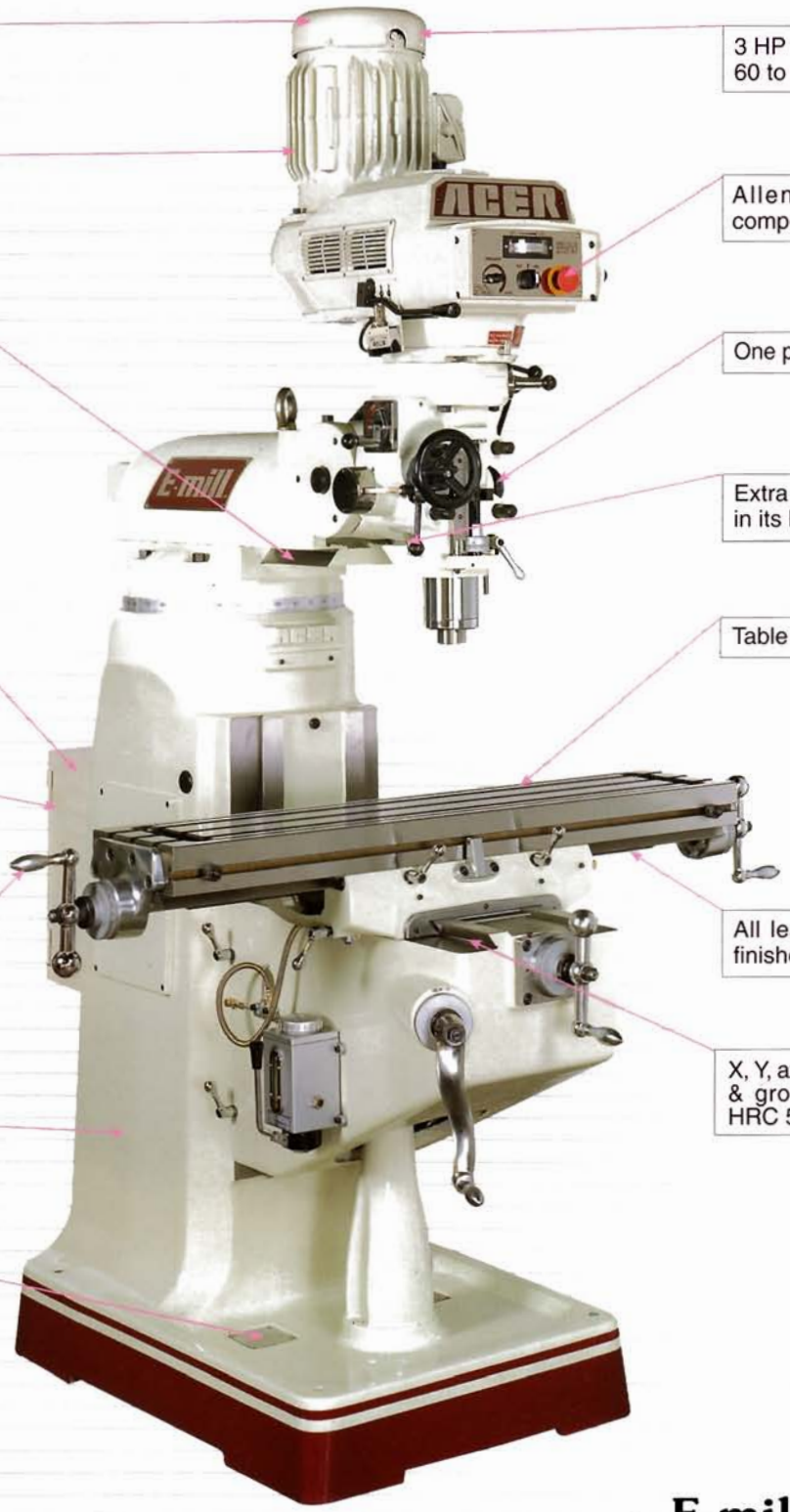
ACER

Technology • Creativity • Reliability
An Unswerving Commitment to Excellence

E-mill™ Series

A Trouble-Free Vertical Turret Mill!

E-mill: A Trouble-Free Mill



Fan cooling system dissipates heat efficiently

U.S. made "Baldor Super E" high efficiency motor

Precision ground ram ways within 0.0004" accuracy

Top brand "YASKAWA" or equivalent A.C. frequency inverter drive

Protective outer case for inverter keeps chips and coolant out!

Turn in the hand handle

Automotive painting process ensures life-long apprearance

Dish-in coolant base

3 HP variable speed from 60 to 4,500 RPM

Allen-Bradley electrical components

One piece quill pinion & shaft

Extra oiler lubricates the quill in its housing

Table surface is HRC 52°.

All lead screws are ground finished

X, Y, axes & knee by hardened & ground dovetail ways to HRC 52°.

