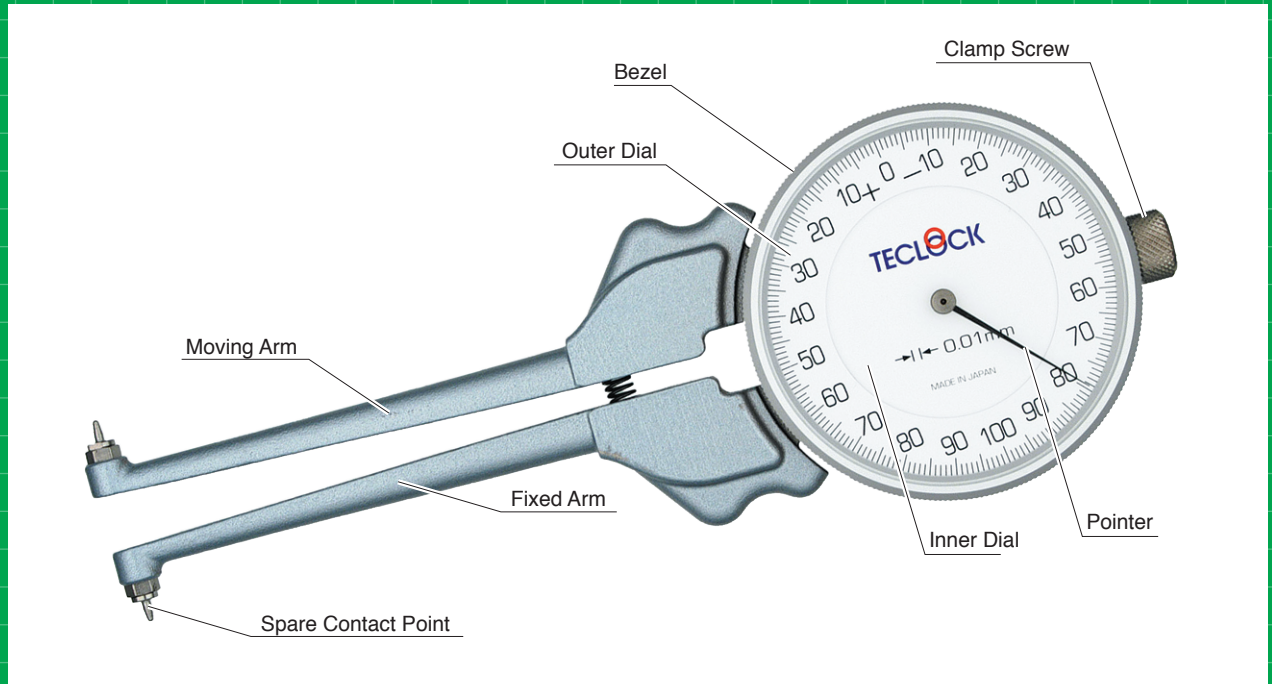




5 Caliper Gauge



As to internal caliper gauge IM-880 series, the distance between contact points facing outside is firstly set at standard dimension with ring gauge or micrometer. Then, it is measured by inserting contact point into internal dimension part to be measured after its outer dial of which moves together with rotated bezel is set at "0". The displacement of indicator from "0" point of outer dial is to be measured at that time. The value adding to the read displacement to standard dimension or deducting it from standard dimension is the dimension of internal diameter. This series attaches spare contact point which can set accurate dimension corresponding to size of internal dimension. External caliper gauge is opposite, namely reading the value by holding work piece with 2 contact points facing outside.



I have to measure the inner diameter of small metal parts.



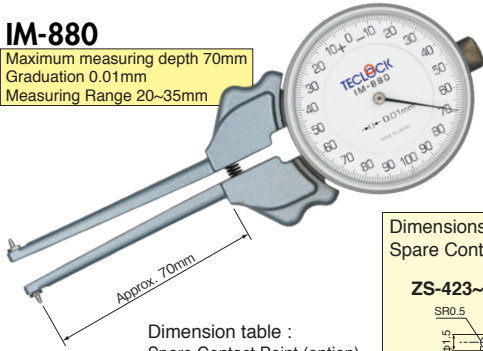
Dial Depth Gauges

- Internal caliper gauge to measure internal diameter of cylindrical workpiece and recessed groove diameter. It can measure groove diameter of "O" ring by modifying spare contact point.
- Set dimension within $\pm 1\text{mm}$ (indication range 2mm) can be comparatively measured (880 series) by alternatively using auxiliary spare contact point in accordance with measured dimension.

- Please set standard dimension within measuring range with micrometer or ring gauge.

