BESTOOL - KANON

LENGTH MEASURING MACHINE
GENERAL CATALOG

E-PEAK15

BESTOOL - KANON

LENGTH MEASURING MACHINE GENERAL CATALOG

INDEX

NAKAMURA MFG.CO,LTD. TSURU FACTORY JQA-EM1367 ISO 14001

ONLY ONE ←"ONLY ONE": Products with this red mark are BESTOOL-KANON completely original products.

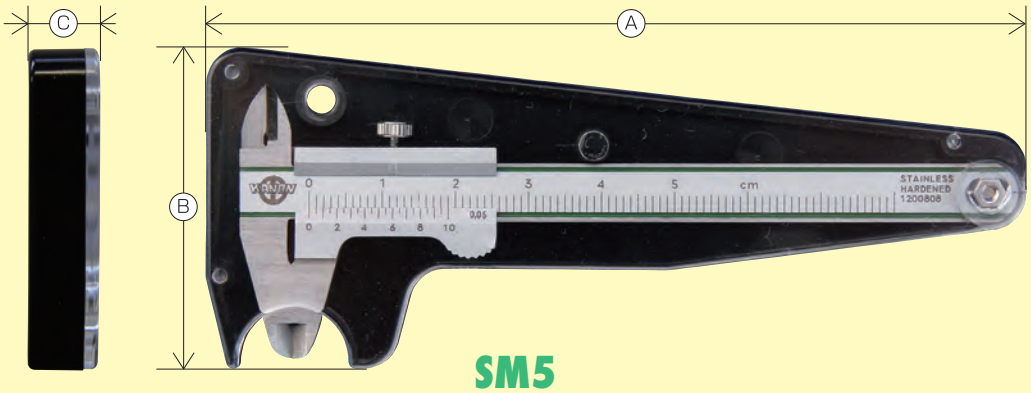
For special size or special specification products from products listed in this catalog, we accept request of estimate and order. Contact our company or your dealers,

SM5

Standard vernier caliper for normal measurement.

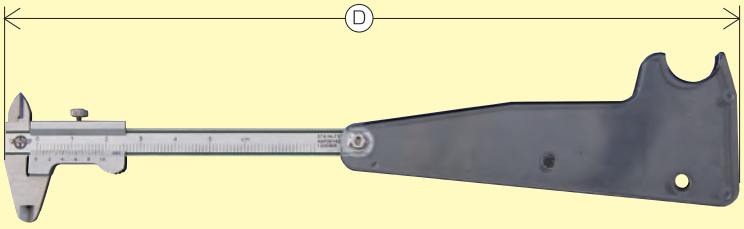
Standard type.

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	Maximum permissible error		Weight	A	B	C	D
			E_{MPE}	S_{MPE}					
SM5	50	0.05	± 0.05	± 0.07	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)

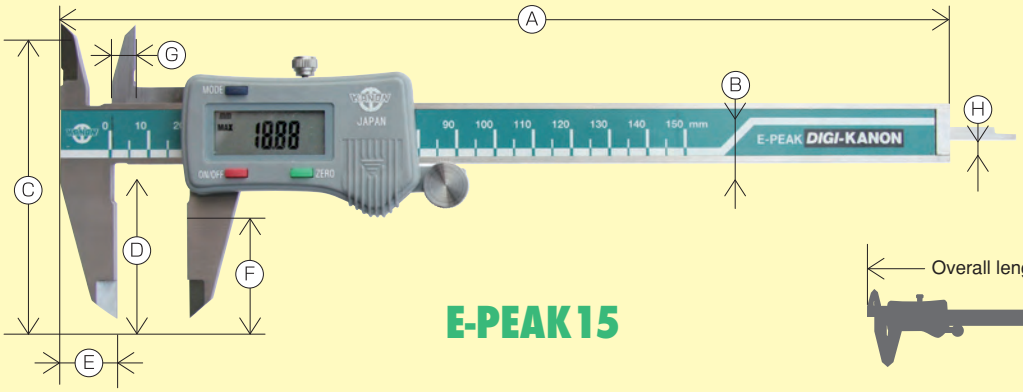
E-PEAK

Digital caliper holding Min and Max measured value

ONLY ONE

Adequate for narrow space where the display is hard to see

REGISTERED AS UTILITY MODEL (Japan)

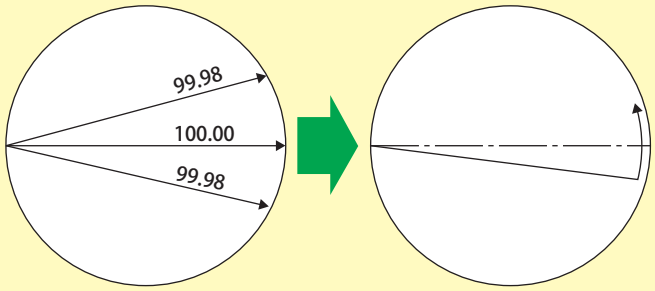


E-PEAK15

Maximum values and minimum values are automatically stored.

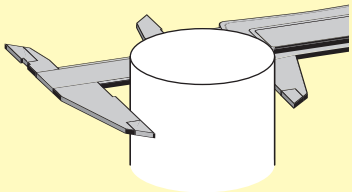
For measuring inner diameter, the maximum value (Max) mode is convenient!

● 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!

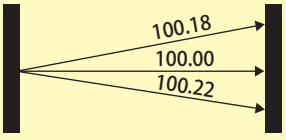


● The minimum value of outer diameter is automatically stored in an E-PEAK vernier caliper.

Convenient in such cases!

Reading at hand

- 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	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H × Thickness
E-PEAK15	150	0.01	± 0.02	± 0.04	241	SR44 1piece	170g	234	16	76	40	14	30	7	3.8×1.2
E-PEAK20	200				291		190g	284							
E-PEAK30	300		± 0.03	± 0.05	396		280g	388		103	64		47	8	4.8×1.2

E-PITA／PITA

Epoch-making flat-head caliper

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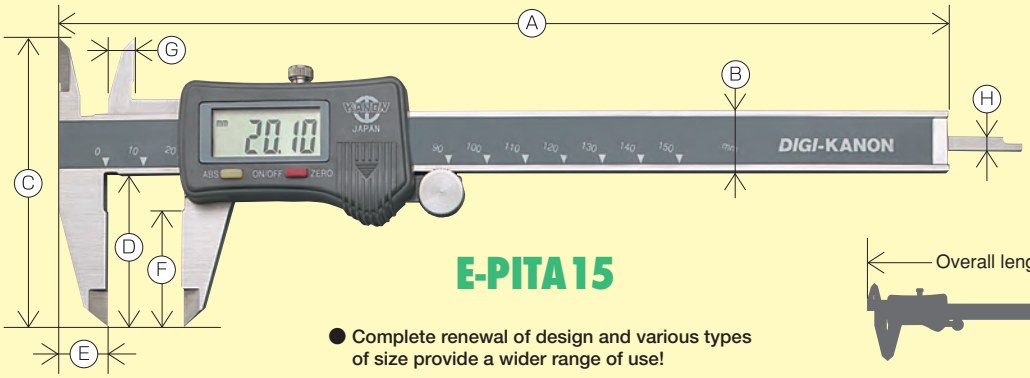
21st century version of standard caliper!

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)

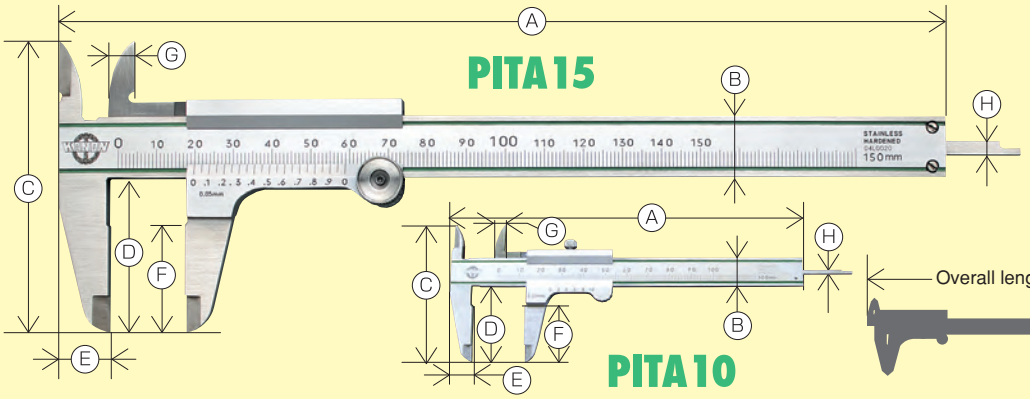
Model	Measuring length	Resolution	Maximum permissible error		Overall length	Power supply	Weight	A	B	C	D	E	F	G	H×Thickness
			EMPE	SMPE											
E-PITA10	100	0.01	± 0.02	± 0.04	191	SR44 1 piece	160g	184	16	76	40	14	30	7	3.8 × 1.2
E-PITA15	150				241		170g	234							
E-PITA20	200				291		190g	284							
E-PITA30	300		± 0.03	± 0.05	396		280g	388		103	64		47	8	4.8 × 1.2
E-PITA40	400		± 0.04	± 0.06	496		400g	488		103	64		47	8	–

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

■ E-PITA : Metric / Inch model Specifications

(Unit : mm)

Model	Measuring length	Resolution	Maximum permissible error		Overall length	Power supply	Weight	A	B	C	D	E	F	G	H×Thickness
			EMPE	SMPE											
E-PITA150×6″	150mm×6″	0.01mm × 0.0005″	± 0.02	± 0.04	241	SR44 1 piece	170g	234	16	76	40	14	30	7	3.8 × 1.2
E-PITA200×8″	200mm×8″				291		190g	284							
E-PITA300×12″	300mm×12″		± 0.03	± 0.05	396		280g	388		103	64		47	8	4.8 × 1.2



● 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)

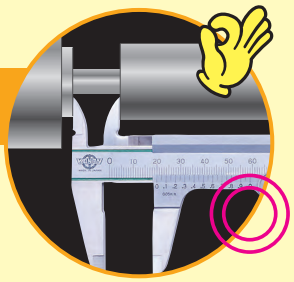
Model	Measuring length	Minimum reading	Maximum permissible error		Overall length	Weight	A	B	C	D	E	F	G	H×Thickness
			EMPE	SMPE										
PITA10	100	0.05 (Division of 39 mm into 20 equal parts)	± 0.05	± 0.10	171	100g	166	13.5	65	34.5	11	25	5	2.4×1.2
PITA15	150				237	140g	230	16	76	40	14	28	7	3.8×1.2
PITA20	200				287	160g	280							
PITA30	300				409	340g	400	20	111	64	19	48	9	4.8×1.2
PITA40	400		± 0.10		515	420g	506							–

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

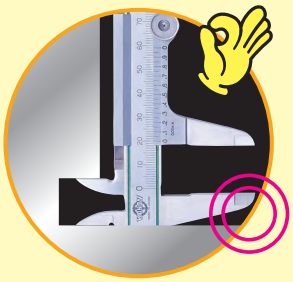
With PITA vernier caliper

Measurement on edge face (measurement with PITA)

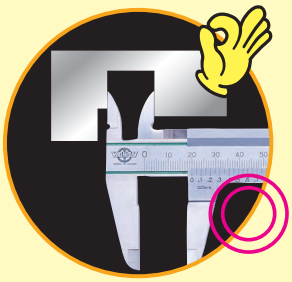
Easy solution for a narrow space at the tip!



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



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



ULJ Judgement

Pass/fail judgment function is added to flat-head caliper.

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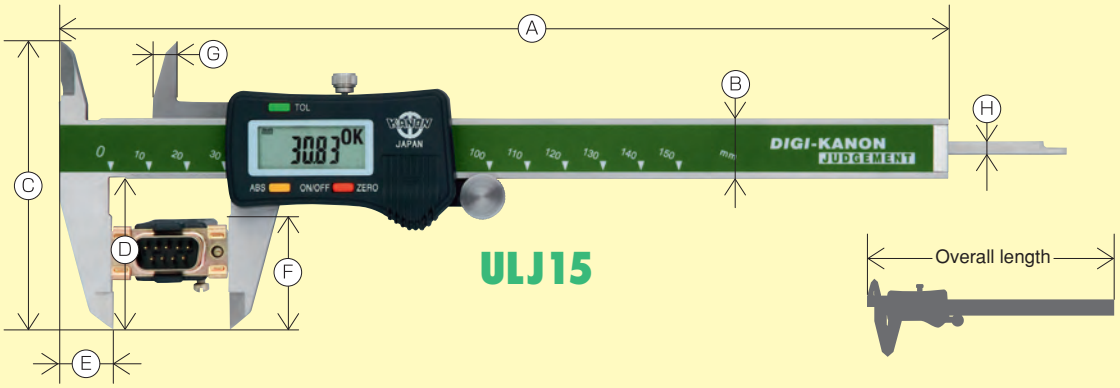
JUDGEMENT

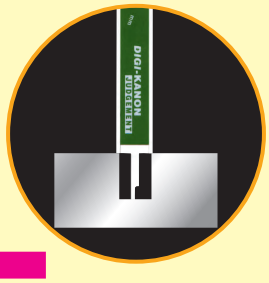
With "Judgment function", instantaneous sorting of accepted products and rejected products is available.



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	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H×Thickness
ULJ15	150	0.01	± 0.03	± 0.05	241	SR44 1piece	170g	234	16	76	40	14	30	7	3.8×1.2
ULJ20	200				291		190g	284							
ULJ30	300		± 0.04	± 0.06	396		280g	388		103	64		47	8	4.8×1.2

■ ULJ : Metric / Inch model Specifications

(Unit : mm)

Model	Measuring length	Resolution	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H×Thickness
ULJ150×6″	150mm×6″	0.01mm × 0.0005″	± 0.03	± 0.05	241	SR44 1piece	170g	234	16	76	40	14	30	7	3.8×1.2
ULJ200×8″	200mm×8″				291		190g	284							
ULJ300×12″	300mm×12″		± 0.04	± 0.06	396		280g	388		103	64		47	8	4.8×1.2

PLUS10

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

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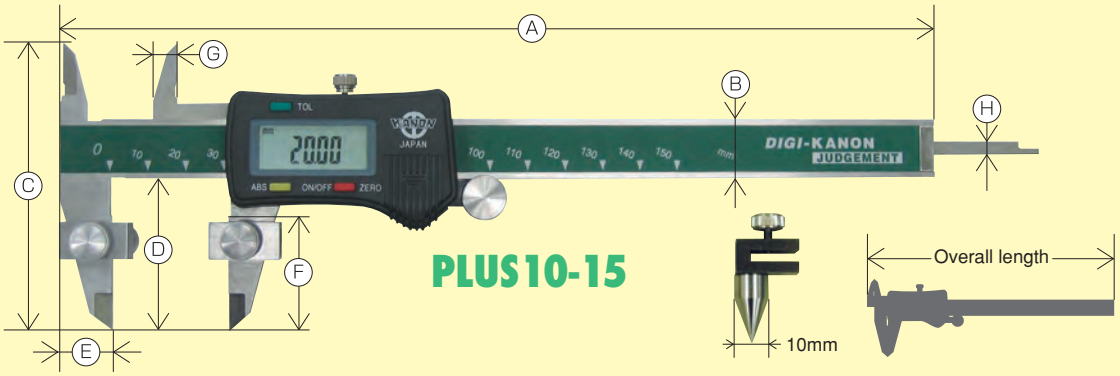
PLUS 10

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

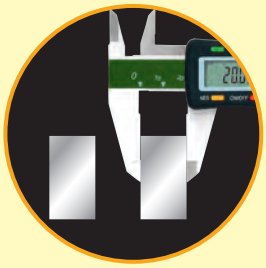


Inside measurement

Outside measurement

Measurement of depth

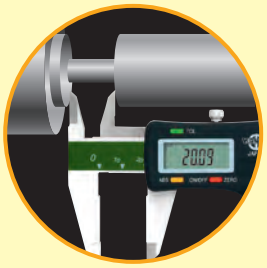
Comparative measurement (ABS function)



Point measurement

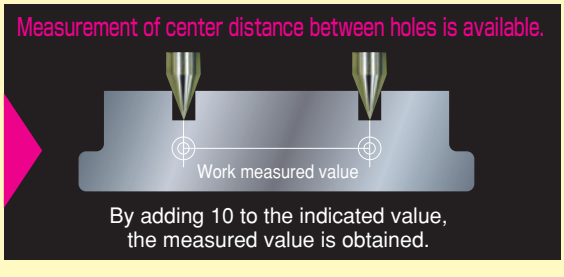
Measurement of height from a face

Measurement on edge face (measurement with flat-head)



Judgment function

Plus 10 provides further ...



- 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.)

(Unit : mm)

■ PLUS10 : Specifications

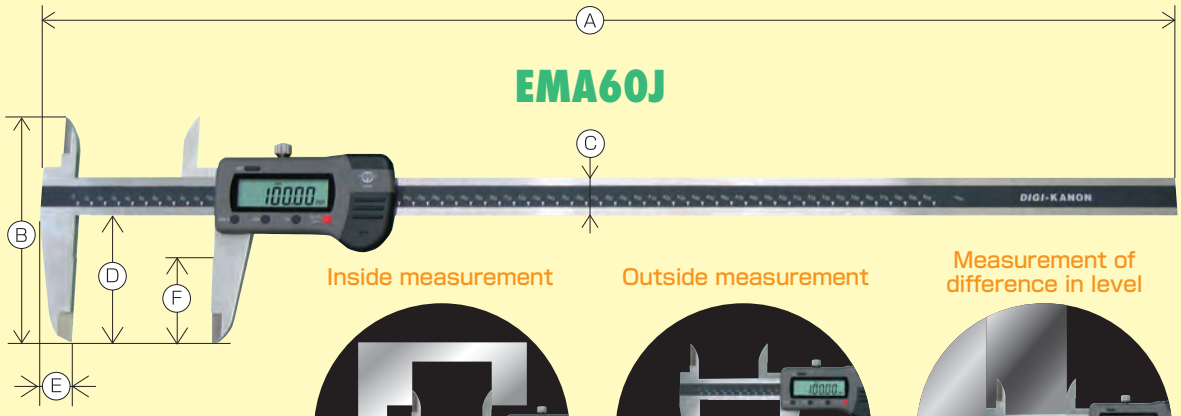
Model	Measuring length	Resolution	*Maximum permissible error E_{MPE}	*Maximum permissible error S_{MPE}	Overall length	Power supply	Weight	A	B	C	D	E	F	G	H × Thickness
PLUS10-15	150	0.01	± 0.03	± 0.05	241	SR44 1 piece	170g	234	16	76	40	14	30	7	3.8×1.2
PLUS10-20	200				291		190g	284							
PLUS10-30	300		± 0.04	± 0.06	396		280g	388		103	64		47	8	4.8×1.2

*This is not MPE of center distance measurement.

EMA

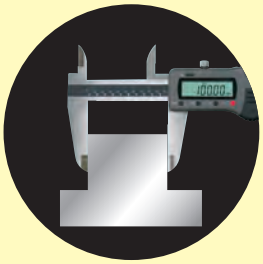
Adequate for large scale measurement

Digital caliper adequate for large scale measurement

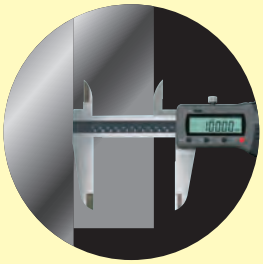


Inside measurement

Outside measurement



Measurement of difference in level



■ EMA : Specifications

(Unit : mm)

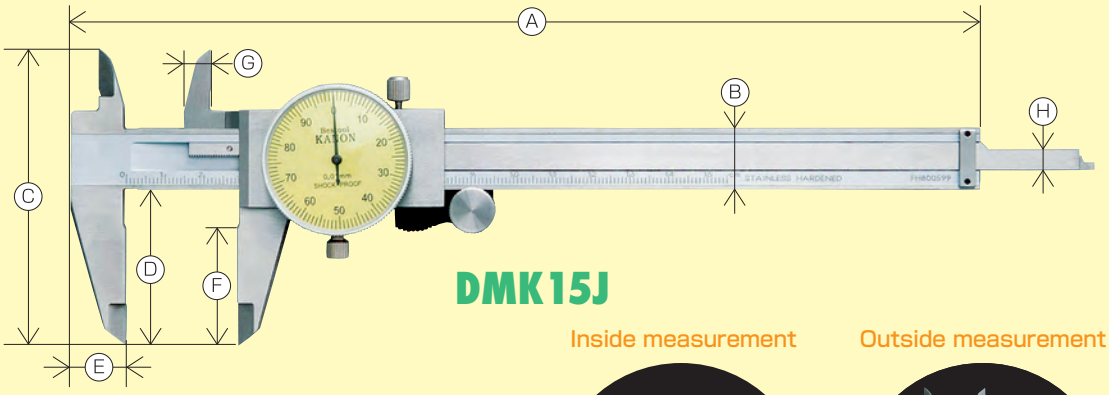
Model	Measuring length	Resolution	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Power supply	Weight	A	B	C	D	E	F
EMA60J	600	0.01	± 0.05	± 0.07	CR2032 1 piece	1.4kg	800	165	28	89	28	60
EMA100J	1000		± 0.07	± 0.09		2.0kg	1200	215		128	32	90

DMK-J

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

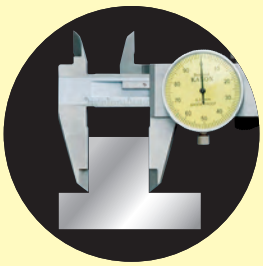
With "Scale dial", instantaneous reading is available. The caliper with dial allows quick reading of measurement.

Dial direct reading method



Inside measurement

Outside measurement



- 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

(Unit : mm)

Model	Measuring length	Resolution	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Rotation of pointer	Weight	A	B	C	D	E	F	G	H × Thickness
DMK15J	150	0.01	± 0.02	± 0.04	1	150g	235	16	77	40	14	30	7	5×1.65
DMK20J	200		± 0.03	± 0.05		210g	290	17	90	50	17	38	7	5×1.65
DMK30J	300		± 0.04	± 0.06		320g	395	17	105	64	18	50	9	3.8×1.2

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!

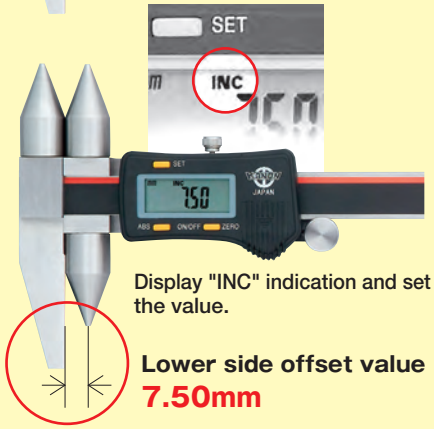
Direct reading system
Digital

One unit for two functions

E-RM15J

Upper side offset value
15.00mm

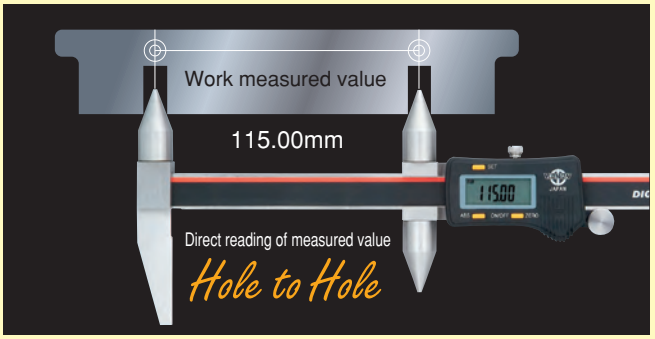
Clear "INC" indication and set the value.



