Helmel Engineering Products, Inc.
6520 Lockport Road
Niagara Falls, NY 14305
(800) BEST-CMM
(716) 297-8644
(716) 297-9405 fax
www.helmel.com
www.geomet-cmm-software.com

Geomet Version Comparison Chart through v7.02.000

Geomet operates in four different levels designed to match your inspection needs. These levels are known as:

- Geomet Junior
- Geomet 101
- Geomet 301
- Geomet 501

Geomet Junior

Geomet Junior is the entry-level full 3D-inspection system of the Geomet series, yet it is packed with most of the functions needed for basic inspection. It favors one touch access to all basic geometric elements in addition to a highly visible set of icons on the screen for intuitive measuring without extensive training. Geomet Junior includes a powerful set of Part Coordinate System (PCS) generation tools that Geomet is famous for. Geomet Junior is included with the purchase of all Helmel manual Coordinate Measuring Machines.

Geomet 101

Geomet 101, our most popular package, offers great flexibility for inspecting parts in the lab or on the production floor. The graphical area on the right side of the display generates a pictorial representation of the measured features which serves as a visual guide for part programs and as a link to the final inspection results. Program writing is done in the self-teach mode, editing is easy and efficient. Geomet 101 includes a full suite of reverse engineering tools. Geomet 101 to includes powerful features such as Vector Point, customized tagging for printing and exporting and analytical tools for circular features. Geomet 101 is designed for the production environment where obtaining and tracking numerical solutions is preferred.

Geomet 301

Geomet 301, our most advanced system, offers the sophisticated user unbridled measuring power with the typical user friendliness of Geomet. It contains all the power of Geomet 101 and a host of other analytical tools to review and manipulate your part inspections. The time proven and inherent quality of the Geomet algorithms guarantee meaningful results when creating new and difficult relationships out of measured features and PCS's.

Geomet 501

Based on the power of Geomet 301 and drives the Renishaw UCC Series of Controllers. Geomet 501 adds support for analog contact scanning as well as 5-axis Touch Trigger and 5-axis Scanning with the SP25, PH20, and REVO probe systems for measuring and reverse engineering.

Geomet Options

All levels of Geomet can be expanded to include advanced feature and hardware support. Some options are universal and can be used by all levels of Geomet. The following chart details the options available to Geomet.

Geomet Option Chart

		Jr.	101	301	501
1	Direct Computer Control (DCC)		•	•	•
2	Renishaw UCC CMM Controller				•
3	Renishaw Stylus Racks		•(1)	•(1)	•(1)
4	Motorized Probe Support		•(1)	•(1)	•(1)
5	LDI Laser Line Scanner		•(1)	•(1)	
6	Robotic I/O Interface			•(1)	
7	Q-DAS SPC Export, Guided Menus		•	•	•
8	ProLink QC-CALC SPC		•	•	•

1 - Requires either the DCC or UCC option.

Q-DAS® Experts in Statistics

Geomet fully integrates Q-DAS ASCII Transfer Format as an option to support the needs of companies that embed Q-DAS on their inspection tools. Helmel Engineering is Certified by Q-DAS under the GMPT F-Fields 20080314 Specification.

Geomet Version Comparison Chart

Special Functions					
	Jr.	101	301	501	
Auto Direction, Feature Measurement	•	•	•	•	
Auto Load Robotic Interface		•	•	•	
Ball-Bar Feature	•	•	•	•	
Ball-Bar Macro		•	•	•	
CMM Utilization Report	•	•	•	•	
Custom Start/Stop Stage Positions		•	•	•	Ensure common start/ stop safe position within inspection programs
Digital I/O Interface		•	•	•	
Export DXF Data Points	•	•	•	•	
Export IGES Feature	•	•	•	•	
Export, Ovation EZ Comp		•	•	•	
Export, ProLink QC-CALC SPC Format		•	•	•	
EZ Launch File Polling Service		•	•	•	Receives external commands from third party source
EZ Launch Menu System		•	•	•	
EZ Launch timing tools for probe calibration		•	•	•	
EZ Launch timing tools for verifying FCSs		•	•	•	
Fast Start Menu System		•	•	•	
File Archive Tool			•	•	
G-Code Import Tool		•	•	•	Builds basic inspection programs from nominal G-Code
Geomet gage R&R		•	•	•	Option External Program
In-Line Math Calculator	•	•	•	•	
Multiple Part Cradle Fixtures		•	•	•	
Multiple Stylus Support on Single Feature		•	•	•	
On Screen Digital Readout	•	•	•	•	
Q-DAS SPC with Integrated Menu Support		•	•	•	
Sphere Repeatability Test		•	•	•	
Triangle Calculator		•	•	•	

Probes and Sensors

	Jr.	101	301	501	
Auto Re-Qualification	•	•(2)	•(2)	•	
Electronic Touch Probes	•	•	•	•	
Hard Ball/Edge/Tapered/Cylinder Probes	•	•	•		Manual, or DCC CMMs (DCC must be disabled)
Manual Indexing Probe Heads on DCC		•	•	•	
Manual Re-Qualification	•	•	•	•	
MCR20 Stylus Racks		•	•	•	Multi-Rack Support
Motorized Probe Heads		•	•	•	
Multiple Stylus db Support		•	•	•	
Qualification with Ring Gage		•	•	•	ID or OD
Reference Sphere Move/Recover	•	•	•	•	
Renishaw PH20				•	
Renishaw RTP20		•	•	•	
Renishaw Scanning Heads				•	
SCR200 Stylus Rack Support		•	•	•	
Stylus Database Edit Tools		•	•	•	
Stylus Manager		•	•	•	
Stylus size update based on measured features		•	•		
Video Cross Hair	•	•	•		Manual CMM, or DCC while disabled

2 - Requires the DCC option.

