



**DIAL AND ELECTRONIC INDICATORS AND GAGES**

MODEL SERIAL NO.  
0675-9699

## TEST INDICATOR SNUGS AND SPLIT BUSHINGS USAGE GUIDE

### DOVE TAIL STYLE SNUGS:

PT22428: 3/32-1/4" (2.4-6.3mm) inch hole on one side and standard female dove connection on the other. For use with 708, 709 and 811 Test Indicators. Allows connection to 657AA, 657A, 657T Magnetic Base and PT017762 Holding Rod for 252 Height Stand and PT11770A Tool Post Holder or 711-49 Height Gage Attachment.

### ROUND CONNECTION SNUGS:

657S: 1/4" hole on both ends

PT18718: 3/32-1/4" hole on one end 5/16" on the other

PT18724: 3/32-1/4" hole on one end 3/8" on the other

657H: 3/8" inch hole on both ends

665D: 3/8" inch hole on one end .465" (11.8mm) on the other. Includes 665L (.375" bushing)

PT16846 (not shown): 3/4" inch hole on both ends

### UNIVERSAL STYLE SNUGS:

58S: 3/32-1/4" hole allows connection to 1/4", 5/16", 3/8" (6.3, 8, 9.5mm)

### UNIVERSAL DRUM STYLE SNUGS:

57S: 5/16" and 3/8" (8, 9.5mm) on one end and 9/64", 5/32", 3/16", 1/4" (3.5, 4, 4.8, 6.3mm) on the opposite

**NOTE:** 3/8-1/4" bushings can be used with some of the snugs above to change 3/8"-1/4" where required (see PT00764)

### SPLIT BUSHINGS:

657R: outside .312" (7.9mm), inside .250" (6.3mm), length 1.000" (25.4mm)

PT00764: .375" (9.5mm) outside, inside .250" (6.3mm), length 1/2" (12.7mm)

80SB: outside .375" (9.5mm), inside .219" (5.5mm), length 1/2" (12.7mm). Used to increase the stem diameter on Starrett 80 miniature indicators to standard .375" diameter.

25MSB: outside .375" (9.5mm), inside .316" (8mm), length 1/2" (12.7mm), converts metric stemmed indicator to standard 3/8" diameter

665L: outside .465 (11.8mm), inside .375" (9.5mm), length 1-1/4" (31.5mm)

25SB: outside .500" (12.7mm), inside .375" (9.5mm), length 1/2" (12.7mm)



### BEST PRACTICES FOR TEST INDICATORS AND HOLDERS

Test indicators are primarily used for testing or checking parts and for machine setups. They are a tool that is indispensable for working as a machinist or toolmaker. They are available in two types – plunger style and the lever style. Both are versatile, but the lever style is more adaptable to smaller, confined working areas.

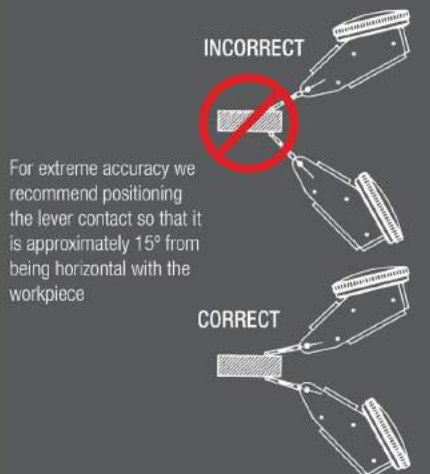
Unlike other indicators, the lever style's contact moves in an arc rather than in a straight line. This can cause a slight inaccuracy called "cosine error" if the angle of the lever to the workpiece is too steep. If, for example, a lever was set off an additional 20°, there could be an error of .0006" in a .010" range (0.012 mm in a 0.2mm range).

It is good practice, therefore, to keep your contact at or near 90° to the direction of movement.

Test indicators should always be "loaded" 1/10 to 1/4 of a turn before measuring.

Test indicators are comparative instruments that check and compare to known standards or that are used to zero-out setups.

We have a broad selection of holders shown in this section that allow you to use these indicators to the fullest. We've never seen a job that one of these holders combined with one of our test indicators could not handle.



# TEST INDICATORS

## 708, 708M, 709, 709M DIAL TEST INDICATORS WITH DOVETAIL MOUNTS

.020", .060"/0.2MM, 0.8MM

These precision test indicators offer an easy to read angled head and the flexibility of three dovetail mounts. Features include:

- Large 1-3/8" (35mm) dial diameter with angled head
- Precision gear-driven design with smooth, jeweled movement
- Replaceable contact point reverses automatically, always maintaining clockwise hand rotation
- Satin chrome finish for durability
- Contacts are frictionally adjustable and replaceable
- Revolution count hand on 708B and 709B models
- Meet or exceed ISO accuracy specification



708BZ

R708AZ



709BCZ

Individual Carbide Contact Points†						
Fits Models	Length		Ball Diameter		Part No.	EDP
	Inch	mm	Inch	mm		
.0001", .0005", 0.01mm Reading Models	13/16"	20mm	.040"	1mm	PT23942	65255
			.078"	2mm	PT23914†	64222
			.120"	3mm	PT23943	65256
.0001", .0005", 0.01mm Reading Models	1-23/64"	34.4mm	.078"	2mm	PT27024†	66239
.0001", .0005", 0.01mm Reading Models	1-5/64"	28.4mm	.078"	2mm	PT25577†	67294
0.002mm Reading Models Only	5/8"	16mm	.078"	2mm	PT23953†	65868

† PT23914, PT27024, PT25577 and PT23953 furnished as standard.

‡ Length of carbide contacts must be the same as contacts normally furnished.

### 708, 709 Dial Test Indicators with dovetail mounts

Grad	Range	Dial Reading	Carbide Contact Point		Description	Dial Color	Cat. No.	EDP	With SLC**	
			Length	Ball Dia.					Cat. No.	EDP
.0001"	.010"	0-5-0	13/16" (20mm)	.078" (2mm)	Without Attachments	White	708AZ	64212	708AZ W/SLC	66866
						Red	R708AZ	64603	R708AZ W/SLC	66867
						Black	B708AZ	64607	B708AZ W/SLC	66868
						White	708ACZ	64217	708ACZ W/SLC	66869
						Red	R708ACZ	64604	R708ACZ W/SLC	66870
						Black	B708ACZ	64608	B708ACZ W/SLC	66871
.0001"	.020"	0-5-0	13/16" (20mm)	.078" (2mm)	Without Attachments	White	708BZ	64213	708BZ W/SLC	66874
					With Attachments*	White	708BCZ	64218	708BCZ W/SLC	66875
.0005"	.030"	0-15-0	13/16" (20mm)	.078" (2mm)	Without Attachments	White	709AZ	64214		
						Red	R709AZ	64605		
						Black	B709AZ	64609		
						White	709ACZ	64219		
						Red	R709ACZ	64606		
						Black	B709ACZ	64610		
.0005"	.050"	0-25-0	1-23/64" (34.4mm)	.078" (2mm)	Without Attachments	White	709ALZ	65857		
					With Attachments*	White	709ALCZ	65858		
.0005"	.060"	0-15-0	13/16" (20mm)	.078" (2mm)	Without Attachments	White	709BZ	64215		
					With Attachments*	White	709BCZ	64220		

### 708M, 709M Dial Test Indicators with dovetail mounts

0.002mm	0.2mm	0-100-0	5/8" (16mm)	.078" (2mm)	Without Attachments	Yellow	708MAZ	65864	708MAZ W/SLC	66872
					With Attachments*	Yellow	708MACZ	65865	708MACZ W/SLC	66873
0.01mm	0.8mm	0-40-0	13/16" (20mm)	.078" (2mm)	Without Attachments	Yellow	709MAZ	64216		
					With Attachments*	Yellow	709MACZ	64221		
0.01mm	1.0mm	0-50-0	1-5/64" (28.4mm)	.078" (2mm)	Without Attachments	Yellow	709MALZ	67092		
					With Attachments*	Yellow	709MALCZ	67093		

\* Attachments include dovetail body clamp (PT22429/EDP 72441), tool post holder (PT11770A/EDP 71361), swivel post snug with dovetail indicator clamp (PT22428/EDP 72440), and snug and rod unit (Inch: PT22430/EDP 72442 or Millimeter: PT27171/EDP 66457).

