

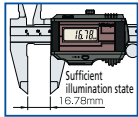
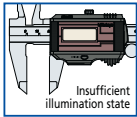
# Calipers

A standard measuring tool of industry

## SuperCaliper

### SERIES 500 — No battery or origin reset needed for IP67 digital caliper

- Top-of-the-line digital caliper. Solar type caliper with no battery and IP67 protection assures waterproof reliability.

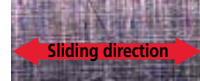


- With no annoying origin restoration necessary, a measurement can be started any time and there is no restriction on operating speed.
- The impact resistance of the display unit has been increased for improved usability in workshop conditions.

- Waterproof function makes this SuperCaliper suitable for use in an environment containing large amounts of cutting fluid or coolant. Operability is equivalent to the mechanical type caliper.
- This SuperCaliper uses components that do not contain harmful substances and is compatible with RoHS Directives.
- Slider operation is smooth and comfortable.

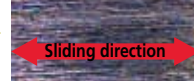
High quality guide surface finish for smooth slider movement

Conventional

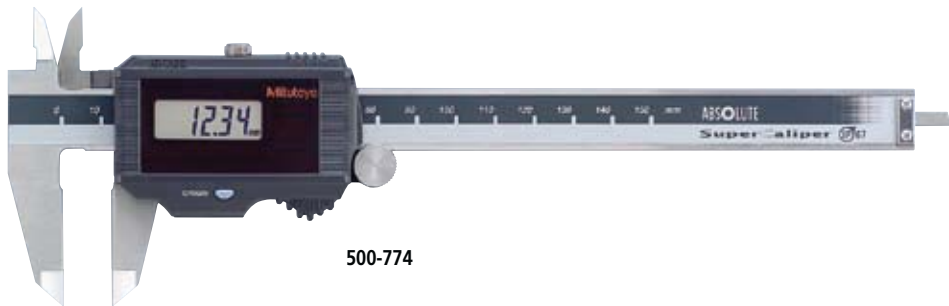


Ra: 0.126μm

SuperCaliper



Ra: 0.07μm



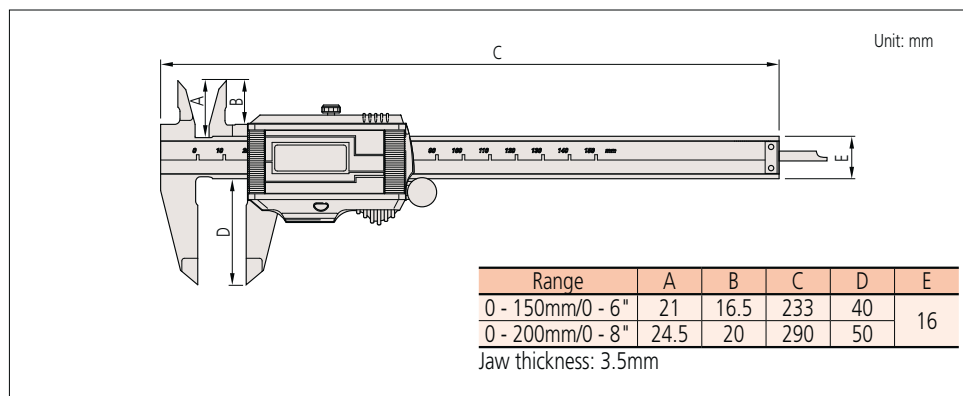
500-774

## SPECIFICATIONS

Metric			
Order No.	Range	Remarks	Mass
500-776	0 - 150mm	with data output	180g
500-777	0 - 200mm		210g
500-774	0 - 150mm	w/o data output	180g
500-775	0 - 200mm		210g

Inch/metric			
Order No.	Range	Remarks	Mass
500-786	0 - 6"	with data output	180g
500-787	0 - 8"		210g
500-784	0 - 6"	w/o data output	180g
500-785	0 - 8"		210g

## DIMENSIONS



**ABSOLUTE**

(Refer to page VIII for details.)

