



ABOVE AND BEYOND **HONING**

SUNNEN DIAL BORE GAGES



32,85±0,05

Ø 4,20^{+0,1}_{-0,0}
90° TO S
M5 x 0,8-6H
2 HOLES

6

20
2x

NO ANGULAR RE...
KEYWAY AND C...

Ø 30,0265±0,0065 (F6)

-A-

8

THE SUNNEN SYSTEM . . .

It's complete

The idea of a dial bore gage has always been good. And now, Sunnen® has put together a complete Dial Bore Gaging System that does a lot of good things the gage could never do alone. From setup to readout this system helps you gage inside diameters to within tenths metric versions (0,002mm) with less fuss and more confidence than ever before. Five .0001" reading Gages and two master Setting Fixtures cover all bores from .054"-8" (1,37 mm-203 mm). The G-822A Gage extension kit allows measurement of bores from 6"-12" (152,4 mm-304.8 mm). Consult your Sunnen field engineer for details.

It's easy

The system does it. Each piece, each feature works together to make bore gaging faster and easier than ever before. The unique Size-Setting Fixture that you can dial to exact size in seconds. The Quick-Set Wrench that takes the fussiness out of adjusting gage points and presets the Gage to within .001" (0,025 mm) of final calibration. The Retractable Gage Head and Adjustable Centralizer for easy "in and out" even with interrupted bores.

It's reliable

A new Shock-Shield protects the indicator against drift and movement caused by heat and rough handling. All gaging points are inexpensive, easily replaced carbide balls. A patented, wear-free ball crank insures repeatability over a long, long life. And a master calibrating ring is provided with Sunnen Setting Fixtures so you can quickly check the system out right on the job.

It's Sunnen

Sunnen builds, services and stands behind this gaging system. You can count on the same accuracy and reliability you've always found in Sunnen honing machines, gages and other bore-sizing products.



HOW THE SUNNEN SYSTEM WORKS

Fast, foolproof setup without ring gages, micrometers or jo blocks.

- 1 Preset Gage to within .001" (0,025 mm) of size** with Quick-Set Wrench. This one tool adjusts gaging points and locks them.
- 2 Put the Gage in the Setting Fixture.** Nest holds it upright and secure during calibration.
- 3 Dial the size desired on the Setting Fixture.**
- 4 Rock the Gage for minimum reading.**
- 5 Zero the Gage . . . AND GO!**

(Some methods may vary depending on size range of gage.)

Sunnen features make this the Dial Bore Gage you trust

Shock-Shield protects dial from hand heat and jarring to help assure reliable readings.

Press here. Gage head retracts.

Gage head slips easily in and out of interrupted holes.

Adjustable centralizers for proper centralization over entire diameter range. One twist adjusts gaging tension so head goes smoothly in and out of any size hole.



All standard Sunnen Dial Bore Gages are TENTH READING (Metric models read in 0,002 mm increments.) Special order gages available with .0005" (0,010 mm) readouts.

Dial can be indexed 90° for easy reading from any angle.

Patented wear-proof ball crank assures repeatability over a long, long life.

Carbide gaging points are both long-wearing and replaceable.

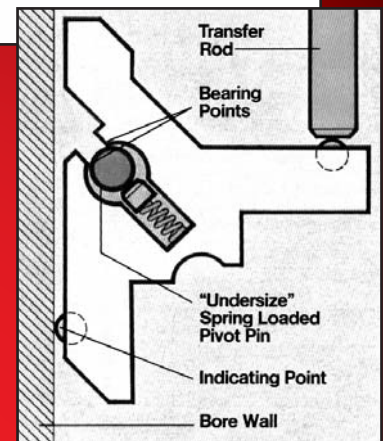
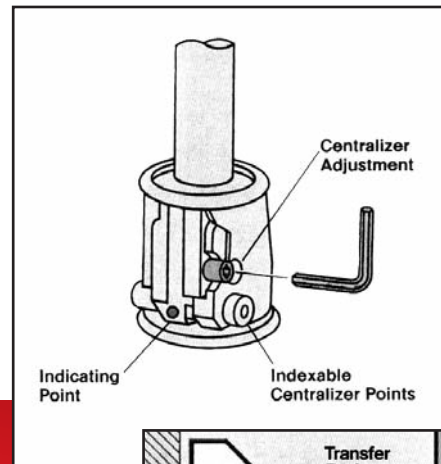
Accurate centralizing action assured under all conditions.

