



**E-PEAK15**



**EXLON-Z III 453**

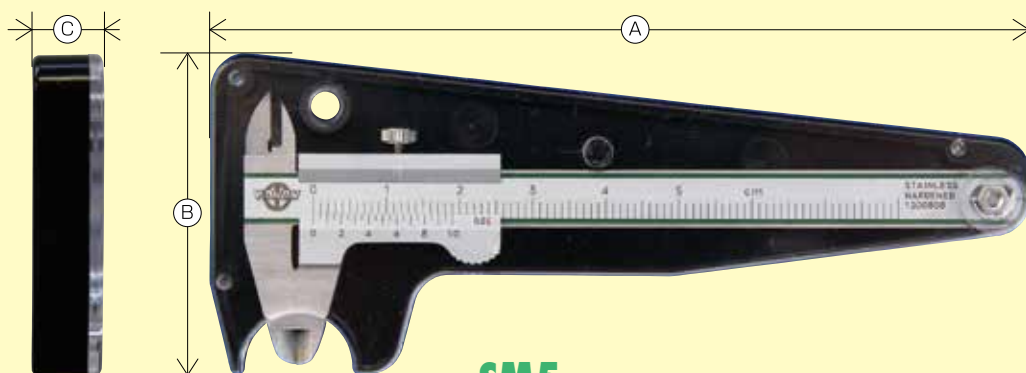
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# SM5

Standard vernier caliper for normal measurement.

Standard type.

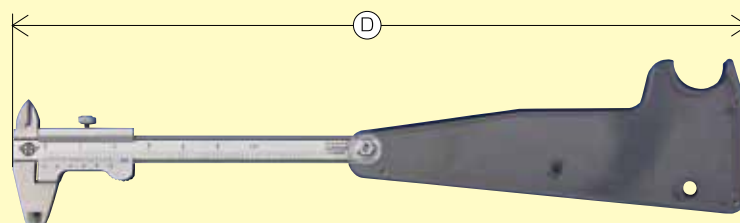
Pocket-sized caliper is convenient to carry



SM5



● Fits comfortably and safely in the breast pocket



## ■ SM5 : Specifications

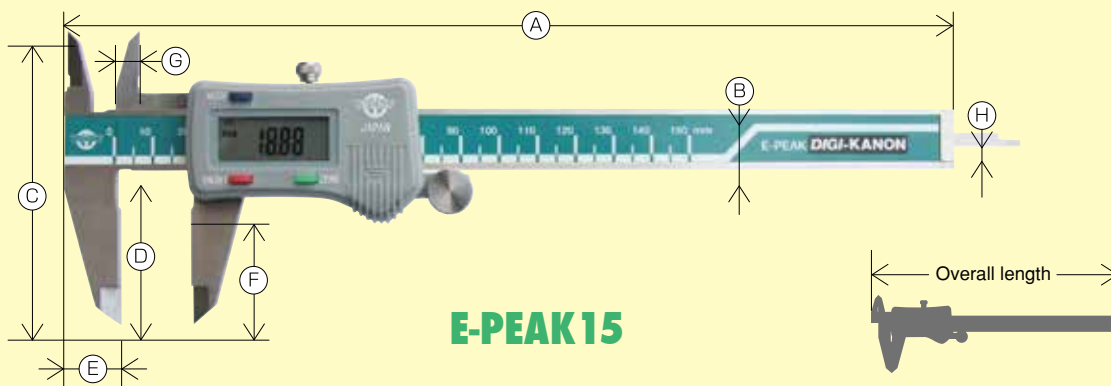
(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D
SM5	50	0.05	$\pm 0.05$	40g	112	44	9.7	209

\* SM5 are not equipped with any depth bar. Refer the specifications of SM7 on P23 for the dimensions of the caliper. (except A and H)

Adequate for narrow space where the display is hard to see

**REGISTERED AS UTILITY MODEL (Japan)**



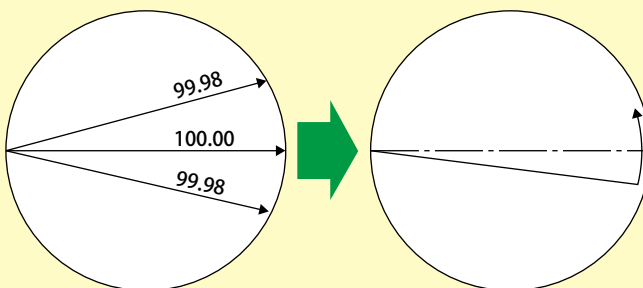
**E-PEAK15**

**New**

**Maximum values and minimum values are automatically stored.**

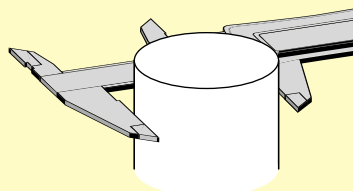
**For measuring inner diameter, the maximum value (Max) mode is convenient!**

- On former vernier calipers, users search the maximum value as a numerical value.



- The maximum value of inner diameter is automatically stored in an E-PEAK vernier caliper.

**For measuring outer diameter at a dark location, the minimum value (Min) mode is convenient!**



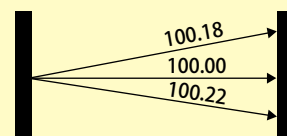
- The minimum value of outer diameter is automatically stored in an E-PEAK vernier caliper.

Convenient in such cases!

Lathe turning (Posture for reading caliper is hard.)

Measurement at the back of processing machine (difficult to see the display)

Measurement of width of large groove



### ■ E-PEAK : Specifications

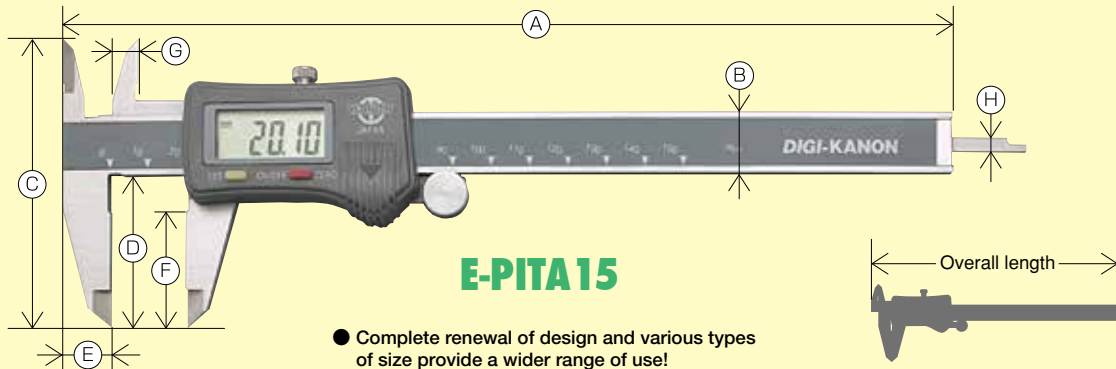
(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H
E-PEAK15	150	0.01	±0.02	241	SR44 1 piece	170g	234	16	76	40	14	30	7	3.8
E-PEAK20	200			291		190g	284	16	76	40	14	30	7	3.8
E-PEAK30	300		±0.03	396		280g	388	16	103	64	14	47	8	4.8

21st century version of standard caliper!

### Flat-head vernier caliper series

With "Flat head", measurement can be conducted easily from any corners.



#### E-PITA15

- Complete renewal of design and various types of size provide a wider range of use!

#### ■ E-PITA : Specifications

(Unit : mm)

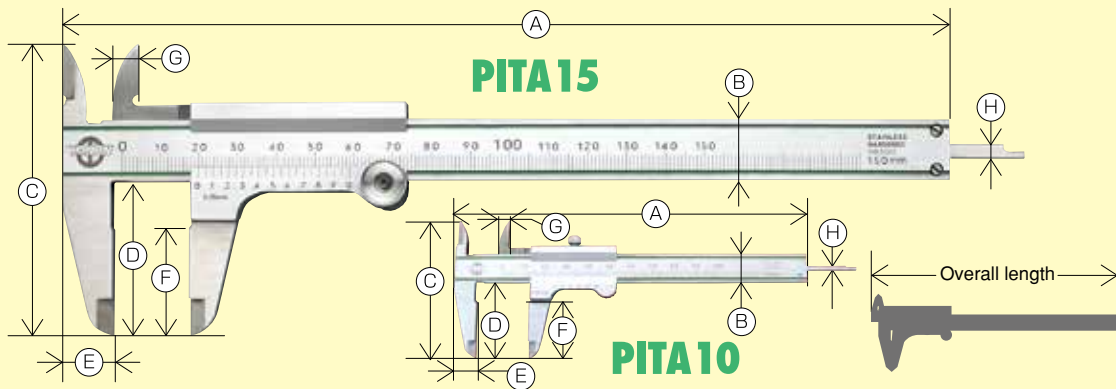
Model	Measuring length	Resolution	Instrumental error	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H
E-PITA10	100	0.01	±0.02	191	SR44 1 piece	160g	184	16	76	40	14	30	7	3.8
E-PITA15	150			241		170g	234	16	76	40	14	30	7	3.8
E-PITA20	200			291		190g	284	16	76	40	14	30	7	3.8
E-PITA30	300		±0.03	396		280g	388	16	103	64	14	47	8	4.8
E-PITA40	400		±0.05	496		400g	488	16	103	64	14	47	8	—

\* E-PITA40 is not equipped with any depth bar.

#### ■ E-PITA : Metric / Inch model Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H
E-PITA150×6"	150mm×6"	0.01mm	±0.02	241	SR44 1 piece	170g	234	16	76	40	14	30	7	3.8
E-PITA200×8"	200mm×8"	×		291		190g	284	16	76	40	14	30	7	3.8
E-PITA300×12"	300mm×12"	0.0005"	±0.03	396		280g	388	16	103	64	14	47	8	4.8



- The upper and lower grooves on the main scale side reduce irregular reflection on the scale surface. In addition, the green color imposes a less load to eyesight, resulting less fatigue of eyes.

#### ■ PITA : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Overall length	Weight	A	B	C	D	E	F	G	H
PITA10	100	0.05 (Division of 39 mm into 20 equal parts)	±0.05	171	100g	166	13.5	65	34.5	11	25	5	2.4
PITA15	150			237	140g	230	16	76	40	14	28	7	3.8
PITA20	200			287	160g	280	16	76	40	14	28	7	3.8
PITA30	300		±0.06	409	340g	400	20	111	64	19	48	9	3.8
PITA40	400			515	420g	506	20	111	64	19	48	9	—

\* PITA40 is not equipped with any depth bar. \* Minimum reading of PITA10 is division of 19mm into 20 equal parts.

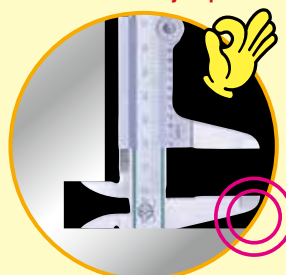
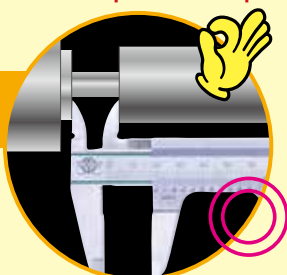
Easy solution for a narrow space at the tip!

Can be fitted at a location where contact was formerly impossible!

Smooth movement at a location where an instrument was formerly blocked!

#### With PITA vernier caliper

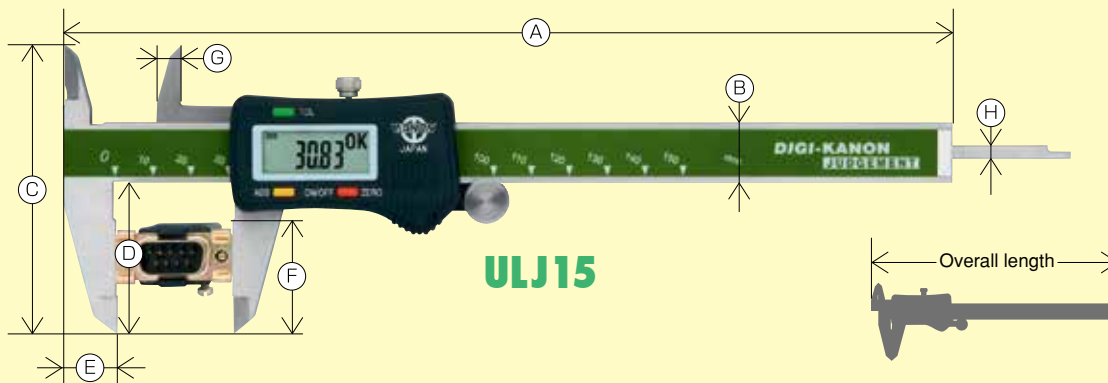
Measurement on edge face (measurement with PITA)





## JUDGEMENT

With "Judgment function", instantaneous sorting of accepted products and rejected products is available.



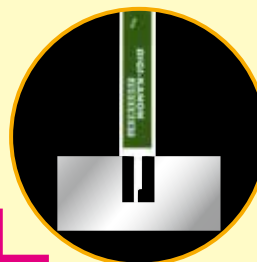
Measurement of internal dimension



Measurement of external dimension



Measurement of depth



- For sorting accepted parts and rejected parts from a large quantity of parts or the like, the working time can be largely reduced relative to former products.
- By setting the reference value for acceptance of work to be measured in advance, the OK/NG indication can be checked in a moment on the panel. Anyone can make a judgment quickly and easily.
- For complex shapes for which measurement with a former vernier caliper was difficult, adoption of a flat head allows fitted contact of the tip and measurement of edge face without any stress.

In addition to normal measurement, the judgment provides further ...

Measurement on edge face (measurement with flat-head)



Judgment function



The OK indication allows quick and accurate "judgment."

### ULJ : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H
ULJ15	150	0.01	±0.03	241	SR44 1 piece	170g	234	16	76	40	14	30	7	3.8
ULJ20	200			291		190g	284	16	76	40	14	30	7	3.8
ULJ30	300			396		280g	388	16	103	64	14	47	8	4.8

### ULJ : Metric / Inch model Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H
ULJ150×6"	150mm×6"	0.01mm × 0.0005"	±0.03	241	SR44 1 piece	170g	234	16	76	40	14	30	7	3.8
ULJ200×8"	200mm×8"			291		190g	284	16	76	40	14	30	7	3.8
ULJ300×12"	300mm×12"			396		280g	388	16	103	64	14	47	8	4.8

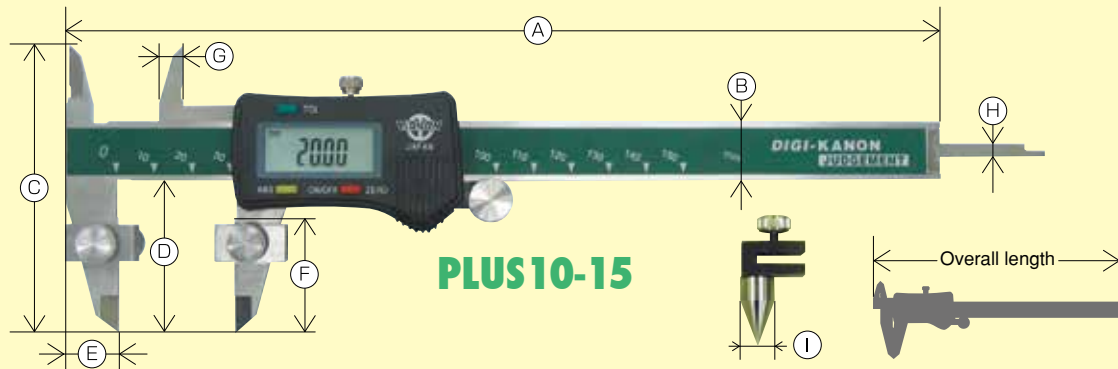
# PLUS10

Equipped with a probe for center distance of holes as a standard component

ONLY ONE

## PLUS10

"Circular center distance of holes measurement function" is added to the new multi-functional caliper.



PLUS10-15

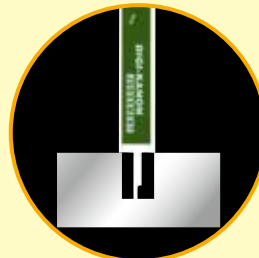
Inside measurement



Outside measurement



Measurement of depth



Comparative measurement (ABS function)



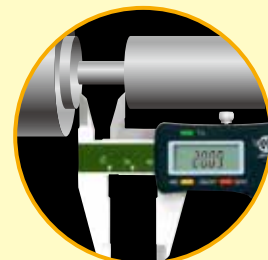
Point measurement



Measurement of height from a face



Measurement on edge face (measurement with flat-head)

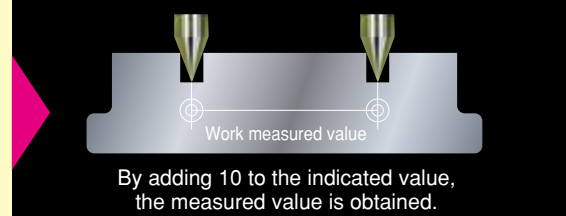


Judgment function



Plus 10 provides further ...

Measurement of center distance between holes is available.



- In addition to normal measurement, a judgment function is provided.
- By mounting a hole pitch probe attachment to the inside of the outside jaw with screws, "circular hole center distance measurement" is available. (\*By adding 10 to the indicated value, the measured value is obtained.)



### PLUS10 : Specifications

(Unit : mm)

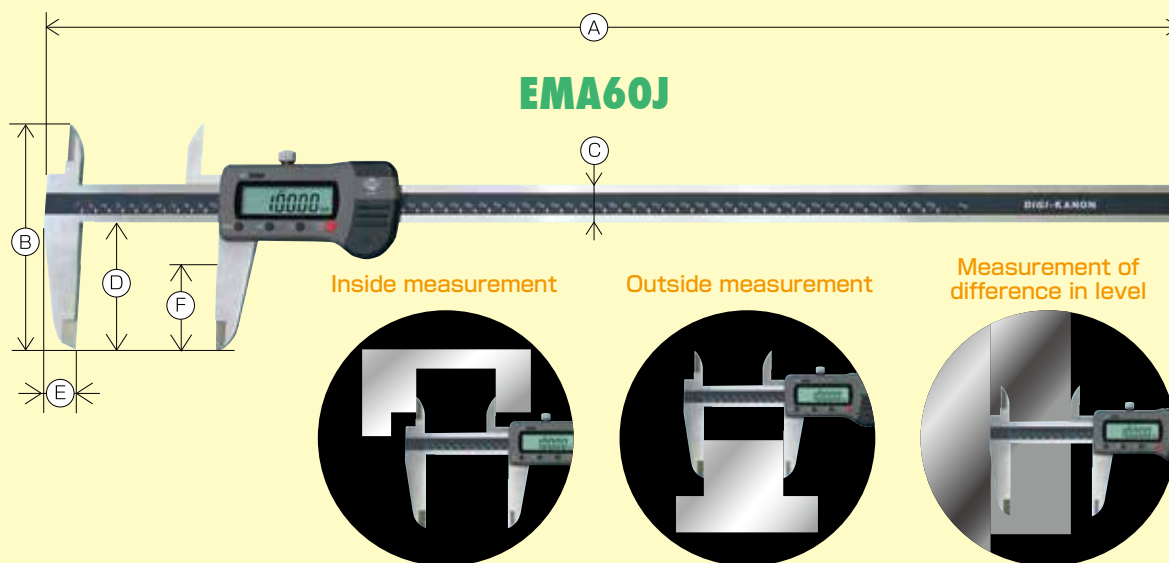
Model	Measuring length	Resolution	* Instrumental error	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H	I
PLUS10-15	150	0.01	±0.03	241	SR44 1 piece	170g	234	16	76	40	14	30	7	3.8	10
PLUS10-20	200			291		190g	284	16	76	40	14	30	7	3.8	10
PLUS10-30	300		±0.04	396		280g	388	16	103	64	14	47	8	4.8	10

\* This is not an instrument error of circular pitch measurement.

# EMA

## Adequate for large scale measurement

### Digital caliper adequate for large scale measurement



#### EMA : Specifications

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F
EMA60J	600	0.01	$\pm 0.05$	CR2032 1 piece	1.4Kg	800	165	28	89	28	60
EMA100J	1000		$\pm 0.07$		2.0Kg	1200	215	28	128	32	90

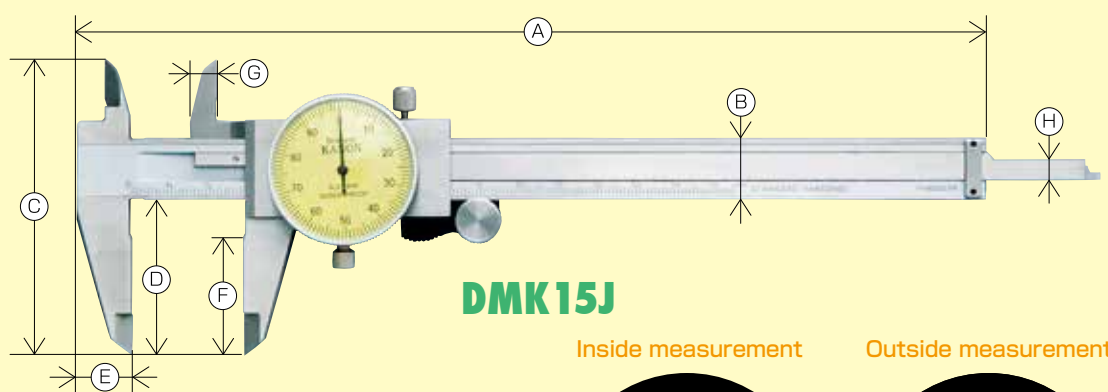
(Unit : mm)

# DMK-J

## Black scale on gold base provides easy-to-see display and is adequate for instantaneous reading.

With "Scale dial", instantaneous reading is available.  
The caliper with dial allows quick reading of measurement.

**Dial direct reading method**



- The scale dial allows quick reading.
- The black scale on a gold base provides easy-to-see display.
- The shock resistance is improved, allowing use without anxiety.

#### DMK-J : Specifications

Model	Measuring length	Resolution	Instrumental error	Rotation of pointer	Weight	A	B	C	D	E	F	G	H
DMK15J	150	0.01	$\pm 0.02$	1	150g	235	16	77	40	14	30	7	5
DMK20J	200		$\pm 0.03$	1	210g	290	17	90	50	17	38	7	5
DMK30J	300		$\pm 0.04$	1	320g	395	17	105	64	18	50	9	3.8

(Unit : mm)



# E-RM-J

Centerline caliper for distance between center to center of holes with equal diameter

ONLY ONE

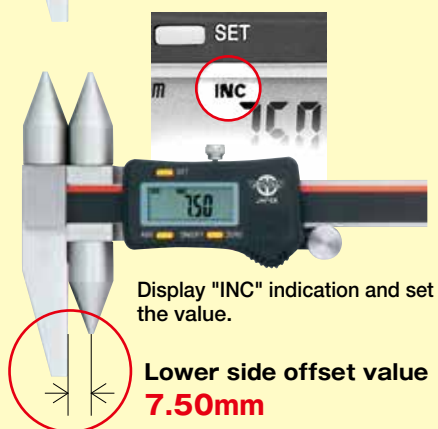
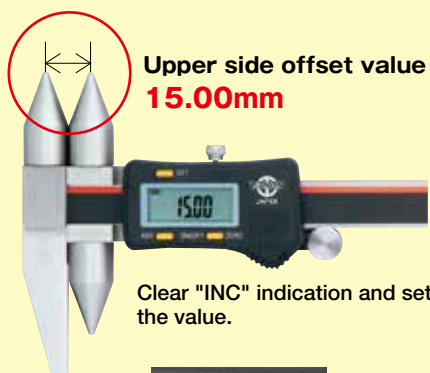
Adequate for center to center distance measurement!

Direct reading system  
Digital

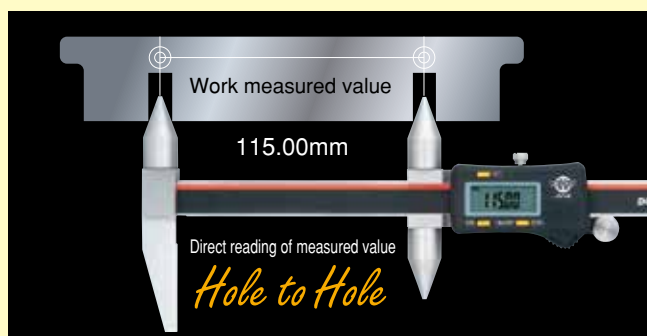
One unit for  
two functions



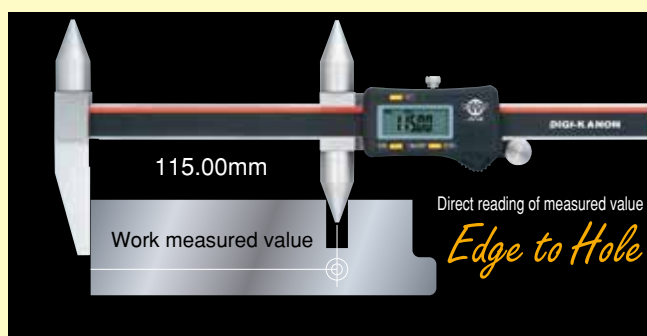
E-RM15J



Measurement of distance between center to center of holes



Measurement of distance between edge face and hole



- By setting the upper side offset value (15.00 mm) and the lower offset value (7.50 mm), this instrument allows the measured center distance to be indicated as actual size. This saves time for addition or subtraction of indicated value that is required by former instruments, resulting easier use.