IM-880

Maximum measuring depth 70mm
Graduation 0.01mm
Measuring Range 20~35mm

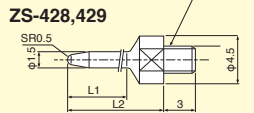
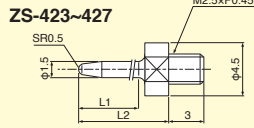


Dimension table : Spare Contact Point (option)

Code No.	L1	L2	Measuring Range
ZS-423	2.5	4	20-23
ZS-424	3.5	5	22-25
ZS-425	4.5	6	24-27
ZS-426	5.5	7	26-29
ZS-427	5.5	8	28-31
ZS-428	5.5	9	30-33
ZS-429	5.5	10	32-35

unit : mm

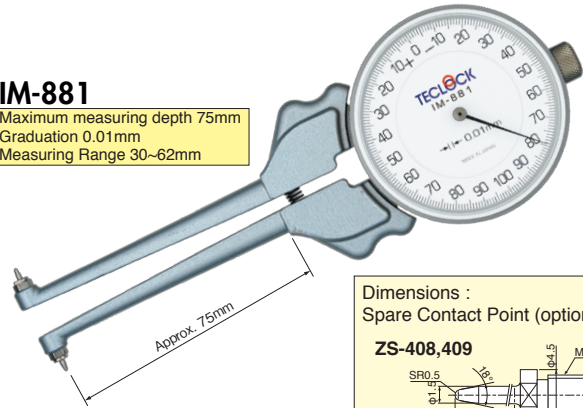
Dimensions : Spare Contact Point (option)



unit : mm

IM-881

Maximum measuring depth 75mm
Graduation 0.01mm
Measuring Range 30~62mm

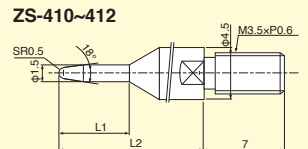
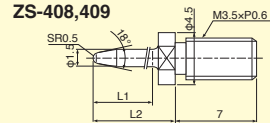


Dimension table : Spare Contact Point (option)

Code No.	L1	L2	Measuring Range
ZS-408	3	4.5	30-38
ZS-409	5.5	7.5	36-44
ZS-410	6	10.5	42-50
ZS-411	6	13.5	48-56
ZS-412	6	16.5	54-62

unit : mm

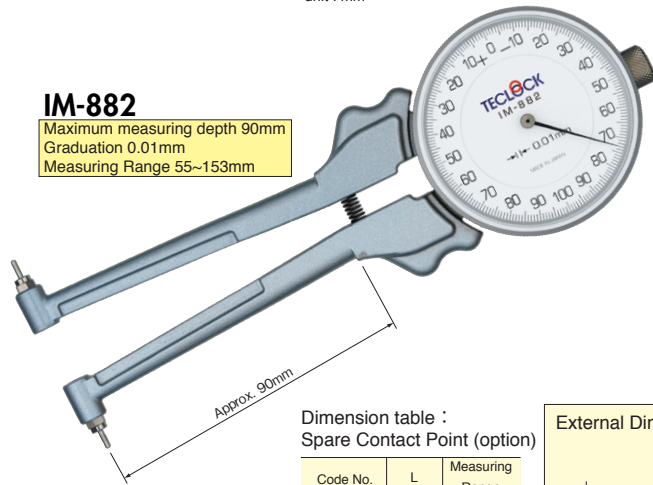
Dimensions : Spare Contact Point (option)



unit : mm

IM-882

Maximum measuring depth 90mm
Graduation 0.01mm
Measuring Range 55~153mm

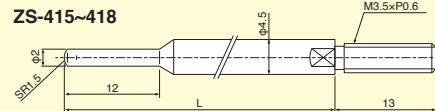
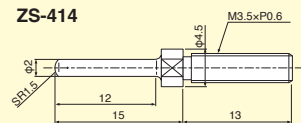
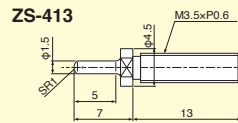


Dimension table : Spare Contact Point (option)

Code No.	L	Measuring Range
ZS-413	7	55-73
ZS-414	15	71-89
ZS-415	23	87-105
ZS-416	31	103-121
ZS-417	39	119-137
ZS-418	47	135-153