E-mill 3VS

E-mill: A Trouble-Free Mill

U.S. made "Baldor Super E" high efficiency motor

Fan cooling system dissipates heat efficiently

Hand-scraped contact surfaces between turret and column

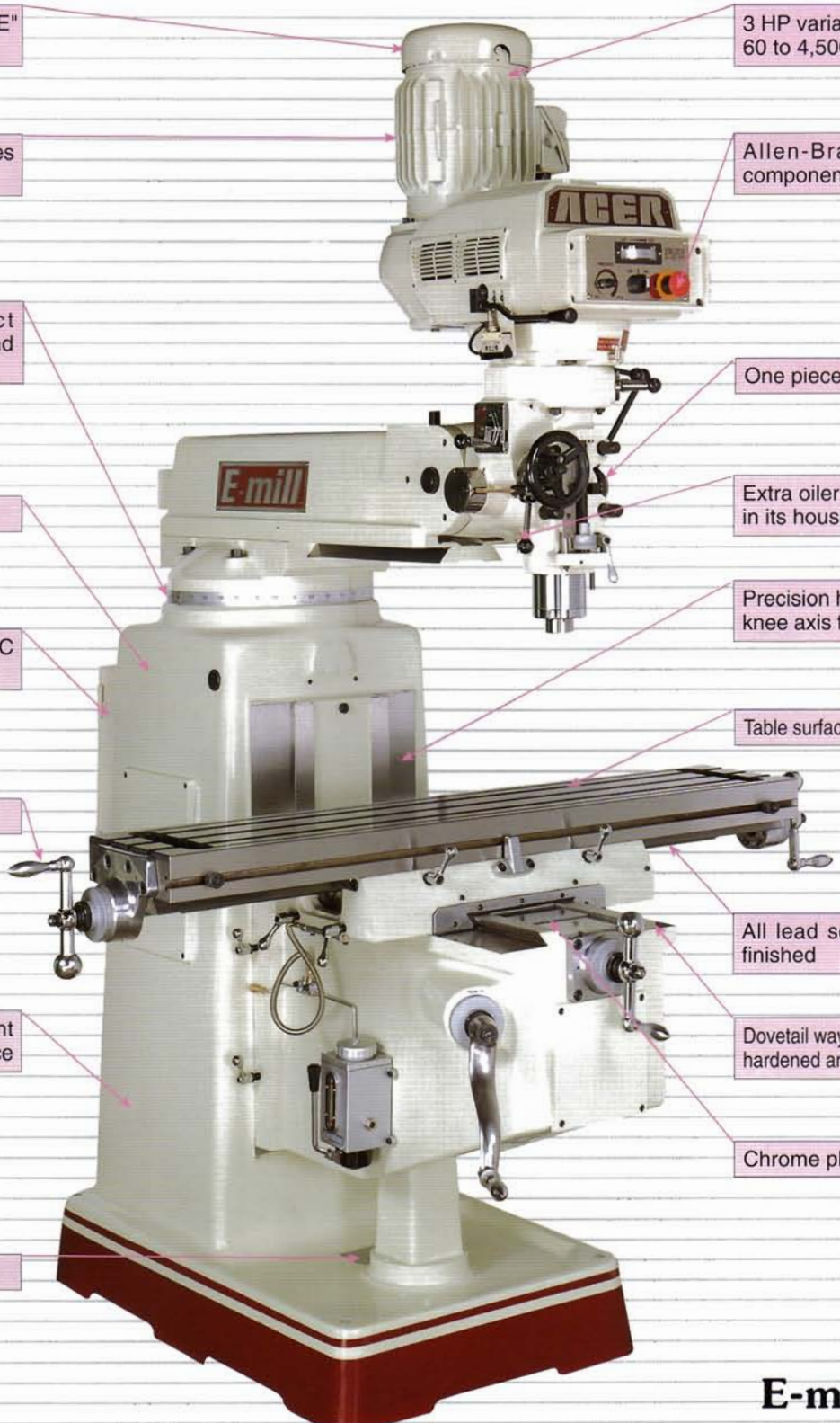
MEEHANITE casting

Top brand Vector-type AC frequency inverter drive

Turn-in the hand handle

Protective automotive paint ensures life-long appearance

Dish-in coolant base



3 HP variable speed from 60 to 4,500 RPM

Allen-Bradley electrical components

One piece quill pinion & shaft

Extra oiler lubricates the quill in its housing

Precision hardened & ground knee axis to HRC 52 degrees

Table surface is HRC 52 degrees

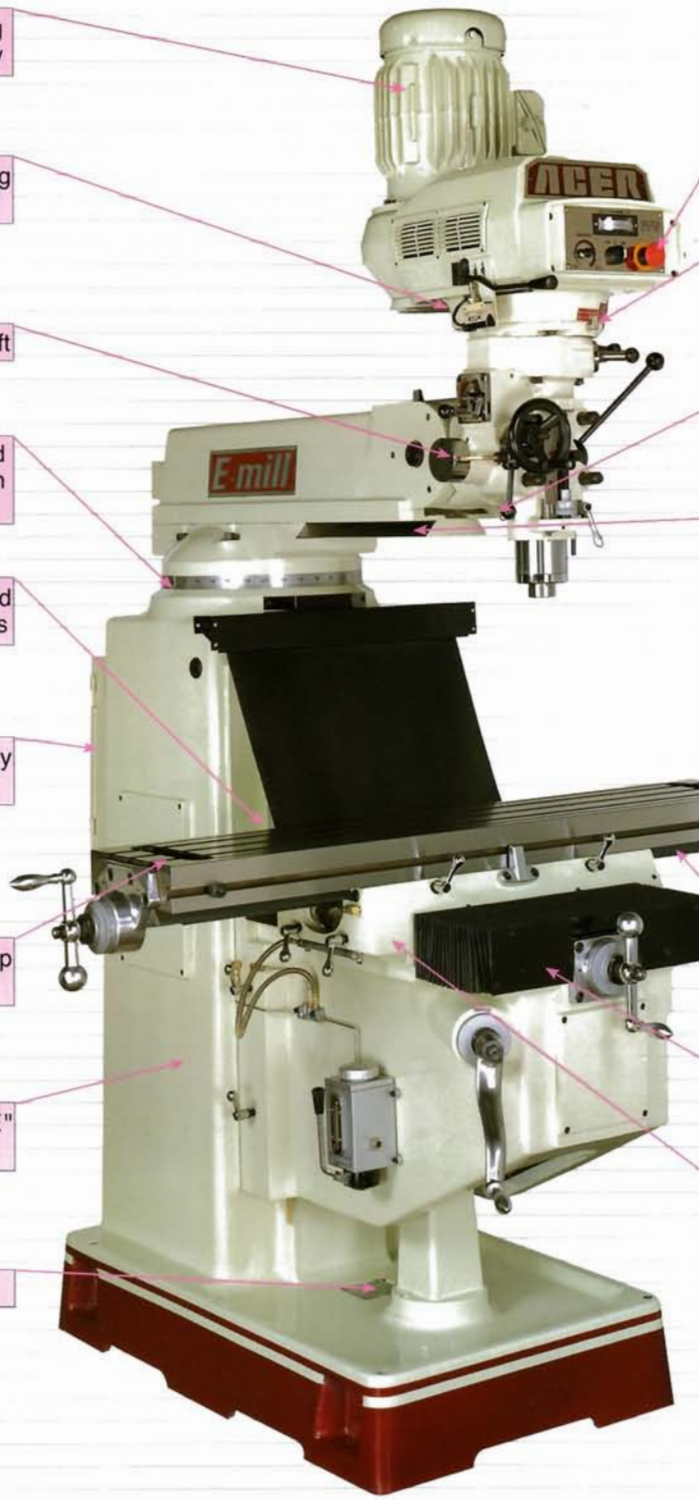
All lead screws are ground finished

Dovetail ways of X and Y axes are hardened and ground.

Chrome plated chip guards

E-mill 3VK

E-mill: A Trouble-Free Mill



3 HP motor with fan cooling system dissipates heat efficiently

Grease fitting for lubricating the bull gear

One piece quill pinion & shaft

Precision hand scraped contact surfaces between turret and column

X,Y & knee axes are hardened & ground to HRC 52 degrees

Vector-type AC frequency inverter drive