- Since one unit of this caliper allows measurement of center distance of holes and distance between edge face and hole through direct reading, the product eliminates the need for preparing two units for two types of measurement, resulting in convenient use.
- Offset value setting in the upper side and the lower side can be easily conducted by pressing the "SET" button.

## E-RM-J : Specifications

(Unit : mm)

Model	Measuring range		Resolution	Instrumental error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	G	H	Θ
	Pitch for upper side	Pitch for lower side															
E-RM15J	15~150	7.5~150	0.01	±0.05	φ 3	φ 14	SR44 1 piece	300g	260	50	16	φ15	φ1.9	38	32	71	40°
E-RM20J	15~200	7.5~200						340g	310								
E-RM30J	15~300	7.5~300						380g	405								

# E-RX / E-RZ

Digital caliper for measuring circular center distance of holes with digital direct reading system

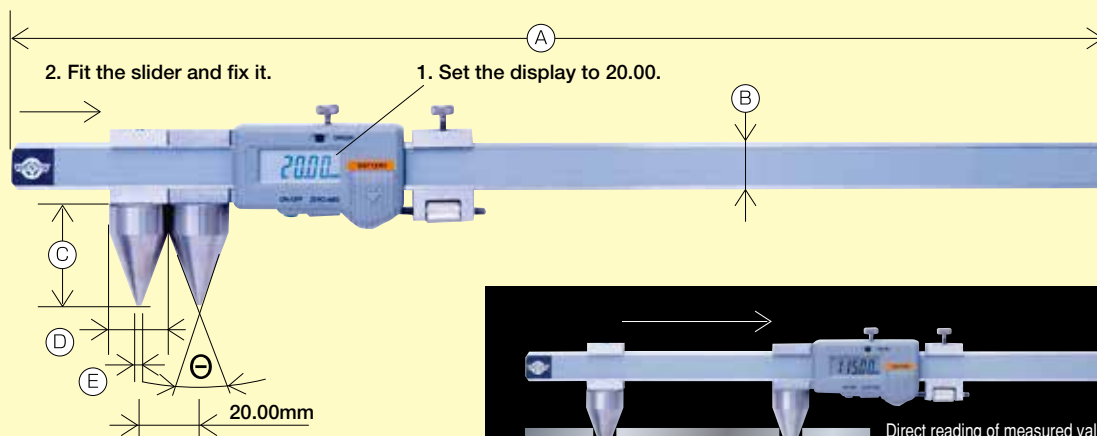
ONLY ONE

"Digital direct reading system" for the measurement of the distance between two centers through easy operation.

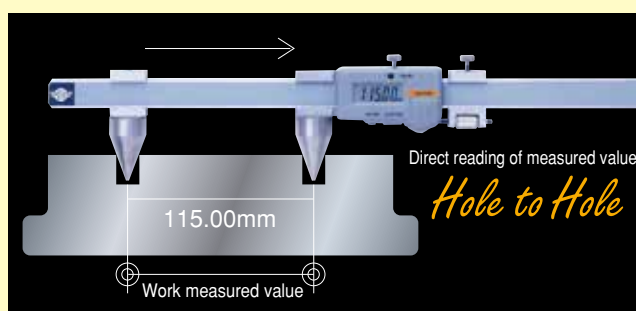
Direct reading system  
Digital

For center distance measurement "between holes"

## E-RX30B



- The center distance of holes can be measured through direct reading. Holes with a diameter of 19 mm at the maximum can be measured.
- The printer output function is provided.



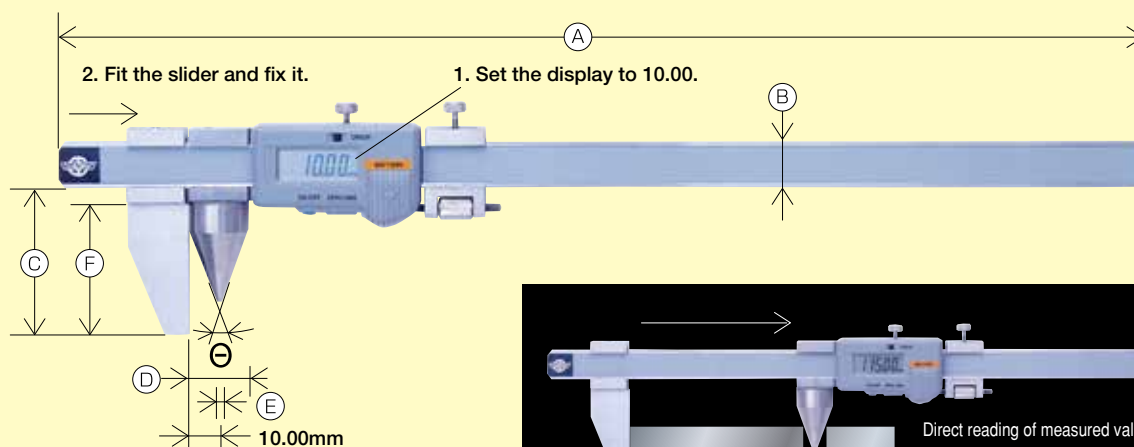
### E-RX : Specifications

(Unit : mm)

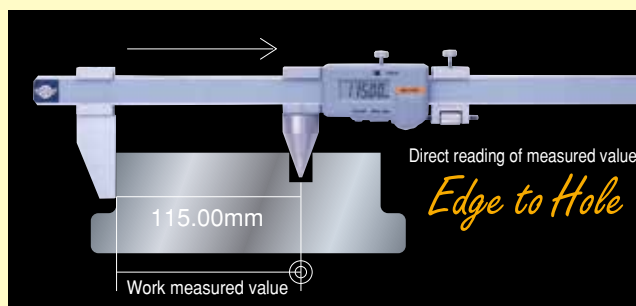
Model	Measuring length	Resolution	Instrumental error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	Θ
E-RX20B	20~200	0.01	±0.05	φ3	φ19	SR44 1 piece	360g	370	16	35	φ20	φ2	40°
E-RX30B	20~300						582g	500	20	35	φ20	φ2	40°

For measurement of distance "between edge face and hole"

## E-RZ30B



- The distance between edge face and hole can be measured through direct reading. Holes with a diameter of 19 mm at the maximum can be measured.
- The printer output function is provided.



### E-RZ : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	Θ
E-RZ20B	10~200	0.01	±0.05	φ3	φ19	SR44 1 piece	340g	370	16	50	φ20	φ2	45	40°
E-RZ30B	10~300						560g	500	20	50	φ20	φ2	42	40°

# E-RX-J

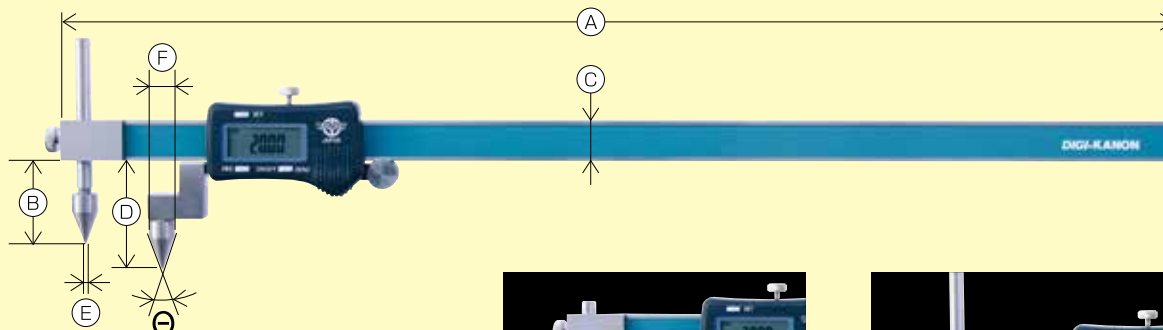
Adequate for center distance measurement for holes at different levels

ONLY ONE

Digital direct reading of center distance measurement "between holes with equal diameter at different levels"

Direct reading system  
Digital

## E-RX30J



- Since the probe of main scale moves vertically, center distance measurement between holes at different levels is available.



### E-RX-J : Specifications

(Unit : mm)

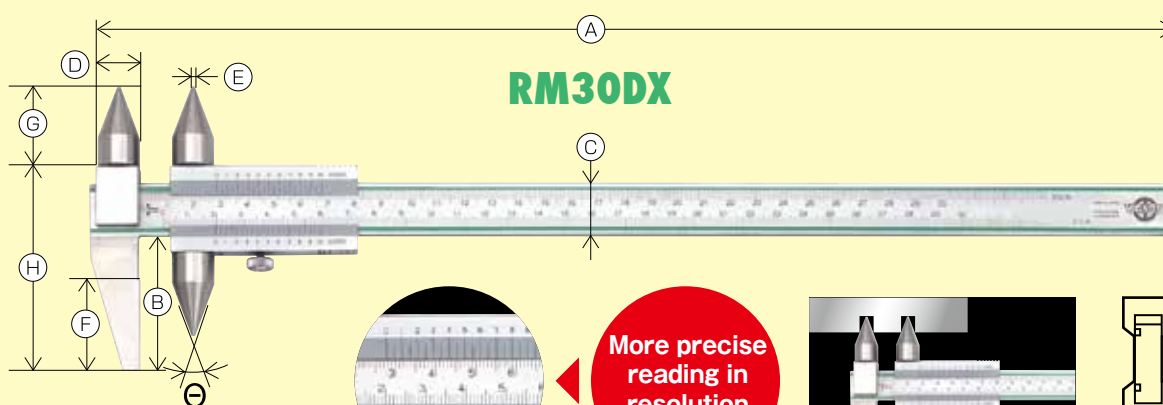
Model	Measuring range	Resolution	Instrumental error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	Θ
E-RX30J	10~300	0.01	±0.05	φ 2	φ 9	SR44 1 piece	300g	435	18~52	16	42	φ 1	φ 10	40°

# RM-DX

Centerline caliper for distance between center to center distance of holes with equal diameter

ONLY ONE

Adequate for center to center distance measurement!



More precise  
reading in  
resolution  
of 0.05!

### RM-DX : Specifications

(Unit : mm)

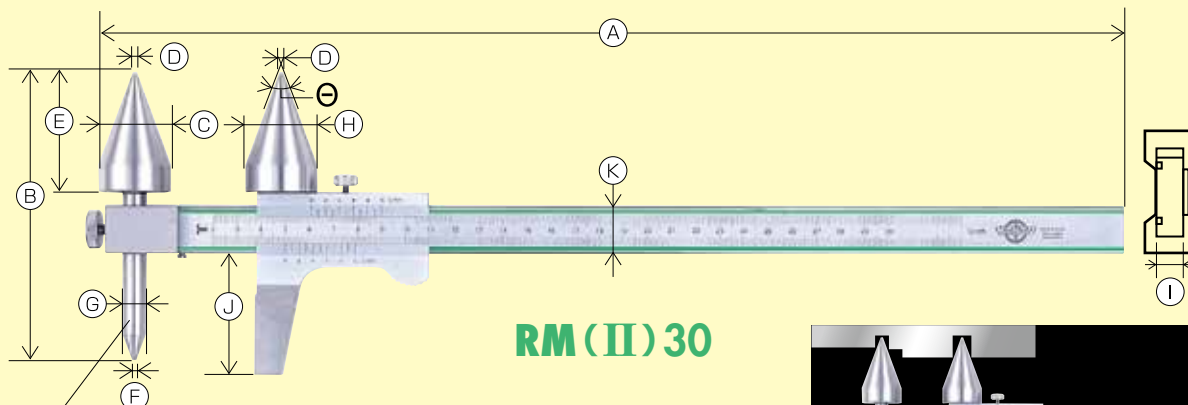
Model	Measuring range		Minimum reading	Instrumental error	Minimum hole diameter	Maximum hole diameter	Weight	A	B	C	D	E	F	G	H	I	Θ
	Pitch for upper side	Pitch for lower side															
RM15DX	17~150	9~150	0.05 <div>Division of 39 mm into 20 equal parts</div>	±0.07	φ 3	φ 15	400g	280	50	20	φ 16	φ 1.9	34	31	76	4	40°
RM20DX	17~200	9~200		±0.08			430g	330									
RM30DX	17~300	9~300		±0.11			500g	410									
RM60DX	17~600	9~600		±0.15	φ 5	φ 19	1.16kg	780	85	25	φ 20	φ 4	67	35	116	6	
RM100DX	21~1000	11~1000							3.15kg	1200							

# RM(II)

## Offset centerline caliper

ONLY ONE

For center to center distance with different diameters!



RM(II) 30

- In addition measurement between holes with different diameters is available because the probe of main scale moves vertically.

### RM(II) : Specifications

Model	Measuring range		Minimum reading	Instrumental error	Minimum hole diameter	Maximum hole diameter	Weight	A	B	C	D	E	F	G	H	I	J	K	L
	Pitch for upper side	Pitch for lower side																	
RM(II)15	25~150	20~150	0.1 (Division of 29 mm into 10 equal parts)	±0.07	φ 1	φ 5	180g	261	70	φ 6	φ 0.2	—	φ 0.2	φ 6	φ 6	3	40	16	53°
RM(II)30	35~300	25~300		±0.08	φ 3	φ 29	550g	422	120	φ 30	φ 2	50	φ 2	φ 10	φ 30	4	50	20	40°
RM(II)60	35~600	25~600		±0.11			1.3kg	781											
RM(II)100	50~1000	40~1000		±0.15			3.5kg	1233											

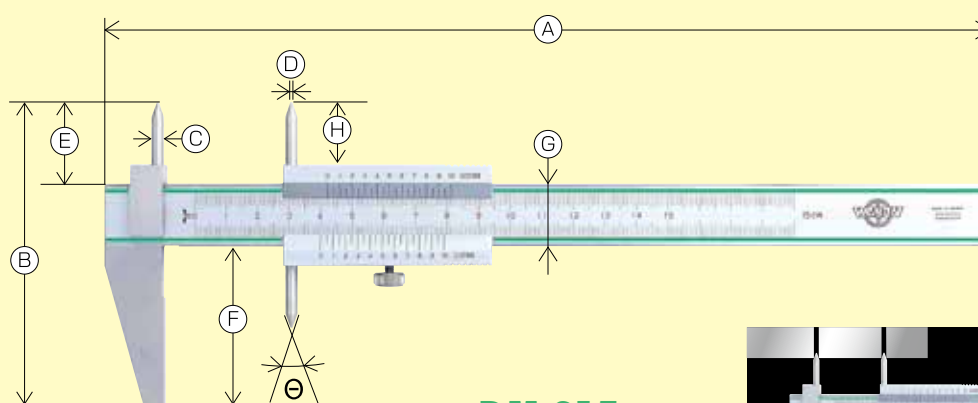
(Unit : mm)

# RM-S

## Adequate for center distance measurement for small diameter holes

ONLY ONE

Vernier caliper for measuring circular hole center distance adequate for "small diameter hole".



RM-S15

### RM-S : Specifications

Model	Measuring range		Minimum reading	Instrumental error	Minimum hole diameter	Maximum hole diameter	Weight	A	B	C	D	E	F	G	H	L
	Pitch for upper side	Pitch for lower side														
RM-S15	5~150	3~150	0.05 (Division of 39 mm into 20 equal parts)	±0.07	φ 1	φ 3.5	180g	280	96	φ 4	φ 0.8	26	50	20	20	40°

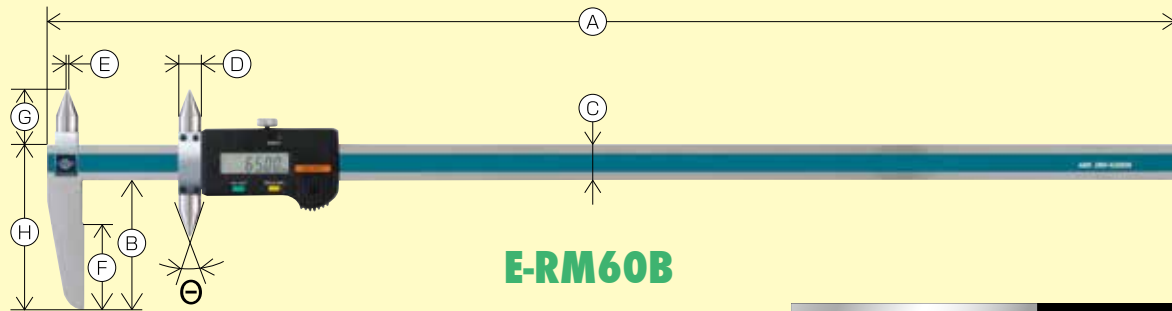
(Unit : mm)

# E-RM60B

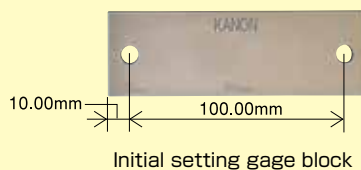
Adequate for center distance measurement for holes with equal diameter on long work

ONLY ONE

With “measuring length of 600 mm”, this large digital caliper is adequate for measuring holes with equal diameter on long work.

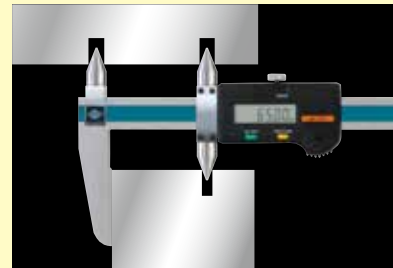


E-RM60B



Initial setting gage block

- Long vernier caliper that allows measurement of center distance of two holes with an equal diameter and measurement of distance between edge face and hole center.
- Initial setting gage block is included as standard accessory. Model: G-10-8. Refer to page 38 for the dimensions.
- The printer output function is provided.



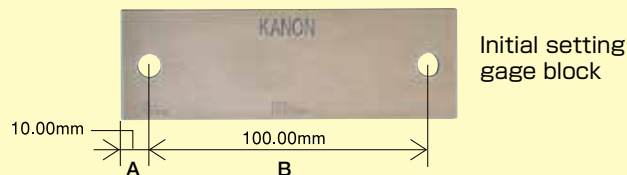
## E-RM60B : Specifications

(Unit : mm)

Model	Measuring range		Resolution	Instrumental error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	G	H	Θ
	Pitch for upper side	Pitch for lower side															
E-RM60B	17~600	9~600	0.01	±0.05	φ 3	φ 15	SR44 1 piece	2.4kg	780	85	25	φ16	φ1.9	69	31	110	40°

## Method of setting with initial setting gage block

Method of measurement on upper and lower sides with E-RM-B series (E-RM60B/E-RM(II)-B/E-RM-S-B) special-purpose gage block



Initial setting gage block

### [In case of E-RM60B]

#### Measurement on lower side

Position the lower measurement section to the dimension A side of the gage block. At this time, ensure that no clearance of measuring surface is present in the edge face side. Press the ON/OFF switch and then press the ZERO/ABS switch. At this time, dimension A of 10 mm becomes the zero point.

\* When the measured value is indicated, add or subtract it to or from dimension A of 10 mm.

- (Example 1) If “8.00” is indicated:  
 $8.00 + 10 \text{ mm (dimension A)} = 18.00 \text{ mm (actual size)}$   
 (Example 2) If “-0.05” is indicated:  
 $-0.05 + 10 \text{ mm (dimension A)} = 9.95 \text{ mm (actual size)}$

#### Measurement on upper side

Position the upper measurement section to the dimension B side of the gage block. At this time, ensure that the probe is securely inserted into the hole. Press the ON/OFF switch and then press the ZERO/ABS switch. At this time, dimension B of 100 mm becomes the zero point.

\* When the measured value is indicated, add or subtract it to or from dimension B of 100 mm.

- (Example 3) If “25.00” is indicated:  
 $25.00 + 100 \text{ mm (dimension B)} = 125.00 \text{ mm (actual size)}$   
 (Example 4) If “-25.00” is indicated:  
 $-25.00 + 100 \text{ mm (dimension B)} = 75.00 \text{ mm (actual size)}$

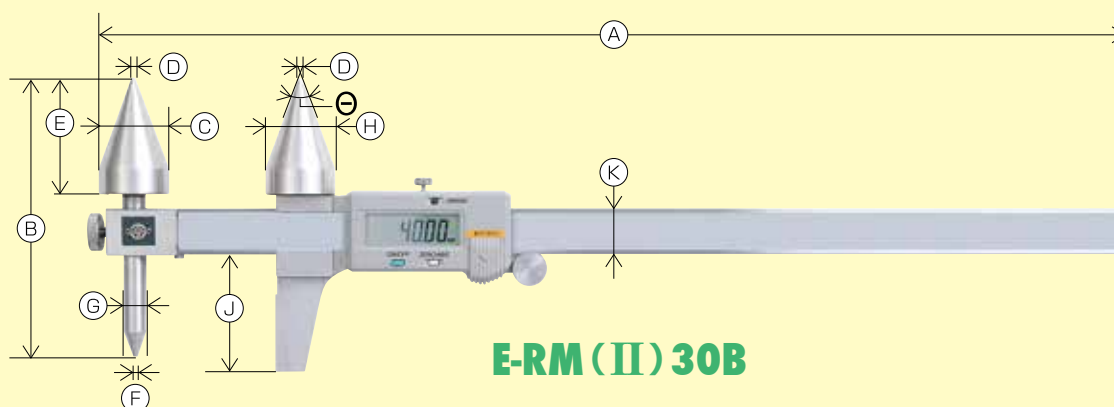


# E-RM(II) / E-RM-S

Adequate for center distance measurement for holes

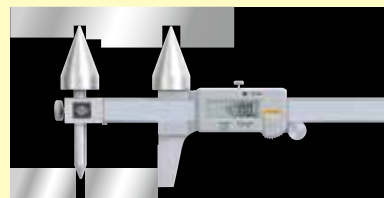
ONLY ONE

Caliper for measuring circular hole center distance adequate for "offset system" with vertical movement of probe and measurement of "small diameter hole and small surface"



**E-RM(II) 30B**

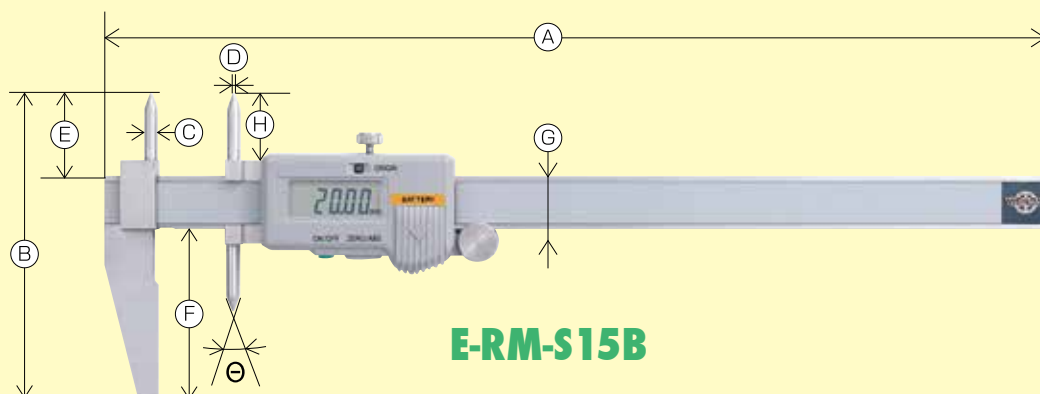
- In addition measurement for holes with different diameters is available because the probe of main scale moves vertically.
- Initial setting gage block is included as standard accessory.  
Model: G-20-3 for E-RM(II)15B.  
Model: G-25-8 for E-RM(II)30B, (II)60B.  
Refer to page 38 for the dimensions.
- The printer output function is provided.



## ■ E-RM(II) : Specifications

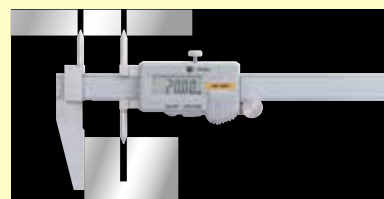
(Unit : mm)

Model	Measuring range		Resolution	Instrumental error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	G	H	J	K	Θ
	Pitch for upper side	Pitch for lower side																	
E-RM(II)15B	25~150	20~150	0.01	±0.05	φ1	φ5	SR44 1 piece	160g	254	70	φ6	φ0.2	—	φ0.2	φ6	φ6	40	16	53°
E-RM(II)30B	35~300	25~300			φ3	φ29		530g	438	120	φ30	φ2	50	φ2	φ10	φ30	50	20	40°
E-RM(II)60B	35~600	25~600						1.7kg	799								70	25	



**E-RM-S15B**

- This product is manufactured on order.
- Initial setting gage block is included as standard accessory.  
Model: G-10-3.  
Refer to page 38 for the dimensions.
- The printer output function is provided.



