THOME PRÄZISION

Special offer
## 3D-Measuring Machine SIGMA/TETA CNC

Covered guide tracks protected against damage, pollution and direct thermal effects.

Made in Germany

Granite guide of the highest quality secures high thermal stability, precision and mechanical rigidity. Through the high precision of the guides and the high quality of the surfaces the air consumption of the air bearings is minimised.

Joystick MCU 1 from Renishaw with 18 function keys and speed regulation.
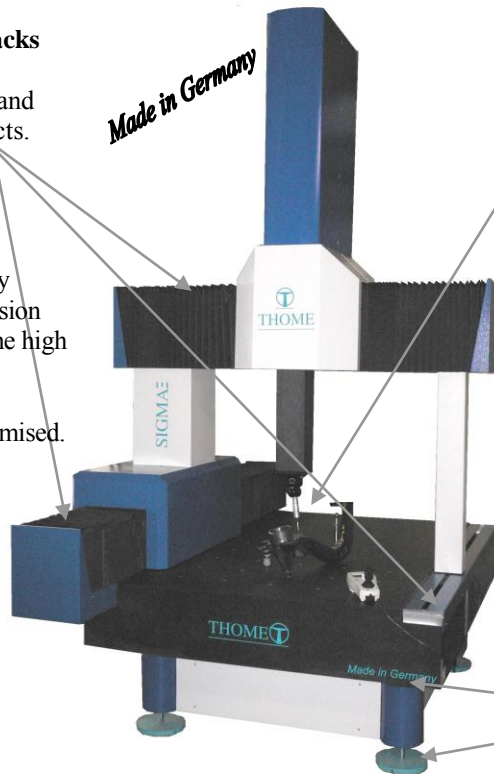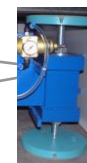
Probe Heads from Renishaw

a.) PH10T
Motorized turn- and rotateable probe head in 7,5°.

b.) PH20
5-Axis probe head with limitless positioning. Maximum time save through "head touch system."
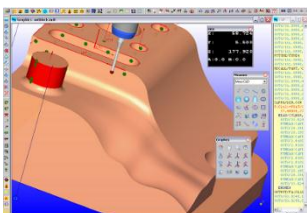
Probe changer MCR 20
Stores up to 6 probemodules.

Double passive vibration dumping is integrated in the underframe as a standard.

User friendly inspection software "CAPPS":

a.) CAPPS BASIC Plus
Measuring of geometrical elements against CAD model. CAD import available. Measuring of geometrical elements against CAD model. Digitize and scan curves from parts. 3D graphical display of all measured and
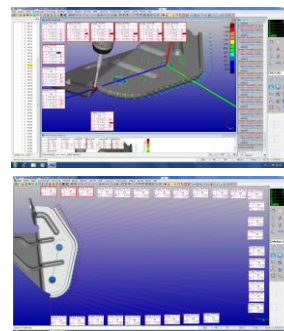
b.) CAPPS Advanced
Zusätzliche Funktionalität der Freiformflächenmessung. Messung von Kurven und Freiformflächen durch Tasten, Digitalisieren oder Scannen. Berechnen von Schnitten und Oberflächen aus den gemessenen Punktewolken bzw. Kurven. Die Soll/Ist-Vergleiche werden direkt im Protokoll übernommen sowie grafisch dargestellt

Machine delivery contains:

1. 3D-Coordinate Measuring Machine RAPID CNC - MPEe=2,2+L/350, MPEp=2,5µm
2. CNC-control unit and Joystick from RENISHAW
3. DELL PC, newest configuration, WINDOWS 7 professional, 22" TFT monitor, "ALL IN ONE" colour printer.
4. Motorized Probe Head PH10T/PH20 incl TP20 with 1 module and probe changer MCR20
5. 10 piece set of M2 stylus in a box, 1 calibration ball Ø25 with M8 thread

Further you will receive the following equipment according to your requirements:

Mostly Sold !

	Sig/Tet packet 1	Sig/Tet packet 2	Sig/Tet packet 3	Sig/Tet packet 4
Software CAPPS	BASIC+	BASIC+	ADVANCED	ADVANCED
Probe	**PH10T**	**PH20**	**PH10T**	**PH20**
Messbereich 1.200x800x700	**72.990 €**	**74.990 €**	**75.490 €**	**77.490 €**
Messbereich 1.500x1.000x700	**78.990 €**	**80.990 €**	**81.490 €**	**83.490 €**
Messbereich 2.000x1.000x800	**89.990 €**	**91.990 €**	**92.490 €**	**94.490 €**

*Prices are Ex work / Training, installation, travel expenses are not included / Warranty period: 12 months.
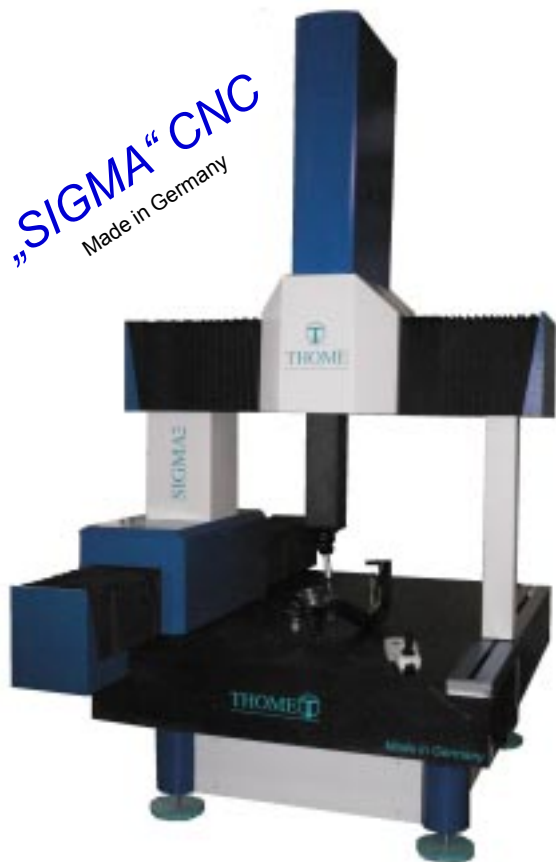**The Offer is valid until 30.06.2013.**

3D Measuring Machine SIGMA / TETA CNC

"SIGMA" CNC
Made in Germany

Flexibility of the Measured Areas in all Axes

The new generation of our 3D measuring machines SIGMA / TETA is characterized in particular by the highest precision, robustness, and the fact that it is to a large extent maintenance-free. All guides are manufactured from precious granite and cut and lapped with the highest precision. Upon request, ceramic guides of the highest quality can be supplied as well. Thus the measuring machine gains in dynamics and rigidity. The thermal stability and high precision of the guides guarantee the most accurate measuring results, even without the use of software compensation. Double passive vibration damping is integrated in the devices as a standard. Upon request, the machines can be equipped with active vibration damping through air spring insulators. This improves the damping of low frequency vibrations in particular. Our consistent modular component system allows the combination of any axis lengths. We would be pleased to assemble your individually tuned machine for you.

Reliability and Precision at a Top Price

As a standard, optimized air bearing precision guides of all axes are enclosed. All guideways are thus protected against damaging, dirt, and direct thermal influences. Especially the solid covering of the two table guides offers optimal protection against damaging during the loading and unloading of the machine. Highly dynamic servo drives and highly rigid belt drives free from wear guarantee an optimal positioning performance.
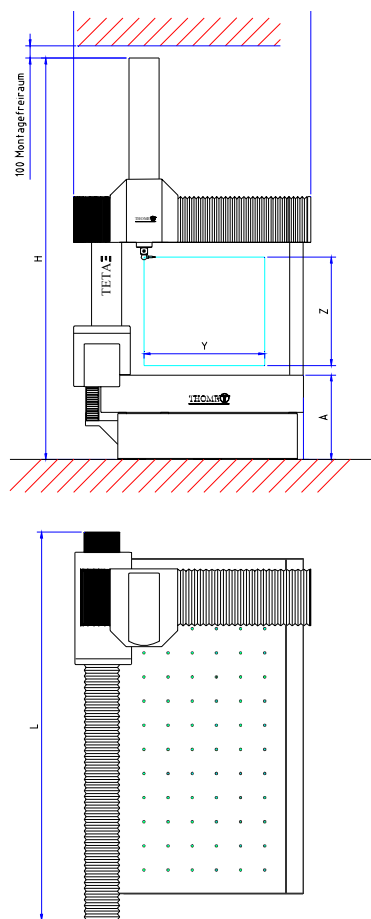
Technical Data:

Measuring Area	SIGMA				TETA			
x-Axis [mm]	1000	1200	1500	2000	1200	1500	1800	2400
y-Axis [mm]	800 / 900				1000 / 1100			
z-Axis [mm]	700 / 800 / 900				800 / 900 / 1000			
Weight [kg]	2800 for Y=800 2950 for Y=900	3000 for Y=800 3200 for Y=900	3350 for Y=800 3600 for Y=900	4000 for Y=800 4300 for Y=900	4050 for Y=1000 4300 for Y=1100	4550 for Y=1000 4830 for Y=1100	5000 for Y=1000 5300 for Y=1100	6300 for Y=1000 6800 for Y=1100
Permitted Weight of Workpieces [kg]	1000	1100	1200	1400	2000	2200	2300	2800
Length [mm]	2215	2415	2715	3215	2415	2715	3015	3615
Width [mm]	(for y 800) 1765, (for y 900) 1865				(for y 1000) 1965, (for y 1100) 2065			
Height (H) [mm]	3228				3328			
Table Height (A) [mm]	700							
Measurement accuracy [µm]	ISO 10360-2: MPEE 2,2 + (L/350) ; MPEP=2,2 mit TP200							
Resolution	0,0001mm							
Set-up Speed	0 bis 80mm/s							
max. Speed	max. v = 400mm/s							
max. Acceleration	a = 1000mm/s²							
Temperature for Guaranteeing Accuracy	20°C +/-2°C, max 1°C per hour / 1.5°C per day							
Air Consumption	25l/min, air quality pre-cleaned according to ISO 8573 Class 2							

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3D-Measuring Machine „SIGMA / TETA" CNC

Your advantage:

Highest precision, robustness, thermical stability and highest stiffness are guarantee through fine guide-materials like granit or ceramic. Optimized airbearings ensure perfect, mechanical accuracy.

