guards removed showing die drive system and easily accessible adjustments for size, rolling height, rear work support position, and rotary match.

ROLLING COOLANT AND LUBRICANT UNIT

The standard unit has a 1/2 HP submerged centrifugal pump, mechanical filter, flow safety switch, and a 38 gallon tank. For continuous thrufeed operation a 55 gallon tank is available with slanted end for easy cleaning.

OPTIONAL CENTRIFUGAL COOLANT CLEANER

For rolling applications where there is a high material residue, a 1/2 HP centrifuge unit with an easily cleanable basket, and gravity load and discharge is available.

OPTIONAL AUTOMATIC GREASE LUBRICATION

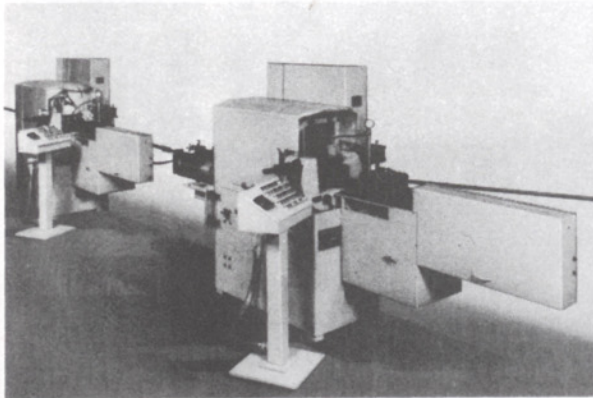
Automatic greasing can be supplied to meet any special customer requirements.

STANDARD SPLASH AND SAFETY GUARDS

This system of covers and doors retains the coolant and prevents operator contact with the die drive system, but does not provide special point-of-work guarding—*which is the user's responsibility.*

OPTIONAL COMPLETE MACHINE ENCLOSURE

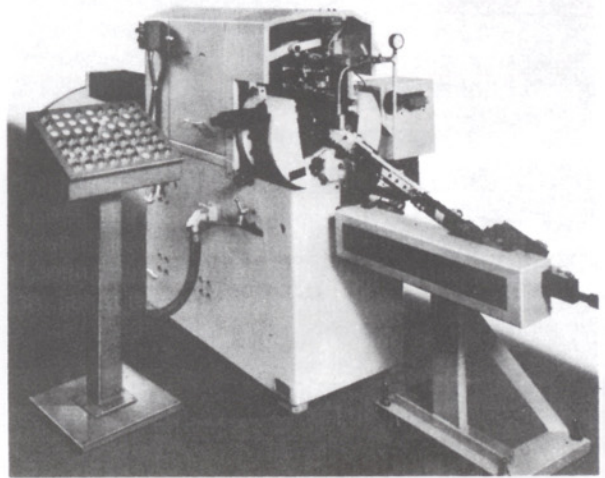
This unit provides complete machine enclosure, including sound absorption and oil return, plus a plexiglass point-of-work guard door which may be modified by the user to accommodate any work handling fixture.



Section of Kinefac shaft making system showing two MC-10 Kine-Rollers integrated with Kine-Mat shaft feeder and axial transfer unit.

APPLICATION ENGINEERING SUPPORT

Our long experience and technological skill applied to both straightforward and difficult rolling applications enables Kinefac to support Kine-Roller users with unique application engineering guidance.



MC-10-FI Kine-Roller with mechanical infeed actuation unit, fed from the rear and unloaded at the front by axial transfer unit.

AUTOMATED PART HANDLING EQUIPMENT

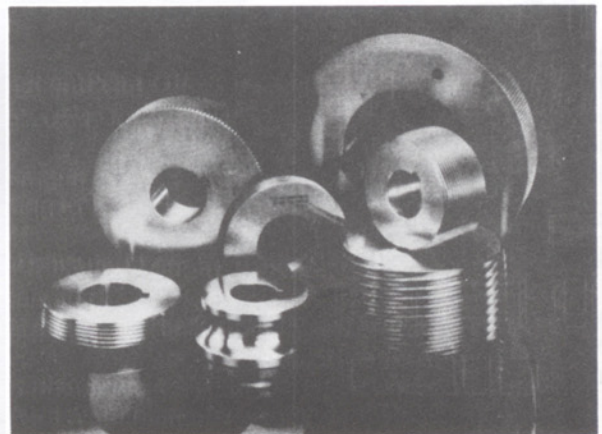
Kine-Mat loading and unloading units, including input and output transfer devices, microprocessor controlled, are designed and built to meet specific customer requirements.

SYSTEM INTEGRATION

Turnkey systems using the MC-10-F Kine-Roller are available for parts production which include all necessary part transfer equipment and controls, including blank preparation.

DIE AVAILABILITY

Kine-Roller users are assured of a dependable and economical tooling source by a complete die design, manufacturing, stocking and regrinding program.



Typical Kine-Form dies.