## ■ E-RM-S : Specifications

(Unit : mm)

Model	Measuring range		Resolution	Instrumental error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	G	H	Θ
	Pitch for upper side	Pitch for lower side															
E-RM-S15B	5~150	3~150	0.01	±0.05	φ1	φ3.5	SR44 1piece	160g	280	90.7	φ4	φ0.8	24.7	50	16	20	40°

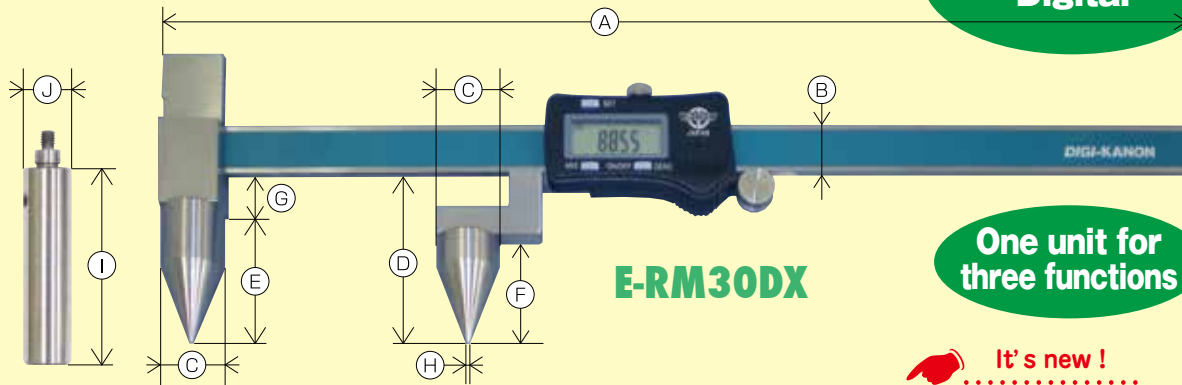
# E-RM30DX

Adequate for distance measurement between wall surface and hole

ONLY ONE

Direct reading type multi-functional digital scale for measuring circular hole center distance that allows "three types of measurement" by replacing the probe

Direct reading system  
Digital

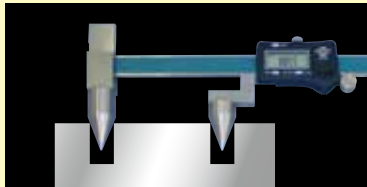


E-RM30DX

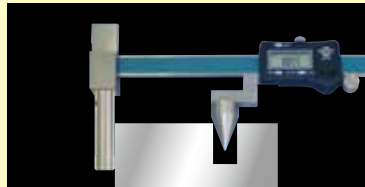
One unit for  
three functions

It's new !  
.....

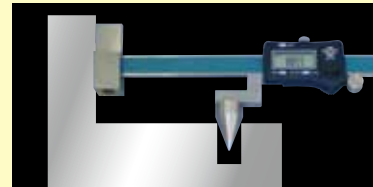
Pitch measurement  
between holes



Distance measurement  
between edge face and hole



Distance measurement  
between wall surface and hole



## ■ E-RM30DX : Specifications

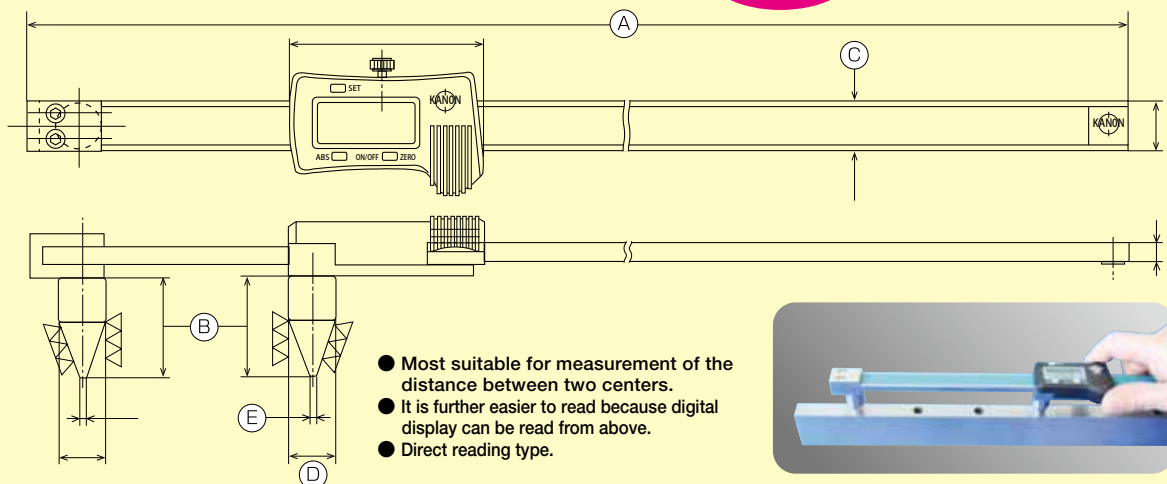
(Unit : mm)

Model	Measuring range		Resolution	Instrumental error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	G	H	I	J
	Edge/wall to hole	Hole to hole																
E-RM30DX	10~300	20~300	0.01	±0.05	φ 3	φ 19	SR44 1 piece	550g	430	16	φ20	57	45	35	12	φ2	60	φ15

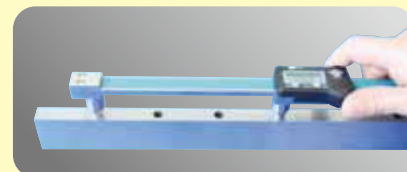
# E-RF30J

E-RF30J overlooking type digital centerline caliper.

An outstanding unit to read the digital display from above.



- Most suitable for measurement of the distance between two centers.
- It is further easier to read because digital display can be read from above.
- Direct reading type.



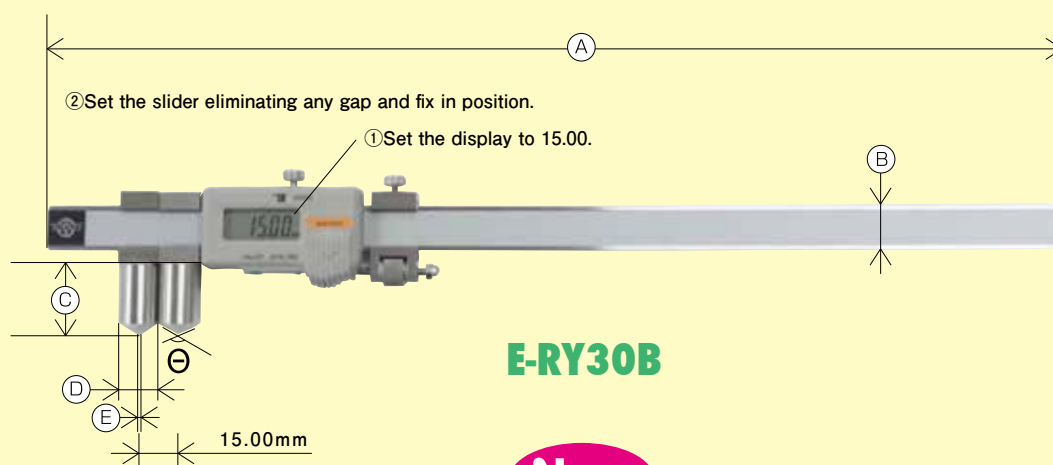
An example of measurement

## ■ E-RF30J : Specifications

(Unit : mm)

Model	Measuring range	Resolution	Minimum hole diameter	Maximum hole diameter	Instrumental error	Power supply	Weight	A	B	C	D	E
E-RF30J	16~300	0.01	φ 3	φ 14	±0.05	SR44 1 piece	500g	424	32	16	φ 15	φ 2

Adequate for measurement of the distance between two centers punched through sheet metal on a press.



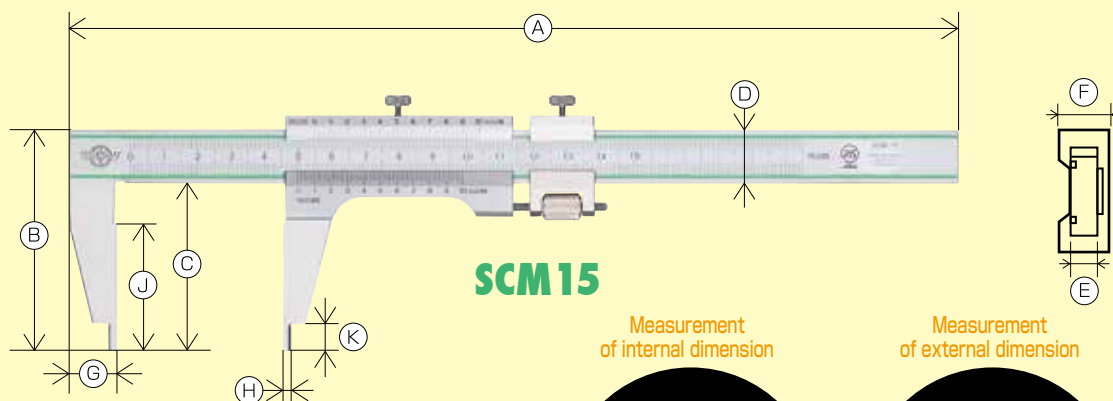
- For measuring the distance between two centers punched through 3.2mm or less thick sheet metal.
- For measuring the distance between two centers of holes drilled on an automatic machine.
- Generally, minimum diameter of a through hole is 1.5 time the sheet thickness.
- The distance between two centers can be measured directly on the surface plate.  
(tip of the probe does not interfere with the surface plate).
- The printer output function is provided.

### ■ E-RY : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	Θ
E-RY20B	15~200	0.01	±0.05	φ 3	φ 14	SR44 1piece	360g	370	16	25	φ 15	φ 1	120°
E-RY30B	15~300												

With “Fine adjustment carriage”, high precision is provided. Also various sizes are available with this vernier caliper.

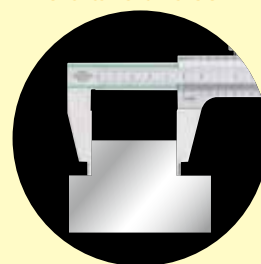
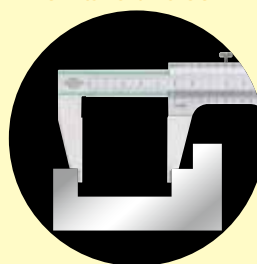


### SCM15

Measurement of internal dimension

Measurement of external dimension

- Since the tip of jaw is thin, high-precision reading is available for measurement of narrow part.

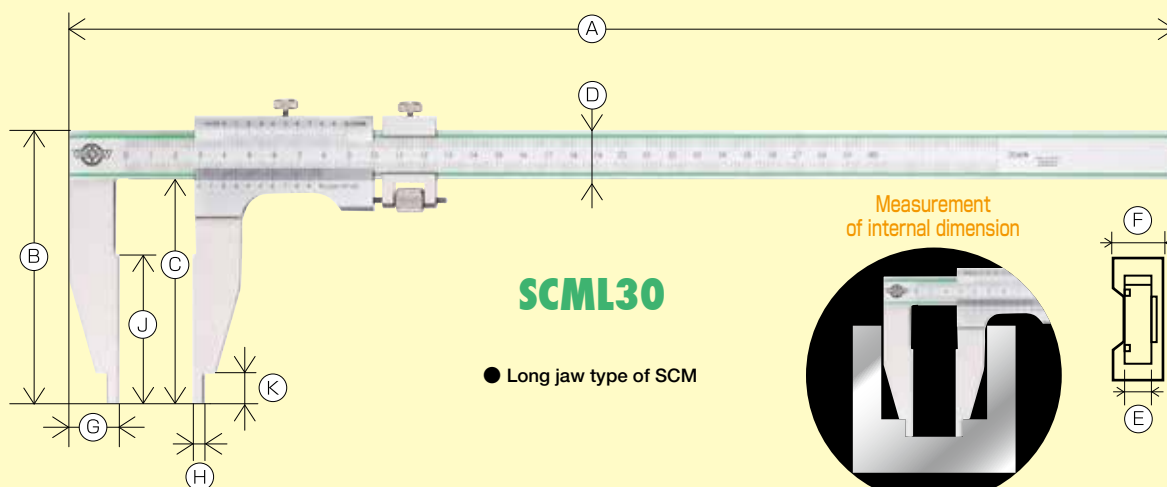


### SCM : Specifications

(Unit : mm)

Model	Measuring length for outside dimension	Measuring length for inside dimension	Instrumental error	Weight	A	B	C	D	E	F	G	H	J	K
SCM15	0~150	5~150	±0.03	170g	265	66	50	16	3	7	14	2.5	38	8
SCM20	0~200	5~200	±0.04	220g	320	77	60	17	3	7	15	2.5	46	8
SCM30	0~300	10~300		460g	445	95	75	20	4	8	20	5	58	12
SCM40	0~400	10~400	±0.05	520g	545	95	75	20	4	8	20	5	58	12
SCM45	0~450	14.5~450		900g	625	125	100	25	6	12.5	24.2	7.25	70	18
SCM50	0~500	14.5~500		1.26kg	670	125	100	25	6	12.5	24.2	7.25	70	18
SCM60	0~600	14.5~600		1.39kg	780	125	100	25	6	12.5	24.2	7.25	70	18
SCM100	0~1,000	20~1,000	±0.07	3.50kg	1250	172	140	32	8	15	32	10	95	24
SCM150	0~1,500	20~1,500	±0.12	6.50kg	1780	205	165	40	9	16	40	10	125	24
SCM200	0~2,000	25~2,000	±0.16	12.50kg	2325	250	200	50	11	20	50	12.5	150	25
SCM250	0~2,500	25~2,500	±0.22	14.50kg	2825	250	200	50	11	20	50	12.5	150	25
SCM300	0~3,000	25~3,000	±0.26	17.00kg	3325	250	200	50	11	20	50	12.5	150	25
SCM400	0~4,000	25~4,000	±0.40	25.00kg	4325	250	200	50	11	20	50	12.5	150	25

\*The minimum reading is 0.02 mm (division of 49 mm into 50 equal parts). For SCM400, however, the value is 0.05 mm.



### SCML30

- Long jaw type of SCM

Measurement of internal dimension



### SCML : Specifications

(Unit : mm)

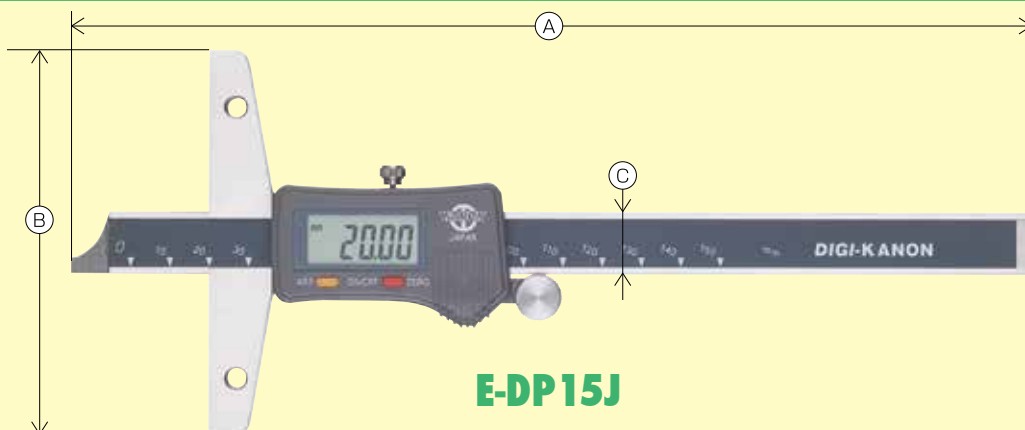
Model	Measuring length for outside dimension	Measuring length for inside dimension	Instrumental error	Weight	A	B	C	D	E	F	G	H	J	K
SCML30	0~300	10~300	±0.04	500g	445	110	90	20	4	8	20	5	60	12
SCML45	0~450	14.5~450	±0.05	1.18kg	630	175	150	25	6	12.5	24	7.25	100	18
SCML50	0~500	14.5~500		1.35kg	680	175	150	25	6	12.5	24	7.25	100	18
SCML60	0~600	14.5~600		1.48kg	780	175	150	25	6	12.5	24	7.25	100	18

\*The minimum reading is 0.02 mm (division of 49 mm into 50 equal parts).

# E-DP-J

Adequate for measuring depth of hole with wide opening

With "Span replacement", this depth gage is adequate for measuring depth of hole with wide opening.



**E-DP15J**

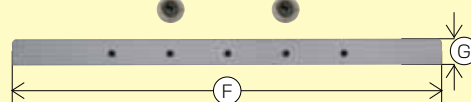
Measurement of depth  
(standard configuration)



Measurement of depth  
(with a span mounted)



● Since the span size of base can be changed on this depth gage, not only normal measurement of depth but also measurement of depth of hole with wide opening is available.  
(Replacement spans are optional.)



## ■ E-DP-J : Specifications

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C
E-DP15J	150	0.01	±0.03	SR44 1 piece	220g	245	100	16
E-DP20J	200				240g	300	100	16
E-DP30J	300				300g	400	100	16

(Unit : mm)

## ■ Replacement span (Unit : mm)

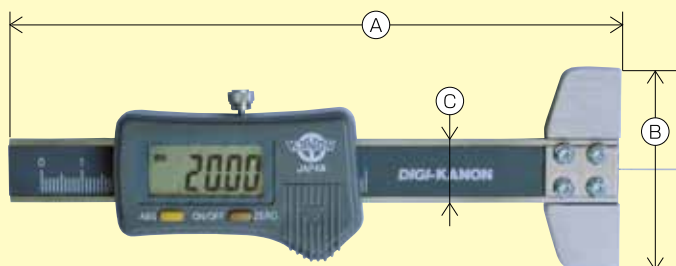
Model	F	G	Weight
SPAN18 (180mm)	180	16	260g
SPAN26 (260mm)	260	16	370g
SPAN32 (320mm)	320	16	440g

Option

# E-DP2J Extra thin

Adequate for measurement of depth of very small hole

With "φ0.5 mm depth bar", this product is adequate for measurement of depth of very thin hole.



Extra  
thin

φ0.5  
mm

Measurement  
of depth

● Since the depth bar is very thin (φ0.5 mm), the product is adequate for measurement of depth of very thin hole in which other depth gages cannot be inserted.

**E-DP2J**

## ■ E-DP2J : Specifications

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D
E-DP2J	20	0.01	±0.02	SR44 1piece	200g	150	50	16	φ 0.5

(Unit : mm)



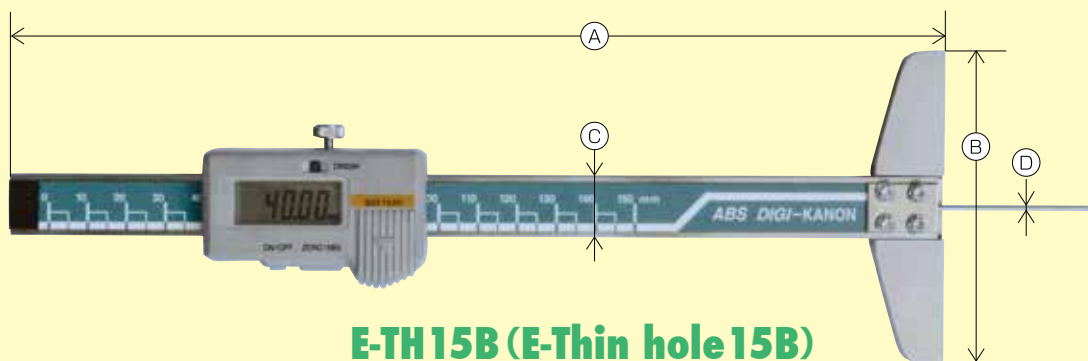


# E-TH E-Thin hole

Thin hole depth gauge with thin depth bar

ONLY ONE

Adequate for measurement of depth of thin hole!



## E-TH15B (E-Thin hole 15B)

Measurement of depth

- Since the depth bar is thin ( $D : \phi 1.5$  mm), the product is adequate for measurement of depth of thin hole.
- The printer output function is provided.

### ■ E-TH : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D
E-TH15B	150	0.01	$\pm 0.02$	SR44 1 piece	180g	238	80	16	$\phi 1.5$
E-TH20B	200				280g	288	80	16	$\phi 1.5$
E-TH30B	300		$\pm 0.03$		340g	388	80	16	$\phi 1.5$



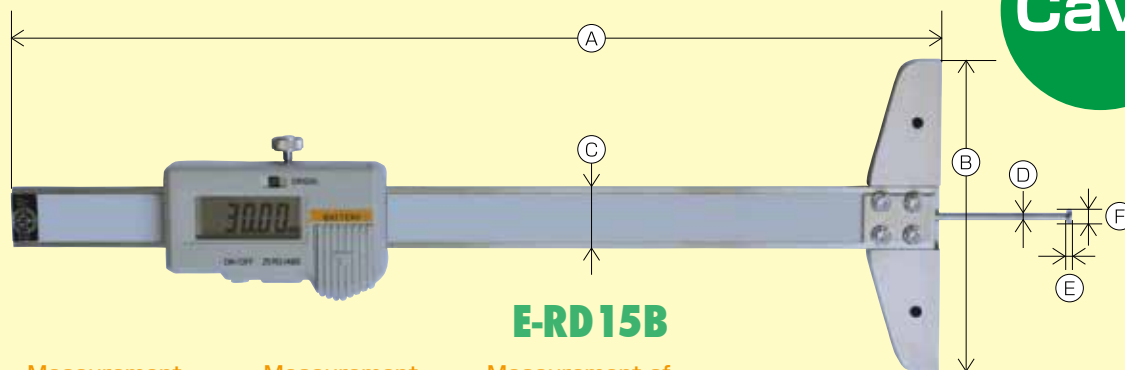
# E-RD Cave

Research gauge

ONLY ONE

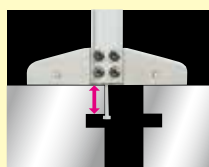
For hook measurement, depth measurement, and step measurement!

Cave



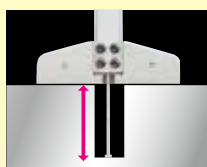
## E-RD15B

Measurement of hook



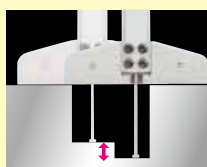
The position of inner cave from the edge face can be measured.

Measurement of depth



Also the depth of thin hole can be measured. (\*)

Measurement of difference in level



Also the difference in level in hole can be measured. (\*)

\* For measurement of depth and measurement of difference in level, use an attachment that is provided as accessories. The lower edge face of hook is flat with the edge face of attachment, and zero setting is conducted.

Attachment provided as accessories (overall length: 80 mm)



- Also an attachment with overall length of 180 mm is provided as an option.
- The printer output function is provided.

### ■ E-RD : Specifications

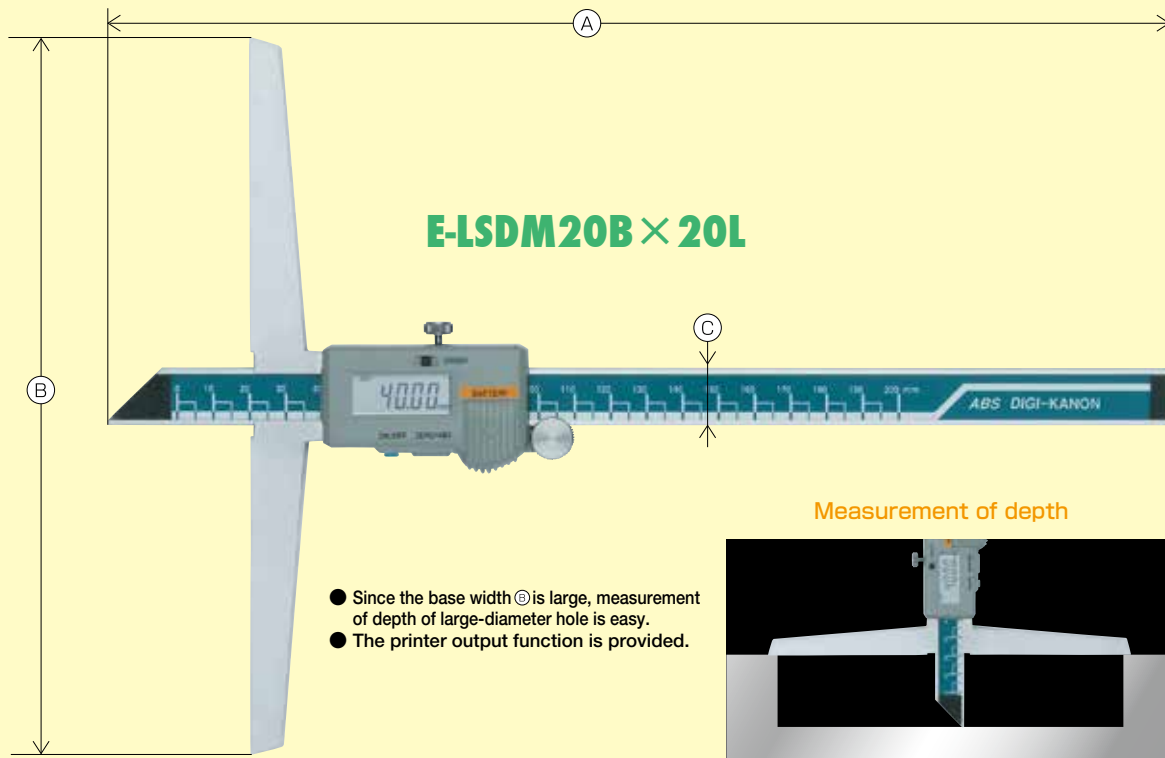
(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F
E-RD5B1	50	0.01	±0.02	SR44 1piece	150g	140	80	16	φ 2	1	φ 4
E-RD10B	100				170g	190					
E-RD15B	150				180g	238			φ 2.5		
E-RD15B6											
E-RD15B8											

# E-LSDM / LSDM

Adequate for measurement of depth of large-diameter hole

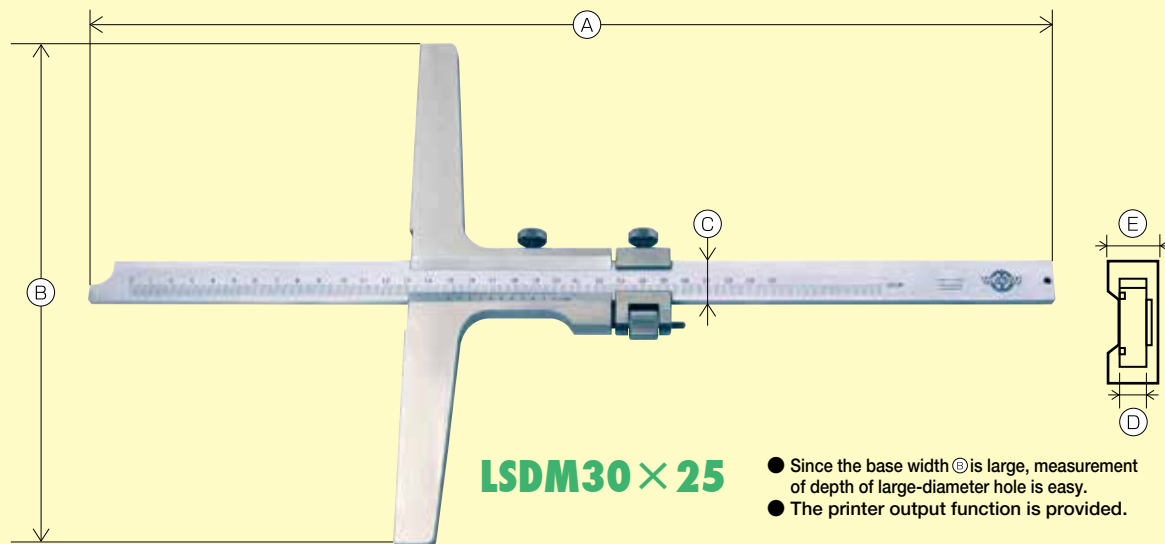
With "Long base", this long base depth gage is adequate for measurement of depth of large-diameter hole.