Belt drive in all axis. Belt drives crossed by steel cords guarantee the highest rigidity at the lowest wear. That makes the measuring machine largely maintenance-free.

Big center-sleve cross section with that optimized support against rotation around the Z-axis. Ideal for long stylies useable. Additional finelly controlled, pneumatical weight balance of the Z-axis.

„TETA" CNC
Made in Germany

Modern, flexibel probe systems All probe systems (taktil, scanning and optical) from Renishaw also the accompanying changers could be used. Point and surface laser could be adapted also.
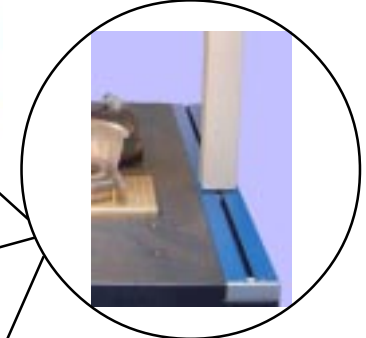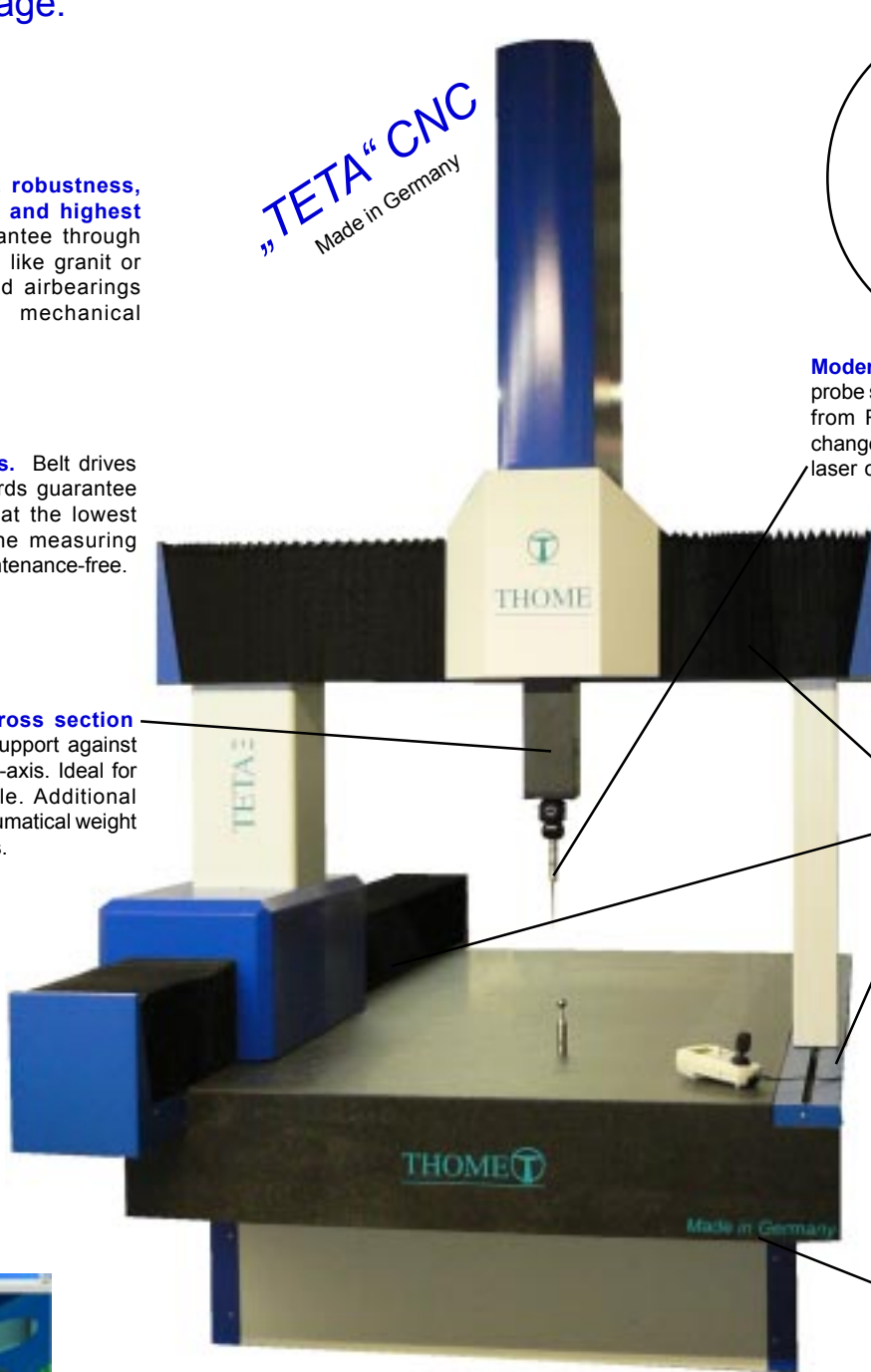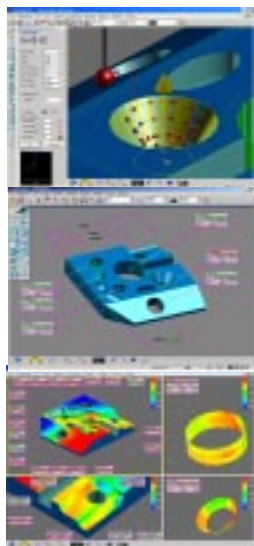
Enclosed guide-ways Protect against dirt and thermical factors. The additional closed table guide moreover protect the machine during loading up the workpieces.

Double passive vibration dumping is the standard deviation integrated in the support. With that the Measuring machine is also good to use into the manufacturing sector. Active air vibration dumpers are also adaptionaly.
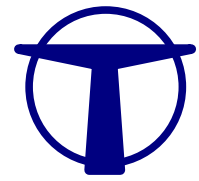
Click and Control "Measuring has never been easier"

The new measuring software CAPPS is ideally suited for the measurement of all ruled geometries, freeform surfaces, and dynamic scanning. Measuring elements can be clicked and measured directly on the screen. In doing so, the generation of the measuring program takes place completely automatically in the background. The traverse paths are displayed on the screen and can be easily adjusted by the user if need be. Measuring against a set of data is turned into child's play. Extensive strategies for the measurement of point aggregates, individual surfaces, or groups of surfaces are available. The results are displayed directly online on the screen and can also be processed as a color mapping. Thus, the user quickly recognizes immediate problem zones. Other highlights are the automatic probe calibration, an interactive online help, graphic collision protection, a simple log editor, a clearly arranged element database, integrated log masters in graphic and table form, and the import of all commoon CAD formats such as CATIA, UNIGRAPHICS, ProE, Parasolid, VDA, IGES...


THOME PRÄZISION

Powerful inspection Software CAPPS

CAPPS was developed to be an upwardly mobile metrology software with a strong graphics engine, complete CAD capability, a powerful programming language with DMIS and tree view structure as well as a flexible reporting environment. With over 20 years of evolution, CAPPS has been one of the leader in CAD based measurement software. CAPPS offers several software levels serving specific needs of customers.

CAPPS is available in 3 separate versions. Each designed to meet the particular needs of its users.
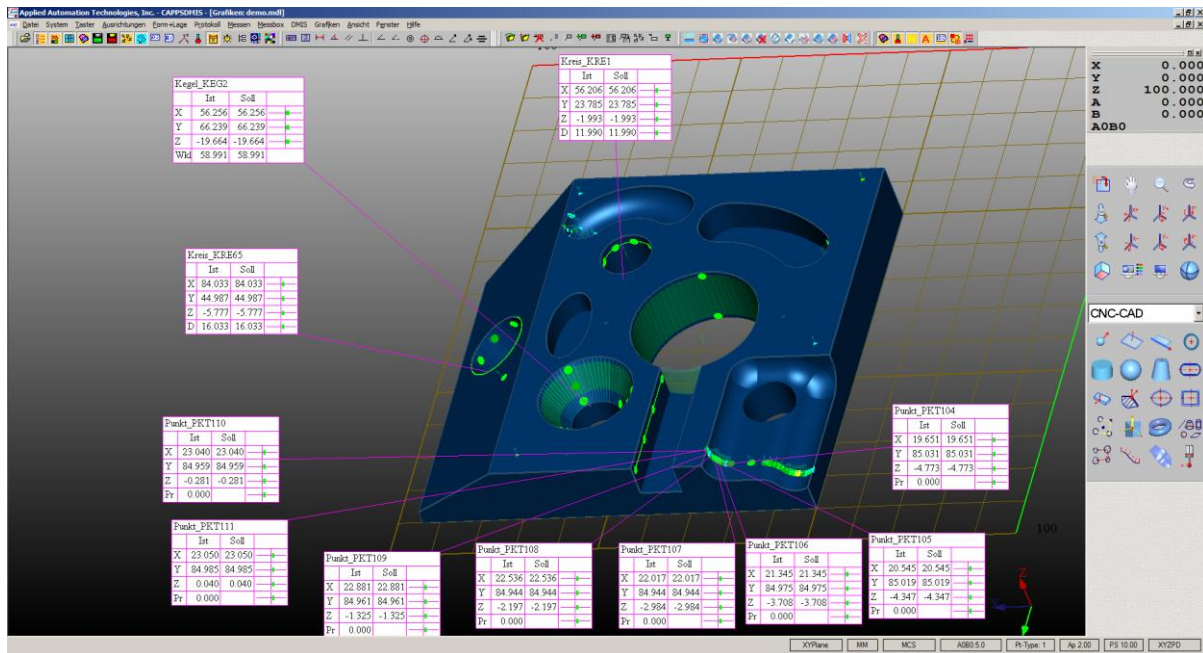
CAPPS PS (Powerfully Simple)

Measurement of all standard geometric entities: **POINT, PLANE, LINE, CIRCLE, SPHERE, CYLINDER, CONE, ELLIPSE, TORUS, EDGE, SLOT, ANGLEPT, CORNER POINT without any need for CAD/CAM data**.

Automatic feature detection during manual measurement.