**IP67**

(Refer to page VIII for details.)



Dust- and watertight  
IP67

(Refer to page IX for details.)



An inspection certificate is attached as standard.  
Refer to page IX for details.

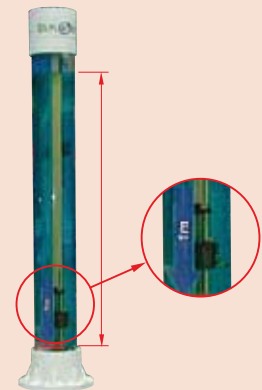
## IP67 protection level

**Level 6:** Dust-proof.

No ingress of dust allowed.

**Level 7:** Protected against water penetration.

Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed to a depth of 1 meter in water under standardized conditions of pressure and time (30 min.).



Demonstration device

## Technical Data

Resolution: 0.01mm or .0005"/0.01mm

Accuracy: ±0.02mm (excluding quantizing error)

Repeatability: 0.01mm

Quantizing error: ±1 count

Dust/Water protection level: IP67\*

Power supply: Solar cell\*\*

Display: LCD

Scale type: ABSOLUTE electromagnetic induction linear encoder

Max. response speed: Unlimited

\* This model is not waterproof type. Therefore, rustproofing shall be applied after use.

\*\* Can be used continuously above 60lux ambient illumination.



## Functions

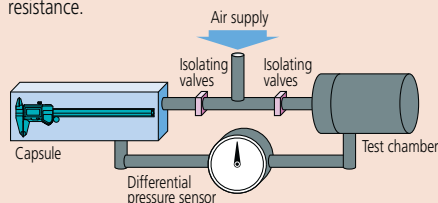
Origin-set: Absolute origin position can be changed.  
Alarm: Error message is displayed and measurement functions become inoperative if:

- Tool is turned on when both illumination and charging voltage are insufficient.
- Main unit is extremely polluted and miscalculation occurs in the display unit.



## Air leak test equipment for water resistance inspection

Generally, an air leak test is adopted for evaluating water resistance.



Procedure: Place the measuring tool inside the capsule and seal it. Then fill the capsule and the test chamber with air at the required pressure and close the isolating valves. If there is no leak in the measuring tool, the differential pressure sensor will read zero, because the amount of air inside the test chamber is unchanging. However, if there is a leak in the measuring tool, the differential pressure sensor will show a non-zero reading due to a decrease in pressure inside the test chamber as air leaks into the tool. By detecting this differential pressure, GO/NG judgment for the severity of the leak is performed. This air leak test is performed for all ABS coolant proof calipers and coolant proof micrometers.



Air leak test equipment for ABS coolant proof caliper

## Optional accessories

(Dedicated for the models equipped with a digimatic output function  
(Code No. 500-776, 500-777, 500-786 and 500-787))  
For details, refer to page A-21.

- **Connecting cables for IT/DP/MUX\***
  - 05CZA624:** SPC cable with data button (1m)
  - 05CZA625:** SPC cable with data button (2m)
- **USB Input Tool Direct**
  - 06ADV380A:** SPC cable for USB-ITN-A (2m)
- **Connecting cables for U-WAVE-T**
  - 02AZD790A:** SPC cable for U-WAVE with data button (160mm)
  - 02AZE140A:** SPC cable for foot switch



\* Cannot be used for other than water resistant type Digital calipers with external output function.



## About the charge function (SuperCaliper)

### The minimum illumination required in the uncharged state is 60lux.

As shown in the table 'JIS Z 9110 Artificial Illumination Intensity Standard', this SuperCaliper can be used with confidence in a normal work environment.

### The charge function allows the operator to use the SuperCaliper without interrupting work even if the ambient illumination is temporarily insufficient.

- In the fully charged state this SuperCaliper can operate for approximately one hour in an environment of 50lux illumination (less than the minimum necessary illumination intensity).
- The time necessary for full charge varies according to the charging conditions. If the SuperCaliper is left unused in an illumination of 500 lux (usual for manufacturing environments), it takes approximately one hour to reach full charge.