\*\* Includes redemption card for Standard Letter of Certification



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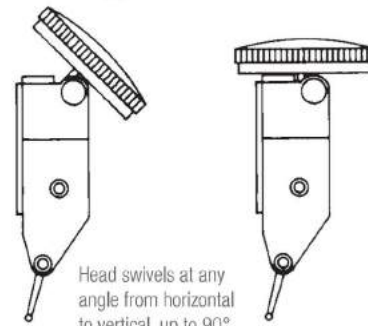
## TEST INDICATORS

### 811, 811M DIAL TEST INDICATORS WITH SWIVEL HEAD

.060", 0.8MM

These are some of the most versatile and unique indicators available, the swivel head feature allows positioning to suit your line of sight from horizontal to vertical and at any angle up to 90°.

- Two positioning mounts work with dovetail test indicator accessories
- Contacts are frictionally adjustable and replaceable
- Contact point reverses, always maintaining clockwise hand rotation
- Contacts also available individually in steel, carbide, and different sizes
- Smooth, jeweled movement
- Large, 1-3/8" (35mm) dial diameter for increased readability
- Inch reading indicators are available with white, red, or black dials – metric indicators with yellow dials



#### Individual Contact Points for 811 and 811M Dial Test Indicators with Swivel Head

Fits 811 Models	Length		Ball Diameter		Material	Part No.	EDP
	Inch	mm	Inch	mm			
.0005" and 0.01mm Reading Only	5/8"	16mm	.032"	0.8mm	Steel	PT23062	72451
					Carbide	PT23062X	72452
			.078"	2mm	Steel	PT22315	72443
					Carbide	PT22315X	72453
.001" Reading Only	1-5/16"	33mm	.032"	0.8mm	Steel	PT23064	72454
					Carbide	PT23064X	72455
			.078"	2mm	Steel	PT23011	72444
					Carbide	PT23011X	72456

#### 811, Dial Test Indicators with Swivel Head

Graduation	Range	Dial Reading	Steel Contact Points		Description	Dial Color	Cat. No.	EDP
			Length Inch (mm)	Ball Dia. Inch (mm)				
.0005"	.030"	0-15-0	5/8" (16mm)	.078" (2mm)	In Case without Attachments	White	811-5PZ	57080
						Black	B811-5PZ	63262
						Red	R811-5PZ	63266
					In Case with Attachments*	White	811-5CZ	57079
						Black	B811-5CZ	63261
						Red	R811-5CZ	63265
.001"	.060"	0-30-0	1-5/16" (33mm)	.078" (2mm)	In Case without Attachments	White	811-1PZ	57082
						Black	B811-1PZ	63264
						Red	R811-1PZ	63268
					In Case with Attachments*	White	811-1CZ	57081
						Black	B811-1CZ	63263
						Red	R811-1CZ	63267

#### 811M Dial Test Indicators with swivel head

0.01mm	0.8mm	0-40-0	5/8" (16mm)	.078" (2mm)	In Case without Attachments	Yellow	811-MPZ	57084
					In Case with Attachments*		811-MCZ	57083

\* Attachments include dovetail body clamp (PT22429/EDP 72441), tool post holder (PT11770A/EDP 71361), swivel post snug with dovetail indicator clamp (PT22428/EDP 72440), and snug and rod unit (Inch: PT22430/EDP 72442 or Millimeter: PT27171/EDP 66457).



# TEST INDICATORS

## ATTACHMENTS FOR 708, 709, AND 811 TEST INDICATORS



### A. DOVETAIL BODY CLAMP

PT22429. 3/16" (4.8mm) diameter rod. For use in chucks, collets or surface gage snugs.

### B. TOOL POST HOLDER

PT11770A. 1/4" x 1 5/16" (6.3 x 33mm) post and 1/4" x 1/2" (6.3 x 12.7mm) shank. For use in tool posts or in height gages.

### C. SWIVEL POST SNUG WITH DOVETAIL INDICATOR CLAMP

PT22428. Will fit over spindles and posts 3/32-1/4" (2.4-6.3mm). Can be used directly on our 252 Height Transfer Gage and our 657 Magnetic Base Holders. It is frequently used on the 1/4" (6.3mm) rod of the Snug and Rod Unit PT22430.

### D. SNUG AND ROD UNIT

PT22430. This unit consists of a snug (PT18724) with two 4" (100mm) long rods, one a 1/4" (6.3mm) diameter, the other a 3/8" (9.5mm) diameter. It is generally used with an indicator attached to PT22428 Swivel Post Snug which slides onto the 1/4" (6.3mm) diameter rod.

The 3/8" (9.5mm) rod will fit into the 252 and 657H Gage Holders. It also has the ability to be held in chucks and adjusted to a wide range of heights and diameters.

### DM. METRIC SNUG AND ROD UNIT

PT27171. This unit consists of a snug with two 100mm (4") long rods, one having a 6mm (.236") diameter, the other an 8mm (.315") diameter.

### E. INDICATOR AXIAL SUPPORT

PT26007. This triple-hinged indicator holder is designed to mount dovetail indicators (such as our 708, 709, and 811 Indicators). By using a rod through the 3/16" (4.7mm) mounting hole, it will also accommodate test indicators such as our 711 Indicator. Overall length is approximately 5-1/4" (133mm), shank size is 3/8" (9.5mm).

### F. HEIGHT GAGE ATTACHMENT

711-49. 1/8" x 5/16" (3 x 8mm) shank. This is used for 250, 750, 751 Height Gages, and 995 Planer and Shaper Gage.

### G. HEIGHT GAGE ATTACHMENT

711-35. 3/16" x 3/8" (4.8 x 9.5mm) shank. This is used for 255 Height Gage.

### H. INDICATOR ATTACHMENT

PT99454 dovetail clamping style. Replaces standard scriber. Provides means to attach dovetail equipped test indicators or electronic probes to height gages. Allows indicator to be used to ensure that the down pressure on the part is the same as the original set zero position.

### I. AND J. COLLET ADAPTORS

PT28315 (I.)— To be used with a 3/16" (4.7mm) diameter attachment for indicators such as PT22429 dovetail body clamp and PT07104F long and short arm attachments. PT28316 (J.)— Swivel Post Collet Adaptor, for use on any dovetail test indicator.

### Attachments for 708, 709, and 811 Test Indicators

Photo Key	Description	Part No.	EDP
A*	Dovetail Body Clamp	PT22429	72441
B*	Tool Post Holder	PT11770A	71361
C*	Swivel Post Snug with Clamp	PT22428	72440
D*	Snug and Rod Unit	PT22430	72442
DM	Metric Snug and Rod Unit	PT27171	66457
E	Indicator Axial Support	PT26007	65101
F	Height Gage Attachment	711-49	52941
G		711-35	52942
H	Indicator Attachment, dovetail style	PT99454	68713
I	Collet Adaptor	PT28315	68847
J		PT28316	68848

\* Furnished with all sets having "C" in the catalog number



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## TEST INDICATORS

### 711, 711M LAST WORD® DIAL TEST INDICATORS

.030", 0.7MM

The venerable Last Word Dial Test Indicator is among the most versatile available. Their small size and variety of attachments will handle all jobs with ease and accuracy. A very useful feature is the shaded dial – when used with a mirror, such as in a jig bore application, the operator will always know what the correct reading is.

Individual Contact Points (Fit All 711 Models)						
Length		Ball Diameter		Material	Part No.	EDP
Inch	mm	Inch	mm			
5/32"	4mm	.035"	0.9mm	Steel	PT07137	70945
		.062"	1.6mm		PT07136	70944
		.120"	3mm		PT07087	70912
5/32"	4mm	.035"	0.9mm	Carbide	PT07137X	52964
		.062"	1.6mm		PT07136X	52965
		.120"	3mm		PT07087X	52966

#### OTHER FEATURES INCLUDE:

- Ideal for precise measurements in all machining, layout, and inspection work
- Smooth, jeweled lever action
- Positive reversing switch
- Hard chrome-plated ratchet contact point
- Swiveling tubular body
- Easy reading dials, half yellow for clarity
- Variety of attachments available to suit the application.
- Indicators having "C" in the catalog number are furnished with 3 interchangeable steel contact points. All other indicators are furnished with one interchangeable steel contact point, PT07087. Carbide points available as listed.