Constructions of geometric and user defined entities: **BESTFIT, INTERSECT, MIDFEAT, TANGENT, PERPENDICULAR, PARELLEL, PROJECT, MOVE**.
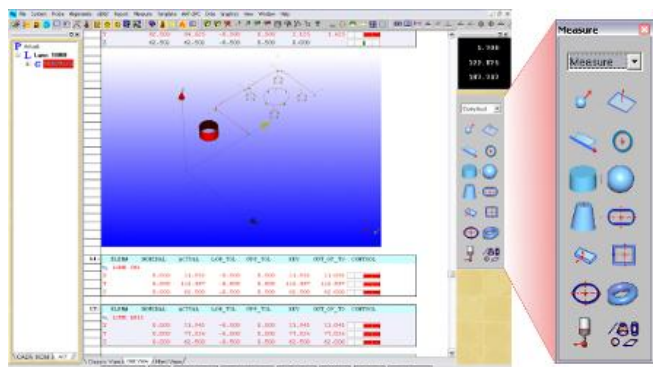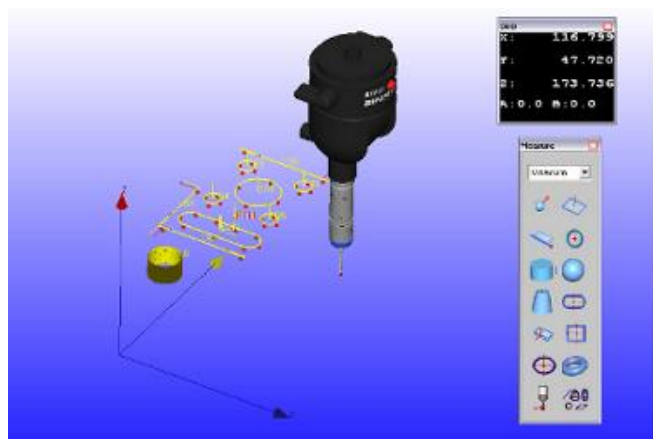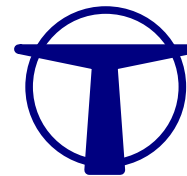
GD&T Tolerance and Report Generation: All geometric **FORMS, DISTANCE, ANGLE, PARALLELISM, PERPENDICULARITY, ANGULARITY, TRUE POSITION, PROFILE, RUNOUT**.

Alignment options: **SETUP, TRANSLATE, ROTATE, MIRROR, SAVE, RECALL**.

Probe Calibrations: Automatic probe calibrations, for fixed or indexable probe heads.
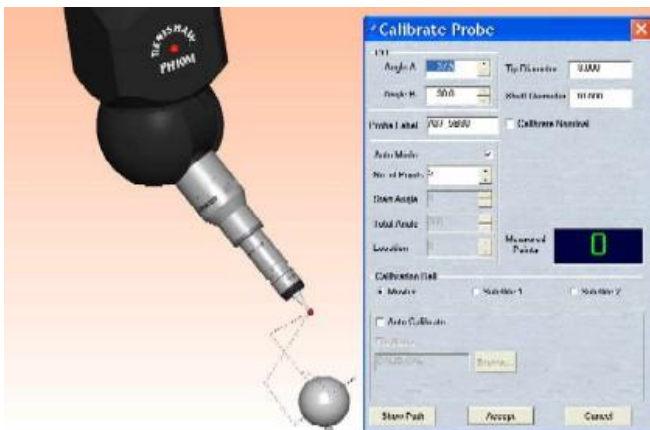
THOME PRÄZISION

Advanced alignment options: MGP, Simple 3-2-1 alignment macro for fixtureless parts.

Teach part programs in DMIS language

Programming window in DMIS or TREE view.

Execute programs: LOOP, Automatic, Manual, User prompts

Generate inspection reports automatically with text and graphics

Update inspection reports for different ALIGNMENT, TOLERANCE

Insert Bitmaps,Re-Synchronize Labels in the Report Window.

Save inspection programs, inspection projects and measured data.

3D graphical display of all measured and nominal features.

Real time display of PROBE, Coordinate Systems, Calibration sphere in 3D

Configurable and programmable view commands

Graphical User Interface includes menus and toolbars.

3D graphics interface with easy to use short keys and toolbars.

This software can be updated to advanced Level which includes CAD Interface

ELEM#	SOLLWERT	ISTWERT	U_TOL	O_TOL	ABW	AUSSERH.	TENDENZ
EBENE EBE1 [MCS]							
Ebenheit		0.011		0.020			
DEMO ** DEMO ** DEMO** Demo Software							

ELEM#	SOLLWERT	ISTWERT	U_TOL	O_TOL	ABW	AUSSERH.	TENDENZ
Innen KREIS KRE1 [WKS1-MT]			Hallo Klaus				
X	56.210	56.209	-0.200	0.200	-0.001		
Y	23.790	23.781	-0.200	0.200	-0.009		
Dur	12.000	12.009	-0.050	0.050	0.009		
Rundheit		0.018		0.050			
DEMO ** DEMO ** DEMO** Demo Software							

ELEM#	SOLLWERT	ISTWERT	U_TOL	O_TOL	ABW	AUSSERH.	TENDENZ
Innen KEGELKEG1							
X	56.213	56.196	-0.200	0.200	-0.017		
Y	66.213	66.195	-0.200	0.200	-0.018		
Angle	60.000	60.175	-0.200	0.200	0.175		
Form		0.004		0.050			
DEMO ** DEMO ** DEMO** Demo Software							

ELEM#	SOLLWERT	ISTWERT	U_TOL	O_TOL	ABW	AUSSERH.	TENDENZ
PUNKT PKT1 [WKS1-MT]							
X	3.058	3.145	-0.200	0.200	0.087		
Y	52.134	52.110	-0.200	0.200	-0.024		
Prof	-0.000		-0.025	0.025			
DEMO ** DEMO ** DEMO** Demo Software							

THOME
PRÄZISION
Datum:28.9.2012
Zeit:14:40:49
KMG:Demopart
Anwender:M. Thome
Teil Nr.:567
Teilename:123
Kommentar:Demo

Physikalisch-Technische Bundesanstalt   PTB

Braunschweig und Berlin

Bericht
Report

Gegenstand: Auswertesoftware für Koordinatenmessgeräte
Object   Evaluation software for coordinate measuring machines

Hersteller: Applied Automation Technologies, Inc. - USA
Manufacturer

Typ: CAPPS - Computer Aided Part Programming System
Type   Version 5.1

Geräte-Nr.:   ----
Serial number

Antragsteller: Applied Automation Technologies, Inc. - USA
Applicant

Anzahl der Seiten des Berichtes: 4
Number of pages of the report

Geschäftszeichen: 5.32-01.94
Reference No.

Prüfzeichen: ----
Test mark

Datum der Prüfung: 21. September 2001
Date of test   21 September 2001

Im Auftrag   Braunschweig, 22. November 2001
By order   22 November 2001

Dr.-Ing. H. Schwenke   Siegel
                        Seal

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THOME PRÄZISION

CAPPS-BASIC+

Measurement of all standard geometric entities: **POINT, PLANE, LINE, CIRCLE, SPHERE, CYLINDER, CONE, ELLIPSE, TORUS, EDGE, SLOT, ANGLEPT, CORNER POINT, CURVES, SURFACES.**

Automatic feature detection during manual measurement.

Constructions of geometric and user defined entities: **BESTFIT, INTERSECT, MIDFEAT, TANGENT, PERPENDICULAR, PARELLEL, PROJECT, MOVE.**

GD&T Tolerance and Report Generation: All geometric **FORMS, DISTANCE, ANGLE, PARALLELISM, PERPENDICULARITY, ANGULARITY, TRUE POSITION, PROFILE, RUNOUT.**

Alignment options: **SETUP, TRANSLATE, ROTATE, MIRROR, SAVE, RECALL.**

Probe Calibrations: Automatic probe calibrations, for fixed or indexable probe heads.

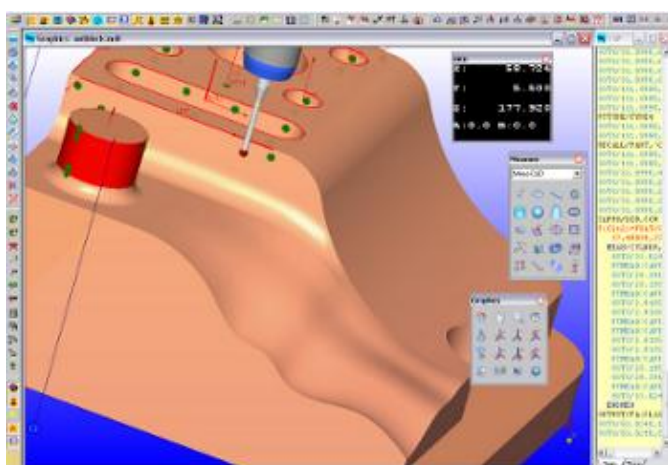Advanced alignment options: MGP, Simple 3-2-1 alignment macro for fixtureless parts.
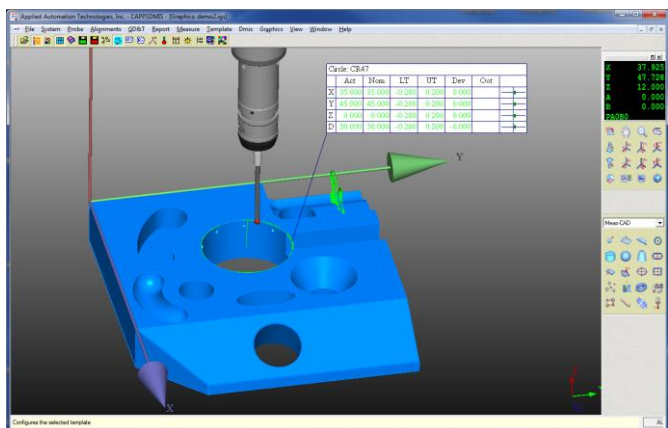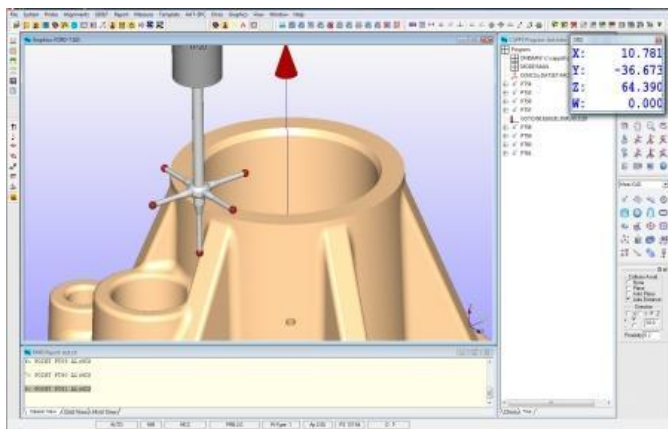
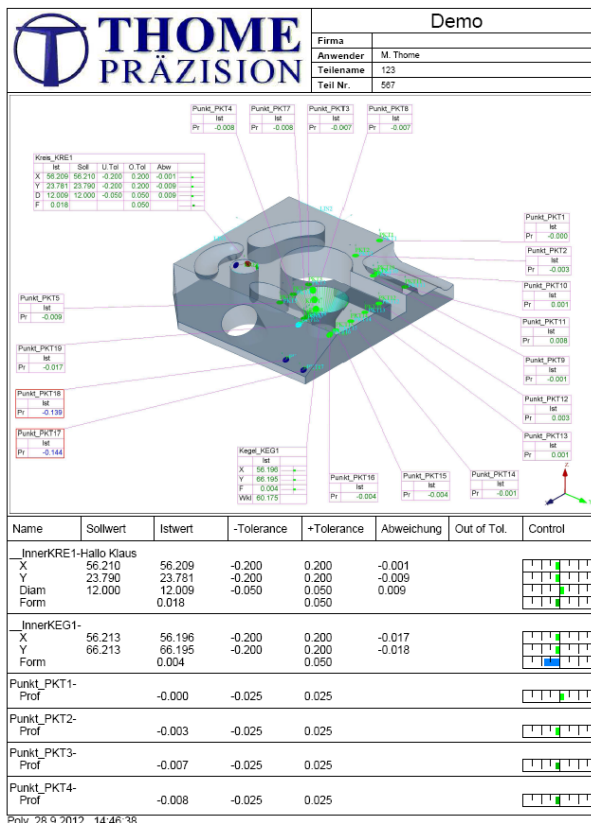Advanced alignment macros: CAD-MGP, 3D SMART 321
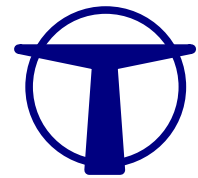
☐ Import **Wire-Frame** CAD models from IGES and STEP: Wire frame, surface or Solid models.