Hardened & ground table top to HRC 52 degrees

Licensed "MEEHANITE" casting

Dish-in coolant base

Allen-Bradley electronic components

Extra oiler lubricates the high-low moving device

Extra oiler to lubricate the quill

Precision ground ram ways within 0.0004" accuracy

Precision ground finished lead screws

Precision ground table guide line to 0.0002" over 20"

Standard accordion type way cover

Turcite-B coated saddle ways

E-mill 3VKH

E-mill: A Trouble-Free Mill

Fan cooling system disssipates heat efficiently

U.S. made "Baldor Super E" high efficiency motor

Hand scraped contact surface between ram and head

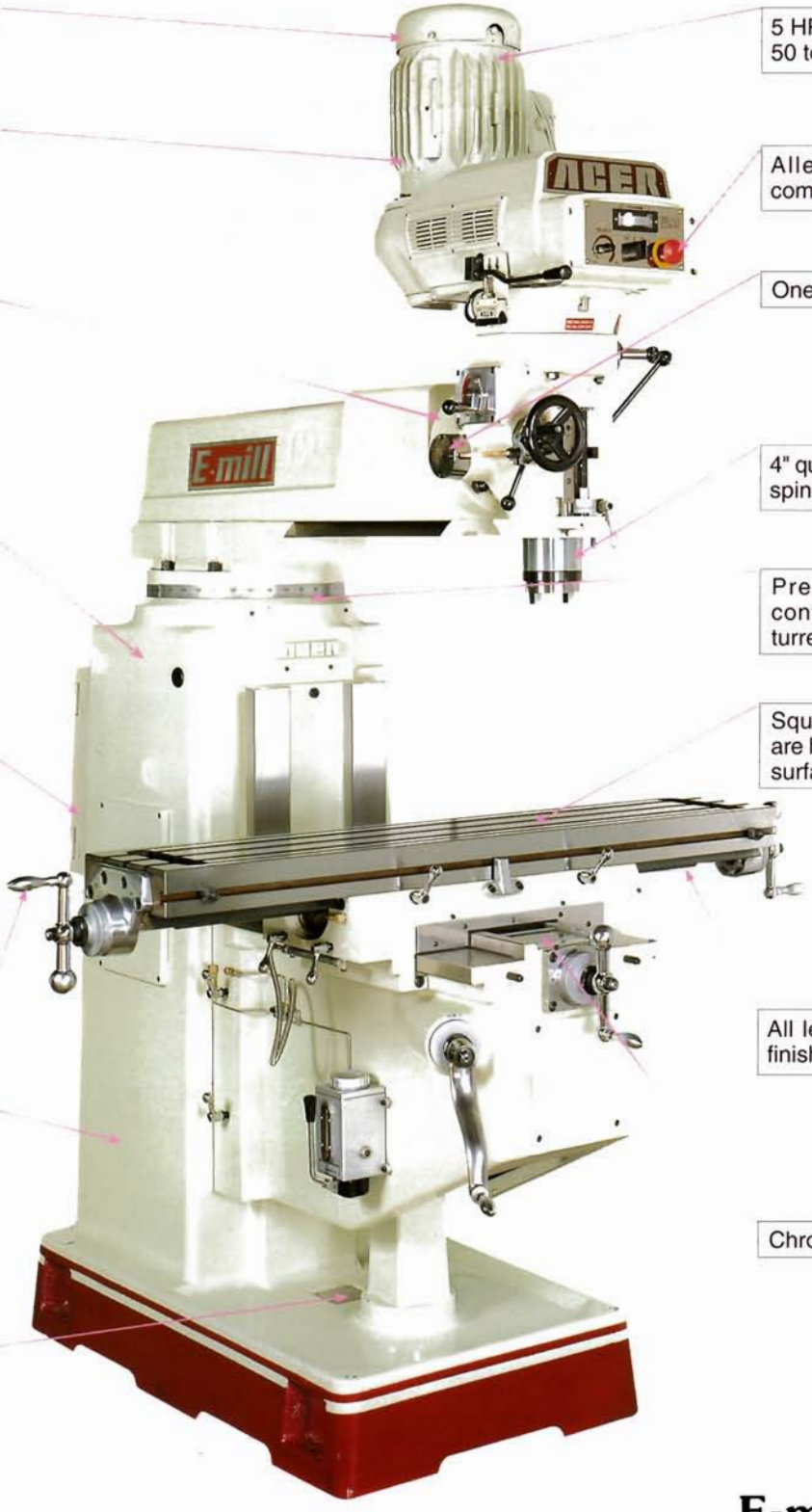
MEEHANITE casting

Top brand Vector-type AC frequency inverter drive

Turn in the hand handle

Protective automotive paint ensures life-long appearance

Dish-in coolant base



5 HP variable speed from 50 to 3,750 RPM

Allen-Bradley electrical components

One piece quill pinion & shaft

4" quill diameter and NST #40 spindle

Precision hand scraped contact surfaces between turret and column

Square ways of Y & Z axes are hardened & ground. Table surface is HRC 52°.