711 Last Word® Dial Test Indicators							
Graduation	Range	Dial Reading	Steel Contact Points		Description	Cat. No.	EDP
			Length	Ball Diameter			
.001"	.030"	0-15-0	5/32" (4mm)	One: .120" (3mm)	Indicator with Universal Shank Complete with Long and Short Arm, Body Clamp	711FSAZ	52925
					Indicator with Gooseneck Shank	711FSBZ	52927
					Indicator with Body Clamp Only	711FSZ	52929
					Indicator with Universal Friction Holder with Shank	711GPSZ	52944
					Indicator Complete with All Attachments*	711GCSZ	52943
.0005"	.030"	0-15-0	5/32" (4mm)	One: .120" (3mm)	Indicator with Universal Shank Complete with Long and Short Arm, Body Clamp	711HSAZ	52951
					Indicator with Body Clamp Only	711HSZ	52953
					Indicator with Universal Friction Holder with Shank	711LPSZ	52958
					Indicator Complete with All Attachments*	711LCSZ	52957
					Indicator Complete with All Attachments*	711LCSZ	52957
0.01mm	0.7mm	0-35-0	5/32" (4mm)	One: .120" (3mm)	Indicator with Universal Shank Complete with Long and Short Arm, Body Clamp	711MFAZ	52926
					Indicator with Body Clamp Only	711MFSZ	52930
					Indicator with Universal Friction Holder with Shank	711MGPSZ	52946
					Indicator Complete with All Attachments*	711MGCSZ	52945
					Indicator Complete with All Attachments*	711MGCSZ	52945

\* Attachments include 3 contact points – body clamp – universal friction holder with shank – universal shank complete with long and short arm – double-jointed attachment – height gage attachment – surface gage attachment – coupling with 3/16" (4.8mm) hole.



711LPSZ Indicator with Universal Friction Holder and Shank



# TEST INDICATORS

## ATTACHMENTS FOR 711 LAST WORD® DIAL TEST INDICATORS



### A. BODY CLAMP

PT07101F Permits the indicator to be held by its body and clamped to any diameter rod from 1/8-1/4" (3-6mm). It also attaches the universal shank to the indicator with the addition of PT07104F Long and Short Arm.

### B. UNIVERSAL FRICTION HOLDER

with shank 711EA – This inserts in place of the end plug at the top of the indicator body. The shank has a 3/16" (4.8mm) diameter which will fit into chucks and also into the snugs of our 57 and 257 Surface Gages.

### C. UNIVERSAL SHANK

PT07103A. This shank includes PT07104F (the long and short arm) to go into the body clamp. With its shank size of 1/4" x 1/2" (6.4 x 12.7mm), this can be used in a lathe tool post or for 254 Height Gage.

### D. GOOSENECK SHANK

PT07107A. 1/4" x 1/2" (6.4 x 12.7mm) shank can be used on tool posts and on the same height gages as the PT07103A Universal Shank. It is attached by unscrewing the body clamp and replacing it with the gooseneck shank.

### E. DOUBLE-JOINTED ATTACHMENT

PT13301. This attachment has a 3/8" (9.5mm) diameter at one end and a 1/4" (6.3mm) diameter at the other end and will fit into chucks and collets, (such as in a jig borer) and hold the indicator by the body clamp, giving it greater depth and diameter range.

### F. LONG AND SHORT ARM

PT07104F. This is used with the universal shank to attach it to the body clamp. It has a 3/16" (4.8mm) diameter and arms with 13/16" and 1-3/16" (20mm and 30mm) lengths.

### G. COUPLING WITH 3/16" (4.8MM) HOLE

PT05116. Coupling slips over the long and short arm PT07104F and the shank of PT13175 Universal Friction Holder to permit offset.

### H. HEIGHT GAGE ATTACHMENT

PT24706 – This inserts in place of the end plug at the top of the indicator body. The 3/16" x 11/32" (4.8 x 8.7mm) shank fits 255 12", 18" and 24" Height Gages.

### I. HEIGHT GAGE ATTACHMENT

711-49. 1/8" x 5/16" (3 x 8mm) shank. This is used for 250, 750, 751 Height Gages and 995 Planer and Shaper Gage.

### J. HEIGHT GAGE ATTACHMENT

711-35. 3/16" x 3/8" (4.8 x 9.5mm) shank. This is used for 255 Height Gage.

### K. INDICATOR AXIAL SUPPORT

PT26007. This triple-hinged indicator holder is designed to mount dovetail indicators (such as our 708, 709, and 811 indicators). By using a rod through the 3/16" (4.7mm) mounting hole, it will also accommodate test indicators such as our 711 indicators. Overall length is approximately 5 1/4" (133mm), shank size is 3/8" (9.5mm).

### L. SURFACE GAGE ATTACHMENT

PT05119. Fits in place of the ball shank of the 711EA Attachment. Allows 711G and L Indicators to be used on holders with smaller clamp hole.

### M. TOOL POST HOLDER

PT11770A. 1/4" x 1 5/16" (6.3 x 33mm) post and 1/4" x 1/2" (6.3 x 12.7mm) shank. For use in tool posts or in height gages

### N. RUBBER DUST GUARD

PT09764. Protects the indicators' working parts by sealing out dust, powder, and other foreign matter under adverse gaging conditions.

### O. COLLET ADAPTOR

PT28315. To be used with a 3/16" (4.7mm) diameter attachment for indicators such as PT22429 dovetail body clamp and PT07104F long and short arm attachments.

### Attachments for 711 Last Word Dial Test Indicators

Photo Key	Description	Part No.	EDP
A*	Body Clamp	PT07101F	70924
B*	Universal Friction Holder with Shank	711EA	52924
C*	Universal Shank Complete with Long and Short Arm	PT07103A	52939
D	Gooseneck Shank	PT07107A	52937
E*	Double-Jointed Attachment	PT13301	71441
F*	Long and Short Arm	PT07104F	70929
G*	Coupling with 3/16" (4.8mm) Hole	PT05116	70556
H*	Height Gage Attachment	PT24706	65064
I	Height Gage Attachment	711-49	52941
J	Height Gage Attachment	711-35	52942
K	Indicator Axial Support	PT26007	65101
L*	Surface Gage Attachment	PT05119	70557
M	Tool Post Holder	PT11770A	71361
N	Rubber Dust Guard	PT09764	71290
O	Collet Adaptor	PT28315	68847

\* Furnished with all sets having "C" in the catalog number



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**NEW!**

INDICATORS AND GAGES

## TEST INDICATORS

### 3808, 3809, 3908 AND 3909 DIAL TEST INDICATORS

These dial test indicators are offered with choices of dial size, range and include accessories.

All 3808 and 3809 models have 1-1/4" (32mm) dial faces while 3908 and 3909 models offer a larger 1-9/16" (40mm) dial face.

3808, 3809, 3908 and 3909 Inch Reading Indicators						
Grad	Range	Dial Reading	Dial Diameter	Description	Cat. No.	EDP
.0001"	.008"	0-4-0	1-1/4"	Indicator, two dovetail clamps, case*	3808A	12331
				Indicator with accessories, case**	3808AC	12303
			1-9/16"	Indicator, two dovetail clamps, case*	3908A	12488
				Indicator with accessories, case**	3908AC	12636
.0005"	.030"	0-15-0	1-1/4"	Indicator, two dovetail clamps, case*	3809A	12333
				Indicator with accessories, case**	3809AC	12305
			1-9/16"	Indicator, two dovetail clamps, case*	3909A	12527
				Indicator with accessories, case**	3909AC	12669

\* Indicator, .156" contact point, 3/8" and 5/32" dovetail clamps and case

\*\* Indicator, .078" and .156" contact points, 3/8" and 5/32" dovetail clamps, .156" swivel post holder, tool post holder, contact wrench and case

3808, 3809, 3908 and 3909 Metric Reading Indicators						
Grad	Range	Dial Reading	Dial Diameter	Description	Cat. No.	EDP
0.002mm	0.2mm	0-100-0	32mm	Indicator, two dovetail clamps, case*	3808MA	12332
				Indicator with accessories, case**	3808MAC	12304
			40mm	Indicator, two dovetail clamps, case*	3908MA	12520
				Indicator with accessories, case**	3908MAC	12656
0.01mm	0.8mm	0-40-0	32mm	Indicator, two dovetail clamps, case*	3809MA	12334
				Indicator with accessories, case**	3809MAC	12307
			40mm	Indicator, two dovetail clamps, case*	3909MA	12563
				Indicator with accessories, case**	3909MAC	12673

