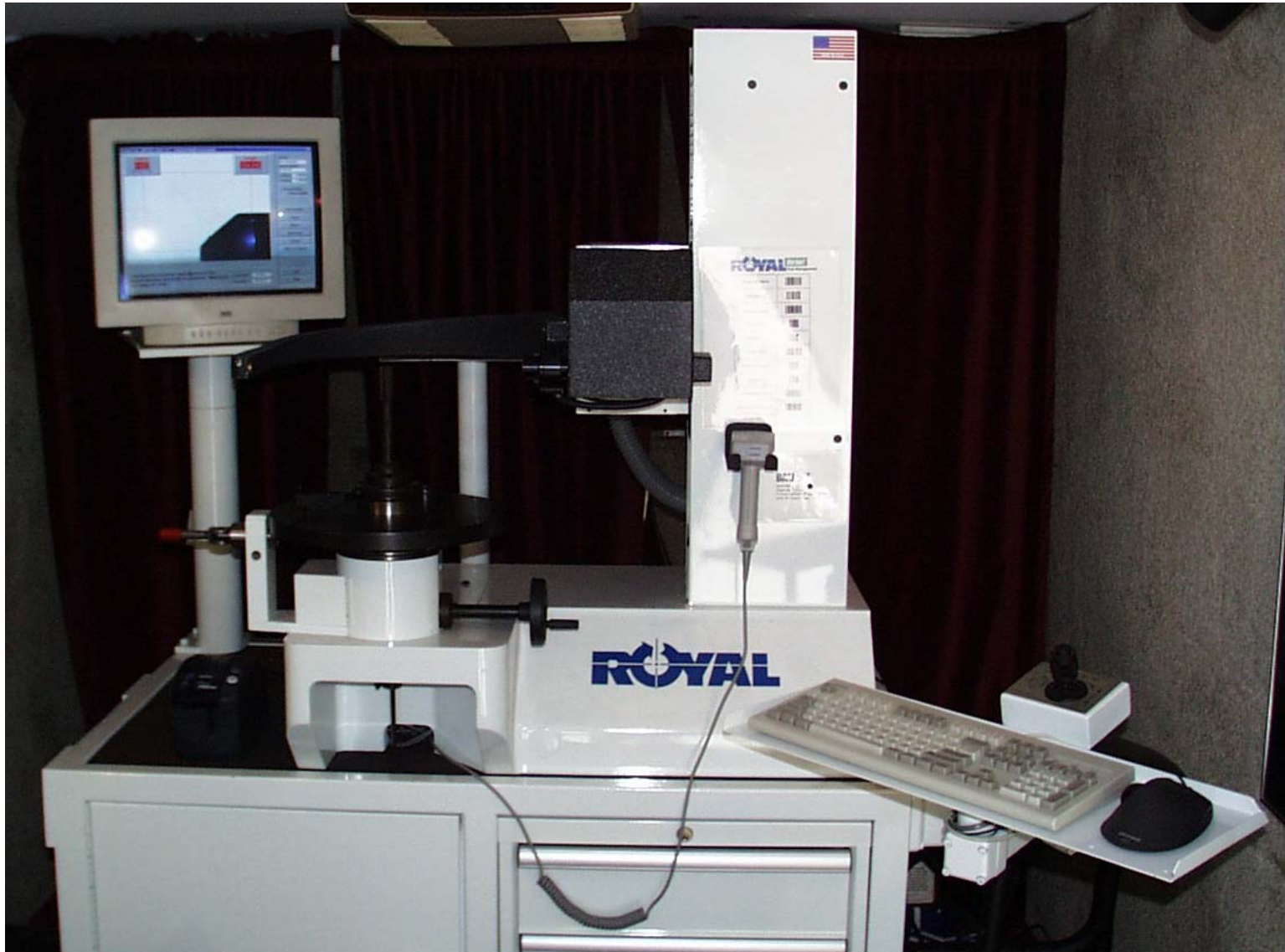


The background of the slide is a classic marbled paper pattern, featuring a complex, organic design of swirling, interconnected lines in shades of light beige, cream, and pale brown, creating a textured, stone-like appearance.

*VARISSET*  
*GAUGE*



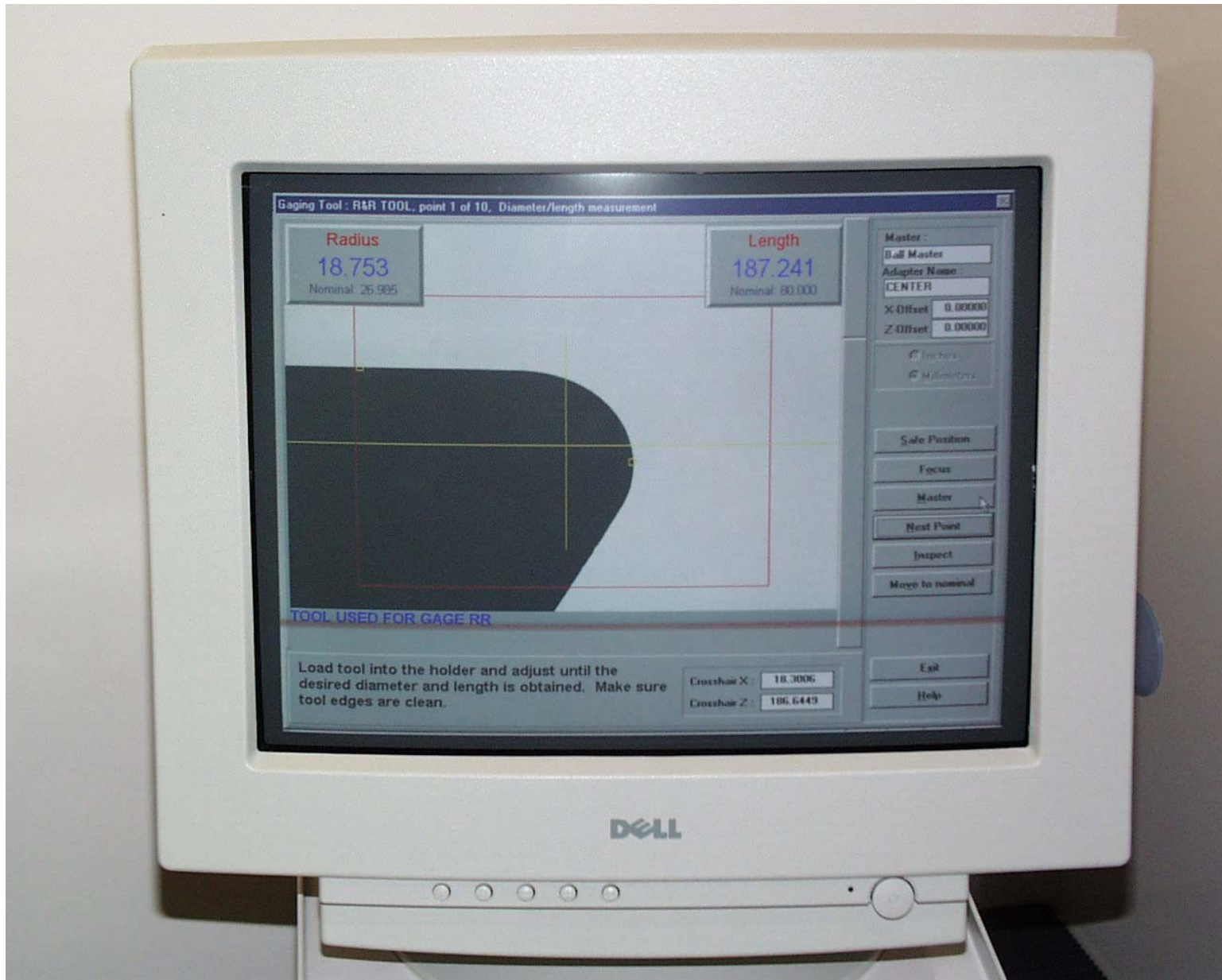
THE 2FVP 620/190 FRONT WORKING GAUGE



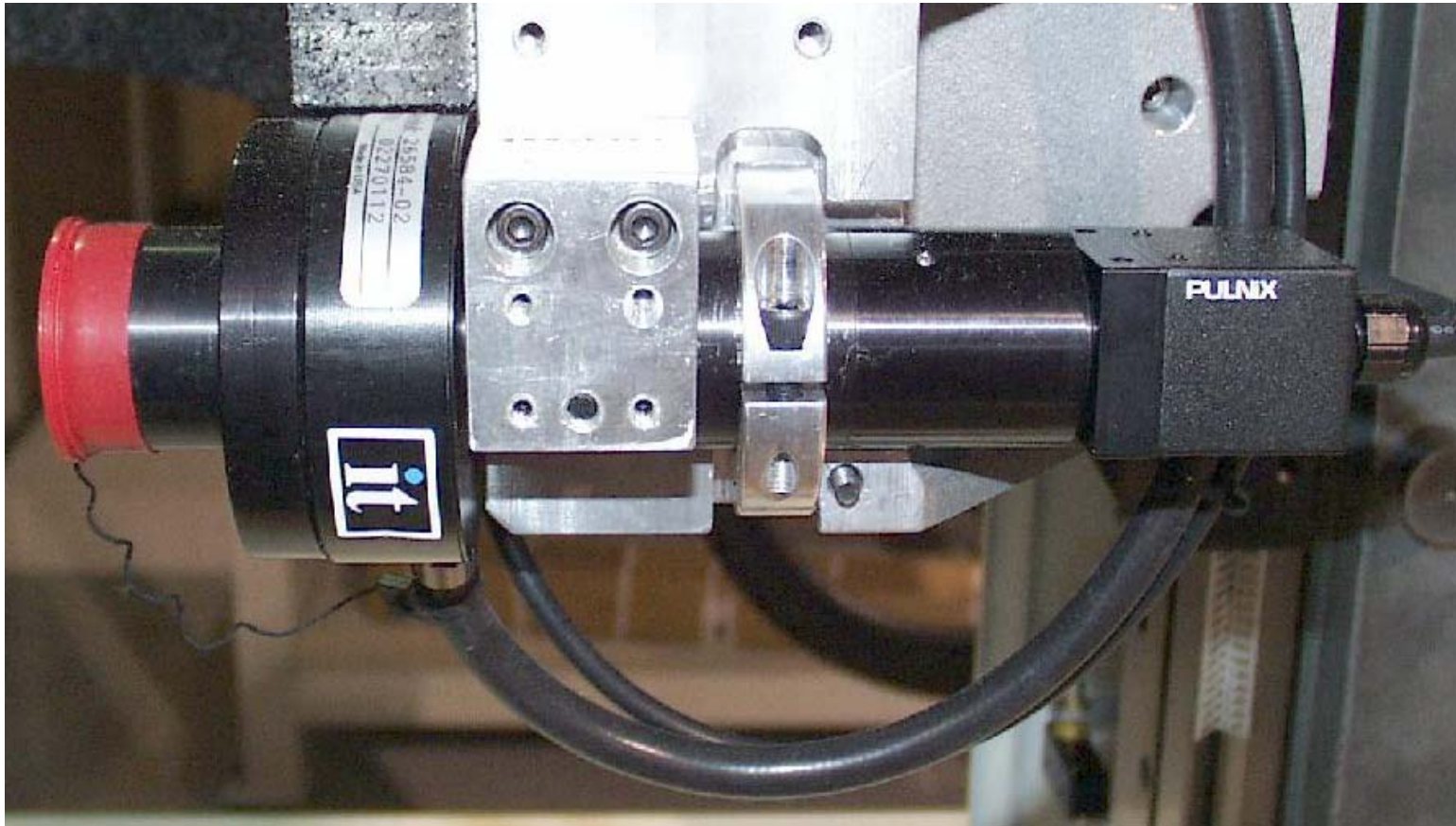
3FVP 620/190 THIRD AXIS GAUGE WITH GRANITE TABLE