All lead screws are ground finished

Chrome plated chip guards

E-mill 5VK

Standards & Features
Quality Machining & Assembly
Inspection

STANDARDS

Manufactured to exact tolerances			
Parallelism			
X. axis	.0008in. / 20in.	Ram	.0008in. / 12in.
Y. axis	.0008in. / 20in.	Quill travel	.0005in. / 5in.
Knee	.0008in. / 12in.	Spindle bore runout	.00015in.

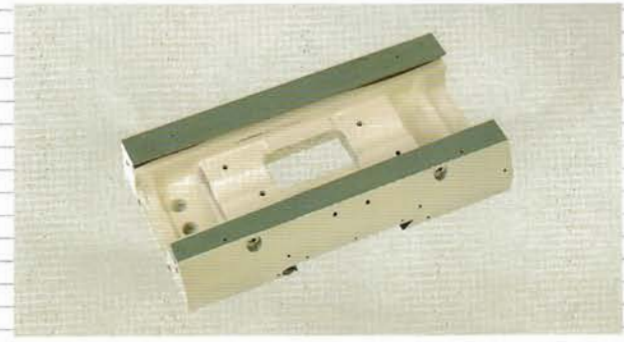
FEATURES

U.S. made **"Baldor Super E"**, high efficient 3 HP motor and the pulley are individually balanced to eliminate vibration and excessive noise during operation.

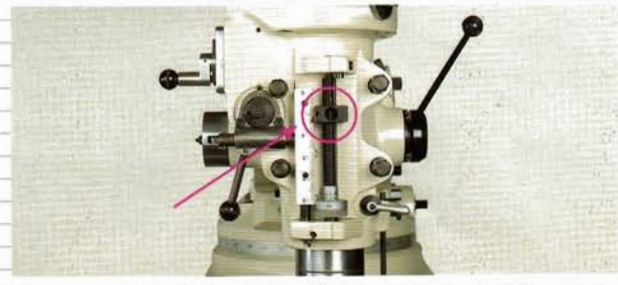
Class 7 NSK high precision spindle bearings insures ACER mills' spindle run-out is no more than **0.00015"**.

U.S. made **"Allen-Bradley"** switch and push button are proven electrical components built for life-long usage.

Vector-type inverter supplies more current to the motor during heavy cutting. This results in a finer finish and saves over **30%** on electrical usage over conventional design.



Turcite-B linings on the saddle ways permit easy

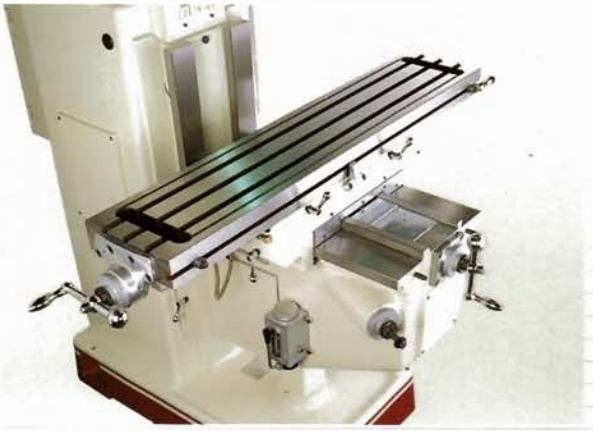


Enhanced quill travel indicator designed for easy

Standards & Features
Quality Machining & Assembly Inspection

One-piece brake assembly and pulleys are indicated within **0.002"** before assembly, this prevents excessive head vibration during operation.

Ram, saddle (except 3VS), table and knee are double locked to eliminate lateral rocking motion.



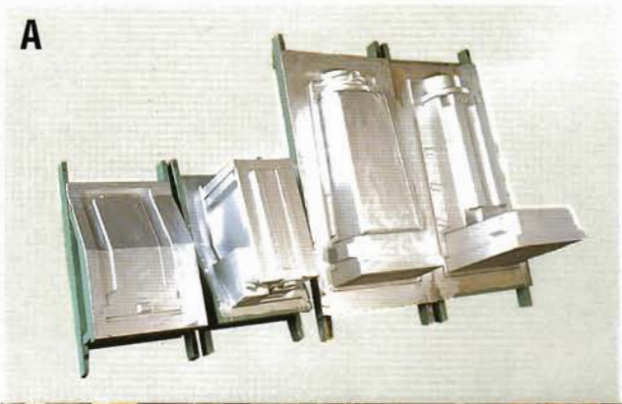
Hardened and ground X,Y and Z axes, dovetail ways, and table surfaces to reach Rockwell C 52 degrees.

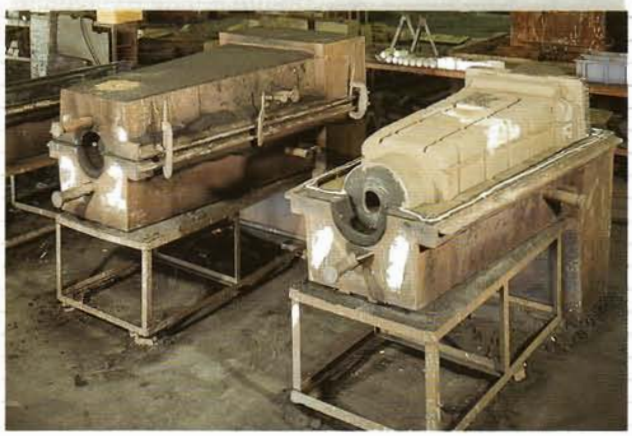
Chrome plated precision ground quill and housing tolerance is controlled to within **0.0005"** to ensure accuracy.