Measured Features

	Jr.	101	301	501	
4-Point Intersect		•	•	•	
Circle	•	•	•	•	
Cone	•	•	•		
Cylinder	•	•	•	•	
Digitized Point Cloud		•	•	•	Collection of 3D Points
Ellipse	•	•	•	•	
Line	•	•	•	•	
Oval Slot		•	•	•	
Plane	•	•	•	•	
Point IR/OR, 2D/3D	•	•	•	•	
Point 1D/2D/3D	•			•	
Slot/Web		•	•	•	

Measured Features					
Sphere	•	•	•	•	
Vector Point		•	•	•	XYZ, IJK, XYZ with IJK, All unknown, Import ASCII
2 - Requires the DCC option.					

Feature Generators					
	Jr.	101	301	501	
Bolt Hole Pattern		•	•	•	
Circle		•	•	•	
Cone		•	•	•	
Cylinder		•	•	•	
Inverse Vector Point		•	•	•	
Line		•	•	•	
Plane		•	•	•	
Points 1D/2D/3D		•	•	•	
Vector Point		•	•	•	

Coordinate System Support					
	Jr.	101	301	501	
Align (Secondary Datum)	•	•	•	•	
Clearance Coordinate System		•	•	•	Clearance Planes for Motion Path
Fixture Coordinate System		•	•	•	
Offset Align	•	•	•	•	
Orient (Primary Datum)	•	•	•	•	
Origin (Tertiary Datum)	•	•	•	•	
Pivot Align	•	•	•	•	
Recall Coordinate Systems	•	•	•	•	
Rotate Coordinate System	•	•	•	•	
Translate Coordinate System	•	•	•	•	Nominal Value or Feature Derived
U/V Rotary Table		•	•	•	U-Axis/V-Axis Live Coordinate System
Wobble Coordinate System		•	•	•	4th Axis Support Live Coordinate System

Runtime Features

	Jr.	101	301	501	
1D Point Edge Targeting		•(2)	•(2)	•	Targets knife edges, precise 1-Axis control
Disable Motion on selected features		•(2)	•(2)	•	
Feature Averaging		•	•	•	Test during run on Circle for Size Averaging
Feature Form Interrupt During Self-Teach	•	•	•	•	Tests form at feature building
Pause/Continue on Features		•	•	•	
ReRun Circle		•(2)	•(2)	•	ReRun 2D Circle features when size is OOT
ReRun Previous Features		•	•	•	Manual CMMs, no DCC

2 - Requires the DCC option.

Constructed Features

	Jr.	101	301	501	
2D Line	•	•	•	•	
3D Line	•	•	•	•	
Angle Between Features	•	•	•	•	
Basic Distance	•	•	•	•	
Circle	•	•	•	•	
Circle from random feature data points		•	•	•	Extracts the measured data points to construct feature
Cone	•	•	•	•	
Cone Apex		•	•	•	
Cone Diameter Offset	•	•	•	•	
Cone Drop Ball	•	•	•	•	
Cone Offset Diameter	•	•	•	•	
Cylinder	•	•	•	•	
Cylinder from Arcs		•	•	•	
Cylinder from random feature data points		•	•	•	Extracts the measured data points to construct feature
Extended Distances		•	•	•	
Feature Bisect	•	•	•	•	
Feature Intersect	•	•	•	•	
Inscribed/Circumscribed Circle		•	•	•	
Offset Line		•	•	•	

Constructed Features

Offset Plane		•	•	•	
Offset Point		•	•	•	
Plane	•	•	•	•	
Recall PCS Components	•	•	•	•	Recall the origin as a 3D Point or base planes and constructed planes
Reference Features	•	•	•	•	Static nominal data referenced during program run
Sphere	•	•	•	•	
Sphere Diameter at Offset	•	•	•	•	
Sphere from random feature data points		•	•	•	Extracts the measured data points to construct feature
Sphere Offset Diameter	•	•	•	•	
Upper/Lower Boundary Planes		•	•	•	Creates a Plane by locating the highest or lowest data point of an existing Plane

