

MONOGRAM AEROSPACE FASTENERS

**COREBOLT BREAK-OFF SHAVING AND MILLING TOOLS
DESIGNED FOR USE WITH VISU-LOK®, COMPOSI-LOK® & RADIAL-LOK® FASTENERS**

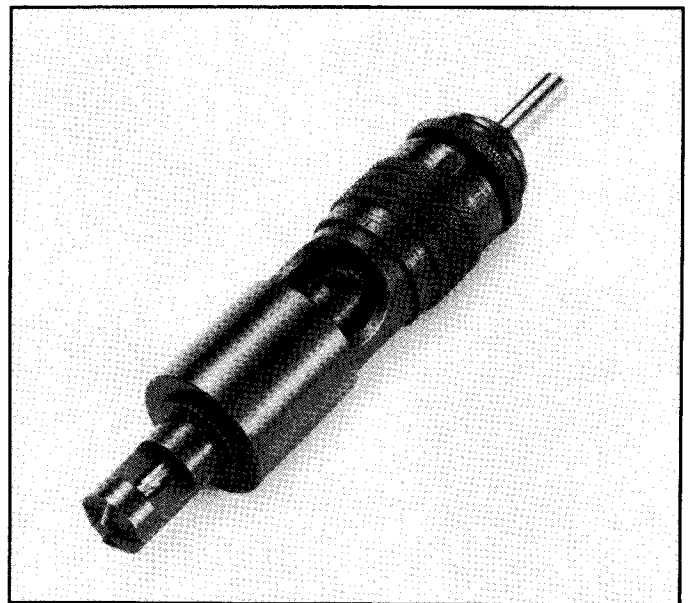
PINTAIL SHAVING UNIT



- Shaves pintail protrusions to meet aircraft flushness requirements
- 30,000 rpm promotes swift pintail "slicing"
- Cutting depth adjustment increments of .001"
- Economical cutting discs
- Lightweight (1¼ pounds)
- One-handed operation

Monogram's Pintail Shaving unit is a unique and easily operated tool for shaving corebolt breakoffs on Composi-Lok and Visu-Lok fasteners where flushness requirements must be met. Unlike traditional, dual rotation, carbide milling units, our Shaver actually "slices" the corebolt, producing uninterrupted cuts and minimal vibration. Additionally, disc changeover is economical, quick and trouble free, making it the most user-friendly and efficient pintail shaving unit available.

PINTAIL MILLING UNIT



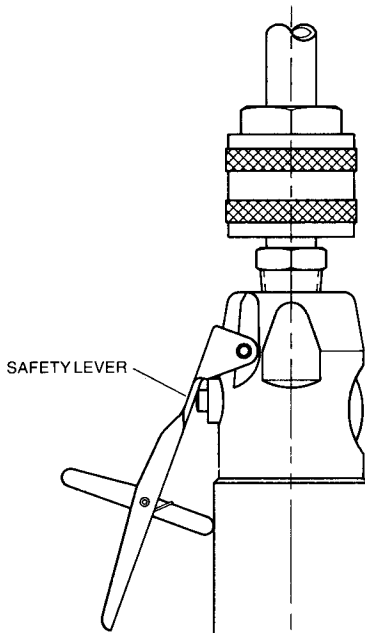
- Designed for precise cutting
- Operates with any drill motor
- Perfect for milling corebolts on fasteners recessed in the airframe structure
- .001" cutting depth increments
- Utilizes single rotation center cutting end mill
- Locating nibs on the Miller nose piece help prevent drifting while cutting
- Compact design fits in the palm of your hand

When accurate trimming and special flushing requirements of corebolts is necessary, Monogram's Pintail Milling Unit is an ideal tooling option to perform the job. In a single stroke, the unit can efficiently remove .001" to .005" of material depending on the tool depth adjustment. A supplement to our Pintail Shaving unit, the Miller is a very effective corebolt flushing tool, particularly in stealth applications where fastener heads are intentionally seated below skin surfaces to avoid radar detection. It is also ideal for milling corebolts so that they rest slightly below the head of the fastener, a feature no other milling unit offers. The Pintail Miller itself utilizes a single rotation, center cutting end mill, which produces very clean, polished-like surfaces in seconds.