Unique lubrication system with point-to-point check (metering) valve on every terminal ensures lubricating oil gets to all slide ways and lead screws. This minimizes component wear and prolongs the life and accuracy of the machine.

Ground finished longitudinal and crossfeed lead screws feature double-nut backlash compensator. They are guaranteed to within **0.0015"** per **12"** travel.

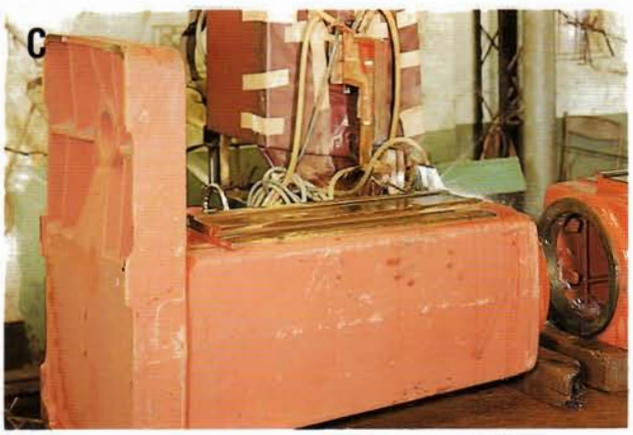
A: MACHINE CASTING





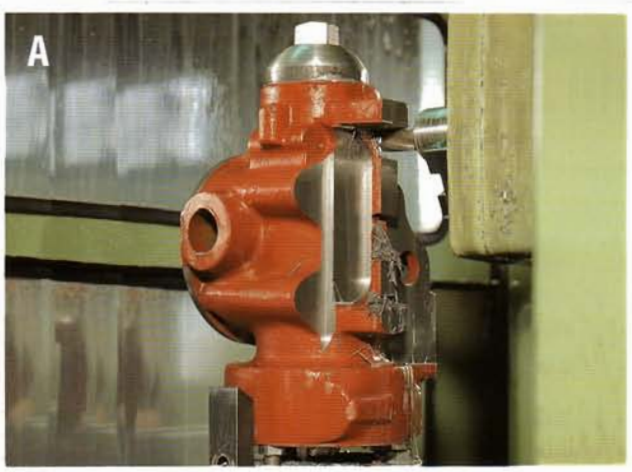
Ceramic-type mold-casting ensures rigid casting with ultimate conformance on casting surfaces.

Exceptionally high stiffness "MEEHANITE" casting is treated with annealing process to eliminate internal stress prior to machining.



Z axis and guide-line surfaces, including dovetail ways are induction hardened to reach Rockwell C 52 degrees.

B: MILLING & MACHINING OF A MACHINE



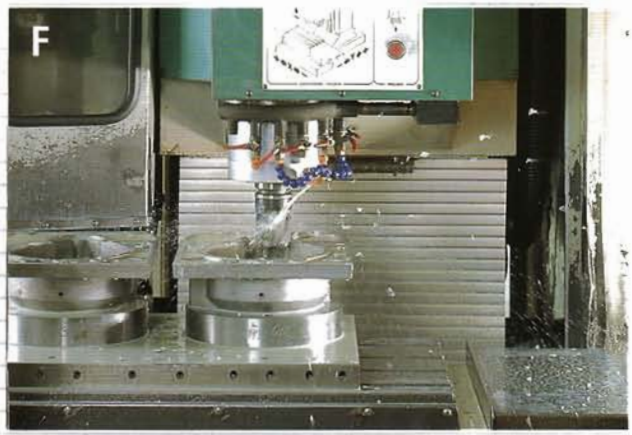
Milling heads are machined by CNC machining centers to ensure quality performance.

The foundations of accuracy (squareness, flatness & parallelism) are milled and machined extensively on planer-type contour milling or four-axis machining centers.

All tables are machined on bridge-type milling centers. The machining accuracy of the table will be within **0.0012"**. The final grinding accuracy of the table can reach **0.0008"** over **40"**.

CNC machining centers are used to mill each ram. They are loaded onto fixtures and machined to the final accuracy of **0.001"** per **20"**.

Every knee is put on a special fixture before machining. With this set-up, we can mill every knee perpendicularly within **0.002"** of each other.

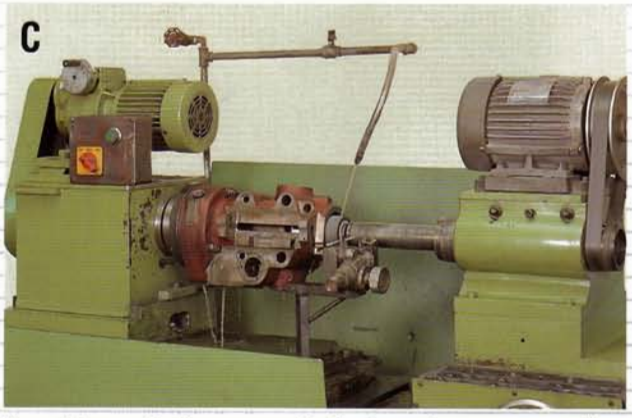


Carefully calculated number and set-up enable the top and lower housing to be milled within **0.0008"** on parallelism, flatness and perpendicularity.

C: PRECISION GRINDING

Precision grinding on top of the hardened table (at HRC 52 degrees) to reach **0.0008"** flatness over the table length.

Precision grinding on dovetail ways and table bottom ensures a longitudinal guide line accuracy of **0.0004"** over **50"**.



Precision grinding on spindle housing ensures the accuracy of the quill travel to within **0.0005**" per **5**".