☐ Teach part programs in DMIS language

☐ Programming window in DMIS or TREE view.

Standard DMIS Engine: Create Part Programs in Native DMIS Language with advanced Capps-DMIS Commands, variable and macro support.

☐ Execute programs: LOOP, Automatic, Manual, User prompts

☐ Generate inspection reports automatically with text and graphics

☐ Update inspection reports for different ALIGNMENT, TOLERANCE

☐ Insert Bitmaps,Re-Synchronize Labels in the Report Window.

☐ Save inspection programs, inspection projects and measured data.

☐ 3D graphical display of all measured and nominal features.

☐ Real time display of PROBE, Coordinate Systems, Calibration sphere in 3D

☐ Configurable and programmable view commands

☐ Graphical User Interface includes menus and toolbars.

☐ 3D graphics interface with easy to use short keys and toolbars.

Advanced Nominal Data extraction for geometrical

THOME PRÄZISION

features from wire-frame only.
Added AAT-AUTOCAL Creator Module: Create Probe List Files, Mirror Probe Angles, Configure Probe Labels and Probe Lengths and simulate and calibrate Probes in DCC Mode.
AAT MDL Creator Module: Automatic translation of CAD files into
CAPPS with a choice of different levels of shading quality.

CURVES:

☐ Digitize and scan curves from parts

☐ Create NURB spline data from scanned data

☐ Export all measured data into IGES model
Measure-CAD: Automatic measurement in Learn Mode.

☐ Create automatic probing paths and measured any geometrical features

☐ Teach measurement paths from CAD data and measure automatically

Sheet Metal Feature measurement commands.
RELATIVE measurement commands for SLOT, HOLE, BOSS, EDGE and TRIM Points
Hole Search and Locate options to measure small holes with large deviations
Layer and color tree view for all data, CAD, Actual, Nominals and DMIS.
Offline Programming and Program Simulation Tools
Create nominal probe calibration commands and Create DMIS programs to automate Master Ball Measurement and Probe Calibration Routine.
Accelerated part programming with Large/Multiple CAD files
EXCEL and WEB HTML export with report files
Advanced Scanning and Digitizing methods

CAPPS-ADVANCED

MEASUREMENT OPTIONS:

☐ Measurement of all standard geometric entities: **POINT, PLANE, LINE, CIRCLE, SPHERE, CYLINDER, CONE, ELLIPSE, TORUS, EDGE, SLOT, ANGLEPT, CORNER POINT, CURVES, SURFACES.**

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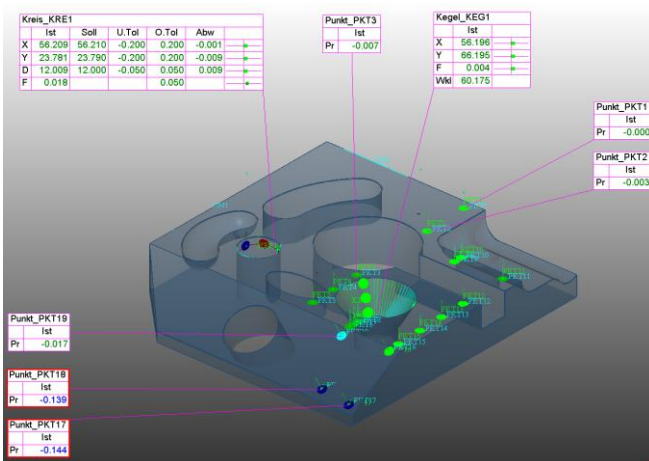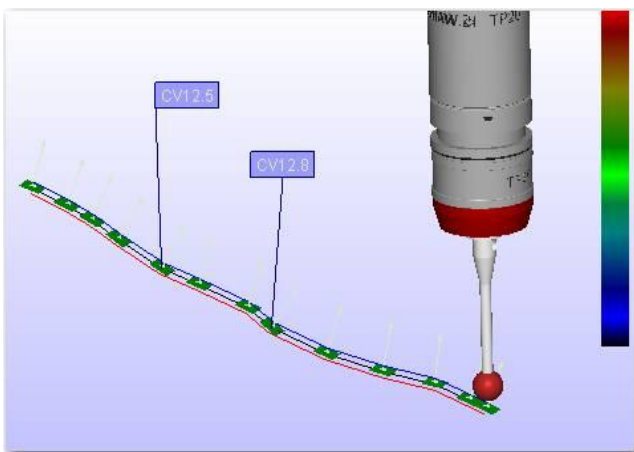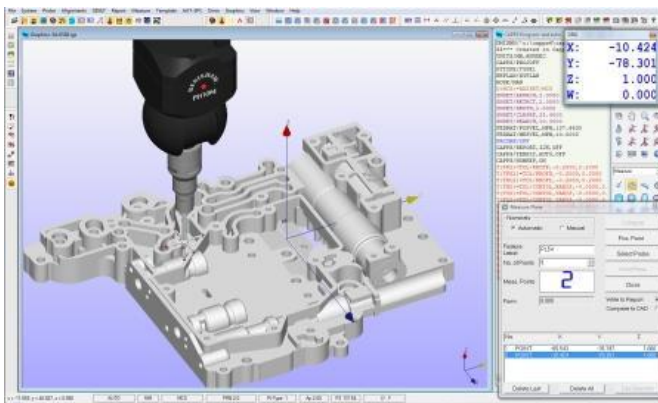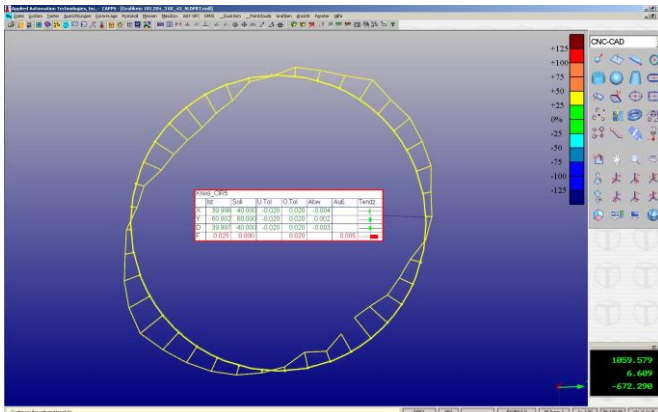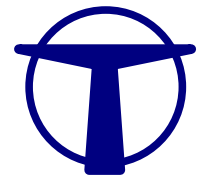
ANGULARITY, TRUE POSITION, PROFILE, RUNOUT, SYMMETRY.

☐ Automatic feature detection of any feature.
☐ Sheet metal relative measurement commands, hole search and locate options.
☐ Vector build and automatic path correction.
☐ Material thickness, part shrinkage options.

CURVE & SURFACE OPTIONS:

☐ Create surface sections by cutting surface at body lines.
☐ Grid Points Generation of U-V lines on surfaces.
☐ Measure points on all or selected surfaces
☐ Generate nominal data for points or geometrical on surface models
☐ Create wire-frame from surface data
☐ Automatically create all nominal data from surfaces
☐ Extract nominal data for points and geometry during manual measurement
☐ Options to extend and offset surfaces
☐ Generate data on surfaces at trim lines

ALIGNMENTS:

☐ Alignment options: SETUP, **TRANSLATE, ROTATE, MIRROR, SAVE, RECALL**.
☐ Advanced alignment options: **MGP, 3-2-1, 3D Bestfit**.
☐ Iterative alignments with iteration on CAD or by re-measuring part
☐ Apply alignment on CAD models

PROBE CALIBRATIONS:

☐ Automatic probe calibrations, for fixed or index able probe heads.
☐ Works with PH10, Manual indexable heads, MH20i, RTP20
☐ Analog probe calibrations for SP25, SP600, SP80
☐ Automatic probe definitions using probe model files.
☐ Support for star stylus configurations
☐ Extract probe calibration data from DMIS to auto calibrate.
☐ Calibrate probes in the middle of programs or executions.
☐ Auto calibrate using DMIS program
☐ Support for MCR, SCR, FCR, ACR tool changers using tool/tip changer option.