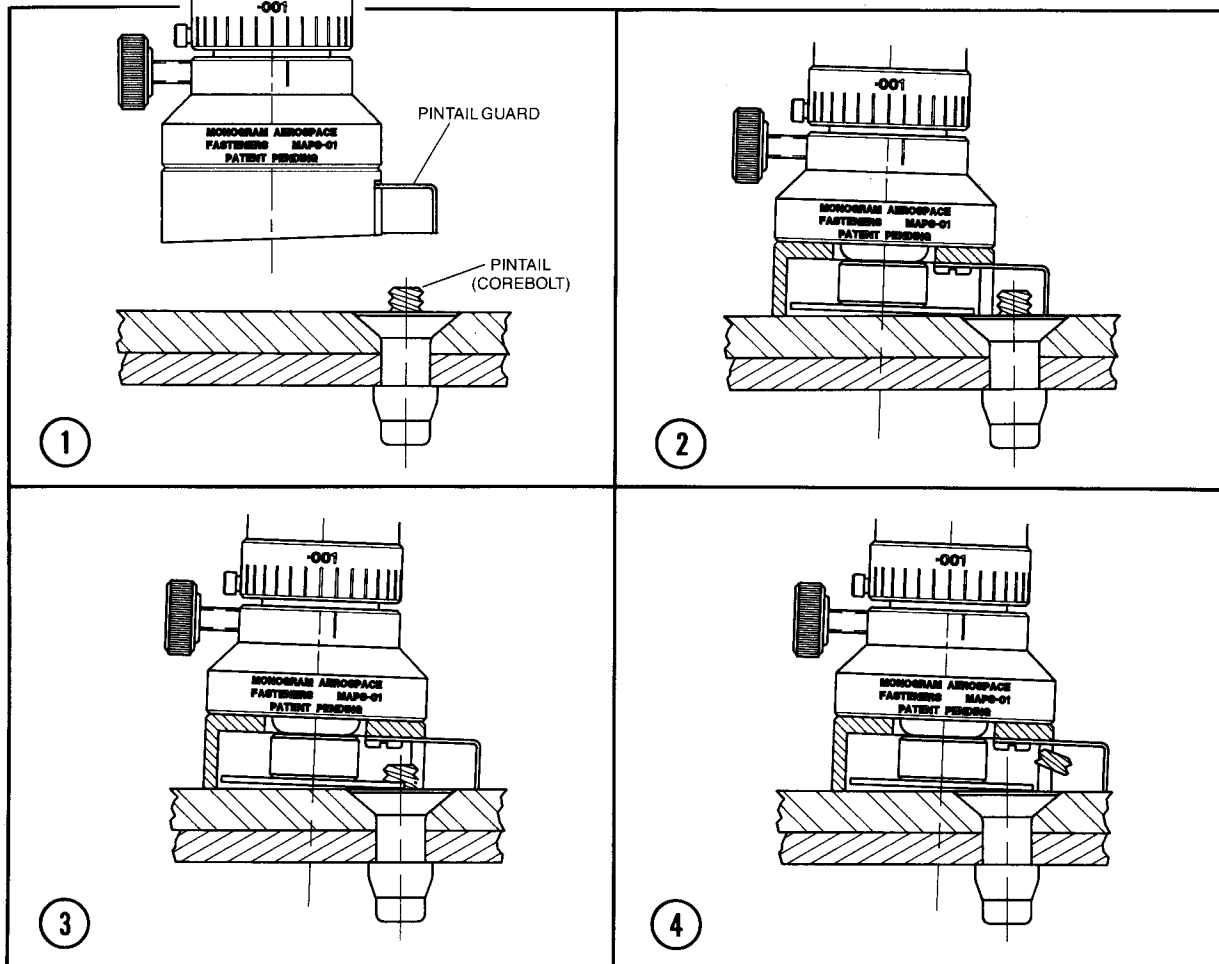


PINTAIL SHAVING UNIT

SHAVING PROCEDURE



1. Adjust shaver to desired cutting depth. It is always best to check for over-adjustment before using the shaver on your primary surface. This may be achieved by running it on a flat scrap piece of metal. If disc abrasions occur, depth is over adjusted. Re-adjust until cutting disc no longer contacts metallic surface.
2. Position the shaver so that pintail (corebolt) guard is directly over the pintail of the fastener. Make sure shaver is resting flat on the structure's surface, then release safety lever and bring motor to full rpm.
3. While using very slight end pressure, slowly move the shaver over the pintail and begin cutting. Let the shaver "walk" through the pintail material; excessive end pressure by the operator may result in a fractured disc or binding of the motor spindle.
4. Continue cutting until pintail has been completely "sliced" off.



PINTAIL SHAVING UNIT