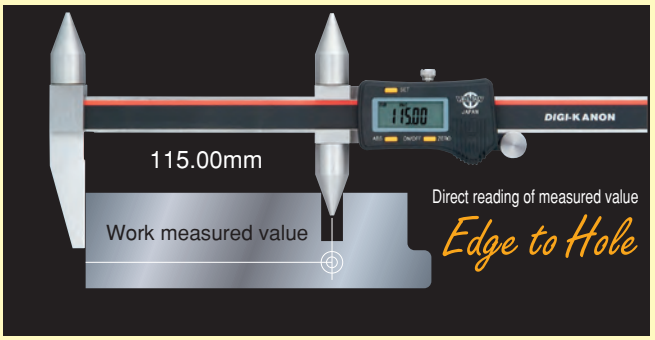
Display "INC" indication and set the value.

Lower side offset value
7.50mm

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	Maximum permissible 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		S_{MPE}													
E-RM15J	15 ~ 150	7.5 ~ 150	0.01	± 0.05	φ3	φ14	SR44 1piece	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

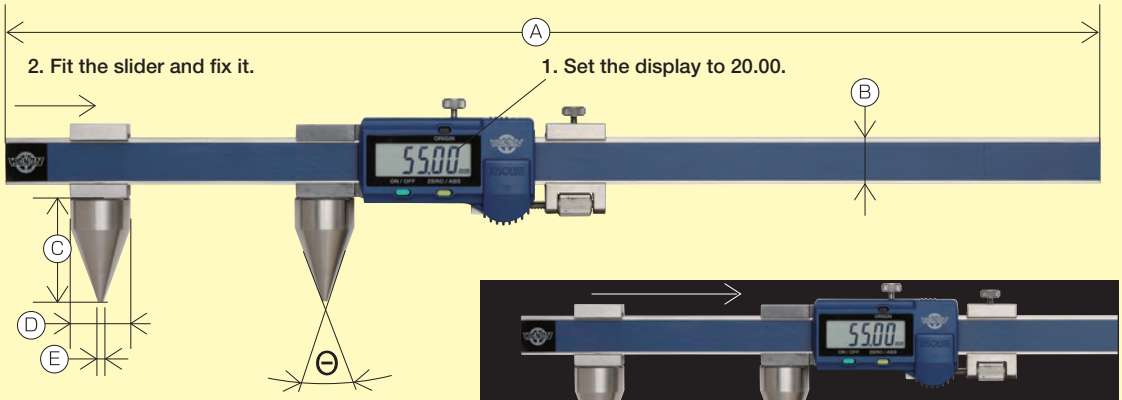
ONLY ONE

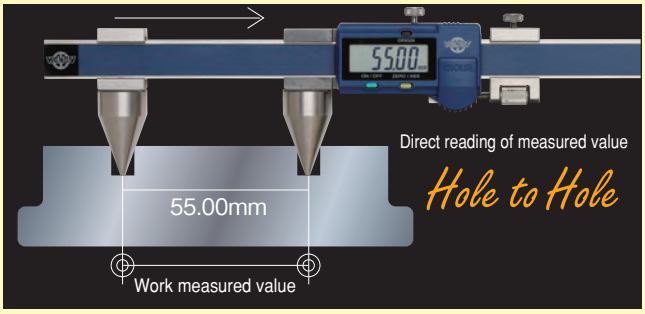
"Digital direct reading system" for the measurement of the distance between two centers through easy operation.

Direct reading system
Digital

For center distance measurement "between holes"

E-RX20BL





- 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 output function is provided.

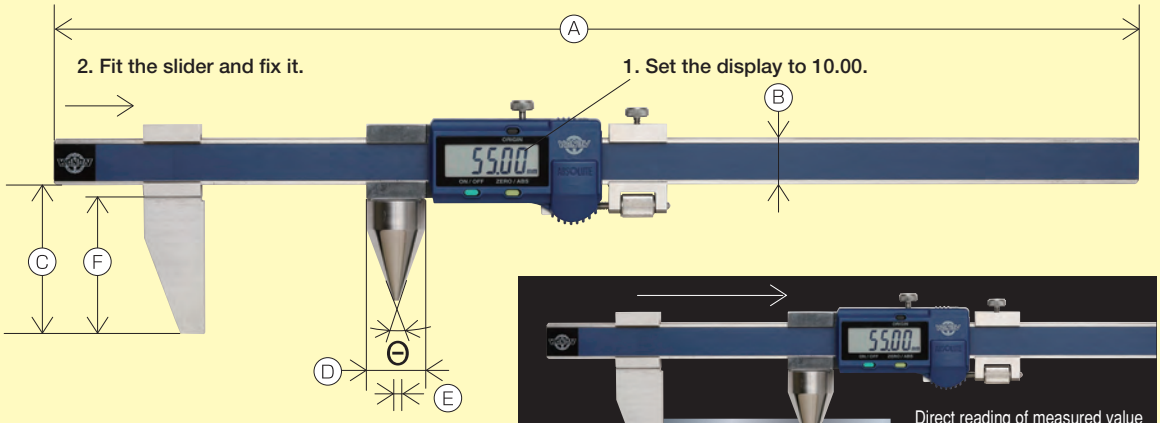
■ E-R X : Specifications

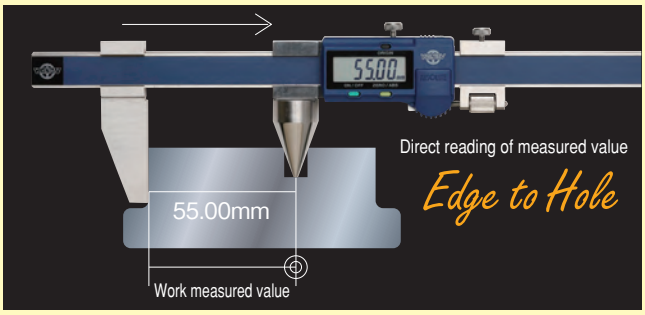
(Unit : mm)

Model	Measuring range	Resolution	Maximum permissible error S_{MPE}	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	θ
E-RX20BL	20 ~ 200	0.01	± 0.05	φ3	φ19	SR44 1piece	360g	370	16	35	φ20	φ2	40°
E-RX30BL	20 ~ 300						582g	500	20				

For measurement of distance "between edge face and hole"

E-RZ20BL





- 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 output function is provided.

■ E-R Z : Specifications

(Unit : mm)

Model	Measuring range	Resolution	Maximum permissible error S_{MPE}	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	θ
E-RZ20BL	10 ~ 200	0.01	± 0.05	φ3	φ19	SR44 1piece	340g	370	16	50	φ20	φ2	45	40°
E-RZ30BL	10 ~ 300						560g	500	20					

E-RX-J

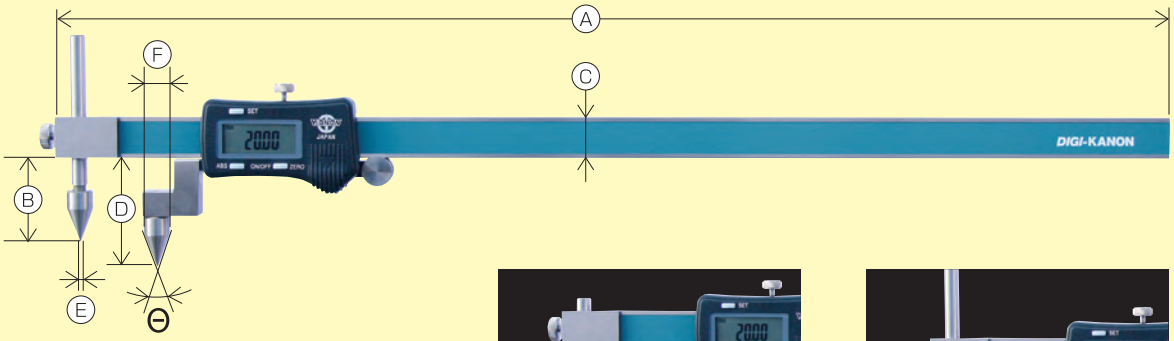
Adequate for center distance measurement for holes at different levels

ONLY ONE

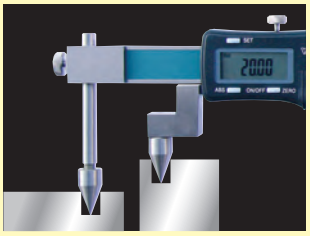
Digital direct reading of center distance measurement "between holes with equal diameter at different levels"

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	Maximum permissible error S_{MPE}	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	θ
E-RX30J	10~300	0.01	± 0.05	φ2	φ9	SR44 1piece	300g	435	18～52	16	42	φ0.5	φ10	40°

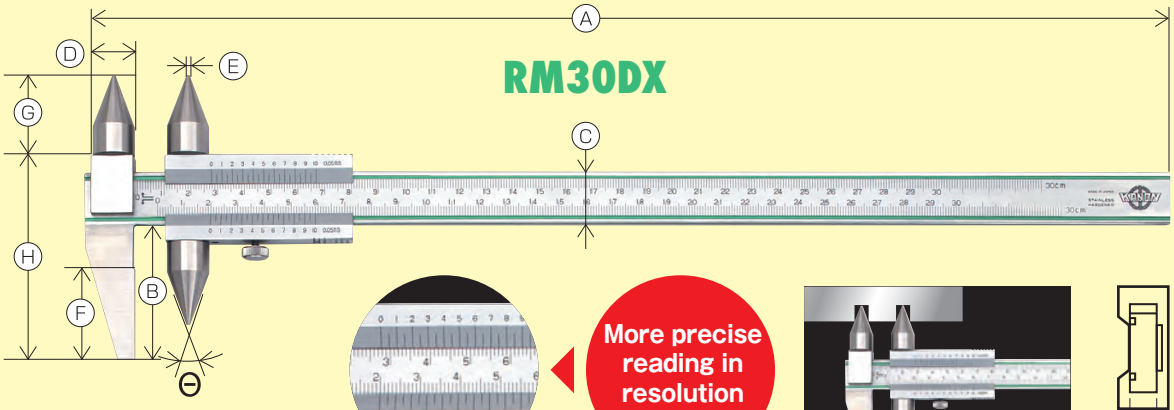
RM-DX

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

ONLY ONE

Adequate for center to center distance measurement!

RM30DX



More precise reading in resolution of 0.05!

■ RM-DX : Specifications

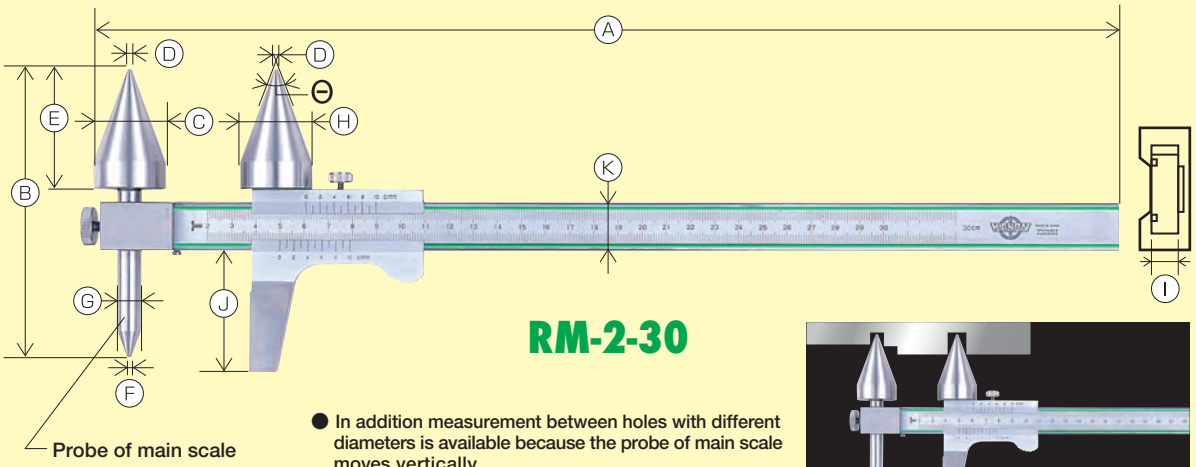
(Unit : mm)

Model	Measuring range		Minimum reading	Maximum permissible error S_{MPE}	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 (Division of 39 mm into 20 equal parts)	± 0.07	φ3	φ15	400g	280	50	20	φ16	φ1.9	34	31	76	4	40°
RM20DX	17~200	9~200					430g	330									
RM30DX	17~300	9~300		± 0.08			500g	410									
RM60DX	17~600	9~600		± 0.11			1.16kg	780	85	25			69		116	6	
RM100DX	21~1000	11~1000		± 0.15	φ5	φ19	3.15kg	1200	90	32	φ20	φ4	67	35	129	8	

RM-2 Offset centerline caliper

ONLY ONE

For cener to center distance with different diameters!



RM-2-30

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

■ RM-2 : Specifications

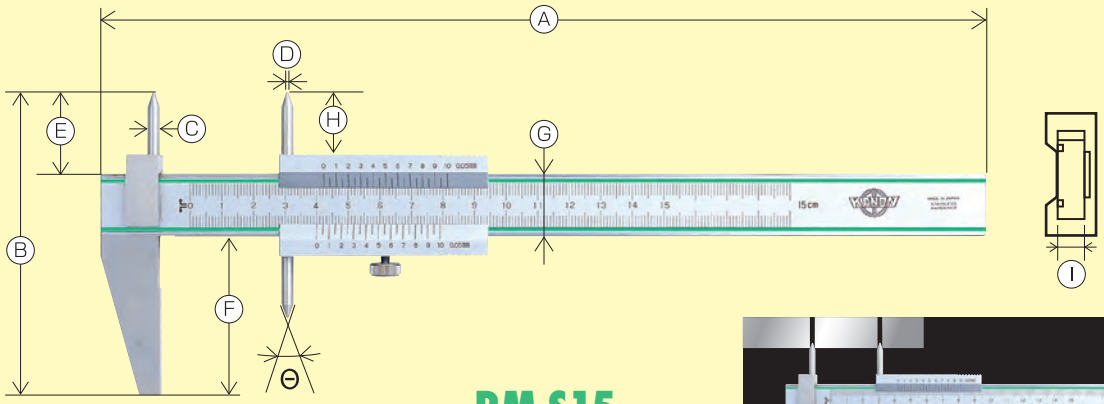
(Unit : mm)

Model	Measuring range		Minimum reading	Maximum permissible error	Minimum hole diameter	Maximum hole diameter	Weight	A	B	C	D	E	F	G	H	I	J	K	θ
	Pitch for upper side	Pitch for lower side		S_{MPE}															
RM-2-15	25~150	20~150	0.1	±0.07	φ1	φ5	180g	261	70	φ6	φ0.2	–	φ0.2	φ6	φ6	3	40	16	53°
RM-2-30	35~300	25~300	Division of 29 mm into 10 equal parts	±0.08	φ3	φ29	550g	422	120	φ30	φ2	50	φ2	φ10	φ30	4	50	20	40°
RM-2-60	35~600	25~600		±0.11			1.3kg	781								6	70	25	
RM-2-100	50~1000	40~1000		±0.15	φ5		3.5kg	1233	90		φ4	42	φ4	φ12		8	80	32	

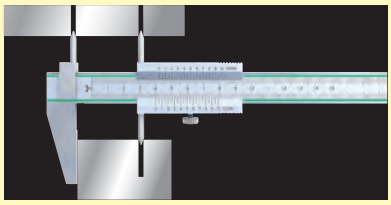
RM-S Adequate for center distance measurement for small diameter holes

ONLY ONE

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



RM-S15



■ RM-S : Specifications

(Unit : mm)

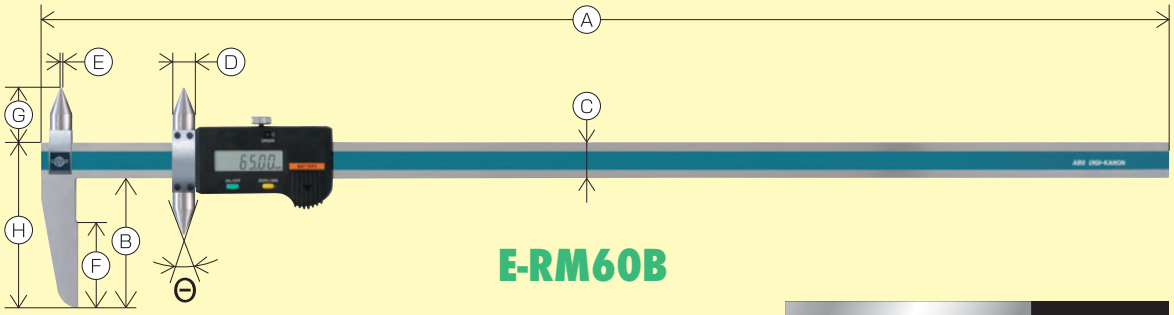
Model	Measuring range		Minimum reading	Maximum permissible error	Minimum hole diameter	Maximum hole diameter	Weight	A	B	C	D	E	F	G	H	I	θ
	Pitch for upper side	Pitch for lower side		S_{MPE}													
RM-S15	5~150	3~150	0.05 Division of 39 mm into 20 equal parts	±0.07	φ1	φ3.5	180g	280	96	φ4	φ0.8	26	50	20	20	4	40°

E-RM60B

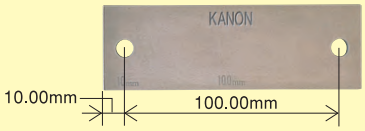
Adequate for center distance measurement for holes with equal diameter on long work

ONLY ONE

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

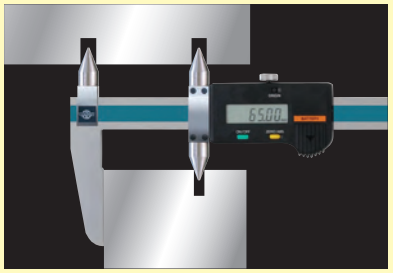


E-RM60B



Initial setting gauge 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 gauge block is included as standard accessory. Model: G-10-8.
  Refer to page 38 for the dimensions.
- The printer output function is provided.



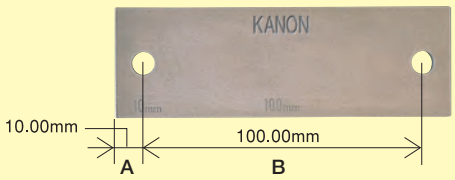
■ E-RM60B : Specifications

(Unit : mm)

Model	Measuring range		Resolution	Maximum permissible 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		S_{MPE}													
E-RM60B	17~600	9~600	0.01	± 0.05	φ3	φ15	SR44 1 piece	2.4kg	780	85	25	φ16	φ1.9	69	40	110	40°

Method of setting with initial setting gauge block

Method of measurement on upper and lower sides with E-RM-B series (E-RM60B / E-RM-2-BL / E-RM-S15BL) special-purpose gauge block



Initial setting gauge block

[In case of E-RM60B]

Measurement on lower side

Position the lower measurement section to the dimension A side of the gauge 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 mm (dimension A) = 18.00 mm (actual size)
(Example 2) If "-0.05" is indicated:
-0.05 + 10 mm (dimension A) = 9.95 mm (actual size)

Measurement on upper side

Position the upper measurement section to the dimension B side of the gauge 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.

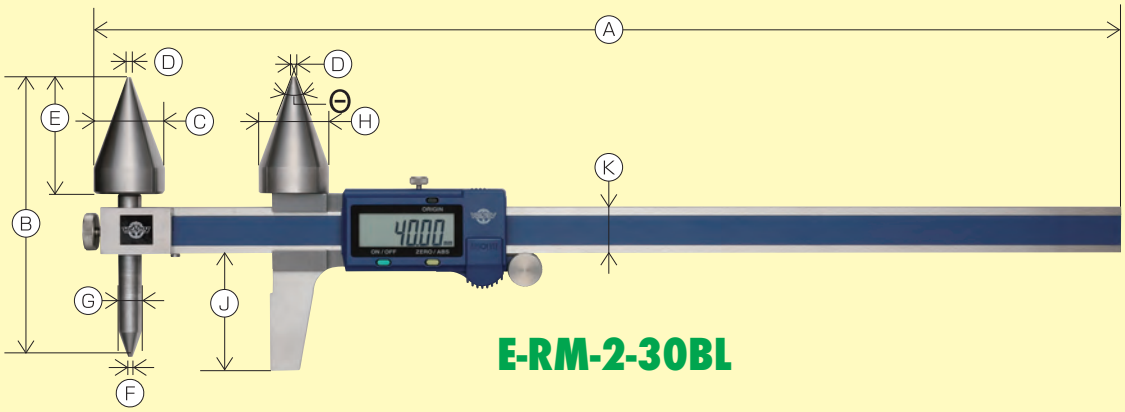
(Example 3) If "25.00" is indicated:
25.00 + 100 mm (dimension B) = 125.00 mm (actual size)
(Example 4) If "-25.00" is indicated:
-25.00 + 100 mm (dimension B) = 75.00 mm (actual size)

E-RM-2／E-RM-S

Adequate for center distance measurement for holes

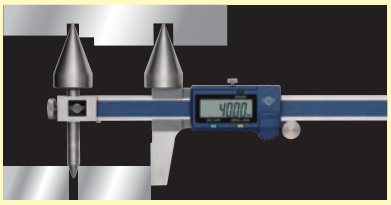
ONLY ONE

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-2-30BL

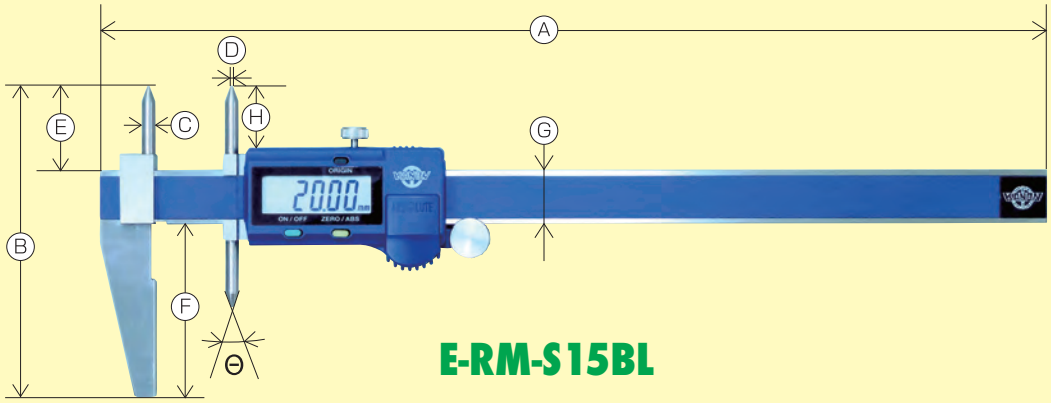
- In addition measurement for holes with different diameters is available because the probe of main scale moves vertically.
- Initial setting gauge block is included as standard accessory.
  Model: G-20-4 for E-RM-2-15BL.
  Model: G-25-8 for E-RM-2-30BL, E-RM-2-60B.
  Refer to page 38 for the dimensions.
- The output function is provided.