Illumination (lx)	Site (possible operations)
1500	
1000	Design room, drafting room (Fine visual work)
750	
500	Conference room, control room (Usual manufacturing environment) (Normal visual work)
300	
200	Machine room, electric room, lecture hall (Rough visual work)
150	
100	Corridor, passage, stairs (Very rough visual work)
75	
50	Emergency staircase, warehouse (Loading, unloading work)
30	
20	

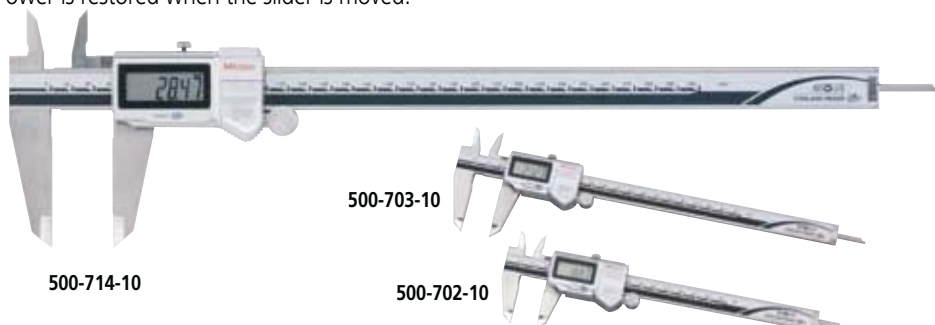
Excerpts from JIS Z 9110 Artificial illumination Intensity Standard

# Calipers

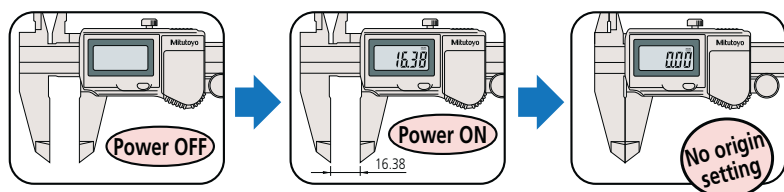
A standard measuring tool of industry

## ABSOLUTE Coolant Proof Caliper SERIES 500 — with Dust/Water Protection Conforming to IP67 Level

- Can be used in workshop conditions exposed to coolant, water, dust or oil. Dimensions, mass and price are the same as the conventional products. Also, 100% inspection by air leak test is performed.
- Carbide-faced jaws with round depth-rod type is newly added to the product lineup.
- Large LCD characters make the display easy to read.
- Easy to use — advanced design styling with only 1 button.
- Incorporates the absolute measurement system. No need to reset the origin.
- The automatic power-on/off function shuts down the LCD display after 20 minutes inactivity, but the ABS scale unit origin is stored. Power is restored when the slider is moved.
- Allows step measurement
- Can be integrated into statistical process control and measurement systems.
- A convenient interface input tool is available so that measurement data can be converted to keyboard signals and input directly to commercial spreadsheet software. Refer to page A-4.
- An inspection certificate is supplied as standard. (However, this cannot be used as a calibration certificate as it is undated.)
- Special type ABS Coolant Proof Calipers are provided.



**A built-in ABS (absolute) scale means that these calipers are ready to use immediately after power-on without origin resetting – just like using a vernier caliper.**



### Optional accessories

For details, refer to page A-15.



### Connecting cables for IT/DP/MUX\*

- 05CZA624: SPC cable with data button (1m)
- 05CZA625: SPC cable with data button (2m)

\* Cannot be used for other than water resistant type Digital calipers with external output function



### USB Input Tool Direct

06ADV380A: SPC cable for USB-ITN-A (2m)

### Connecting cables for U-WAVE-T

- 02AZD790A: SPC cable for U-WAVE with data button (160mm)
- 02AZE140A: SPC cable for footswitch

### IP67 protection level

IP 6 7

First characteristic number	Protection from solid objects (people or things)		Second characteristic number	Protection from liquids (water, etc.)	
	Brief description	Description		Brief description	Description
6	Dust-proof.	No ingress of dust allowed.	7	Protected against water penetration.	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardized conditions of pressure and time.