EXPLODED VIEW OF MAJOR SHAVER COMPONENTS

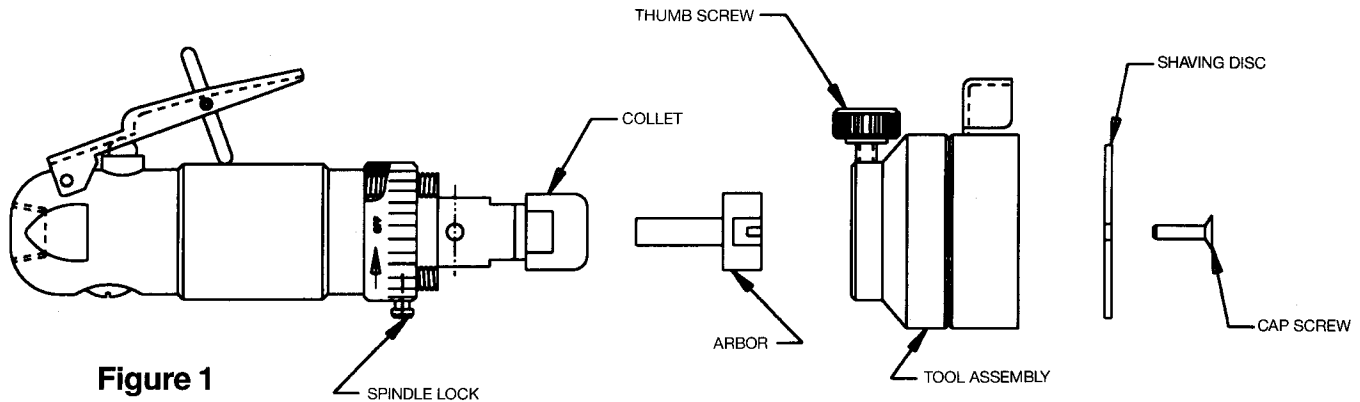


Figure 1

PROCEDURE FOR CHANGING THE ARBOR (See Figure 1)

1. Depress the Spindle Lock button to prevent spindle rotation.
2. Use a 5/64" Allen key to remove the cap screw. Remove cutting disc from Arbor.
3. Loosen the Thumb Screw then unscrew the tool assembly.
4. Once again depress the Spindle Lock.
5. Using a 5/8" open end wrench, loosen the Collet by turning it counterclockwise one complete revolution. Remove the Arbor, insert the replacement then retighten the Collet.
6. Screw the Tool Assembly back onto the air motor.

PROCEDURE FOR CHANGING THE CUTTING DISC (See Figure 1)

1. Depress the Spindle Lock button to prevent spindle rotation.
2. Use a 5/64" Allen key to remove the cap screw. Remove cutting disc from Arbor.
3. Peel away the adhesive strip on the new disc. Place disc on arbor by aligning the holes and lugs.
4. While depressing Spindle Lock, reinsert cap screw and tighten securely.