■ E-RM-2 : Specifications

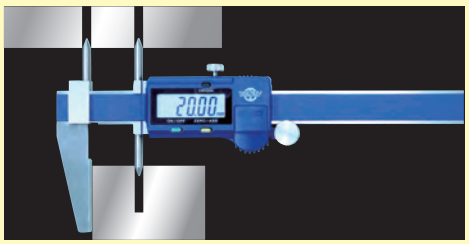
(Unit : mm)

Model	Measuring range		Resolution	Maximum permissible 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		S_{MPE}															
E-RM-2-15BL	25~150	20~150	0.01	± 0.05	φ1	φ5	SR44 1piece	160g	254	70	φ6	φ0.2	–	φ0.2	φ6	φ6	40	16	53°
E-RM-2-30BL	35~300	25~300			φ3	φ29		530g	438	120	φ30	φ2	50	φ2	φ10	φ30	50	20	40°
E-RM-2-60B	35~600	25~600						1.7Kg	799								70	25	



E-RM-S15BL

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



■ E-RM-S15BL : Specifications

(Unit : mm)

Model	Measuring range		Resolution	Maximum permissible 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		S_{MPE}													
E-RM-S15BL	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°

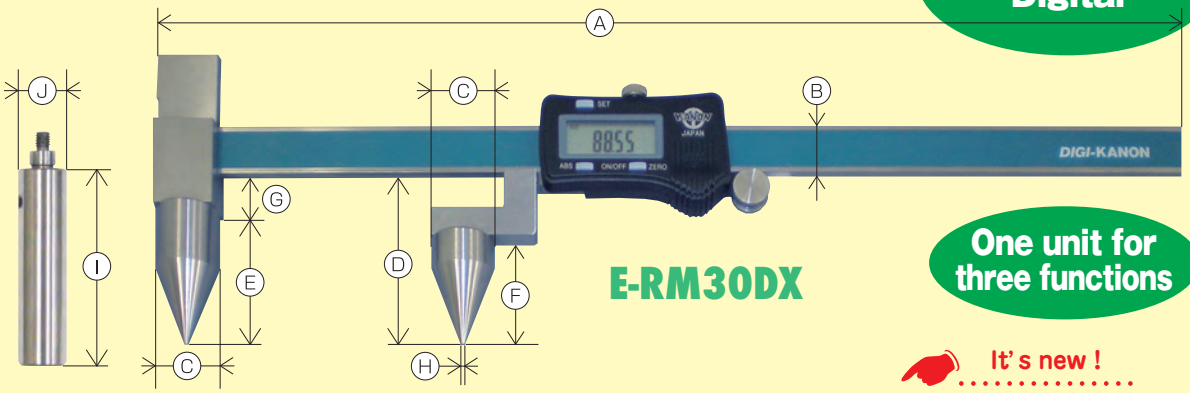
E-RM30DX

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

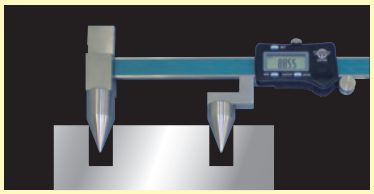


E-RM30DX

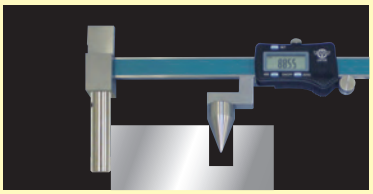
One unit for three functions

It's new !

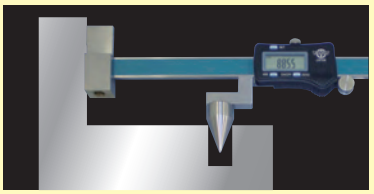
Pitch measurement between holes



Distance measurement between edge face and hole



Distance measurement between wall surface and hole



■ E-RM30DX : Specifications

(Unit : mm)

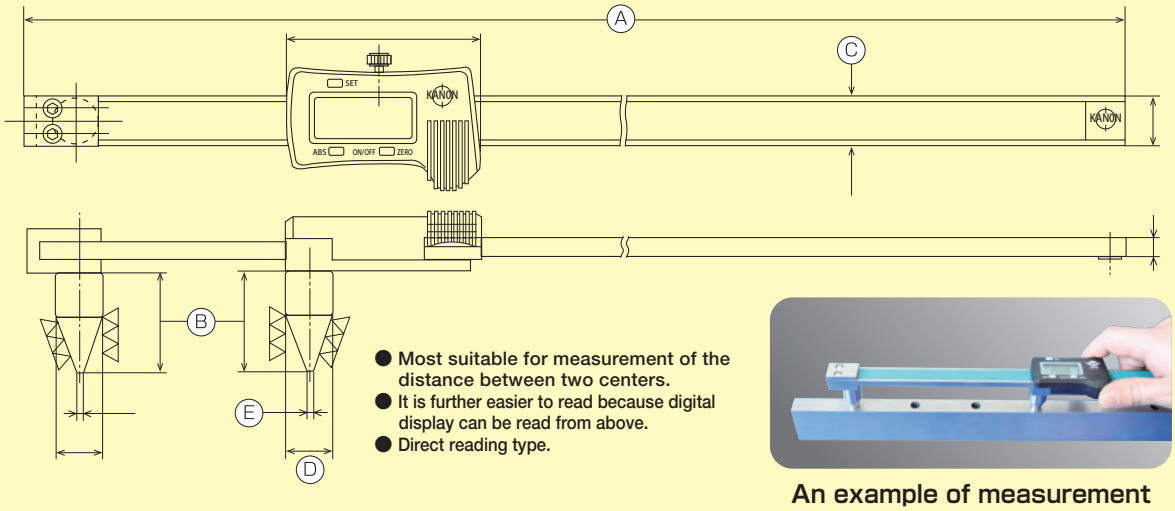
Model	Measuring range		Resolution	Maximum permissible error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F	G	H	I	J
	Pitch for upper side	Pitch for lower side		S_{MPE}														
E-RM30DX	10~300	20~300	0.01	± 0.05	φ3	φ19	SR44 1piece	550g	430	16	φ20	57	45	35	12	φ2	60	φ15

E-RF30J

E-RF30J overlooking type digital centerline caliper.

An outstanding unit to read the digital display from above.

E-RF30J



- 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)

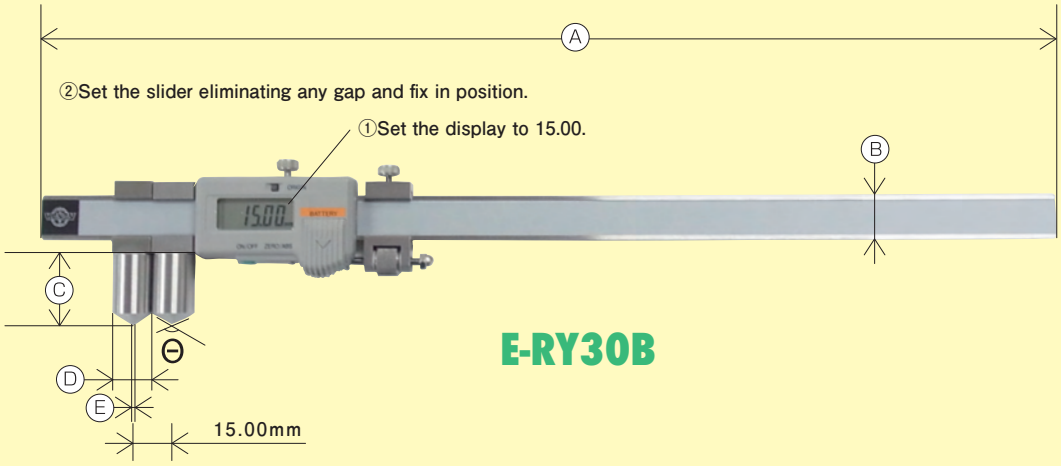
Model	Measuring range	Resolution	Maximum permissible error	Minimum hole diameter	Maximum hole diameter	Power supply	Weight	A	B	C	D	E	F
			S_{MPE}										
E-RF30J	15~300	0.01	± 0.05	φ3	φ14	SR44 1piece	500g	424	32	16	φ15	φ2	3.3

E-RY

E-RY digital caliper direct reading centerline caliper for sheet metal.

ONLY ONE

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



E-RY30B

- 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 output function is provided.

■ E-RY : Specifications

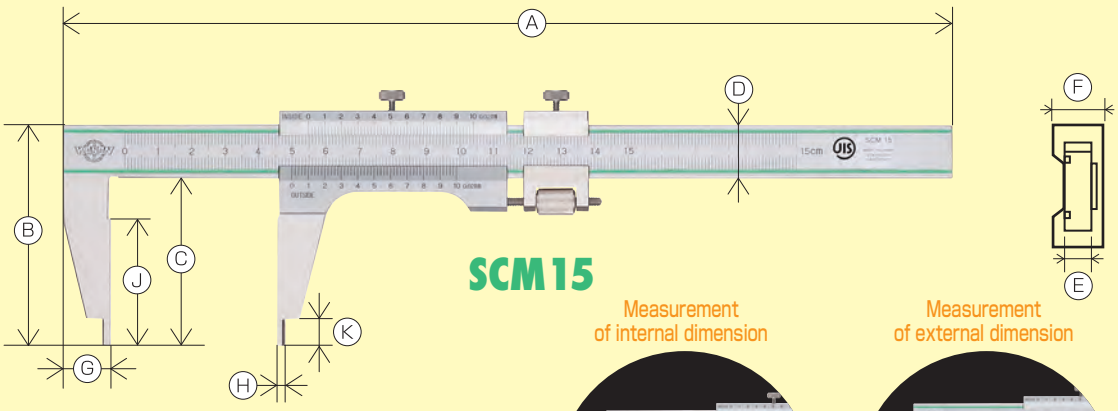
(Unit : mm)

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	φ3	φ14	SR44 1 piece	360g	370	16	25	φ15	φ1	120°
E-RY30B	15~300						580g	500	20				

SCM／SCML

High-precision reading for inside and outside measurement

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

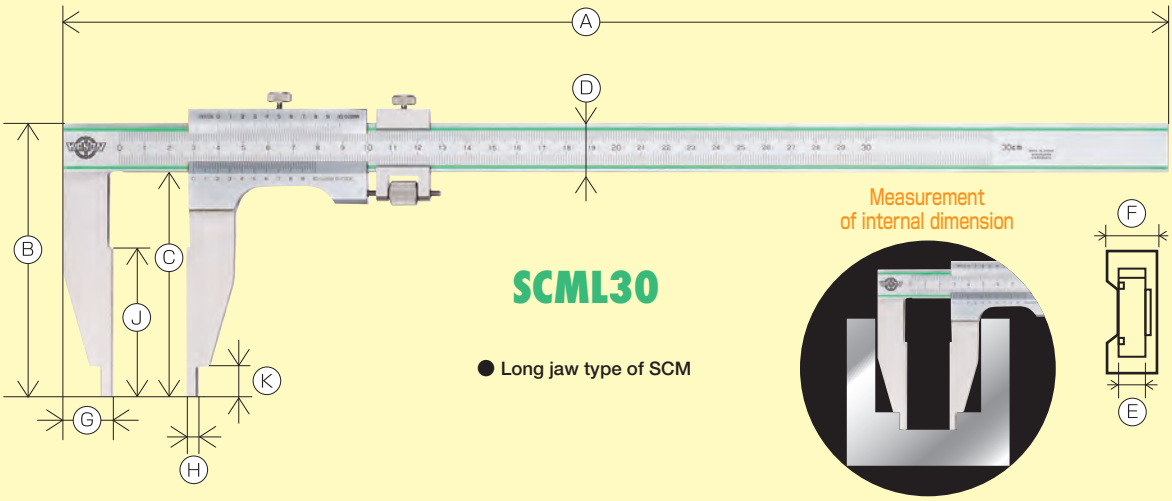
(Unit : mm)

Model	Measuring length for outside dimension	Measuring length for inside dimension	Minimum reading	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Weight	A	B	C	D	E	F	G	H	J	K
SCM15	0~150	5~150	0.02 (Division of 49 mm into 50 equal parts)	± 0.04	± 0.06	170g	265	66	50	16	3	7	14	2.5	38	8
SCM20	0~200	5~200				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				520g	545	95	75	20	4	8	20	5	58	12
SCM45	0~450	14.5~450		± 0.06	± 0.08	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		± 0.08	± 0.10	3.50kg	1250	172	140	32	8	15	32	10	95	24

Model	Measuring length for outside dimension	Measuring length for inside dimension	Minimum reading	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Weight	A	B	C	D	E	F	G	H	J	K
SCM150	0~1,500	20~1,500	0.02 (Division of 49 mm into 50 equal parts)	± 0.12	± 0.16	6.5kg	1780	205	165	40	9	16	40	10	125	24
SCM200	0~2,000	25~2,000		± 0.16	± 0.20	12.5kg	2325	250	200	50	11	20	50	12.5	150	25
SCM250	0~2,500	25~2,500		± 0.22	± 0.26	14.5kg	2825	250	200	50	11	20	50	12.5	150	25
SCM300	0~3,000	25~3,000		± 0.40	± 0.44	17kg	3325	250	200	50	11	20	50	12.5	150	25

Model	Measuring length for outside dimension	Measuring length for inside dimension	Minimum reading	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Weight	A	B	C	D	E	F	G	H	J	K
SCM400	0~4,000	25~4,000	0.05	± 0.40	± 0.50	25kg	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)

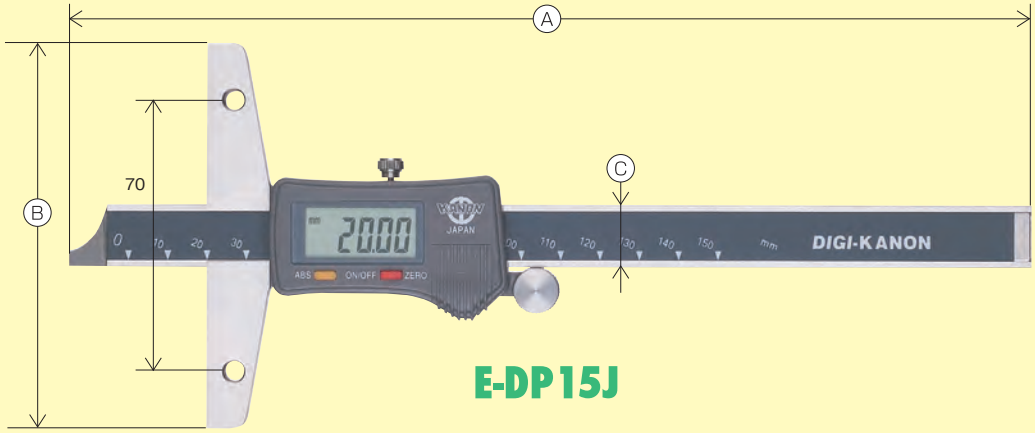
Model	Measuring length for outside dimension	Measuring length for inside dimension	Minimum reading	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Weight	A	B	C	D	E	F	G	H	J	K
SCML30	0~300	10~300	0.02 (Division of 49 mm into 50 equal parts)	± 0.04	± 0.06	500g	445	110	90	20	4	8	20	5	60	12
SCML45	0~450	14.5~450		± 0.06	± 0.08	1.18kg	630	175	150	25	6	12.5	24	7.25	100	18
SCML50	0~500	14.5~500				1.35kg	680									
SCML60	0~600	14.5~600				1.48kg	780									

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

E-DP-J

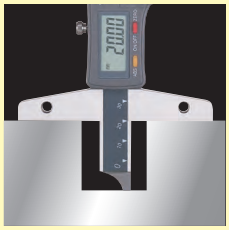
Adequate for measuring depth of hole with wide opening

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

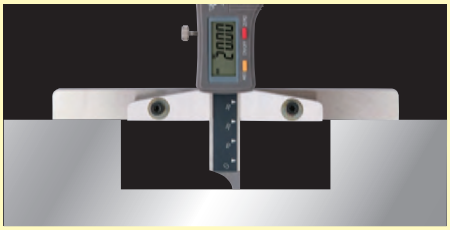


E-DP15J

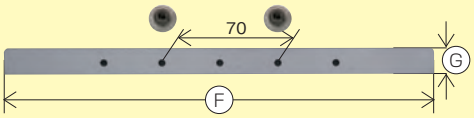
Measurement of depth (standard configuration)



Measurement of depth (with a span mounted)



● Since the span size of base can be changed on this depth gauge 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

(Unit : mm)

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		
E-DP30J	300				300g	400		

Option

■ Replacement span (Unit : mm)

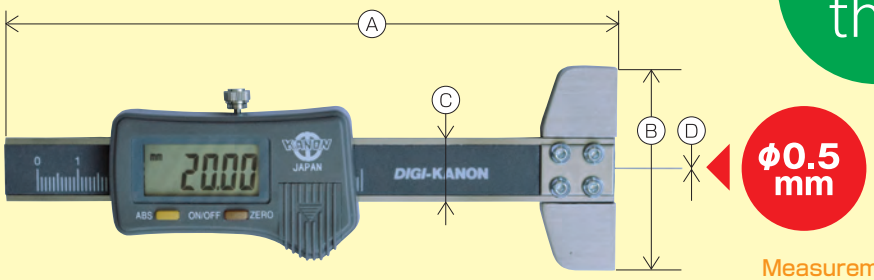
Model	F	G	Weight
SPAN18 (180mm)	180	16	260g
SPAN26 (260mm)	260		350g
SPAN32 (320mm)	320		400g

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



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 gauge cannot be inserted.

E-DP2J

■ E-DP-2J : Specifications

(Unit : mm)

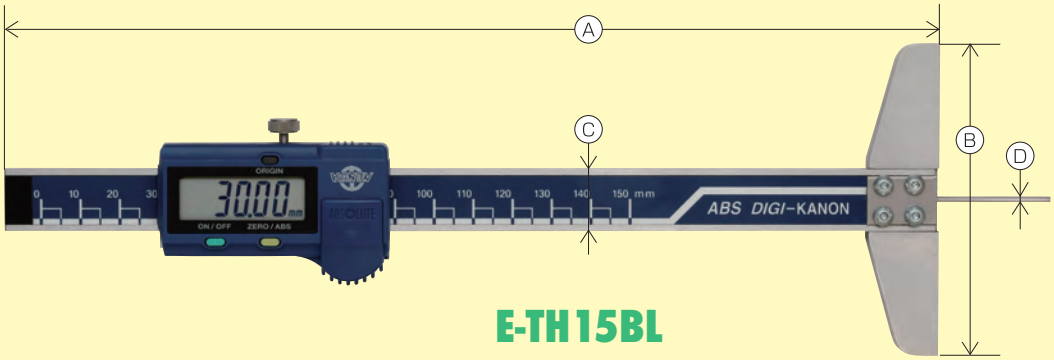
Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D
E-DP2J	20	0.01	± 0.02	SR44 1piece	200g	150	50	16	ϕ0.5

E-TH E-Thin hole

Thin hole depth gauge with thin depth bar

ONLY ONE

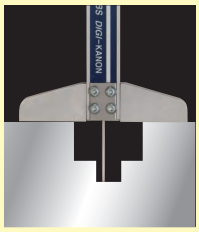
Adequate for measurement of depth of thin hole!



E-TH15BL

- Since the depth bar is thin (D : φ1.5 mm), the product is adequate for measurement of depth of thin hole.
- The output function is provided.

Measurement of depth



■ E-TH : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D
E-TH15BL	150	0.01	± 0.02	SR44 1 piece	180g	238	80	16	φ1.5
E-TH20BL	200				280g	290			
E-TH30BL	300		± 0.03		390g	405		20	

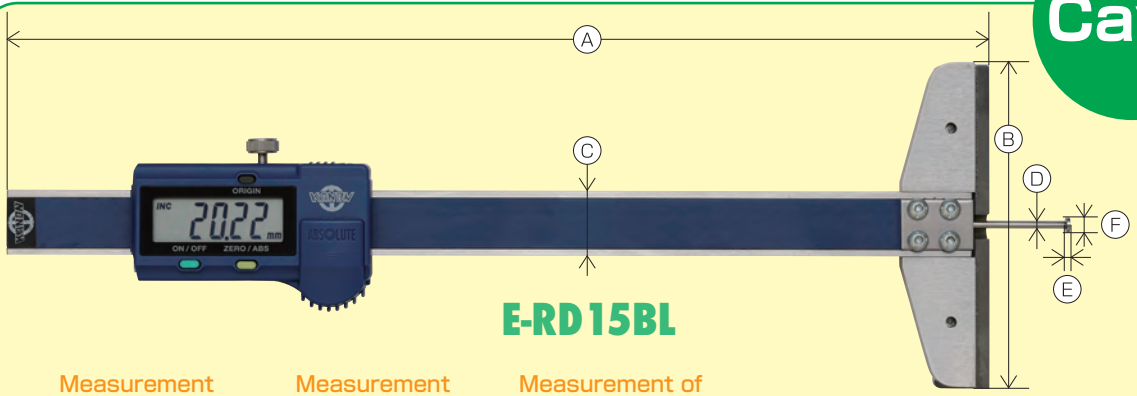
E-RD Cave

Depth gauge for the measurement of hook and step

ONLY ONE

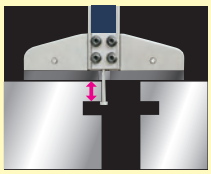
For hook measurement, depth measurement, and step measurement!

Cave



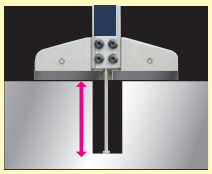
E-RD15BL

Measurement of hook



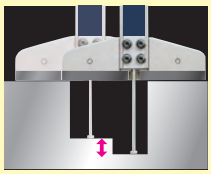
The position of inner cave from the edge face can be measured.

