

## Digimatic Caliper·Caliper

Digimatic Caliper·Caliper



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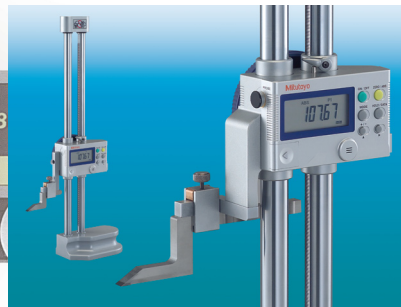
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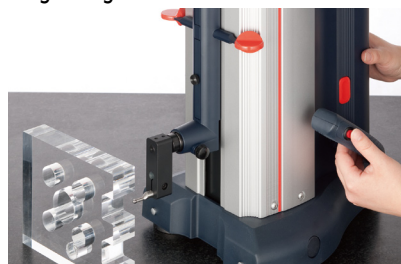
## Digimatic Height Gage·Height Gage

Digimatic Height Gage·Height Gage



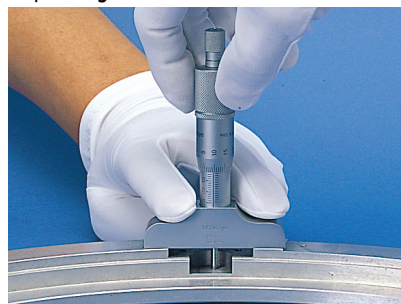
## Height Gage

Height Gage



## Depth Gage

Depth Gage



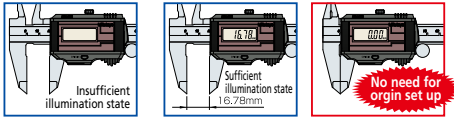
# Calipers

An industry standard in measuring tools

## SuperCaliper

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

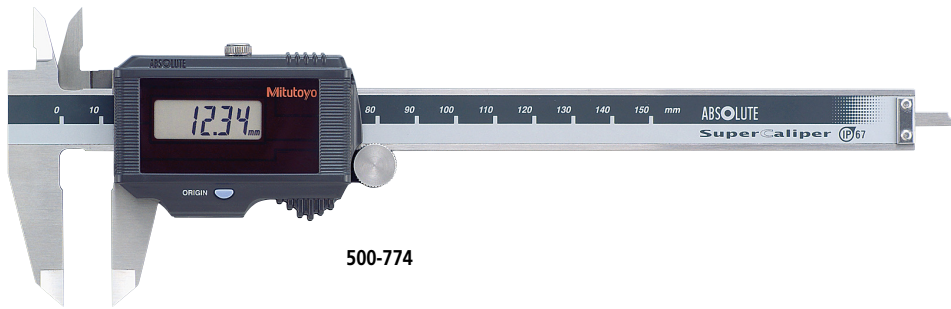
- Top-of-the-line digital caliper. Solar type caliper with no battery and IP67 protection assures waterproof reliability.



- 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

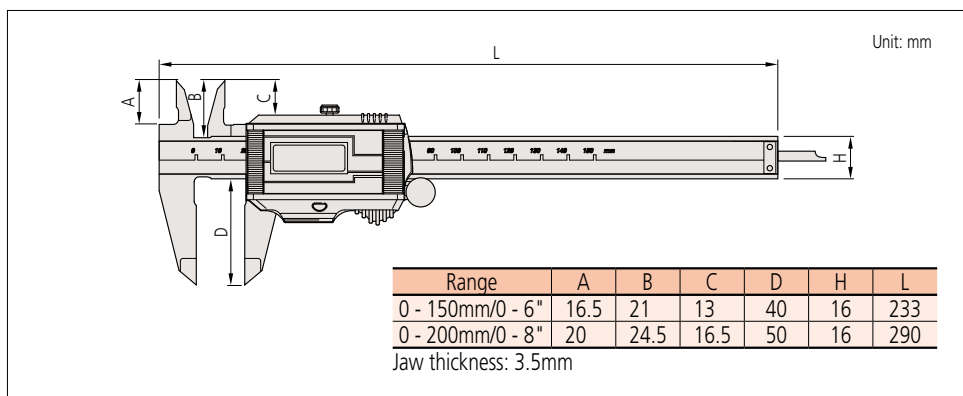


500-774

## SPECIFICATIONS

Metric				Inch/metric			
Order No.	Range	Remarks	Mass	Order No.	Range	Remarks	Mass
500-776	0 - 150mm	with data output	180g	500-786	0 - 6"	with data output	180g
500-777	0 - 200mm		210g	500-787	0 - 8"		210g
500-774	0 - 150mm	w/o data output	180g	500-784	0 - 6"	w/o data output	180g
500-775	0 - 200mm		210g	500-785	0 - 8"		210g