\* Indicator, 4mm contact point, 9.5mm and 4mm dovetail clamps and case

\*\* Indicator, 2mm and 4mm contact points, 9.5mm and 4mm dovetail clamps, 4mm swivel post holder, tool post holder, contact wrench and case

Each inch reading and metric reading 3808, 3809, 3908 and 3909 is offered with a choice of two Graduation/Range/Reading configurations. Features include:

- Precision gear-driven design with smooth, jeweled movement
- Frictionally adjustable contact point reverses automatically, always maintaining clockwise hand rotation
- Meets or exceeds ANSI/ASME accuracy specifications
- High contrast, easy-to-read dials with white background for inch and yellow for metric



3909A



3909MA





# BACK PLUNGER INDICATORS

## 650, 651 BACK-PLUNGER DIAL INDICATORS

.200"

These workhorse back plunger indicators feature AGD (American Gage Design) stem holding fixtures and the great variety of AGD contact points. These very versatile indicators have the following features:

- 650 Indicators have a 3" (75mm) deep hole attachment that connects directly with the main spindle for positive action. Attachment is convenient to use when checking internal dimensions of a workpiece. When not needed, the attachment can be easily removed and the hole capped.
- 651 Indicators are identical to the 650 indicators except they cannot accept the deep hole attachment
- Both models have large 1-11/16" (43mm) diameter bezels with easy-to-read dial numbers and graduations
- Smooth and accurate operation due to their sturdy, basic design
- Hardened, stainless steel AGD stem .375" (9.5mm) diameter
- Shank dimension 1/4" (6.3mm) diameter, 3-3/16" (80mm) long
- With their .375" (9.5mm) AGD stem diameter, the 650 and 651 can be used with our 670 Hole Attachment and our 671 Universal Attachment
- Adjustable dials to set zero at any point opposite the hand
- Inch reading dials have white faces and millimeter reading dials are yellow
- Three different styles of contact points are furnished with each indicator

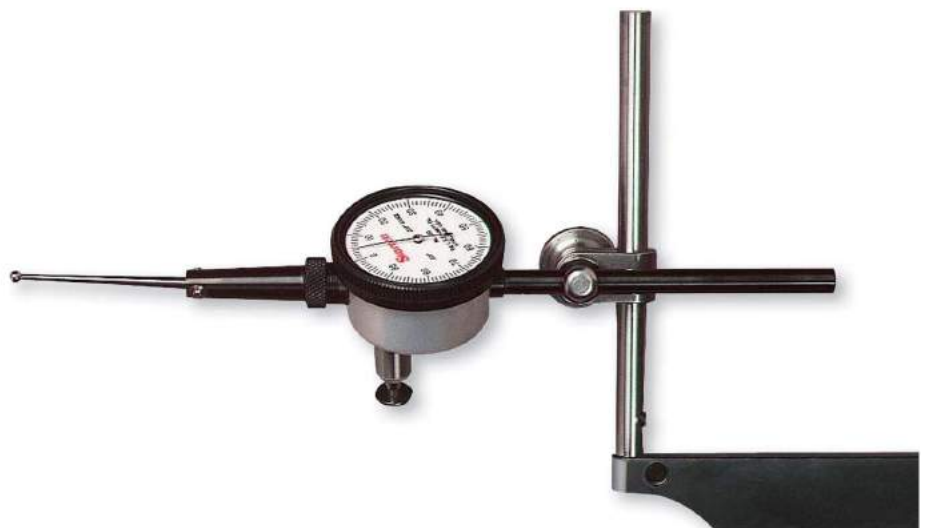


INDICATORS AND GAGES

650, 651 Back Plunger Dial Indicators				With Deep Hole Attachment		Without Deep Hole Attachment	
Graduation	Range	Dial Reading	Description	Cat. No.	EDP	Cat. No.	EDP
.001"	.200"	0-100	Indicator with 3 Contact Points, 3 Attachments*, in Case	650A1Z	64475	651A1Z	64483
			Indicator with 3 Contact Points Only	650B1	64477	651B1	64485
.001"	.200"	0-50-0	Indicator with 3 Contact Points, 3 Attachments*, in Case	650A5Z	64474	651A5Z	64484
			Indicator with 3 Contact Points Only	650B5	64476	651B5	64486
650, 651 Back Plunger Dial Indicators				With Deep Hole Attachment		Without Deep Hole Attachment	
0.01mm	5mm	0-100 Yellow Dial Face	Indicator with 3 Contact Points, 3 Attachments*, in Case	650MA1Z	65261	651MA1Z	65263
			Indicator with 3 Contact Points Only	650MB1	65262	651MB1	65264

\* Attachments include clamp, tool post holder and snug (PT18718).

Individual Contact Points Only		
Photo	Part No.	EDP
	PT01761	75263
	PT06632-5	70793
	PT06632-6	70794



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## BACK PLUNGER INDICATORS

### 196, 196M UNIVERSAL BACK PLUNGER DIAL INDICATORS

.200", 5MM

Our 196 Indicator is one of the most versatile indicators available ... and it is the "granddaddy" of them all. Over the years this tool has been improved by methods and materials, but the basic design is unchanged. The design has withstood the test of time and beaten all challengers because it is:

- Accurate and reliable
- Simple to operate
- Rugged, with few moving parts
- Smooth in operation

While there is a need for indicators with finer graduations, such as our 708 Indicators, this indicator with graduations to .001" and 0.02mm will handle by far the majority of jobs. Shank diameter is 1/4" (6.3mm). Antimagnetic models are also available: (inch reading) 196A6Z and 196B6.

For full use, the operator first chooses the proper contact from the three hardened contact points that come with each model. Then the contact should be brought against the work with enough pressure to give the hand one full turn. Set the hand at zero by rotating the dial with the knurled bezel. This provides one full rotation of the hand both to the right and left of zero, showing a rise or drop in the work and the amount of that variation.

Contact Points and Adaptors Only for 196 and 196M Universal Back Plunger Dial Indicators		
Description	Catalog/Part No.	EDP
Adaptor**	196R	50711
Adaptor (Metric Threads)	196MR	67457
	PT05471	70617
Hardened Steel Contact Point	PT05472	70618
	PT05473	70619

\*\* For Contact Points with #4-48 Thread, see AGD Contact Listings.



Left: 196MB1  
Below: 196B1

196 Universal Back Plunger Dial Indicators (1/4" Shank Diameter)						
Graduation	Range	Dial Reading	Description	Cat. No.	EDP	
.001"	.200"	0-100	Indicator with 3 Contact Points, Adaptor, 4 Attachments* in Case	196A1Z	50697	
			Indicator with 3 Contact Points and Adaptor Only	196B1	50699	
			Indicator with 3 Contact Points, Adaptor, and Standard Letter of Certification†	196B1 W/SLC	66865	
			Antimagnetic Indicator with 3 Contact Points, 4 Attachments* in Case	196A6Z	50701	
.001"	.200"	0-50-0	Antimagnetic Indicator with 3 Contact Points Only	196B6	50702	
			Indicator with 3 Contact Points, Adaptor, 4 Attachments* in Case	196A5Z	50714	
			Indicator with 3 Contact Points and Adaptor Only	196B5	50717	
			<b>196M Universal Back Plunger Dial Indicators (6.3mm Shank Diameter)</b>			
0.02mm	5mm	0-100 Yellow Dial Face	Indicator with 3 Contact Points, Adaptor, 4 Attachments* in Case	196MA1Z	65251	
			Indicator with 3 Contact Points and Adaptor Only	196MB1	65252	
			Indicator with 3 Contact Points, Adaptor 196R, 4 Attachments* in Case	196MA5Z	65253	
			Indicator with 3 Contact Points and Adaptor Only	196MB5	65254	

\* Attachments include clamp, tool post holder, snug and hole attachment.

† Includes redemption card for Standard Letter of Certification (SLC).



# BACK PLUNGER INDICATORS

## ATTACHMENTS FOR 650, 651, 196 AND 196M BACK PLUNGER DIAL INDICATORS AND UNIVERSAL DIAL INDICATORS

### A. CLAMP

PT99437 With a 1-5/16" (33mm) flat or round capacity – 5/16" (8mm) post (PT03709-1/2) used with PT18718 Snug.