THE 2FVP IS ERGONOMICALLY FRIENDLY



17" COLOR MONITOR IS STANDARD EQUIPMENT



PRECISION LENS WITH HIGH RESOLUTION CCD CAMERA

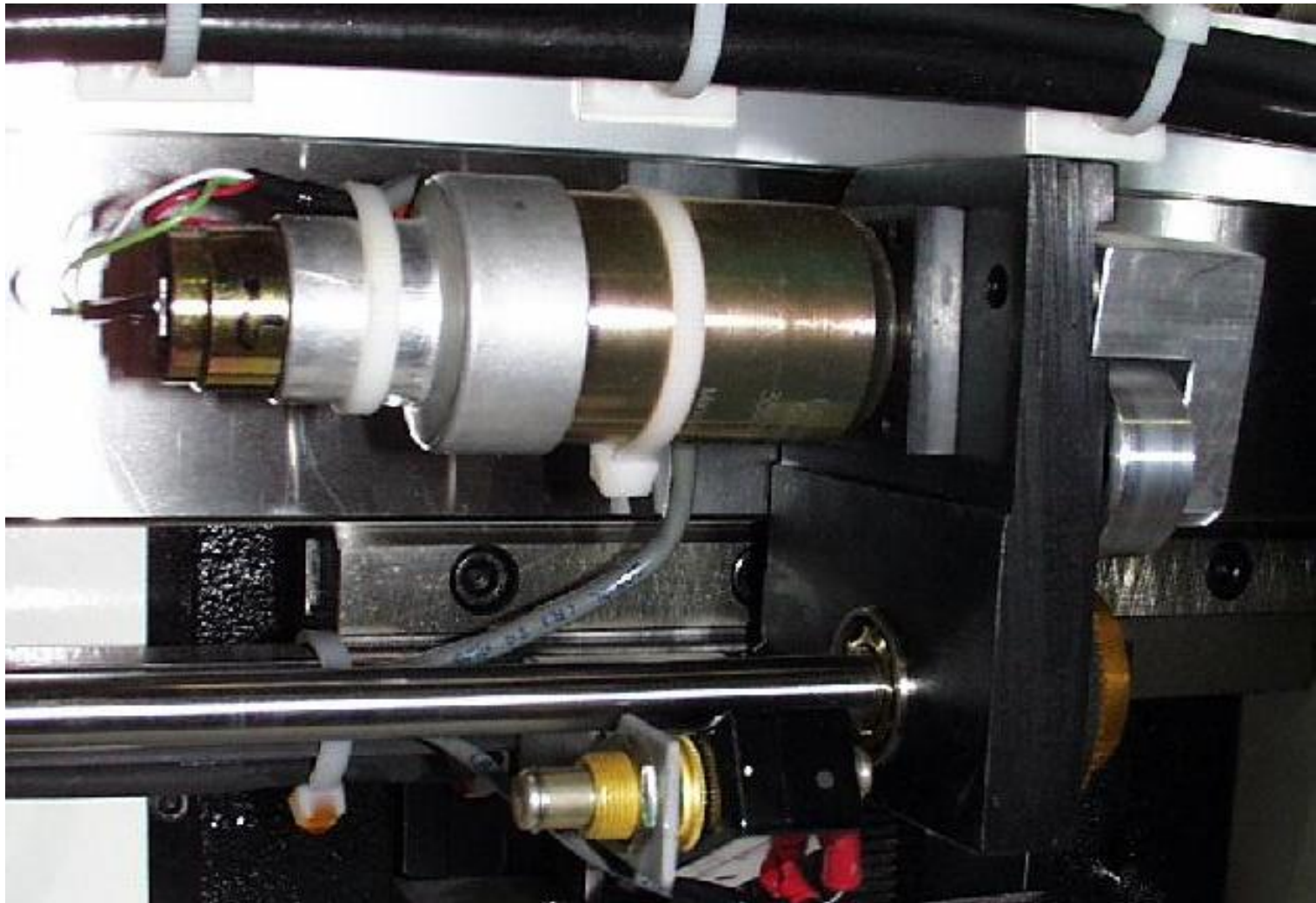


**HEIDENHAIN LINEAR ENCODERS FOR HIGH ACCURACY**  
(DIADUR scales of Glass with Sealed Lips)



**LINEAR DRIVE NUT FOR BACKLASH-FREE POSITIONING**





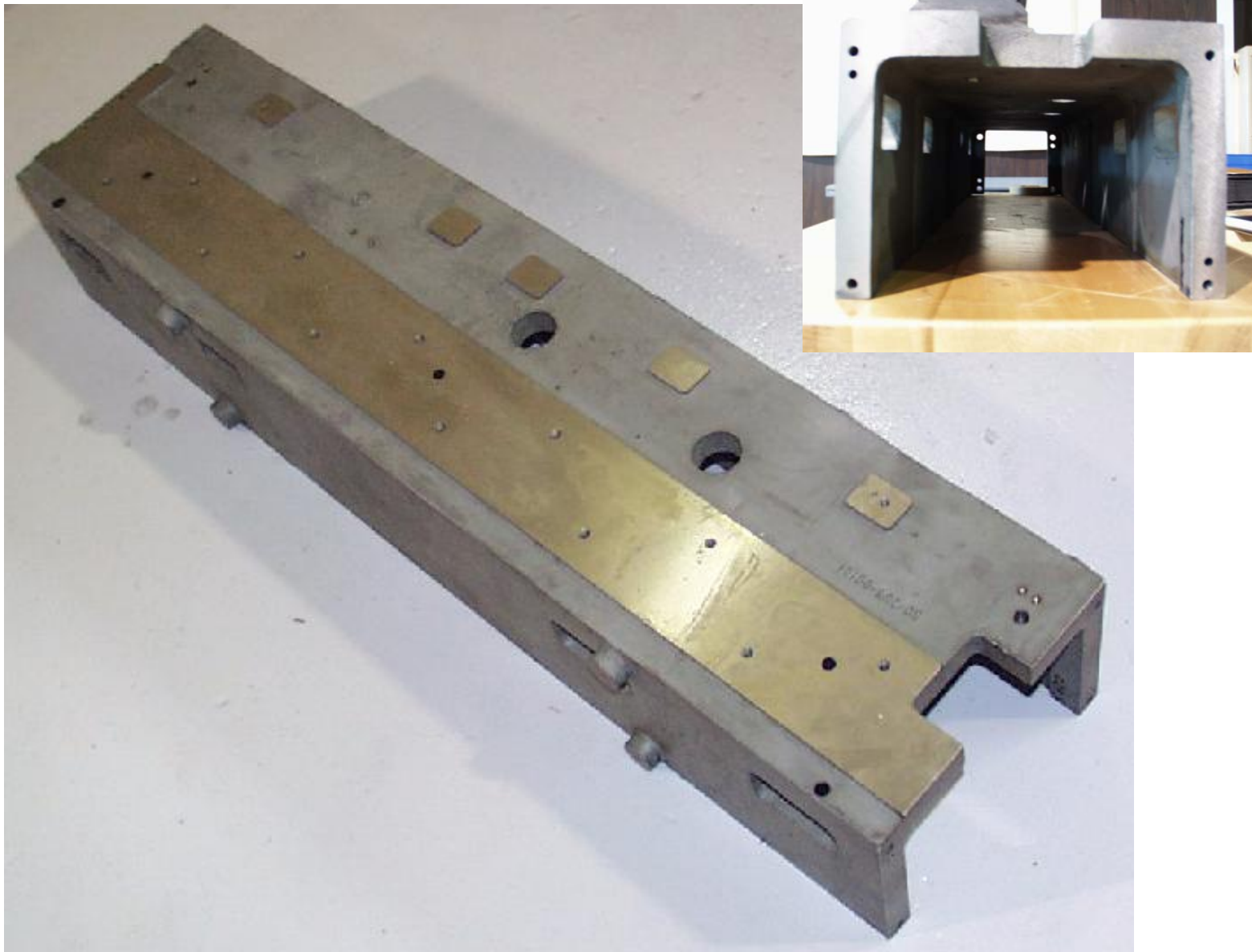
DC SERVO MOTORS FOR CLOSED LOOP POSITIONING