SPARE PARTS ORDERING INFORMATION

(See Figure 2)

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	MAPS-01 MAPS-01B	MILLER ASSEMBLY w/PLASTIC BASE MILLER ASSEMBLY w/BRASS BASE	1
2	MAPSD-01	CUTTING DISC ASSEMBLY	
3	MAPS-01-15	FLAT HEAD CAP SCREW	1
4	MAPS-01-100	DISC MOUNTING ARBOR ASSEMBLY	1
5	MAPS-01-05	THUMB SCREW ASSEMBLY	1
6	MAPS-01-07 MAPS-01-07B	CUTTING DISC HOUSING (PLASTIC) CUTTING DISC HOUSING (BRASS)	1 1
7	MAPS-01-08	WIRE FORMED RETAINING RING	1

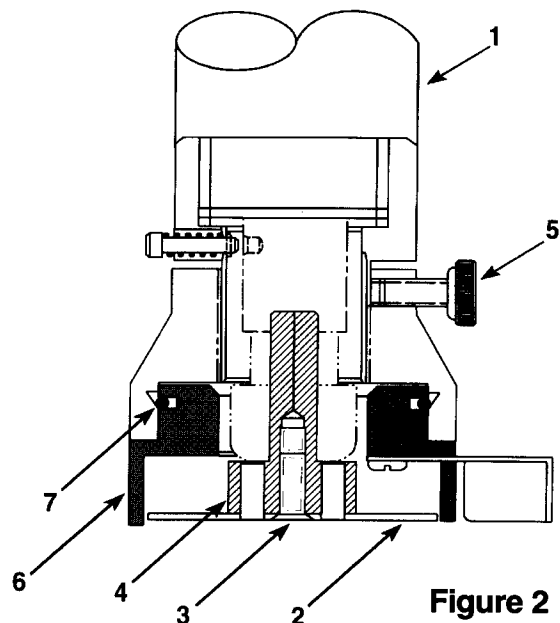


Figure 2

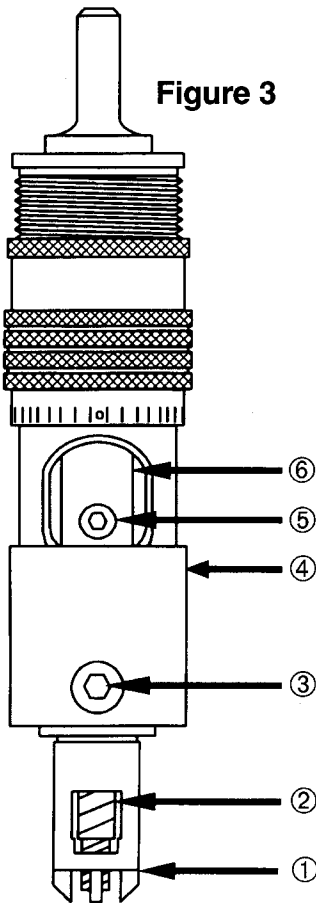
PINTAIL MILLING UNIT



INSTRUCTIONS FOR REPLACING THE MILLER CUTTER & NOSE PIECE

(See Figure 3)

- Using a 3/32" Allen key, loosen the set screw ③ on the nose piece holder ④ and remove the nose piece ①. Reinsert new nose piece and tighten set screw. If reconfiguring the Miller to cut another diameter, proceed to Step 2.
- Loosen the set screw ⑤ on the Tool Holder using a 1/16" Allen key. Replace Miller Cutter ② and re-tighten set screw. Reinsert Nose Piece into Holder, then tighten the 3/32" set screw ③.