## ■ E-LSDM : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C
E-LSDM15B×15L	150	0.01	±0.02	SR44 1piece	280g	245	150	16
E-LSDM20B×20L	200				340g	295	200	16

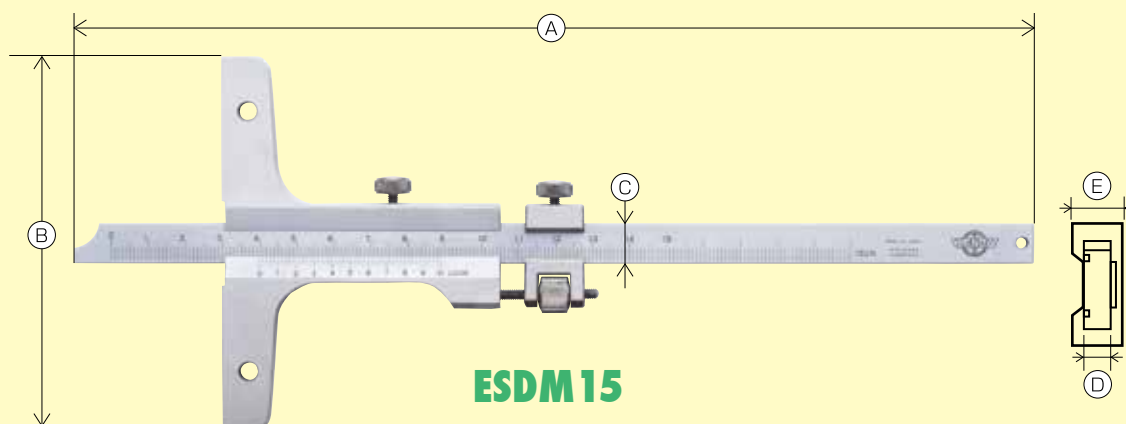


## ■ LSDM : Specifications

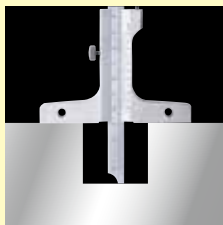
(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E
LSDM15×15	150	0.02 Division of 49 mm into 50 equal parts	±0.03	320g	260	150	11	4	8
LSDM15×20	150			370g	260	200	11	4	8
LSDM15×25	150			850g	300	250	20	6	11
LSDM20×15	200			320g	310	150	11	4	8
LSDM20×20	200			380g	310	200	11	4	8
LSDM20×25	200			900g	350	250	20	6	11
LSDM30×15	300		±0.04	350g	410	150	11	4	8
LSDM30×20	300			410g	410	200	11	4	8
LSDM30×25	300			1.1kg	450	250	20	6	11

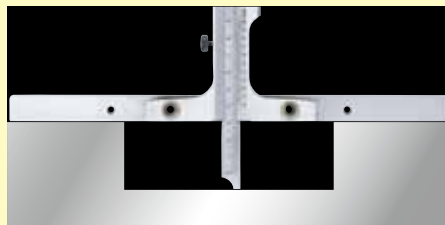
### Depth gage adequate for measurement of depth of hole with wide opening



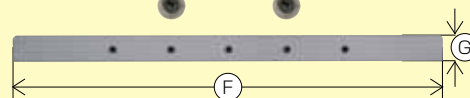
Measurement of depth (standard configuration)



Measurement of depth (with a span mounted)



● Since the span size of base can be changed on this depth gage, not only normal measurement of depth but also measurement of depth of hole with wide opening is available. (Replacement spans are optional.)



#### ESDM : Specifications

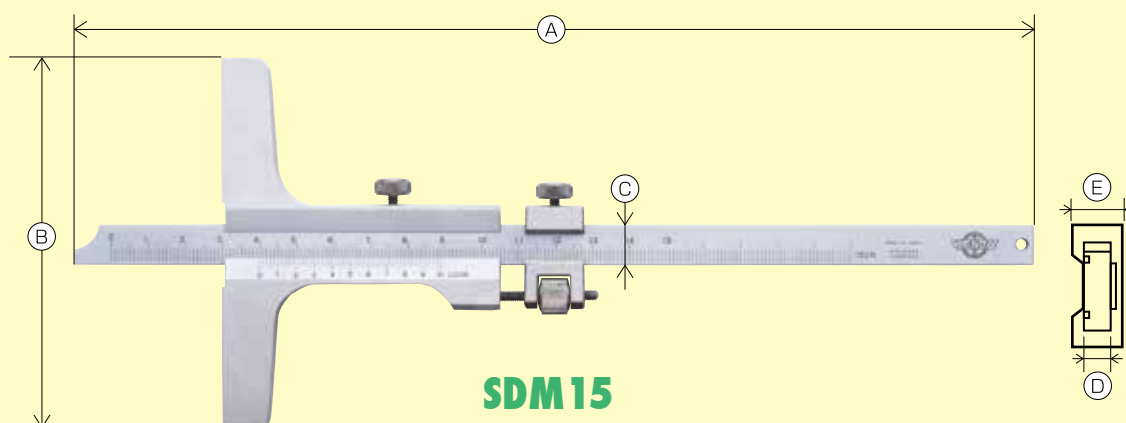
(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E
ESDM15	150	0.02 [Division of 49 mm into 50 equal parts]	±0.03	250g	260	100	11	4	8
ESDM20	200			270g	310	100	11	4	8
ESDM30	300		±0.04	300g	410	100	11	4	8

Option

#### Replacement span (Unit : mm)

Model	F	G	Weight
SPAN18 (180mm)	180	16	260g
SPAN26 (260mm)	260	16	370g
SPAN32 (320mm)	320	16	440g



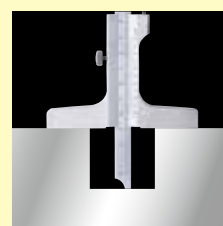
● Model configured as ESDM without span

#### SDM : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E
SDM15	150	0.02 [Division of 49 mm into 50 equal parts]	±0.03	250g	260	100	11	4	8
SDM20	200			270g	310	100	11	4	8
SDM30	300			300g	410	100	11	4	8
SDM40	400		±0.04	900g	580	180	16	5	11
SDM50	500			950g	680	180	16	5	11
SDM60	600		±0.05	970g	780	180	16	5	11
SDM100	1000		±0.07	1.66kg	1150	250	20	6	11

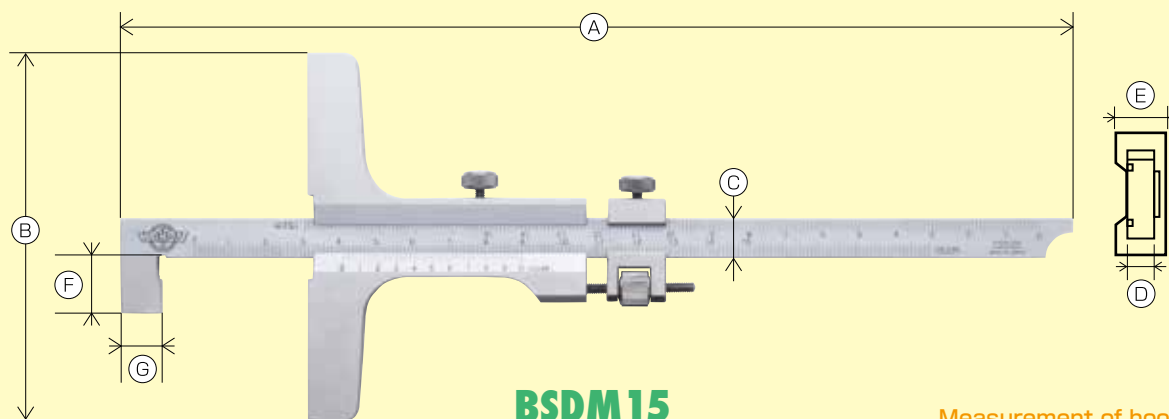
Measurement of depth



# BSDM

Adequate for measurement of depth of horizontal cave

With "Hook", this depth gage is adequate for measurement of depth of hole without end.



**BSDM 15**

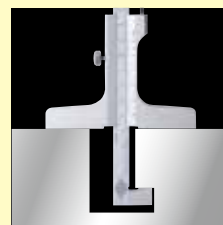
Measurement of hook

- By replacing the slider, the product can be used as SDM type. (Dual Scale)

## ■ BSDM : Specifications

(Unit : mm)

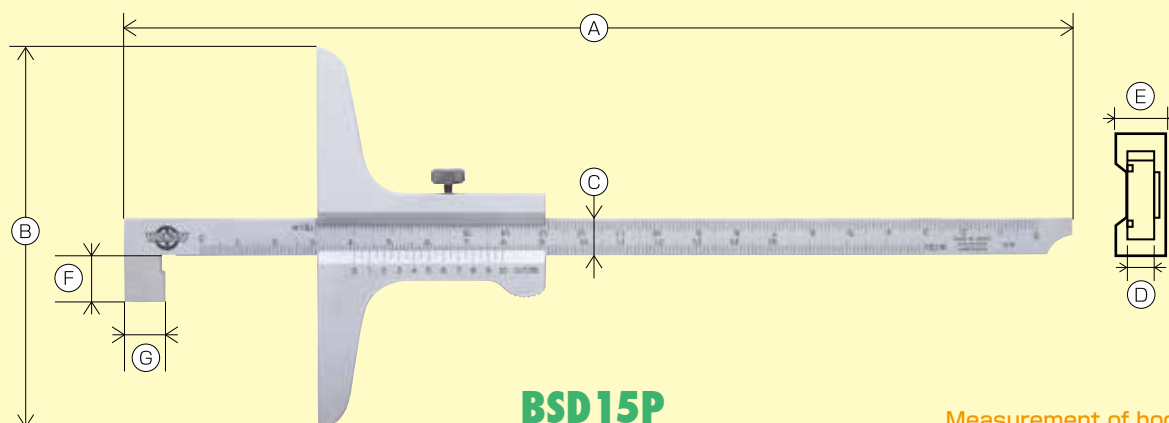
Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G
BSDM15	150	0.02 [Division of 49 mm into 50 equal parts]	±0.03	270g	260	100	11	4	8	15	Approximately 11
BSDM20	200			290g	310	100	11	4	8	15	Approximately 11
BSDM30	300		±0.04	320g	410	100	11	4	8	15	Approximately 11



# BSD-P

Adequate for measurement of hook in normal hole

"Standard type", Carl Mahr type depth gage equipped with hook without jogging function



**BSD-P 15**

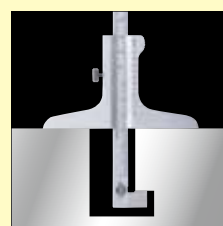
Measurement of hook

- By replacing the slider, the product can be used as SD-P type. (Dual Scale)

## ■ BSD-P : Specifications

(Unit : mm)

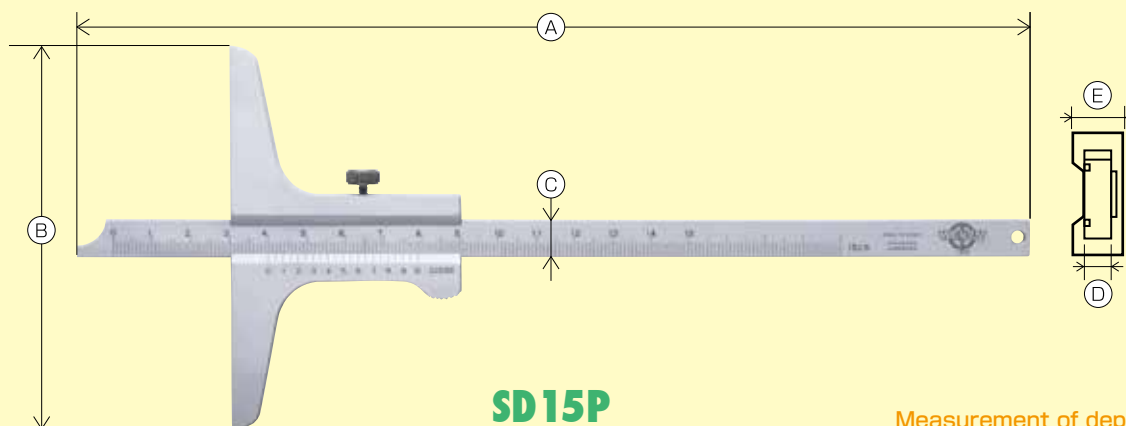
Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G
BSD15P	150	0.05 [Division of 39 mm into 20 equal parts]	±0.07	140g	250	100	10	3	6	12	Approximately 10
BSD20P	200			150g	300	100	10	3	6	12	Approximately 10
BSD30P	300		±0.08	170g	400	100	10	3	6	12	Approximately 10



# SD-P

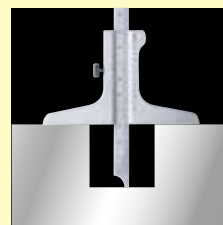
## Adequate for measurement of depth of normal hole

"Standard type", Carl Mahr type depth gage without jogging function



**SD15P**

Measurement of depth



### SD-P : Specifications

(Unit : mm)

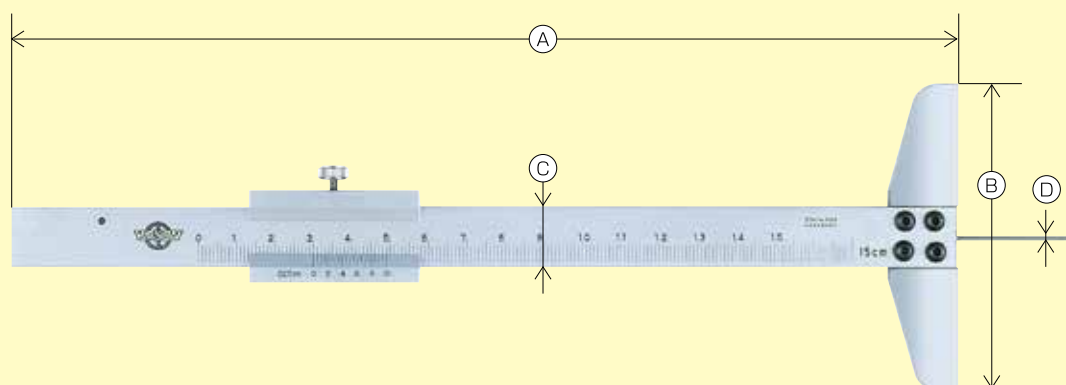
Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E
SD15P	150	0.05 Division of 39 mm into 20 equal parts	±0.07	140g	250	100	10	3	6
SD20P	200			150g	300	100	10	3	6
SD30P	300		±0.08	180g	400	100	10	3	6

# TH Thin hole

## Adequate for measurement of depth of thin hole

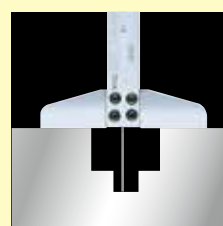
ONLY ONE

With "φ 1.5 mm depth bar", this thin hole depth gage is adequate for measurement of depth of thin hole.



**TH15 (Thin hole 15)**

Measurement of depth



- Since the depth bar is thin (D : φ 1.5 mm), the product is adequate for measurement of depth of thin hole.

### TH : Specifications

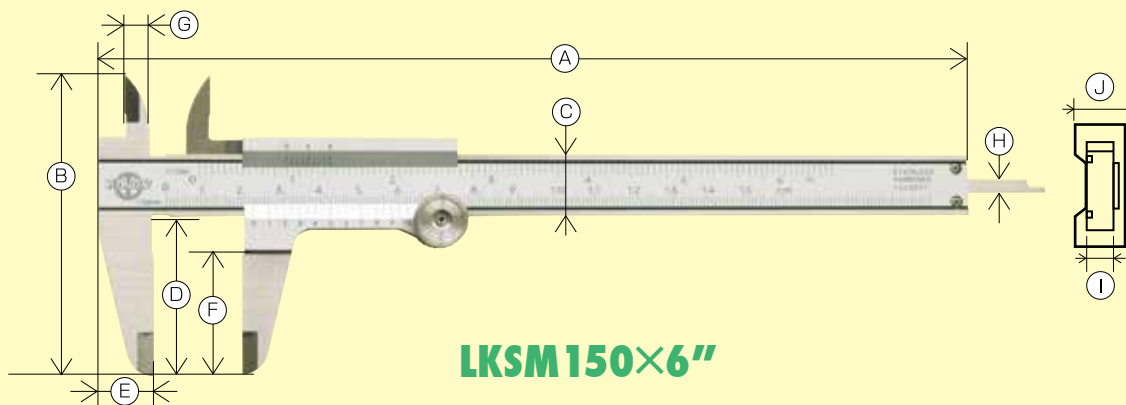
(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D
TH15 (Thin hole15)	150	0.05	±0.07	160g	245	80	16	φ1.5

\* The minimum reading is 0.05 (19 mm is divided into 20 equal parts).



### “Standard caliper”

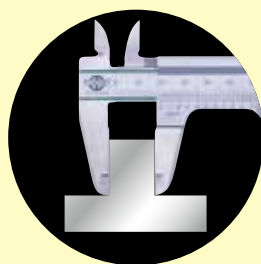


- The upper and lower grooves in the main scale side reduce irregular reflection on the scale surface. In addition, the green color imposes a less load to eyesight, resulting in less fatigue of eyes.

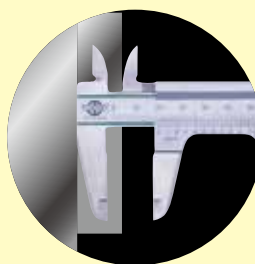
Inside measurement



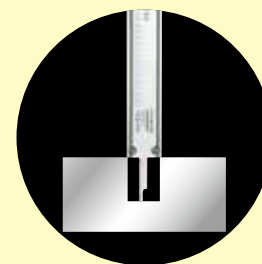
Outside measurement



Measurement of difference in level



Measurement of depth

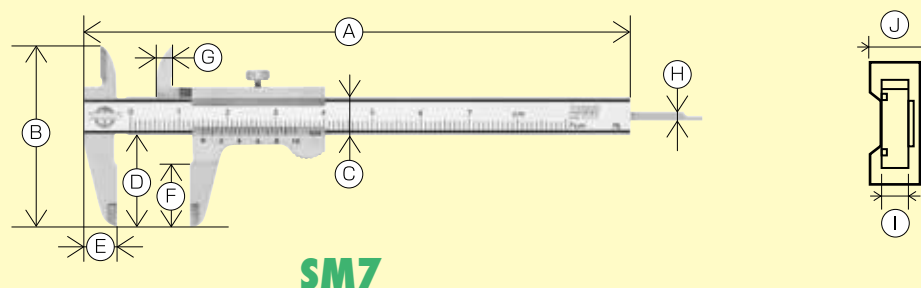


#### ■ LKSM : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I	J
LKSM150×6"	150mm×6"	0.05 <div>Division of 39 mm into 20 equal parts</div>	±0.05	130g	230	77	16	40	14	28	7	3.8	3	6
LKSM200×8"	200mm×8"			180g	290	91	17	50	17	37	7.5	3.8	3	6
LKSM300×12"	300mm×12"			250g	390	91	17	50	17	37	7.5	3.8	3	6

### Mini vernier caliper and standard long scale vernier caliper



#### ■ SM : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I	J
SM7	70	0.05	±0.05	23g	113	38	8	19	7	13	3.5	1.8	2	4.6
SM150	1500	Division of 39 mm into 20 equal parts	±0.16	6.5kg	1780	268.7	40	160	45	125	20	—	9	16
SM200	2000		±0.20	12.5kg	2325	330	50	200	50	150	23	—	11	20
SM250	2500		±0.24	14.5kg	2825	330	50	200	50	150	23	—	11	20
SM300	3000		±0.30	17.0kg	3325	330	50	200	50	150	23	—	11	20
SM400	4000		±0.40	25.0kg	4325	330	50	200	50	150	23	—	11	20

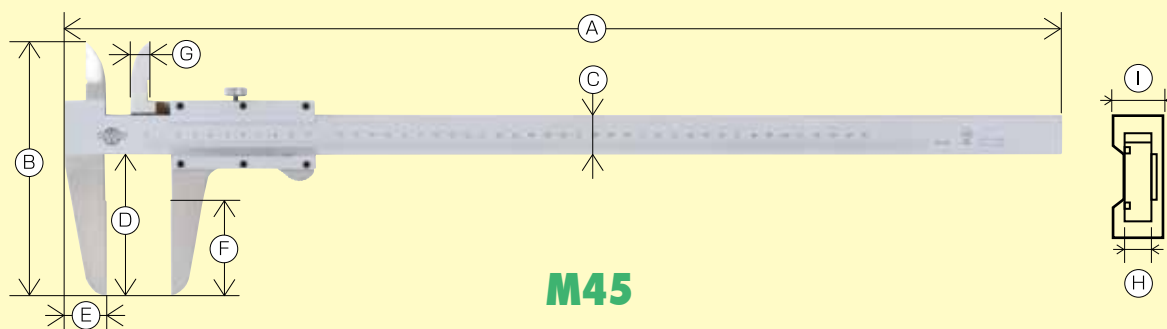
\* The minimum reading of SM7 is 0.05 (division of 19 mm into 20 equal parts). \* SM150 to SM300 are not equipped with any depth bar.

\* SM150-400 is equipped with fine adjustment.

# M / M-60P

Standard vernier caliper for normal measurement

"Standard type"



**M45**

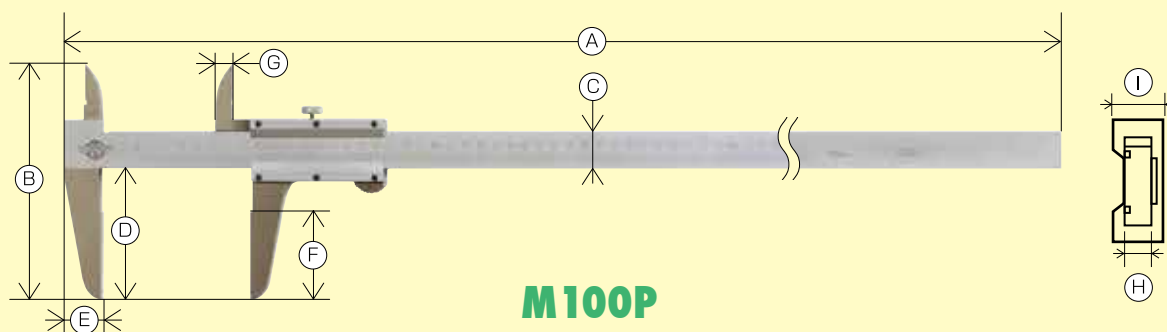
## ■ M : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I
M45	450	0.05 (Division of 39 mm into 20 equal parts)	±0.10	900g	625	161.5	25	90	25	60	12.5	6	12.5
M50	500			1.13kg	670	161.5	25	90	25	60	12.5	6	12.5
M60	600		±0.11	1.25kg	780	161.5	25	90	25	60	12.5	6	12.5
M100	1000		±0.15	3.50kg	1250	222	32	130	32	85	16	8	15

\* Production of M40 was ceased. As an alternative product, we sell PITA40. (See page 3.)

Although the measuring length is large,  
this vernier caliper is light and can be held easily with one hand.  
Also the price is reasonable.