All quills are chrome plated and ground. The final cylindrical accuracy of the quill is within **0.0002**", and the bearing seat accuracy is within **0.00005**". This keeps the quill travel accuracy to within **0.0005**", and spindle run-out within **0.00015**". This prolongs the life of the spindle when operated properly.

Every spindle is aligned and measured before final grinding. The high speed internal grinder is able to grind the spindle taper within **0.00008**" of each other. This enables us to swap spindles to other machines and still keep the spindle run-out within **0.00015**".

The special fixture on the double-column type surface grinder allows operator to grind machine column or knee in a very fast pace. It allows a higher than usual accuracy and parts will not deviate more than **0.0002**".

D: HAND SCRAPING

Standards & Features
Quality Machining & Assembly Inspection

Before loading saddle onto knee, the saddle is scraped and fit to a table. The gib is scraped on both sides to fit between the table and saddle. This procedure ensures a maximum lateral movement of no more than **0.0004"**.

All turrets are scraped to maximize the contact surfaces between column and ram. With solid contact areas, an ACER milling head will not move during heavy cutting.

E: PAINTING

Skillful painters apply automotive padding onto every component of the machine separately. This is done before painting process and final assembly.

A protective automotive paint is used to ensure the life-long appearance and easy cleaning.

F: ASSEMBLY OF PARTS AND MACHINE

Each machine spindle is equipped with NSK class 7 angular contact bearings sealed with quality **Klüber LDS 18** bearing grease (8cc per bearing) to minimize thermal expansion for longer service life.

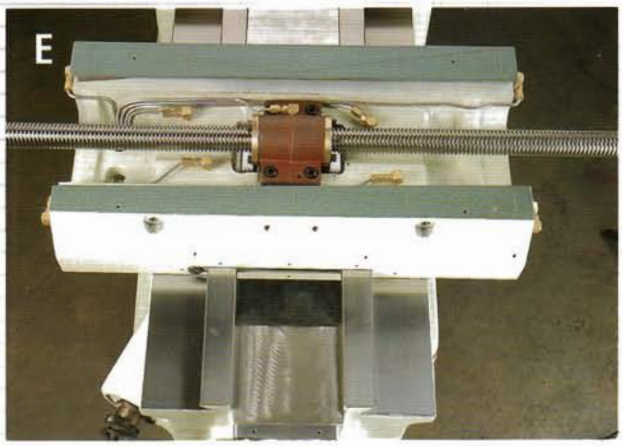
All spindles are assembled in a temperature controlled room. Exact assembly procedures are followed to ensure spindle run-out of no more than **0.00015"**.

Carefully assembled lower housings are checked for braking mechanism and spline alignment. These two features reduce noise and vibration when the milling head is running.

Equipped with high quality controlled components, the milling head is assembled with accuracy and reliability built-in.

With extreme attention, the knee and column are assembled to reach inspection accuracy.

Technicians assemble the saddle onto the knee, and check for mis-alignment and irregularity. Once they are fit, the table can be assembled.



The ground finished lead screw with double nut design ensures the smooth movement to keep backlash within **0.005"**.

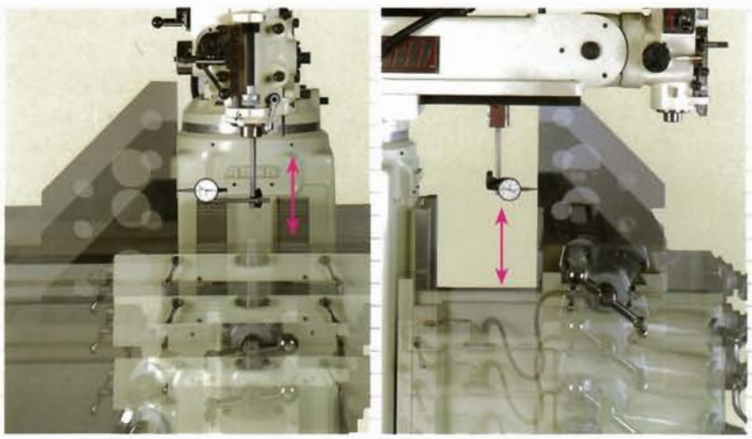
Once all saddles and lead screws are fit, the table is loaded onto the saddle. We can then finally adjust the table movement. A check and re-adjustment of the table is the final assembly procedure before inspection.

Standards & Features
Quality Machining & Assembly Inspection

Adding the milling head is the final step before inspection. All ACER milling machines are produced to order, and shipped within the delivery time.

On the ACER assembly line, technicians carefully inspect every milling machine to ensure high quality standard before shipping.

INSPECTION



Vertical movement of knee square to table surface.
A: 0.0008/20" **B: 0.0008/20"**