## DIMENSIONS



**ABSOLUTE™** (Refer to page X for details.)



(Refer to page X for details.)



(Refer to page X for details.)

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An inspection certificate is supplied as standard. Refer to page X for details.

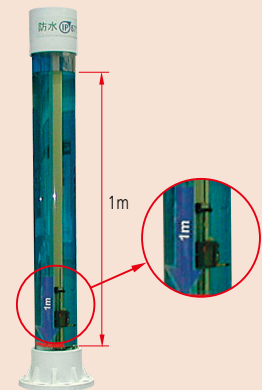
## IP67 protection level

**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

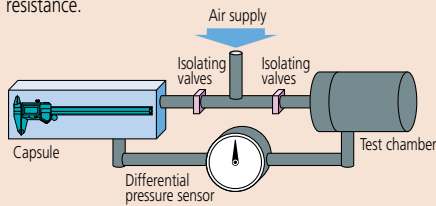
Origin-set: Absolute origin position can be changed.  
 Alarm: Error message is displayed and measurement functions become inoperative if:

- 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 D-39.

- **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	

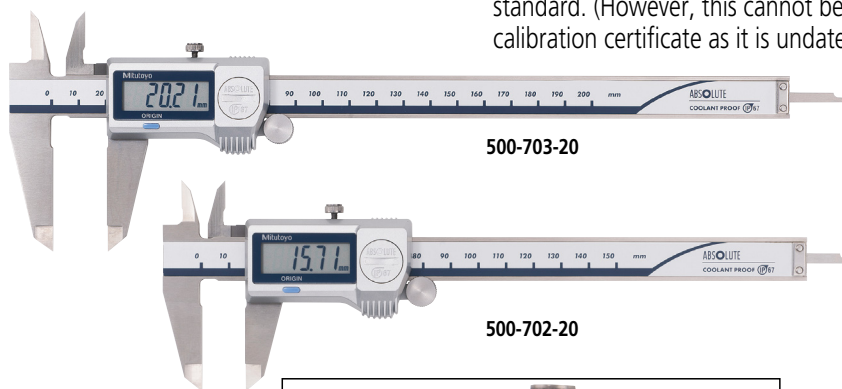
Excerpts from JIS Z 9110 Artificial illumination Intensity Standard

# Calipers

An industry standard in measuring tools

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

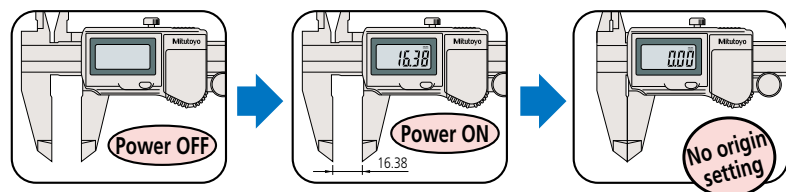
- ABS Coolant Proof Caliper with Dust/Water Protection conforming to IP67 Level. Can be used in workshop conditions exposed to coolant, water, dust or oil. 100% air-leak test ensures every caliper conforms to IP67.
- Font height is 9mm (increased by 22%) and visibility is improved (except for 0 - 300mm / 0 - 12" models).
- Battery cap does not require a screw driver for battery replacement (except for 0 - 300mm / 0 - 12" models).
- Extended battery life of 5 years due to low current integrated circuit (except for 0 - 300mm/0 - 12" models).
- Easy to use — advanced ergonomic design uses only 1 button.
- Incorporates Mitutoyo's 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 origin is unaffected. Power is restored to the display when the slider is moved.
- Stepped features can be measured.
- Can be integrated into statistical process control and measurement systems.
- An inspection certificate is supplied as standard. (However, this cannot be used as a calibration certificate as it is undated.)