SCHNEEBERGER VEE ROLLER LINEAR GUIDE BEARINGS



BASE ~ HEAVY DUTY CAST IRON CONSTRUCTION



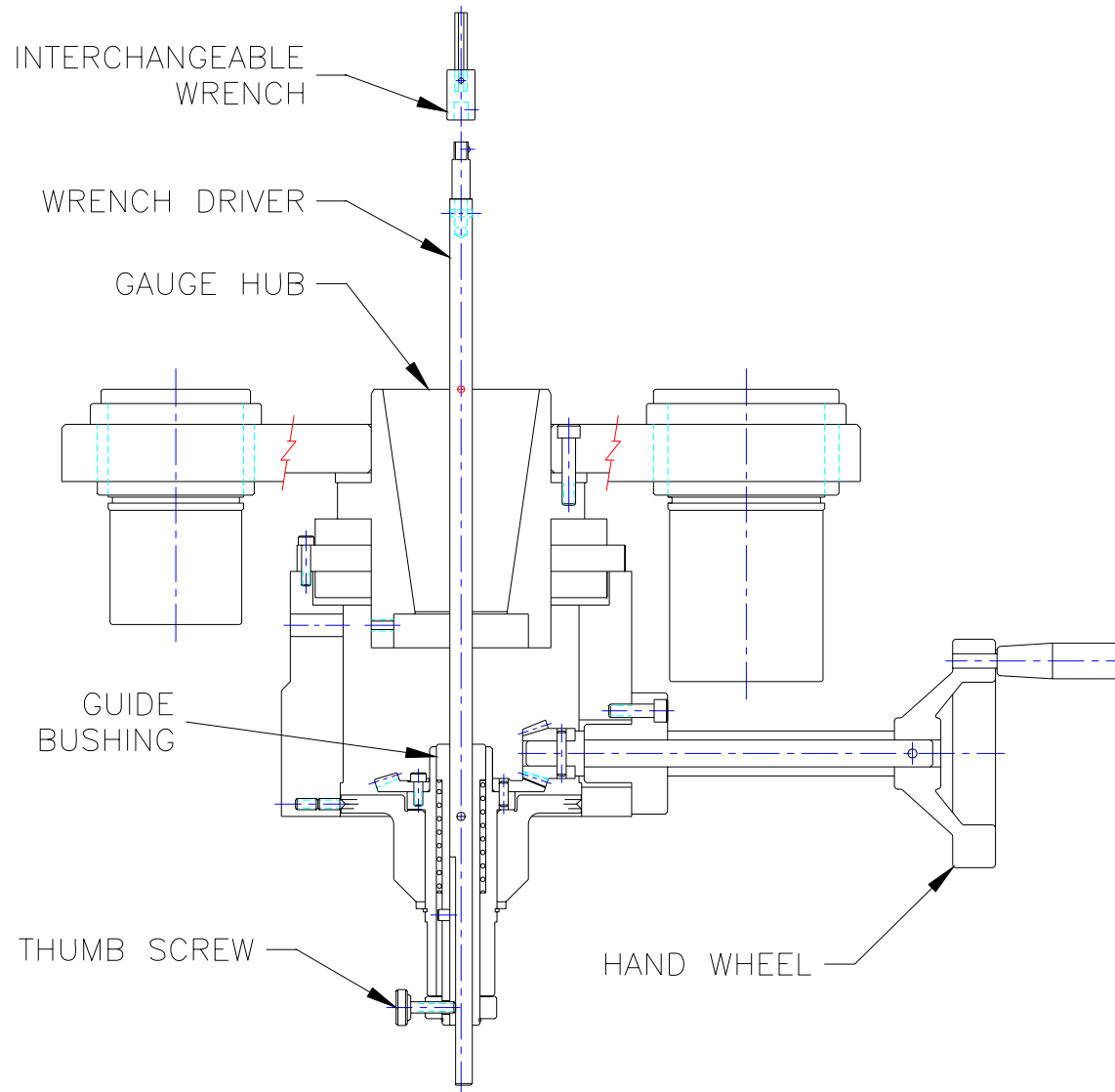
COLUMN ~ HEAVY DUTY CAST IRON CONSTRUCTION



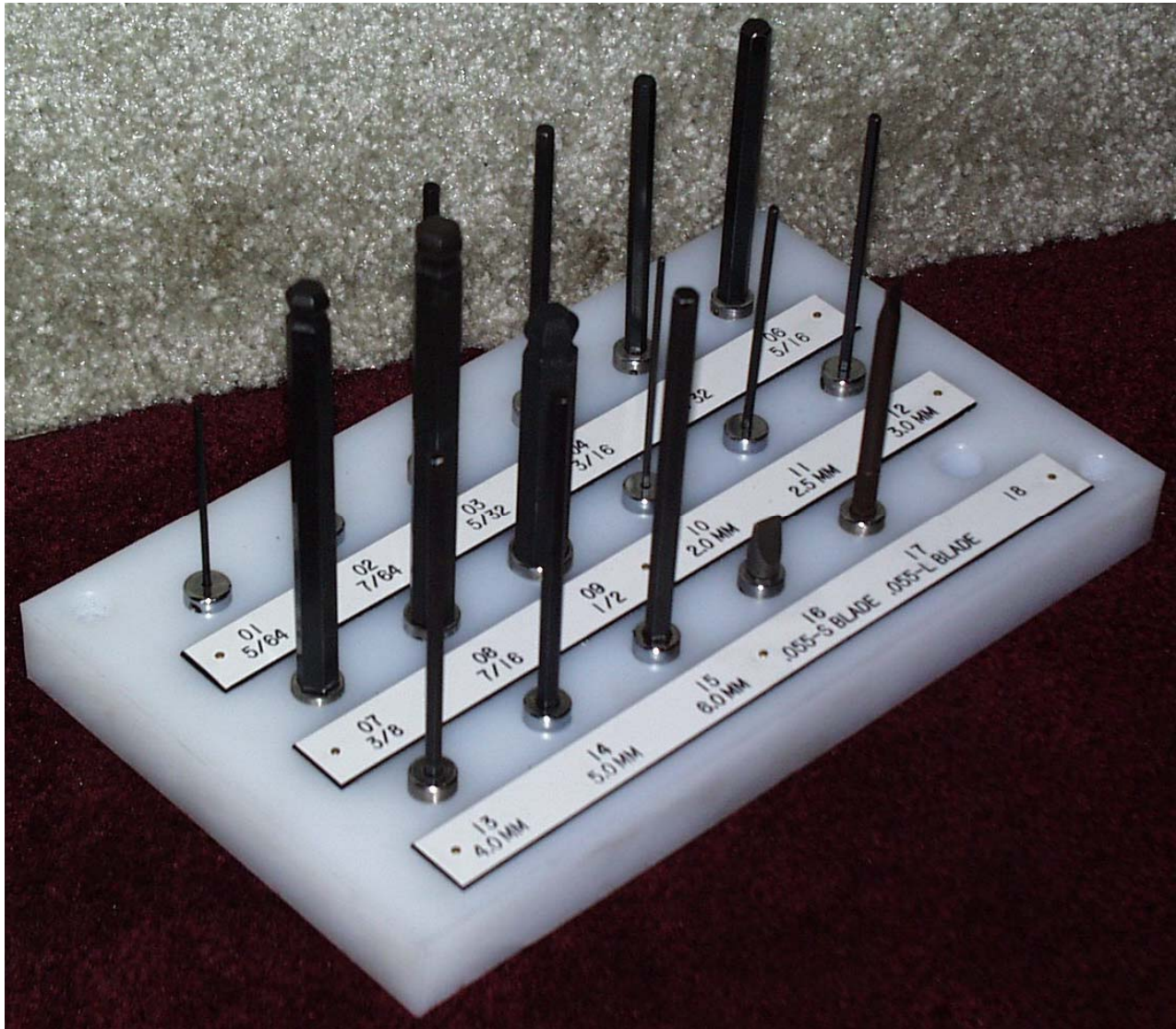
14" ROTARY TABLE WITH STRAIGHT SHANK TOOL BUSHINGS



