


# CONTOUR MEASUREMENT

PRE1163(7)



Quality assurance with profile:  
Contour measuring machines from Mitutoyo

**Mitutoyo**



Quality testing: no ifs and buts...

**...just winners and losers.**

Anyone who is unable to guarantee compliance with the most stringent standards will soon find themselves without a future in this competitive world. Absolutely perfect measurement technology is therefore essential for lasting success.

The detection and evaluation of contours is particularly demanding work. As the most versatile supplier of production measuring technology in the world, Mitutoyo sets the standard in know-how and experience – with an intelligently-structured range of sophisticated solutions for modern contour measurement. Here users seeking high performance results will find a tailor-made configuration for the perfect evaluation of profiles in production and in the laboratory.

This brochure gives you an overview of the Mitutoyo range of contour measurement machines – from practical mobile devices through to high-end systems with dual stylus technology for automatic high-volume measurement. You will quickly be able to focus in on the best solution for you and your own particular measurement tasks. You can then request to see more detailed brochures on the configuration of your choice, together with the varied range of accessories and software available.

Whatever you choose: with a Mitutoyo contour measuring system, you will secure the experience, competence and performance of an international technology leader, and customer-oriented service worth getting excited about.

CONTOUR MEASURING  
MACHINES

# ACER



# Individual solutions, sophisticated technologies, convincing concepts: contour measurement with Mitutoyo competence.

## Model

## Description

### CONTRACER CV-1000

Transportable device with digital glass scale, also in the Z axis. For portable high precision contour measurement. Digital recording of measured values in the X and Z axes – the only system in its class.



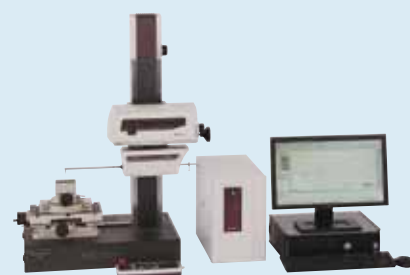
### Contracer CV-2000

Economic stationary contour measurement in production and in the laboratory. Compact, robust desk-top machine available in manual or automatic versions.



### CONTRACER CV-3200

Powerful system for automatic high-volume measurement. With even greater precision in all axes for difficult stationary contour testing in the production environment or in the test room.



### CONTRACER CV-4500

Dual stylus measuring unit for upward/downward measurement. The system meets highest accuracy requirements.



## CNC measurement machines:

### CONTRACER CV-3000CNC

The Contracer CNC series enhances the measuring efficiently due to the comprehensive measuring functions. Drive speed up to 200 mm/s and increases the throughput of multiple measurement tasks. All information on these efficient systems can be found in the separate CNC Form Measuring Instrument Series brochure.



Mitutoyo offers a wide range of models for various applications.

## Device-specific features

- High resolution throughout the measuring range
- Comes as standard with FORMTRACEPAK software and PC connection
- Digital recording of measured values in the X and Z axes

- Comes as standard with FORMTRACEPAK software and PC connection
- Digital recording of measured values in the X and Z axes
- Feed inclination adjustment  $\pm 45^\circ$

- Magnetic stylus arm
- Measuring range of Z1=60 mm
- Motorised Z axis
- Including FORMTRACEPAK measurement and analytical software
- Feed inclination adjustment  $\pm 45^\circ$
- ABS scale in the Z2 axis

- Magnetic stylus arm
- Measuring range of Z1=60 mm
- Software controlled measuring force
- Motorised Z axis
- Including FORMTRACEPAK measurement and analytical software
- Feed inclination adjustment  $\pm 45^\circ$
- ABS scale in the Z2 axis

Model	Measuring range X/Z axis	Height adjustment	Base plate dimensions
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<b>CV-1000 N2</b>	50 / 25 mm	optional	optional
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<b>CV-2000 M4</b>	100 / 40 mm	320 mm	man.	600x450 mm
<b>CV-2000 S4</b>	100 / 40 mm	320 mm	mot.	600x450 mm