### B. TOOL POST HOLDER

PT99438 3/8" x 3/4" x 6" (9.5 x 19 x 150mm) with upright spindle (PT03820-0) 5/16" dia. x 4-1/2" length (8 x 114mm). Use with PT18718 Snug.

### C. SNUG COMPLETE

PT18718. Post hole has a 5/16" diameter† and 3/32-1/4" holding capacity. Can be used on our 252 Height Transfer Gage, 57 and 257A and B Surface Gages, on 657A Magnetic Base and Swivel Post Assembly.

### D. SNUG COMPLETE

PT18724. Post hole has a 3/8" diameter (9.5mm) and 3/32-1/4" (2.4-6.3mm) holding capacity. Can be used with our 57 and 257C and D Surface Gages or 657AA Magnetic Base with upright post.

### E. UNIVERSAL SNUG

57S With spindle hole diameters 5/16", 3/8" (8, 9.5mm) and gripping hole diameters 9/64", 5/32", 3/16", 1/4" (3.5, 4, 4.8, 6.3mm).

### F. UNIVERSAL SNUG

58S. With spindle hole diameters 1/4", 5/16", 3/8" (6.3, 8, 9.5mm). Gripping hole diameters range from 3/32-1/4" used on holders with smaller clamp hole.

Attachments for 650, 651, 196 and 196M Back Plunger Dial Indicators and Universal Dial Indicators

Photo Key	Description	Cat./Part No.	EDP
A*	Clamp	PT99437	64492
B*	Tool Post Holder	PT99438	64493
C*	Snug Complete	PT18718	50709
D	Snug Complete - 1/4" and 3/8" Holes	PT18724	50710
E	Universal Snug	57S	50296
F	Universal Snug	58S	56613
G*	Hole Attachment for 196 and 196M Only	196F	50706
H	Shock Absorbing Anvil for 196 and 196M Only	PT08726A	66052
I	Split Bushing for 196 and 196M Only	PT00764	68850

\* Attachments marked with an asterisk (\*) are furnished with all sets having "A" in the catalog number.

† For snug with 8mm post hole diameter and 2.4-6.3mm holding capacity, order PT27171, EDP 66457.



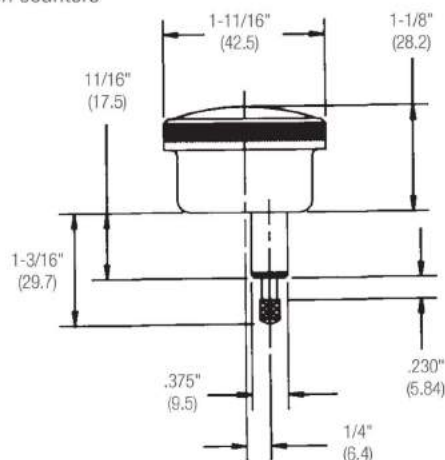
## 641, 641M BACK PLUNGER DIAL INDICATORS

.200"/5MM

These indicators have the same design as the 650, but without the shank and deep hole attachments. They are useful for positioning in unconventional fixtures and mountings. The spindle is perpendicular to the dial face for optimum dial readability.

- Continuous reading dials with revolution counters
- Uses standard AGD contacts

641 Back-Plunger Dial Indicators				
Range	Graduation	Dial Reading	Cat. No.	EDP
.200"	.001"	0-100	641	65107
641M Back-Plunger Dial Indicators				
5mm	0.01mm	0-100	641M	65108



## ATTACHMENTS FOR 196 AND 196M ONLY

### G. HOLE ATTACHMENT

196F. allows indicator be used over obstructions and inside holes to a depth of approximately 1-5/8" (40mm).

### H. SHOCK ABSORBING ANVIL

PT08726A.

### I. SPLIT BUSHING

PT00764. Allows attachment of 196 Indicator to 660 Magnetic Base.



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## DIAL INDICATORS

### MECHANICAL DIAL INDICATORS AND ATTACHMENTS

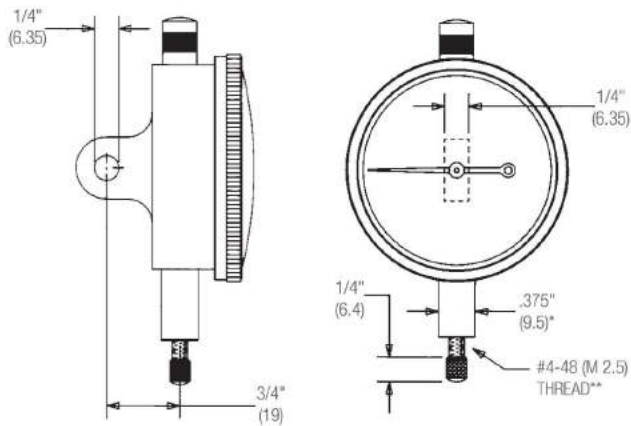
#### ELECTRONIC INDICATORS/INDICATOR HOLDERS

Accurate, rugged, versatile, convenient to use and inexpensive – for these reasons and more, mechanical dial indicators with bottom plungers are the measurement workhorses of industrial production.

Electronic indicators have an unmatched ability for the accurate recording of a great amount of measurement data which is used in a variety of Statistical Process Control (SPC) operations.

The first part of this section shows our complete line of mechanical/analog dial indicators – over 180 models to give you the widest selection in the industry. Our comparison guide, following these introduction pages, has all the significant specifications to help you make your selection.

#### COMPARING AGD DESIGN SPECIFICATIONS WITH OTHERS



\* There are two major differences between American Gage Design and other specifications. The first is the stem diameter. AGD specifies .375" (9.5mm) and some other standards specify an 8mm (.315") diameter. International specifications allow for either one and we can furnish both diameters. The .375" (9.5mm) diameter provides a little more protection for the rack when clamped on the stem – 8mm stems are available on any model, please specify when ordering.

\*\* The other difference is the contact thread. AGD specifies a #4-48 thread. Other standards specify a metric thread, #M2.5.

#### APPLICATION SPECIFICATION FACTORS

1. Regular analog styles with indicating hands are more readable than digital styles when the measurements are being visually monitored by an operator.
2. Select the dial size that gives you the readability you need. We offer five regular dial sizes which will fit most applications that have both space limitations and readability requirements.
3. Choose the accuracy and readout you need – don't select a .0001" (or 0.001mm) readout if .001" (or 0.01mm) will do your job.
4. Electronic styles are best when the measurement data needs to be collected, printed out or stored for future use.
5. Consider any special features you may need – inch or millimeter reading, special shockless movement, antimagnetic, long range, long stem, special backs, special contacts, special holders, etc. If you don't see what you need, please contact our Special Order Department. Even though we have a broad line of indicators to tackle most jobs, we also do a lot of special design, catering to the specific needs of our customers – challenge us!
6. Starrett indicators are made to American Gage Design Specifications (AGD). These specifications were developed in 1945 at the request of the U.S. Commerce Department through the National Bureau of Standards – now the National Institute of Standards and Technology (NIST). These specifications provide the dimensions to allow interchangeability between indicators of different manufacturers in fixturing. As you will see, these dimensions pertain to sizes for space consideration and for holding. Other countries have made their own design specifications which we can also furnish. However, the AGD design is probably more widely used, simply because it was the first standard created.
7. Basically, all dial indicators used worldwide fall into the following size ranges which relate to bezel diameters. Size 0 is a smaller dial indicator, having its own dimensions. Sizes 1 through 4 are AGD sizes. These sizes and the AGD dimensions are essentially the same for all manufacturers, except as noted.
8. Accuracy – All indicators should be "loaded" 1/8-1/4 of a turn before testing or measuring. Starrett dial indicators meet or exceed all known performance specifications. Most accuracies are specified plus or minus one graduation over the full range. This basically means a 2-1/2 turn range. Longer ranges have slightly wider tolerances. Starrett indicators are at least that accurate, but we are better than that in the final critical measuring zone of "10 o'clock to 2 o'clock" from zero. AGD specifies 2-1/3 turn indicators to cover any particular range. The reason for this is that in an effort to get the most out of the indicator, the operator "loads" it to about 1-1/3 turns and sets zero on his master. The indicator will now show the accurate deviation for a full revolution, plus or minus.