SPARE PARTS ORDERING INFORMATION

	MILLER ASSEMBLY PART NUMBER (Note 1)	CORRESPONDING MILLING CUTTER PART NUMBER	CORRESPONDING NOSE PIECE PART NUMBER
GROUP A	MAPM-01-05AA	MAPM-05-05	MAPM-06-05
	MAPM-01-06AA	MAPM-05-06	MAPM-06-06
	MAPM-01-07AA	MAPM-05-07	MAPM-06-07
	MAPM-01-08AA	MAPM-05-08	MAPM-06-08
GROUP B	MAPM-01-09AA	MAPM-05-09	MAPM-06-09
	MAPM-01-10AA	MAPM-05-10	MAPM-06-10
	MAPM-01-11AA	MAPM-05-11	MAPM-06-11
	MAPM-01-12AA	MAPM-05-12	MAPM-06-12

NOTE 1: Because the shank diameter of the -5 thru -8 cutter is 3/16" and the -9 thru -12 cutters are configured with 1/4" shanks, there is no interchangeability between the two size groups. For example, a MAPM-01-05AA cannot be retrofitted with a MAPM-05-10 cutter and a MAPM-06-10 nose piece to make a MAPM-01-10AA milling unit. Interchangeability is only possible within the specific size group.

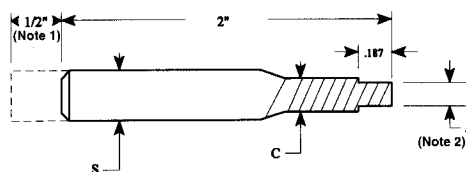
MILLER ASSEMBLIES

(See Note Below)

FASTENER DIAMETER	MILLER ASSEMBLY PART NUMBER
-5 (5/32)	MAPM-01-05AA
-6 (3/16)	MAPM-01-06AA
-7 (7/32)	MAPM-01-07AA
-8 (1/4)	MAPM-01-08AA
-9 (9/32)	MAPM-01-09AA
-10 (5/16)	MAPM-01-10AA
-11 (11/32)	MAPM-01-11AA
-12 (3/8)	MAPM-01-12AA

NOTE: includes all components necessary to perform trimming

DATA FOR MODIFYING STANDARD END MILLS FOR USE AS MILLING CUTTERS



This tool cutter drawing and table are supplied so you have the option to engineer milling tool cutters from standard end mills and significantly reduce delivery time and unit cost. If you prefer, cutters can still be procured from Monogram by ordering from the above spare parts list.

MONOGRAM PART NUMBER	A	C	S	SIZE / REF	TRAVERS TOOL NUMBER
MAPM-05-05	.112	5/32	3/16	5/32 (-5)	20-501-210
MAPM-05-06	.140	5/32	3/16	3/16 (-6)	20-501-210
MAPM-05-07	.163	3/16	3/16	7/32 (-7)	20-501-212
MAPM-05-08	.187	3/16	3/16	1/4 (-8)	20-501-212
MAPM-05-09	.214	7/32	1/4	9/32 (-9)	20-501-214
MAPM-05-10	.214	7/32	1/4	5/16 (-10)	20-501-214
MAPM-05-11	.241	1/4	1/4	11/32 (-11)	20-501-216
MAPM-05-12	.241	1/4	1/4	3/8 (-12)	20-501-216

NOTES: 1. Remove 1/2" from size 9, 10, 11 & 12 end mills. 2. Circle grind only; side relief not necessary.

Suggested vendor for blank, center cutting carbide end mills: **TRAVERS TOOL CO. 1-800-221-0270**

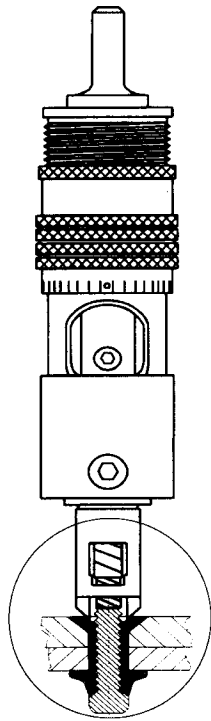
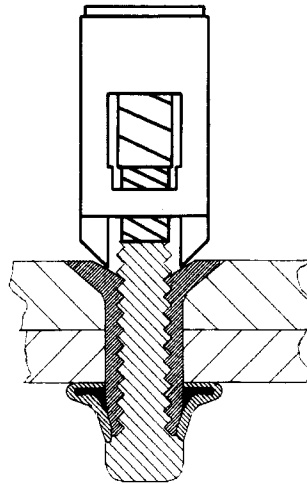