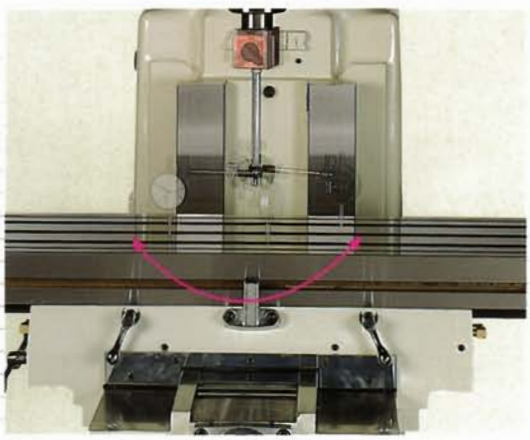
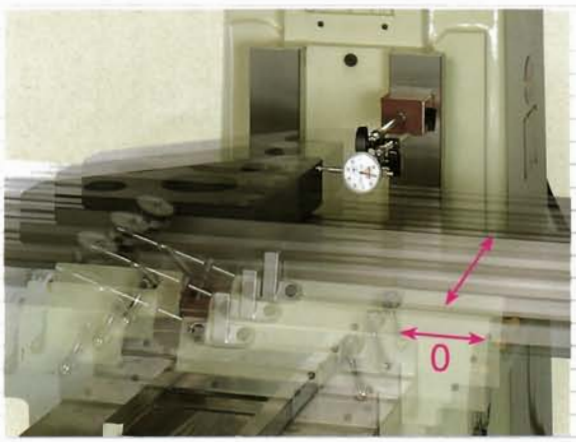
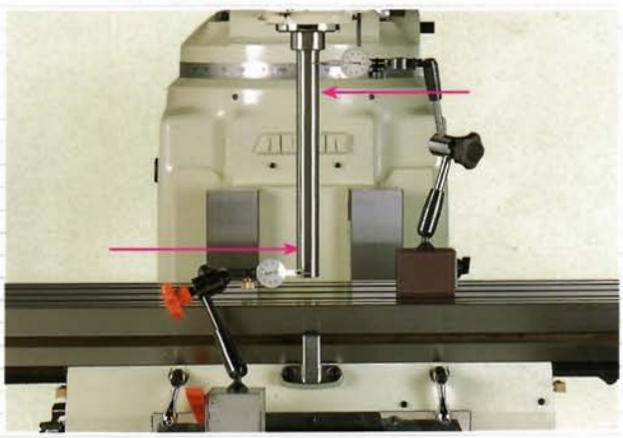


Table sweep knee high level, spindle perpendicular to top of the table.
X: 0.0008/20" **Y: 0.0008/20"**

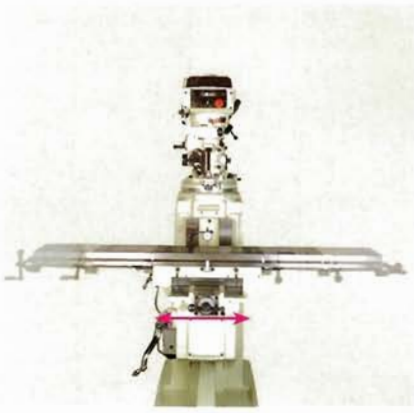


Front edge parallels longitudinal travel and is perpendicular to cross travel.
X: 0.0008/20" **Y: 0.0008/20"**



Spindle bore run-out.
A: 0.0004" **B: 0.0008"**

Standards & Features
Quality Machining & Assembly
Inspection



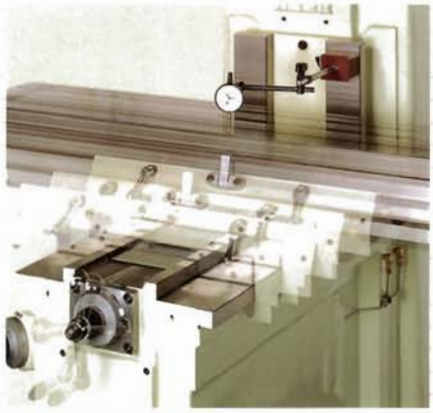
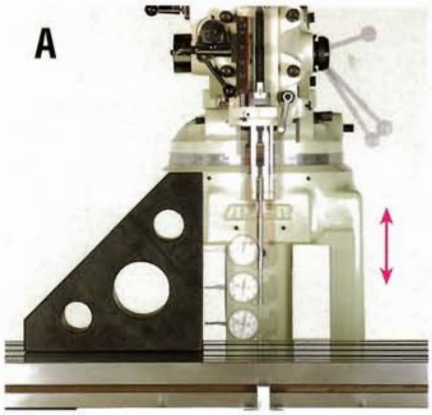
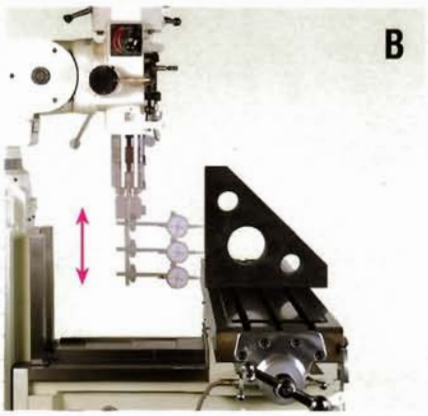


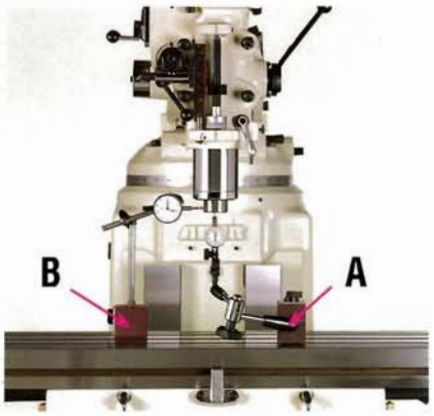
Table surface parallels to its movement.
A: 0.0008/12" **B: 0.0008/12"**

Ram slides parallel to table top.
0.0008/12"

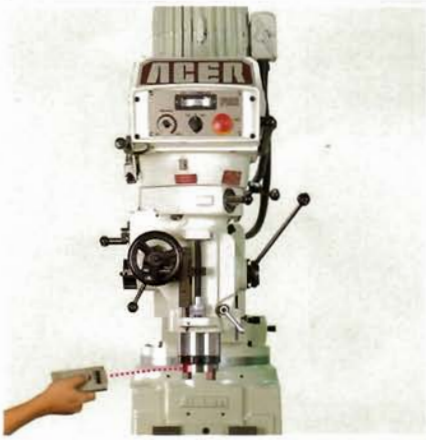




Quill travels square to table surface.
A: 0.0008/5" **B: 0.0008/5"**



Spindle nose and face run-out.
A: 0.00015" **B: 0.0004"**



Digital tachometer is checking on the actual spindle speed.