**M100P**

## ■ M-P : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I
M60P	600	0.05 (Division of 39 mm into 20 equal parts)	±0.11	612g	800	111.6	20	64.2	18.9	48	9.4	4	8
M100P	1000		±0.15	1.9kg	1250	161.5	25	90	25	60	12.5	6	12.5

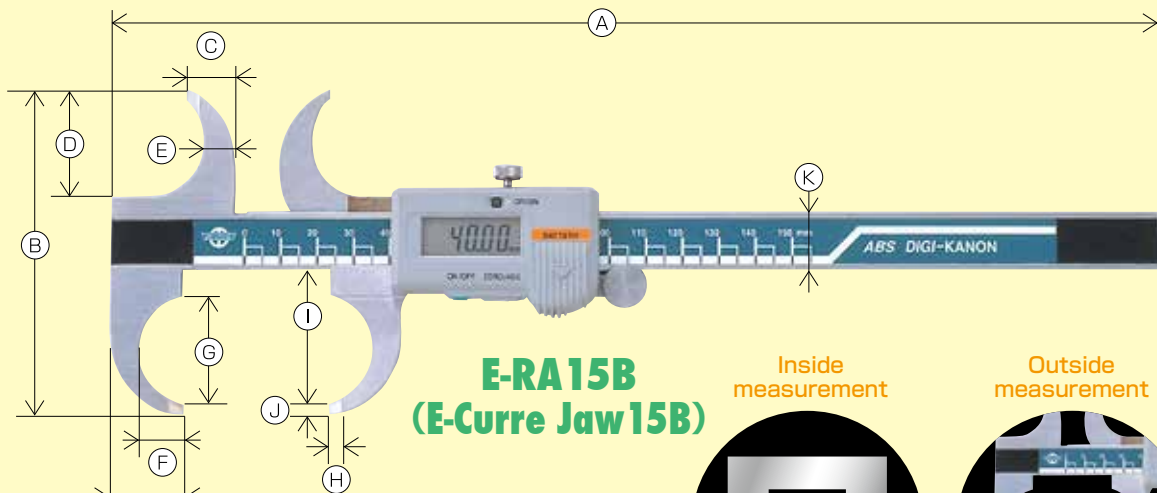
\* M60P M100P are not equipped with any JIS mark. The instrumental error is within the JIS specification.

# E-RA E-Curre Jaw / RA Curre Jaw

Adequate for measurement at a deep location of sac hole

ONLY ONE

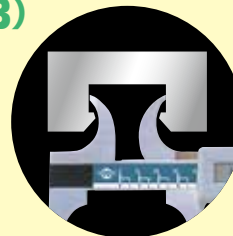
With "Curre jaw", this caliper is adequate for measurement of work for which straight jaws cannot be used.



**E-RA15B**  
(E-Curre Jaw 15B)

Inside measurement

Outside measurement

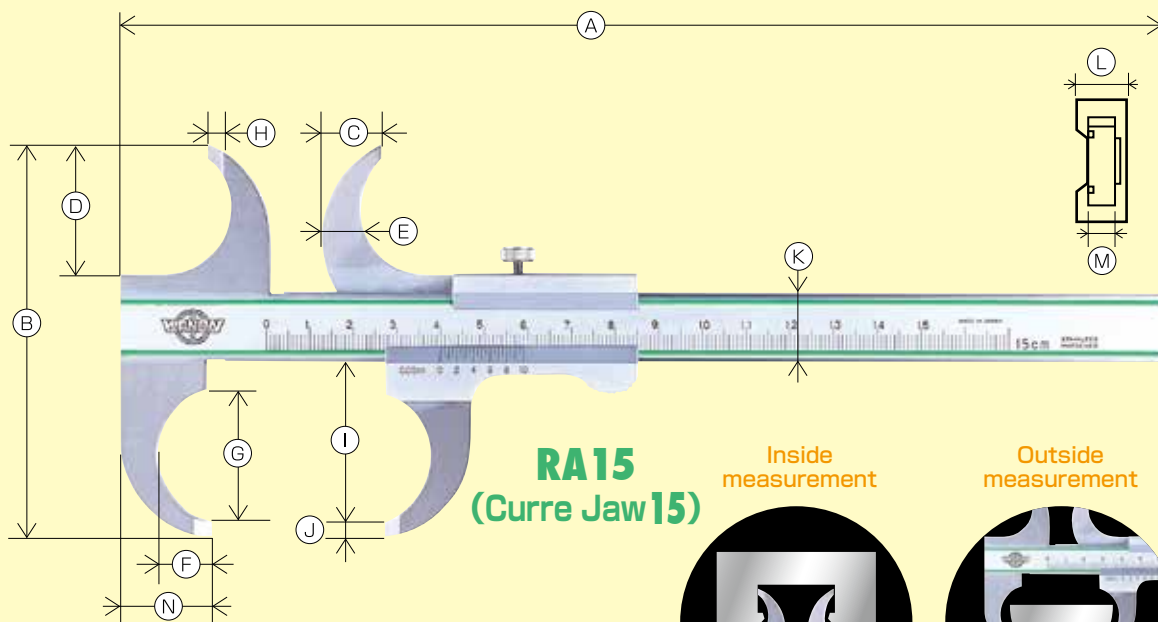


- Adequate for measurement of work for which straight jaws cannot be used, for example, measurement of outside of narrower part and inside of deep location of sac hole.
- The printer output function is provided.

## ■ E-RA : Specifications

(Unit : mm)

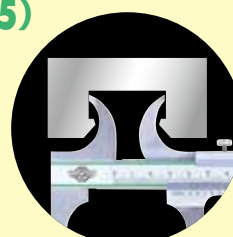
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F	G	H	I	J	K
E-RA15B (E-Curre Jaw15B)	150	0.01	±0.03	SR44 1piece	170g	287	90	14	30	8.5	12	29	5.5	36	4	16
E-RA20B (E-Curre Jaw20B)	200				190g	337										



**RA15**  
(Curre Jaw 15)

Inside measurement

Outside measurement



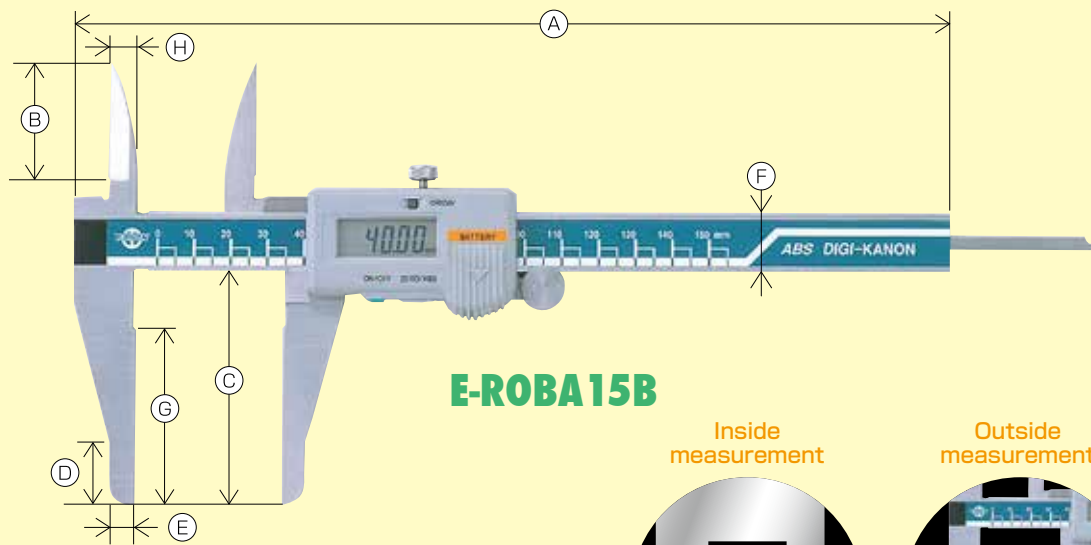
- Adequate for measurement of work for which straight jaws cannot be used, for example, measurement of outside of narrower part and inside of deep location of sac hole.

## ■ RA : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I	J	K	L	M	N
RA15 (Curre Jaw15)	150	0.05 [Division of 19 mm into 20 equal parts]	±0.07	170g	238	90	14	30	8.5	12	29	5.5	36	4	16	8	3	20
RA20 (Curre Jaw20)	200			200g	290													

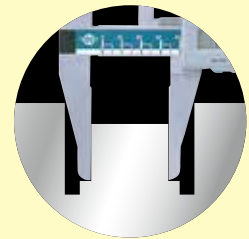
Adequate for measurement of inside and outside of narrow and deep part!



### E-ROBA15B

Inside measurement

Outside measurement

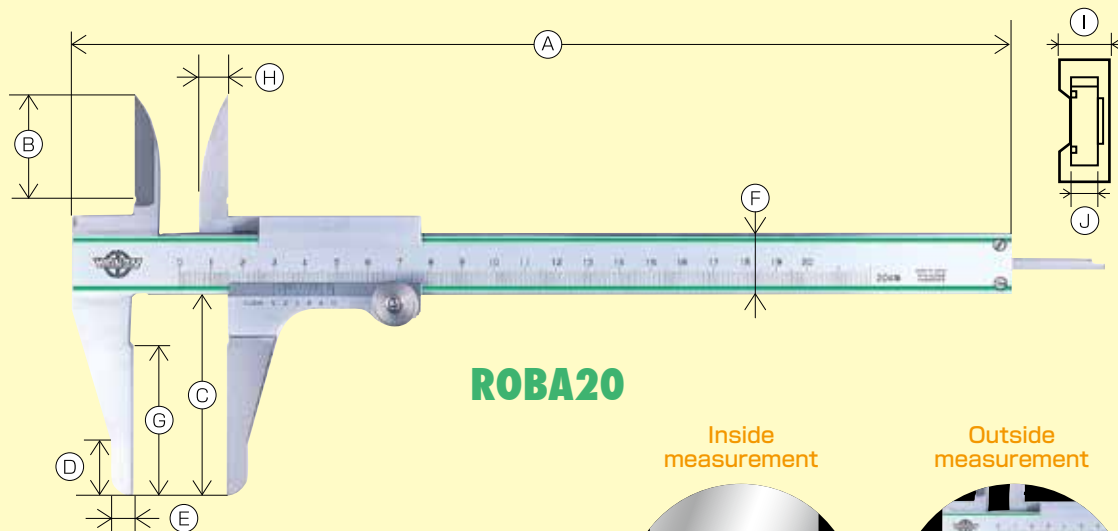


- Since the jaw for inside and the jaw for outside are long, the product is adequate for measurement of the inside and outside of a narrow and deep location.
- The printer output function is provided.

#### ■ E-ROBA : Specifications

(Unit : mm)

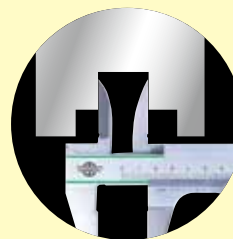
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F	G	H
E-ROBA15B	150	0.01	±0.03	SR44 1piece	180g	247	34	64	17	6.5	16	48	9
E-ROBA20B	200				200g	297							



### ROBA20

Inside measurement

Outside measurement



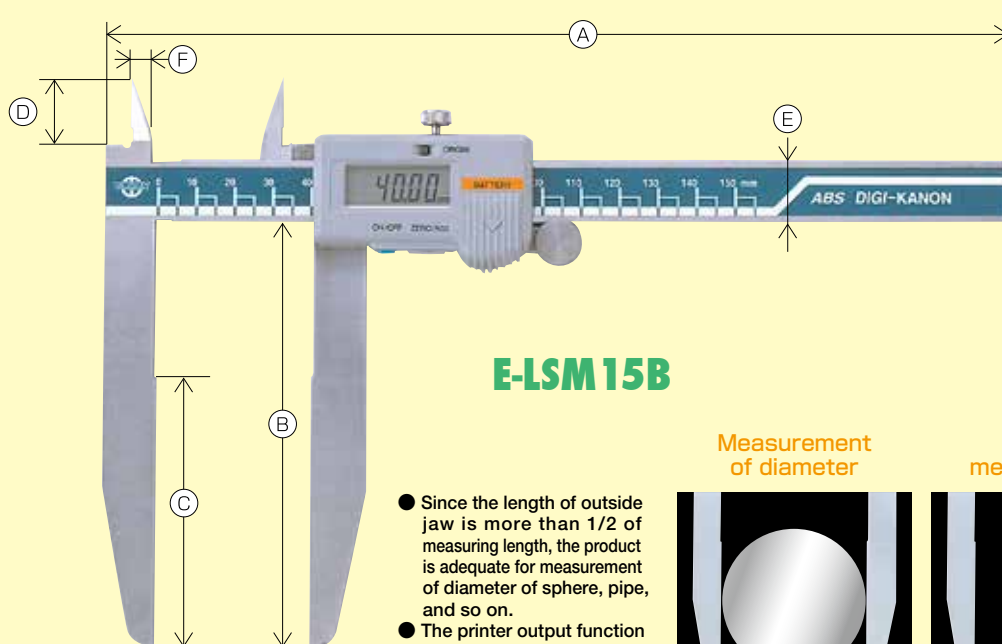
- Since the jaw for inside and the jaw for outside are long, the product is adequate for measurement of the inside and outside of a narrow and deep location.

#### ■ ROBA : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I	J
ROBA15	150	0.05 [Division of 19 mm into 20 equal parts]	±0.07	270g	250	34	64	17	6.5	20	48	9	8	4
ROBA20	200			310g	300									
ROBA30	300		±0.08	370g	410									

Adequate for measurement of diameter of ball, pipe, etc.!



### E-LSM 15B

- Since the length of outside jaw is more than 1/2 of measuring length, the product is adequate for measurement of diameter of sphere, pipe, and so on.
- The printer output function is provided.

Measurement of diameter

Outside measurement

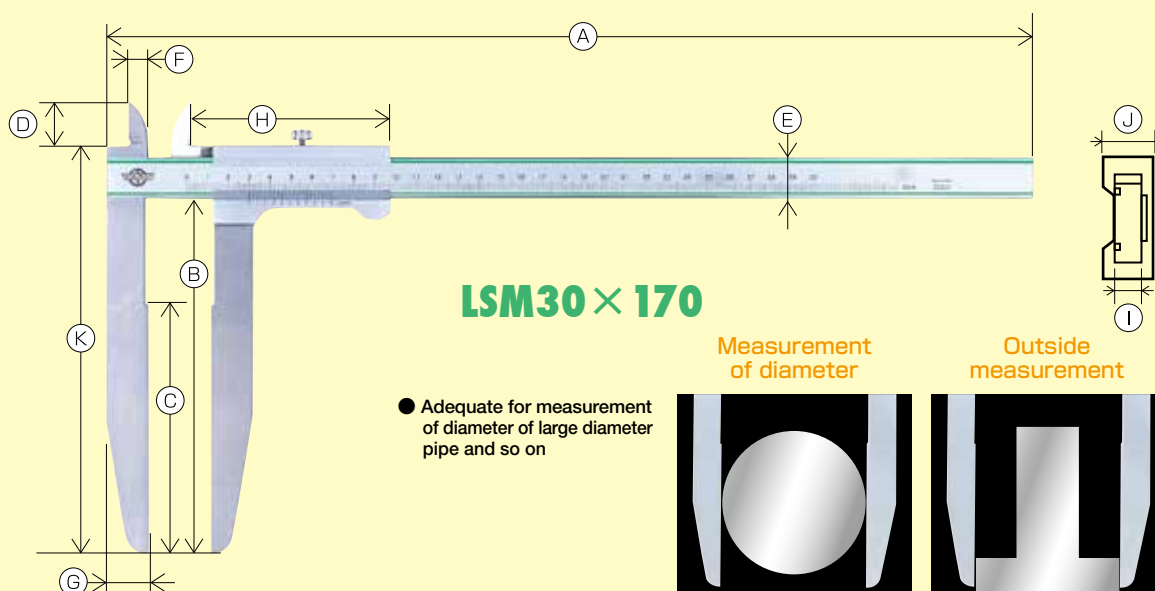


#### E-LSM : Specifications

(Unit : mm)

Model	Measuring length	Length of jaw	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F
E-LSM15B	150	110	0.01	±0.05	SR44 1piece	220g	236	110	70	20	16	6
E-LSM20B	200	110				250g	290					
E-LSM30B	300	170				490g	400					
E-LSM60B	600	320		±0.07		4.8kg	780	320	200	—	25	—

\* E-LSM60B is not equipped with the inside jaw.



### LSM30 × 170

- Adequate for measurement of diameter of large diameter pipe and so on

Measurement of diameter

Outside measurement



#### LSM : Specifications

(Unit : mm)

Model	Measuring length	Length of jaw	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I	J	K
LSM15×80	150	80	0.05 (Division of 39 mm into 20 equal parts)	±0.07	160g	295	80	50	22	20	10	20	95	4	8	105.5
LSM20×110	200	110			220g	345	110	70								135.5
LSM30×170	300	170			440g	445	170	120								195.5
LSM45×230	450	230			1.23kg	630	230	150				25		6	12.5	255
LSM60×320	600	320			3.50kg	825	320	200				32		8	15	352

\* LSM45/60 is not equipped with the inside jaw.



# E-LSM R

Adequate for measurement of dimensions inside or deep in a processing machine.

ONLY ONE

Adopts the features of E-PEAK. The reverse long jaw digital caliper retains the MIN values and the value can be read near at hand.



- Since the length of outside jaw is more than 1/2 of measuring length, the product is adequate for measurement of diameter of sphere and pipe.
- The measured MIN value is retained. Even if the jaw is widened, the measurement value can be read as it is.

## E-LSM R : Specifications

(Unit : mm)

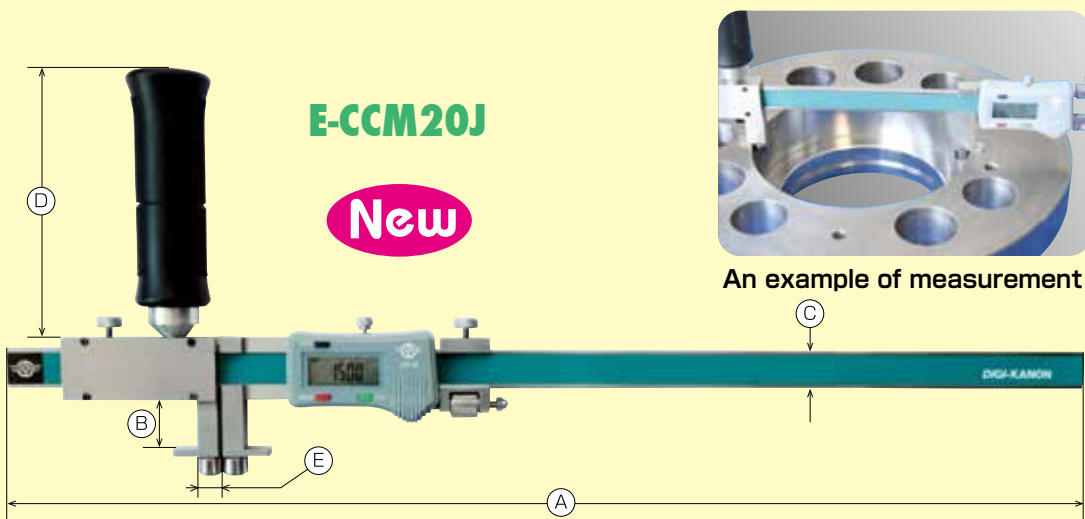
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	E
E-LSM R20J	200	0.01	±0.05	SR44 1piece	250g	320	110	70	16
E-LSM R30J	300				380g	430	170	120	

# E-CCM

Adequate for measurement of outside and inside diameter of large work

ONLY ONE

Adopts the features of E-PEAK. The MAX values are retained and read near at hand.



- MAX value is automatically retained simply by sliding the roller of the probe.
- The roller at the tip is actually a bearing, and slides smoothly.

## E-CCM : Specifications

(Unit : mm)

Model	Measuring range	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E
E-CCM20J	21~200	0.01	±0.05	SR44 1piece	560g	445	24.5	16	106	φ 10
E-CCM30J	21~300				580g	545				

# E-ICM-J / E-ICM / ICM

Adequate for measurement of inside in a deep location

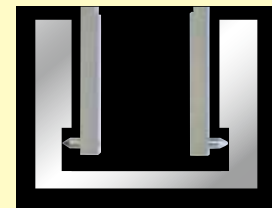
With "Long and thin jaw", this inside caliper is adequate for measurement of inside in a deep location.



## E-ICM20J

- Since the jaw is long and thin, the product is adequate for measurement of inside in a deep hole.
- Digital direct reading type

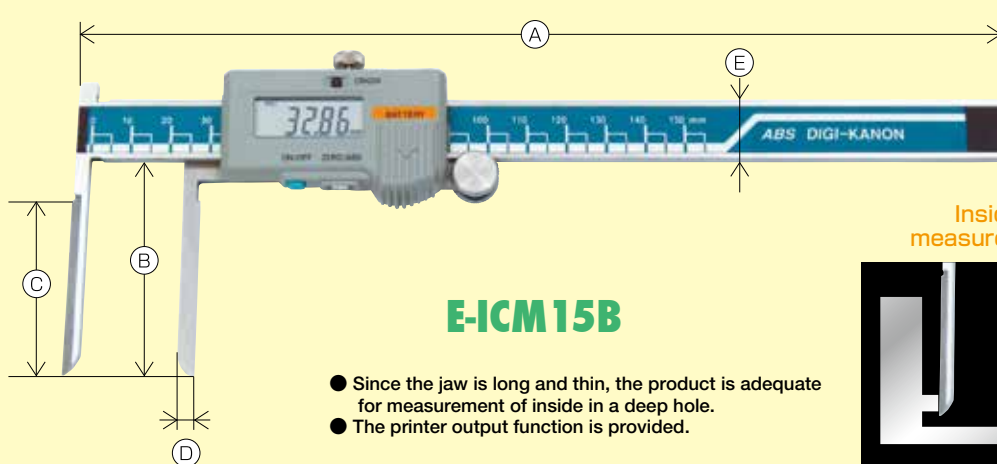
Inside measurement



### ■ E-ICM-J : Specifications

(Unit : mm)

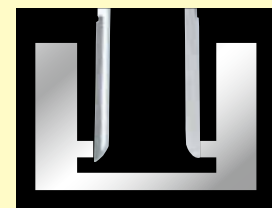
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F
E-ICM20J	20 ~ 200	0.01	±0.05	SR44 1piece	183g	300	50	30	5	16	φ3



## E-ICM15B

- Since the jaw is long and thin, the product is adequate for measurement of inside in a deep hole.
- The printer output function is provided.

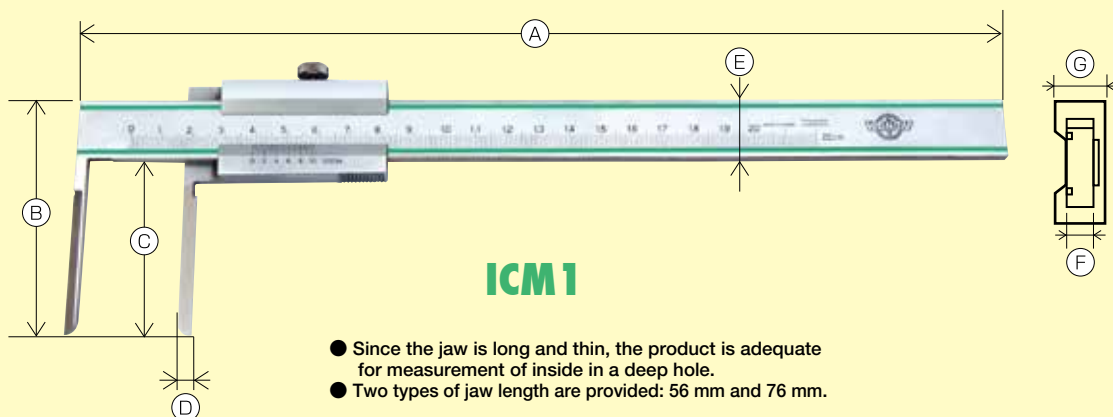
Inside measurement



### ■ E-ICM : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E
E-ICM15B	5 ~ 150	0.01	±0.05	SR44 1piece	160g	236	55.5	45	4.5	16



## ICM 1

- Since the jaw is long and thin, the product is adequate for measurement of inside in a deep hole.
- Two types of jaw length are provided: 56 mm and 76 mm.

### ■ ICM : Specifications

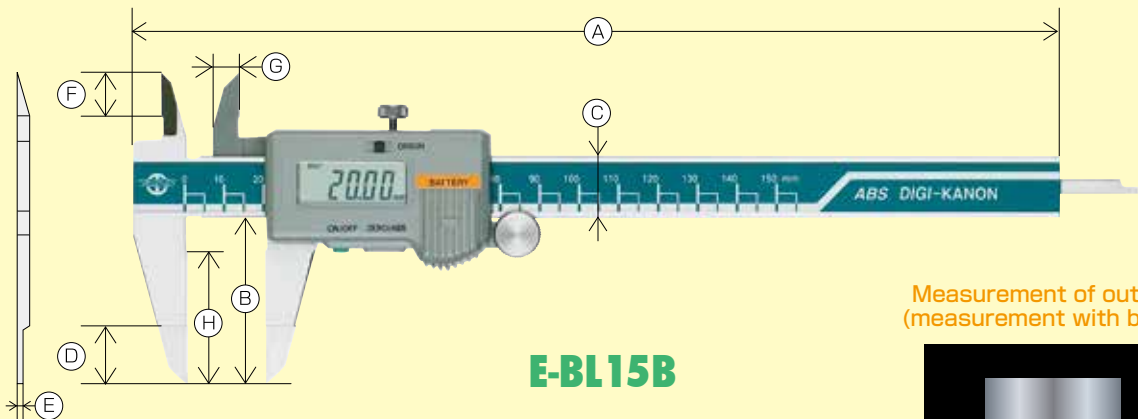
(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G
ICM 1	5 ~ 200	0.05	±0.07	300g	300	76	56	4.5	20	4	10.5
ICM 2	10 ~ 200	[Division of 19 mm into 20 equal parts]		320g	300	96	76	9.5	20	4	10.5

# E-BL

## Adequate for measurement of outside of narrow groove

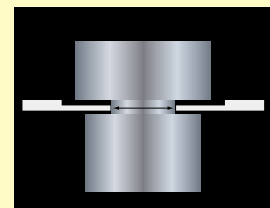
With "Blade jaw", this digital blade caliper is adequate for measurement of outside of groove on work with narrow groove and groove interval.