For details of the test conditions used in evaluating each degree of protection, please refer to the original standard.

ABSOLUTE

(Refer to page VIII for details.)

IP67

(Refer to page VIII for details.)



• Dust- and watertight IP67

(Refer to page IX for details.)



An inspection certificate is attached as standard. Refer to page IX for details.

### Smooth slider movement makes for comfortable operation.

#### High quality guide surface finish for smooth slider movement



### Technical Data

- Accuracy:  $\pm 0.02\text{mm}$  ( $\leq 200\text{mm}$ ),  $\pm 0.03\text{mm}$  ( $> 200\text{mm}$ ) (excluding quantizing error)
- Resolution:  $0.01\text{mm}$  or  $0.0005"$ / $0.01\text{mm}$
- Repeatability:  $0.01\text{mm}$
- Quantizing error: Not including  $\pm 1$  count
- Dust/Water protection level: IP67\*
- Display: LCD
- Scale type: ABSOLUTE electromagnetic induction linear encoder
- Max. response speed: Unlimited
- Battery: **SR44** (1 pc.), **938882**
- Battery life: Approx. 3 years under normal use (1 year: over 300mm models)

\* This model is not waterproof type. Therefore, rustproofing shall be applied after use.

## Functions

Origin-set: Absolute origin position can be changed.

Data output: Measurement data output connector allows integration into statistical process control and measurement systems.

Automatic power on/off: LCD display will turn off after 20 minutes inactivity, but the ABS scale unit origin is stored. Power is restored when the slider is moved.

Alarm: Error message is displayed if error in calculation is found and measurement is stopped. Measurement will not be continued while error is displayed. Also, if the battery voltage becomes low, "B" appears to alert the user before measurement is no longer possible.

## SPECIFICATIONS

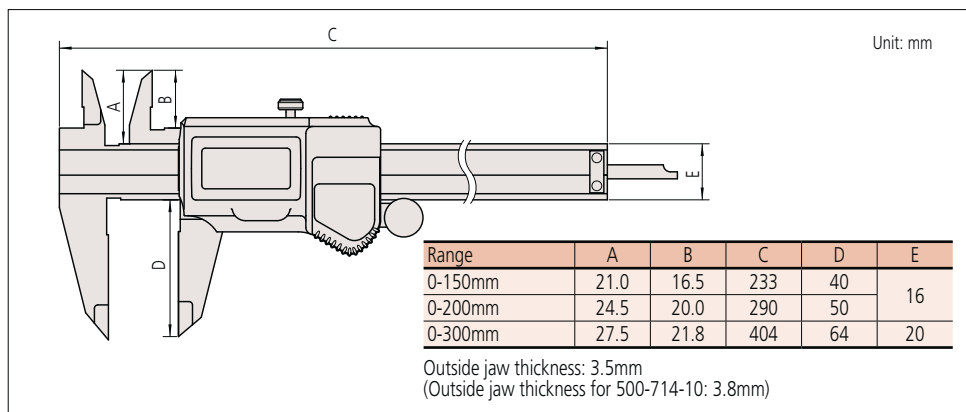
Metric				
Order No.	Range	Depth bar	Fine adjustment	Remarks
500-702-10*	0 - 150mm	Blade	with thumb roller	—
500-712-10			—	
500-706-11*		—		
500-716-11			—	
500-709-11*		ø1.9mm rod		with thumb roller
500-719-10		Blade	—	Carbide-tipped jaws for outside and inside measurement
500-721-10			with thumb roller	—
500-723-10			—	
500-727-11	with thumb roller		—	
500-703-10*	—			
500-713-10	with thumb roller			Carbide-tipped jaws for outside measurement
500-707-11*	—			
500-717-11	with thumb roller		Carbide-tipped jaws for outside and inside measurement	
500-722-10	—			
500-724-10	with thumb roller			—
500-728-11	—			
500-714-10	0 - 300mm		with thumb roller	—
500-718-11			—	
500-704-10*			with thumb roller	
500-708-11*			—	