Remarkably easy to read display



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 D-39.



### 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 footswitch

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

ABSOLUTE™ (Refer to page X for details.)

IP67 (Refer to page X for details.)



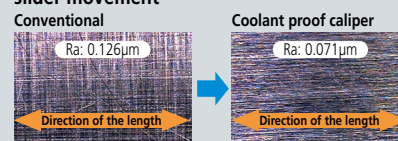
(Refer to page X for details.)



An inspection certificate is supplied as standard. Refer to page X for details.

### Smooth slider movement makes for comfortable operation.

High quality guide surface finish for smooth slider movement



### Technical Data

- Resolution: 0.01mm or .0005"/0.01mm
  - Repeatability: 0.01mm or .0005"/0.01mm
  - Quantizing error: Not including ±1 count
  - Dust/Water protection level: IP67 (IEC60529)\*
  - Display: LCD
  - Scale type: ABSOLUTE electromagnetic induction linear encoder
  - Max. response speed: Unlimited
  - Battery: SR44 (1 pc), 938882, for initial operational checks (standard accessory)
  - Battery life: Approx. 5 years under normal use (1 year: 0 - 300mm/0 - 12" models)
- \* Although these models are IP67 rated, care should be taken to dry tool 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.

### 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.

### SPECIFICATIONS

Metric								
Order No.	Range	Accuracy*	Mass	Measurement data output port	Thumb roller	Remarks		
500-702-20	0 - 150mm	±0.02mm	168g	—	—			
500-703-20	0 - 200mm		198g					
500-712-20	0 - 150mm		168g					
500-713-20	0 - 200mm		198g					
500-719-20	0 - 150mm		168g			✓	✓	Depth bar ø1.9mm
500-721-20	0 - 150mm		168g					Carbide-tipped jaws for outside measurement
500-722-20	0 - 200mm		198g					Carbide-tipped jaws for outside and inside measurement
500-723-20	0 - 150mm		168g					
500-724-20	0 - 200mm		198g					
500-714-10	0-300mm		±0.03mm			350g	✓	✓
500-718-11		345g		—				
500-704-10		350g		✓				
500-708-11		345g		—				

\* Not including quantizing error of ±1 count in LSD

Inch/Metric									
Order No.	Range	Accuracy*	Mass	Measurement data output port	Thumb roller	Remarks			
500-731-20	0 - 6"	±.001"/ ±0.02mm	168g	—	—	Carbide-tipped jaws for outside measurement			
500-732-20	0 - 8"		198g						
500-733-20	0 - 6"		168g						
500-734-20	0 - 8"		198g						
500-735-20	0 - 6"		168g			✓	✓	Carbide-tipped jaws for outside measurement	
500-736-20	0 - 8"		198g					Carbide-tipped jaws for outside and inside measurement	
500-737-20	0 - 6"		168g						
500-738-20	0 - 8"		198g						
500-752-20	0 - 6"		168g			—	—		
500-753-20	0 - 8"		198g						
500-762-20	0 - 6"		168g			✓	—		
500-763-20	0 - 8"		198g						
500-768-20	0 - 6"		168g			—		Depth bar ø1.9mm	
500-769-20	0 - 6"		168g			✓		Depth bar ø1.9mm	
500-764-10	0-12"		".0015"/ ±0.03mm"			350g	✓	✓	
500-754-10						350g			—

\* Not including quantizing error of ±1 count in LSD

### DIMENSIONS

Unit: mm

Range	A	B	C	D	H	L
0 - 150	16.5	21	14.6	40	16	233
0 - 200	20	24.5	18.1	50		290

Outside jaw thickness = 3.5mm  
 Main beam thickness = 3.5mm

# Calipers

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

- ABSOLUTE electromagnetic induction linear encoder system is introduced (except for 0 - 300mm/0 - 12" models).
- New ergonomic design with finger rest.
- 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.
- 18,000 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.

ABSOLUTE™ (Refer to page X for details.)



An inspection certificate is supplied as standard. Refer to page X for details.