### E-BL15B

- Since the tip of outside jaw is thin (0.8 mm), the product is adequate for measurement of outside of narrow groove.
- The printer output function is provided.

Measurement of outside  
(measurement with blade)



#### ■ E-BL : Specifications

(Unit : mm)

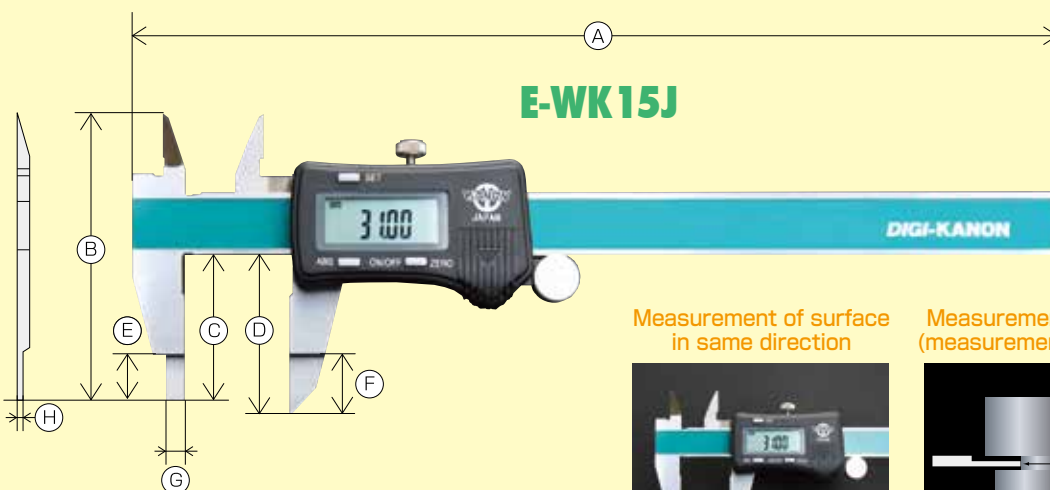
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F	G	H
E-BL15B	150	0.01	±0.02	SR44 1piece	160g	236	42	16	15	0.8	11.3	7	33.4

# E-WK

## Direct-reading type digital caliper



Adequate for measurement in same direction!



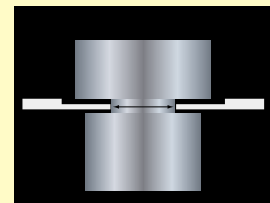
### E-WK15J

- Since the tip of outside jaw is thin (0.8 mm), the product is adequate for measurement of narrow interval and surface in same direction.

Measurement of surface  
in same direction



Measurement of outside  
(measurement with blade)



#### ■ E-WK : Specifications

(Unit : mm)

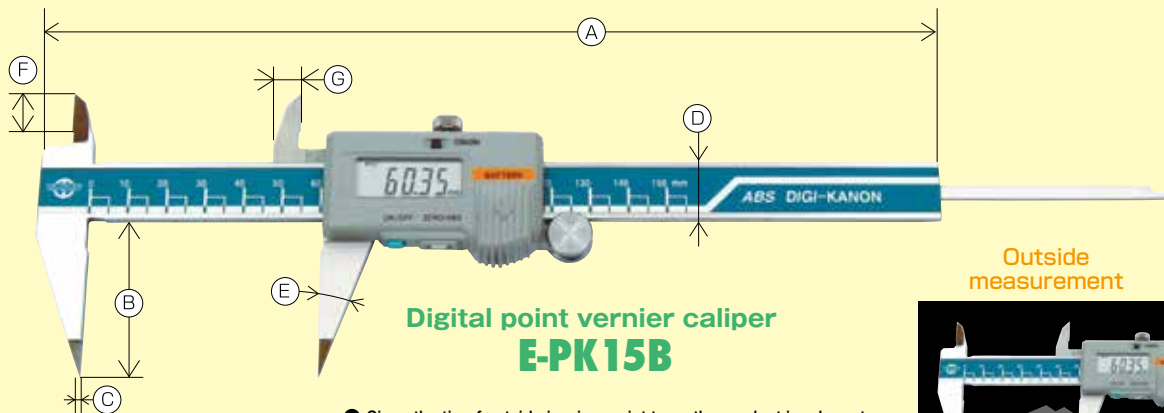
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F	G	H
E-WK15J	0~150	0.01	±0.05	SR44 1piece	166g	234	73	36	39.5	11.5	15	5	0.8

\*The measuring range of surface in same direction is 6 to 150 mm.

# E-PK / E-PM / E-NK

Adequate for measurement of special outside

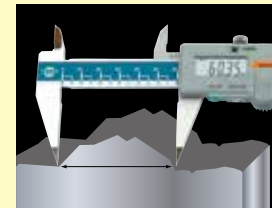
Point vernier caliper for narrow groove interval, pipe caliper for wall thickness of curvature, and neck caliper for groove part



Digital point vernier caliper  
**E-PK15B**

- Since the tip of outside jaw is a point type, the product is adequate for measurement of outside of narrow groove interval.
- The printer output function is provided.

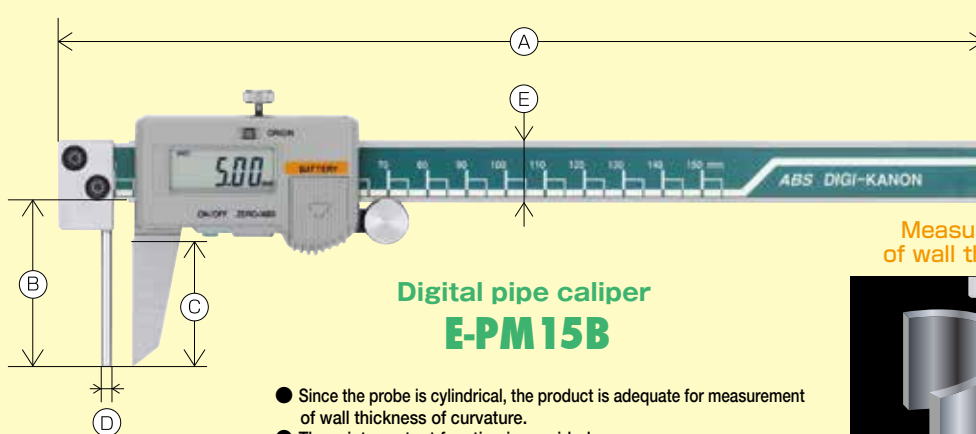
Outside measurement



## ■ E-PK : Specifications

(Unit : mm)

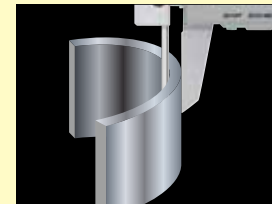
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F	G
E-PK15B	150	0.01	±0.02	SR44 1piece	160g	236	42	0.2	16	20°	11.3	7



Digital pipe caliper  
**E-PM15B**

- Since the probe is cylindrical, the product is adequate for measurement of wall thickness of curvature.
- The printer output function is provided.

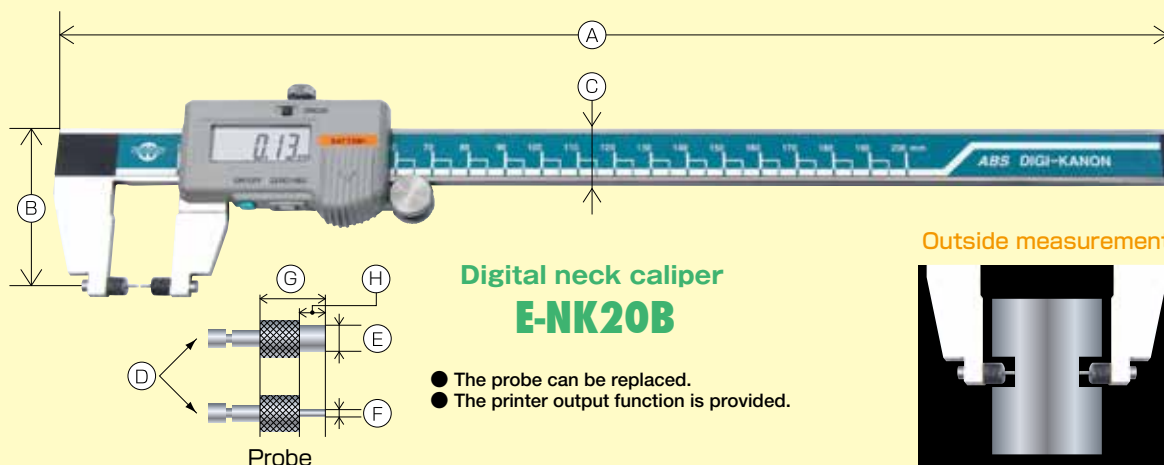
Measurement of wall thickness



## ■ E-PM : Specifications

(Unit : mm)

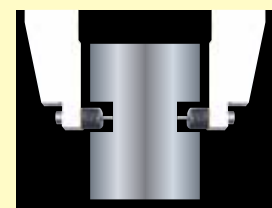
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E
E-PM15B	150	0.01	±0.03	SR44 1piece	160g	236	42	33.4	φ3	16



Digital neck caliper  
**E-NK20B**

- The probe can be replaced.
- The printer output function is provided.

Outside measurement



## ■ E-NK : Specifications

(Unit : mm)

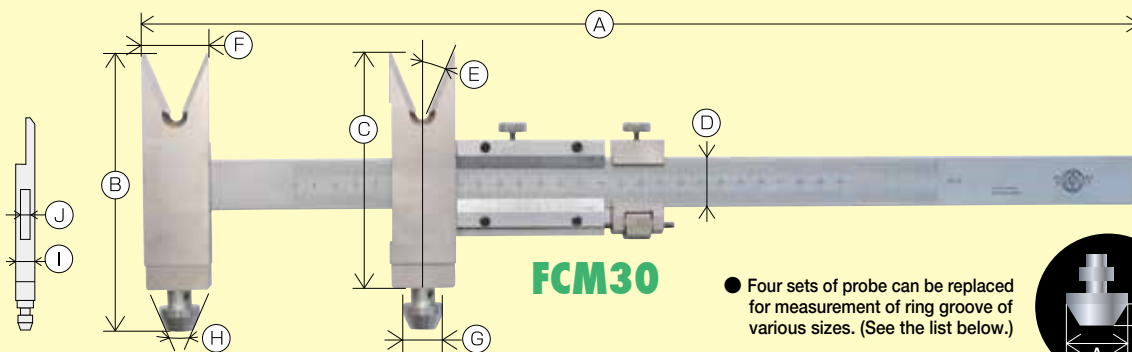
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F	G	H
E-NK20B	200	0.01	±0.03	SR44 1piece	170g	307	46	16	M2	φ5	φ1	8	3

# FCM For inspection

## Adequate for measurement of flange ring groove

ONLY ONE

Kanon original flange caliper adequate for measurement of dimensions "within JPI standard"

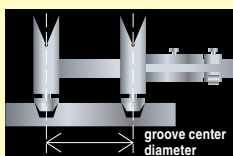


FCM30

- Four sets of probe can be replaced for measurement of ring groove of various sizes. (See the list below.)

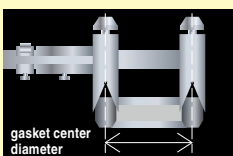
- The dimensions of flange ring groove and gasket can be securely measured.

Method of measurement of groove center diameter



Select a probe (No. 1 to 4) from the list according to the ring No. of groove to be measured.

Method of measurement of gasket center diameter



Carry out adjustment by jogging so that the V-shape measurement section is completely in contact with the gasket.

FCM : List of probes

Probe	Dimensions of groove		Ring No.
	Width	Depth	
No.1 8 (A) × 4 (B)	7.14	5.56	R11
	8.74	6.35	R12~20, 22, 25, 29, 33, 36, 40, 43, 48, 52, 56, 59, 64, 68, 72, 76, 80
No.2 14 (A) × 6 (B)	11.91	7.92	R21, 23, 24, 26, 27, 30, 31, 34, 35, 37, 39, 41, 44, 45, 49, 53, 57, 61, 65, 69, 82, 84, 92, 99
	13.49	9.52	R28, 32, 46, 73, 85
	15.09	11.13	R81
	16.69	11.13	R38, 50, 54, 62, 66, 77, 86, 87
	19.84	12.70	R42, 47, 70, 74, 88, 89, 93, 94, 95
No.3 20 (A) × 7.5 (B)	23.01	14.27	R51, 58, 90, 96, 97, 98
	26.97	15.88	R63, 78
No.4 30 (A) × 7.5 (B)	30.18	17.48	R55, 67, 71, 100
	33.32	17.48	R60, 75, 91, 101, 102, 103
	36.54	20.62	R79, 104, 105

FCM : Specifications

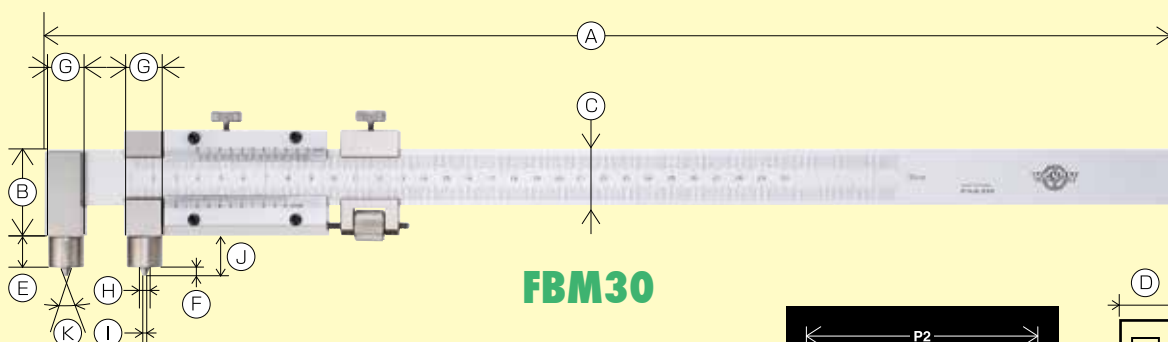
Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I	J
FCM30	33~300	0.02	±0.04	Approximately 1.2kg	500	135.5	115	25	23°	32	φ8, φ14	46°	12	6
FCM70	33~700	(Division of 49 mm into 50 equal parts)	±0.06	Approximately 1.6kg	900	135.5	115	25	23°	32	φ20, φ30	46°	12	6

(Unit : mm)

# FBM For working

## Developed for measuring dimensions of groove used for flange during processing

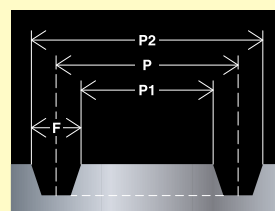
ONLY ONE



FBM30

- P1 The dimensions of inner edge of groove can be measured with the lower scale of FBM (for working).
- P2 The dimensions of outer edge of groove can be measured with the upper scale of FBM (for working).
- P The center diameter of groove (R11 to R105 of JPI standard) can be measured with FCM (for inspection).
- F Width of groove (JPI standard)

The figure on the right shows measurement locations.

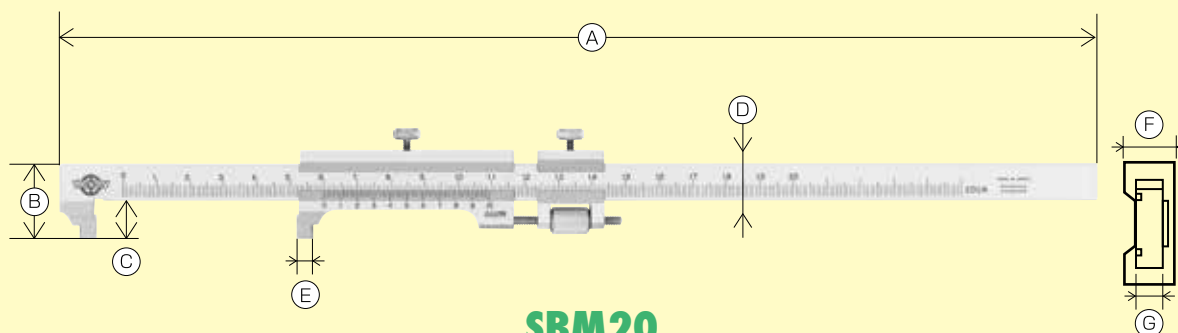


FBM : Specifications

Model	Measuring length		Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I	J	K	L
	P1 (Lower scale)	P2 (Upper scale)															
FBM30	12~300	23~300	0.02	±0.04	1.0kg	500	37.5	25	11	14	4	φ16	φ5.5	φ2	18	46°	6
FBM70	12~700	23~700	(Division of 49 mm into 50 equal parts)	±0.06	1.4kg	900	37.5	25	11	14	4	φ16	φ5.5	φ2	18	46°	6

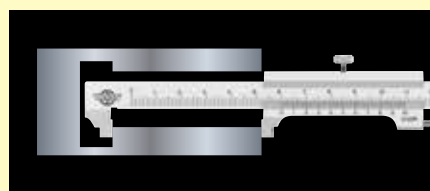
(Unit : mm)

With "Short leg jaw", this product can be easily used for measurement of step machining part in a hole.



**SBM20**

- Since the jaw is short, the product is adequate for measurement of step machining in a deep hole.



### SBM : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G
SBM20	200	0.02 (Division of 49 mm into 50 equal parts)	$\pm 0.03$	180g	310	22.5	11.5	11	5	8	4
SBM30	300		$\pm 0.04$	210g	410	22.5	11.5	11	5	8	4

# SNAP GAUGE

## For inspection of precision of vernier caliper

With "Various sizes", this snap gauge allows quick inspection of inside and outside of vernier caliper.



**SNAP GAGE 15**



**SNAP GAGE STAND**

### SNAP GAUGE : Specifications (Unit : mm)

Model	Measuring length	Weight
SNAP GAGE 5	50	0.4kg
SNAP GAGE 10	100	0.5kg
SNAP GAGE 15	150	0.6kg
SNAP GAGE 20	200	1.0kg
SNAP GAGE 30	300	1.6kg

- By mounting the product to the special-purpose stand, the gage becomes stable, allowing more accurate inspection of vernier caliper.

### SNAP GAUGE STAND (Options)

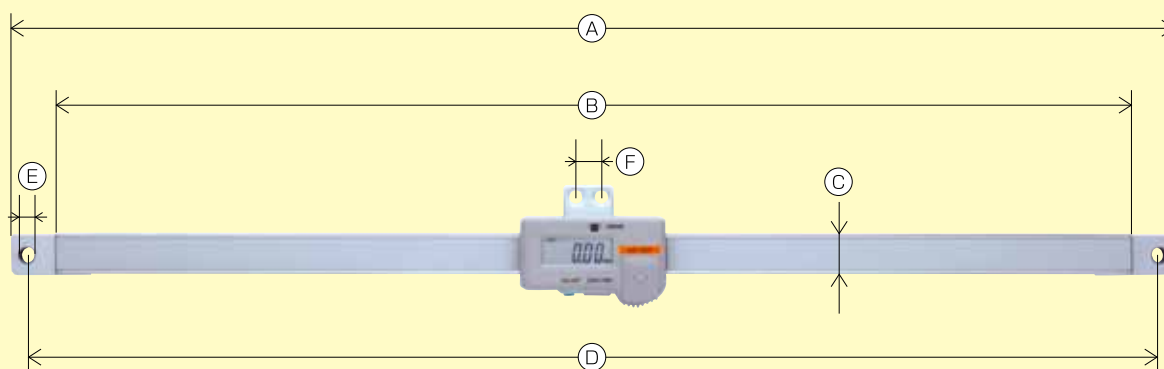
Model	Weight
SNAP GAGE STAND (common to all sizes)	3.2kg



# ES-B

Adequate for positioning of machine tool, measurement equipment, and so on

Convenience digital scale on which the indication of “digital direct reading type” scale can be read directly.



## ES30B

- ABS with absolute origin is built in and therefore zero setting is not required each time the power is turned on.
- With a measurement data output function, a statistical process control system or a measurement system can be configured.

### ■ ES-B : Specifications

(Unit : mm)

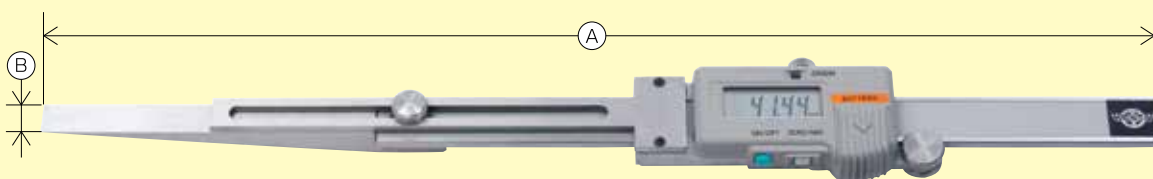
Model	Measuring length	Resolution	Allowable measuring range	Instrumental error	Power supply	Weight	A	B	C	D	E	F
ES10B	100	0.01	120	±0.03	SR44 1 piece	360g	256	220	16	244	φ 6	10 φ 5.2
ES20B	200	0.01	220			480g	356	320	16	344	φ 6	10 φ 5.2
ES30B	300	0.01	320			590g	456	420	16	444	φ 6	10 φ 5.2

# TES

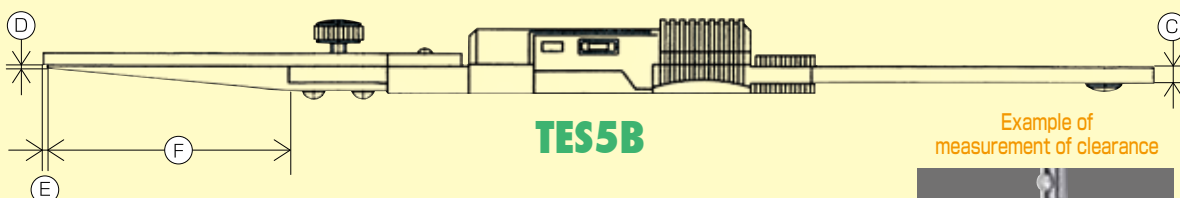
Digital thickness scale



Easy measurement of clearance in a narrow location!

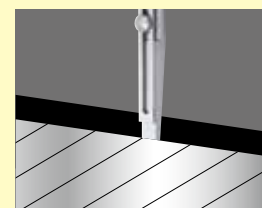


## TES10B



## TES5B

Example of measurement of clearance



- Measurement of clearance on door and measurement of clearance on turbine wheel can be conducted for a short time.
- A measurement data output function is provided.
- Measurement data can be transferred to a personal computer through radio communication. (Manufactured on order)
- A hold unit (optional) and a connection cable with output switch (optional) can be used.

### ■ TES : Specifications

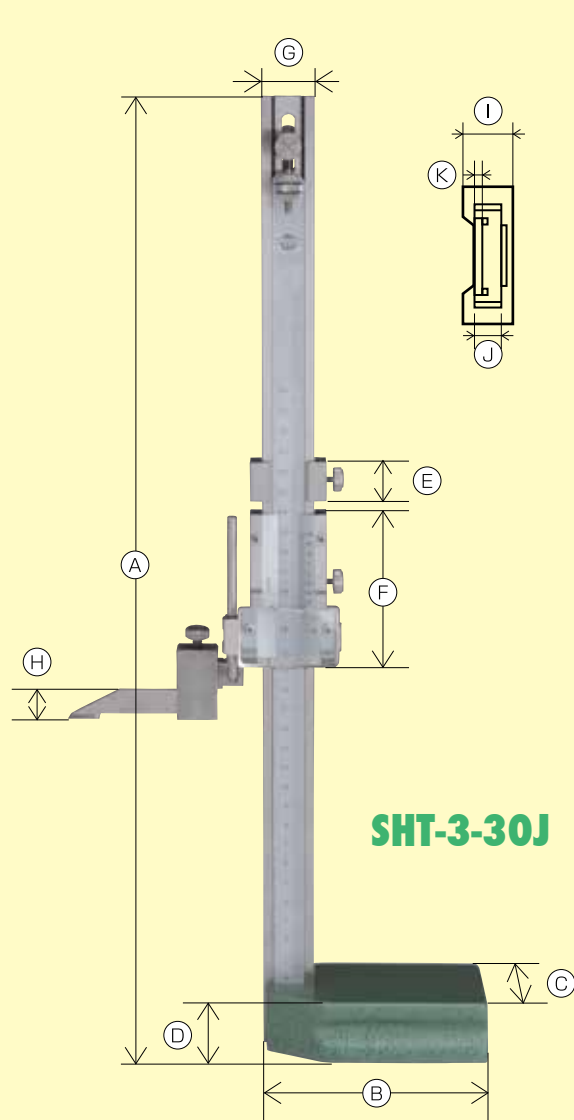
(Unit : mm)

Model	Measuring range	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F
TES5B	0.2~4.8	0.01	±0.03	SR44 1piece	158g	225	10	3.3	0.1	1	49
TES10B	0.5~9.5				218g	330	10	3.3	0.3	3	102

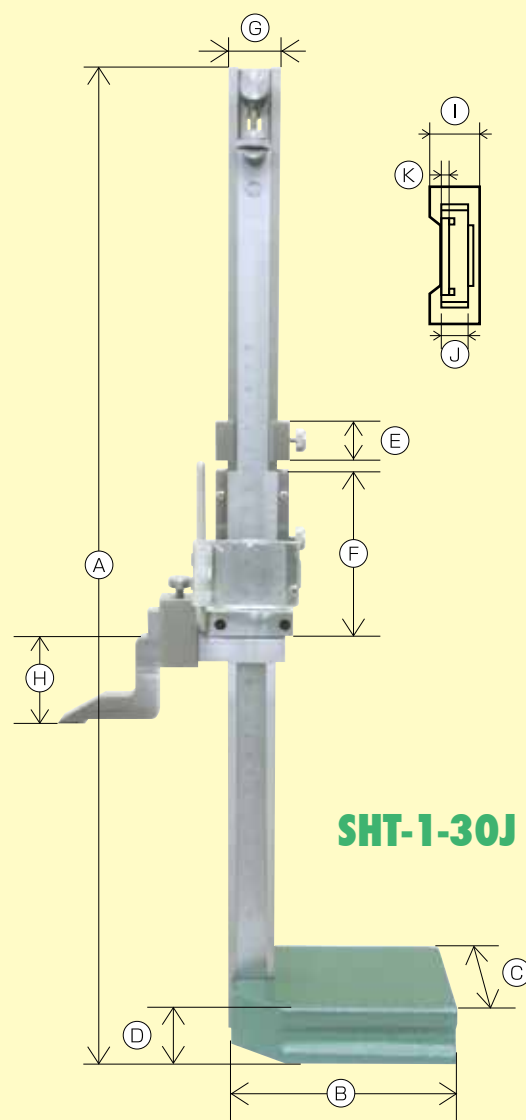
# SHT-3 / SHT-1

Adequate for measurement of height for vertically long objects

With "Vertical movement of main scale", this height gage can be used for instantaneous measurement.