Measurement of depth



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

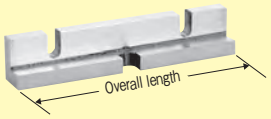
Measurement of difference in level



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) E-RD-AT80



- Also an attachment with overall length of 180 mm is provided as an option.
- The printer output function is provided. E-RD-AT180

■ E-RD : Specifications

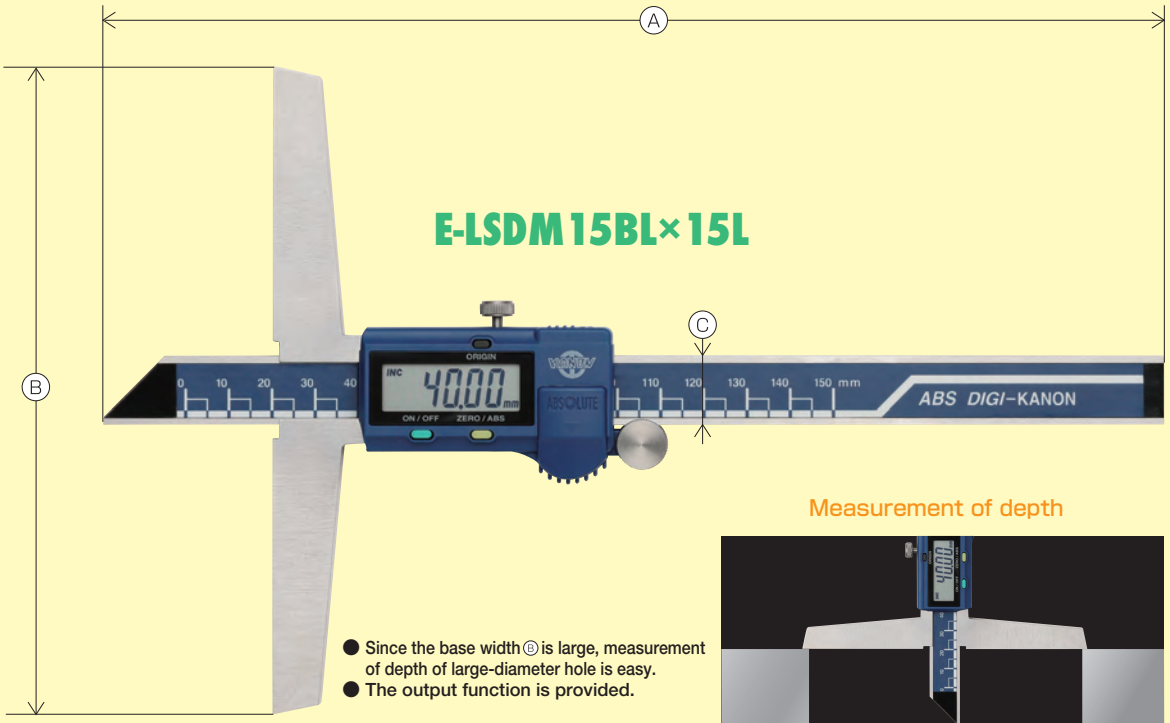
(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F
E-RD5BL	50	0.01	± 0.02	SR44 1 piece	150g	140	80	16	φ2	1	φ4
E-RD10BL	100				170g	190					
E-RD15BL	150				180g	238					
E-RD15BL6	150		± 0.05						φ2.5		φ6
E-RD15BL8	150										φ8

E-LSDM／LSDM

Adequate for measurement of depth of large-diameter hole

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



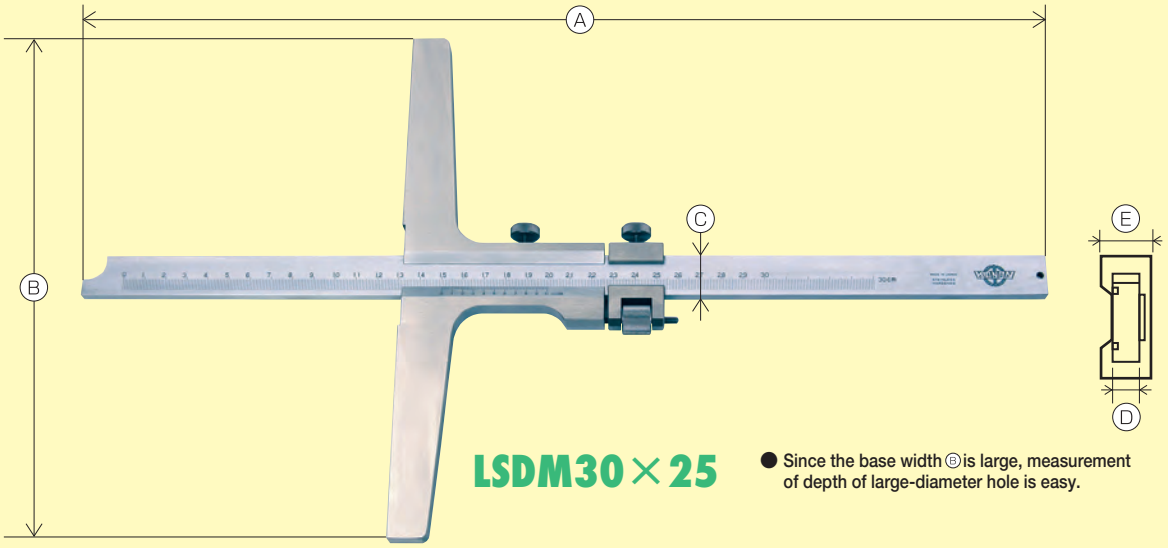
- Since the base width Ⓑ is large, measurement of depth of large-diameter hole is easy.
- The output function is provided.

Measurement of depth

■ LSDM : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Instrumental error	Power supply	Weight	A	B	C
E-LSDM15BL×15L	150	0.01	± 0.02	SR44 1piece	280g	245	150	16
E-LSDM20BL×20L	200				340g	295	200	



- Since the base width Ⓑ is large, measurement of depth of large-diameter hole is easy.

■ LSDM : Specifications

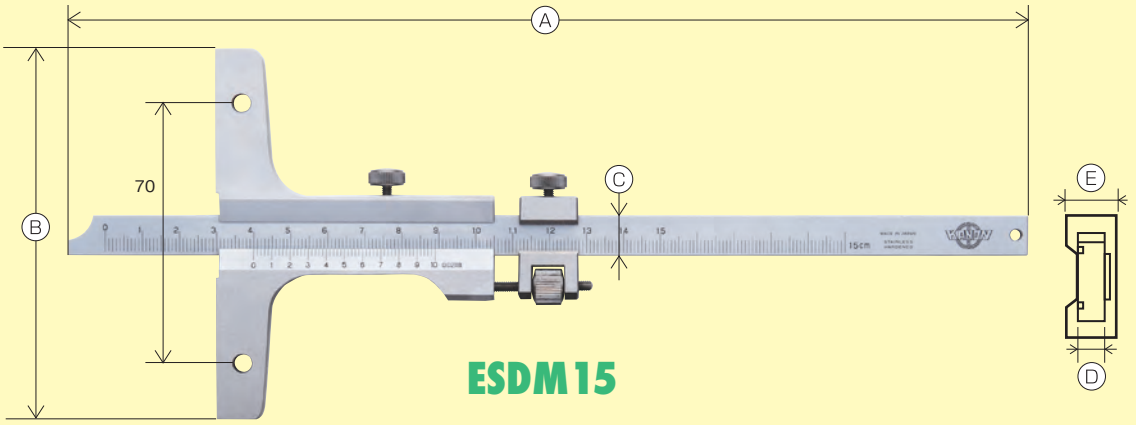
(Unit : mm)

Model	Measuring length	Resolution	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
LSDM15×25				370g		200			
LSDM15×25				850g	300	250	20	6	11
LSDM20×15	200			320g	310	150	11	4	8
LSDM20×20				380g		200			
LSDM20×25				900g	350	250	20	6	11
LSDM30×15	300		± 0.04	350g	410	150	11	4	8
LSDM30×20				410g		200			
LSDM30×25				1.1kg	450	250	20	6	11

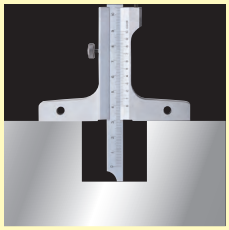
ESDM／SDM

Adequate for measurement of depth of hole with wide opening

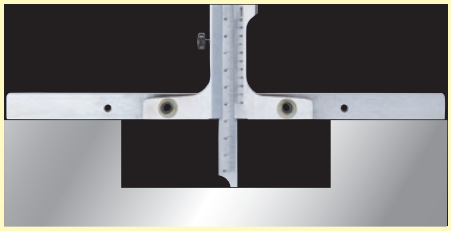
Depth gauge adequate for measurement of depth of hole with wide opening



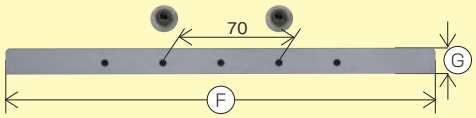
Measurement of depth (standard configuration)



Measurement of depth (with a span mounted)



● Since the span size of base can be changed on this depth gauge, 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)

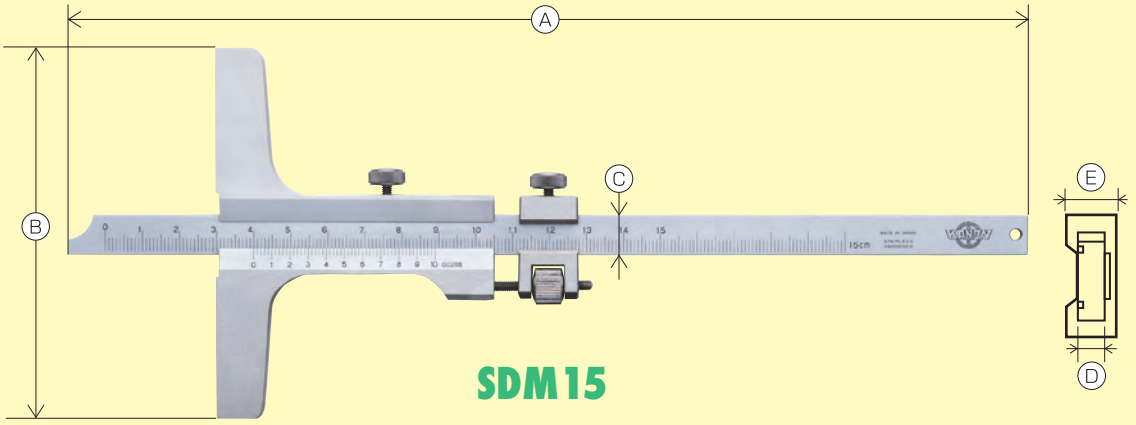
Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E
ESDM15	150	0.02 (Division of 49 mm into 50 equal parts)	± 0.03	250g	260	100	11	4	8
ESDM20	200			270g	310				
ESDM30	300		± 0.04	300g	410				

Option

■ Replacement span

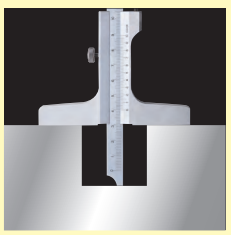
(Unit : mm)

Model	F	G	Weight
SPAN18 (180mm)	180	16	260g
SPAN26 (260mm)	260		350g
SPAN32 (320mm)	320		400g



● Model configured as ESDM without span

Measurement of depth



■ SDM : Specifications

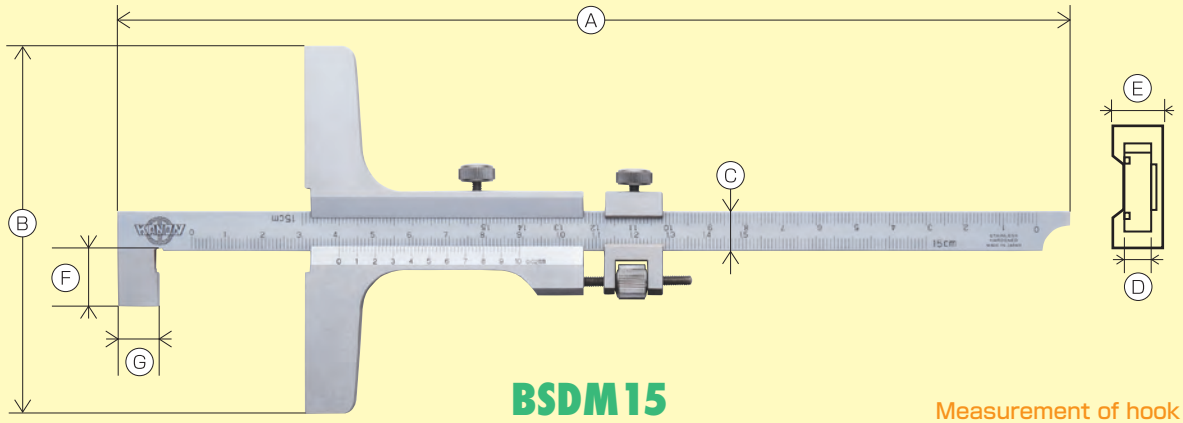
(Unit : mm)

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				
SDM30	300		± 0.04	300g	410				
SDM40	400			900g	580	180	16	5	11
SDM50	500		± 0.05	950g	680				
SDM60	600			970g	780				
SDM100	1000		± 0.07	1.66kg	1150	250	20	6	

BSDM

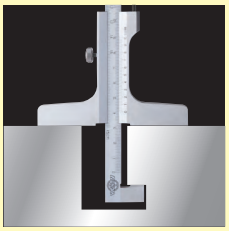
Adequate for measurement of depth of horizontal cave

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



BSDM15

Measurement of hook



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

■ BSDM : Specifications

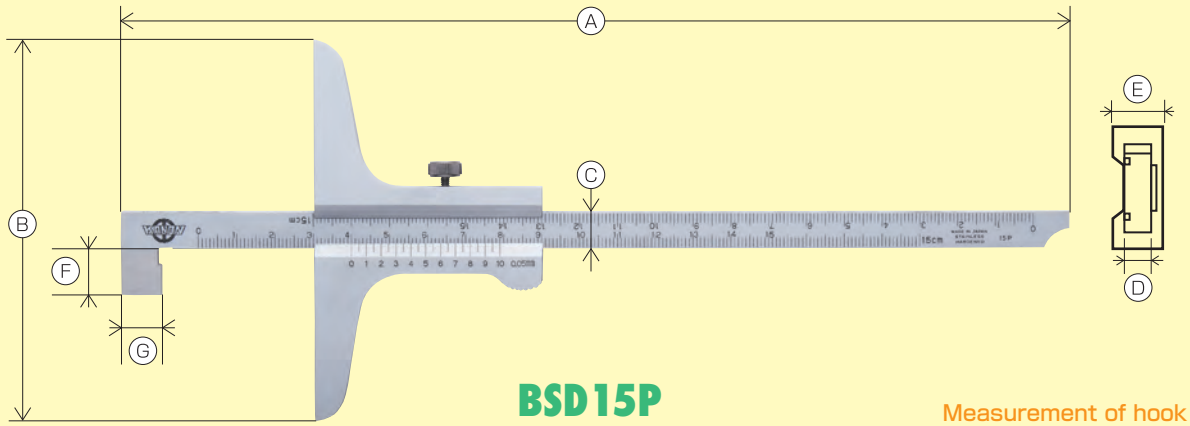
(Unit : mm)

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						
BSDM30	300		± 0.04	320g	410						

BSD-P

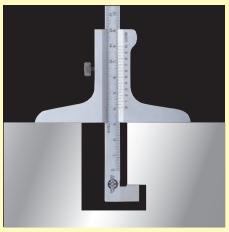
Adequate for measurement of hook in normal hole

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



BSD15P

Measurement of hook



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

■ BSD-P : Specifications

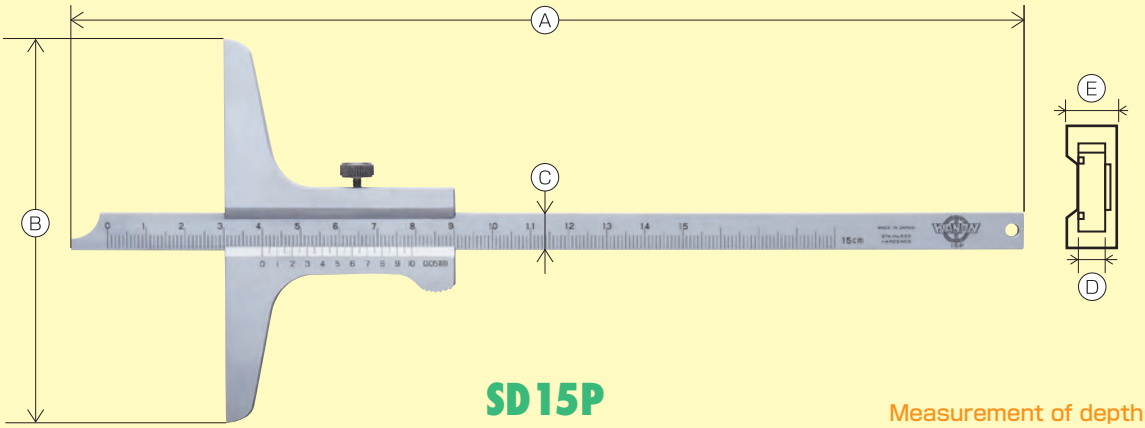
(Unit : mm)

Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E	F	G
BSD15P	150	0.02 (Division of 39 mm into 20 equal parts)	± 0.07	140g	250	100	10	3	6	12	Approximately 10
BSD20P	200			150g	300						
BSD30P	300		± 0.08	170g	400						

SD-P

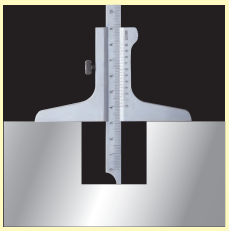
Adequate for measurement of depth of normal hole

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



SD15P

Measurement of depth



■ SD-P : Specifications

(Unit : mm)

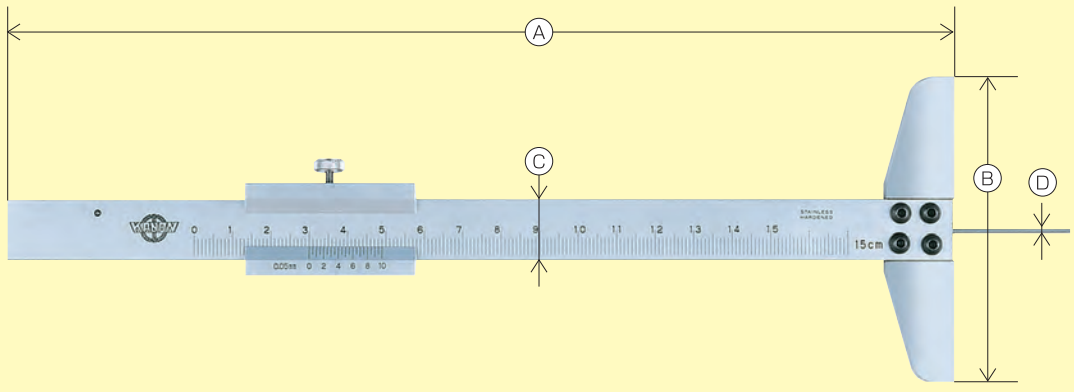
Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D	E
SD15P	150	0.05 (Division of 39 mm into 20 equal parts)	± 0.07	140g	250	100	10	3	6
SD20P	200			150g	300				
SD30P	300		± 0.08	180g	400				

TH Thin hole

Adequate for measurement of depth of thin hole

ONLY ONE

With "ϕ1.5 mm depth bar", this thin hole depth gauge is adequate for measurement of depth of thin hole.



TH15

Measurement of depth

● Since the depth bar is thin (D : ϕ1.5 mm), the product is adequate for measurement of depth of thin hole.

■ TH : Specifications

(Unit : mm)

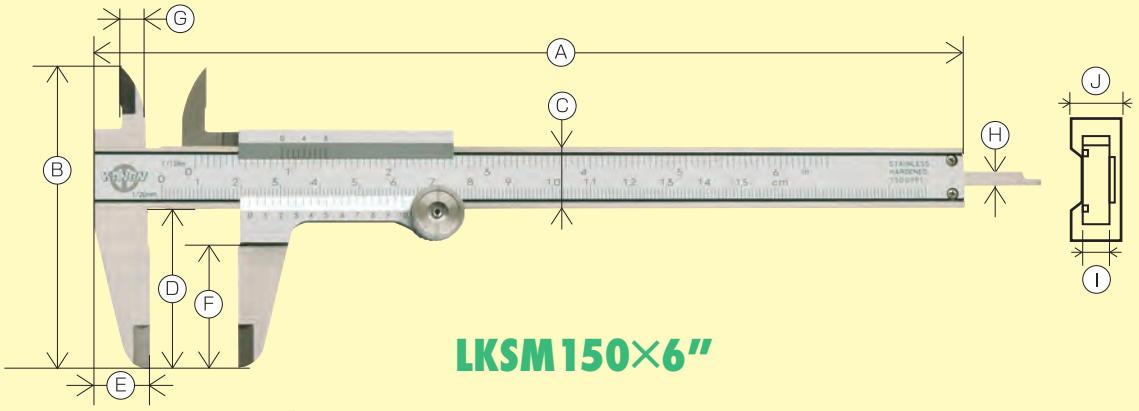
Model	Measuring length	Minimum reading	Instrumental error	Weight	A	B	C	D
TH15	150	0.05	± 0.07	160g	245	80	16	ϕ1.5

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

LKSM／SM

Standard vernier caliper for normal measurement

“Standard caliper”



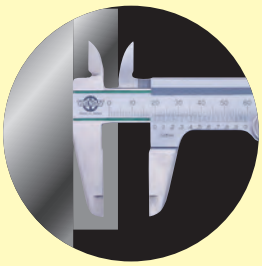
LKSM150×6″

- 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.