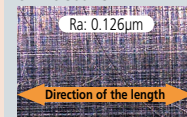
### Technical Data

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 .0005"/0.01mm  
 Repeatability: 0.01mm  
 Display: LCD  
 Scale type\*: ABSOLUTE electromagnetic induction linear encoder  
 \*ABSOLUTE electrostatic capacity static linear encoder for 0 - 300mm/0 - 12" models.  
 Max. response speed: Unlimited  
 Battery: **SR44** (1 pc), **938882**, for initial operational checks (standard accessory)  
 Battery life: Approx. 5 years under normal use (18,000 hours for continuous use)

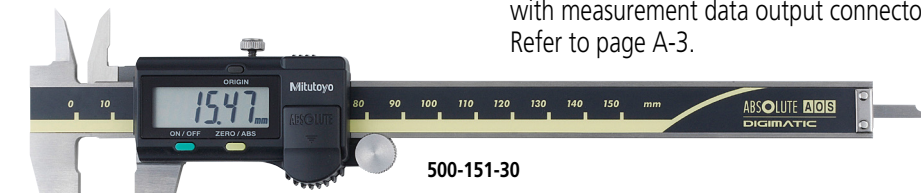
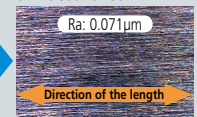
### Smooth slider movement makes for comfortable operation.

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

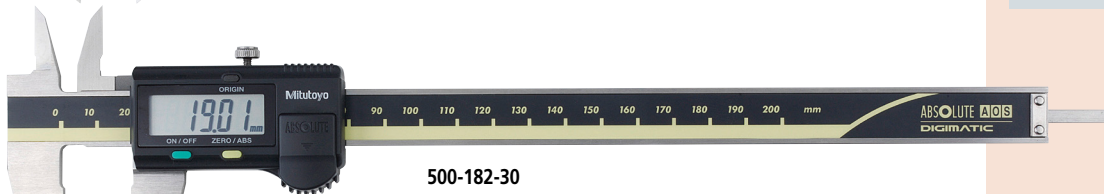
Conventional ex. No.500-151



ABSOLUTE Digimatic Caliper ex. No.500-151-30



500-151-30



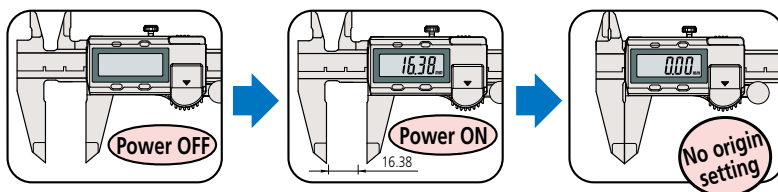
500-182-30



Actual size

Remarkably easy to read display

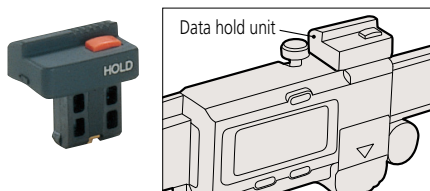
A built-in ABS (absolute) scale means that these calipers are ready to use immediately after power-on without origin resetting – just like using a vernier caliper.



### Optional accessories

Dedicated for the models equipped with a digimatic output function. For details, refer to page D-39.

#### 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

## 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

**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	Accuracy**	Mass	Depth bar	Fine adjustment	Remarks
500-150-30	0 - 100mm	±0.02mm	137	ø1.9mm rod	with thumb roller	—
500-180-30*					—	
500-151-30					—	
500-154-30	0 - 150mm	±0.02mm	162	Blade	with thumb roller	Carbide-tipped jaws for outside measurement
500-155-30						Carbide-tipped jaws for outside and inside measurement
500-158-30						—
500-181-30*						—
500-152-30	0 - 200mm	±0.02mm	192	Blade	with thumb roller	Carbide-tipped jaws for outside measurement
500-156-30						Carbide-tipped jaws for outside and inside measurement
500-157-30						—
500-182-30*						—
500-153	0 - 300mm	±0.03mm	350	—	with thumb roller	—