<b>CV-3200 S4</b>	100 / 60 mm	300 mm	mot.	600x450 mm
<b>CV-3200 H4</b>	100 / 60 mm	500 mm	mot.	600x450 mm
<b>CV-3200 W4</b>	100 / 60 mm	500 mm	mot.	1000x450 mm
<b>CV-3200 S8</b>	200 / 60 mm	300 mm	mot.	600x450 mm
<b>CV-3200 H8</b>	200 / 60 mm	500 mm	mot.	600x450 mm
<b>CV-3200 W8</b>	200 / 60 mm	500 mm	mot.	1000x450 mm

<b>CV-4500 S4</b>	100 / 60 mm	300 mm	mot.	600x450 mm
<b>CV-4500 H4</b>	100 / 60 mm	500 mm	mot.	600x450 mm
<b>CV-4500 W4</b>	100 / 60 mm	500 mm	mot.	1000x450 mm
<b>CV-4500 S8</b>	200 / 60 mm	300 mm	mot.	600x450 mm
<b>CV-4500 H8</b>	200 / 60 mm	500 mm	mot.	600x450 mm
<b>CV-4500 W8</b>	200 / 60 mm	500 mm	mot.	1000x450 mm

man: manual  
mot: motorised

# Contracer CV-1000

## Mobile contour measurement with stand-alone performance.

# CV-1000

### Measuring range:

X	50 mm
Z	25 mm

### Resolution:

X axis	0.2 $\mu\text{m}$
Z axis	0.4 $\mu\text{m}$

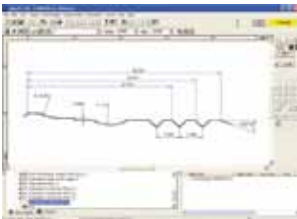
### Accuracy:

X axis	$(3.5+0.02L) \mu\text{m}$
Z axis	$\pm(3.5+ 4H /25) \mu\text{m}$

### Contracer CV-1000

**Sophisticated digital technology for portable  
recording and evaluation of profiles – with the  
precision and performance of stationary systems.**

- Simple, rapid measurement and evaluation and printing of the measurement results
- Optimum measurement volume
- Glass scale in the X axis
- Glass scale also in the Z axis
- Glass scale on Z axis for optimised accuracy adapted to radial movement of the probe arm
- FORMTRACEPAK powerful measurement and analytical software
- Integral interface on the measurement system
- Data transmission via USB interface
- Optional stand for stationary use
- Wide range of accessories



FORMTRACEPAK software: Evaluation screen



FORMTRACEPAK software: Layout



**Mitutoyo**



# mobile



# Contracer CV-2000

The state of the art in economical measuring.

## CV-2000

### Measuring range:

X	100 mm
Z	40 mm

### Resolution:

X axis	0.2 $\mu\text{m}$
Z axis	0.5 $\mu\text{m}$

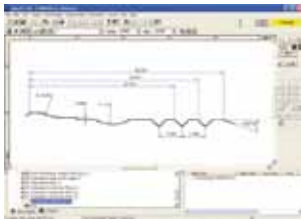
### Accuracy:

X axis	$(3.5+0.02L) \mu\text{m}$
Z axis	$\pm(3.5+ 4H /25) \mu\text{m}$

### Contracer CV-2000:

**Stand-alone contour measuring machine with convincing price-performance ratio. Efficient in production or the laboratory, in every respect.**

- Simple, rapid measurement and evaluation and printing of the measurement results
- Optimum measurement volume
- Feed inclination  $\pm 45^\circ$
- Rapid adjustment of the X axis (feed)
- Straightness deviation of the X axis  $3.5 \mu\text{m}/100 \text{ mm}$
- Glass scale in the X axis
- Glass scale also in the Z axis
- Glass scale on Z axis for optimised accuracy adapted to radial movement of the probe arm
- FORMTRACEPAK powerful measurement and analytical software
- Integral interface on the measurement system
- Data transmission via USB interface
- Wide range of accessories
- Manual or motorised versions



FORMTRACEPAK software: Evaluation screen



FORMTRACEPAK software: Layout



**Mitutoyo**



# precise



# CONTRACER CV-3200

## Top technology for contour measurement

# CV-3200

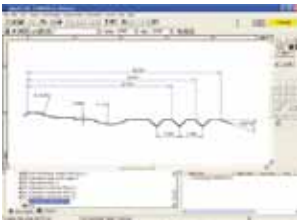
### Measuring range:

#### [Resolution]:

X axis	100/200 mm [0.05 $\mu$ m]
Z2 axis	300/500 mm [1.00 $\mu$ m]
Z1 axis	60 mm [0.04 $\mu$ m]

### Accuracy:

X [S4,H4,W4]	$\pm(0.8+0.01L)$ $\mu$ m
X [S8,H8,W8]	$\pm(0.8+0.02L)$ $\mu$ m
Z1	$\pm(1.6+2H/100)$ $\mu$ m
Straightness X	0.8 $\mu$ m/100 mm 2.0 $\mu$ m/200 mm



FORMTRACEPAK software: Evaluation screen

### CONTRACER CV-3200:

**Powerful stand-alone system for automatic high-volume use in measuring rooms and laboratories. High efficient with motorized axis, good measurement volume and magnetic stylus arm attachment.**

- Quick and easy measurement, evaluation and print out of contours
- Measurement and analytical software FORMTRACEPAK
- Contour measuring range of Z1 = 60 mm as standard
- Easy exchange of magnetic contour stylus arm gives excellent flexibility
- Excellent accuracy and resolution
- Highest positioning speed up to 80 mm/s
- Ceramic straightness guide of X axis
- Wide range of accessories
- Collision prevention
- Supports many CNC functions



# Mitutoyo

# technology



# CONTRACER CV-4500

No compromise.

maxim

## CV-4500

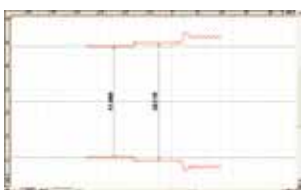
### Measuring range

#### [Resolution]:

X axis	100/200 mm [0.05 $\mu$ m]
Z2 axis	300/500 mm [1.00 $\mu$ m]
Z1 axis	60 mm [0.02 $\mu$ m]

### Accuracy:

X [S4,H4,W4]	$\pm(0.8+0.01L)$ $\mu$ m
X [S8,H8,W8]	$\pm(0.8+0.02L)$ $\mu$ m
Z1	$\pm(0.8+12HI/100)$ $\mu$ m
Straightness X	0.8 $\mu$ m/100 mm 2.0 $\mu$ m/200 mm



FORMTRACEPAK: Double side contour

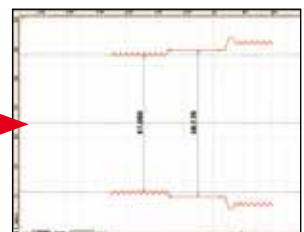
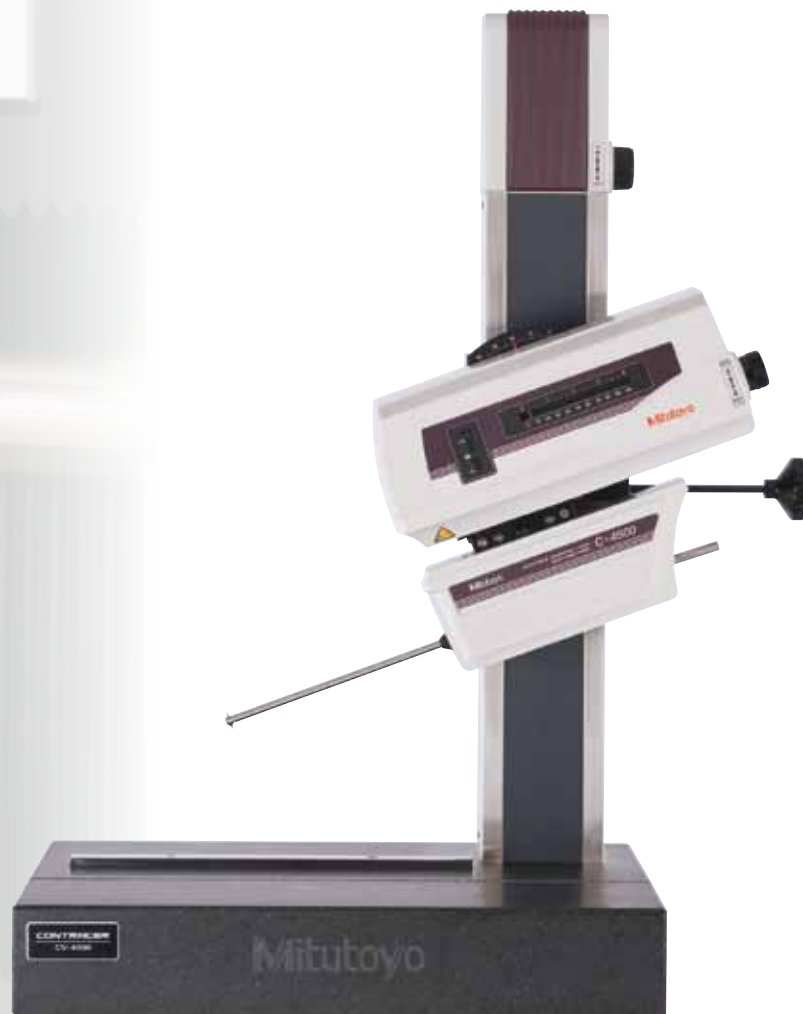
### CONTRACER CV-4500:

**This stationary high-end dual stylus system meets highest requirements. Powerful system for use in measuring rooms and laboratories.**

- Dual stylus system for upward /downward measurement at double side contours
- Measurement force controlled by software FORMTRACEPAK
- Contour measuring range of Z1 = 60 mm as standard
- Quick and easy measurement, evaluation and print out of contours
- Easy exchange of magnetic contour stylus arm gives excellent flexibility
- Measurement and analytical software FORMTRACEPAK
- Highest accuracy and resolution
- Highest positioning speed up to 80 mm/s
- Wide range of accessories
- Collision prevention
- Supports many CNC functions



# num precision



# MiCAT

Mitutoyo Intelligent Computer Aided Technology

the standard in world  
metrology software

**FORM**

# Professional Software

## FORMTRACEPAK

Software package

### Expansion module

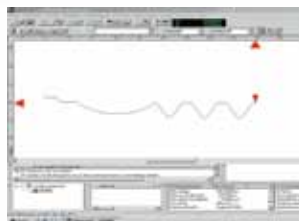
#### MeasurLink

Module for statistical measurement data processing and analysis, and storage of measured data.

- Reading in of DXF and IGES formats is possible
- Outputting of DXF and IGES formats is possible
- Evaluation of measured data against DXF or IGES setpoint contours
- Individual preparation of reports
- Reading in of graphic files
- Automatic parts program sequence
- Editing of parts programs
- User-defined settings
- Graphic representation during contour detection
- Control of the measurement system using software and joystick
- Individual outputting of results (report, ASCII, CSV)
- Linking of individual contours
- Representation and evaluation of several contours on one screen
- Best fit function for graphic setpoint/actual comparisons and parts program measurement

## FORMTRACEPAK

Measuring, evaluation and complete documentation: with FORMTRACEPAK, the high-end software from Mitutoyo. Comes as standard with all CONTRACER systems, at no extra cost and with impressive range of features – a real bonus. For professional contour measurement with best results.



Contour recording during measurement



Evaluation






Report editor

# Mitutoyo

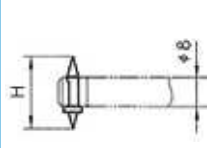
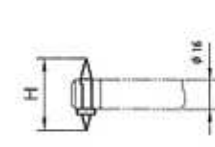


# Optional




## Applicable arms for CV-3200, CV-4500

<b>Straight</b> 12AAM101		AB-31
<b>Eccentric</b> 12AAM102		AB-32
<b>Small hole</b> 12AAM103		AB-33

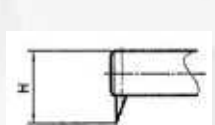
## Applicable styli for CV-4500

<b>Both sides conical</b> 12AAM095		SPHW-56	H = 20 mm
<b>Both sides conical</b> 12AAM096		SPHW-66	H = 32 mm
<b>Both sides conical</b> 12AAM097		SPHW-76	H = 48 mm
<b>Both sides small hole</b> 12AAM108		SPHW-31	H = 2.4 mm
<b>Both sides small hole</b> 12AAM109		SPHW-32	H = 5 mm
<b>Both sides small hole</b> 12AAM110		SPHW-33	H = 9 mm