**DISTORTION FREE DISK BRAKE WITH MANUAL INDEXING  
RELEASE**



**RIGHT ANGLE REAR ADJUST WRENCH ASSEMBLY**

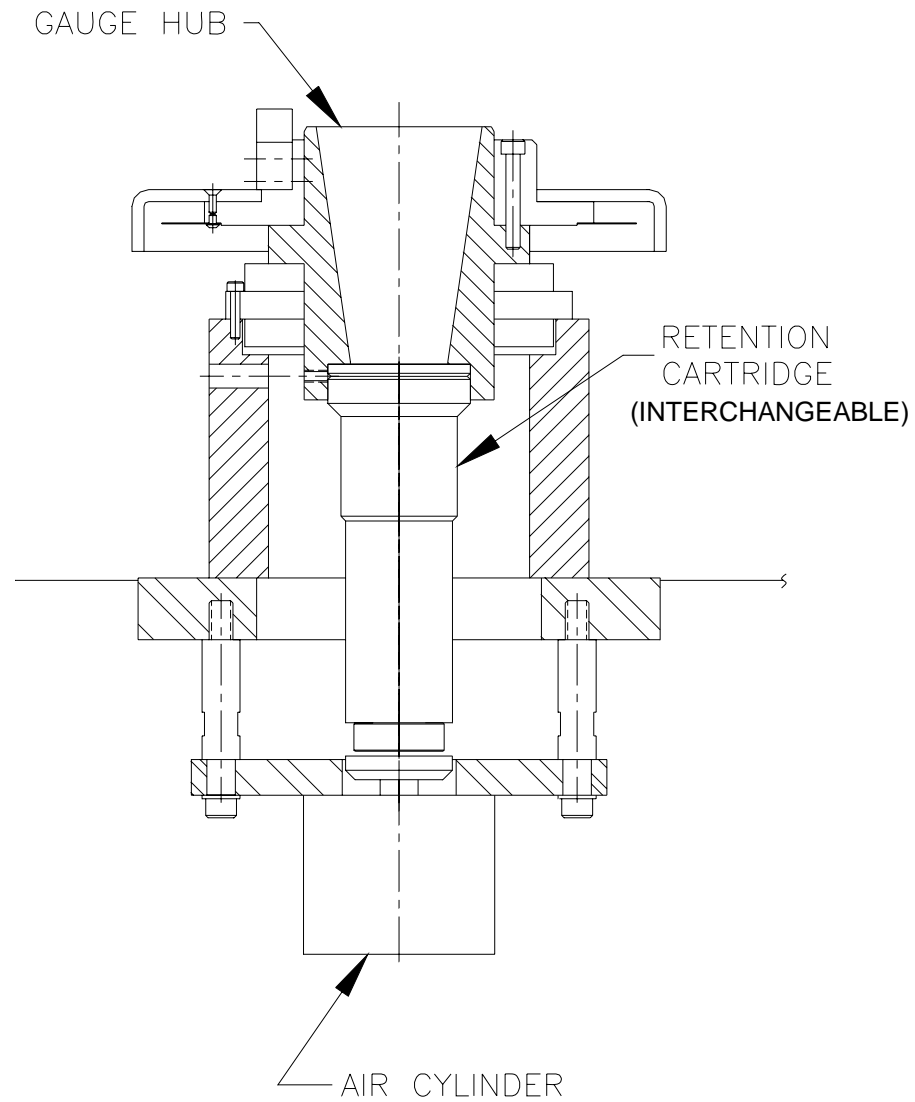


WRENCHES FOR REAR ADJUST MECHANISM





RETENTION KNOB CLAMPING



**CROSS SECTION OF RETENTION KNOB CLAMPING  
MECHANISM**



STANDARD AND CUSTOM TOOLING ADAPTERS

The background of the slide is a classic marbled paper pattern, featuring a complex, organic design of swirling, vein-like shapes in shades of light beige, cream, and pale blue. The overall effect is a textured, vintage aesthetic.

**QUALITY ASSURANCE  
AND  
CUSTOMER  
DOCUMENTATION**



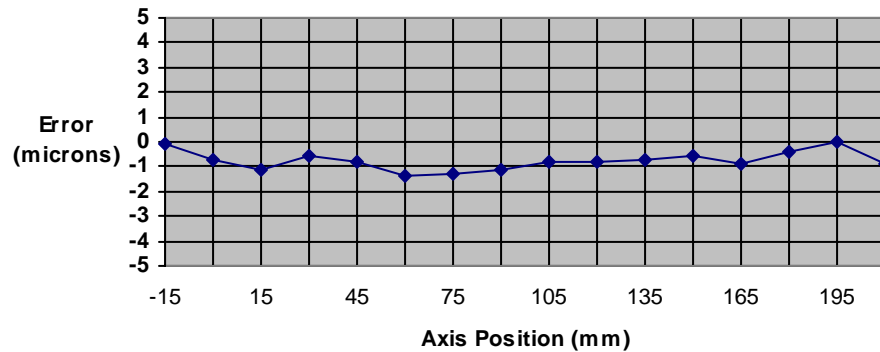
LASER CHECKED FOR ACCURACY

## GAGE ACCURACY REPORT

CUSTOMER : SPX Contech  
SO NUMBER : 14860A  
TEST DATE : 20 April, 2001  
MACHINE : ROYAL 2VP 620/200 vision tool presetter  
TECHNICIAN : C.J.  
AXIS : Horizontal (after error comp. and related to reference marks)  
LOCATION : Royal  
FILE : n:\r&r\laser\14860alaser.doc

Axis Position	Error (microns)
-15	-0.1
0	-0.7
15	-1.1
30	-0.6
45	-0.8
60	-1.4
75	-1.3
90	-1.1
105	-0.8
120	-0.8
135	-0.7
150	-0.6
165	-0.9
180	-0.4
195	-0.0
210	-0.9

**Positioning Error**



# LASER DOCUMENTATION

ROYAL DESIGN AND MANUFACTURING									
11:04 AM									
Customer	Chrysler - Detroit Axle				Tool Number	Test done with KM tool at R			
Serial No	X13892A - 2AVP 620/190 with Variset III & PID II control W/ Data Transla				Check number	Z axis - Readings in increme			
OPERATOR No. 1	Steve B.				OPERATOR No. 2	Kurt F.			
ENTER # OF PARTS	10		ENTER # OF RUNS	3		# OF OPERATORS	2		
FILE NAME - N:\R&R\13892									
OPERATOR NUMBER ONE			OPERATOR NUMBER TWO			OPERATOR			
SAMPLE	1ST RUN	2ND RUN	3RD RUN	RANGE	1ST RUN	2ND RUN	3RD RUN	RANGE	1ST RUN
One	-55.0000	-55.0000	-55.0000	0.0000	-53.0000	-55.0000	-54.0000	2.0000	
Two	-54.0000	-55.0000	-55.0000	1.0000	-52.0000	-54.0000	-55.0000	3.0000	
Three	-54.0000	-55.0000	-55.0000	1.0000	-54.0000	-55.0000	-55.0000	1.0000	
Four	-54.0000	-55.0000	-54.0000	1.0000	-54.0000	-54.0000	-55.0000	1.0000	
Five	-55.0000	-55.0000	-54.0000	1.0000	-54.0000	-54.0000	-55.0000	1.0000	
Six	-54.0000	-54.0000	-54.0000	0.0000	-54.0000	-55.0000	-55.0000	1.0000	
Seven	-54.0000	-54.0000	-54.0000	0.0000	-54.0000	-54.0000	-54.0000	0.0000	
Eight	-52.0000	-54.0000	-54.0000	2.0000	-54.0000	-54.0000	-54.0000	0.0000	
Nine	-54.0000	-54.0000	-54.0000	0.0000	-54.0000	-54.0000	-54.0000	0.0000	
Ten	-54.0000	-55.0000	-54.0000	1.0000	-54.0000	-55.0000	-54.0000	1.0000	
Totals	-540.0000	-546.0000	-543.0000	7.0000	-537.0000	-544.0000	-545.0000	10.0000	0.0000
Averages	X1 =	-54.3000	R1 =	0.7000	X2 =	-54.2000	R2 =	1.0000	X3 =
TEST FOR CONTROL:									
Upper control limit (UCL) = D x Average (R1+R2+R3)      Where D = 3.27 for 2 runs or 2.58 for 3 runs									
Upper Control Limit (UCL) =      2.1930									
MEASUREMENT SYSTEM / GAGE CAPABILITY ANALYSIS:									
Equipment Variation ( Repeatability ) = k x Avg(R1+R2+R3)      Where k = 4.56 for 2 runs or 3.05 for 3 runs									
Equipment Variation ( Repeatability ) =      2.5925									
Operator Variation ( Reproducibility ) = K x Diff between max & min of X1, X2 & X3      Where K = 3.65 for 2 operators or 2.70 for 3 operators.									
Operator Variation (Reproducibility) =      0.3650									

## R & R RESULTS REPORT

# ADAPTER INSPECTION REPORT

Customer:	DaimlerChrysler Mack II Engine Plant – Shrinker Project
Adapter Number	95
Serial Number	X14734B1
Adapter type	Vee Block adapter for Shrinker tooling
Inspected by	Craig Jones
Inspection Date	25 May, 2001



<u>Inspection results</u>			
<u>Feature</u>	<u>Print</u>	<u>Actual</u>	<u>Status</u>
Vertical Offset	58.7mm	2.3286" 59.146mm	OK

Comments: This adapter used in conjunction with Royal Model 250 vision presetter to send tool length information to Briney “Shrinker” unit.

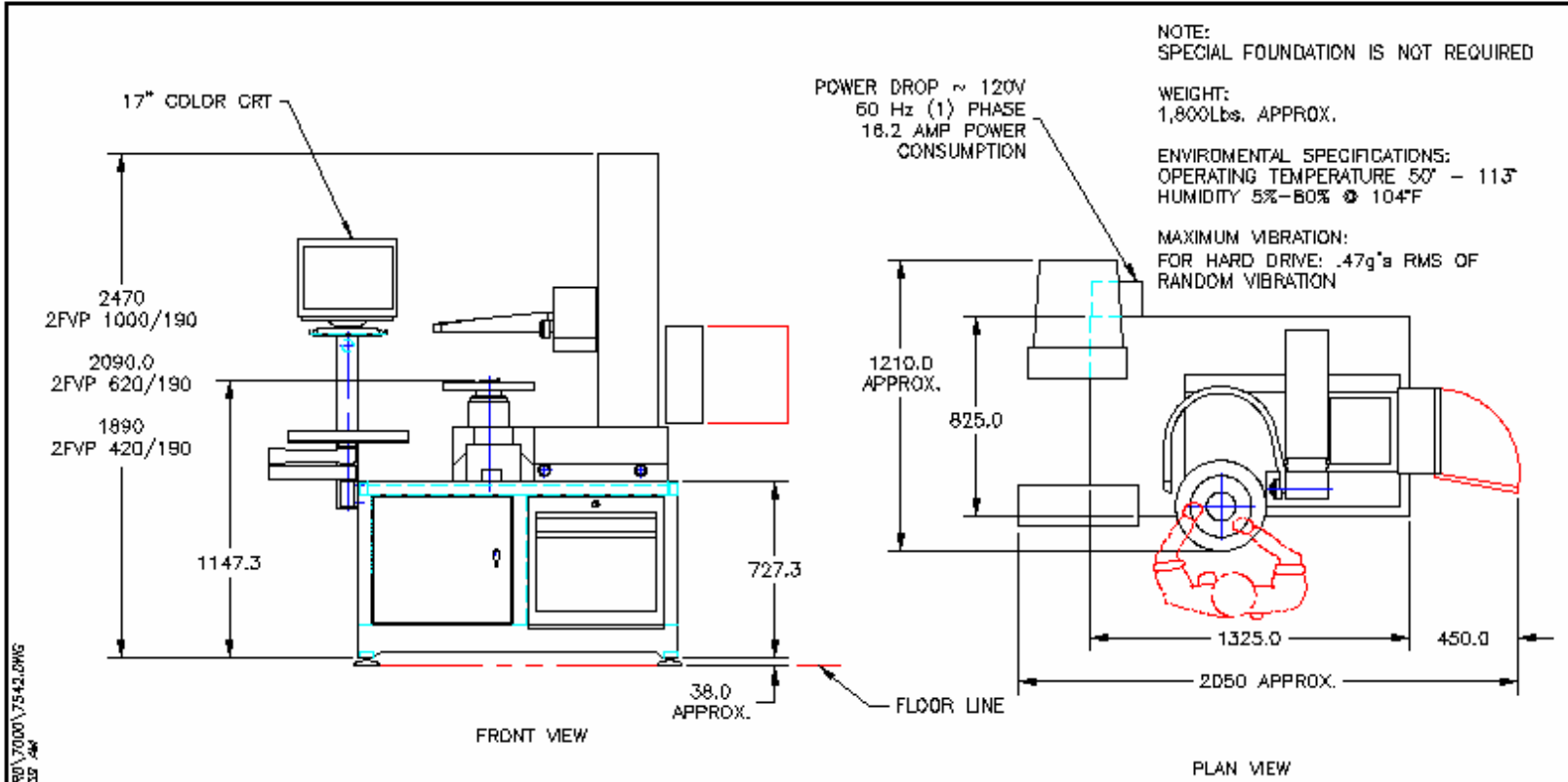
Inspection done at Royal Design & Manufacturing using the following certified equipment:

<u>Item</u>	<u>Number</u>	<u>Calibrated</u>	<u>NIST #</u>
Surface Plate	RDM.0025	18MAY01	NIST #821/259563
Indicator	RDM.0031	08JUL00	NIST #821/259502-98
Gage Blocks	RDM.0030	06JUL00	NIST #821/259502-98
Taper Pot	T7518	22MAR00	NIST #821/259564-98

n:\customer\14700\s\14734\14734b1\_air.doc

# ADAPTER INSPECTION REPORT





CAD FILE NAME: A:\STANDARD\7000\7542.DWG  
BY: SEB DATE: 7/2/92 9:23 AM

CHANGE	DATE	REVISION

DO NOT SCALE  
TOLERANCE UNLESS OTHERWISE SPECIFIED  
ANGULAR ± 1/2°

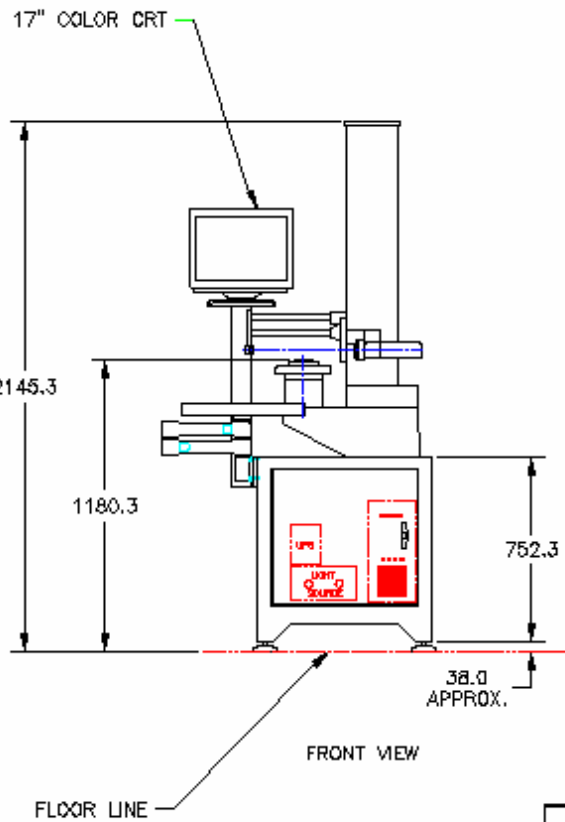
DRAWN BY: DMB  
CHECKED BY: PVE  
DATE: 8/6/92

TOOL CONTROL SYSTEM

**ROYAL**  
design and manufacturing inc.  
2501 STEPHENSON PARKWAY  
MADISON HEIGHTS, MICHIGAN 48071  
USA

TITLE  
VARISSET  
2FVP ON BENCH  
PLANT FACILITIES  
LAYOUT

DRAWN BY	CHECKED BY	DATE	SCALE	SHEET	DRAWING NO.
DMB	PVE	8/6/92	1 : 16	7 OF 1	M7542



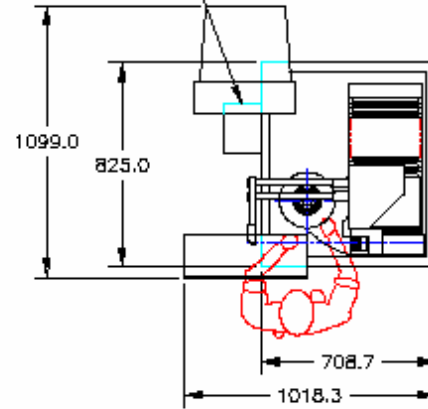
FRONT VIEW

POWER DROP ~ 120V  
 60 Hz (1) PHASE  
 16.2 AMP POWER  
 CONSUMPTION

NOTE: SPECIAL FOUNDATION  
 IS NOT REQUIRED  
 WEIGHT: 1,100 Lbs. APPROX

ENVIRONMENTAL SPECIFICATIONS  
 OPERATING TEMPERATURE: 50°-113°  
 HUMIDITY: 5%-80% @ 104°F

MAXIMUM VIBRATION  
 FOR HARD DRIVE: .47g<sup>rms</sup> RMS OF  
 RANDOM VIBRATION



PLAN VIEW

CAD FILE NAME: A:\STANDARD\7000\7547.DWG  
 BY: SEB DATE: 7/24/02 9:42 AM

CHANGE	DATE	REVISION

DO NOT SCALE  
 TOLERANCE UNLESS OTHERWISE SPECIFIED  
 ANGULAR ± 1/2°  
 FINISH 3 PL. DECIMAL ± .010  
 2 PL. DECIMAL ± .020  
 4 PL. DECIMAL ± .0005  
 METRIC 1 PL. DECIMAL ± 0.05  
 2 PL. DECIMAL ± 0.10  
 3 PL. DECIMAL ± 0.020  
 BREAK ALL SHARP EDGES .50 (MIN) X 45°  
 UNLESS OTHERWISE SPECIFIED  
 STAMP ALL DETAILS WITH ROYAL SERIAL No.  
 UNLESS OTHERWISE SPECIFIED

TOOL CONTROL SYSTEM



design and manufacturing inc.  
 2501 STEPHENSON PARKWAY  
 WILSON, NORTH CAROLINA 27597  
 USA

TITLE  
 PLANT FACILITIES  
 LAYOUT FOR VARISSET  
 2FVP 460/170 GAGE  
 ON BENCH

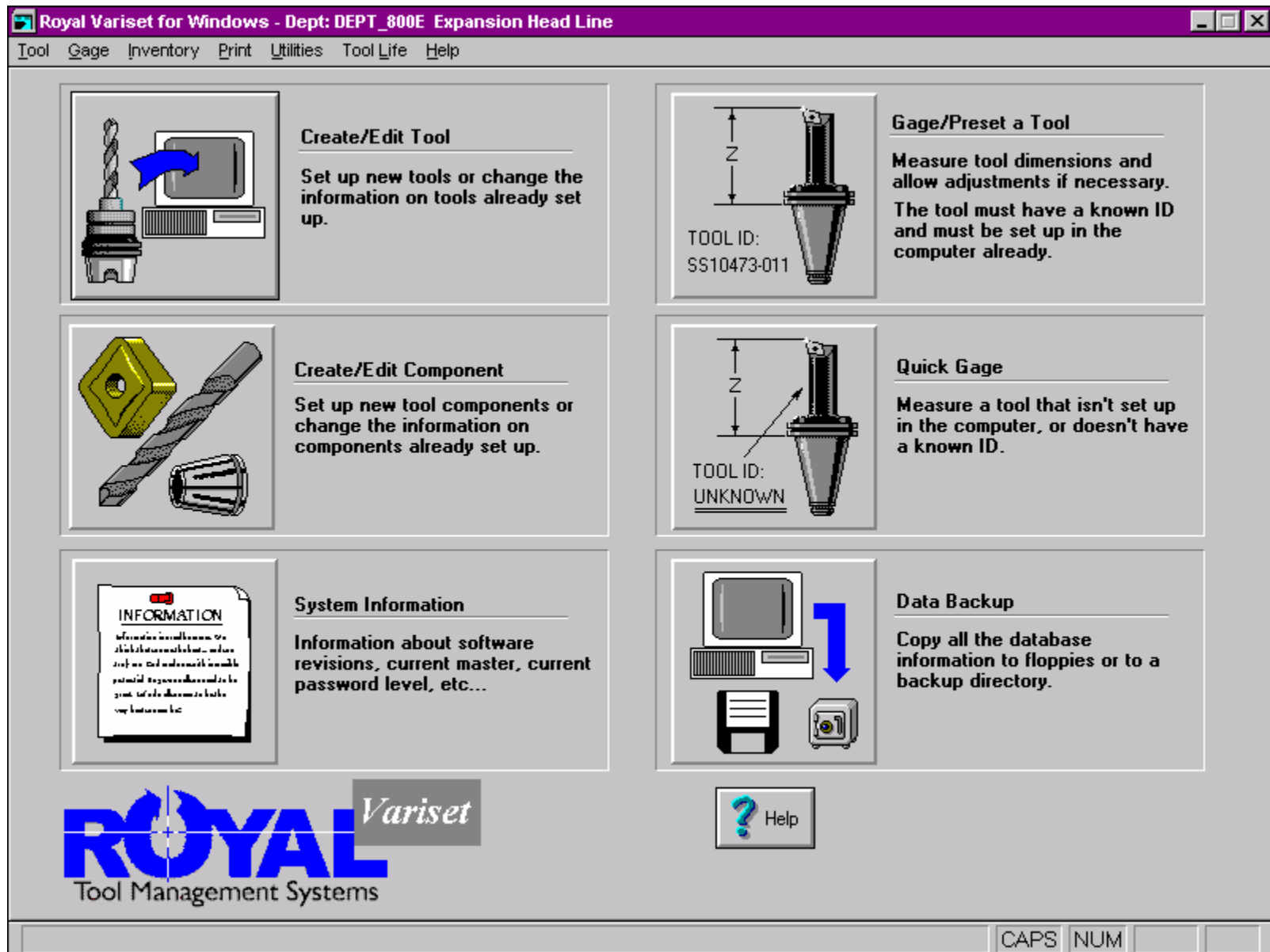
DRAWN BY DMB	CHECKED BY PJE	DATE 9/7/04	SCALE 1 : 16	SHEET 7 OF 1	DRAWING NO. M7547
-----------------	-------------------	----------------	-----------------	-----------------	----------------------