CAD IMPORT OPTIONS:

☐ Import CAD models from IGES and STEP: Wire frame, surface or Solid models.
☐ Direct CAD import options available for CATIA, UG, ProE, Parasolid, VDA at extra charge

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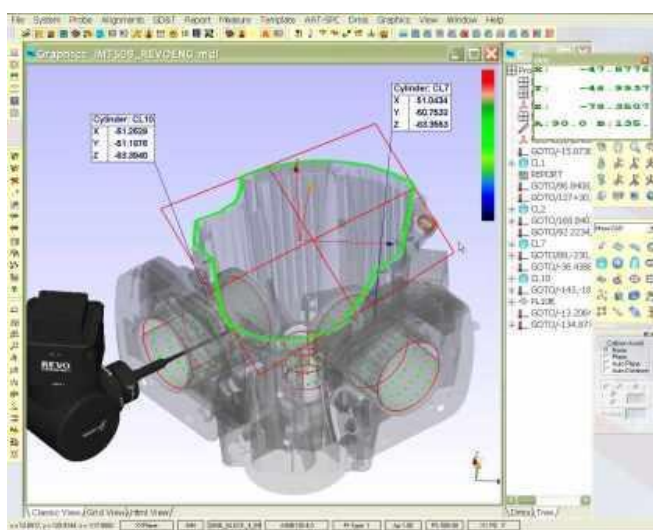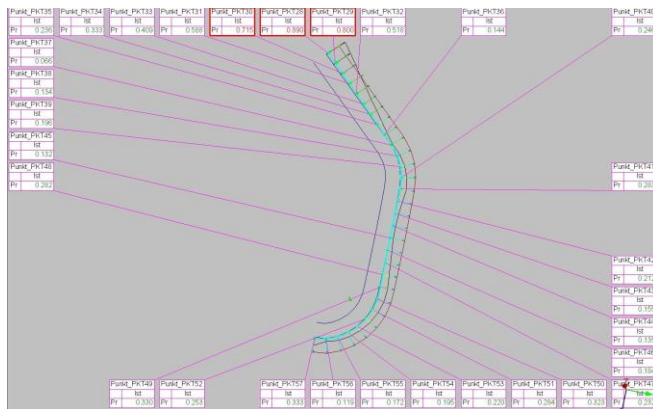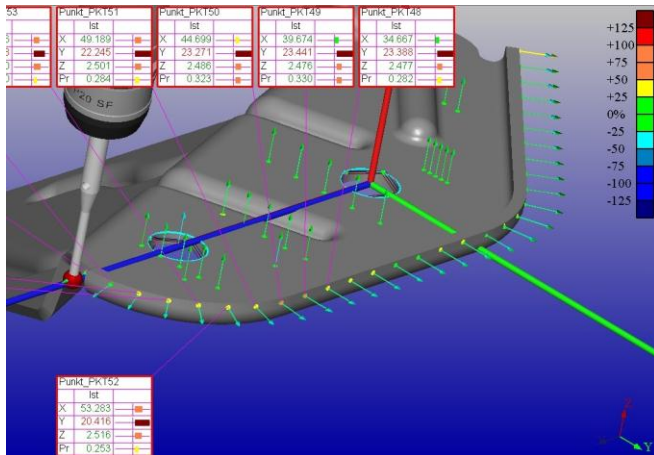
- ☐ Teach part programs in DMIS language from CAD or accept CMM programs in DMIS language
- ☐ Layer and color tree view for all data, CAD, Actual, Nominals and DMIS.
- ☐ Ability crate layers, colors, hide or delete.
- ☐ Change CAD model alignments, mirror and copy.
- ☐ Save imported models into AAT MDL format or export to IGES, or STEP.

PROGRAMMING OPTIONS:

- ☐ Automatic point and click on surfaces to measure any point
- ☐ Group many features to generate automatic measurement routines
- ☐ Measure 2D features automatically by graphically adjusting measurement parameters.
- ☐ Real time display of programming window in DMIS or TREE view.
- ☐ **Advanced Collision Detection:** Detect and Avoid possible part
- ☐ collision. Automatically insert clearance points to avoid collision
- ☐ Offline Programming and Program Simulation Tools
- ☐ Teach part programs in DMIS language
- ☐ Programming window in DMIS or TREE view.
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Standard DMIS Engine: Create Part Programs in Native DMIS Language with advanced Capps-DMIS Commands, variable and macro support.

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- ☐ Insert Bitmaps,Re-Synchronize Labels in the Report Window.
- ☐ Save inspection programs, inspection projects and measured data.
- ☐ 3D graphical display of all measured and nominal features.
- ☐ Real time display of PROBE, Coordinate Systems, Calibration sphere in 3D
- ☐ Configurable and programmable view commands
- ☐ Graphical User Interface includes menus and toolbars.
- ☐ 3D graphics interface with easy to use short keys and toolbars.

Advanced Nominal Data extraction for geometrical

THOME PRÄZISION

features.

Added AAT-AUTOCAL Creator Module: Create Probe List Files, Mirror Probe Angles, Configure Probe Labels and Probe Lengths and simulate and calibrate Probes in DCC Mode.

AAT MDL Creator Module: Automatic translation of CAD files into CAPPS with a choice of different levels of shading quality.

SURFACE OPTIONS:
☐ Create surface sections by cutting surface at body lines.
☐ Grid Points Generation of U-V lines on surfaces.
☐ Measure points on all or selected surfaces
☐ Generate nominal data for points or geometrical on surface models
☐ Create wire-frame from surface data
☐ Automatically create all nominal data from surfaces
☐ Extract nominal data for points and geometry during manual measurement
☐ Automatically recognize geometry from surfaces during measurements

CURVES:
☐ Digitize and scan curves from parts
☐ Create NURB spline data from scanned data
☐ Export all measured data into IGES model

Measure-CAD: Automatic measurement in Learn Mode.
☐ Create automatic probing paths and measured any geometrical features
☐ Teach measurement paths from CAD data and measure automatically

Sheet Metal Feature measurement commands. RELATIVE measurement commands for SLOT, HOLE, BOSS, EDGE and TRIM Points

Hole Search and Locate options to measure small holes with large deviations
Collision Detection: Detect and Avoid possible part collision. Automatically insert clearance points to avoid collision
Confetti Style Reporting for molds and dies with multi color reports.
Layer and color tree view for all data, CAD, Actual, Nominals and DMIS.
Offline Programming and Program Simulation Tools
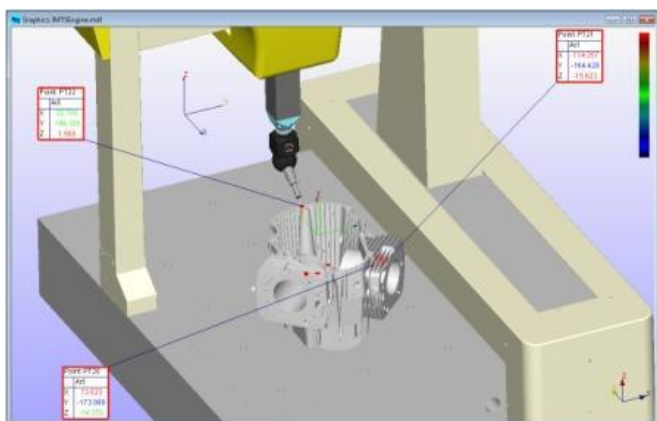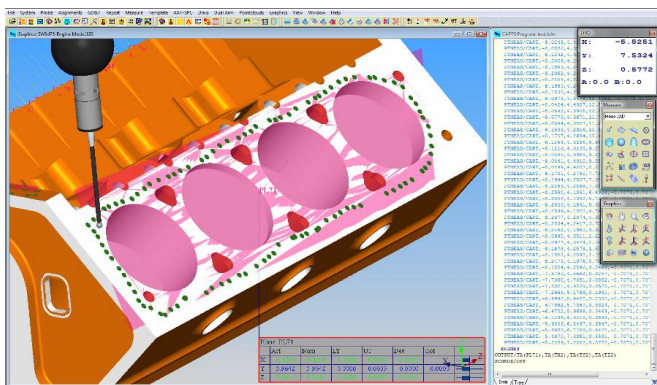
THOME PRÄZISION
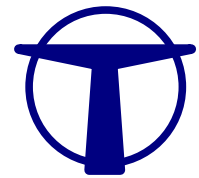
Graphical report generation with templates.
Create nominal probe calibration commands and Create DMIS programs to automate Master Ball Measurement and Probe Calibration Routine.
Accelerated part programming with Large/Multiple CAD files
Advanced CAD options of interface with rendering
Support of multiple CAD Interfaces (IGES, STEP are standard)
EXCEL and WEB HTML export with report files
Advanced Scanning and Digitizing methods

Kreis_KRE1

	Ist	Soll	U.Tol	O.Tol	Abw
X	56.209	56.210	-0.200	0.200	-0.001
Y	23.781	23.790	-0.200	0.200	-0.009
D	12.009	12.000	-0.050	0.050	0.009
F	0.018			0.050	

Punkt_PKT3

	Ist
Pr	-0.007

Kegel_KEG1

	Ist
X	56.196
Y	66.195
F	0.004
Wkl	60.175

Punkt_PKT1

	Ist
Pr	-0.000

Punkt_PKT2

	Ist
Pr	-0.003

Punkt_PKT19

	Ist
Pr	-0.017

Punkt_PKT18

	Ist
Pr	-0.139

Punkt_PKT17

	Ist
Pr	-0.144

THOME PRÄZISION

THOME PRÄZISION

Demo	
Firma	
Anwender	M. Thome
Teilename	123
Teil Nr.	567

Punkt_PKT4

	Ist
Pr	-0.008

Punkt_PKT7

	Ist
Pr	-0.008

Punkt_PKT3

	Ist
Pr	-0.007

Punkt_PKT8

	Ist
Pr	-0.007

Kreis_KRE1

	Ist	Soll	U.Tol	O.Tol	Abw
X	56.209	56.210	-0.200	0.200	-0.001
Y	23.781	23.790	-0.200	0.200	-0.009
D	12.009	12.000	-0.050	0.050	0.009
F	0.018			0.050	