**SHT-3-30J**



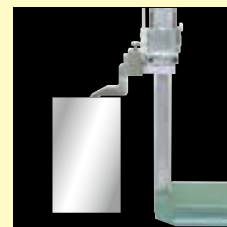
**SHT-1-30J**

Measurement of height



- A magnifying lens for easy reading of scale is provided.
- A carbide tip is provided on the top end of scribe, and the measuring surface is precisely finished.

Measurement of height



## ■ SHT-3 : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I	J	K
SHT-3-30J	300	0.02 (Division of 49 mm into 50 equal parts)	±0.04	2.3kg	480	120	71	32	20	70	26	16	14	8	3.1
SHT-3-60J	600		±0.05	5.4kg	836	162	110	43	20	90	28	16	19	12	3.1

## ■ SHT-1 : Specifications

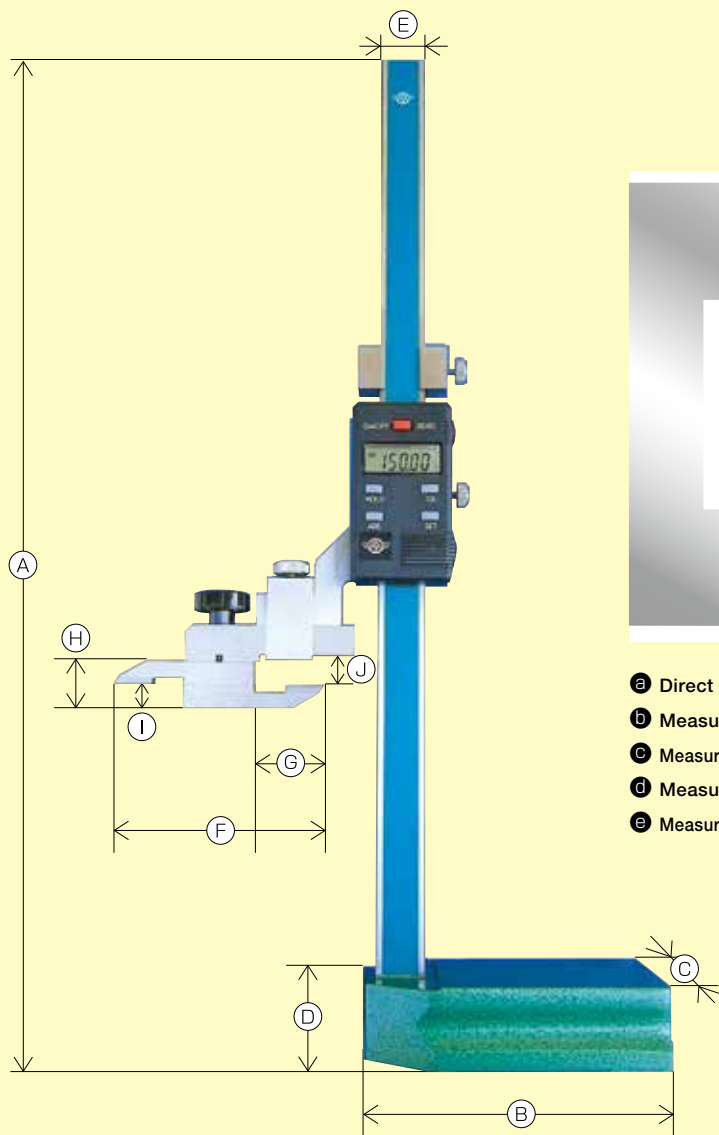
(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G	H	I	J	K
SHT-1-30J	300	0.02 (Division of 49 mm into 50 equal parts)	±0.04	2.4kg	500	123	71	32	20	84	26	47	14	8	3.1
SHT-1-60J	600		±0.05	5.5kg	851	162	110	43	20	102	28	58	19	12	3.1
SHT-1-150	1,500		±0.12	39.0kg	1,920	272	200	75	35	125	50	75	29.5	20	5
SHT-1-200	2,000		±0.16	43.0kg	2,420	322	250	75	35	125	50	75	29.5	20	5

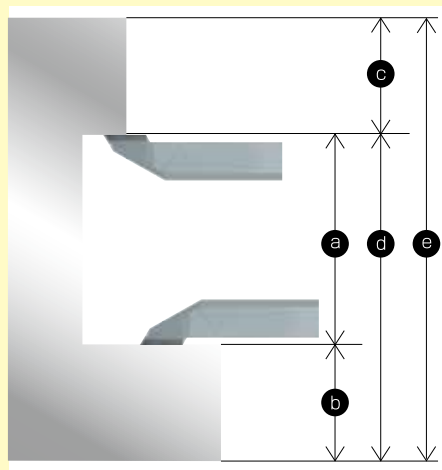
# EHK30J

## Height gauge with rotating scriber

Adequate for various types of height measurement!



Examples of various types of measurement

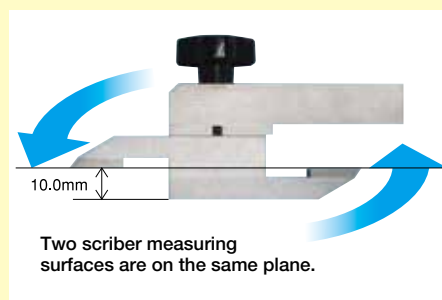


- a Direct measurement of groove width
- b Measurement of distance from plane to step
- c Measurement of distance from ceiling to upper surface
- d Measurement of distance from plane to ceiling
- e Measurement of distance from plane to upper surface

### EHK30J

- ABS/INC measurement
- A scriber for SHT-3-30J is provided as a standard component like the rotating scriber.
- Two scriber measuring surfaces of "Kurukuru" are on the same plane.
- Since the product is an absolute (ABS) type, zero setting is not required each time the power is turned on.
- Zero setting can be conducted at any positions, and relative measurement is available.
- Digital display provides easy reading.

### Rotating scriber "Kurukuru"



#### EHK : Specifications

(Unit : mm)

Model	Measuring range(*)	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F	G	H	I	J
EHK30J	0~300	0.01	±0.03	SR44 1piece	2.2kg	450.5	120.0	68.0	32.0	19.9	94.0	32.1	20.0	10.0	13.1

\*When the rotating scriber "Kurukuru" is used, the measuring range is 10 to 300 mm.

# TPK-3

## Kanon standard printer

With various statistical parameters, measurement data is securely controlled.



CNB-1



TPK-3

- Various statistical parameters
- Number of samples (N), maximum value (MAX)/ minimum value (MIN), range (R), mean value (X), standard deviation (on, on-1), process capability index (Cp, Cpk), number of defectives ( $\pm$ NG), fraction defective (P)
- Preparation of histogram
- Pass/fail judgment display for object to be measured through LED or printing

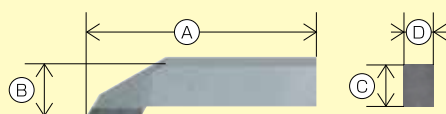
### TPK-3

Model
Kanon standard printer TPK-3
Printer cord 1m CNB-1
Printer cord 2m CNB-2

# SCRIBER

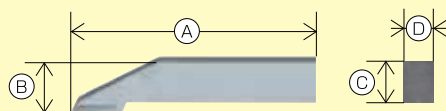
## Measuring surface for height gage

Precisely finished scriber with carbide tip



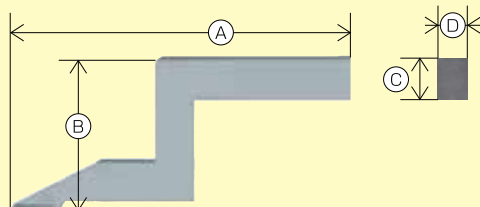
### ■ Scriber for EHK : Dimensions (Unit : mm)

Type	A	B	C	D
For EHK30B	75	15.2	12.7	9



### ■ Scriber for SHT-3-J : Dimensions (Unit : mm)

Type	A	B	C	D
For SHT-3-30J	76	16	12.7	9
For SHT-3-60J				

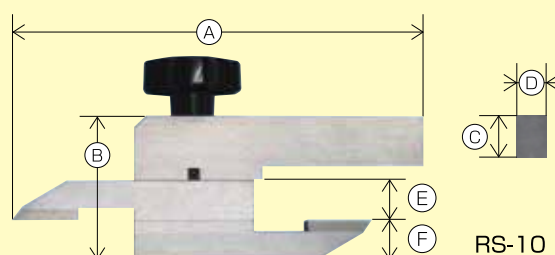


### ■ Scriber for SHT-1-J : Dimensions (Unit : mm)

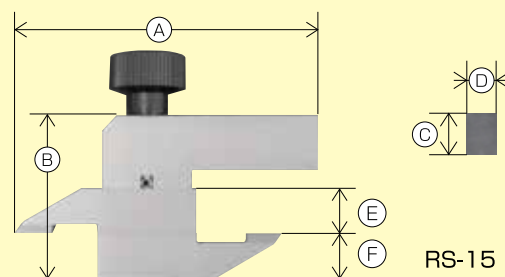
Type	A	B	C	D
For SHT-1-30J	119.8	47	12.7	9
For SHT-1-60J	150	58		

### ■ Scriber for SHT-1-100 to 200 : Dimensions (Unit : mm)

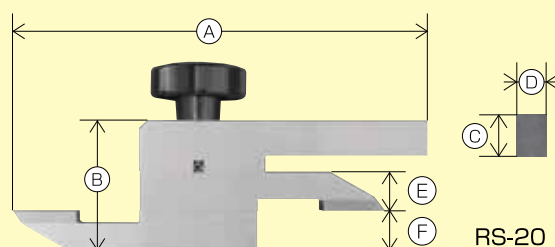
Type	A	B	C	D
For SHT-1-100	220	62	18	9
For SHT-1-150		75		
For SHT-1-200				



RS-10



RS-15



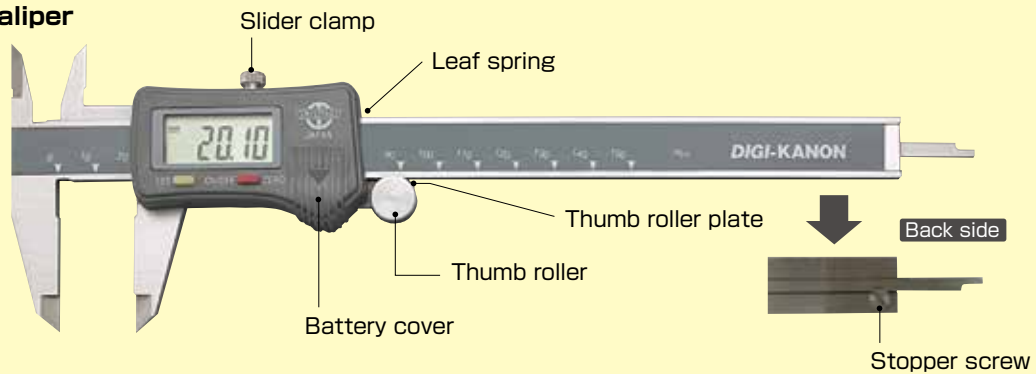
RS-20

### ■ Rotating scriber "Kurukuru" : Dimensions (Unit : mm)

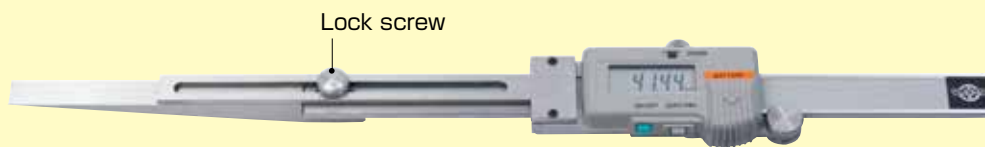
Type	A	B	C	D	E	F
RS-10	105.5	36	12.7	9	10	10
RS-15	68	36.7	12.7	6.35		
RS-20	105	33	9	9		

# PARTS for DIGITAL CALIPERS

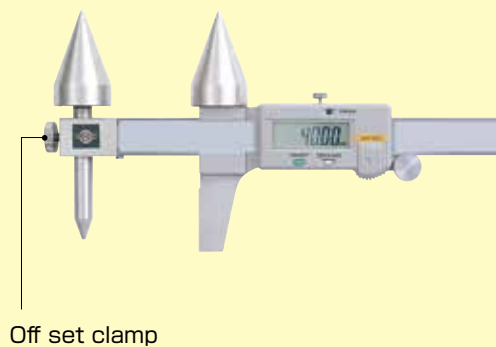
## Digital caliper



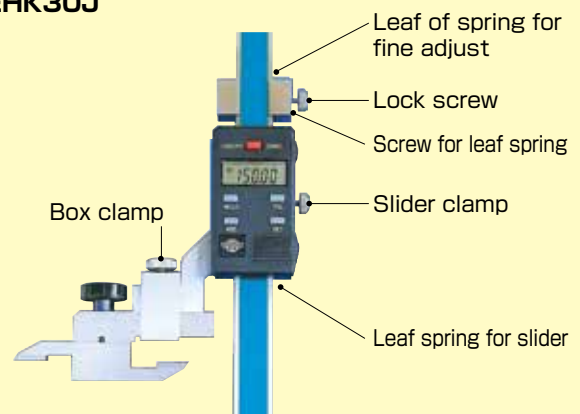
## TES



## E-RM (II)



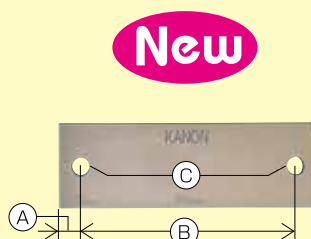
## EHK30J



# GAGE BLOCK

## Initial setting for E-RM

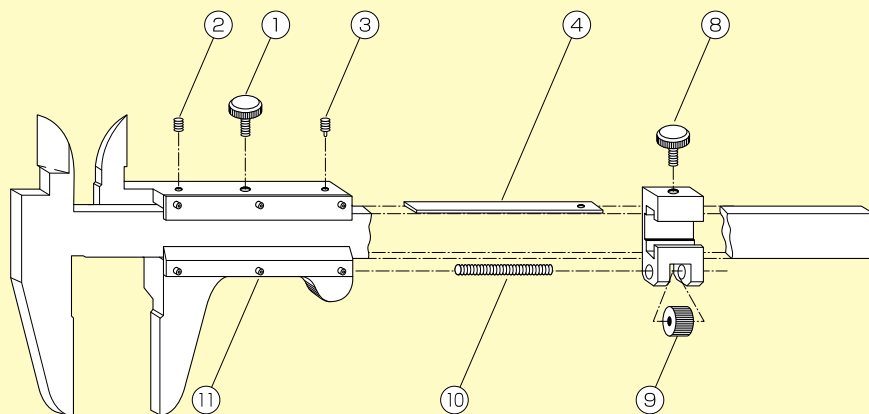
Gage block for E-RM



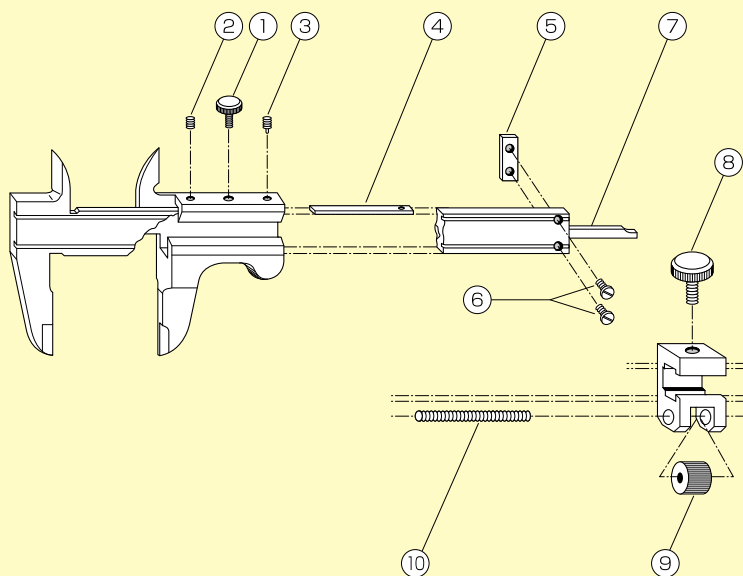
### ■ Gage block for E-RM : Specifications

Model	A (mm)	B (mm)	C ( $\phi$ )	Applicable E-RM
G-10-3	10	100	3	E-RMS15B
G-20-4	20		4	E-RM (II) 15B
G-25-8	25		8	E-RM (II) 30B E-RM (II) 60B
G-10-8	10			E-RM60B

# PARTS LIST



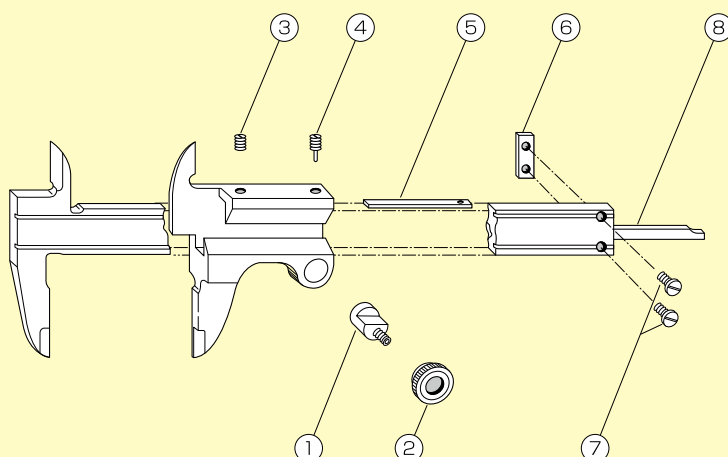
SM/M type



Name	1	2	3	4	5	6	7	8	9	10	11
Model	Slider clamp	Upper screw	Lower screw	Leaf spring	Bridge plate	Bridge screw	Depth bar	Fine adjust clamp	Fine adjust nut	Fine adjust bar screw	Screw for vernier scale
M 45	○	○	○	○	—	—	—	—	—	—	○
M 50	○	○	○	○	—	—	—	—	—	—	○
M 60	○	○	○	○	—	—	—	—	—	—	○
M 100	○	○	○	○	—	—	—	○	○	○	○
SM 7	○	○	○	○	—	One set screw for depth	○	—	—	—	—
SM 150	○	○	○	○	—	—	—	○	○	○	○
SM 200	○	○	○	○	—	—	—	○	○	○	○
SM 250	○	○	○	○	—	—	—	○	○	○	○
SM 300	○	○	○	○	—	—	—	○	○	○	○
RA 15	○	○	○	○	—	—	—	—	—	—	—
RA 20	○	○	○	○	—	—	—	—	—	—	—
LSM 15X 80	○	○	○	○	—	—	—	—	—	—	—
LSM 20X110	○	○	○	○	—	—	—	—	—	—	—
LSM 30X170	○	○	○	○	—	—	—	—	—	—	—
LSM 45X230	○	○	○	○	—	—	—	—	—	—	○
LSM 60X320	○	○	○	○	—	—	—	—	—	—	○



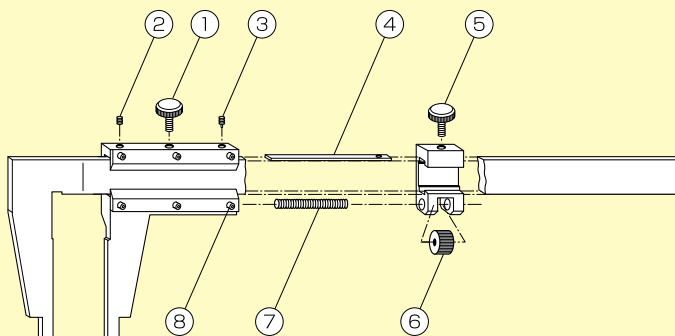
## KSM type



Name		1	2	3	4	5	6	7	8
Model		Lock bolt	Lock nut	Upper screw	Lower screw	Plate spring	Bridge plate	Bridge screw	Depth bar
KSM	15FF	○	○	○	○	○	○	○	○
KSM	20FF	○	○	○	○	○	○	○	○
KSM	30FF	○	○	○	○	○	○	○	○
ROBA	15	○	○	○	○	○	○	○	○
ROBA	20	○	○	○	○	○	○	○	○
ROBA	30	○	○	○	○	○	○	○	○
PITA	10	○	○	○	○	○	○	○	○
PITA	20	○	○	○	○	○	○	○	○
PITA	30	○	○	○	○	○	○	○	○
PITA	40	○	○	○	○	○	—	— *	—

\* One stopper screw included

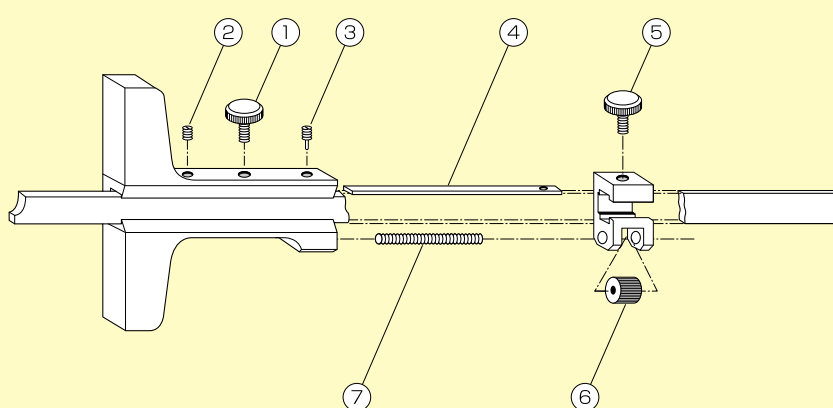
## SCM type



Name		1	2	3	4	5	6	7	8
Model		Slider clamp	Upper screw	Lower screw	Leaf spring	Fine adjust clamp	Fine adjust nut	Fine adjust bar screw	Screw for vernier scale
SCM	15	○	○	○	○	○	○	○	—
SCM	20	○	○	○	○	○	○	○	—
SCM	30	○	○	○	○	○	○	○	—
SCM	40	○	○	○	○	○	○	○	—
SCM	45	○	○	○	○	○	○	○	○
SCM	50	○	○	○	○	○	○	○	○
SCM	60	○	○	○	○	○	○	○	○
SCM	100	○	○	○	○	○	○	○	○
SCM	150	○	○	○	○	○	○	○	○
SCM	200	○	○	○	○	○	○	○	○
SCM	250	○	○	○	○	○	○	○	○
SCM	300	○	○	○	○	○	○	○	○
SCML	30	○	○	○	○	○	○	○	—
SCML	45	○	○	○	○	○	○	○	○
SCML	50	○	○	○	○	○	○	○	○
SCML	60	○	○	○	○	○	○	○	○