*VARISSET III*

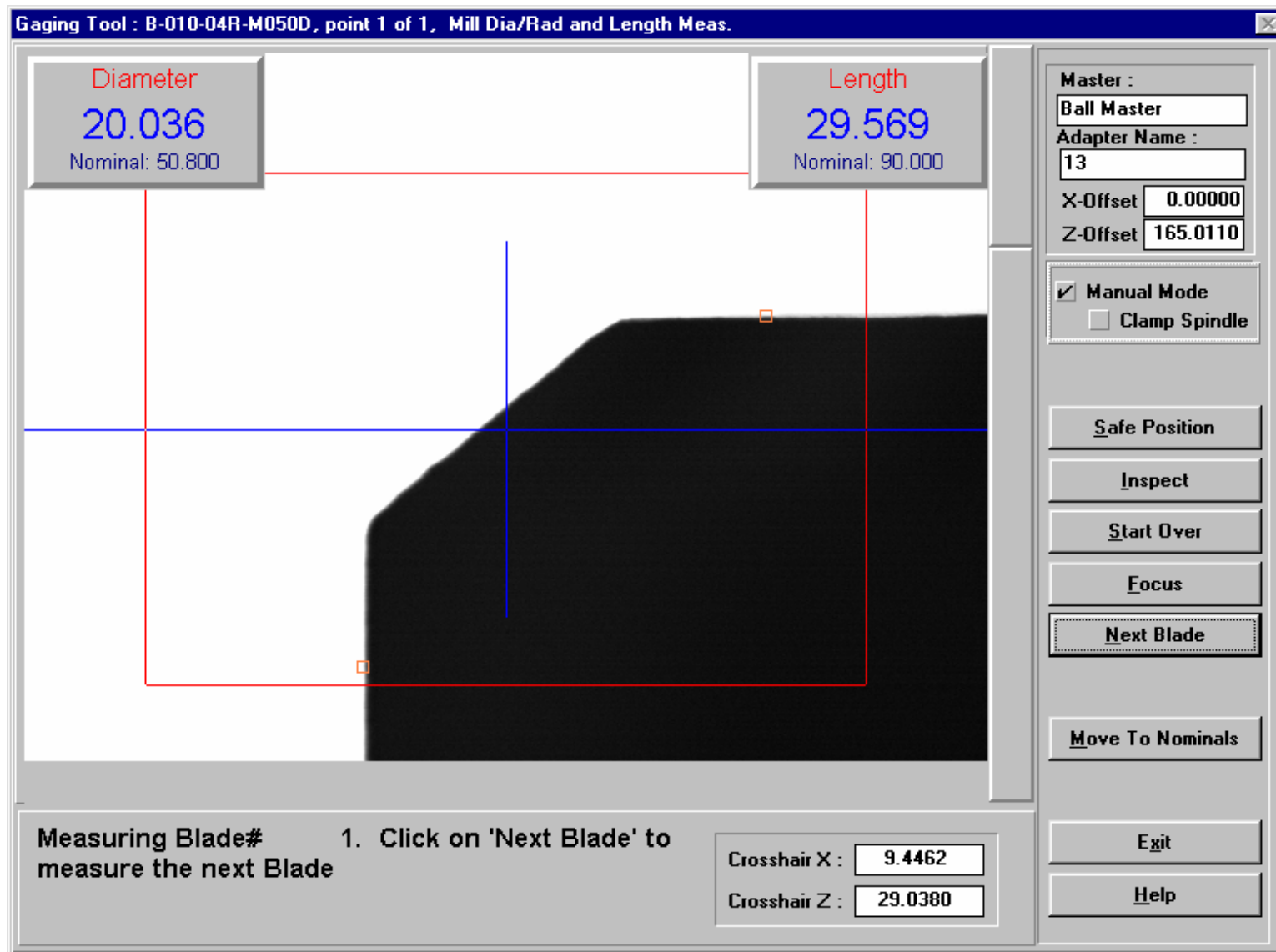
GAUGE SOFTWARE

OPERATOR

FRIENDLY

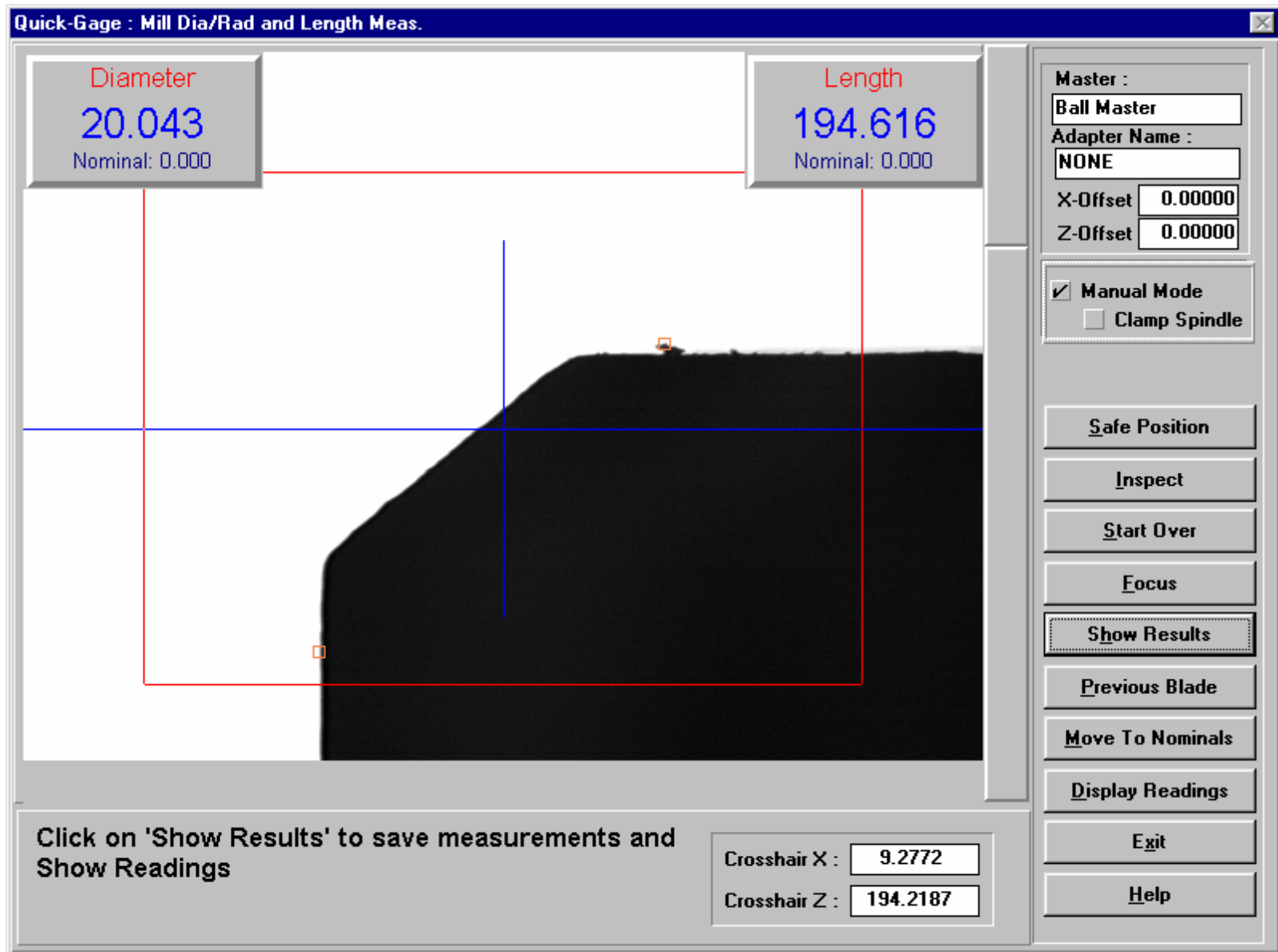


*VARISSET III*® THE SOFTWARE THAT SET THE STANDARD

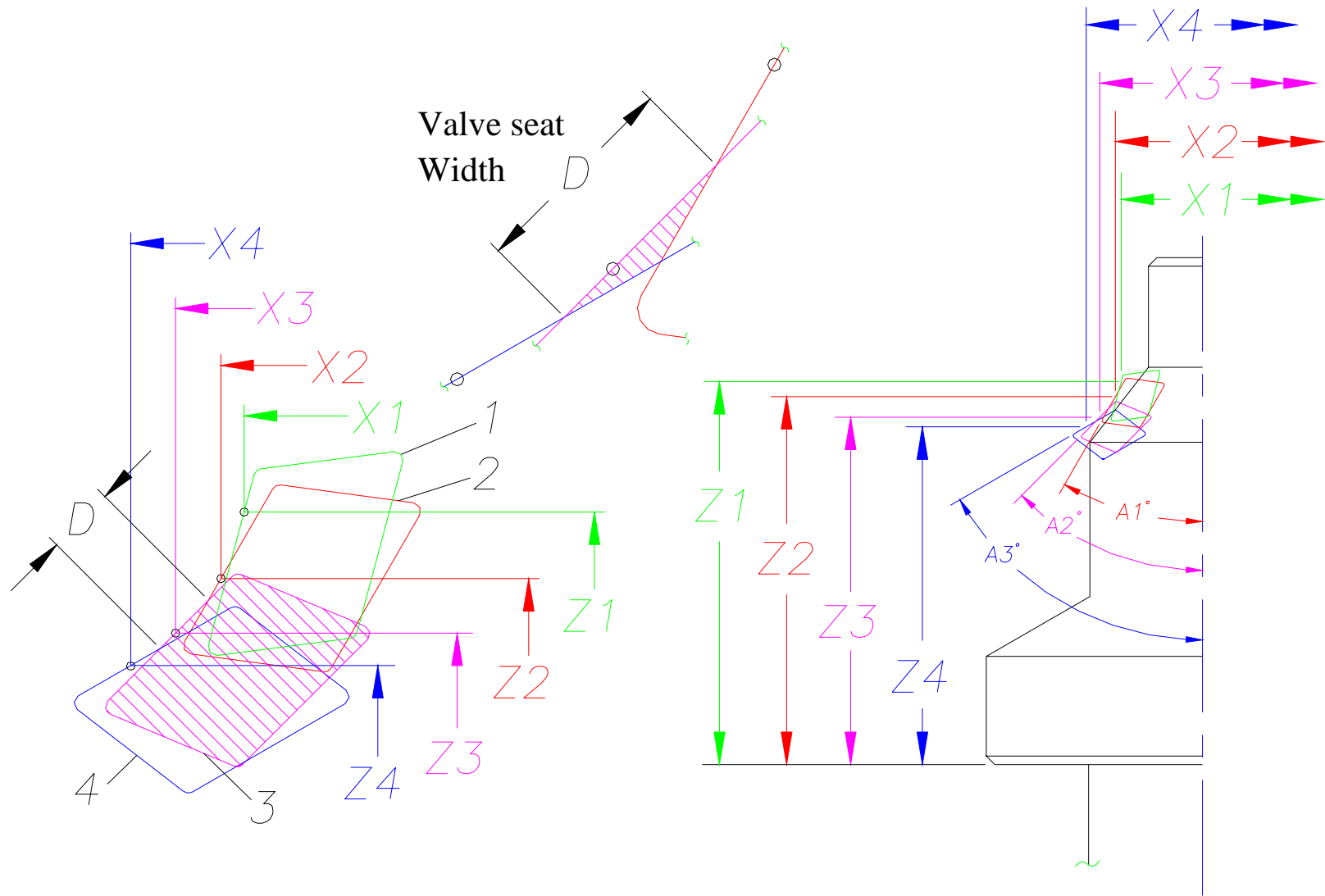


MEASUREMENT IS ACQUIRED ANYWHERE ON THE SCREEN.

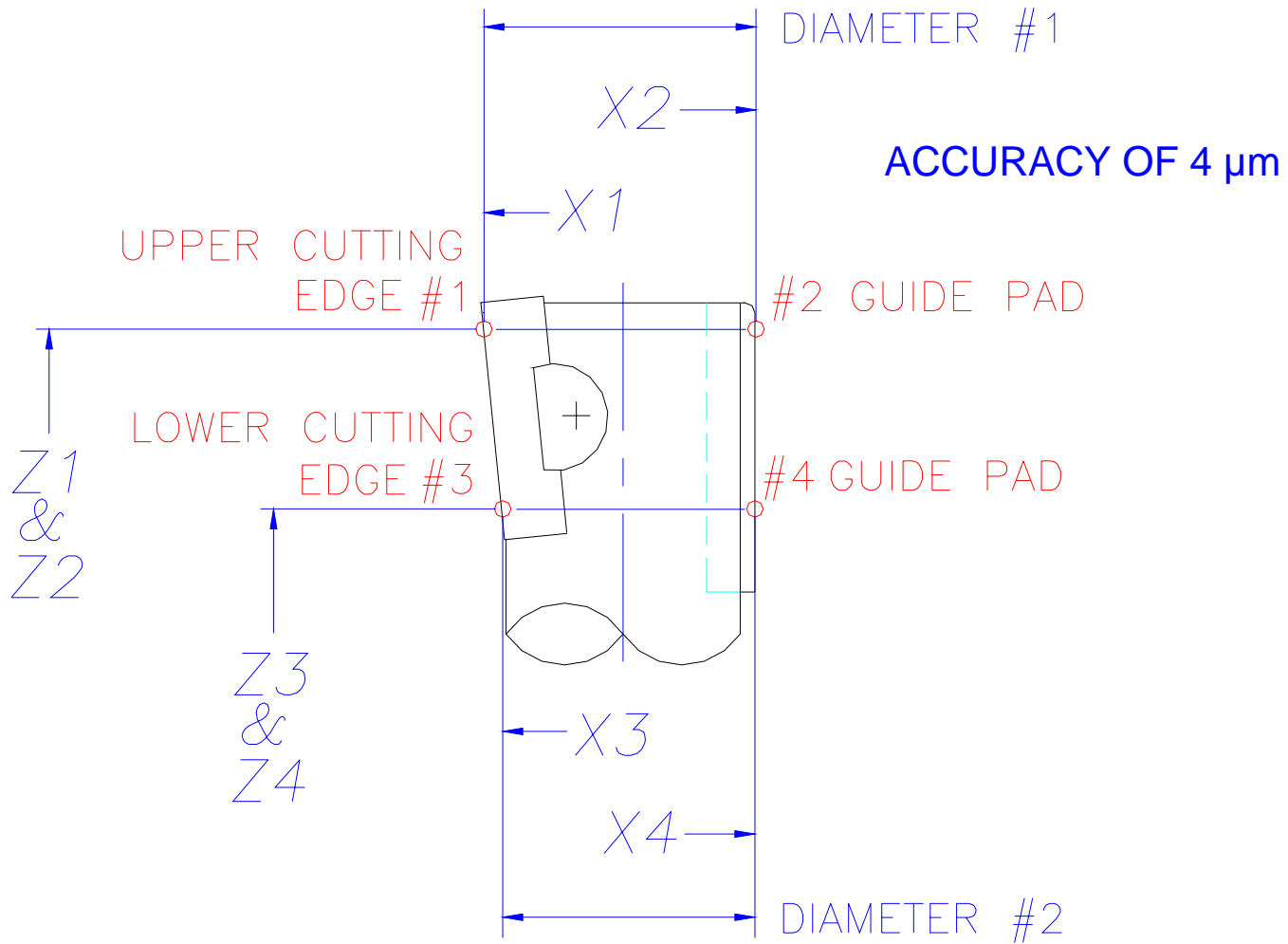
*FLYING BOXES*<sup>®</sup> INDICATE HIGH POINT



*FLYING BOXES*<sup>®</sup> PROVIDE INTELLIGENT OPERATOR FEED BACK.  
IDENTIFIES CONTAMINANT ON CUTTING EDGE



**VALVE SEAT TOOLING MEASUREMENT**



## MAPAL TOOL MEASUREMENT



The background of the slide is a classic marbled paper pattern, featuring a complex, organic design of swirling, interlocking shapes in shades of light beige, cream, and pale brown. The pattern is dense and covers the entire surface.

# SHRINK SOLUTIONS



ROYAL/BRINEY PRESETTING SHRINK UNIT

The background of the slide is a classic marbled paper pattern, featuring a complex, organic design of swirling, vein-like shapes in shades of light beige, cream, and pale brown. The overall effect is a textured, vintage aesthetic.