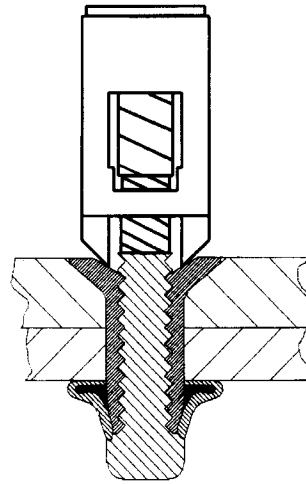
Figure 4

MILLING SEQUENCE



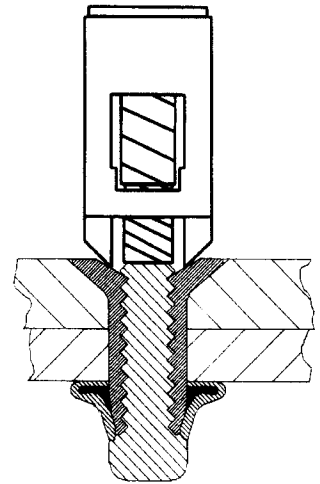
1

Shows initial corebolt milling procedure. If breakoff is .020 above head of fastener, Monogram's shaving tool should be used to cut off extruding corebolt. This procedure will save time and reduce tool wear.



2

Surface of screw becomes flat and flush to skin surface.



3

If desired, the corebolt can be cut so that it rests slightly below the head of the fastener.

SETTING YOUR CUTTING DEPTH:

Initial cutting depth set up is a subjective decision based on your specific needs. Users should generally adjust the Miller to cut high, then readjust until the target depth is reached. We generally recommend setting the initial cutting depth so that when the spindle shaft is depressed, the Milling Cutter rests midway between the ribs on the nose piece.

If the lock ring is positioned against the knurled adjustment knob, loosen it until it bottoms out near the base of the spindle. Draw back the knurled knob to disengage the locking notches, then rotate the upper assembly to your desired depth. Turning the upper assembly clockwise (with the front of the unit facing away from you) will decrease cutting depth, while the opposite direction will increase cutting depth. Once adjustment has been achieved, do not re-tighten the lock ring; if the lock ring is butted against the knurled adjusting knob, the spindle will often bind.