Punkt_PKT1

	Ist
Pr	-0.000

Punkt_PKT2

	Ist
Pr	-0.003

Punkt_PKT10

	Ist
Pr	0.001

Punkt_PKT5

	Ist
Pr	-0.009

Punkt_PKT11

	Ist
Pr	0.008

Punkt_PKT19

	Ist
Pr	-0.017

Punkt_PKT9

	Ist
Pr	-0.001

Punkt_PKT18

	Ist
Pr	-0.139

Punkt_PKT12

	Ist
Pr	0.003

Punkt_PKT17

	Ist
Pr	-0.144

Punkt_PKT13

	Ist
Pr	0.001

Kegel_KEG1

	Ist
X	56.196
Y	66.195
F	0.004
Wkl	60.175

Punkt_PKT16

	Ist
Pr	-0.004

Punkt_PKT15

	Ist
Pr	-0.004

Punkt_PKT14

	Ist
Pr	-0.001

Name	Sollwert	Istwert	-Tolerance	+Tolerance	Abweichung	Out of Tol.	Control
__InnerKRE1-Hallo Klaus							
X	56.210	56.209	-0.200	0.200	-0.001		
Y	23.790	23.781	-0.200	0.200	-0.009		
Diam	12.000	12.009	-0.050	0.050	0.009		
Form		0.018		0.050			
__InnerKEG1-							
X	56.213	56.196	-0.200	0.200	-0.017		
Y	66.213	66.195	-0.200	0.200	-0.018		
Form		0.004		0.050			
Punkt_PKT1-							
Prof		-0.000	-0.025	0.025			
Punkt_PKT2-							
Prof		-0.003	-0.025	0.025			
Punkt_PKT3-							
Prof		-0.007	-0.025	0.025			
Punkt_PKT4-							
Prof		-0.008	-0.025	0.025			

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THOME PRÄZISION
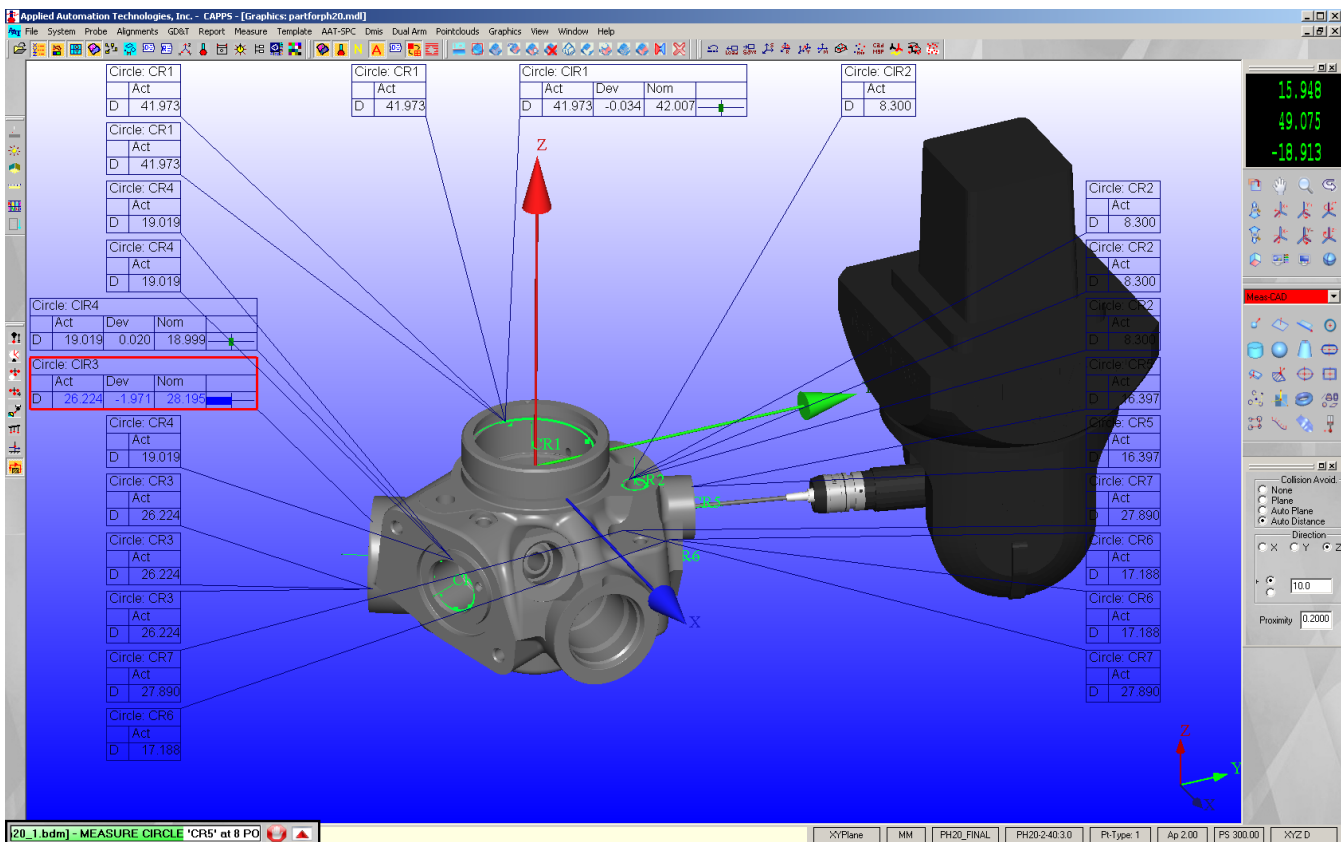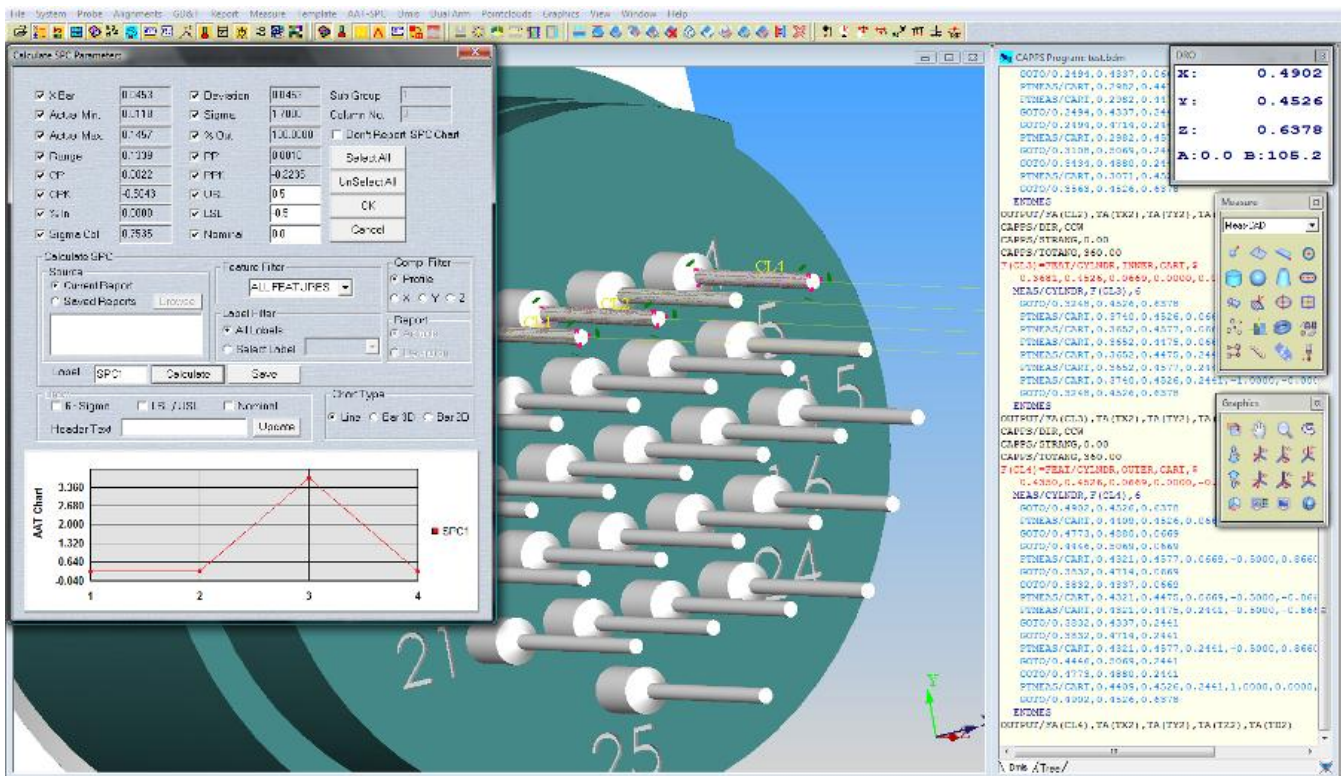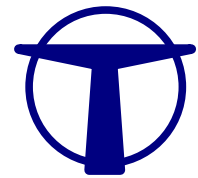
CAPPS is also ideal suited for retrofitting. Different older CMM's from various manufacturers.

Old Machines can be transformed into modern measuring machines. This is especially interesting for bigger machines with a high value of the mechanic components.

THOME PRÄZISION ⊤

Controller by Renishaw

UCC Fusion   "Modern touchtrigger controller"

CNC-Controller by Renishaw
Optimized the CMM and the probes combinations. Highest
exactness and bigger flexibility is given. Future hard and
software updates can be simply carried out.

- **Precise vector control** for 3 axes with running
  optimisation to decrease measuring time.
- **Automatic probe reverse movement** after contact in
  CNC- and Joystick move.
- **Crash protection** by limitation of feed force.
- **Optimised checkingroutines**
- **Integrated Interface** for Touchprobes like TP6, TP2,
  TP20, TP8, MH20i etc.
- **UCC server Interface (I++DME) communication**
- **CNC software option**

UCC-Fusion controller by Renishaw

Application example for Renishaw controller

UCC 2   „High performance Scanning controller"

- **Renishaw's universal CMM controller is suitable for
  touch-trigger and scanning probing.**
- **UCC2™ is also the controller platform for the
  revolutionary new Renscan5® technology.**
- **The new UCC2™ offers full 4-axis control and
  scanning capability.**
- **Known part adaptive scanning techniques:**
- **cylinder scan**
- **gasket scan**
- **grid scan**
- **automatic find centre**
- **advanced data filtering**
- **advanced analogue probe calibration**
- **Crash protection** by limitation of feed force.
- **Integrated Interface** for probes **SP25M, SP80, SP600**
- **UCC server Interface (I++DME) open communication
  Interface for every Inspectionsoftware**
- **Internal error compensation**
- **Free comfiguration for highest flexibility by measuring
  and scanning.**

UCC2 controller by Renishaw

SPA power supply for big Measuring machines

*SPA-Lite power supply for small Measuring
machines*

THOME PRÄZISION

Joystick for Renishaw Controllers

Joystick MCU-Lite for all UCC-controller

- Multi function Joystick
- Control lever for manual operation
- Ergonomically designed and massive enclosured
- speed regulation for safety test of new measuringprogramms
- emergency stop button
- 13 function keys. Two function keys can be set by the user

Preis MCU-Lite 790,-€

Joystick MCU1 for all UCC-Controller

- Multi function Joystick
- Control lever for manual operation
- Ergonomically designed and massive enclosured
- speed regulation for safety test of new measuringprogramms
- emergency stop button
- 17 function keys. Four function keys can be set by the user
- LCD-Display for graphical user instructions
- Operate as a computer mouse
- Has a system menu that can allow navigation through operating software

Preis MCU1 / 1.990,-€

All prices are without obligation.