# DIAL INDICATORS

## DESIGN FEATURES

- Rugged and simple unit construction with a "universally fitting" design as shown
- One gear unit assembly fits AGD Group 2 (our 25 Indicators), AGD Group 3 (our 655 Indicators) and AGD Group 4 (our 656 Indicators)
- The gear unit is constructed of a massive single bridge and plate assembly with a hardened stainless steel gear train
- All gear trains are fully jeweled for sensitivity, smoothness and life. (We do provide 1/2" and 1" range models with plain bronze bearings)
- The case is light but sturdy, with a hardened, precision stainless steel rack that rides in bronze bushings. Size Groups 0 and 1 indicators are of similar construction but smaller in size.
- Hardened stainless steel bottom stems can be held in fixtures without cramping rack action
- Easy readability with the best, balanced style of graduation and number combination. (Too thick and accuracy suffers; too thin and readability suffers)
- Balanced and tapered hands are easy to follow
- Special non-shock mechanism (can be furnished on most styles) is ideal for when an indicator may be subjected to repeated and excessive shocks



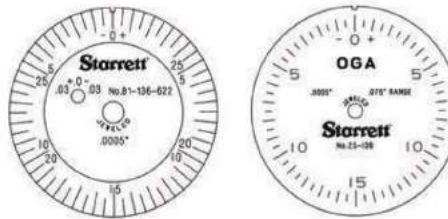
- A. Sharp bezel serrations for positive grip
- B. Non-reflecting white eggshell finish on dial (millimeter models have yellow dials)
- C. Unbreakable crystal
- D. Hardened stainless steel stem
- E. Positive-acting clamp locks bezel in position
- F. No-glare satin finish on case
- G. .375" mounting diameter (all AGD models)
- H. Interchangeable contact point
- I. Four screw holes for 90° rotation of back
- J. Direct acting compression spring eliminates side friction
- K. Hardened stainless steel rack and spindle
- L. Massive bridge for rigid bearing support
- M. Replaceable low friction jewel bearings
- N. Hardened stainless steel gears and pinions

## DIALS, ACCESSORIES AND OPTIONS

**Balanced or Continuous Dials** – Starrett AGD indicators are furnished with a balanced dial (plus on right). A continuous dial (reading clockwise) may also be ordered.

**Plus and Minus Graduations** – Plus and minus readout – black figures read clockwise, red figures read counterclockwise, or colors reversed – are available on some 81 Dial Indicators.

**Revolution Counters** – All AGD indicators with 2-1/2 revolutions can be furnished with double dial and count hand at a slight additional cost. Intermediate and long-range indicators have revolution counters



Far Left: Dial with Plus and Minus Graduations  
Left: Dial with Special Trademark Imprint

**Special Dials** – Starrett dial indicators can be furnished with any standard dial marked with your company name or trademark. No charge when the indicators are purchased in lots of 25 or more. For quantities under 25, there is an additional charge. Prices are available on request.

**Antimagnetic Mechanism** – An antimagnetic mechanism can be furnished on most 81, 25, 655, 656, 196B6 Dial Indicators. This mechanism is desirable when the indicator is used near a magnetic chuck or a similar magnetic field which would disturb its operation. See individual listings for availability.

**Attachments and Accessories** – A variety of attachments and accessories are provided for mounting dial indicators on machine tools, inspection equipment and special fixtures, including:

- Backs
- Contact Points
- Dust Guard
- Hole Attachments
- Special Non-shock mechanism
- Spindle Travel Controls
- Stem and Back Mounting Accessories
- Tolerance and Maximum Reading Hands



Gear Unit + Case Assembly = Complete Indicator



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## DIAL INDICATORS

### 80 MINIATURE DIAL INDICATORS AND ACCESSORIES

ANSI GROUP 0  
RANGES UP TO .100"  
1-1/4" BEZEL, 7/32" STEM

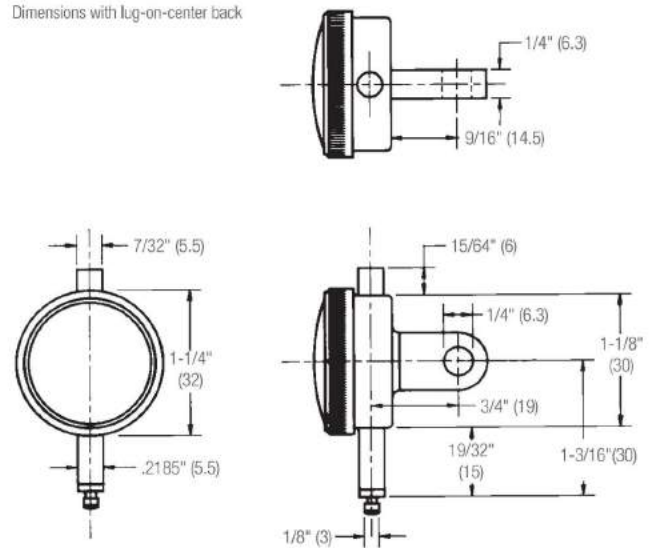
Similar in design to AGD dial indicators, these miniatures are built for gaging dimensions in tight places. Equipped with high precision, low friction movements, they are made in four models, all with frictionally adjustable bezels for quick, positive zero setting. No-glare, white eggshell finish dials. Black bezel, silver finish on case. Furnished with balanced dial, jeweled bearings and lug-on-center back.

80SB split bushing available .219" to 3/8".

#### 80 Miniature Dial Indicators

Graduation	Range		Dial Reading	Cat. No.	EDP
	One Rev.	Total			
.0001"	.004"	.010"	0-2-0	80-114J	55891
.0001"	.010"	.025"	0-5-0	80-111J	67714
.0005"	.020"	.050"	0-10-0	80-134J	55892
.001"	.040"	.100"	0-20-0	80-144J	55893

Dimensions with lug-on-center back



Free drafting template available for this size.  
Write The L. S. Starrett Co. at:  
121 Crescent Street  
Athol, MA 01331.



80-114J



80-134J

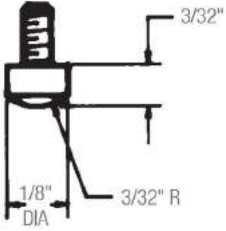


80-144J

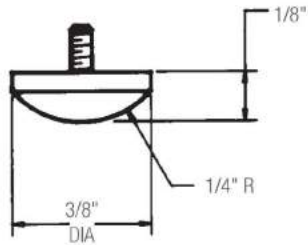


### CONTACT POINTS

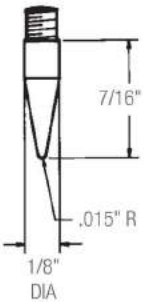
The regular contact point is furnished standard on all 80 Dial Indicators. Button, cone and flat contact points are available individually, as listed. All have #0-80 thread.



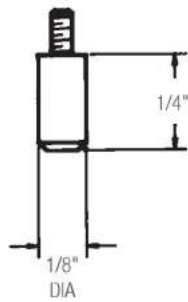
PT25044 Regular Contact Point  
(Standard on all 80 Dial Indicators)



PT25159 Button Contact Point



PT25161 Cone Contact Point

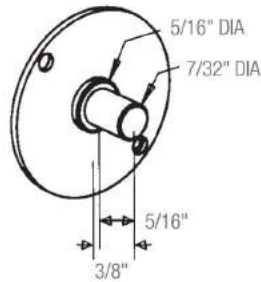


PT25160 Flat Contact Point

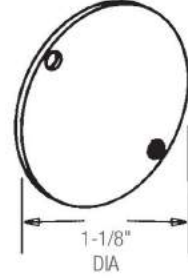


### BACKS

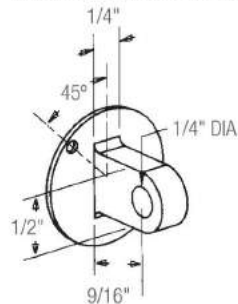
The lug-on-center back is furnished standard on all 80 Dial Indicators.



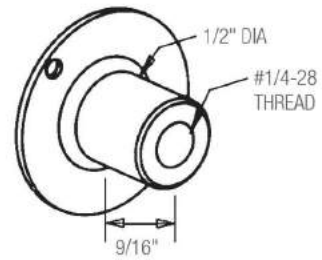
PT25158 Post-Type Lug Back



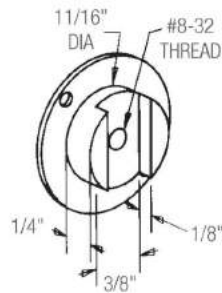
PT25079 Flat Back



PT25053 Lug-on-Center Back  
(Standard on all 80 Dial Indicators)



PT25071 Screw-Type Lug Back



PT25157 Adjustable Bracket Back

NOTE: Contact points and backs can be ordered individually. Order by part number/EDP number.