\* without SPC data output

Inch/Metric				
Order No.	Range	Depth bar	Fine adjustment	Remarks
500-752-10*	0 - 6"	Blade	with thumb roller	—
500-762-10		ø3/40" rod		
500-768-10*				
500-769-10		Blade		Carbide-tipped jaws for outside measurement
500-731-10*				Carbide-tipped jaws for outside and inside measurement
500-735-10	Carbide-tipped jaws outside and inside measurement			
500-733-10*	—			
500-737-10	Carbide-tipped jaws for outside measurement			
500-753-10*	Carbide-tipped jaws for outside and inside measurement			
500-763-10	0 - 8"			—
500-732-10*				
500-736-10				
500-734-10*				
500-738-10				
500-764-10	0 - 12"			—
500-754-10*				

\* without SPC data output

## DIMENSIONS



# Calipers

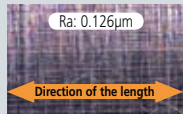
A standard measuring tool of industry

## ABSOLUTE Digimatic Caliper 500 Series — with exclusive ABSOLUTE Encoder Technology

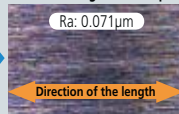
- The ZERO/ABS button allows the display to be Zero-Set at any slider position along the scale for comparison measurements. This button will also allow return to the absolute (ABS) mode and display of the true position from the origin (usually jaws closed point).
- Large and clear LCD readout.
- Smooth slider movement makes for comfortable operation.
- 20,000 hours battery life.
- Allows step measurement.
- Carbide-tipped jaw calipers are optimal for rough finished parts, castings, grinding stones, etc.
- Allows integration into statistical process control and measurement systems for models with measurement data output connector. Refer to page A-3.

### High quality guide surface finish for smooth slider movement

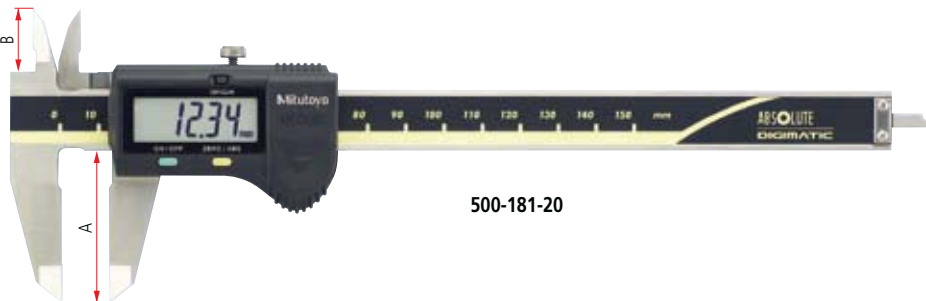
Conventional



ABSOLUTE Digimatic Caliper

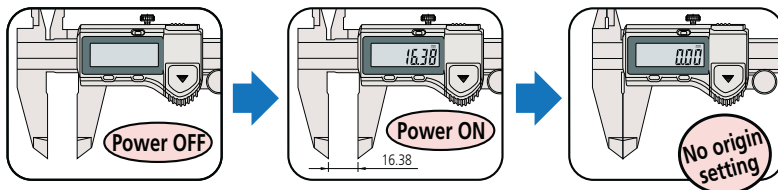


500-150-20



500-181-20

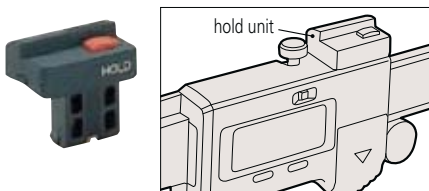
A built-in ABS (absolute) scale means that these calipers are ready to use immediately after power-on without origin resetting – just like using a vernier caliper.