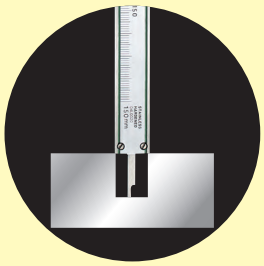
Inside measurement

Outside measurement

Measurement of difference in level



Measurement of depth

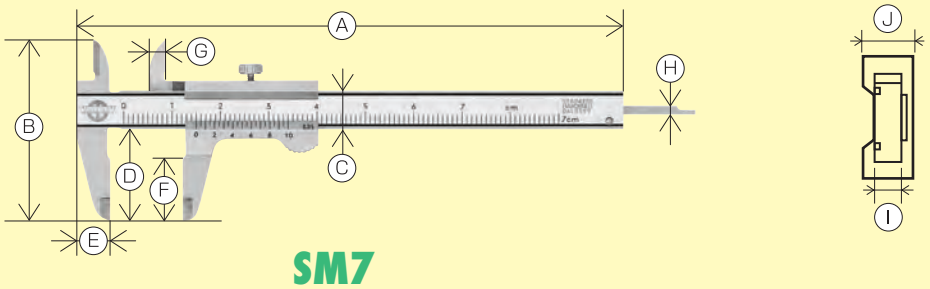


■ LKSM : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Maximum permissible error		Weight	A	B	C	D	E	F	G	H	I	J
			E_{MPE}	S_{MPE}											
LKSM150×6″	150mm×6″	0.05 (Division of 39 mm into 20 equal parts)	± 0.05	± 0.10	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			
LKSM300×12″	300mm×12″				250g	390									

Mini vernier caliper and standard long scale vernier caliper



SM7

■ SM : Specifications

(Unit : mm)

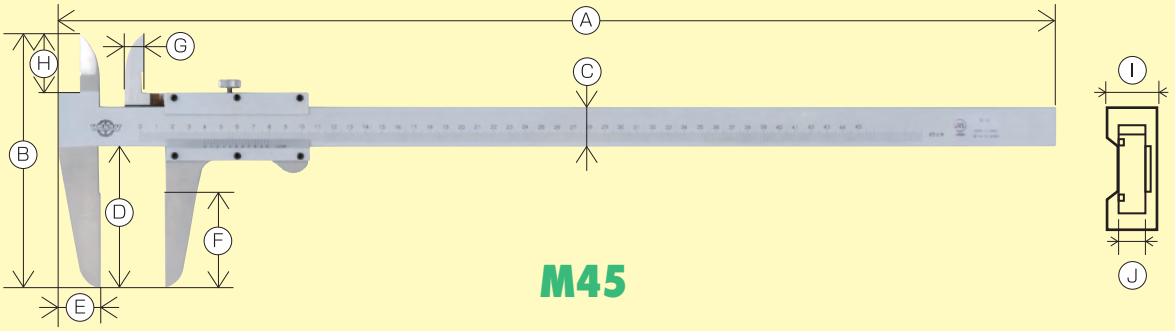
Model	Measuring length	Minimum reading	Maximum permissible error		Weight	A	B	C	D	E	F	G	H × Thickness	I	J
			E_{MPE}	S_{MPE}											
SM7	70	0.05	± 0.05	± 0.10	23g	113	38	8	19	7	13	3.5	1.8×0.8	2	4.6
SM150	1500	0.05 (Division of 39 mm into 20 equal parts)	± 0.15	± 0.20	6.5kg	1780	268.7	40	160	45	125	20	–	9	16
SM200	2000		± 0.20	± 0.25	12.5kg	2325	330	50	200	50	150	23	–	11	20
SM250	2500		± 0.25	± 0.30	14.5kg	2825	330	50	200	50	150	23	–	11	20
SM300	3000		± 0.30	± 0.35	17.0kg	3325	330	50	200	50	150	23	–	11	20
SM400	4000		± 0.40	± 0.50	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-P

Standard vernier caliper for normal measurement

"Standard type"



M45

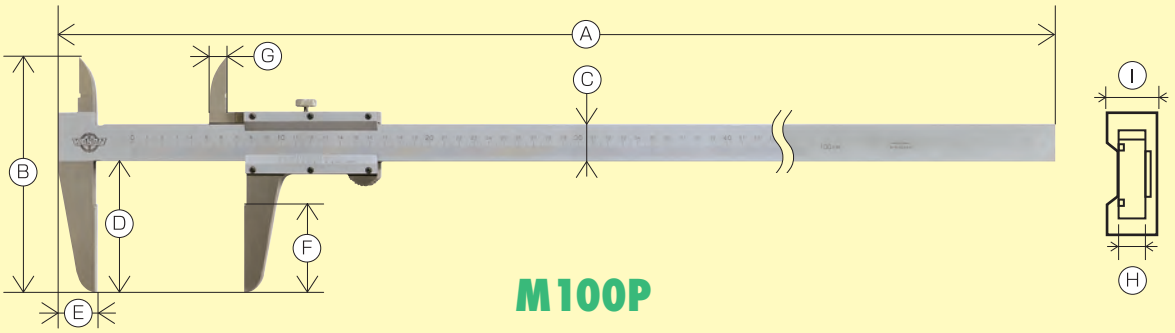
■ M : Specifications

(Unit : mm)

Model	Measuring length	Minimum reading	Maximum permissible error		Weight	A	B	C	D	E	F	G	H	I	J
			*E*MPE	*S*MPE											
M45	450	0.05 (Division of 39 mm into 20 equal parts)	± 0.10	± 0.10	900g	625	161.5	25	90	25	60	12.5	38	12.5	6
M50	500				1.13kg	670									
M60	600		± 0.15	± 0.15	1.25kg	780									
M100	1000				3.50kg	1250	222	32	130	32	85	16	50	15	8

＊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	Maximum permissible error		Weight	A	B	C	D	E	F	G	H	I
			*E*MPE	*S*MPE										
M60P	600	0.05 (Division of 39 mm into 20 equal parts)	± 0.15	± 0.15	612g	800	111.6	20	64.2	18.9	48	8.7	4	8
M100P	1000				1.9kg	1250	161.5	25	90	25	60	12.5	6	12.5

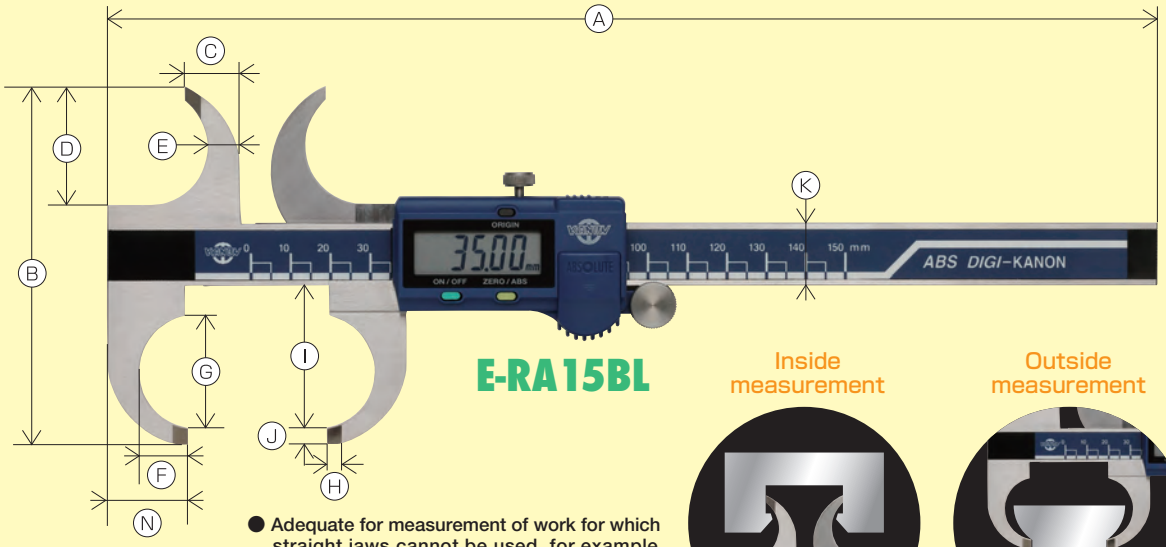
＊M60P M100P are not equipped with any JIS mark. The MPE is within the JIS specification.

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-RA15BL

Inside measurement

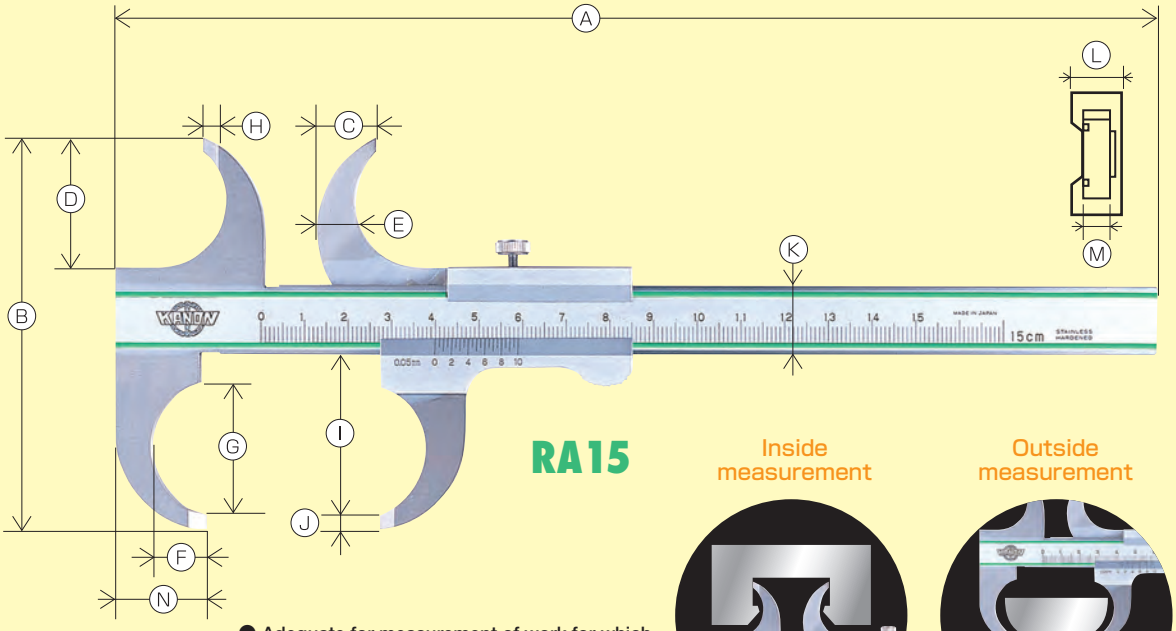
Outside measurement

- 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 output function is provided.

■ E-RA : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Maximum permissible error		Power supply	Weight	A	B	C	D	E	F	G	H	I	J	K	N	Thickness of Jaw
			E_{MPE}	S_{MPE}															
E-RA15BL	150	0.01	± 0.03	± 0.05	SR44 1piece	200g	265	90	14	30	8.5	12	29	5.5	36	4	16	20	3.3
E-RA20BL	200					210g	315												



RA15

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)

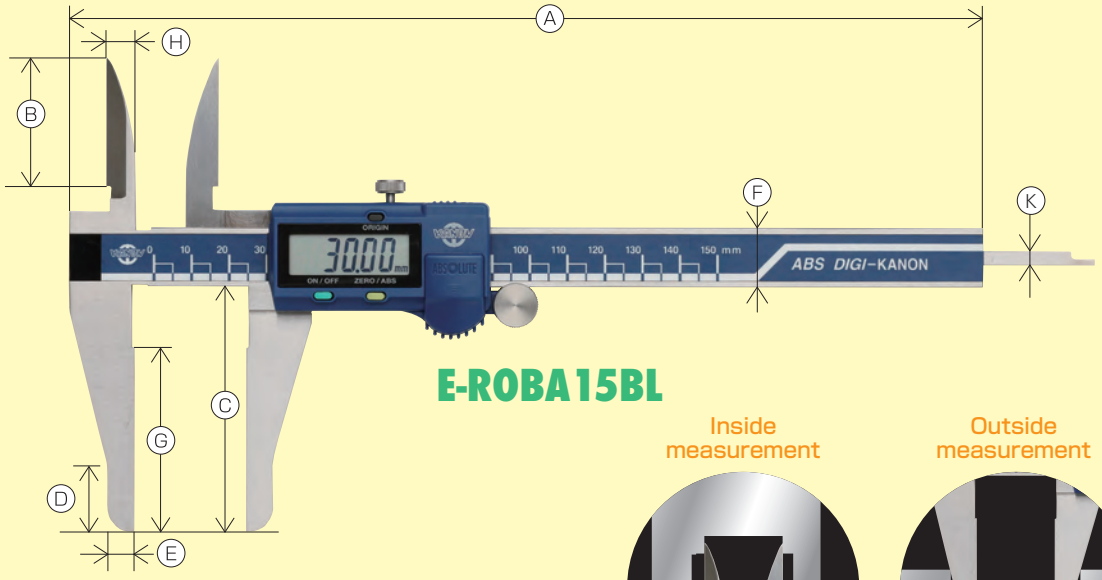
Model	Measuring length	Minimum reading	Maximum permissible error		Weight	A	B	C	D	E	F	G	H	I	J	K	L	M	N
			E_{MPE}	S_{MPE}															
RA15	150	0.05 (Division of 19 mm into 20 equal parts)	± 0.10	± 0.10	170g	238	90	14	30	8.5	12	29	5.5	36	4	16	8	3	20
RA20	200				200g	290													

E-ROBA／ROBA

ROBA caliper with donkey shape

ONLY ONE

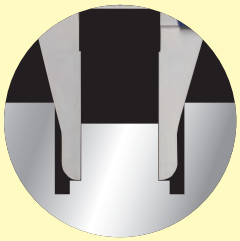
Adequate for measurement of inside and outside of narrow and deep part!



E-ROBA15BL

Inside measurement

Outside measurement

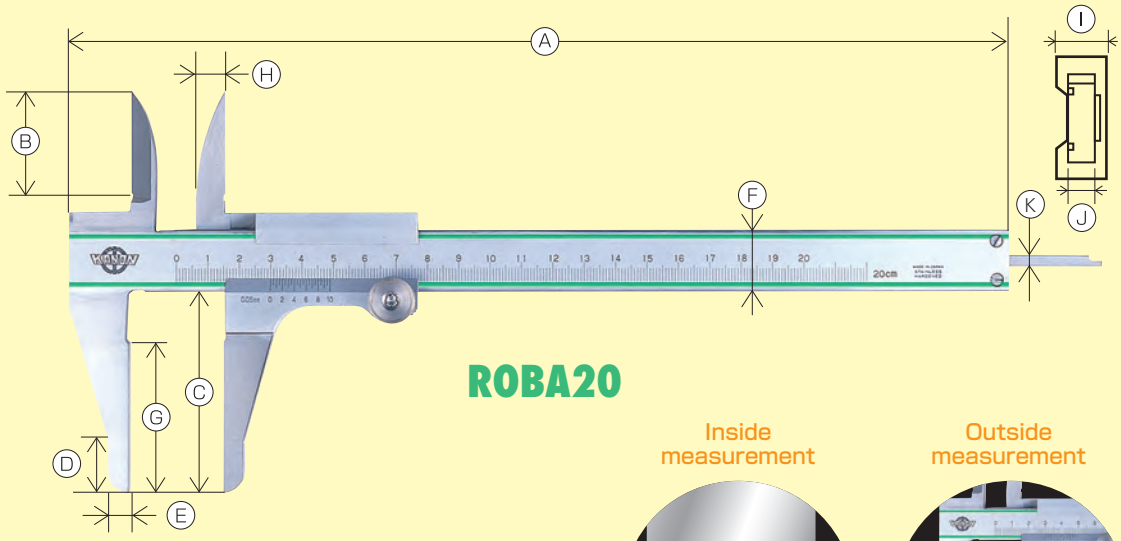


- Since the jaw for inside and the jaw for outside are long, the product is adequate for measurement of the inside and outside of a narrow and deep location.
- The output function is provided.

■ E-ROBA : Specifications

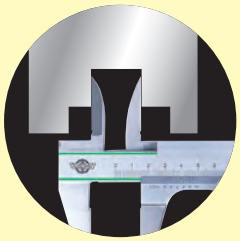
(Unit : mm)

Model	Measuring length	Resolution	Maximum permissible error EMPE	Maximum permissible error SMPE	Power supply	Weight	A	B	C	D	E	F	G	H	K×Thickness	Thickness of Jaw
E-ROBA15BL	150	0.01	± 0.03	± 0.05	SR44 1piece	180g	247	34	64	17	6.5	16	48	9	3.8×1.4	3.3
E-ROBA20BL	200					200g	297									

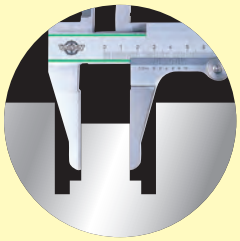


ROBA20

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)

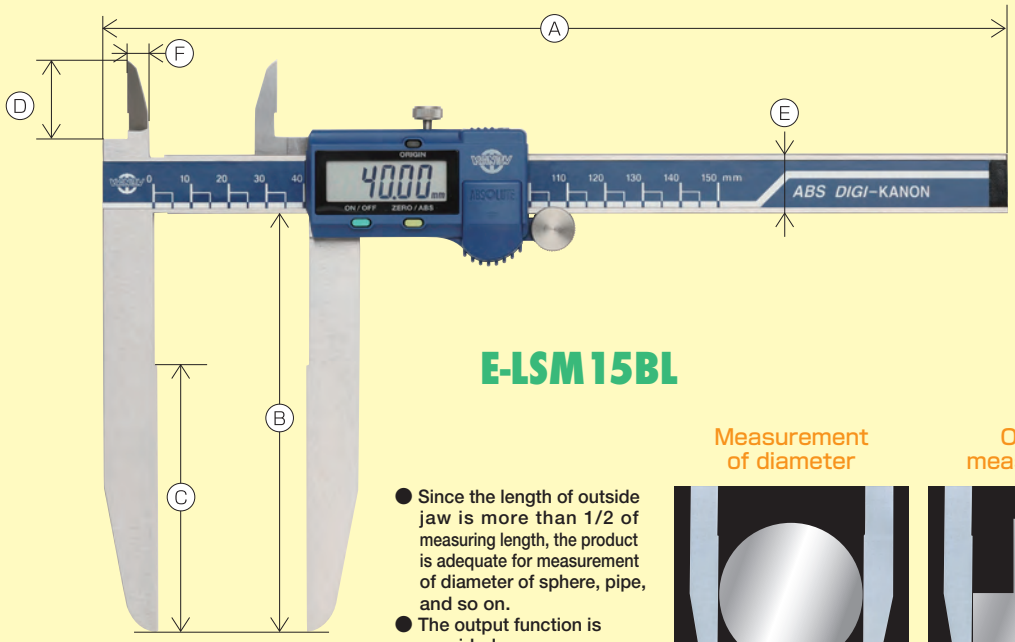
Model	Measuring length	Minimum reading	Maximum permissible error EMPE	Maximum permissible error SMPE	Weight	A	B	C	D	E	F	G	H	I	J	K×Thickness
ROBA15	150	0.05 (Division of 19 mm into 20 equal parts)	± 0.07	± 0.10	270g	250	34	64	17	6.5	20	48	9	8	4	3.8×1.4
ROBA20	200				300g	300										
ROBA30	300		± 0.08		410g	410										

E-LSM／LSM

Long jaw caliper

ONLY ONE

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



E-LSM15BL

- 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 output function is provided.

Measurement of diameter

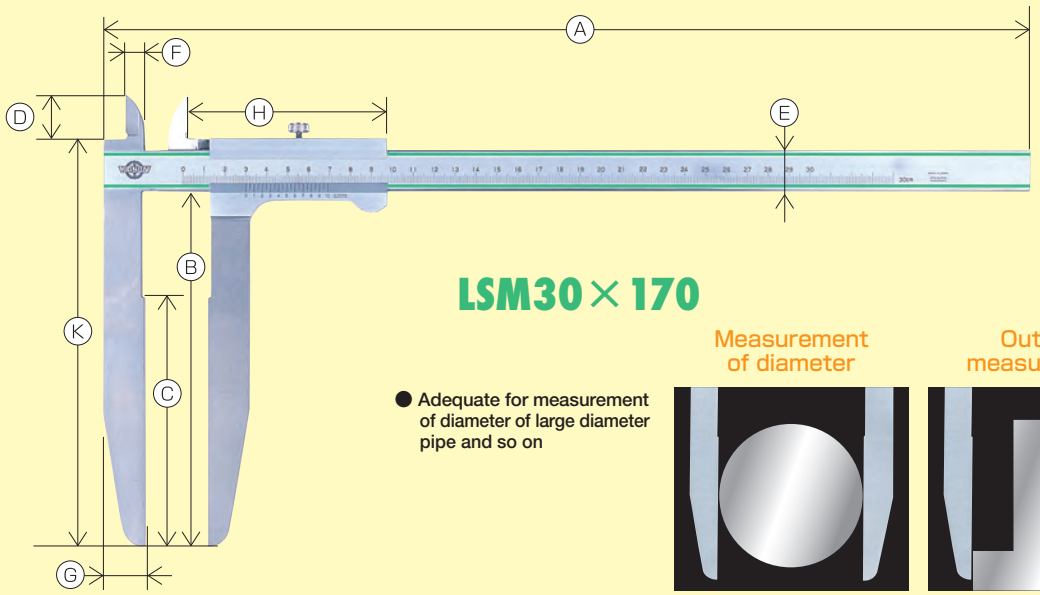
Outside measurement

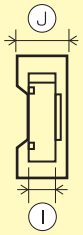
■ E-LSM : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Maximum permissible error		Power supply	Weight	A	B	C	D	E	F	Thickness of Jaw
			E_{MPE}	S_{MPE}									
E-LSM15BL	150	0.01	± 0.05	± 0.07	SR44 1 piece	220g	240	110	70	20	16	6	3.3
E-LSM20BL	200					250g	290						
E-LSM30BL	300					490g	400	170	120	22.1	20	8.75	4
E-LSM60B	600		± 0.07	–		1.8kg	780	320	200	–	25	–	6

＊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	Minimum reading	Maximum permissible error		Weight	A	B	C	D	E	F	G	H	I	J	K
			E_{MPE}	S_{MPE}												
LSM15×80	150	0.05 (Division of 19 mm into 20 equal parts)	± 0.07	± 0.10	160g	295	80	50	22	20	10	20	95	4	8	105.5
LSM20×110	200				220g	345	110	70								135.5
LSM30×170	300		± 0.08		440g	445	170	120								195.5
LSM45×230	450		± 0.10	–	1.23kg	630	230	150	–	25	–	25	–	6	12.5	255
LSM60×320	600		± 0.15	–	3.2kg	825	320	200	–	32	–	32	–	8	15	352

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

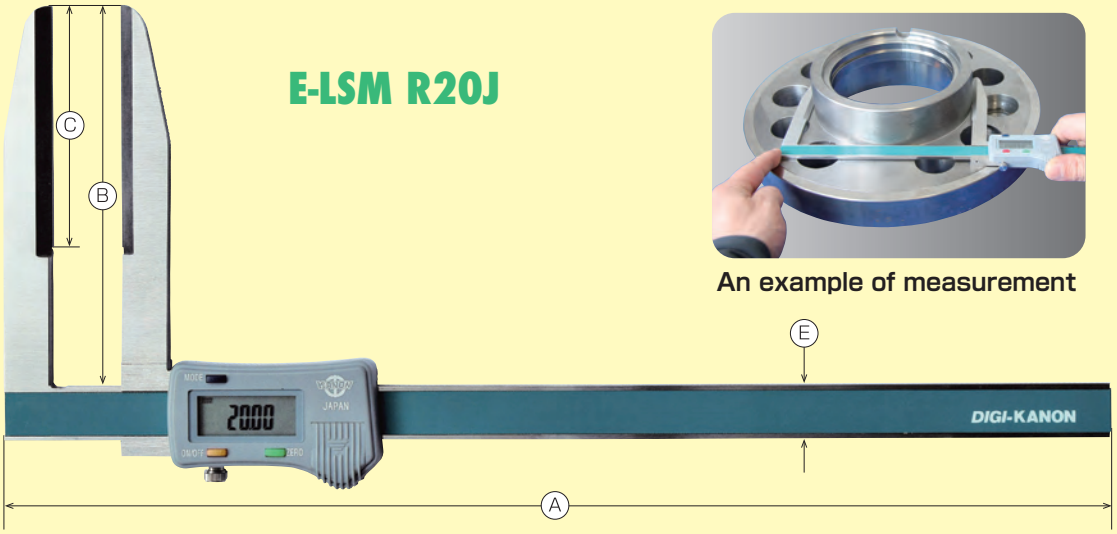
E-LSM R

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.