Description	Part No.	EDP
Regular Contact Point	PT25044	72023
Button Contact Point	PT25159	72024
Cone Contact Point	PT25161	72025
Flat Contact Point	PT25160	72026
Flat Back	PT25079	72028
Screw-Type Lug Back	PT25071	72030
Lug-on Center Back	PT25053	72027
Adjustable Bracket Back	PT25157	72029
Post-Type Lug Back	PT25158	72031



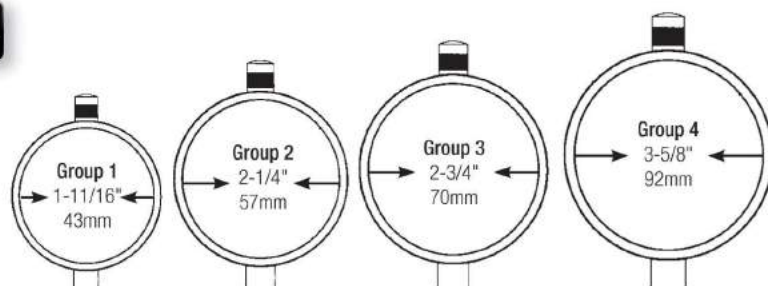
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## DIAL INDICATORS

### 81, 25, 655 AND 656 AGD DIAL INDICATORS

This comparison table is an aid to help you find the indicator with the specific graduations and ranges you are looking for. Refer to the following pages for the exact catalog number and EDP number.



81, 25, 655 and 656 AGD Dial Indicators (White Dials Furnished Standard)

Graduation	Range One Rev.	Total	Dial Reading	Group 1 81 Indicators	Group 2 25 Indicators	Group 3 655 Indicators	Group 4 656 Indicators
.00005"	.006"	.015"	0-3-0 0-6		25-109 25-209		656-109 656-209
.0001"	.006"	.015"	0-3-0 0-8		25-116 25-118 25-218	655-118	656-118
.0001"	.010"	.025"	0-5-0 0-10	81-111 81-211	25-111 25-211	655-111 655-211	656-111 656-211
.0001"	.010"	.025"	+0.10 -0.10 -0.10 +0.10	81-111-624* 81-111-630*			
.0001"	.010"	.200"	0-5-0 0-10		25-511* 25-611*	655-511* 655-611*	656-511* 656-611*
.0001"	.020"	.400"	0-10-0 0-20				656-517* 656-617*
.00025"	.010"	.025"	0-5-0 0-10	81-124 81-224	25-124 25-224	655-124 655-224	656-124 656-224
.00025"	.020"	.050"	0-10-0 0-20	81-128 81-228	25-128 25-228	655-128 655-228	656-128 656-228
.00025"	.030"	.075"	0-15-0 0-30			655-129 655-229	656-129 656-229
.0005"	.020"	.050"	0-10-0 0-20	81-134 81-234	25-134 25-234	655-134 655-234	656-134 656-234
.0005"	.030"	.075"	0-15-0 0-30	81-136 81-236	25-136 25-236	655-136 655-236	656-136 656-236
.0005"	.030"	.075"	+0.30 -0.30 -0.30 +0.30	81-136-622* 81-136-623*			
.0005"	.040"	.100"	0-20-0 0-40	81-138 81-238	25-138 25-238	655-138 655-238	656-138 656-238
.0005"	.050"	.125"	0-25-0 0-50	81-131 81-231	25-131 25-231	655-131 655-231	656-131 656-231
.0005"	.050"	.500"	0-50		25-431*† 25-631*†		

\* With revolution counter on dial

† With top lift mechanism

AGD Design Specifications: Bezel Diameters

Design	Size Group	Minimum Diameter		Maximum Diameter	
		Inch	mm	Inch	mm
AGD	0	1"	25mm	1-3/8"	35mm
	1	1-3/8"	35mm	2"	50mm
	2	2"	50mm	2-3/8"	60mm
	3	2-3/8"	60mm	3"	75mm
	4	3"	76mm	3-3/4"	95mm





**81, 25, 655 and 656 AGD Dial Indicators (White Dials Furnished Standard)**

Graduation	Range		Dial Reading	Group 1	Group 2	Group 3	Group 4
	One Rev.	Total		81 Indicators	25 Indicators	655 Indicators	656 Indicators
.001"	.020"	.050"	0-10-0 0-20	81-142 81-242	25-142 25-242	655-142 655-242	656-142 656-242
.001"	.030"	.075"	0-15-0 0-30	81-143 81-243	25-143 25-243	655-143 655-243	656-143 656-243
.001"	.030"	.075"	+0.30, -0.30 -0.30, +0.30	81-143-628* 81-143-629*			
.001"	.040"	.100"	0-20-0 0-40	81-144 81-244	25-144 25-244	655-144 655-244	656-144 656-244
.001"	.050"	.125"	0-25-0 0-50	81-145 81-245	25-145 25-245	655-145 655-245	656-145 656-245
.001"	.100"	.250"	0-50-0 0-100	81-141 81-241	25-141 25-241	655-141 655-241	656-141 656-241
.001"	.100"	.500"	0-50-0 0-100		25-341/5*† 25-441/5*†	655-341/5* 655-441/5*	656-341/5* 656-441/5*
.001"	.100"	1.000"	0-50-0 0-100		25-341*† 25-441*†	655-341*† 655-441*†	656-341*† 656-441*†
.001"	.100"	2.000"	0-100		25-2041*	655-2041*	656-2041*
		3.000"			25-3041*	655-3041*	656-3041*
		4.000"			25-4041*	655-4041*	656-4041*
		5.000"			25-5041*	655-5041*	656-5041*
		6.000"					656-6041*
		7.000"					656-7041*
		8.000"					656-8041*
		9.000"					656-9041*
		10.000"					656-10041*
		11.000"					656-11041*
12.000"			656-12041*				

**81, 25, 655 and 656 AGD Dial Indicators (Yellow Dials Furnished Standard)**

0.001mm	0.1mm	0.25mm	0-50-0 0-100		25-151* 25-251*		
0.002mm	0.2mm	0.5mm	0-10-0 0-20	81-161 81-261	25-161 25-261	655-161 655-261	656-161 656-261
0.01mm	1mm	2.5mm	0-50-0 0-100	81-181 81-281	25-181 25-281	655-181 655-281	656-181 656-281
0.01mm	1mm	10mm	0-50-0 0-100		25-381*† 25-481*		
0.01mm	1mm	25mm	0-50-0 0-100		25-781*† 25-881*†	655-881*†	656-881*†
0.01mm	1mm	50mm	0-100		25-2081*	655-2081*	
0.01mm	1mm	75mm	0-100		25-3081*	655-3081*	
0.01mm	1mm	100mm	0-100		25-4081*	655-4081*	
0.01mm	1mm	125mm	0-100		25-5081*	655-5081*	

\* With revolution counter on dial

† With top lift mechanism

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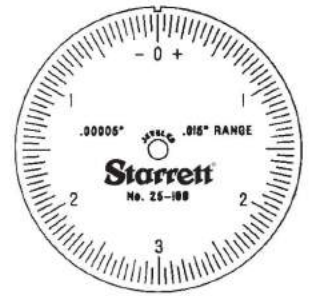


## DIAL INDICATORS

### STARRETT DIAL NUMBERING AND LINE STYLES FOR DIAL INDICATORS

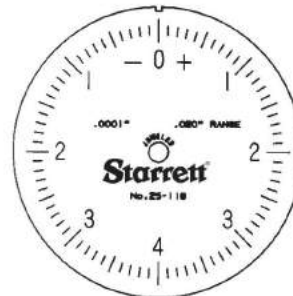


These next four pages include all Starrett dial styles. (Actual size not shown.) Refer to the graduation, then range, and catalog number below the dial and then see the following pages for the specific dial reading and other indicator information. Most of the dials shown have balanced styles. Continuous dials have the same graduations, but have consecutive numbers instead. For most indicators, the first number after the base catalog number signifies dial style. The number "1" signifies balanced dials (example: 25-109) and number "2" signifies continuous dials (example: 25-209).