### Optional accessories

Dedicated for the models equipped with a digimatic output function. For details, refer to page A-15.

#### 959143: Data hold unit



#### Connecting cables for IT/DP/MUX\*

959149: SPC cable with data button (1m)

959150: SPC cable with data button (2m)



#### USB Input Tool Direct

06ADV380C: SPC cable for USB-ITN-C (2m)

#### Connecting cables for U-WAVE-T

02AZD790C: SPC cable for U-WAVE with data button (160mm)

02AZE140C: SPC cable for footswitch

**ABSOLUTE**

(Refer to page VIII for details.)



An inspection certificate is attached as standard. Refer to page IX for details.

### Technical Data

Accuracy:  $\pm 0.02\text{mm}$  ( $\leq 200\text{mm}$ ),  $\pm 0.03\text{mm}$  ( $\leq 300\text{mm}$ )  
(excluding quantizing error)

Resolution: 0.01mm or 0.005"/0.01mm

Repeatability: 0.01mm

Display: LCD

Scale type\*: ABSOLUTE electrostatic capacity linear encoder

Max. response speed: Unlimited

Battery: SR44 (1 pc.), **938882**

Battery life: Approx. 3.5 years under normal use (20000 hours for continuous use)



## Functions

Absolute measurement: After power is turned ON, measurement can be started without zero-setting if origin-setting was previously performed. The Absolute origin position can be changed by the ORIGIN button.

Incremental measurement: Display can be set to zero at any arbitrary position for comparative measurements

Scale contamination detection: Contamination on the surface of the scale is detected and an error message (ErrC) is displayed.

Low-voltage alert: If the battery voltage becomes low, a "B" appears in the display to alert the user before measurement is no longer possible. A battery change advisory alert precedes this alert.

Data output: By using the connecting cable (option), measurement data can be output.

Data hold: By using the data hold unit (option), the displayed value can be held. This cannot be used with the data output function.

## SPECIFICATIONS

Metric				
Order No.	Range	Depth bar	Fine adjustment	Remarks
500-150-20	0 - 100mm	ø1.9mm rod	with thumb roller	—
500-180-20*			—	
500-151-20	0 - 150mm	Blade	with thumb roller	Carbide-tipped jaws for outside measurement
500-154-20				Carbide-tipped jaws for outside and inside measurement
500-155-20		ø1.9mm rod	—	—
500-158-20				
500-181-20*	0 - 200mm	Blade	with thumb roller	Carbide-tipped jaws for outside measurement
500-152-20				Carbide-tipped jaws for outside and inside measurement
500-156-20				—
500-157-20				—
500-182-20*				—
500-153	0 - 300mm		with thumb roller	

\* without SPC data output

Inch/Metric				
Order No.	Range	Depth bar	Fine adjustment	Remarks
500-170-20	0 - 4"	ø3/40" rod	with thumb roller	—
500-195-20*				—
500-171-20	0 - 6"	Blade		Carbide-tipped jaws for outside measurement
500-174-20				Carbide-tipped jaws for outside and inside measurement
500-175-20		ø3/40" rod		—
500-178-20				Carbide-tipped jaws for outside measurement
500-196-20*	0 - 8"	Blade		Carbide-tipped jaws for outside and inside measurement
500-159-20*				—
500-160-20*				Carbide-tipped jaws for outside measurement
500-172-20				Carbide-tipped jaws for outside and inside measurement
500-176-20				—
500-177-20				Carbide-tipped jaws for outside measurement
500-197-20*				Carbide-tipped jaws for outside and inside measurement
500-163-20*				—
500-164-20*				Carbide-tipped jaws for outside measurement
500-173				Carbide-tipped jaws for outside and inside measurement
500-167	0 - 12"			—
500-168				Carbide-tipped jaws for outside measurement
500-193*				Carbide-tipped jaws for outside and inside measurement
500-165*				—
500-166*		—	Carbide-tipped jaws for outside measurement	
			Carbide-tipped jaws for outside and inside measurement	