E-LSM R20J



An example of measurement

- 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	Maximum permissible error E_{MPE}	Power supply	Weight	A	B	C	D	Thickness of Jaw
E-LSM R20J	200	0.01	± 0.05	SR44 1 piece	250g	320	110	70	16	3.3
E-LSM R30J	300				380g	430	170	120		4

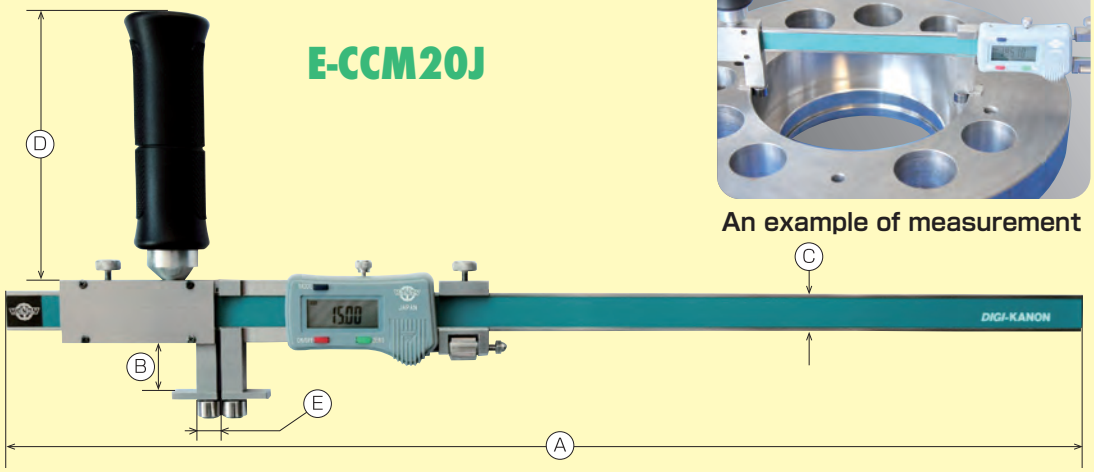
E-CCM

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.

E-CCM20J



An example of measurement

- 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

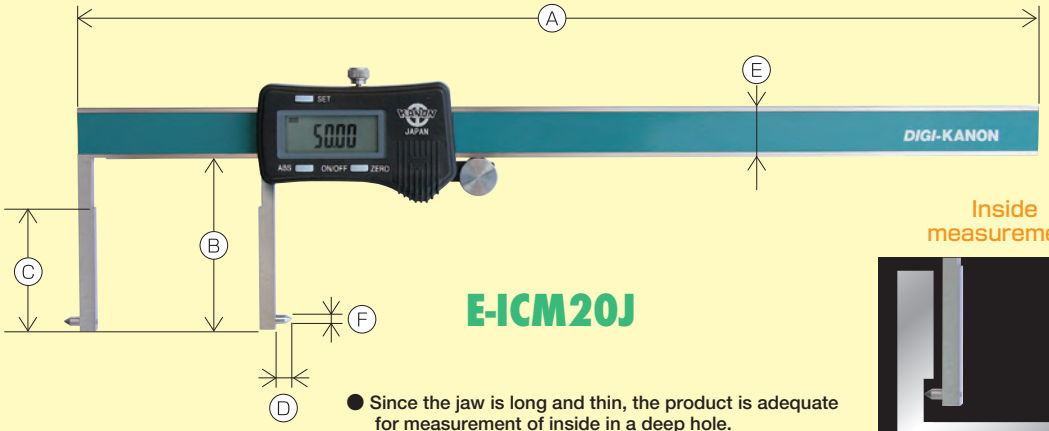
(Unit : mm)

Model	Measuring range	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E
E-CCM20J	21～200	0.01	± 0.05	SR44 1 piece	560g	445	24.5	16	106	ϕ10
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

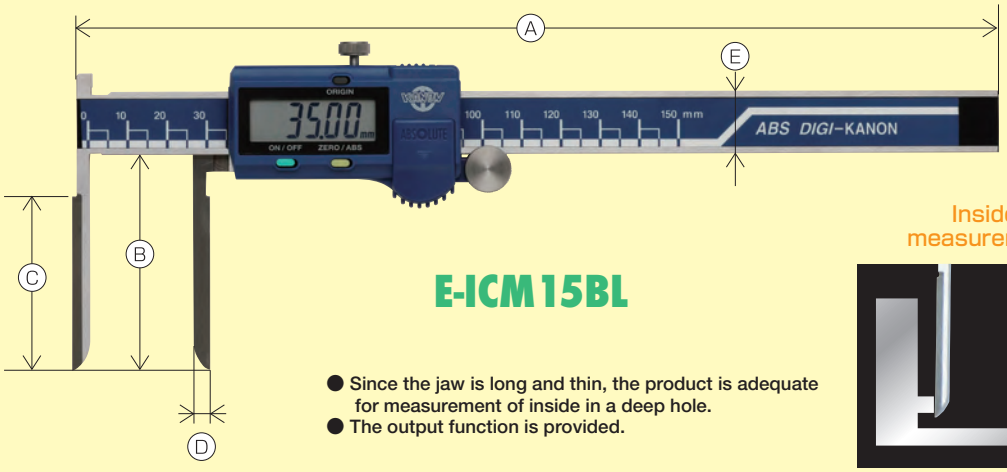
Inside measurement

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

■ 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	53	38	5	16	φ3



E-ICM15BL

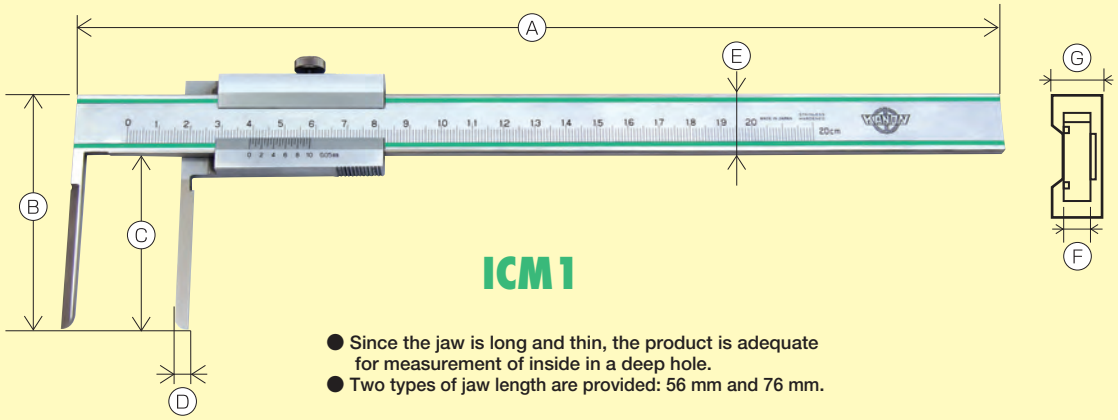
Inside measurement

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

■ E-ICM : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Maximum permissible error S_{MPE}	Power supply	Weight	A	B	C	D	E
E-ICM15BL	5～150	0.01	± 0.05	SR44 1piece	165g	236	55.5	45	4.5	16



ICM1

- 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

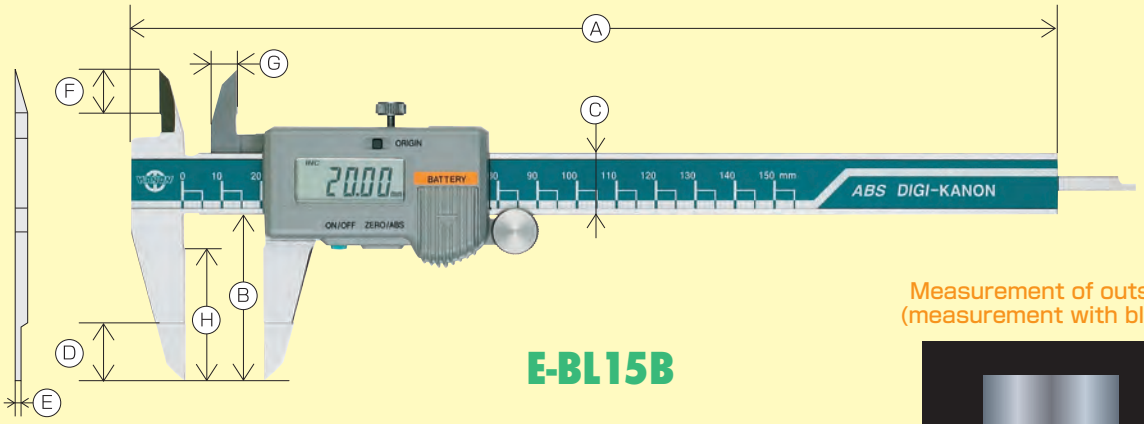
(Unit : mm)

Model	Measuring length	Minimum reading	Maximum permissible error S_{MPE}	Weight	A	B	C	D	E	F	G
ICM 1	5～200	0.05 (Division of 19 mm into 20 equal parts)	±0.07	300g	300	76	56	4.5	20	4	10.5
ICM 2	10～200			320g		96	76	9.5			

E-BL

Adequate for measurement of outside of narrow groove

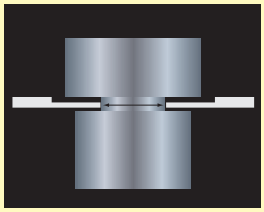
With "Blade jaw", this digital blade caliper is adequate for measurement of outside of groove on work with narrow groove and groove interval.



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 output function is provided.

Measurement of outside (measurement with blade)



■ E-BL : Specifications

(Unit : mm)

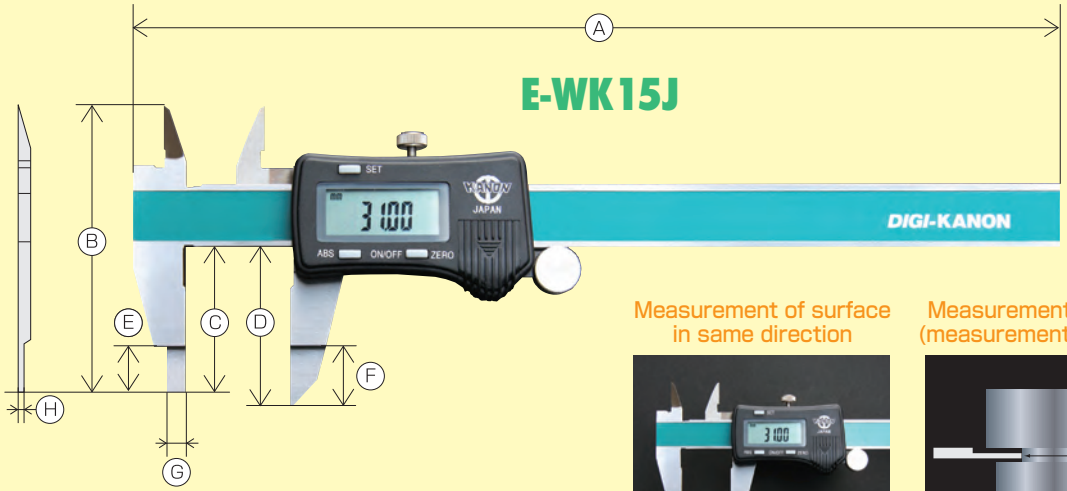
Model	Measuring length	Minimum reading	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Power supply	Weight	A	B	C	D	E	F	G	H	I×Thickness
E-BL15B	150	0.01	± 0.02	± 0.04	SR44 1piece	160g	238	42	16	15	0.8	11.3	7	33.4	3.8×1.4

E-WK

Direct-reading type digital caliper

ONLY ONE

Adequate for measurement in same direction!

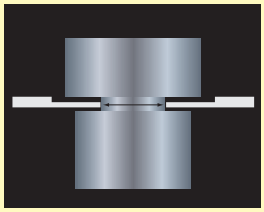


E-WK15J

- 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)

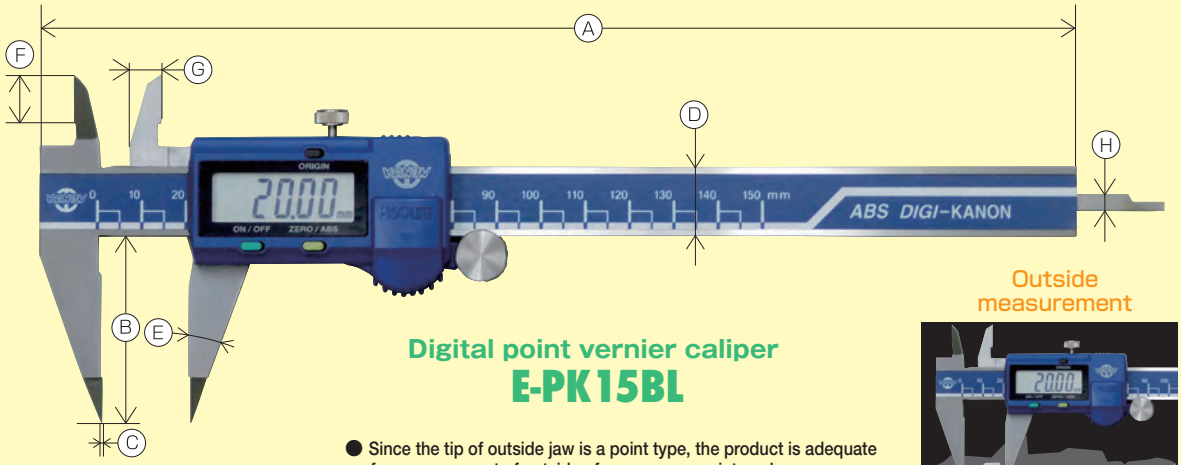
Model	Measuring length	Minimum reading	Maximum permissible error E_{MPE}	Maximum permissible error S_{MPE}	Power supply	Weight	A	B	C	D	E	F	G	H
E-WK15J	150	0.01	± 0.03	± 0.05	SR44 1piece	166g	234	73	36	39.5	11.5	15	5	0.8

＊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



Outside measurement

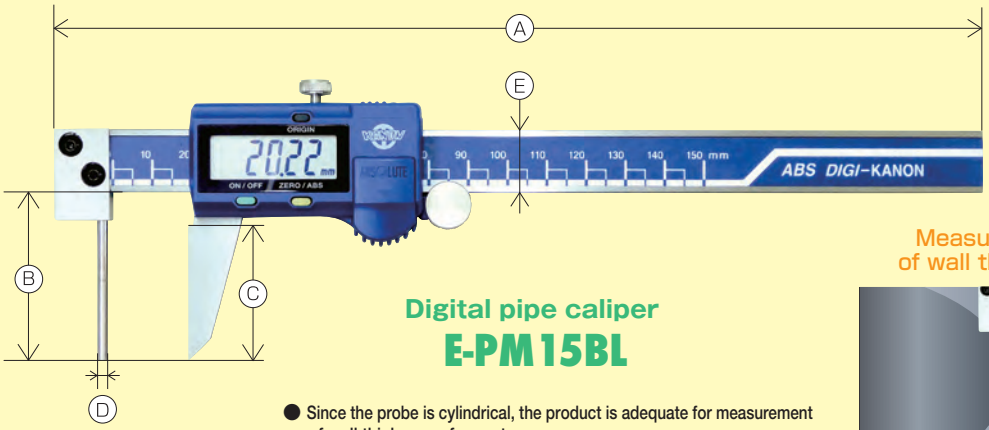
Digital point vernier caliper
E-PK15BL

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

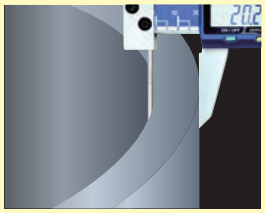
■ E-PK : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Maximum permissible error		Power supply	Weight	A	B	C	D	E	F	G	H×Thickness	Thickness of Jaw
			E_{MPE}	S_{MPE}											
E-PK15BL	150	0.01	± 0.02	± 0.04	SR44 1piece	160g	236	42	0.2	16	20°	11.3	7	3.8×1.4	3.3



Measurement of wall thickness



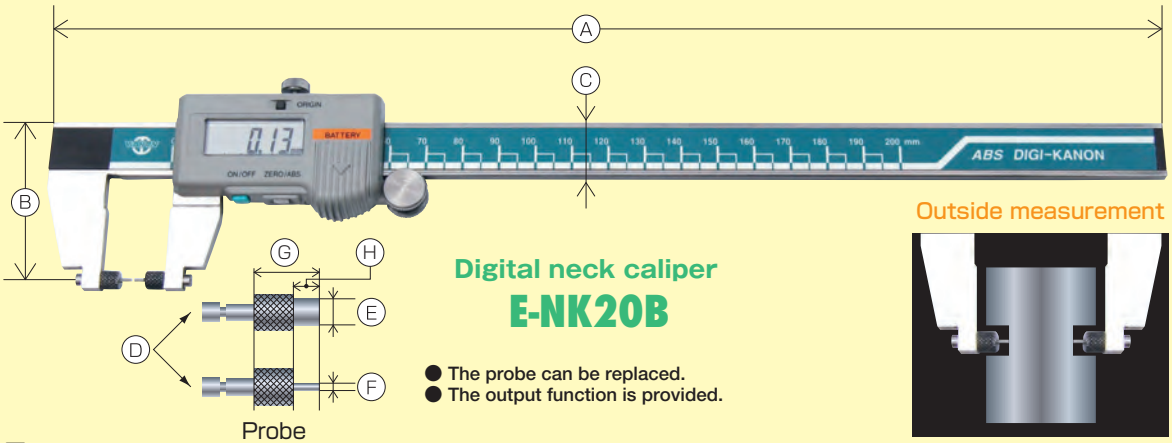
Digital pipe caliper
E-PM15BL

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

■ E-PM : Specifications

(Unit : mm)

Model	Measuring length	Resolution	Maximum permissible error	Power supply	Weight	A	B	C	D	E	Thickness of Jaw
			E_{MPE}								
E-PM15BL	150	0.01	± 0.03	SR44 1piece	160g	236	42	33.4	ϕ3	16	3.3



Probe

Outside measurement

Digital neck caliper
E-NK20B

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

■ E-NK : Specifications

(Unit : mm)

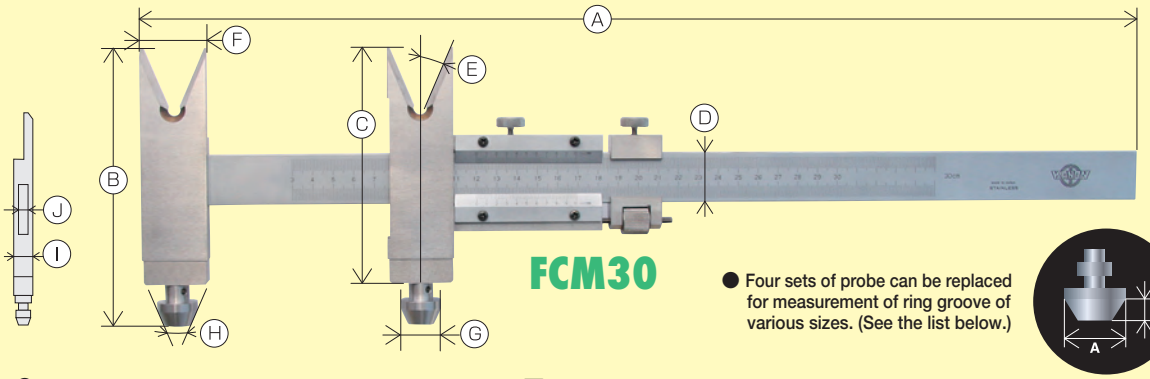
Model	Measuring length	Resolution	Maximum permissible error	Power supply	Weight	A	B	C	D	E	F	G	H
			E_{MPE}										
E-NK20B	200	0.01	± 0.03	SR44 1piece	170g	307	46	16	M2	ϕ5	ϕ1	8	3

FCM For inspection

Adequate for measurement of flange ring groove

ONLY ONE

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

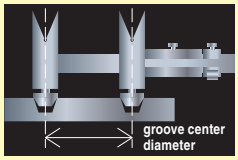


FCM30

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

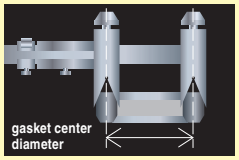
● The dimensions of flange ring groove and gasket can be securely measured.

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. ＊Ring numbers indicated in bold type indicate that the center diameter is 100 mm or more.
	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
	11.91	7.92	
	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
No.3 20(**A**)×7.5(**B**)	19.84	12.70	R42, 47, 70, 74, 88, 89, 93, 94, 95
	23.01	14.27	R51, 58, 90, 96, 97, 98
No.4 30(**A**)×7.5(**B**)	26.97	15.88	R63, 78
	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

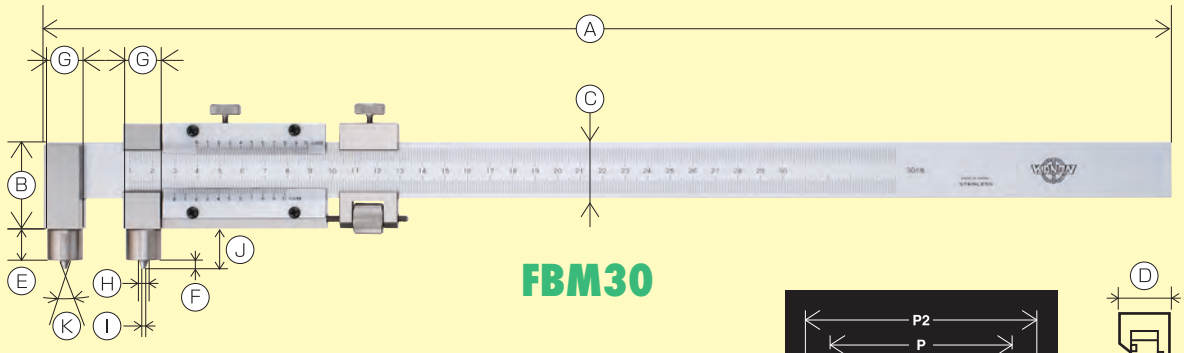
(Unit : mm)

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

FBM For working

Developed for measuring dimensions of groove used for flange during processing

ONLY ONE



FBM30

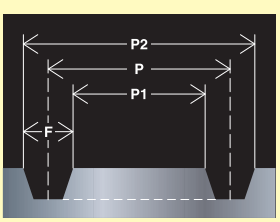
P1 The dimensions of inner edge of groove can be measured with the lower scale of FBM (for working).

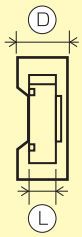
P2 The dimensions of outer edge of groove can be measured with the upper scale of FBM (for working).