Position of the gage centralizer points can be adjusted to minimize interference or shock when traveling over cross holes or grooves in the bore being measured. Unique centralizer design insures accurate centering action even with gage tilted off the bore axis. Maintains accurate readings when gaging in close quarters.

Centralizer points can be indexed easily as they wear . . . greatly extending their useful life.

Exclusive ball crank pivot eliminates wear as a factor in gaging accuracy.

Spring-loaded pivot pin actually "wears in" as gage is used. Repeatability stays factory new even with extended use under tough production shop conditions.



Note: Models GR-3000 and GRM-3000 for small bores from .054" (1,37 mm) to .535" (13,59 mm) operate on a probe and transfer pin design rather than the centralizer design described above.



The Gages

Standard Sunnen Dial Bore Gages read out in tenths (metric versions 0,002 mm). Models are also available that read out in five-tenths (metric version 0,010 mm). All models (except GR-3000 and GRM-3000) feature all-carbide gaging points, wear-proof ball crank, and adjustable centralizers. Each gage comes packed in its own sturdy box with all tools and wrenches required for setup and adjustment. *Note: For the Sunnen Digital Dial Bore Gage, Just add "E" to the suffix of the gage part number (i.e. GR-2245E).*



Diameter Range		Max. Gaging Depth		Overall Length		Model Number				Shipping Weight	Notes
inches	mm	inches	mm	inches	mm	.0001" Reading Indicators	0,002 mm Reading Indicators	.0005" Reading Indicators	0,010 mm Reading Indicators		
.054 to .535	1,37 to 13,59	.43 to 1.81	11 to 46	Depends on probe used		GR-3000 (See chart at right)	GRM-3000 (See chart at right)	—	—	2 lbs (1kg)	These gages are retractable. Must be used with probes/transfer pins which are ordered separately. Blind bore probes are available on special order. Can be set with CF-502 Setting Fixture (CF-502M for metric) using CF-540 size-setting adapter.
.495 to .750	12,6 to 19,0	2.5 to 7	62 to 175	7.3125 to 11.8125	187 to 302	GA-4051 GA-4101 GA-4141	GAM-4051 GAM-4101 GAM-4141	GA-4055† GA-4105† GA-4145†	GAM-4055† GAM-4105† GAM-4145†	1.5 lbs (0,7kg)	No retractor in this size range. Measures to within .200" (5,0mm) of the bottom of a blind bore. Carbide balls replaceable in the indicating finger only. Can be set with CF-502 Setting Fixture. (CF-502M for metric.)
.740 to 1.190	18,8 to 30,2	3.5 to 12	88 to 300	9.1875 to 17.6875	235 to 451	GR-6071 GR-6121 GR-6241	GRM-6071 GRM-6121 GRM-6241	GR-6075† GR-6125† GR-6245†	GRM-6075† GRM-6125† GRM-6245†	2 lbs (1kg)	All gages retractable in this size range. Measures to within .270" (6,8mm) of the bottom of a blind bore. Carbide balls replaceable in the indicating finger only. Can be set with CF-502 Setting Fixture. (CF-502M for metric.)
1.180 to 2.000	30,0 to 50,8	3.5 to 12	88 to 300	9.25 to 17.75	237 to 452	GR-9071 GR-9121 GR-9241	GRM-9071 GRM-9121 GRM-9241	GR-9075† GR-9125† GR-9245†	GRM-9075† GRM-9125† GRM-9245†	4 lbs (1,8kg)	All gages retractable in this size range. Measures to within .335" (8,5mm) of the bottom of a blind bore. Carbide balls replaceable in both indicating finger and extension points. Can be set with CF-502 Setting Fixture. (CF-502M for metric.)
2.000 to 6.000	50,0 to 150,0	3 to 12	75 to 300	8 to 17	203 to 432	GA-2031 GA-2061 GA-2121	GAM-2031 GAM-2061 GAM-2121	GA-2035† GA-2065† GA-2125	GAM-2035† GAM-2065† GAM-2125†	6 lbs (2,7kg)	These gages are not retractable. Measures to within .500" (13mm) of the bottom of a blind bore. Carbide balls replaceable in both indicating finger and extension points. Can be set with CF-1126 Setting Fixture (CF-1126M for metric.)
2.000 to 6.000	50,0 to 150,0	6 to 24	150 to 600	11 to 29	280 to 737	GR-2061 GR-2121 GR-2241*	GRM-2061 GRM-21261 GRM-2241*	GR-2065† GR-2125† GR-2245†	GRM-2065† GRM-2125† GRM-2245†	6 lbs (2,7kg)	The following Sleeve Assemblies are available to change to a different gaging depth when using a GA-2000 series gage: GA-203 3" (75mm) GA-206 6" (150mm) GA-212 12" (300mm) GA-224 24" (600mm) Note: Sleeve assemblies are not available for retractable shaft extensions and are not interchangeable in the field.
6.000 to 12.000	152,4 to 305,8	The range of Sunnen GA/GR-2000 series dial bore gages can be extended to 12" (300mm) by substituting oversize centralizer points and adding gage point extensions. Select the appropriate Series 2000 gage from the table above, and order: G-822A Gage Extension Kit (Two oversize centralizer points, G-632A #7 gage point extension, and G-634A #8 gage point extension.)				extension.) G-822A can be installed in the field or at the factory. Note: When GA/GR-2000 series gages are modified with G-822A to measure diameters over 6" (150mm), "one tenth" accuracy may not be obtained. "Half thousandths" reading indicators are recommended for diameters over 6" (150mm). Contact Sunnen Customer Service for information.				The CF-1126 will not accommodate a dial bore gage with the G-822A Oversize Centralizers in place on a GA/GR-2000 series gage. Diameters over 8" (203mm) must be set with a gage ring or jo block.	