THOME PRÄZISION

Probe Heads

PH6 / PH6M

- compact fixed heads with integrated cable
- Possibility of side probing by using a starprobe
- maximum extension 150 mm

PH6: All M8 thread probes (like TP20 and TP200) can be fitted directly onto the mount. Scanningprobes can´t be used.

PH6M: All Autojoint system probeheads (like SP25 and SP600) can be fitted directly. Touchtrigger Probes can be fitted by using an adapter. Scanningprobes are fully supported.

RTP20

The automated indexing of the RTP20 allows the integral TP20 probe to be moved to 168 repeatable positions in 15-degree increments using both the A and B axes, requiring a one-time only qualification for each stylus position thus ensuring fast throughput for part inspection.
Improved productivity is achieved via probe module changing and automated indexing without the need for constant re-qualification.
A built-in extension together with existing extension bars allow reach up to 168 mm (including maximum stylus length).
Utilising the CMM motion to lock and orientate the head, together with the MCR20, provides a fully automated system.
Crash protection: TP20 modules have overtravel in all directions. The magnetic mounting provides additional crash protection in X and Y.
Seven different TP20 modules are available.

PH10T / PH10M motorized indexing head by RENISHAW

The PH10 was designed to increase the throughput. It offers the possibility to the CMM to position the probe in space. This allows measurements from different angular positions, without the need for frequent, time-consuming modification of the stylus.
This system enables fast, complete and repeatable measuring of more complex workpieces. The machine will be upgraded to a 5-way measuring machine and enables significant measuring time saving especially with complex inspection parts.

- repeatability of position ±0.5μm
- rotating axis ± 180°, swing axis 0°-105°
- total number of positions 720
- max. torque 0.45Nm
- max. extension 300mm using PAA3 extension
- weight 645g
- operational environment temperature 10-40°C

PH10T: All M8 thread probes (like TP20 and TP200) can be fitted directly onto the mount. Scanningprobes can´t be used.

PH10M: All Autojoint system probeheads (like SP25 and SP600) can be fitted directly. Touchtrigger Probes can be fitted by using an adapter. Scanningprobes are fully supported.

PH10T for use with touchtrigger probes

PH10M for use with scanning probes

THOME PRÄZISION

5-axis ProbeheadPH20 with Headtouch performance

PH20   5-axis simultaneous motion Probehead with Headtouch performance

PH20's unique 'head touches' allow measurement points to be taken by moving only the head rather than the CMM structure. Using only the rapid rotary motion of the head, points can be taken faster, and with improved accuracy and repeatability. Furthermore, 5-axis motion eliminates time spent indexing the head. Together these speed increases typically result in a 3-fold improvement in throughput over conventional systems.
Easy access to features at any angle
PH20's infinite positioning capability guarantees optimal feature access, minimising stylus changes.
5-axis simultaneous motion allows larger parts to be measured on the CMM by minimising the space required around the part for head rotation.
PH20 automatically aligns itself with the part coordinate system, avoiding stylus collisions and the requirement for accurate fixtures.
The unique 'inferred calibration' technique developed for PH20 determines the head orientation and probe position in a single operation, allowing subsequent measurement at any head angle. Further modules only require a few touches on the calibration sphere before use.
Users of the PH20 probe head will immediately have access to the range of proven TP20 probe modules, providing a wide selection of trigger forces, directional sensing options and extensions to meet application requirements. The detachable modules provide crash protection and can be automatically changed using the MCR20 change rack

MCR20 automatic changing rack for probehead TP20, RTP20 and PH20

The MCR20 probe module changing rack is designed to securely hold stored modules for rapid automatic changing, and to protect them from airborne contaminants which may be present within the working environment.
6 Slots are available.
With this changer you can change automatically and with a repeatability of 1µm between different probemodules.

THOME PRÄZISION ⊤

Probes

TP8

Manual rotateabel probe head from Renishaw with integrated probe

The TP8 is extremely robust and a low cost solution. It is useable on manual measuring machines as well as on CNC machines.
- The TP8 has a fixed integrated probe
- 2D repeatability +/-1µm. The stylus force is up to 0,13 N in X-Y-plane
- The fixing of the stylus is by M3 screw
- The TP8 must be recalibrated after each rotation.
- It does not work with an automaticly changing rack.
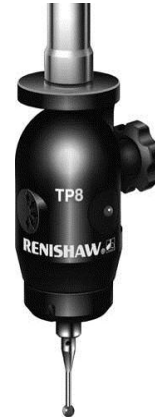
TP20

Electromechanical touch-trigger probe TP20 by RENISHAW
- set with 2 replaceable standard trigger modules, cleaning kit and tool kit.
- Probe TP20 consists of two parts – probe body and detachable trigger module
- Highly accurate 5-way touch-trigger probe
- Decreased measuring time due to fast stylus configuration changing without the need for requalification
- Ca. 3 million of touches of each module
- 2D- uncertainty of measurement A0.8µm
- Repeatability (max. 2σ) 0.35µm
- Thread M8

Testing conditions: extension length 10mm, touch speed 480mm/min, trigger force 0.08 N

TP200

Electronic touch-trigger probe TP200 with interface PI200 and head cable PLM6.T by RENISHAW
- Probe TP200 consists of two parts – probe body and detachable trigger module
- Great repeatability and highly accurate 3D- shape deviation
- Fast, repeatable stylus changing, without the need for requalification
- Ca. 10 million of touches of each module
- 2D- uncertainty of measurement A0.8µm
- Repeatability (max. 2σ) 0.4µm
- Thread M8

Testing conditions: extension length 50mm, touch speed 480mm/min, trigger force 0.02-0.04 N

THOME PRÄZISION ⊤

Changing racks

MCR20 changing rack by RENISHAW.

Change unit with six changer ports. Module combinations may be quickly renewed and automatically changed without the necessity of recalibration. At the same time it protects modules from contaminants. The changer unit works passively and does not need any electrical connection for the control of the measuring machine. Module changing is performed following simple commands. The MCR20 system also has crash protection.

SCR200 changing rack by RENISHAW.

Changing rack with six ports.
Module combinations may be quickly renewed and automatically changed without the necessity of recalibration. Installation and system adjustment is ideal for the user as no special cable, software or link to the measuring machine are needed. Module changing is performed following simple commands. SCR200 system also has crash protection.

MRS 400/600 and 1000 fixing kit for fast and automatic changing of switching modules and probes.

MRS has modular design and is ideal for various changing systems by Renishaw. SCP600 (SP600 memory modules), SCP80 (SP80 memory modules), FCR25 (SP25M memory modules) and units ACR3 may be attached to the MRS strip which may be of various lengths (400mm, 600mm and 1000mm). Further future changing systems by Renishaw will also be compatible with MRS.

FCR25-module change unit with 3 ports

FCR25 module changing rack unit by RENISHAW
with three or six ports for direct mounting to the measuring machine or mounting to the console MRS (see figure). Storing of scanning modules SM25-1, SM25-2, SM25-3, TM25-20. Thanks to the enclosed adapters PA25-SH, PA25-20 module holders SH25-1, SH25-2, SH25-3 or modules TP20 may be docked.

MRS 600

FCR25 Stand alone

THOME PRÄZISION
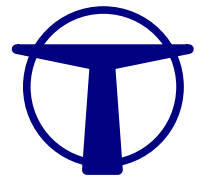
Steuerung PC-System

Dell TFT Monitor 22"
Garantie 3 Jahre Vorortservice

In the inclination adjustable 22-inch screen, high picture contrast and quick response times. In the wide picture format you can explain several uses side by side on a screen and increase thus your productiveness
Resolution: 1680×1050

Intel Core i3-2130 (3.40GHz, 3MB)
Mini-Tower Gehäuse
3 years of maintenance guarantee

- 500GB Hard Disl
- Working memory 4GB
- 48x DVD-ROM/CD-RW Combo Drive
- AMD Radeon HD 6350 Grafic card 512MB
- Windows 7 Professionell
- Wireless Maus und Wireless Tastatur
- Wireless mouse and Wireless keyboard installation, configuration, connecting of all cabels, installation of additional cards, test and set machine parameters, connecting to the CMM.

Drucker HP Officejet 4500

4-in-1 multifunctional device for wireless printing, scanning, copying and faxing with exceptionally low cost per page.
- Print speed up to 28 S./Min. in s/w, 22 S./Min. in color, Print quality up to 4.800 x 1.200dpi,
- Scanning resolution up to 1.200 x 2.400dpi

General terms of business of the company
THOME Präzision GmbH

1. Offers
Our offers, also on the part of our representatives, are without obligation. The written order confirmation is obliging. Supplements, changes or verbal additional agreements need to her effectiveness of the written confirmation. The documents belonging to the offer, pictures Drawings, Declarations of weight and Measurements are authoritative only roughly, as far as they are not called expressly obliging. In quotations, drawings and other documents the THOME Präzision GmbH reserves itself property rights and copyrights; they may be made to third not accessible.

2. Price and payment
a. Basically the agreed prices get on not free ex works; cargo, postage, duty, assembly and packaging pays the customer just as a desired transport, theft and pilferage or other inssurance. The packaging is calculated to the respective cost of sales. From this divergent arrangements need the written form. For the prices the value added tax comes by the respective legal height.
b. In the absence of special arrangements the payment is to be made cash freely cashier's office of the THOME Präzision GmbH namely:
30% payment in advance after receiving the order confirmation within 14 days, 70 % payment in advance 20 days before the estimated shipping date.