Tolerance

	Jr.	101	301	501	
Angularity	•	•	•	•	Reference to PCS or Previous Feature
Bilateral	•	•	•	•	
Circularity	•	•	•	•	
Concentricity	•	•	•	•	Reference to PCS or Previous Feature
Cylinder/Plane Runout	•	•	•	•	
Cylindricity	•	•	•	•	
Flatness	•	•	•	•	
Multi-Feature Tolerance Edit		•	•	•	
Out-of-Tolerance Flash Message		•	•	•	
Parallelism	•	•	•	•	Reference to PCS or Previous Feature
Perpendicularity	•	•	•	•	Reference to PCS or Previous Feature
Position (RFS/LMC/MMC)	•	•	•	•	
Preset Tolerance (Drawing Title Blocks)	•	•	•	•	
Process Control Tolerance			•	•	Multi-Level Guard Banding
Straightness	•	•	•	•	
Vector Point Profile Tool	•	•	•	•	

Program Editing

	Jr.	101	301	501	
Copy and Append	•	•	•	•	
Copy/Paste Print Tags	•	•	•	•	
Copy/Paste Feature Tolerance	•	•	•	•	
Deg.Dec / Deg-Min-Sec	•	•	•	•	
Delete (Un-Delete)	•	•	•	•	
Delete Permanently	•	•	•	•	
Edit History		•	•	•	
Feature Library		•	•	•	
Feature specific motion disable		•	•	•	
Inch/Metric	•	•	•	•	
Insert Features	•	•	•	•	
Insert single/multiple features in Cartesian grid		•	•	•	
Line, Switch Angles	•	•	•	•	
Line, Switch Pierce Point	•	•	•	•	
Measurement Point Targeting		•	•	•	
Move Features	•	•	•	•	
Polar/Cartesian	•	•	•	•	
Recall Features	•	•	•	•	
Report Offset Values	•	•	•	•	

Motion Editing

	Jr.	101	301	501	
DCC Clearance Coordinate System		•	•	•	
DCC Motion Edge Targeting		•	•	•	
Disable Motion of Selected Features		•	•	•	Drops into Joystick Mode for Manual Data Point Capture
Export Motion Map / ASCII File		•	•	•	
Full Motion Map Editing		•	•	•	
Import Motion Map / ASCII File		•	•	•	
Joystick in Part Coordinate System		•	•	•	
Motion Parameter Adjusting		•	•	•	Control over speed, distances, joystick behavior and blending
Off-Line Motion Building		•	•	•	

Motion Editing

One-Step Motion Map Editing		•	•	•	Move the motion map by relative values (option to protect leading Stand-Off Points)
Re-Teach Motion Map, Self-Teach		•	•	•	
Switch Probe Assignment in Motion Map		•	•	•	

Text and Image Features

	Jr.	101	301	501	
Display Image Prompts		•	•	•	
Graphic Screen Shot		•	•	•	
Manual Attribute Entry		•	•	•	During a run, enter a manual measurement, optional tolerance values
Runtime Text Entry		•	•	•	
Text Statements	•	•	•	•	
User Prompts		•	•	•	

Reporting Formats and Graphic Control

	Jr.	101	301	501	
Advanced Feature Editor	•	•	•	•	On Screen access to all feature attributes
ASCII Report Copy and Edit	•	•	•	•	
Auto Printing of Reports		•	•	•	
Concise Print Report	•	•	•	•	
Custom Feature Labels	•	•	•	•	
Custom Report Ordering		•	•	•	Reorder feature order in printed reports
Decimal Precision per Feature	•	•	•	•	
OOT Flash Message		•	•	•	
Print Feature Tagging	•	•	•	•	Select individual attributes for printing
Recall diametric features, tangent points	•	•	•	•	
Recall features into new PCS	•	•	•	•	
Report Templates		•	•	•	Save templates for custom reports
SPC Export Tools	•	•	•	•	

Reporting Formats and Graphic Control

Vector Point Display Controls		•	•	•	Graphic display of whiskers, arrows and other parameters
Vector Point Profile Reporting		•	•	•	

Feature Analysis

	Jr.	101	301	501	
Circle Profiler	•	•	•	•	
Diameter Averaging		•	•	•	Math Support Tool
Min/Max/Ave/Spread Calculations		•	•	•	Math Support Tool
Planar Data Point Report	•	•	•	•	
Planar Profile	•	•	•	•	

Reverse Engineering

	Jr.	101	301	501	
2D Outline Scanning				•	SP25 Scanning
Boundary Contour Digitizing		•	•	•	Digitizing within a 4 edge boundary, 3D Points
Build Cardinal Splines	•	•	•	•	
Contour Surface Scanning				•	SP25 Scanning
Data Point Exclusion Zones During Digitizing		•	•	•	Allows for skipping over features in a digitizing area boundary
GeoTracer	•	•	•		Hard Probe Drag Digitizing (DCC must be disabled)
Inside/Outside Border Scan				•	SP25 Scanning
Manual Digitizing	•	•	•	•	Random 3D Point collection (Manual CMM or with DCC disabled)
Radial Boundary Digitizing		•	•	•	Digitizing within a radial boundary, 3D Points
Radial Path Digitizing		•	•	•	Example: Cylinder End, 3D Points
Scan In Plane				•	SP25 Scanning
Scan with Radial Border				•	SP25 Scanning
Single Line Surface Digitizing		•	•	•	
Unknown Curve Scanning				•	SP25 Scanning