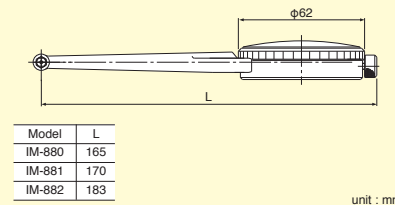
unit : mm

Dimensions : Spare Contact Point (option)



unit : mm

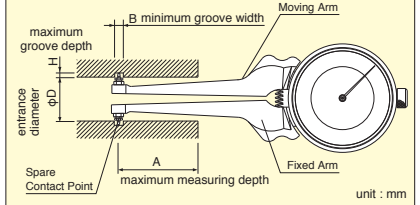
External Dimensions



Model	L
IM-880	165
IM-881	170
IM-882	183

unit : mm

Dimensions



unit : mm

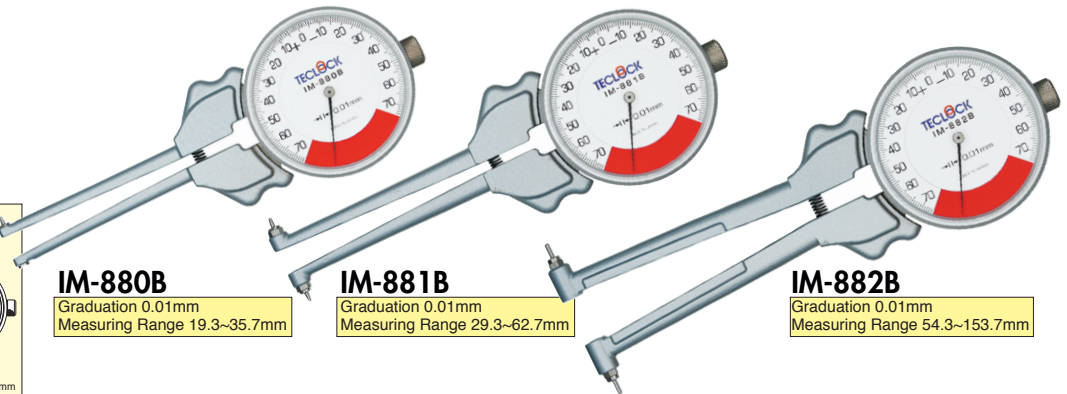
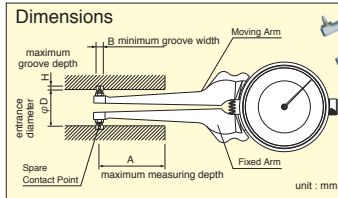
Specifications

Model	Graduation (mm)	Measuring Range (mm)	Indicating range (mm)	Indication Error (μm)	Measuring Force (N)	Weight (g)	Spare Contact Point		maximum measuring depth A (mm)	entrance diameter φD (mm)*	groove depth H (mm)	minimum groove width B (mm)
							Code No.	Measuring Range (mm)				
IM-880	0.01	20-35	2	± 20	3 or less	196	ZS-423	20-23	70		15-18	2.5
							ZS-424	22-25			15-18	3.5
							ZS-425	24-27			16-19	4
							ZS-426	26-29			18-21	4
							ZS-427	28-31			20-23	4
							ZS-428	30-33			22-25	4
							ZS-429	32-35			24-27	4
							ZS-408	30-38			24-32	3
IM-881	0.01	30-62	2	± 20	3 or less	218	ZS-409	36-44	75		27.4-35.4	4.3
							ZS-410	42-50			33.4-41.4	4.3
							ZS-411	48-56			39.4-47.4	4.3
							ZS-412	54-62			45.4-53.4	4.3
							ZS-413	55-73			45-63	5
							ZS-414	71-89			54-72	8.5
							ZS-415	87-105			70-88	8.5
							ZS-416	103-121			86-104	8.5
IM-882	0.01	55~153	2	± 20	3 or less	240	ZS-417	119-137	90		102-120	8.5
							ZS-418	135-153			118-136	8.5

*φD=Measuring Range - 2H



One Revolution Internal Dial Caliper Gauges



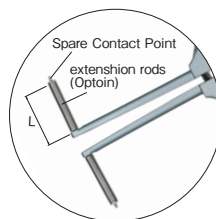
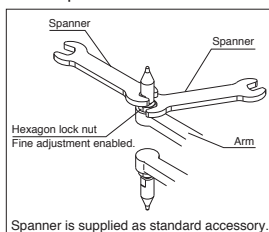
Specifications