* Furnished with Metal Case for accessories only.

† Available as a special order – call Customer Service in St. Louis.

Note: Contact your Sunnen representative for information on: special gaging depth gages, carbide inserted gaging probes and transfer pins; blind hole probes and transfer pin and accessories.

GAGES FOR BORES AS SMALL AS .054" (1,37 MM)

Sunnen offers a Dial Bore Gage for checking a wide range of extra small bores. It can be set on any .00001" increment from .535" diameter all the way down to .054" (13,59 mm to 1,37 mm). Size is set with the standard Sunnen CF-502 Setting Fixture used with .5" to 2" (12,7 mm to 50,8 mm) dial bore gages. This small-bore gage gives you all the features and benefits that have made Sunnen Dial Bore Gages so popular in shops of all kinds . . . worldwide.

GR-3000 Dial Indicator Assembly

Consists of a tenth reading indicator, probe retractor and probe retainer bushing in a reinforced nylon insulating shroud. Metric model GRM-3000 reads in increments of 0,002 mm.

GR-3000 Series Gage Probes and Transfer Pins

Probes and pins must be ordered separately. (See Charts in this brochure.)

Special Orders

Transfer pins, blind hole probes, probe extensions and a right angle attachment can be purchased on special order. Call Sunnen in St. Louis for Bulletins and ordering information.



Probe Extension*

Available for probes .323" (8,2 mm) or larger. Probe extensions are 2-1/2" (63,5 mm) long, and up to three can be assembled together. Part Number: **KZ1X-3500**.

Blind Hole Probes and Transfer Pins

Order standard probe and transfer pin number and add - **KZOX** to number. Example: **G-1240-KZOX**. Note: G-1055 probe and G-2037 transfer pin not available in blind hole configuration. Available 4 weeks after receipt of order.