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

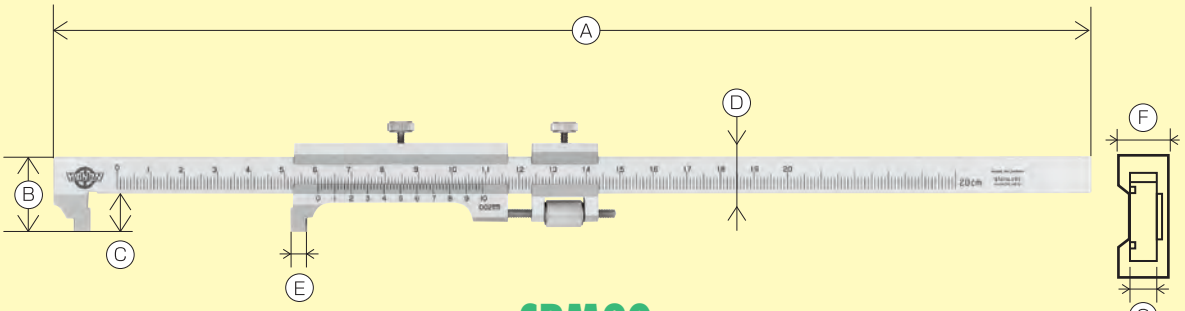
(Unit : mm)

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 (Division of 49 mm into 50 equal parts)	±0.04	1.0kg	500	37.5	25	11	14	4	φ16	φ5.5	φ2	18	46°	6
FBM70	12~700	23~700		±0.06	1.4kg	900											

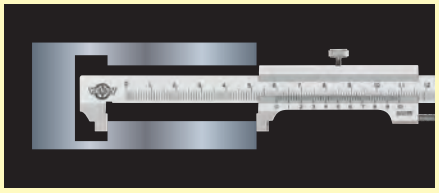
SBM

Adequate for measurement of step machining part in hole

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	Maximum permissible error		Weight	A	B	C	D	E	F	G
			EMPE	SMPE								
SBM20	200	0.02 (Division of 49 mm into 50 equal parts)	±0.03	±0.05	180g	310	22.5	11.5	11	5	8	4
SBM30	300		±0.04	±0.06	210g	410						

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 GAGE : Specifications

(Unit : mm)

Model	Measuring length	Weight
SNAP GAGE5	50	0.4kg
SNAP GAGE10	100	0.5kg
SNAP GAGE15	150	0.6kg
SNAP GAGE20	200	1.0kg
SNAP GAGE30	300	1.6kg

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

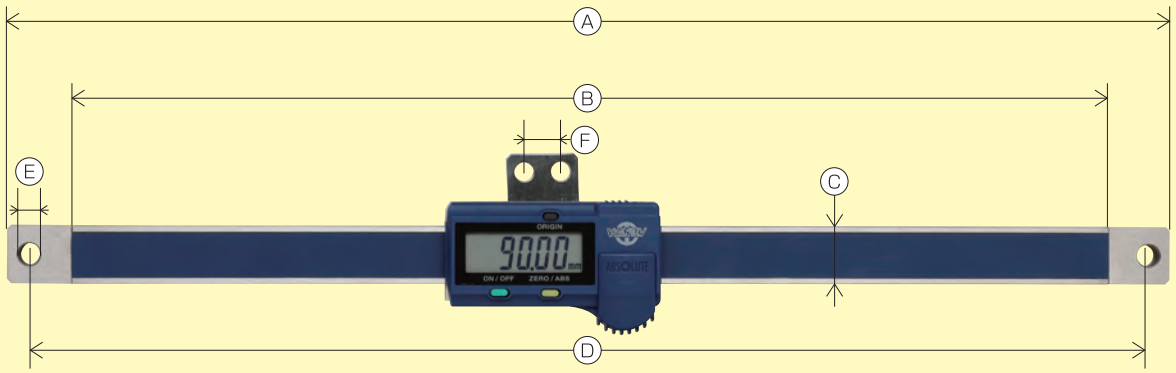
■ SNAP GAGE STAND (Options)

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

ES

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.



ES-20BL

- 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 : Specifications

(Unit : mm)

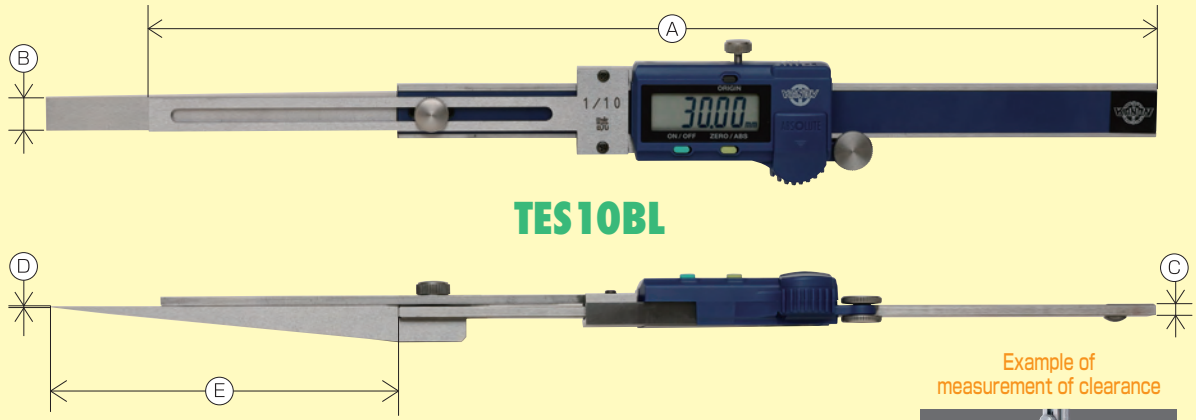
Model	Measuring length	Resolution	Maximum permissible error S_{MPE}	Power supply	Weight	A	B	C	D	E	F
ES10BL	150	0.01	± 0.05	SR44 1 piece	360g	256	220	16	244	φ6	10 φ5.2
ES20BL	200				480g	321	285		309		
ES30BL	300				560g	441	405	20	429		

TES

Digital thickness scale

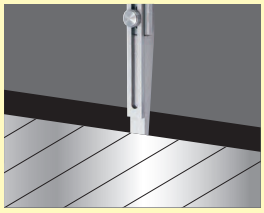
ONLY ONE

Easy measurement of clearance in a narrow location!



TES10BL

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

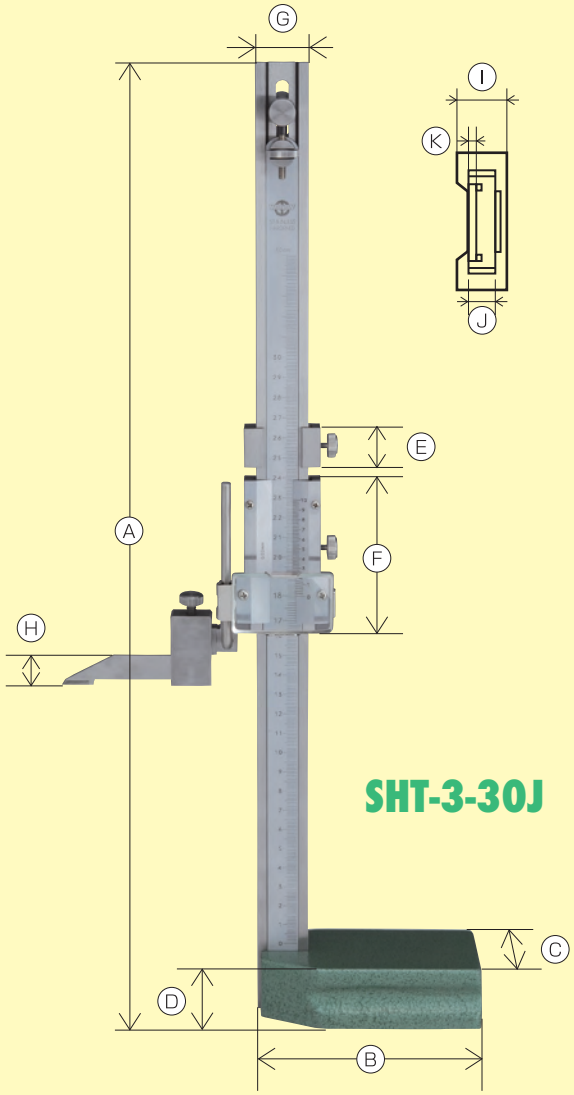
(Unit : mm)

Model	Measuring range	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E
TES5BL	0.2~4.8	0.01	± 0.03	SR44 1piece	160g	225	10	3.3	0.1	79
TES10BL	0.5~9.5				220g	330			0.3	102

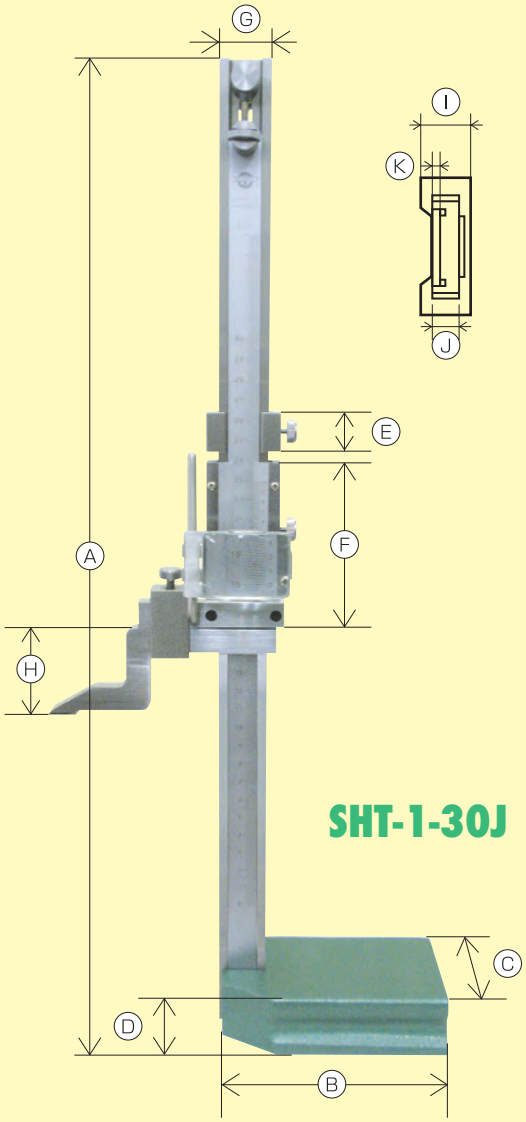
SHT-3 / SHT-1

Adequate for measurement of height for vertically long objects

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

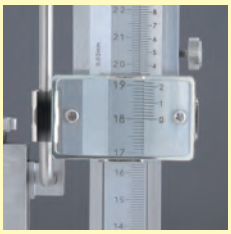


SHT-3-30J



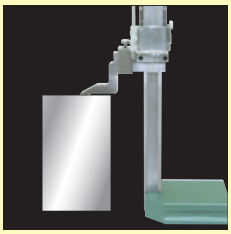
SHT-1-30J

Measurement of height



- A magnifying lens for easy reading of scale is provided.
- A carbide tip is provided on the top end of scriber, 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		90	28		19	12	

■ SHT-1 : Specifications

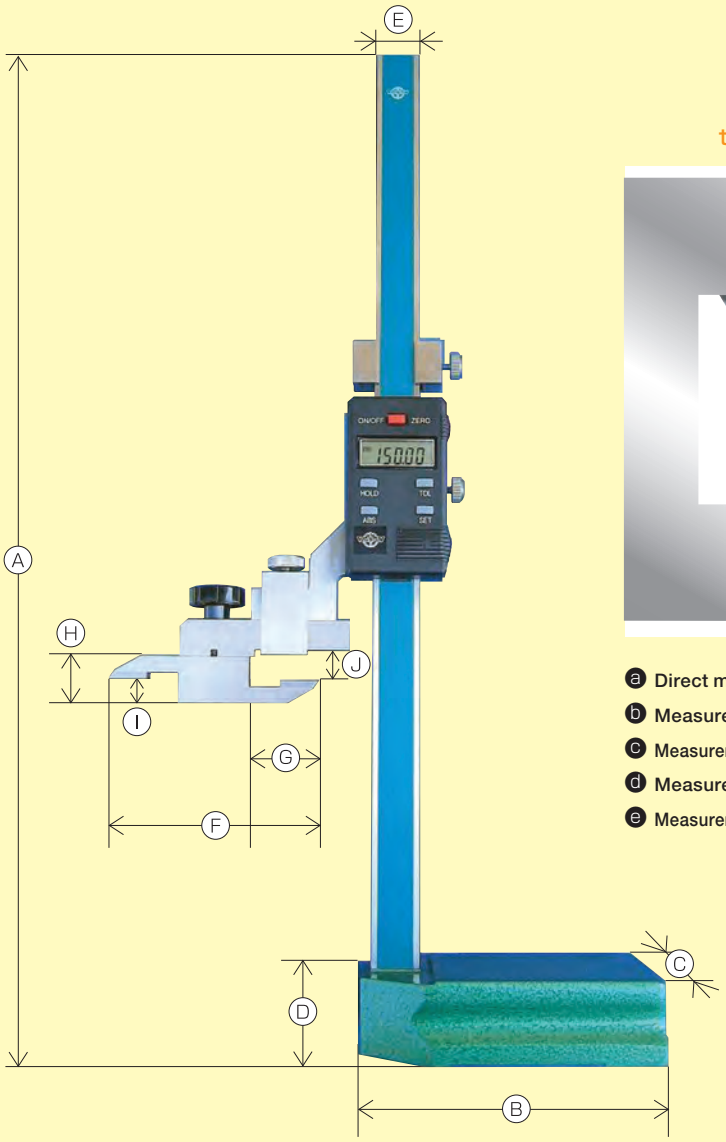
(Unit : mm)

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 19 mm into 20 equal parts)	±0.04	2.4kg	500	120	71	32	20	84	26	47	14	8	3.1
SHT-1-60J	600		±0.05	5.5kg	851	162	110	43		102	28	58	19	12	
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								

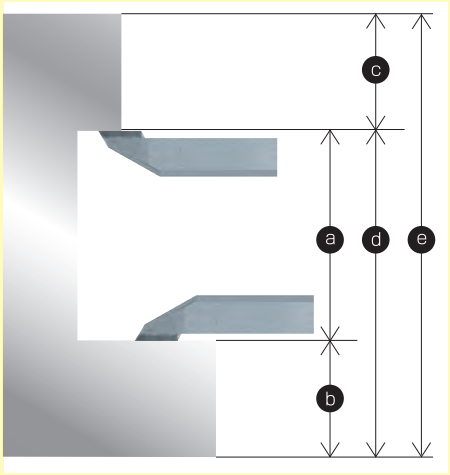
EHK30J

Height gauge with rotating scriber

Adequate for various types of height measurement!



Examples of various types of measurement

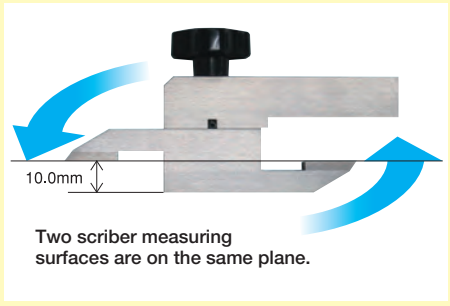


- ⓐ Direct measurement of groove width
- ⓑ Measurement of distance from plane to step
- ⓒ Measurement of distance from ceiling to upper surface
- ⓓ Measurement of distance from plane to ceiling
- ⓔ Measurement of distance from plane to upper surface

EHK30J

Rotating scriber "Kurukuru"

- 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.



Two scriber measuring surfaces are on the same plane.

■ EHK : Specifications

(Unit : mm)

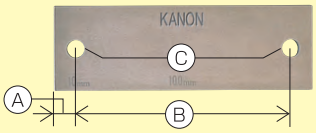
Model	Measuring range (*)	Resolution	Instrumental error	Power supply	Weight	A	B	C	D	E	F	G	H	I	J
EHK30J	0~300	0.01	± 0.05	SR44 1piece	2.2kg	450.5	120.0	68.0	32.0	19.9	94.0	32.1	20.0	10.0	13.1

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

GAUGE BLOCK

Initial setting for E-RM

Gauge block for E-RM



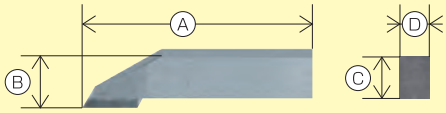
■ Gauge block for E-RM : Specifications

Model	A (mm)	B (mm)	C (mm)	Applicable E-RM
G-10-3	10	100	φ3	E-RMS15BL
G-20-4	20		φ4	E-RM-2-15BL
G-25-8	25		φ8	E-RM-2-30BL E-RM-2-60B
G-10-8	10			E-RM60B

SCRIBER

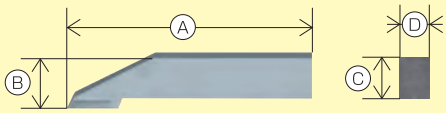
Measuring surface for height gauge

Precisely finished scriber with carbide tip



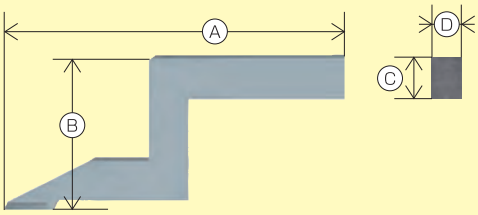
■ Scriber for EHK : Dimensions (Unit : mm)

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				

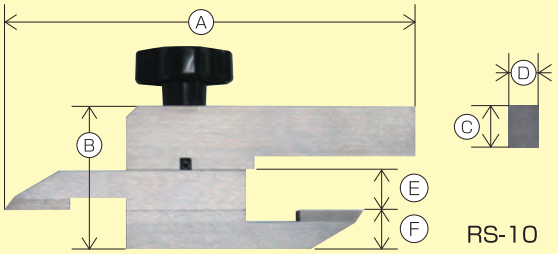


■ Scriber for SHT-1-J : Dimensions (Unit : mm)

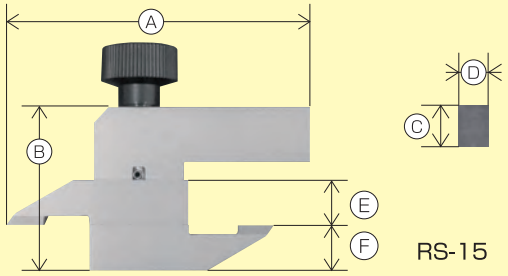
Type	A	B	C	D
For SHT-1-30J	119.8	47	12.7	9
For SHT-1-60J	150	58		

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

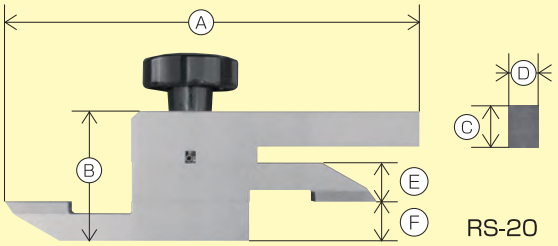
Type	A	B	C	D
For SHT-1-100	220	62	18	9
For SHT-1-150		75		
For SHT-1-200				



RS-10



RS-15



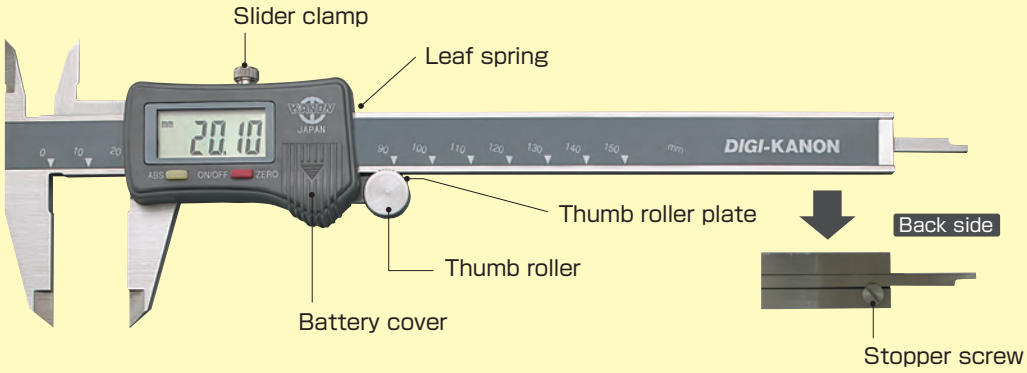
RS-20

■ 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		

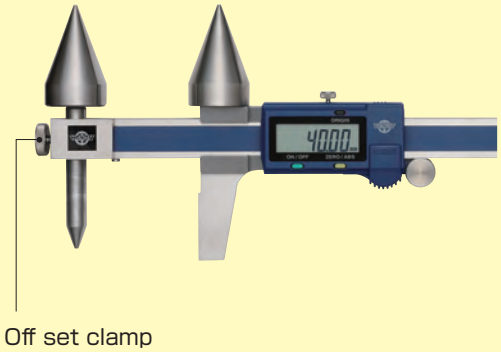
PARTS for DIGITAL CALIPERS

Digital caliper

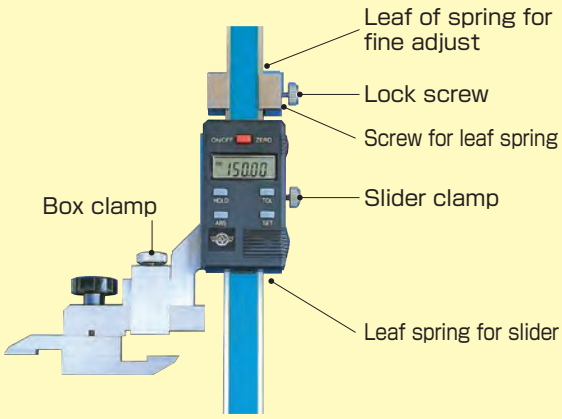


TES

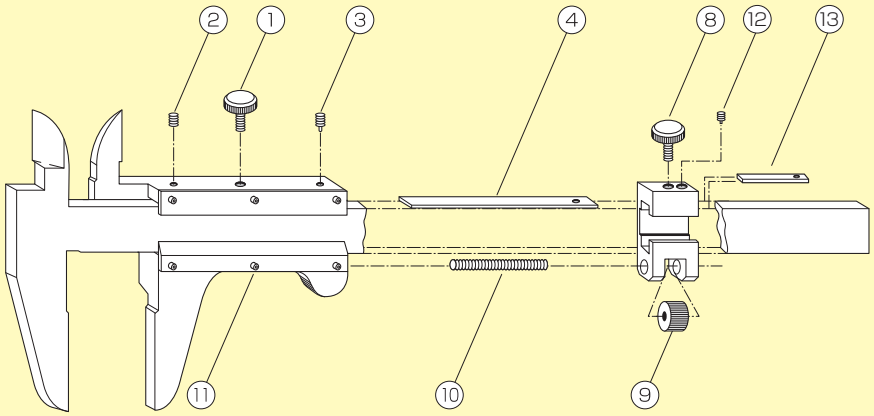
E-RM-2



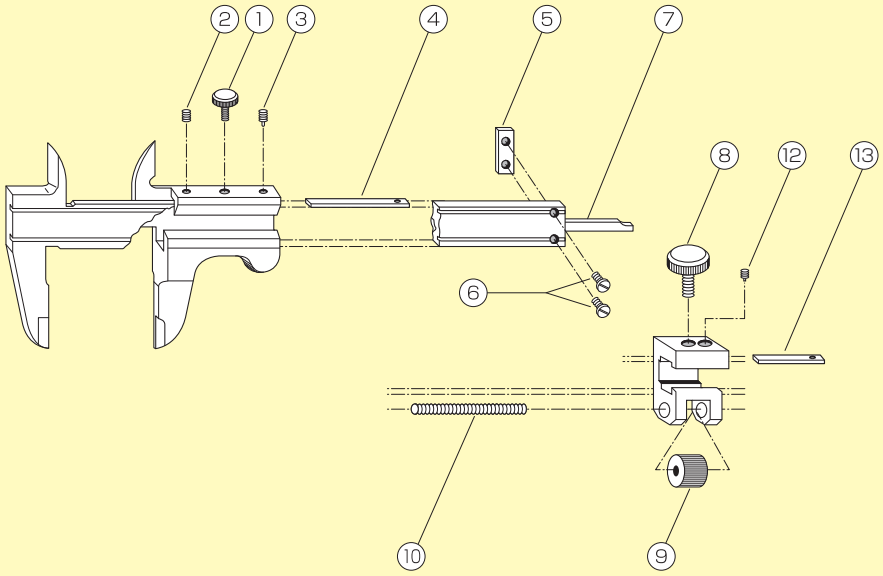
EHK30J



PARTS LIST



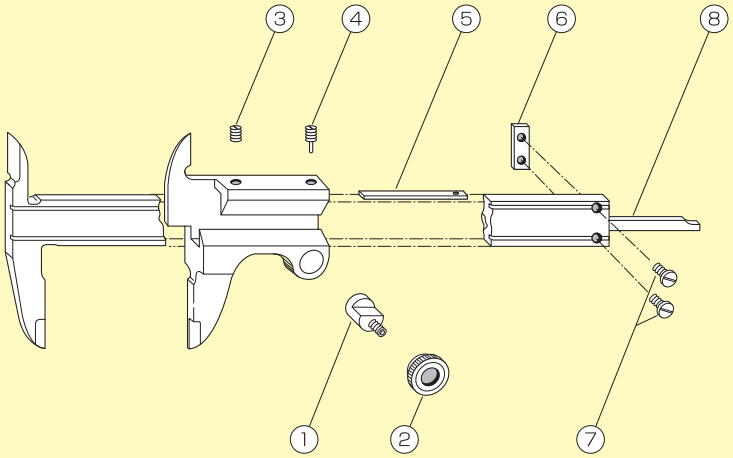
SM/M type



Model \ Name	1	2	3	4	5	6	7	8	9	10	11	12	13
	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	Push screw	Leaf spring for fine adjust
M 45	○	○	○	○	–	–	–	–	–	–	○	–	–
M 50	○	○	○	○	–	–	–	–	–	–	○	–	–
M 60	○	○	○	○	–	–	–	–	–	–	○	–	–
M 100	○	○	○	○	–	–	–	○	○	○	○	○	○
SM 7	○	○	○	○	–	–※	○	–	–	–	–	–	–
SM 150	○	○	○	○	–	–	–	○	○	○	○	○	○
SM 200	○	○	○	○	–	–	–	○	○	○	○	○	○
SM 250	○	○	○	○	–	–	–	○	○	○	○	○	○
SM 300	○	○	○	○	–	–	–	○	○	○	○	○	○
RA 15	○	○	○	○	–	–	–	–	–	–	–	–	–
RA 20	○	○	○	○	–	–	–	–	–	–	–	–	–
LSM 15× 80	○	○	○	○	–	–	–	–	–	–	–	–	–
LSM 20×110	○	○	○	○	–	–	–	–	–	–	–	–	–
LSM 30×170	○	○	○	○	–	–	–	–	–	–	–	–	–
LSM 45×230	○	○	○	○	–	–	–	–	–	–	○	–	–
LSM 60×320	○	○	○	○	–	–	–	–	–	–	○	–	–