Model	Graduation (mm)	Measuring Range (mm)	Indicating range (mm)	Indication Error (μm)	Measuring Force (N)	Spare Contact Point			Maximum Measuring depth A (mm)	Entrance diameter φD (mm)*	Groove depth H (mm)	Groove width B (mm)	Weight (g)	
						Code No.	Extension Rods	Measuring Range (mm)						
IM-880B	0.01	20~35	1.4	±20	3 or less	ZS-423	ZS-423	-	19.3~20.7	70	14.3	2.5	2.5	196
						ZS-423	ZS-424	-	20.3~21.7		15.3	2.5		
						ZS-424	ZS-424	-	21.3~22.7		14.3	3.5		
						ZS-424	ZS-425	-	22.3~23.7		15.3	3.5		
						ZS-425	ZS-425	-	23.3~24.7		15.3	4		
						ZS-425	ZS-426	-	24.3~25.7		16.3	4		
						ZS-426	ZS-426	-	25.3~26.7		17.3	4		
						ZS-426	ZS-427	-	26.3~27.7		18.3	4		
						ZS-427	ZS-427	-	27.3~28.7		19.3	4		
						ZS-427	ZS-428	-	28.3~29.7		20.3	4		
						ZS-428	ZS-428	-	29.3~30.7		21.3	4		
						ZS-428	ZS-429	-	30.3~31.7		22.3	4		
						ZS-429	ZS-429	-	31.3~32.7		23.3	4		
						ZS-426	ZS-426	ZS-646	32.3~33.7		24.3	4		
						ZS-426	ZS-427	ZS-646	33.3~34.7		25.3	4		
ZS-427	ZS-427	ZS-646	34.3~35.7	26.3	4									
IM-881B	0.01	30~62	1.4	±20	3 or less	ZS-408	ZS-408	-	29.3~38.7	75	24	3	2.5	218
						ZS-409	ZS-409	-	35.3~44.7		27.4	4.3		
						ZS-410	ZS-410	-	41.3~50.7		33.4	4.3		
						ZS-411	ZS-411	-	47.3~56.7		39.4	4.3		
						ZS-412	ZS-412	-	53.3~62.7		45.4	4.3		
						ZS-413	ZS-413	-	54.3~73.7		45	5		
IM-882B	0.01	55~153	1.4	±20	3 or less	ZS-414	ZS-414	-	70.3~89.7	90	54	8.5	3.5	240
						ZS-415	ZS-415	-	86.3~105.7		70	8.5		
						ZS-416	ZS-416	-	102.3~121.7		86	8.5		
						ZS-417	ZS-417	-	118.3~137.7		102	8.5		
						ZS-418	ZS-418	-	134.3~153.7		118	8.5		

Optional Extension Rods

- IM-880 series dialcaliper gauges can measure internal dimension up to measuring range in the right list by installing extension rods. Standard products of spare extension rods can be used as it is.

Mounting Method of Spare Contact Point



IM-880: measuring range with extension rods (mm)

Spare Contact Point	extension rods	Measuring Range	
ZS-646 L=7	ZS-423	34-37	
	ZS-424	36-39	
	ZS-425	38-41	
	ZS-426	40-43	
	ZS-427	42-45	
	ZS-428	44-47	
	ZS-429	46-49	
	ZS-647 L=14	ZS-423	48-51
		ZS-424	50-53
		ZS-425	52-55
		ZS-426	54-57
		ZS-427	56-59
		ZS-428	58-61
	ZS-648 L=21	ZS-429	60-63
		ZS-423	62-65
ZS-424		64-67	
ZS-425		66-69	
ZS-426		68-71	
ZS-427		70-73	
ZS-649 L=28	ZS-428	72-75	
	ZS-429	74-77	
	ZS-423	76-79	
	ZS-424	78-81	
	ZS-425	80-83	
	ZS-426	82-85	
	ZS-427	84-87	
	ZS-428	86-89	
ZS-429	88-91		

IM-881: measuring range with extension rods (mm)

Spare Contact Point	extension rods	Measuring Range
ZS-693 L=15	ZS-408	60-68
	ZS-409	66-74
	ZS-410	72-80
	ZS-411	78-86
	ZS-412	84-92
	ZS-408	90-98
ZS-694 L=30	ZS-409	96-104
	ZS-410	102-110
	ZS-411	108-116
	ZS-412	114-122
ZS-695 L=45	ZS-408	120-128
	ZS-409	126-134
	ZS-410	132-140
	ZS-411	138-146
ZS-412	144-152	

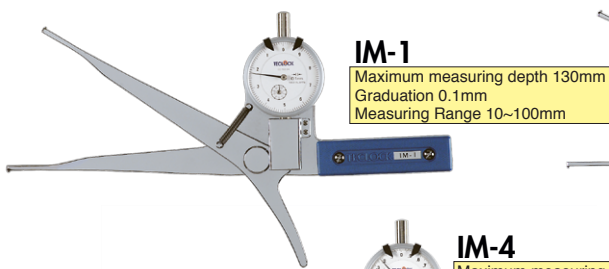
IM-882: measuring range with extension rods (mm)

Spare Contact Point	extension rods	Measuring Range
ZS-696 L=48	ZS-413	151-169
	ZS-414	167-185
	ZS-415	183-201
	ZS-416	199-217
	ZS-417	215-233
	ZS-418	231-249
	ZS-413	247-265
	ZS-414	263-281
	ZS-415	279-297
	ZS-416	295-313
	ZS-417	311-329
	ZS-418	327-345