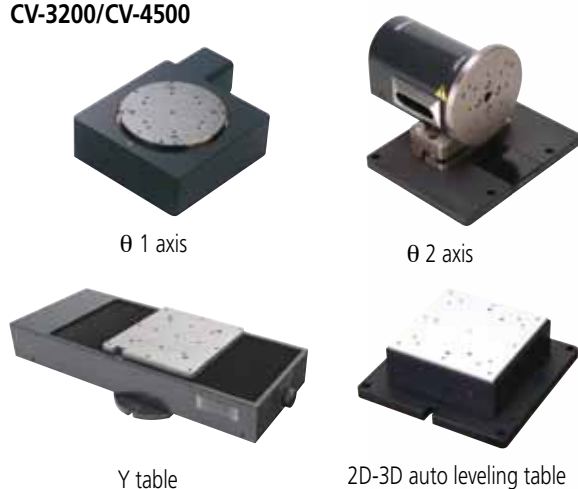
## Applicable arms for small diameters for CV-1000, CV-2000

		
SP-11 SP-31	SP-12 SP-32	SP-13 SP-33

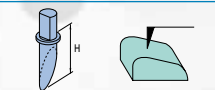
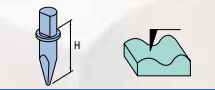
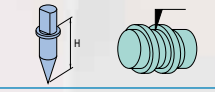
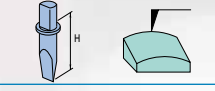
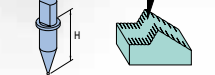
## Applicable styli for CV-3200, CV-4500

<b>Small hole</b>		SPH-41	H = 2 mm
<b>Small hole</b>		SPH-42	H = 4 mm
<b>Small hole</b>		SPH-43	H = 6.5 mm

## Accessories for supporting CNC functions of CV-3200/CV-4500



## Applicable styli for CV-1000, CV-2000, CV-3200, CV-4500\*

<b>Flat on one side</b>		SPH-51 SPH-61 SPH-71 SPH-81 SPH-91	H = { 6 mm 12 mm * 20 mm 30 mm 42 mm
<b>Cross-ground</b>		SPH-52 SPH-62 SPH-72 SPH-82 SPH-92	H = { 6 mm 12 mm 20 mm 30 mm 42 mm
<b>Conical</b>		SPH-53 SPH-63 SPH-73 SPH-83 SPH-93	H = { 6 mm 12 mm 20 mm 30 mm 42 mm
<b>Knife edge</b>		SPH-54 SPH-64 SPH-74 SPH-84 SPH-94	H = { 6 mm 12 mm 20 mm 30 mm 42 mm
<b>Ball</b>		SPH-55 SPH-65 SPH-75 SPH-85 SPH-95	H = { 6 mm 12 mm 20 mm 30 mm 42 mm

\* Extract from the wide range of styli.

Please ask for our other general brochures!



#### FORM MEASUREMENT

Individual solutions for perfect measurement of rotationally-symmetrical workpieces – from particularly easy-to-operate compact instruments with an integral printer through to the high-accuracy class reference model.



#### SURFACE MEASUREMENT

Mitutoyo presents an intelligently structured product range of sophisticated solutions for modern surface testing. Discerning clients will find here the configuration to meet their needs, for thoroughly perfect roughness and waviness measurements – both in production and in the laboratory.



#### CONTOUR AND SURFACE MEASUREMENT

The machines in the Formtracer series combine the technologies of contour and surface measurement in a single space, time and cost saving system. This reaps the benefits of both methods, even where space is limited, with efficiency and economy in perfect combination.

Coordinate Measuring Machines

Vision Measuring Systems

Form Measurement

Optical Measuring

Sensor Systems

Test Equipment and  
Seismometers

Digital Scale and DRO Systems

Small Tool Instruments and  
Data Management

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