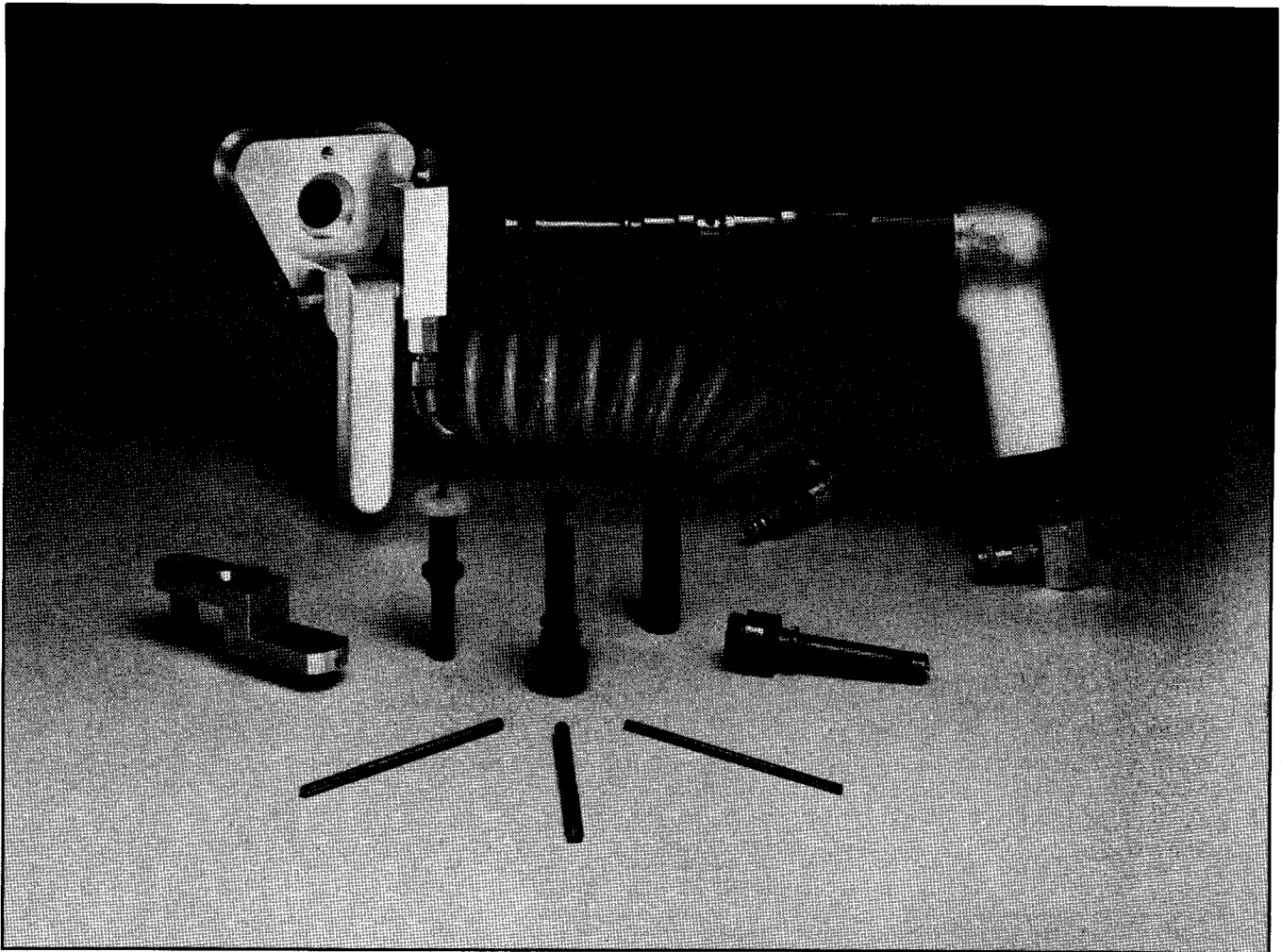
By trial and error, once the first fastener has been milled to satisfaction, you may continue cutting other fasteners of the same diameter without readjusting the unit. Note that after resharpening the cutter, or installing a new one, depth will have to be reset.

For best results and to obtain optimum life on the cutting tool, it is best to use light end pressure when cutting the corebolt. If there is any indication of excessive heat, pause and allow the cutter to cool. When reengaging, apply less end pressure to avoid further overheating and excessive tool wear.

Note:

It is important to remember that the Pintail Miller was designed solely as a corebolt finishing tool, and is not intended as a complete corebolt trimming system. Where applicable, higher than flush breakoffs should first be cut with Monogram's Pintail Shaving Unit.

RK5000 FASTENER REMOVAL KIT



DESIGNED SPECIFICALLY FOR REMOVAL OF 5/32", 3/16" and 1/4" VISU-LOK® and COMPOSI-LOK® FASTENERS

Over the years Monogram has supported the removal of Visu-Lok and Composi-Lok blind fasteners throughout the aircraft industry by supplying air-frame manufacturers with specialized tooling to drill out such fasteners. Now, Monogram introduces its newest, state-of-the-art fastener removal kit—the RK5000! Economically priced at one-third the cost of the previous removal system, this kit focuses solely on the removal of 5/32", 3/16" and 1/4" diameter Visu-Lok and Composi-Lok fasteners—the most commonly used diameters in the aircraft industry. The removal kit set-up procedure has been greatly simplified and removal time for a given fastener is significantly improved.



OUR NEW AREA CODE:
323

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