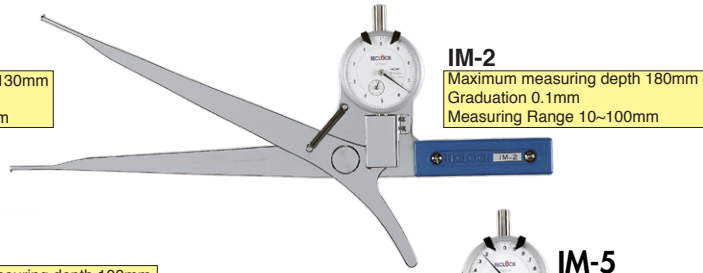


Internal Dial Caliper Gauges

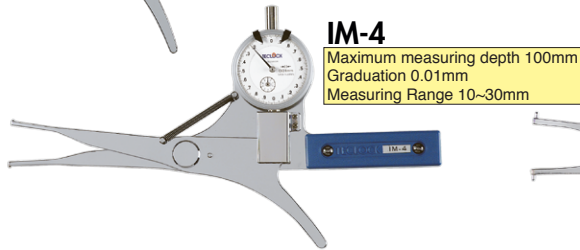
- These gauges are designed for use in measuring deep internal diameter of bores of castings etc, and for internal reading in fabrications. Clearance has been provided for use in recessed bores. The convenient retraction lever allows one-hand operation.



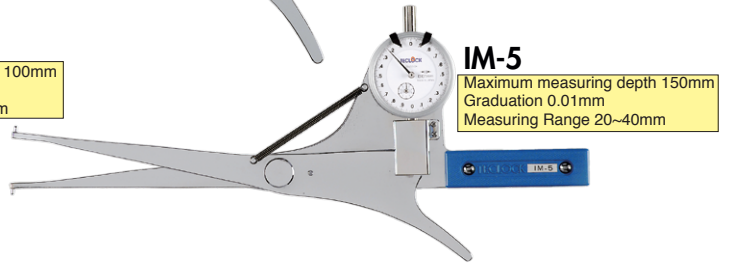
IM-1
Maximum measuring depth 130mm
Graduation 0.1mm
Measuring Range 10~100mm



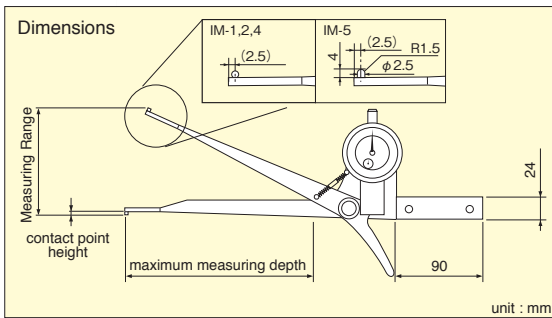
IM-2
Maximum measuring depth 180mm
Graduation 0.1mm
Measuring Range 10~100mm



IM-4
Maximum measuring depth 100mm
Graduation 0.01mm
Measuring Range 10~30mm



IM-5
Maximum measuring depth 150mm
Graduation 0.01mm
Measuring Range 20~40mm



Specifications

Model	Graduation (mm)	Measuring Range (mm)	Indication Error (mm)	Maximum measuring depth (mm)	Contact point height (mm)	Measuring Force (N)	Weight (g)
IM-1	0.1	10~100	±0.1	130	2	5 or less	500
IM-2	0.1	10~100	±0.1	180	2	5 or less	620
IM-4	0.01	10~30	±0.02	100	2	5 or less	500
IM-5	0.01	20~40	±0.02	150	4	5 or less	600

Internal size of workpiece is 10mm, 15mm, 20mm and 30mm or over against measuring applicable depth.

Model	Internal size			
	10	15	20	30~
IM-1	35	50	80	130
IM-2	35	50	80	180
IM-4	35	50	80	100
IM-5	-	-	140	150

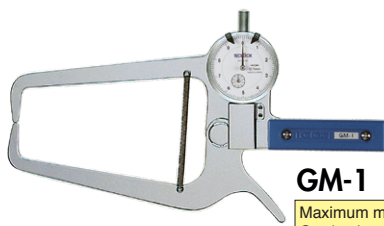
unit : mm

Inside of workpiece should be straight or round shape without step etc.



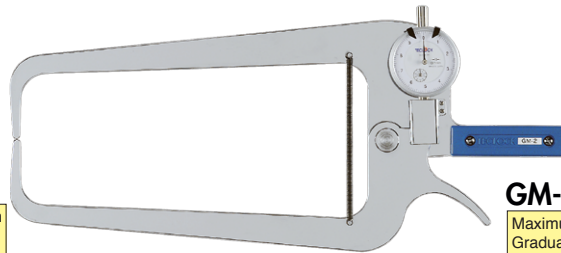
External Dial Caliper Gauges

- These gauges are designed for use in measuring external dimension of thick and large measuring work piece or special shape products which seem to be difficult to measure.
- Special order can be produced.