\* Without SPC data output

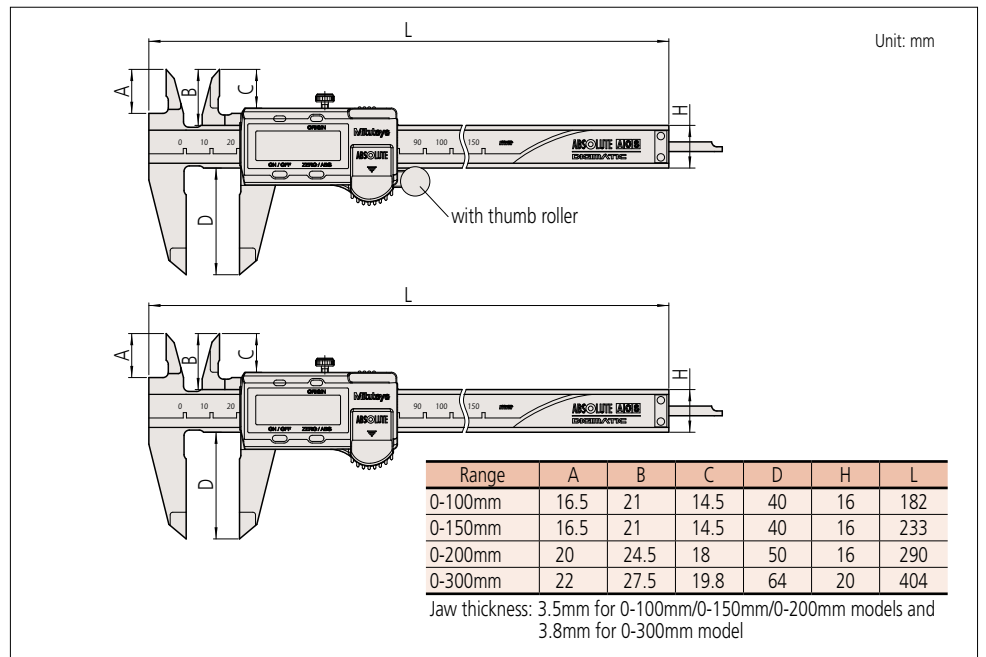
\* Not including quantizing error of ±1 count in LSD

Inch/Metric						
Order No.	Range	Accuracy**	Mass	Depth bar	Fine adjustment	Remarks
500-170-30	0 - 4"	±0.001"/ ±0.02mm	137	.075" rod	with thumb roller	—
500-195-30*						—
500-171-30						—
500-174-30	0 - 6"	±0.001"/ ±0.02mm	162	Blade	with thumb roller	Carbide-tipped jaws for outside measurement
500-175-30						Carbide-tipped jaws for outside and inside measurement
500-178-30						—
500-196-30*						—
500-159-30*	0 - 8"	±0.001"/ ±0.02mm	192	Blade	with thumb roller	Carbide-tipped jaws for outside measurement
500-160-30*						Carbide-tipped jaws for outside and inside measurement
500-172-30						—
500-176-30						—
500-177-30	0 - 8"	±0.0015"/ ±0.03mm	350	Blade	with thumb roller	Carbide-tipped jaws for outside measurement
500-197-30*						Carbide-tipped jaws for outside and inside measurement
500-163-30*						—
500-164-30*						—
500-173	0 - 12"	±0.0015"/ ±0.03mm	350	Blade	with thumb roller	Carbide-tipped jaws for outside measurement
500-167						Carbide-tipped jaws for outside and inside measurement
500-168						—
500-193*						—
500-165*	0 - 12"	±0.0015"/ ±0.03mm	350	Blade	with thumb roller	Carbide-tipped jaws for outside measurement
500-166*						Carbide-tipped jaws for outside and inside measurement

\* Without SPC data output

\* Not including quantizing error of ±1 count in LSD

## DIMENSIONS



# Calipers

An industry standard in measuring tools

**ABSOLUTE™** (Refer to page X for details.)

## 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.



### 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**,  
for initial operational checks (standard accessory)  
Battery life: Approx. 3.5 years under normal use  
Max. response speed: Unlimited