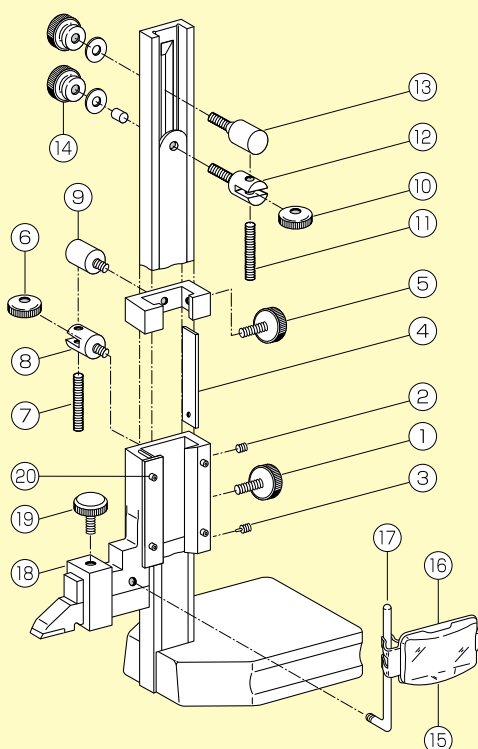
# PARTS LIST

## SDM type

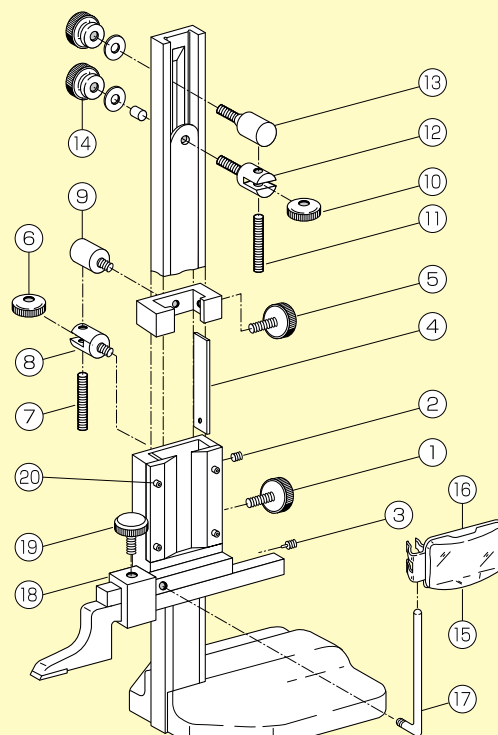


Name	1	2	3	4	5	6	7
Model	Slider clamp	Upper screw	Lower screw	Leaf spring	Fine adjust clamp	Fine adjust nut	Fine adjust bar screw
SDM 15	○	○	○	○	○	○	○
SDM 20	○	○	○	○	○	○	○
SDM 30	○	○	○	○	○	○	○
SDM 40	○	○	○	○	○	○	○
SDM 50	○	○	○	○	○	○	○
SDM 60	○	○	○	○	○	○	○
SDM 100	○	○	○	○	○	○	○
BSDM 15	○	○	○	○	○	○	○
BSDM 20	○	○	○	○	○	○	○
BSDM 30	○	○	○	○	○	○	○
LSDM 15X15	○	○	○	○	○	○	○
LSDM 15X20	○	○	○	○	○	○	○
LSDM 15X25	○	○	○	○	○	○	○
LSDM 20X15	○	○	○	○	○	○	○
LSDM 20X20	○	○	○	○	○	○	○
LSDM 20X25	○	○	○	○	○	○	○
LSDM 30X15	○	○	○	○	○	○	○
LSDM 30X20	○	○	○	○	○	○	○
LSDM 30X25	○	○	○	○	○	○	○
SD 15P	○	—	○	○	—	—	—
SD 20P	○	—	○	○	—	—	—
SD 30P	○	—	○	○	—	—	—
BSD 15P	○	—	○	○	—	—	—
BSD 20P	○	—	○	○	—	—	—
BSD 30P	○	—	○	○	—	—	—

## SHT-3 type



## SHT-1 type



Name	1	2	3	4	5	6	7	8	9	10
Model	Slider clamp	Upper screw	Lower screw	Leaf spring	Lock screw	Fine adjust nut	Fine adjust bar screw	Fine adjust nut holder	Fine adjust blacket nut	Main scale adjust nut
SHT-3-30J	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-3-60J	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

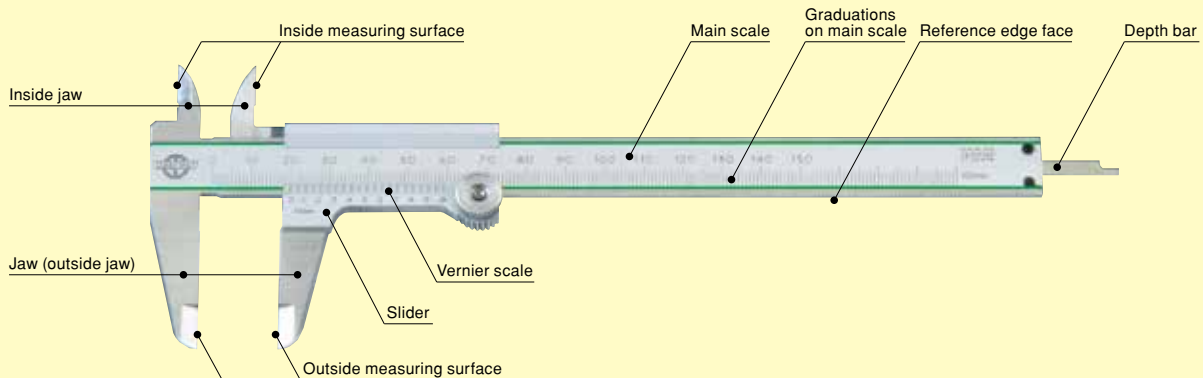
Name	11	12	13	14	15	16	17	18	19	20
Model	Main scale bar screw	Main scale nut holder	Main scale blacket nut	Main scale fixing nut	Magnifier	Magnifier frame	Magnifier bar	Scriber box	Box clamp	Screw for vernier scale
SHT-3-30J	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-3-60J	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Name	1	2	3	4	5	6	7	8	9	10
Model	Slider clamp	Upper screw	Lower screw	Leaf spring	Lock screw	Fine adjust nut	Fine adjust bar screw	Fine adjust nut holder	Fine adjust blacket nut	Main scale adjust nut
SHT-1-30J	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-1-60J	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-1-100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-1-150	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-1-200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Name	11	12	13	14	15	16	17	18	19	20
Model	Main scale bar screw	Main scale nut holder	Main scale blacket nut	Main scale fixing nut	Magnifier	Magnifier frame	Magnifier bar	Scriber box	Box clamp	Screw for vernier scale
SHT-1-30J	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-1-60J	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-1-100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-1-150	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SHT-1-200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### What is a vernier caliper?

A vernier caliper is a measuring tool for use in the field that is used most widely for dimension measurement at present. A slider and a scale are combined and a vernier scale is mounted to the outside jaw, allowing finer and more accurate reading of graduations of scale.



### Origin of vernier caliper

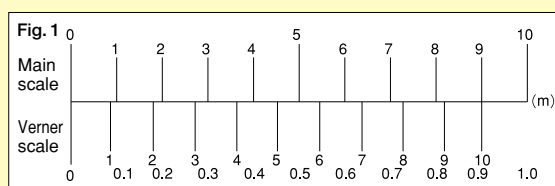
It is said that the method of vernier scale was invented by Portuguese mathematician, Petrus Nonius (1492 – 1577). It is French Pierre Vernier that developed structure for accurate reading by mounting this method of scale to one measuring jaw of pass. In Germany, it is called Nonius.

### Principle of vernier

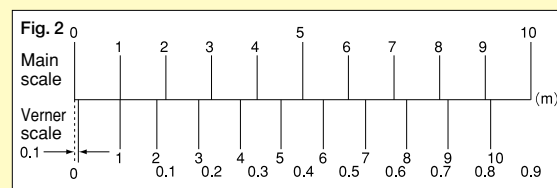
By subdividing the reference graduations of main scale for accurate reading, a vernier scale is provided. Normally, if the graduations of main scale are in 1 mm steps, the vernier scale is provided by dividing  $(n - 1)$  mm into  $n$  or  $n/2$  equal parts. For example, the following types of vernier scale are the greater part of Kanon calipers. (See Table 1.)

- ① 1.  $n = 20$  (divided into  $n$  equal parts)  $\rightarrow$  19 mm is divided into 20 equal parts.  
(ICM, ROBA, RA, etc.)
- ② 2.  $n = 40$  (divided into  $n/2$  equal parts)  $\rightarrow$  39 mm is divided into 20 equal parts.  
(PITA, M45 to M100, SM150 to 300, etc.)
- ③ 3.  $n = 50$  (divided into  $n$  equal parts)  $\rightarrow$  49 mm is divided into 50 equal parts.  
(SCM, SCML, FCM, etc.)

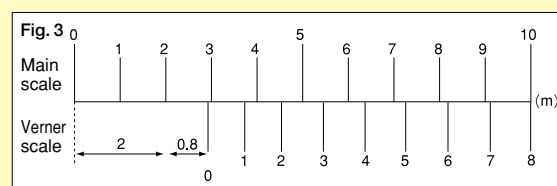
For easy understanding of the principle, take an example of scale in 1 mm steps with vernier scale of 9 mm divided into 10 equal parts ( $n = 10$ ). For example, as shown in Fig. 1, the 9 graduations (9 mm) on the main scale (in 1 mm steps) divided into 10 equal parts configure a vernier scale. One graduation on the scale is 0.9 mm. Consequently, the difference of one graduation between the main scale and the vernier scale is  $1 \text{ mm} - 0.9 \text{ mm} = 0.1 \text{ mm}$ . This shows a case that graduation 0 on the main scale matches with graduation 0 on the vernier scale, namely the slider is at the leftmost position without any object to be measured. (Fig. 1)



Then, suppose that a string of 0.1 mm in thickness is put in the outside jaw. The vernier scale slides to the right by 0.1 mm, and graduation 1 on the vernier scale that is 0.1 mm shorter than the main scale matches with graduation 1 on the main scale. (Fig. 2) From the reverse point of view, reading this graduation on the vernier scale indicates the quantity of sliding of the vernier scale, namely the dimension of object to be measured (0.1 mm). If the vernier scale slides further and graduation 2 matches, the measured value is 0.2 mm. If graduation 3 matches, the value is 0.3 mm.



In other words, the deviation of graduation 0 on the main scale from graduation 0 on the vernier scale is the measured value. In the case of Fig. 3, the method of reading is expressed as shown below.  
Deviation of graduation 0 between main scale and vernier scale = Graduation of main scale (2 mm) +  $(8 \times 1/10 \text{ mm}) = 2.8 \text{ mm} <$  Measured value  
As shown above, a vernier scale that is graduated in smaller values than the main scale is used to read finer and more accurate dimensions. This is the principle of vernier.



## Example of actual measurement

In the example on the previous page, 9 mm is divided into 10 equal parts and therefore values can be read in 0.1 mm steps. Here, we show a case of currently popular vernier scale on which 19 mm is divided into 20 equal parts (1).

One graduation of this vernier scale is  $19\text{mm}/20 = 0.95\text{mm}$ . The deviation of one graduation from the main scale is  $1\text{mm} - 0.95\text{mm} = 0.05\text{mm}$ , which is minimum reading. Consequently, values can be read in  $5/100\text{ mm}$ , namely,  $1/20\text{ mm}$  steps. (Fig. 4) Similarly, in the case of division of 39 mm into 20 equal parts (2), values can be read in  $1/20\text{ mm}$  steps (Fig. 5). In the case of division of 49 mm into 50 equal parts (3), values can be read in  $0.02\text{ mm}$ , namely  $1/50$  steps (Fig. 6).

### (A) How to read 1/20 mm vernier

In the case of Fig. 7, the 5th graduation of vernier matches.  $9\text{mm} + (1/20\text{mm} \times 5) = 9\text{mm} + 0.25\text{mm} = 9.25\text{mm}$ . Consequently, the 5th graduation of vernier scale indicates 25 for easy reading.

### (B) How to read 1/50 mm vernier

In the case of Fig. 8, the 6th graduation of vernier matches.  $5\text{mm} + (1/50\text{mm} \times 6) = 5\text{mm} + 0.12\text{mm} = 5.12\text{mm}$ . Consequently, the 6th graduation of vernier scale indicates 11 similarly.

Fig. 4 1/20 mm vernier (19 graduations, 20 equal parts)

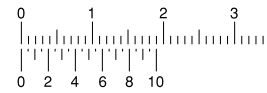


Fig. 5 1/20 mm vernier (39 graduations, 20 equal parts)

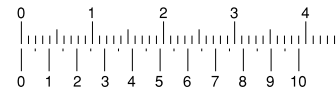


Fig. 6 1/50 mm vernier (49 graduations, 50 equal parts)

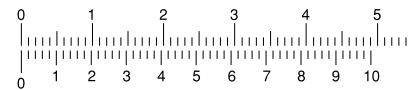
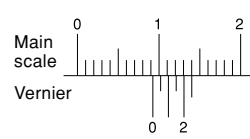
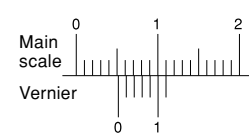


Fig. 7



(A) Scale reading 9.25 mm

Fig. 8



(B) Scale reading 5.12 mm

## Scale type of Kanon vernier calipers Table 1 (JIS B7507 standard)

1 graduation of main scale	1mm			
Method of vernier scale	49 graduations -> 50 equal parts	19 graduations -> 20 equal parts	39 graduations -> 20 equal parts	29 graduations -> 10 equal parts
Minimum reading	$1/50 = 0.02\text{mm}$	$1/20 = 0.05\text{mm}$		$1/10 = 0.1\text{mm}$
Applicable Kanon calipers	LSDM, ESDM, SDM, BSDM, FCM, SDM, SCM, SCML	TH, SM7, RA, ROBA, ICM	PITA, RM-DX, RM-S, BSD-P, SD-P, SM150~300, M45~100, LSM	RM (II)

## Features of Kanon calipers

Kanon calipers, for which the tradition of Kanon and its excellent technology are fully used from standard products such as SM to special products, are commonly acknowledged first-class products concerning quality and precision.

### 1. Material

Since high-quality stainless steel (SUS420J2) that is selected carefully is refined completely, rust is not generated and aged deterioration does not occur.

### 2. Overall quenching

Not only measuring surfaces but also the main scale are quenched completely, the product has excellent resistance to flaw and wear.

### 3. Power of two lines of Kanon

Since two grooves are provided on the scale surface, the scale can be easily read and is resistant to flaw. Also galling does not occur easily and smooth sliding can be conducted. (PITA, etc.)

### 4. Graduation lines

Graduation lines and numbers are processed with a Kanon original method, and accurate and uniform lines are obtained. Also chromium matte plating is applied to the scale surface, clear and easy reading is available without fatigue of eyes.

### 5. Excellent precision quality

Each part is processed uniformly with latest special-purpose machines for vernier calipers under a rational mass production system and keeps high precision even after assembly.



### Vernier caliper

Vernier, dial and digital calipers

#### 1. Scope

This standard specifies calipers of which the maximum measuring length is 1,000 mm or less among general vernier calipers of which the resolution or the minimum reading is 0.1 mm, 0.05 mm, 0.02 mm or 0.01 mm and which are used for measuring outside dimension and inside dimension (hereafter referred to as caliper).

#### 2. Definition of terms

The definition of principal terms used in this standard conforms to JIS B 7507 and additionally is described below.

##### ■ (1) Caliper

Measuring instrument in which the main scale that is equipped with a jaw with measuring surfaces for outside and inside on one end is configured as a reference component, a slider that is equipped with a jaw including a measuring surface that is parallel with the above measuring surfaces slides, and the distance between measuring surfaces is read on the main scale and the vernier scale or on the dial scale or through electronic digital display.

##### ■ (2) Vernier scale

Scale for reading detailed graduations of main scale graduations of which the graduations are obtained by dividing  $\frac{n}{2}$  (n – 1) graduations of main scale into n or n/2 equal parts. Also it is called subscale.

##### ■ (3) Dial scale

Disk type scale in which the slider moving quantity is enlarged mechanically by gears or the like and is read through a rotating pointer.

##### ■ (4) Electronic digital display

Numeric display in which the slider moving quantity is detected based on the main scale and indicated numerically by counting with an electronic circuit.

##### ■ (5) Instrumental error

Value obtained by subtracting real value to be indicated from the read value on the caliper.



### 3. Notes on use

- (1) Since the caliper is not equipped with any constant pressure device, proper and uniform measurement power must be used for measurement.  
Note that measurement at the base or the tip of jaw may cause particularly a larger error.
- (2) On electronic digital display, consider sufficiently that the last digit of indicated value is uncertain within the range of 1. Attention must be paid particularly to the operating environment. For example, a magnetic field, electric field, and humidity influence the function of electronic parts.

### 4-1. Instrumental error of caliper

The tolerance of instrumental error of caliper is shown in Table 1.

Table 1. Tolerance of instrumental error of caliper

(Unit : mm)

Measuring length	Graduation, resolution or minimum reading	
	0.1 or 0.05	0.02 or 0.01
50 or less	$\pm 0.05$	$\pm 0.02$
More than 50 100 or less	$\pm 0.06$	$\pm 0.03$
More than 100 200 or less	$\pm 0.07$	
More than 200 300 or less	$\pm 0.08$	$\pm 0.04$
More than 300 400 or less	$\pm 0.09$	
More than 400 500 or less	$\pm 0.10$	$\pm 0.05$
More than 500 600 or less	$\pm 0.11$	
More than 600 700 or less	$\pm 0.12$	$\pm 0.06$
More than 700 800 or less	$\pm 0.13$	
More than 800 900 or less	$\pm 0.14$	$\pm 0.07$
More than 900 1000 or less	$\pm 0.15$	

Remarks 1. Values in the table are for 20°C.  
2. These values include measurement errors caused by straightness and parallelism of measuring surface.

### 4-2. Deviation of zero point of depth bar

For calipers with a depth bar for measurement of depth, the deviation of zero point must be 0.02 mm or less.

# EXLON-Y

Adequate for vision measurement for printed circuit board and so on.

With "Manual operation and noncontact method", this vision measuring machine allows high-precision measurement for small parts and soft objects.

Manual and noncontact type  
vision measuring machine

**EXLON-Y**



- Only by clicking the measurement location, multipoint measurement can be automatically conducted.
- Basic measurement for point, line, circle, arc, etc. (500 points at the maximum)
- Indirect measurement for distance, angular midpoint, etc.
- Coordinate system setting for axis correction. origin movement, etc.
- Calling and recalculation
- Drawing is conducted at the same time as measurement.
- Recalculation can be conducted only by clicking the measurement location on the graph, instead of number for recalculation of result.
- Graphs can be stored in a DXF file. It can be transferred to CAD/CAM, allowing editing.
- As measurement data, in addition to X and Y coordinate values, geometrically calculated values such as roundness and straightness can be outputted at the same time.
- Also the shortest distance and the longest distance can be calculated.
- CNC machines (automatic) are also provided.

## EXLON Y : Specifications

Model	EXLON Y 45
Measuring range for X axis	400mm
Measuring range for Y axis	500mm
Resolution	0.001mm
Precision on each axis	5+5L/1000 $\mu$ m
Operation method	Manual
Sliding section	LM guide
Sensor	Optical linear scale
Environmental conditions: Temperature	18°C~30°C
Environmental conditions: Humidity	30%~80%
Detection of image	High-definition image CCD camera
Lighting system	LED epi-illumination, transillumination (optional)
Zoom lens-barrel	1x to 4x zoom lens
Personal computer	OS : Windows 7 Professional
A	1300mm
B	720mm
C	800mm
Weight	290kg

Large sizes (up to 2,000 mm) are supported. Contact our company or your dealer.

# EXLON-Z III 453

Adequate for coordinate measurement for complex shape

With "Manual operation" and excellent operability, this coordinate measuring machine allows high-precision measurement for three-dimensional objects.



- A jogging unit with excellent operability is provided for each axis.  
While moving an axis, the machine can be operated easily.
- Since the main body has portal structure, the product is resistant to vibration, resulting in stable precision. Also a stone surface plate is used and therefore the product is resistant to temperature change, resulting in stable precision at ordinary temperature.
- Measurement = Three-dimensional rotation, reverse, enlargement/reduction, movement, and so on of prepared drawing can be conducted easily.  
Output to IGES file allows easy editing on CAD/CAM.
- In addition to measurement of elements (point, line, surface, circle, sphere, cylinder) and indirect measurement in which measured elements are combined for calculation, geometric calculation (straightness, flatness, roundness, sphericity, cylindricity, position, parallelism, perpendicularity) is available.

## EXLON Z III 453 : Specifications

Model	EXLON Z III 453
Measuring range for X axis	400mm
Measuring range for Y axis	500mm
Measuring range for Z axis	300mm
Resolution	0.001mm
Precision on each axis	4+5L/1000 $\mu$ m
Operation method	Manual
Sliding section	LM guide
Sensor	Optical linear scale
Environmental conditions: Temperature	18°C~30°C
Environmental conditions: Humidity	30%~80%
Sensor section	Electronic probe TP8
Personal computer	OS : Windows 7 Professional
A	1,830mm
B	720mm
C	800mm
D	415mm
E	495mm
Weight	350kg

Large sizes are also provided. Contact our company or your dealer.

# X-600 / X-1000 Straight line

Measurement of shaft with easy operation

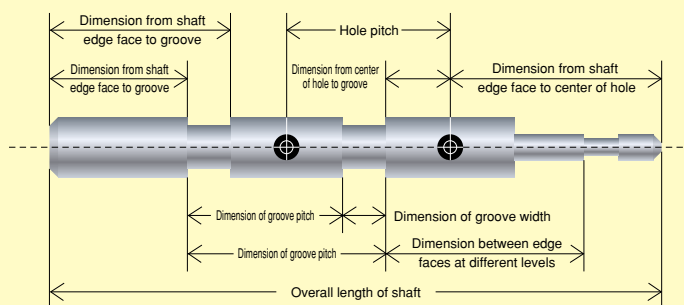
With "3 types of probe placed in line", this oneaxis measuring machine can be used for various types of dimension measurement.

Straight line

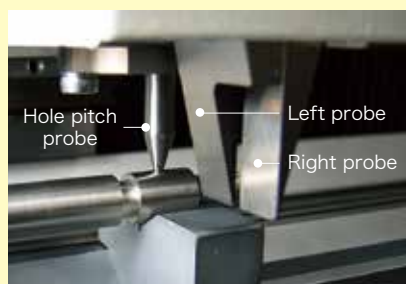


X-600

## Measurement locations



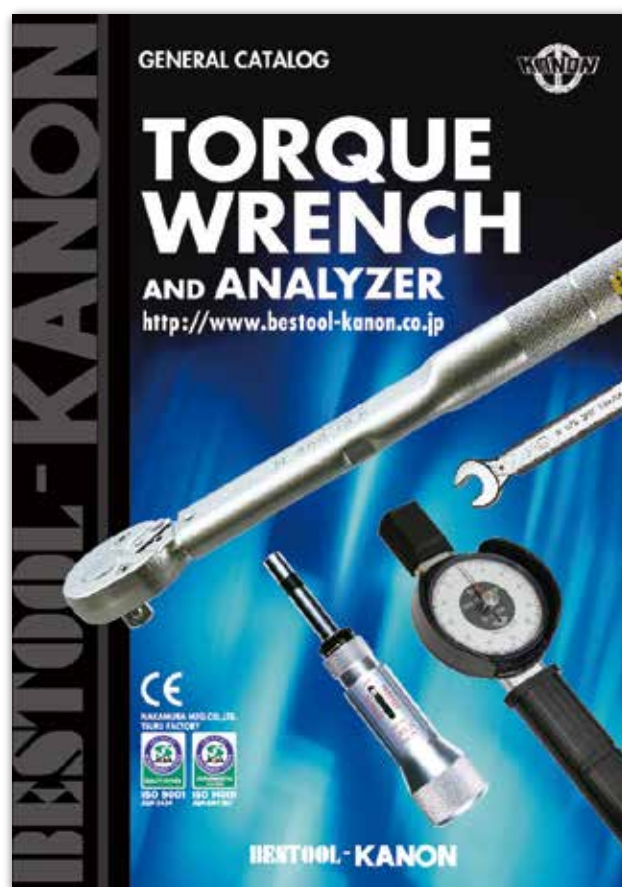
- This product is manufactured on order.
- The product is adequate for dimension measurement in grooving section and drilling section of shaft.
- Three types of probe are provided: hole pitch probe, left probe, and right probe.
- V blocks for work rest are provided as accessories. (large, intermediate, and small)
- A printer is provided as a standard component. The output function is provided.
- For printer output, a foot switch specification can be provided. (Optional)



## X-600/X-1000 : Specifications

Model	X-600	X-1000
Measuring length	600mm	1000mm
Resolution	0.01mm	
Precision	$\pm 0.03\text{mm} + 1\text{digit}$	
Display	LED display: 7-digit display including a sign	
Power supply voltage	AC100~240V (50/60Hz)	
Power consumption	25VA	
Output	Printer output	
Environmental conditions for operation	Temperature: 0 to 45°C Humidity: 20 to 80%	
Measurable diameter	$\phi 2 \sim \phi 40\text{mm}$	
Measurable groove width	0.5 mm or more	
Function	Zero setting, data output, various types of error display	
Diameter supported by hole pitch probe	$\phi 1 \sim \phi 5.8\text{mm}$	
Outside dimensions (mm)	W 830 × D 350 × H 375	W 1400 × D 350 × H 375
Weight	Approximately 90 kg	Approximately 150 kg

**"Reliable measured values"  
of Kanon contribute to  
"reliable manufacturing."**



Torque equipment general catalog

Please feel free to inquire about products and request catalogs.



- Origin of KANON Mark -

The KANON mark is a symbol of technology of Nakamura Mfg. Co., Ltd., which was established at the time of foundation. Kanon is a Latin word that means “Standard.” We selected this word because we think that our products on which the KANON mark is printed must be “KANON” of all measuring equipment, namely the best model product.

Note that the specifications may be changed without prior notice.

Produced by :

**NAKAMURA MFG. CO., LTD.**

4-4, Ohi 4-chome, Shinagawa-ku, Tokyo 140-0014, Japan  
TEL: +81-3-3775-1527 FAX: +81-3-3775-1732  
E-MAIL: [oversea@bestool-kanon.co.jp](mailto:oversea@bestool-kanon.co.jp)  
URL: <http://www.bestool-kanon.co.jp/english/>

Dealer