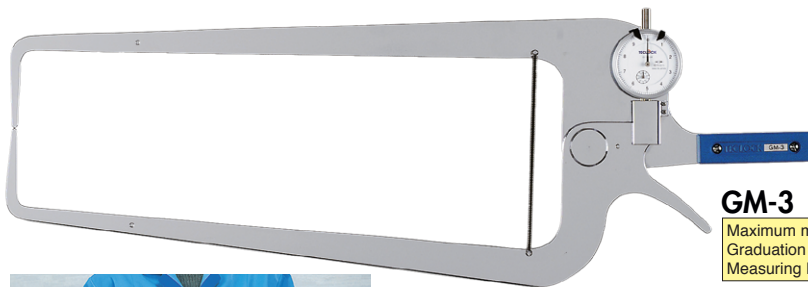
GM-1

Maximum measuring depth 125mm
Graduation 0.1mm
Measuring Range 0~90mm



GM-2

Maximum measuring depth 250mm
Graduation 0.1mm
Measuring Range 0~90mm

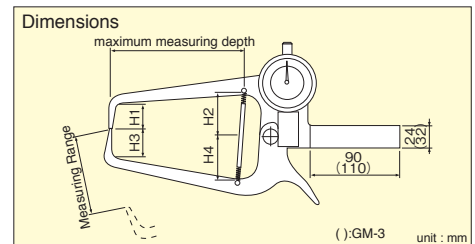


GM-3

Maximum measuring depth 400mm
Graduation 0.1mm
Measuring Range 0~90mm



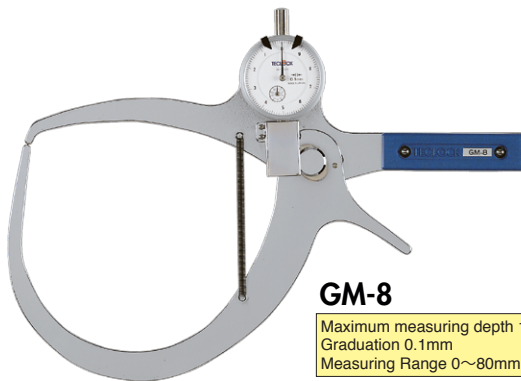
Overall length of GM-3 is large as 635mm.



Dimension table

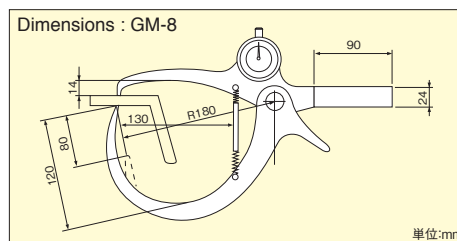
Model	H ₁	H ₂	H ₃	H ₄
GM-1	25	40	25	40
GM-2	50	60	50	60
GM-3	60	70	60	80

unit : mm



GM-8

Maximum measuring depth 130mm
Graduation 0.1mm
Measuring Range 0~80mm



Specifications

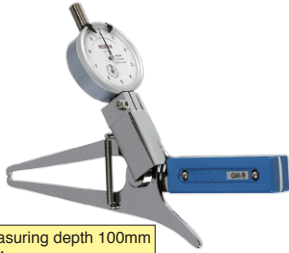
Model	Graduation (mm)	Measuring Range (mm)	Indication Error (mm)	Maximum measuring depth (mm)	Measuring Force (N)	Weight (g)
GM-1	0.1	0~90	±0.1	125	5 or less	530
GM-2	0.1	0~90	±0.1	250	5 or less	800
GM-3	0.1	0~90	±0.2	400	10 or less	1,400
GM-8	0.1	0~80	±0.1	130	5 or less	550