＊One stopper screw

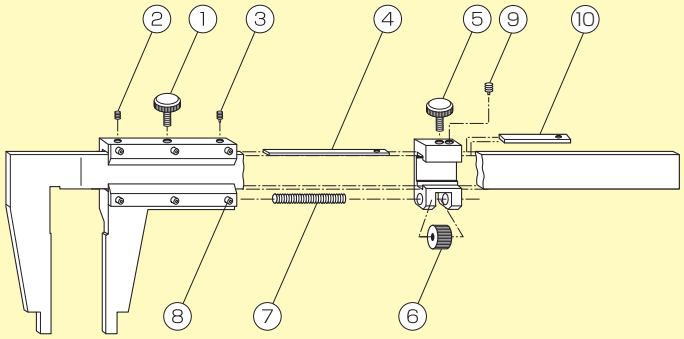
PITA type



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

*1 Slider clamp instead of Lock bolt and Lock nut
*2 One stopper screw

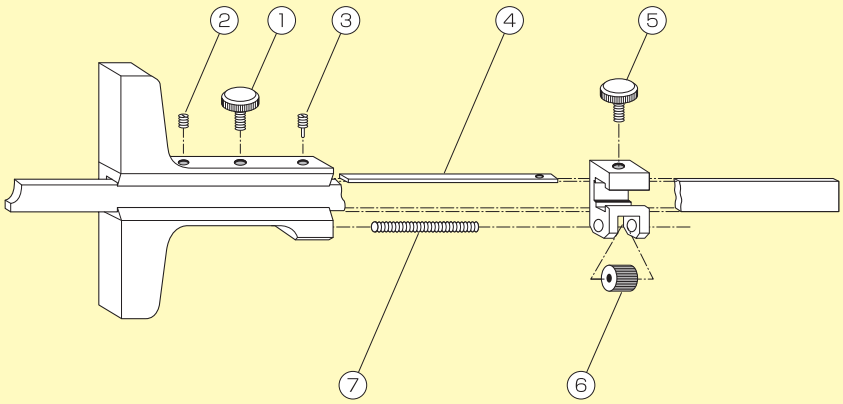
SCM type



Model \ Name	1	2	3	4	5	6	7	8	9	10
	Slider clamp	Upper screw	Lower screw	Leaf spring	Fine adjust clamp	Fine adjust nut	Fine adjust bar screw	Screw for vernier scale	Push screw	Leaf spring for fine adjust
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	○	○	○	○	○	○	○	○	−	−

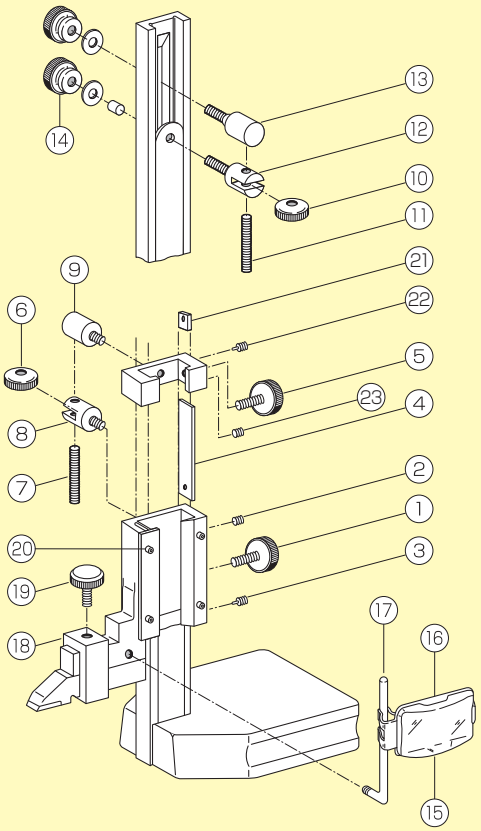
PARTS LIST

SDM type

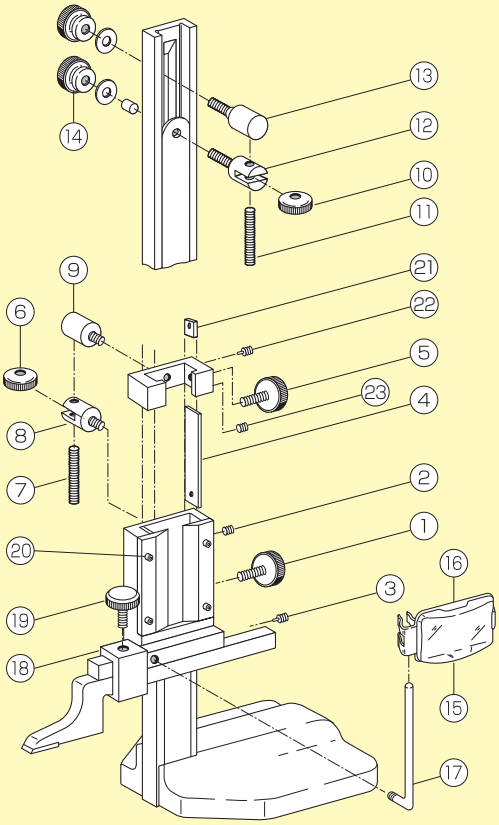


Model \ Name	1 Slider clamp	2 Upper screw	3 Lower screw	4 Leaf spring	5 Fine adjust clamp	6 Fine adjust nut	7 Fine adjust bar screw
SDM 15	○	○	○	○	○	○	○
SDM 20	○	○	○	○	○	○	○
SDM 30	○	○	○	○	○	○	○
SDM 40	○	○	○	○	○	○	○
SDM 50	○	○	○	○	○	○	○
SDM 60	○	○	○	○	○	○	○
SDM 100	○	○	○	○	○	○	○
BSDM 15	○	○	○	○	○	○	○
BSDM 20	○	○	○	○	○	○	○
BSDM 30	○	○	○	○	○	○	○
LSDM 15×15	○	○	○	○	○	○	○
LSDM 15×20	○	○	○	○	○	○	○
LSDM 15×25	○	○	○	○	○	○	○
LSDM 20×15	○	○	○	○	○	○	○
LSDM 20×20	○	○	○	○	○	○	○
LSDM 20×25	○	○	○	○	○	○	○
LSDM 30×15	○	○	○	○	○	○	○
LSDM 30×20	○	○	○	○	○	○	○
LSDM 30×25	○	○	○	○	○	○	○
SD 15P	○	–	○	○	–	–	–
SD 20P	○	–	○	○	–	–	–
SD 30P	○	–	○	○	–	–	–
BSD 15P	○	–	○	○	–	–	–
BSD 20P	○	–	○	○	–	–	–
BSD 30P	○	–	○	○	–	–	–

SHT-3 type



SHT-1 type



Name / Model	1 Slider clamp	2 Upper screw	3 Lower screw	4 Leaf spring	5 Lock screw	6 Fine adjust nut	7 Fine adjust bar screw	8 Fine adjust nut holder	9 Fine adjust blacket nut	10 Main scale adjust nut	11 Main scale bar screw
SHT-3-30J	○	○	○	○	○	○	○	○	○	○	○
SHT-3-60J	○	○	○	○	○	○	○	○	○	○	○

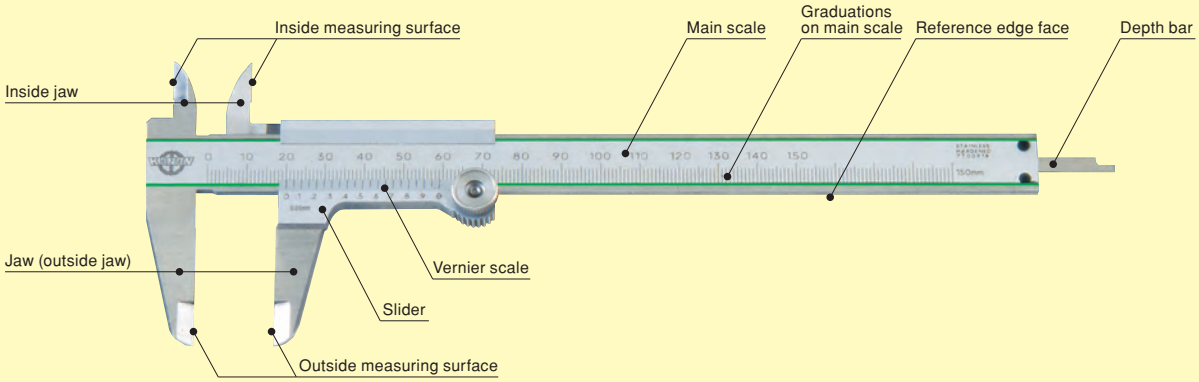
Name / Model	12 Main scale nut holder	13 Main scale blacket nut	14 Main scale fixing nut	15 Magnifier	16 Magnifier frame	17 Magnifier bar	18 Scriber box	19 Box clamp	20 Screw for vernier scale	21 Leaf spring for fine adjust	22 Push screw	23 Upper push screw
SHT-3-30J	○	○	○	○	○	○	○	○	○	○	○	○
SHT-3-60J	○	○	○	○	○	○	○	○	○	○	○	○

Name / Model	1 Slider clamp	2 Upper screw	3 Lower screw	4 Leaf spring	5 Lock screw	6 Fine adjust nut	7 Fine adjust bar screw	8 Fine adjust nut holder	9 Fine adjust blacket nut	10 Main scale adjust nut	11 Main scale bar screw
SHT-1-30J	○	○	○	○	○	○	○	○	○	○	○
SHT-1-60J	○	○	○	○	○	○	○	○	○	○	○
SHT-1-100	○	○	○	○	○	○	○	○	○	○	○
SHT-1-150	○	○	○	○	○	○	○	○	○	○	○
SHT-1-200	○	○	○	○	○	○	○	○	○	○	○

Name / Model	12 Main scale nut holder	13 Main scale blacket nut	14 Main scale fixing nut	15 Magnifier	16 Magnifier frame	17 Magnifier bar	18 Scriber box	19 Box clamp	20 Screw for vernier scale	21 Leaf spring for fine adjust	22 Push screw	23 Upper push screw
SHT-1-30J	○	○	○	○	○	○	○	○	○	○	○	○
SHT-1-60J	○	○	○	○	○	○	○	○	○	○	○	○
SHT-1-100	○	○	○	○	–	○	○	○	○	○	○	–
SHT-1-150	○	○	○	○	–	○	○	○	○	○	○	–
SHT-1-200	○	○	○	○	–	○	○	○	○	○	○	–

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.)

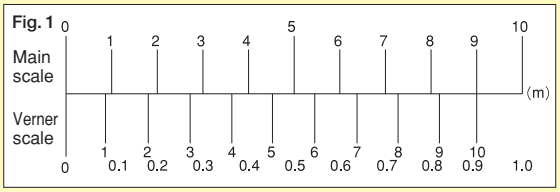
① 1. n = 20 (divided into n equal parts) -> 19 mm is divided into 20 equal parts.
(ICM, ROBA, RA, etc.)

② 2. n = 40 (divided into n/2 equal parts) -> 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) -> 49 mm is divided into 50 equal parts.
(SCM, SCML, FCM, etc.)

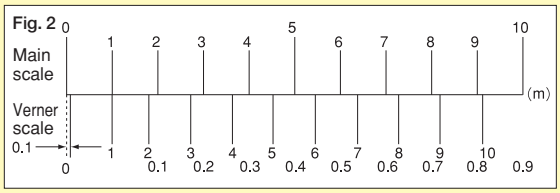
For easy understanding of the principle, take an example of scale in 1 mm steps with vernier scale of 9 mm divided into 10 equal parts (n = 10). For example, as shown in Fig. 1, the 9 graduations (9 mm) on the main scale (in 1 mm steps) divided into 10 equal parts configure a vernier scale. One graduation on the scale is 0.9 mm. Consequently, the difference of one graduation between the main scale and the vernier scale is 1 mm – 0.9 mm = 0.1 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)

Fig. 1



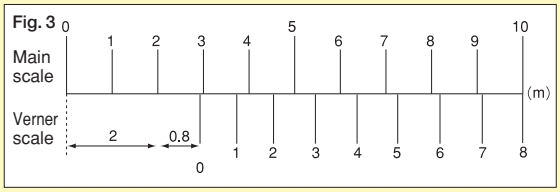
Then, suppose that a string of 0.1 mm in thickness is put in the outside jaw. The vernier scale slides to the right by 0.1 mm, and graduation 1 on the vernier scale that is 0.1 mm shorter than the main scale matches with graduation 1 on the main scale. (Fig. 2) From the reverse point of view, reading 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.

Fig. 2



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 X 1/10 mm) = 2.8 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.

Fig. 3



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 19mm/20 = 0.95mm. The deviation of one graduation from the main scale is 1mm – 0.95mm = 0.05mm, which is minimum reading. Consequently, values can be read in 5/100 mm, namely, 1/20 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 mm steps (Fig. 5). In the case of division of 49 mm into 50 equal parts (3), values can be read in 0.02 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.
9mm＋(1/20mm×5)＝9mm＋0.25mm＝9.25mm
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.
5mm＋(1/50mm×6)＝5mm+0.12mm=5.12mm
Consequently, the 6th graduation of vernier scale indicates 11 similarly.

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

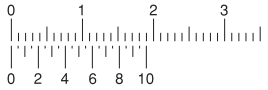


Fig. 5 1/20 mm vernier (39 graduations, 20 equal parts)

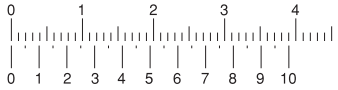


Fig. 6 1/50 mm vernier (49 graduations, 50 equal parts)

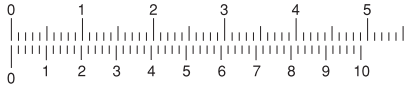
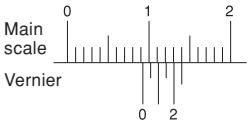
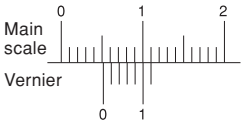


Fig. 7



(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 = 0.02mm	1/20 = 0.05mm		1/10 = 0.1mm
Applicable Kanon calipers	LSDM, ESDM, SDM, BSDM, FCM, SCM, SCML	TH, SM7, RA, ROBA, ICM	PITA, RM-DX, RM-S, BSD-P, SD-P, SM150～300, M45～100, LSM	RM-2

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.

Japan Industrial Standards

Geometrical Products Specifications (GPS) – Dimensional measuring equipment -Vernier

Geometrical Product Specifications (GPS) – Dimensional measuring equipment – Vernier, dial and digital callipers

On May 20, 2022, JIS B 7507 2022 was revised. Former 2016 edition is valid until May 19, 2023.

1. Scope

This standard specifies calipers which have analogue display and digital display with vernier scale or dial scale.

2. Definiton of terms

The definition of principal terms used in this standard conforms to JIS B 0641-1, JIS B 0642 and JIS Z 8103 as well as following items.

(1) Vernier caliper

Measuring equipment which estimates outside or inside dimensions using the fixed jaw on the vernier main body and the moving jaw sliding along the measuring scale on the vernier main body.
Note 1: Caliper, which have the step measuring face or the depth bar on the caliper main body and the slider, is available for measuring step distance and depth.
Note 2: Reading value is displayed in analogue style (the vernier scale or the dial scale) or digital style.

(2) Display error (Former instrumental error)

Value obtained by deducting the real value (as the corresponding input value) from the indicated value by the caliper
Note 1: Since the real value cannot be decided, the determined real value is applied actually.

(3) Maximum permissible error: MPE

(3)-1 Partial surface contact error (E_{MPE})
Partial surface contact error is the indication error when the partial measuring face contact is used to make standard measurement using the outside measuring face.

(3)-2 Shift error (S_{MPE})
Shift error is the indication error when the all measuring surface contact or the partial measuring surface contact is used for measuring surfaces except for the outside measuring surface
Shift errors are generally accompanied by the inside measuring surface, the depth bar and the step measuring surface.

3. Notes on use

•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 tip of jaw may cause particularly a larger error since the caliper does not conform the ＊Abbe principle.

•Temperature and deformation factors may cause effects to the measuring results.
Minimum uncertainty, which is estimated by those effects, may increase by caliper' s minimum readings, minimum scale interval or minimum displayed value.

•For the digital display caliper, pay attention to environment factors such as electromagnetic noise which may affect electric components in the caliper.

＊Abbe principle: The principle on the precision of dimension measuring instruments. To enhance measuring accuracy, measuring errors can be minimized if the measuring target and the scale of measuring instrument are located on the same line.

4. Maximum permissible error of caliper

MPE of caliper is shown in Table 1.

Table 1. Maximum permissible error of caliper

〈Unit: μm〉

Measureing length : ℓ mm	Minimum reading or Resolution					
	0.01mm		0.02mm		0.05mm	
	*E*MPE	*S*MPE	*E*MPE	*S*MPE	*E*MPE	*S*MPE
0 < ℓ ≦ 50	± 20	± 30	± 20	± 40	± 50	± 50
50 < ℓ ≦ 100	± 30	± 50	± 40	± 60	± 50	± 100
100 < ℓ ≦ 200	± 30	± 50	± 40	± 60	± 100	± 100
200 < ℓ ≦ 300	± 40	± 60	± 40	± 60	± 100	± 100
300 < ℓ ≦ 400	± 40	± 60	± 40	± 60	± 100	± 100
400 < ℓ ≦ 500	± 50	± 70	± 60	± 80	± 100	± 100
500 < ℓ ≦ 600	± 50	± 70	± 60	± 80	± 150	± 150
600 < ℓ ≦ 700	± 60	± 80	± 60	± 80	± 150	± 150
700 < ℓ ≦ 800	± 60	± 80	± 60	± 80	± 150	± 150
800 < ℓ ≦ 1,000	± 70	± 90	± 80	± 100	± 150	± 150

Note: *E*MPE includes measuring errors caused by caliper' s straightness, outside measuring surface flatness and parallelism.

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 μm
Operation method	Manual
Sliding section	LM guide
Sensor	Optical linear scale
Environmental conditions: Temperature	18℃~30℃
Environmental conditions: Humidity	30%~80%
Detection of image	CMOS color camera
Lighting system	LED epi-illumination, transillumination (optional)
Zoom lens-barrel	1x to 4x zoom lens
Personal computer	OS : Windows 11
A	1400mm
B	750mm
C	950mm
Weight	360kg

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

EXLON-Z III

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.

Manual CMM

EXLON-Z III 453

- 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/1000μm
Operation method	Manual
Sliding section	LM guide
Sensor	Optical linear scale
Environmental conditions: Temperature	18℃~30℃
Environmental conditions: Humidity	30%~80%
Sensor section	Electronic probe TP8
Personal computer	OS : Windows 11
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

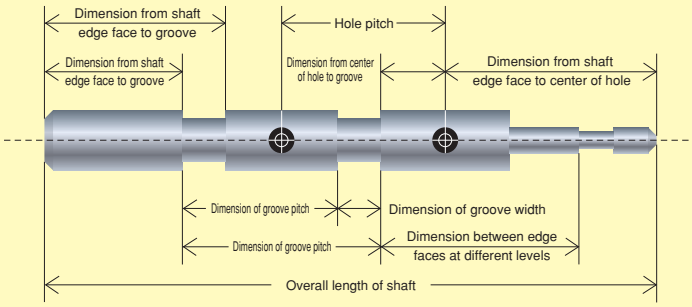
Measurement of shaft with easy operation

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

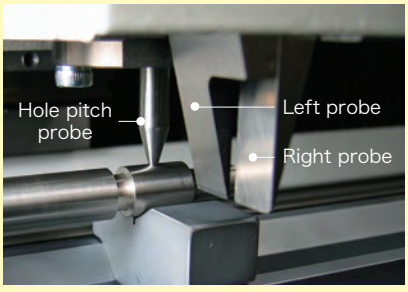
Straight line

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	±0.03mm ＋ 1digit	
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℃ Humidity: 20 to 80%	
Measurable diameter	φ2～φ40mm	
Measurable groove width	0.5 mm or more	
Function	Zero setting, data output, various types of error display	
Diameter supported by hole pitch probe	φ1～φ5.8mm	
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.

Producted by :

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Dealer

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