\* without SPC data output

# Calipers

A standard measuring tool of industry

## Long ABSOLUTE Digimatic Caliper 500 Series — with Exclusive ABSOLUTE Encoder Technology

- Long Digital caliper incorporating an ABSOLUTE scale and available with a measuring range from 450mm to 1000mm.
- Allows step measurement
- Allows integration into statistical process control and measurement systems for models with measurement data output connector. Refer to page A-3.
- For the details of the Absolute scale and its function, refer to page D-8.



### SPECIFICATIONS

Metric				
Order No.	Range	Depth bar	Fine adjustment	Remarks
500-500-10	0 - 450mm	—	—	—
500-501-10	0 - 600mm			
500-502-10	0 - 1000mm			

\* without SPC data output

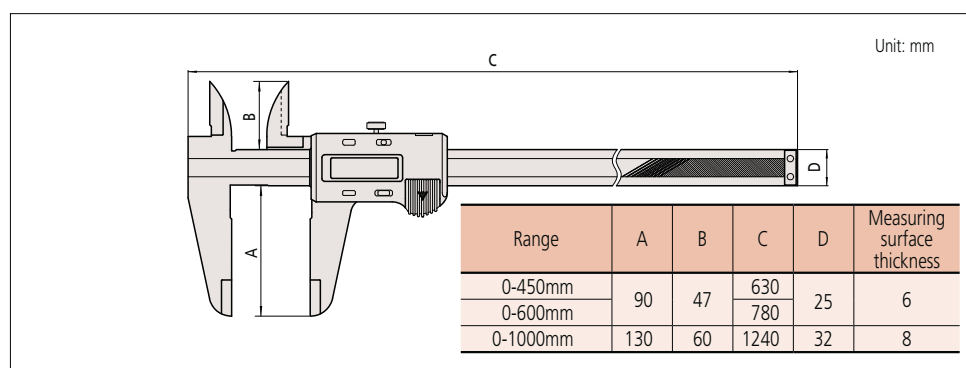
Inch/Metric				
Order No.	Range	Depth bar	Fine adjustment	Remarks
500-505-10	0 - 18"	—	—	—
500-506-10	0 - 24"			
500-507-10	0 - 40"			

\* without SPC data output

### Technical Data

Accuracy:  $\pm 0.05\text{mm}$  ( $\leq 600\text{mm}$ ),  $\pm 0.07\text{mm}$  ( $\leq 1000\text{mm}$ )  
(excluding quantizing error)  
Resolution: 0.01mm or .0005"/0.01mm  
Repeatability: 0.01mm  
Display: LCD  
Scale type: ABSOLUTE electrostatic capacity linear encoder  
Max. response speed: Unlimited  
Battery: SR44 (1 pc.), **938882**  
Battery life: Approx. 3.5 years under normal use  
Max. response speed: Unlimited

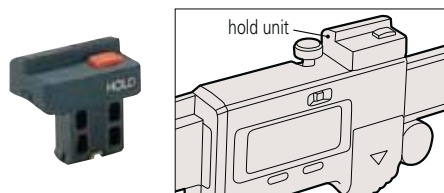
### DIMENSIONS



### Optional accessories

Dedicated for the models equipped with a digimatic output function. For details, refer to page A-15.

#### 959143: Data hold unit



#### Connecting cables for IT/DP/MUX\*

959149: SPC cable with data button (1m)  
959150: SPC cable with data button (2m)



#### USB Input Tool Direct

06ADV380C: SPC cable for USB-ITN-C (2m)

#### Connecting cables for U-WAVE-T

02AZD790C: SPC cable for U-WAVE with data button (160mm)  
02AZE140C: SPC cable for footswitch



An inspection certificate is attached as standard.  
Refer to page IX for details.