## SPECIFICATIONS

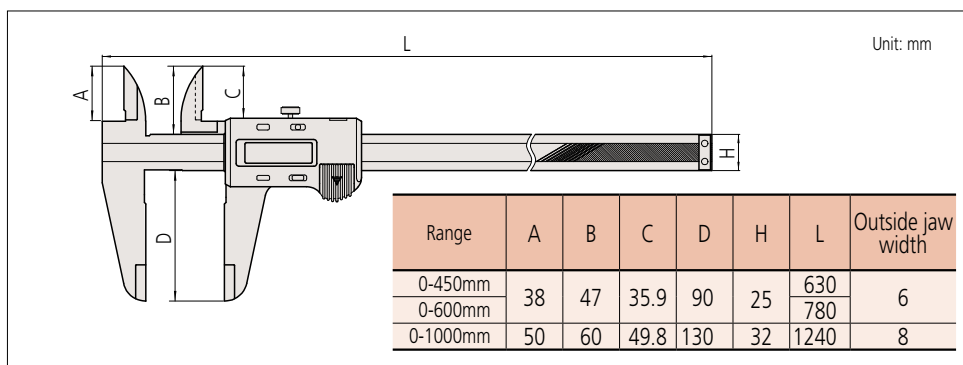
Metric				
Order No.	Range	Depth bar	Fine adjustment	Remarks
<b>500-500-10</b>	0 - 450mm	—	—	—
<b>500-501-10</b>	0 - 600mm			
<b>500-502-10</b>	0 - 1000mm			

\* without SPC data output

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

\* without SPC data output

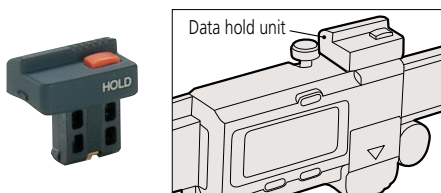
## DIMENSIONS



## Optional accessories

Dedicated for the models equipped with a digimatic output function. For details, refer to page D-39.

### 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 supplied as standard. Refer to page X for details.

### Technical Data

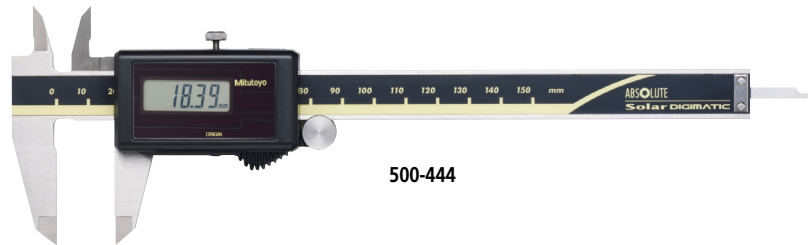
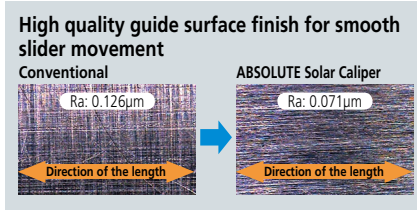
- Accuracy:  $\pm 0.02\text{mm}$  (excluding quantizing error)
- Resolution:  $0.01\text{mm}$  or  $.0005"/0.01\text{mm}$
- Repeatability:  $0.01\text{mm}$
- Display: LCD
- Scale type: ABSOLUTE electrostatic capacity linear encoder
- Power supply: Solar cell\*
- Max. response speed: Unlimited
- Operational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



### SPECIFICATIONS

Metric			
Order No.	Range	Depth bar	Fine adjustment
500-443	0 - 100mm	$\phi 1.9\text{mm}$ rod	with thumb roller
500-453*	0 - 150mm	Blade	
500-454*			
500-445	0 - 200mm	Blade	
500-455*			

\* without SPC data output

Inch/Metric			
Order No.	Range	Depth bar	Fine adjustment
500-463	0 - 4"	.075" rod	with thumb roller
500-473*	0 - 6"	Blade	
500-464			
500-474*	0 - 8"	Blade	
500-465			
500-475*			

\* without SPC data output

### DIMENSIONS

Range	A	B	C	D	H	L
0-100mm	16.5	21	14.5	40	16	182
0-150mm						233
0-200mm	20	24.5	18	50		290

Jaw thickness: 3.5mm

### Optional accessories

Dedicated for the models equipped with a digimatic output function. For details, refer to page D-39.

#### 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