Caliper Gauge

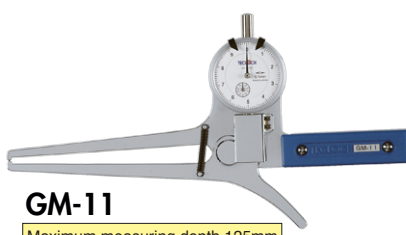
GM-9

Maximum measuring depth 100mm
Graduation 0.1mm
Measuring Range 0~30mm



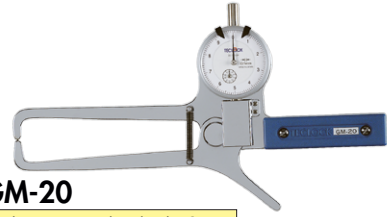
GM-11

Maximum measuring depth 125mm
Graduation 0.1mm
Measuring Range 0~50mm



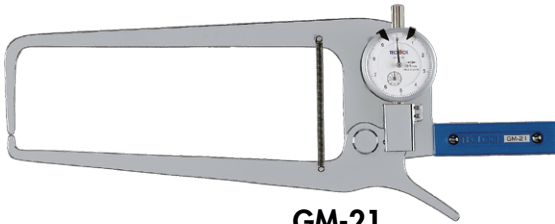
GM-20

Maximum measuring depth 125mm
Graduation 0.1mm
Measuring Range 0~80mm



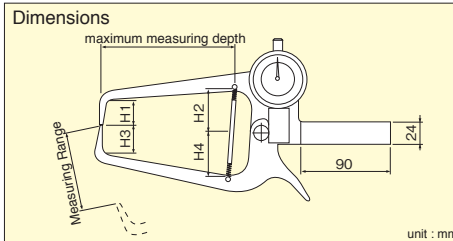
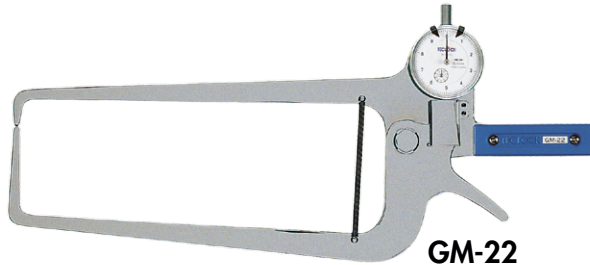
GM-21

Maximum measuring depth 220mm
Graduation 0.1mm
Measuring Range 0~90mm



GM-22

Maximum measuring depth 250mm
Graduation 0.1mm
Measuring Range 0~90mm



Dimension table

Model	H ₁	H ₂	H ₃	H ₄
GM-9	2	12	2	12
GM-11	2	6	2	6
GM-20	17	11	17	11
GM-21	65	70	10	15
GM-22	20	25	65	70

unit : mm

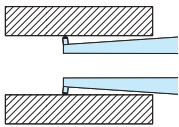
Specifications

Model	Graduation (mm)	Measuring Range (mm)	Indication Error (mm)	maximum measuring depth (mm)	Measuring Force (N)	Weight (g)
GM-9	0.1	0~30	±0.1	100	5 or less	460
GM-11	0.1	0~50	±0.1	125	5 or less	480
GM-20	0.1	0~80	±0.1	125	5 or less	500
GM-21	0.1	0~90	±0.1	220	5 or less	660
GM-22	0.1	0~90	±0.1	250	5 or less	720

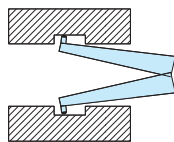
Usage Example

Internal Caliper Gauges

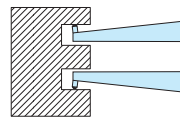
Internal dimension of deep position can be easily measured. (maximum measuring depth 180mm=IM-2)



Groove diameter of groove for "O" ring can be easily measured. (IM-808,IM-880 etc)

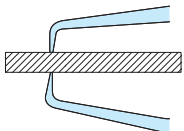


Measurement evading from screw, nuts etc. can be made.

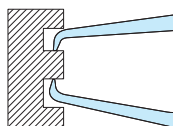


External Caliper Gauges

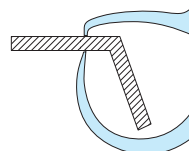
Thickness of long distance position of board shape workpiece can be measured. (maximum measuring depth 400mm=GM-3)



Thickness measurement in narrow area. (GM-9,GM-11)



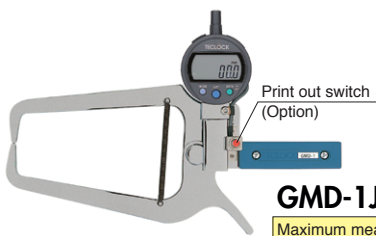
It can measure evading obstacles in front of measuring point. (GM-8,GMD-8J)





External Digital Caliper Gauges

- External dimension measuring instrument of which digital gauge is built into frame. This can treat statistics data and print out it by connecting it to the optional exclusive printer SD-765P (Please refer to page 30).
- It is possible to equip print out switch (Option).



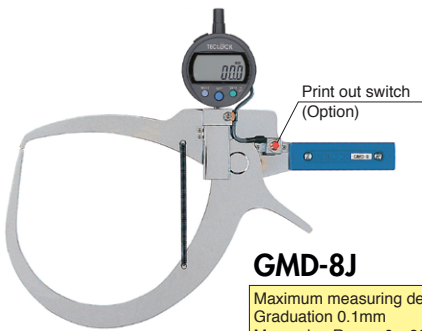
GMD-1J

Maximum measuring depth 125mm
Graduation 0.1mm
Measuring Range 0~90mm



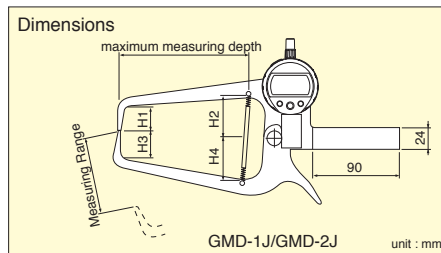
GMD-2J

Maximum measuring depth 250mm
Graduation 0.1mm
Measuring Range 0~90mm



GMD-8J

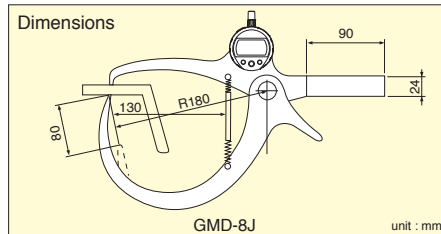
Maximum measuring depth 130mm
Graduation 0.1mm
Measuring Range 0~80mm