## Technical Data

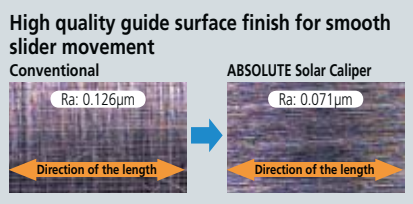
Accuracy:  $\pm 0.02\text{mm}$  (excluding quantizing error)  
Resolution:  $0.01\text{mm}$  or  $.0005"/0.01\text{mm}$   
Repeatability:  $0.01\text{mm}$   
Display: LCD  
Scale type: ABSOLUTE electrostatic capacity linear encoder  
Power supply: Solar cell\*  
Max. response speed: Unlimited  
Operational temperature:  $0$  to  $40^{\circ}\text{C}$   
\* Can be used continuously above  $60\text{lux}$  ambient illumination

## Functions

Absolute measurement  
Scale contamination detection  
Data output (use together with optional connecting cable)  
Data hold (use optional hold unit. This cannot be used with the data output function)  
\* For details of the function, refer to page D-8.

## ABSOLUTE Solar Caliper SERIES 500 — No battery or origin reset needed

- Mitutoyo's Absolute Solar Digimatic Caliper retains its origin point indefinitely.
- At  $60\text{ Lux}$  and above the ABSOLUTE solar caliper is ready to start measurement. No more repeated zero setting caused by a shortage of light.
- An ABSOLUTE scale is incorporated so that zero setting is not required at each power ON. No danger of overspeed errors.
- Slider operation is smooth and comfortable.
- Allows step measurement.
- Allows integration into statistical process control and measurement systems for models with measurement data output connector. Refer to page A-3.



500-444

## SPECIFICATIONS

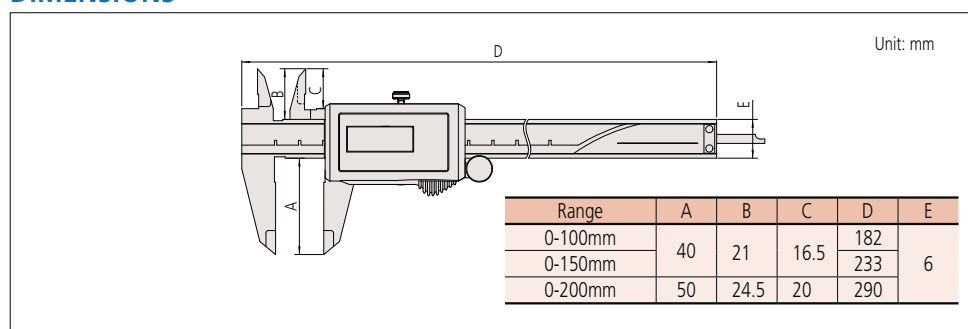
Metric			
Order No.	Range	Depth bar	Fine adjustment
500-443	0 - 100mm	ø1.9mm rod	with thumb roller
500-453*			
500-444	0 - 150mm	Blade	
500-454*			
500-445			
500-455*	0 - 200mm		

\* without SPC data output

Inch/Metric			
Order No.	Range	Depth bar	Fine adjustment
500-463	0 - 4"	ø3/40" rod	with thumb roller
500-473*			
500-464	0 - 6"	Blade	
500-474*			
500-465	0 - 8"		
500-475*			

\* without SPC data output

## DIMENSIONS



## Optional accessories

Dedicated for the models equipped with a digimatic output function. For details, refer to page A-15.

### 959143: Data hold unit



### Connecting cables for IT/DP/MUX\*

959149: SPC cable with data button (1m)  
959150: SPC cable with data button (2m)



### USB Input Tool Direct

06ADV380C: SPC cable for USB-ITN-C (2m)

### Connecting cables for U-WAVE-T

02AZD790C: SPC cable for U-WAVE with data button (160mm)  
02AZE140C: SPC cable for footswitch