**TOOL MANAGEMENT  
SUPPORT  
EQUIPMENT**



TOOLING TRAYS IN A RAINBOW OF COLORS



CUSTOM DESIGN TRANSPORT TRAYS



TOOL STORAGE & TRANSPORTATION SOLUTIONS



TRANSPORT CARTS



PLATFORM AND CUSTOM CARTS





**CUSTOM HEAVY DUTY CABINETS**



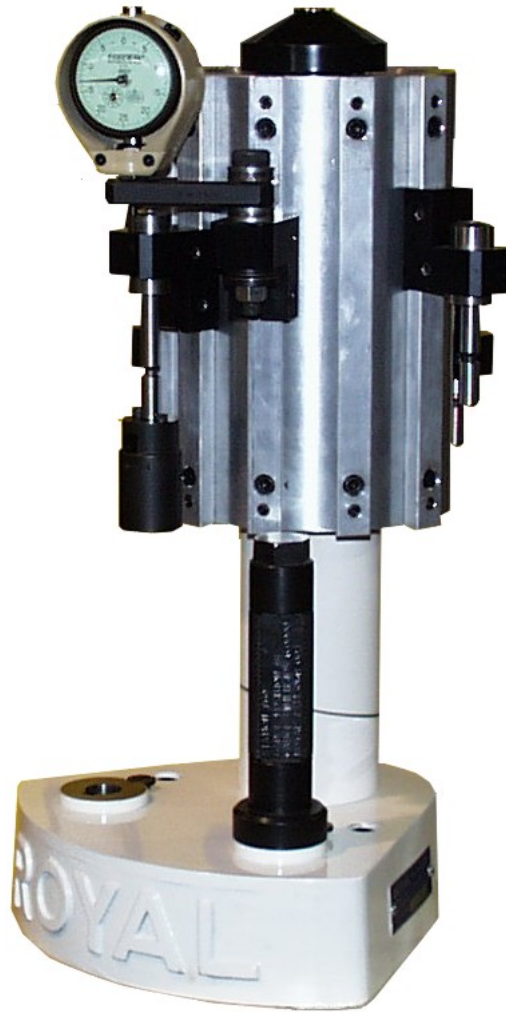
WORK BENCHES ~ ALL STYLES AND SIZES



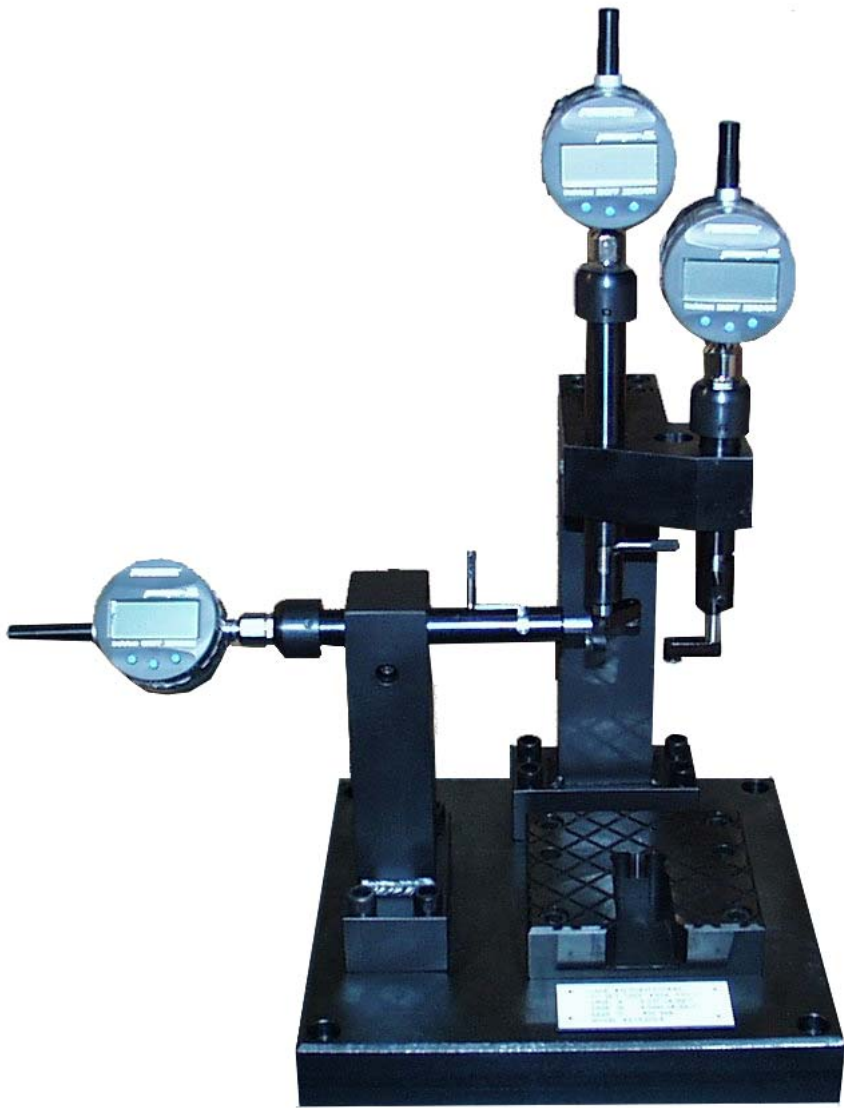
ON MACHINE TOOL STORAGE BRACKETS



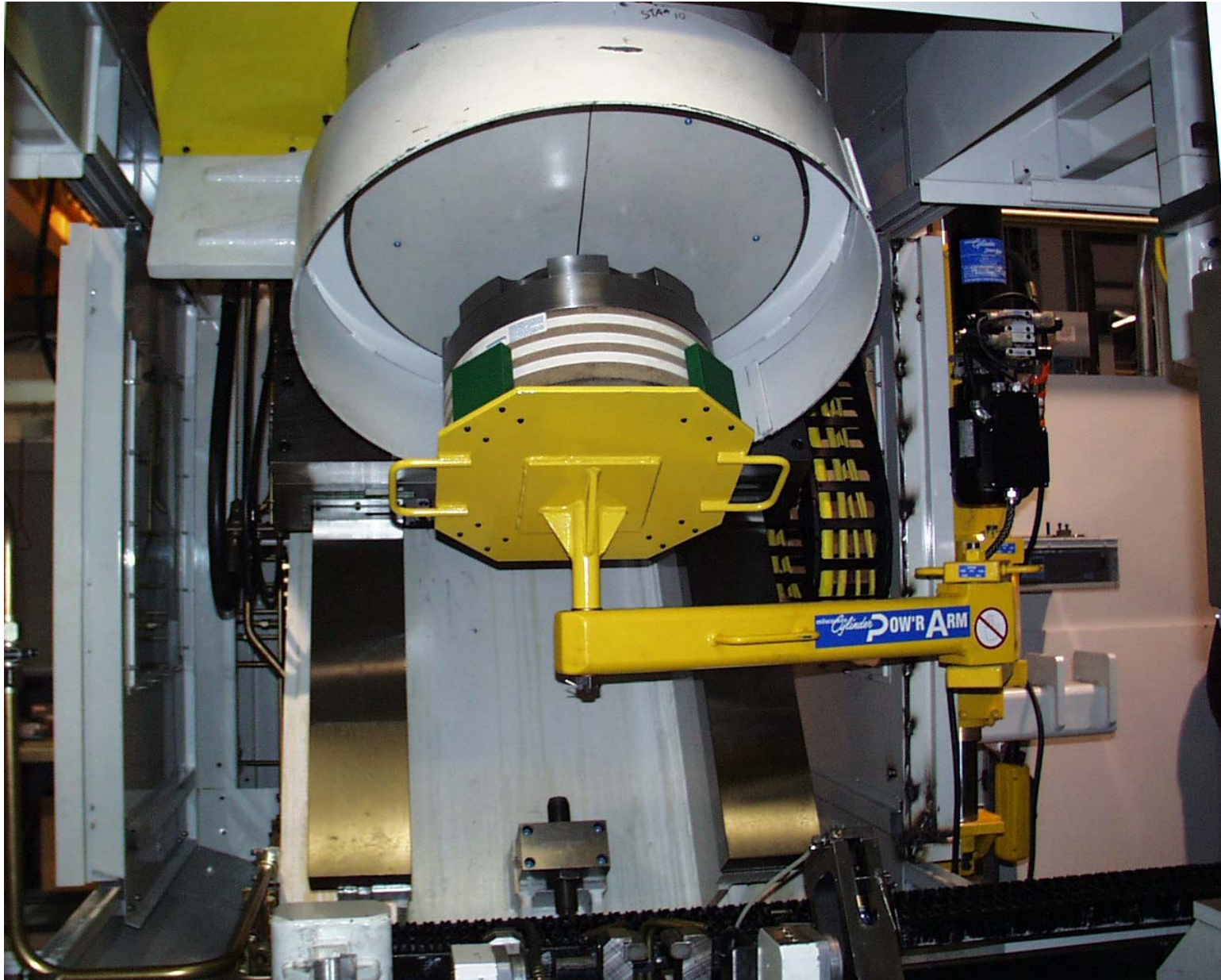
TOOL CONTROL BOARDS



TURRET GAUGES



BENCH MOUNTED INDICATOR GAUGES



CUTTER LOAD ASSISTS

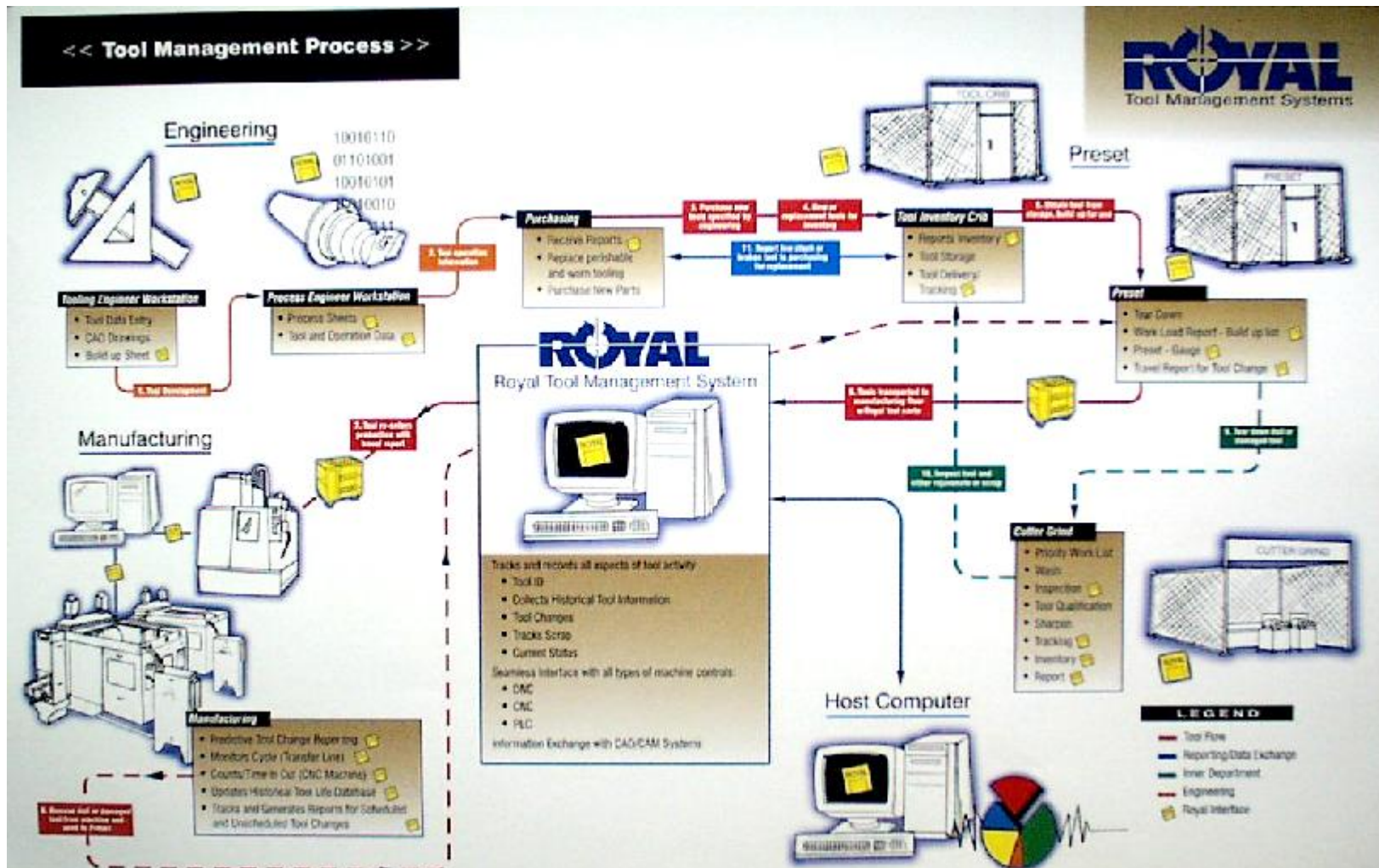


COMPLETE TOOL CRIBS



The background of the slide is a classic marbled paper pattern, featuring a complex, organic design of swirling, vein-like shapes in shades of light beige, cream, and pale brown. The overall effect is a textured, aged appearance.

# TOTAL TOOL MANAGEMENT PROCESS



## TOOL MANAGEMENT PROCESS

**THANK YOU FOR  
YOUR ATTENTION**

**WE WELCOME  
YOUR QUESTIONS  
AND COMMENTS**