



"ALL-ANGLE" **MILLING** **ATTACHMENT** **TYPE 3**

The most universal head on the market, having both hand wheel and lever feed, with plenty of power; capable of handling hundreds of jobs encountered in the shop. It is an all purpose attachment which has thoroughly proved itself all over the world. Ideal for the making of plastic molds, die casting molds, permanent mold casting molds, metal patterns, tool and die making, production work of all kinds, as well as for grinding, drilling, boring, etc.

**EASY
TO HANDLE**
FLEXIBLE
UNIVERSAL
STURDY

**DIRECT
DRIVE**
**OR BACK
GEARED**

MANUFACTURED BY FRAY MACHINE TOOL CO.
NATIONAL DISTRIBUTORS

H. LEACH MACHINERY CO.

387 CHARLES STREET ★ PROVIDENCE 4, R. I.

AGENTS IN ALL PRINCIPAL CITIES

OUTSTANDING FEATURES OF THE IMPROVED FRAY "ALL-ANGLE" MILLING ATTACHMENT TYPE 3

These Milling Attachments are of the quill type, and are precision tools in every sense of the word. They are manufactured for the express purpose of enabling the operator to work to closer limits than has been possible heretofore with milling attachments generally.

HOUSING: Cast of semi-steel, normalized, accurately machined and honed to a mirror like finish to receive the quill.

SPINDLE: Made of chrome-moly steel, six splines, hardened and ground all over, and carried on three ball bearings of the precision type. Drive mechanism to spindle individually suspended, thus eliminating all side strain on the spindle.

SQUARING FACE on front of housing for easy setting.

ANY ANGLE quickly and easily obtained.

QUILL: Mechanical Tubing, heat treated, and ground on both its inner and outer diameters. Equipped with travel indicators.

QUILL LOCK: Positive in action. Weight of quill adjustably compensated for sensitivity.

HAND WHEEL AND LEVER FEED: Both types of feed supplied as standard equipment on Type 3 Attachment. Hand Wheel Feed through 34/1 ratio Worm and Gear. Lever feed direct through rack and pinion. Instantaneous shift. Equipped with calibrated dial, large in diameter and easily read.

HAND WHEEL ANGLE ADJUSTER: For changing position of attachment on overarm. Not supplied as standard equipment, but can be obtained at extra cost.

BACK GEARING: An exclusive patented Fray feature, which makes available two additional low speeds. Type 3 Attachment can be supplied with direct drive and 6 standard speeds, or with back gearing and 2 additional low speeds at extra cost.

OVERARM ADAPTERS: Calibrated 360°. Standard sizes from 3 in. to 4 1/4 in. supplied to specifications. Above 4 1/4 in. to 5 1/4 in. supplied at extra cost. Special overarm adapters available for all types of machine tools, including rectangular type for Cincinnati Millers. Write for quotations.

MOTOR: Heavy duty 3/4 H.P. 220/440 volts 3 phase 50 or 60 cycles standard equipment. Single phase motors, and motors requiring special voltages and cycles available at small additional cost. Lead cords and plugs also available. Specify when ordering.

REVERSING SWITCH mounted on motor, supplied, standard equipment.

ENTIRE MOTOR AND BRACKET rotates 360° around quill housing.

DRAW BAR, GREASE GUN, and WRENCH furnished with each machine, standard equipment.

HEAD DIAL	Calibrated 180° (minus 90°—plus 90°)
DIAL and DEPTH STOP NUT	Calibrated in thousandths, 50 divisions.
DEPTH STOP: Positive in action.....	Calibrated in 1/16".
QUILL TRAVEL	3 1/2 in.
SPINDLE SPEEDS	375-700-1100-1825-3000-5200 R.P.M.
BACK GEAR SPEEDS	(In addition to above) 125 and 250 R.P.M.
TAPER IN SPINDLE	No. 7 B&S, or No. 2 Morse. Specify when ordering.
COLLETS: (Not supplied with attachment).....	No. 7 B&S or No. 2 Morse.
Draw-in type	3/8" x 16 threads per inch.
COLLET CAPACITY:	1/2" in No. 7 B&S, 1/2" in No. 2 Morse.
ENDMILL CAPACITY:	3/4" in soft metal, 1/2" in hard metal.
HEIGHT: Nose of spindle to top of motor	28 1/4"
HEIGHT: Center of Overarm Adapter to top of draw bar	12 1/4"
CENTER of overarm adapter to nose of spindle	4 1/4"
CENTER of overarm adapter to center of spindle	6 1/8"
WEIGHT: Complete with motor	140 lbs.
WEIGHT: Complete with motor, boxed for shipment	190 lbs.

SOLD IN YOUR VICINITY BY
A. A. JOHNSON MACHINE TOOL CO.
3122 GRANT BLVD.
SYRACUSE, N. Y.