*Standard CF-502 Setting Fixture nest does not work with these accessories. Alternative methods of setting size must be used. Available 4 weeks after receipt of order.



Carbide Inserted Probes and Transfer Pins

For applications where gage points are exposed to extreme wear conditions such as heavy production, rough workpieces or abrasive materials. Not available in sizes smaller than .165" (4,2 mm). Order standard probe and transfer pin number and add **KY5X** to number. Example: **G-1240-KY5X**. Available 2-4 weeks after receipt of order.

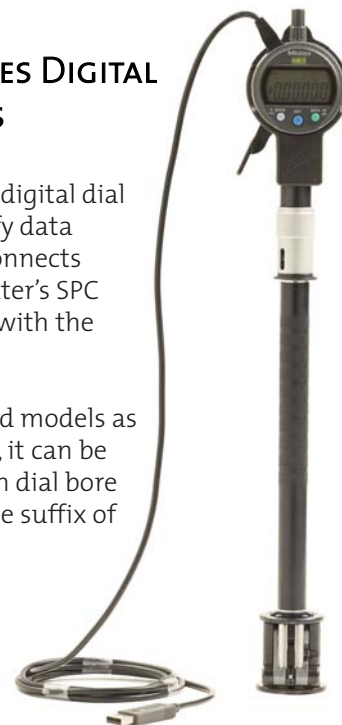
Right Angle Attachment*

Available for special conditions where it is difficult to read the gage or the total gage height causes a problem. Part Number: **KZ1X-90**.

SUNNEN'S E-SERIES DIGITAL DIAL BORE GAGES

Sunnen's easy-to-read digital dial bore gages will simplify data analysis as the gage connects directly to your computer's SPC software spreadsheet with the option cable (LU2X1).

Available in 16 standard models as well as special lengths, it can be ordered on any Sunnen dial bore gage. Just add "E" to the suffix of the gage part number (i.e. GR-2245E).



THE SETTING FIXTURES

Sunnen's unique Setting Fixtures multiply the usefulness of the Dial Bore Gages many times over. Two models combine to cover a continuous range of .054" to 8" in .0001" increments (1,37 mm to 150 mm in 0,002 mm increments). Both models feature a heavy stress-relieved cast iron base, lapped carbide micrometer anvils, and built-in magnifier for fast, accurate setup. Each Setting Fixture comes with its own master calibrating ring.

For 2.000" to 8.000" diameters —

Model CF-1126 combines a large micrometer head and four lapped setting standards covering continuous range from 2" to 8" in .0001" increments.

Metric version CF-1126M has a range of 50 to 203 mm marked in 0,002 mm increments. May be used without taking it out of protective metal box.

For .054" to 2.000" diameters —

Model CF-502 is equipped with a large micrometer head with range of 0" to 2" marked in .0001" increments.

Metric version CF-502M has a 0 to 51 mm micrometer head marked in 0,002 mm increments. Supplied in a sturdy, nested box.