Backlash reading on dials.
A: Max. 0.005" (longitudinal)
B: Max. 0.005" (crosswise)

Optional Accessories

Power Feed

Halogen Light

Coolant system

Milling Vise

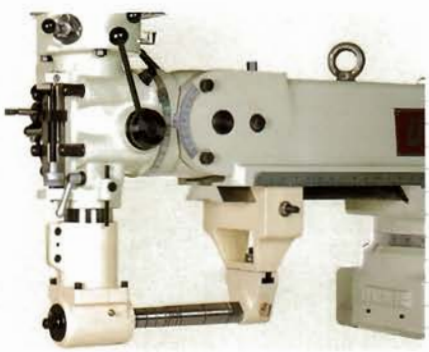
Clamping Kit

Automatic Lubrication System

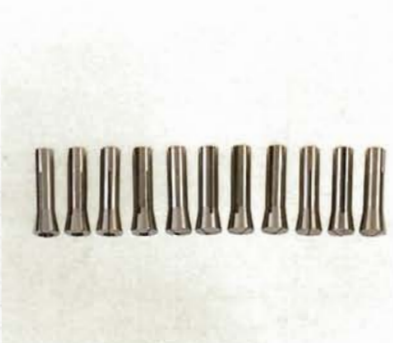
T-Slot Cover

Riser Block

Horizontal/vertical rotary table



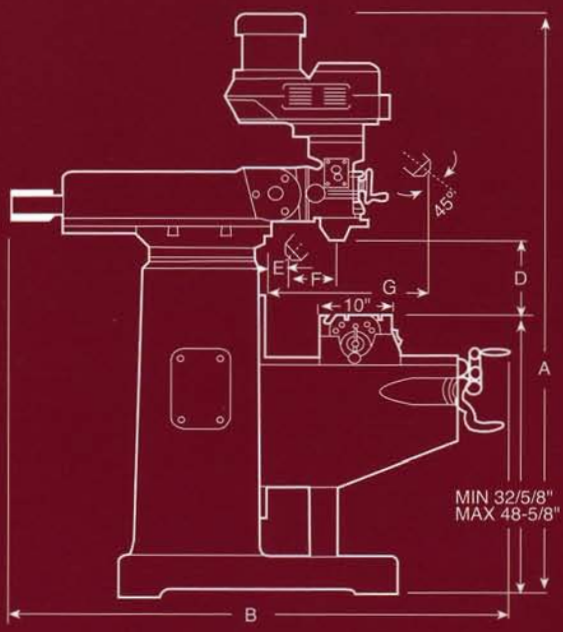
Horizontal Milling Attachment



R-8 Collet Set

Also available:

- Digital Read-out
- Mist Coolant System
- Ball Screws
- Air Power Drawbar
- #30 Taper Spindle



Unit: Inch

overall height
A: 88" / 94" / 96"

overall depth
B: 70" / 79"

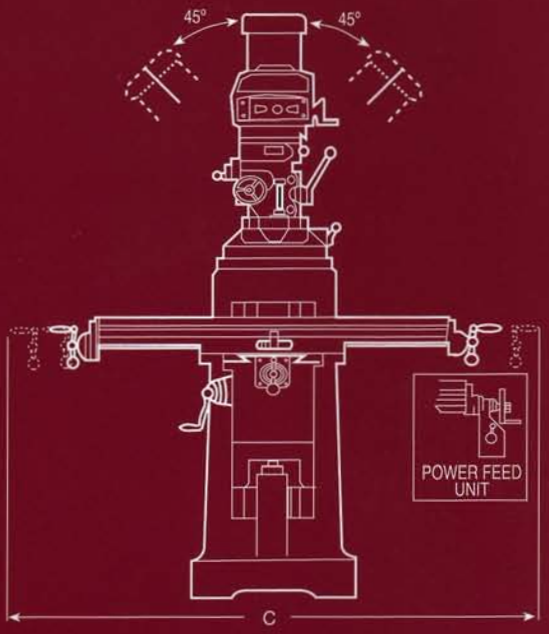
overall width
C: 91" / 98"

min. / max.
D: 1~18"/3~21"/4~21"

min. / max.
E: 3~11"/1~18"

min. / max.
F: 4~20"/4~27"

min. / max.
G: 12~18"/4~27"



Note: All measurements are approximate!

SPECIFICATIONS

ITEM / MODEL		E-mill 3VS		E-mill 3VK	E-mill 3VKH		E-mill 5VK
TABLE	Working surface	42" x 9"	49" x 9"	50" x 10"	50" x 10"	54" x 10"	50" x 10"
	Longitudinal travel	28"	34"	34"	32-1/2"	36-1/2"	32-1/2"
	Cross travel	12"		16"	16"		16"
	Vertical knee travel	16"		16"	19"		19"
	Ram travel	12"		20"	20"		20"
	T-slot number, size	3 , 5/8"		3 , 5/8"	3 , 5/8"		3 , 5/8"
HEAD	Main motor	3 HP		3 HP	3 HP		5 HP
	Head moves right to left	90°		90°	90°		90°
	Head tilts front to back	45°		45°	45°		-
SPINDLE	Spindle drive	Variable		Variable	Variable		Variable
	Spindle speed	60 ~ 4,500		60 ~ 4,500	60 ~ 4,500		50 ~ 3,750
	Spindle taper	R-8		R-8	R-8		N.S.T. #40
QUILL	Power quill feeds (In / Rev.)	0.0015", 0.003", 0.006"		0.0015", 0.003", 0.006"	0.0015", 0.003", 0.006"		0.0015", 0.003", 0.006"
	Quill diameter(Chromed)	3-3/8"		3-3/8"	3-3/8"		4"
	Quill travel	5"		5"	5"		5"
	Weight approximated	2,380 lbs	2,430 lbs	3,050 lbs	3,300 lbs	3,450 lbs	3,500 lbs

Note: The manufacturer reserves the right to modify the design, specifications, mechanisms, etc. to improve the performances of machine without notice.
All the specifications shown above are for reference only.

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