3. Delivery time
a. Delivery dates, achievement terms and appointments are valid only roughly, unless they are agreed in particular cases expressly and in writing as obliging.
B. If terms of delivery are agreed obligingly, they begin with sending the order confirmation, however, not before adduction of the documents to be procured by the customer, approvals, releases as well as before entrance of the agreed deposit.
c. An agreed delivery time is kept if up to her expiry the object of delivery has left the work or the dispatch readiness is informed.
d. An agreed term of delivery is extended appropriately with measures within the scope of labour disputes, in particular strike and lockout as well as by the entry of unforeseen obstacles which lie beyond the will of the THOME Präzision GmbH, as far as such obstacles are as can be proved on the completion or delivery of the object of delivery of considerable influence. This is also valid if the circumstances enter with untersuppliers.
The precalled circumstances are also not to be represented by the THOME Präzision GmbH if they originate during an already being delay. Beginning and end of such obstacles will inform in important cases of the THOME Präzision GmbH the customer as soon as possible.
e. In case of the delay the customer is entitled to the exclusion of other claims to demand a delay damage. He amounts for every full week of the delay to 0.2%, on the whole, however, at most 3% of the value of that part of the whole delivery which cannot be used as a result of the delay on time or vertragsgemäß.
following Becoming the dispatch by request of the customer delays, become to him, beginning one month after announcement of the dispatch readiness which calculates, at least nevertheless, 0.5% of the invoice amount for every month by the storage to originating costs. Nevertheless, the THOME Präzision GmbH is entitled to dispose after settlement and futile course of an adequate term otherwise of the object of delivery and to supply the customer with appropriately extended term.
g. The observance of the term of delivery puts the fulfilment of the contract ¬ to duties of the customer ahead.

4. Retention of title
a. The THOME Präzision GmbH reserves itself the property in the object of delivery up to the entrance of all payments from the supply agreement. The retention of title remains also exist for all demands which are entitled to the THOME Präzision GmbH from running business connections to the customer.
b. Only customers with suitable industrial concerns are entitled to the wide disposal or subsequent treatment of the product within the scope of her proper business concern. By now the customers resign to us everybody to them from the wide disposal and the business relations to her buyers in connection with the wide disposal to being entitled demands with subsidiary rights for the protection of our claims. The retention of title remains also effective if the object of delivery processes, is mixed or is connected; the THOME Präzision GmbH becomes the fraction owner in the products anew resulted by mixture.
Other orders about the object of delivery are prohibited the customer. Anyhow the customers are entitled to the move of the demands resigned to us and are obliged, as long as we do not revoke this authorisation. However, by request the customers must immediately inform us to whom they have disposed of the product and which demands are entitled to them from the disposal.

c. If the customer comes to default or injures he his obligations from the retention of title, can use the THOME Präzision GmbH the purchase object herausverlangen and after written announcement with adequate term under charge of the utilisation proceed for the purchase price freehand.

5. Danger crossing and acceptance
a. The danger goes over at the latest in sending the parts of delivery on the customer, namely also if part deliveries occur or the THOME Präzision GmbH still other achievements, e.g., the sending costs or transportation and installation has taken over.
b. If the dispatch is delayed as a result of circumstances which the customer has to represent, the danger of the day of the dispatch readiness on the customer goes over; however, the THOME Präzision GmbH is obliged to cause the assurances if requested and costs of the customer this required.
C. Part deliveries are allowed.

6. Liability for defects of the delivery
The THOME Präzision GmbH sticks for the defects of the delivery to which also the absence of expressly assured qualities belongs to the exclusion of other claims regardless of segment 9.d. as follows:
a. All those parts are to be mended free of charge at reasonable discretion of being defeated choice of the THOME Präzision GmbH or to deliver anew, which to itself within 6 months (with Mehrschichtbetrieb within 3 months) since introduction as a result of a fact lying before the danger crossing - in particular because of faulty design, bad building materials or defective implementation - when do not put outside uselessly or in her usefulness as unimportant affected. The statement of such defects is to be announced to the THOME Präzision GmbH immediately in writing. Substituted parts become a property of the THOME Präzision GmbH. If the dispatch, the installation or the introduction are delayed without fault of the THOME Präzision GmbH, the liability goes out at the latest 12 months after danger crossing.
For essential foreign products the liability of the THOME Präzision GmbH limits itself to the cession of the liability claims which you are entitled against the supplier of the foreign product.
b. The right of the customer to assert claims from defects comes under the statute of limitations in all cases from the time of the timely rebuke in 6 months, at the earliest, nevertheless, with expiry of the guarantee term.
c. No guarantee is taken over for the damages which have originated from postfol. ¬ to genden reasons:
Inexpedient or improper use, faulty assembly or initial start-up by the customer or third, natural From ¬ use, faulty or negligent treatment, inexpedient company means, exchange materials, defective edge and interfaces terms, chemical, electro-chemical or electric influence, provided that they are not due to a fault of the THOME Präzision GmbH.

d. To the given name of all of the THOME Präzision GmbH after any judgement inevitably to appearing repairs and spare deliveries the customer has to give the necessary time and opportunity after notification with the THOME Präzision GmbH, otherwise the THOME Präzision GmbH is released from the liability for defects. Only in urgent cases of the danger of the operational safety and to the defence of unreasonably big damages and the THOME Präzision GmbH is to be informed immediately, or if the THOME Präzision GmbH is with the removal of the lack in delay the customer has to let remove the right the lack or by third and to require substitute of the necessary costs from the supplier.

e. From by the repair or spare delivery originate ¬ to the immediate costs carries the THOME Präzision GmbH - in so far as as itself the objection puts outside as entitled - which costs of the spare part including the dispatch as well as the adequate costs of the removal and installation, further, if this can be required for situation of the isolated case rightly, the costs of the possibly necessary Gestellung of his assemblers and assistants., For the rest, the customer bears the costs.

following for the spare part and the repair amounts to the Gewährlei ¬ stungsfrist 3 months. She runs at least up to the expiry of the original guarantee term for the object of delivery.

The term for the liability for defects in the object of delivery is extended by the duration of the business interruption caused by the repair works.

g. By possibly on the part of the customer or third improperly without previous approval of the THOME Präzision GmbH made changes or repair works the liability for the results originating from it is lifted.

h. Other claims of the customer, in particular a claim to substitute of the damages which have not originated in the object of delivery themselves are excluded.

This disclaimer of liability is not valid with intention or coarse carelessness of the owner or leading employees. He is not valid also with the absence of qualities them are expressly assured if the assurance has just aimed to secure the customer against the damages which have not originated in the object of delivery themselves.

7. Liability for accessory obligations

If the delivered object of the customer as a result of omitted or faulty implementation from before or after completion of the contract to recumbent proposals and consultations as well as other contractual Nebenverpflichtungen - in particular instructions for service and servicing of the object of delivery - vertragsgemäß cannot be used by fault of the THOME Präzision GmbH, the regulations of the segment 6. and 9. are valid to the exclusion of other claims of the customer accordingly.

8. Surely of the customer on resignation and other liability of the THOME Präzision GmbH

a. The customer can withdraw from the contract if the whole achievement becomes finally impossible for the supplier before danger crossing. The same is valid with incapacity of the supplier. The customer can also withdraw from the contract if with an order of objects of the same kind the implementation of a part of the delivery becomes impossible after the number and he has a legitimate interest in the refusal of a part delivery; if this is not the case, the customer can diminish the consideration accordingly.

b. If achievement delay is given for the purposes of the segment 3., and the customer grants an adequate extension with the explicit explanation to the supplier located in delay that he rejects the acceptance of the achievement at the end of this term, and the extension is not kept, the customer is entitled to the resignation.

C. If the impossibility enters during the acceptance delay or by fault of the customer, this remains to the consideration obliged.

d. The customer has further a right to rescind if the supplier allows to spread an adequate extension put to him for the repair or spare delivery with regard to a lack to be represented by him for the purposes of the terms of delivery by his fault futilely. The right to rescind of the customer exists from in other cases of the Fehlschlagens of the repair or Ersatzlie ¬ ferung by the supplier.

e. All the other further claims of the customer, in particular on change, notice or decrease as well as on substitute are excluded from damages of some kind namely also from such damages which have not originated in the object of delivery themselves.

This disclaimer of liability is not valid with intention or coarse carelessness of the owner or leading employees. He is also not valid with the absence of qualities which are expressly assured if the assurance has just aimed at the customer against damages which have not originated in the object of delivery themselves to secure.

following step of the customers of the bill of sale back, so the following expense allowances are to be paid to the THOME Präzision GmbH:

30% of the order sum with all standard products of the THOME Präzision GmbH.

80% of the order sum with all Sonderanfertigungen of the THOME Präzision GmbH.

9. Surely of the THOME Präzision GmbH on resignation

For the case of unforeseen events for the purposes of the segment 3.d. of these general terms of business, provided that they change the commercial relevance or the contents of the achievement considerably or have an effect on the company of the THOME Präzision GmbH considerably, and for the case afterwards of turning out impossibility of the implementation the contract is adapted appropriately. As far as this is not defensible economically, stands to the THOME Präzision GmbH the right to withdraw too all or part from the contract.

Compensation claims of the customer because of such a resignation do not exist. If wants to make the THOME Präzision GmbH of the right to rescind use, she has to inform of this after knowledge of the range of the event immediately the customer, namely also if first with the customer a lengthening of the term of delivery was agreed.

10. E-mail

E-mails serve with the THOME Präzision GmbH of the quick communication. They carry no signatures and can be changed by third. Obliging arrangements are dispatched with the THOME Präzision GmbH as a letter, scanned letter or fax and carry signatures according to the signature regulation applying with the THOME Präzision GmbH.

11. Place of fulfilment, legal venue

a. Place of fulfilment for all deliveries and payments is of the companies ¬ sit.

b. With all disputes arising from the contractual relationship Darmstadt/Germany is agreed if the customer is an independent commercial agent, a legal entity of the public right or a public law special property as a legal venue.

12. Other

a. Divergent terms of business of the customer are non-binding for the THOME Präzision GmbH even if these is not expressly contradicted.

b. The language of communication is German. It is worth the right of the Federal Republic of Germany.

c. Should one of the preceding conditions be ineffective, the remaining regulations are not touched from this. The contracting partners have to substitute for an ineffective regulation with an allowed regulation which comes to the sense and the meaning most near the ineffective regulation.