GR-3000 PROBES AND TRANSFER PINS

Diameter Range		Probe #	Transfer Pin #	Maximum Gaging Depth		Overall Length	
inches	mm			inches	mm	inches	mm
.054/.061	1,37/1,55	G-1055	G-2037	.43	11	6.6	167
.059/.075	1,50/1,90	G-1070		.63	16	6.9	174
.071/.087	1,80/2,20	G-1080	G-2059	.63	16	6.9	174
.081/.096	2,05/2,45	G-1090		.63	16	6.9	174
.089/.108	2,25/2,75	G-1100		.82	21	7.1	179
.098/.118	2,50/3,00	G-1110		.82	21	7.1	179
.108/.128	2,75/3,25	G-1120		.82	21	7.1	179
.118/.138	3,00/3,50	G-1130	G-2089	.82	21	7.1	179
.128/.148	3,25/3,75	G-1140		.82	21	7.1	179
.138/.157	3,50/4,00	G-1150		.82	21	7.1	179
.148/.167	3,75/4,25	G-1160		.82	21	7.1	179
.165/.189	4,20/4,80	G-1180		1.53	39	7.7	195
.185/.209	4,70/5,30	G-1200		1.53	39	7.7	195
.205/.228	5,20/5,80	G-1220		1.53	39	7.7	195
.224/.248	5,70/6,30	G-1240		1.53	39	7.7	195
.244/.268	6,20/6,80	G-1260		1.53	39	7.7	195
.264/.287	6,70/7,30	G-1280	G-2264	1.53	39	7.7	195
.283/.307	7,20/7,80	G-1300		1.53	39	7.7	195
.303/.327	7,70/8,30	G-1320		1.53	39	7.7	195
.323/.346	8,20/8,80	G-1340		1.53	39	7.7	195
.343/.366	8,70/9,30	G-1360		1.53	39	7.7	195
.362/.386	9,20/9,80	G-1380		1.53	39	7.7	195
.370/.417	9,40/10,60	G-1400		1.81	46	7.7	195
.409/.457	10,40/11,60	G-1440	G-2370	1.81	46	7.7	195
.449/.496	11,40/12,60	G-1480		1.81	46	7.7	195
.488/.535	12,40/13,60	G-1520		1.81	46	7.7	195

Probe Extension*

Available for probes .323" (8,2 mm) or larger. Probe extensions are 2-1/2" (63,5 mm) long, and up to three can be assembled together.

Part Number: KZ1X-3500.

Blind Hole Probes and Transfer Pins

Order standard probe and transfer pin number and add **-KZOX** to part number. *Example: G-1240-KZOX.*

Note: G-1055 probe and G-2037 transfer pin not available in blind hole configuration.

Available 4 weeks after receipt of order.

Right Angle Attachment*

Available for special conditions where it is difficult to read the gage or the total gage height causes a problem.

Part Number: KZ1X-90.

* Standard CF-502 Setting Fixture does not work with these accessories. Alternative methods of setting the size must be used.

Available 4 weeks after receipt of order.

GR-3000 Probe Kits

Probe kits to cover the more popular diameters are available as listed below. Both kits are supplied in a hinged, nested box.

Probe Kit G-3025

Consists of 15 probes and 2 transfer pins. Covers a continuous diameter range from .165" to .535" (4,2 mm to 13,6 mm).



Probe #	Diameter Range		Transfer Pin #	
	inches	mm		
G-1180	.165/.189	4,20/4,80	G-2264	
G-1200	.185/.209	4,70/5,30		
G-1220	.205/.228	5,20/5,80		
G-1240	.224/.248	5,70/6,30		
G-1260	.244/.268	6,20/6,80		
G-1280	.264/.287	6,70/7,30		
G-1300	.283/.307	7,20/7,80		
G-1320	.303/.327	7,70/8,30		
G-1340	.323/.346	8,20/8,80		
G-1360	.343/.366	8,70/9,30		
G-1380	.362/.386	9,20/9,80		
G-1400	.370/.417	9,40/10,60		G-2370
G-1440	.409/.457	10,40/11,60		
G-1480	.449/.496	11,40/12,60		
G-1520	.488/.535	12,40/13,60		

Probe Kit G-3050

Consists of 6 probes and 2 matching transfer pins which cover a .165" to .535" (4,2 mm to 13,6 mm) diameter range on even 1/16" (1,58 mm) increments.



Probe #	Diameter Range		Transfer Pin #	
	inches	mm		
G-1180	.165/.189	4,20/4,80	G-2264	
G-1260	.244/.268	6,20/6,80		
G-1320	.303/.327	7,70/8,30		
G-1380	.362/.386	9,20/9,80		
G-1440	.409/.457	10,40/11,60		G-2370
G-1520	.488/.535	12,40/13,60		



A LEGACY OF EXCELLENCE SINCE 1924

WORLDWIDE

Our global manufacturing, distribution, and sales and service network allows us to deliver quality Sunnen solutions worldwide.

And our state-of-the-art Technical Services Centers allow our technical experts to develop innovative solutions to customer application challenges. The Centers also provide answers for customer questions and training for Sunnen representatives around the world.

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