Dimension table

Model	H ₁	H ₂	H ₃	H ₄
GMD-1J	25	40	25	40
GMD-2J	50	60	50	60

unit : mm



Printer (Option)

Mini Printer for
Digital Caliper Gauges SD-765P
Connect cord ZE-018



Specifications

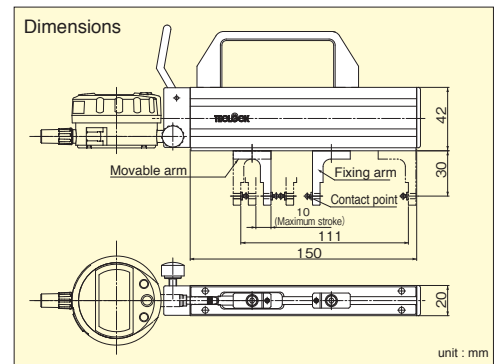
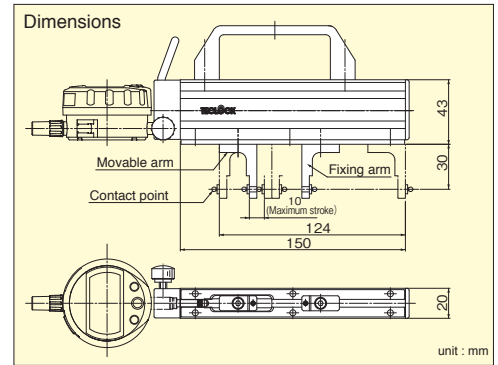
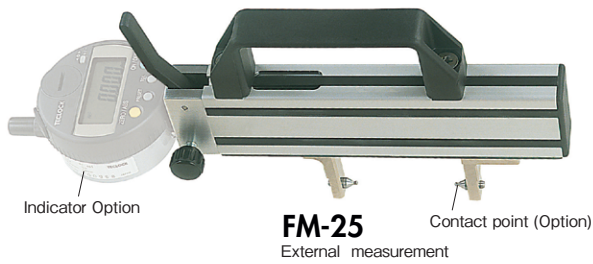
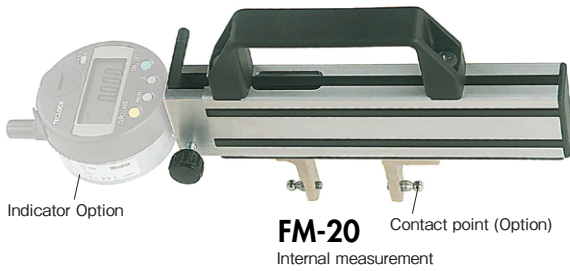
Model	Graduation (mm)	Measuring Range (mm)	Indication Error* (mm)	Maximum measuring depth (mm)	Measuring Force (N)	Weight (g)
GMD-1J	0.1	0~90	±0.1	125	5 or less	560
GMD-2J	0.1	0~90	±0.1	250	5 or less	830
GMD-8J	0.1	0~80	±0.1	130	5 or less	580

*The quantizing error function is not included.



Arm Slide Type Caliper Gauges

- Stable and accurate measuring dimension (comparative measurement) is possible for internal and external dimension, as this can well stick to workpiece with measurement method by sliding movable arm.
- Boxy type, easily to hold, lightweight and solid, this is suitable to inspect large volume at work site.
- This can be used for various objectives to measure internal gears, internal diameter female screw, plain gear, spline shaft of special key, over pin diameter of separation shaft and pitch gear thickness.
- Contact point is separately produced on demand such as ball type, flat type, knife edge type. Please advise dimension and shape.
- As Digital indicator is an option, please select it according to an objective. Because dial indicator can be installed.
- This can print out data by connected to Digital mini printer SD-763P (option).



Groove internal diameter is comparatively measured by using Digital indicator with 0.001mm resolution

Specifications

Model	Application	Measuring Range (mm)	Arm length (mm)	Measuring force (N)	Fitting holes (mm)	Weight (g)
FM-20	Internal	20~130	30	7~9	φ3.5	380
FM-25	External	0~100	30	7~9	φ3.5	380

Contact point and digital indicator are not included.