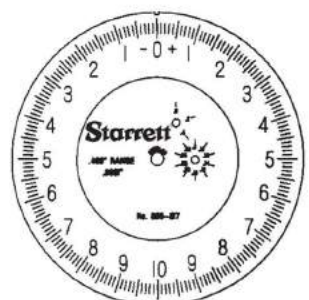
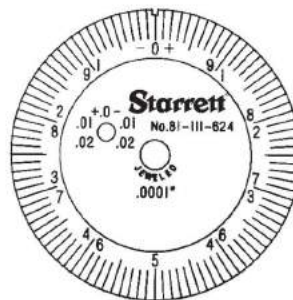
#### .00005" Graduation

Total Range	.015"
Cat. No.	25-109 656-109



#### .0001" Graduation

Total Range	.015"	.020"	.025"
	25-116	25-118 655-118 656-118	25-111 80-111 81-111 655-111 656-111
Cat. No.			



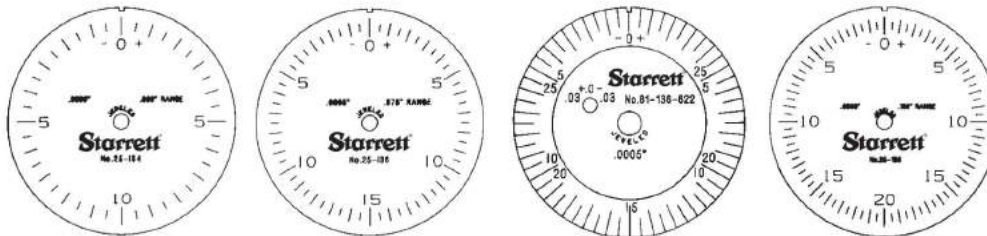
#### .0001" Graduation

Total Range	.025"	.200"	.400"
	81-111-624 (with double row figures)	25-511 655-511 656-511	656-517
Cat. No.			

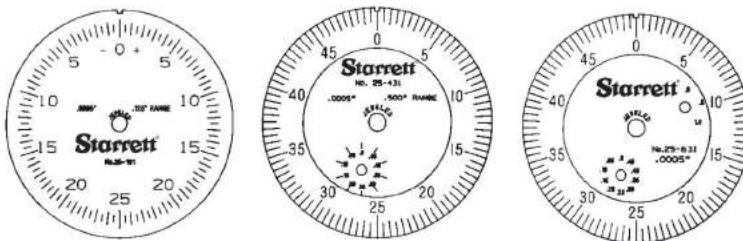




<b>.00025" Graduation</b>			
<b>Total Range</b>	<b>.025"</b>	<b>.050"</b>	<b>.075"</b>
	81-124	81-128	655-129
<b>Cat. No.</b>	25-124	25-128	656-129
	655-124	655-128	
	656-124	656-128	



<b>.0005" Graduation</b>				
<b>Total Range</b>	<b>.050"</b>	<b>.075"</b>	<b>.075"</b>	<b>.100"</b>
	81-134	81-136	81-136-622	81-138
<b>Cat. No.</b>	25-134	25-136	(with double row figures)	25-138
	655-134	655-136		655-138
	656-134	656-136		656-138



<b>.0005" Graduation</b>			
<b>Total Range</b>	<b>.125"</b>	<b>.500"</b>	<b>1.000"</b>
	81-131	25-431	25-631
<b>Cat. No.</b>	25-131		
	655-131		
	656-131		

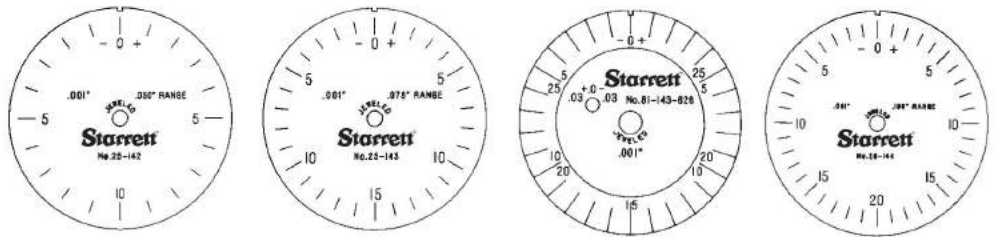


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## DIAL INDICATORS

### STARRETT DIAL NUMBERING AND LINE STYLES FOR DIAL INDICATORS



.001" Graduation				
Total Range	.050"	.075"	.075"	.100"
Cat. No.	81-142 *25-142 *655-142 *656-142	81-143 25-143 655-143 656-143	81-143-628 (with double row figures)	81-144 *25-144 *655-144 *656-144

\* Also on long range models.



.001" Graduation			
Total Range	.125"	.250"	.500", 1.000"
Cat. No.	81-145 *25-145 *655-145 *656-145	81-141 *25-141 *655-141 *656-141	25-441, 25-441/5 655-441, 655-441/5 656-441, 656-441/5

\* Also on long range models.





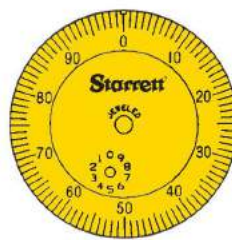
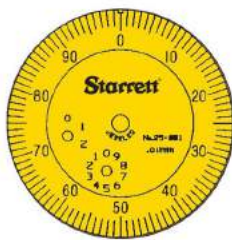
0.001mm Graduation	
Total Range	.25mm
Cat. No.	25-151



0.002mm Graduation	
Total Range	0.5mm
	No.81-161
Cat. No.	25-161
	655-161
	656-161



0.005mm Graduation	
Total Range	1.25mm
Cat. No.	25-171



0.01mm Graduation				
Total Range	2.5mm	25mm	10mm	50, 75, 100, 125mm
	81-181	25-881	25-381	25-2081
Cat. No.	25-181	655-881		25-3081
	655-181	656-881		25-4081
	656-181			25-5081



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## DIAL INDICATORS

### 81 DIAL INDICATORS

#### AGD GROUP 1

#### RANGES UP TO .250" AND 2.5MM

These Indicators have a shockless, hardened steel gear train and jewel bearings. They are furnished with a lug-on-center back. Antimagnetic and special non-shock mechanisms are options available for all models. For more information on these and other attachments, accessories and contact points, refer to the end of the AGD Dial Indicator listings. For dial styles, see previous pages.

If lift lever is desired, indicator must be ordered with case stem cap.

81 Dial Indicators						
Graduation	Range One Rev.	Total	Dial Reading	Cat. No.	EDP	
.0001"	.010"	.025"	0-5-0	81-111J	53378	
			0-10	81-211J	53414	
.00025"	.010"	.025"	0-5-0	81-124J	53384	
			0-10	81-224J	53416	
.00025"	.020"	.050"	0-10-0	81-128J	53386	
			0-20	81-228J	53418	
.0005"	.020"	.050"	0-10-0	81-134J	53390	
			0-20	81-234J	53422	
.0005"	.030"	.075"	0-15-0	81-136J	53392	
			0-30	81-236J	53424	
.0005"	.040"	.100"	0-20-0	81-138J	53398	
			0-40	81-238J	53426	
.0005"	.050"	.125"	0-25-0	81-131J	53388	
			0-50	81-231J	53420	
.001"	.020"	.050"	0-10-0	81-142J	53402	
			0-20	81-242J	53430	
.001"	.030"	.075"	0-15-0	81-143J	53404	
			0-30	81-243J	53432	
.001"	.040"	.100"	0-20-0	81-144J	53408	
			0-40	81-244J	53434	
.001"	.050"	.125"	0-25-0	81-145J	53410	
			0-50	81-245J	53436	
.001"	.100"	.250"	0-50-0	81-141J	53400	
			0-100	81-241J	53428	

81 Dial Indicators						
Graduation	Range One Rev.	Total	Dial Reading	Stem Dia.	Cat. No.	EDP
0.002mm	0.2mm	0.5mm	0-10-0	.375" (8mm)	81-161J	56043
			0-20	.375" (8mm)	81-161J-8	64643
0.002mm	0.2mm	0.5mm	0-20	.375" (8mm)	81-261J	56045
			0-50-0	.375" (8mm)	81-261J-8	64644
0.01mm	1.0mm	2.5mm	0-50-0	.375" (8mm)	81-181J	53412
			0-100	.375" (8mm)	81-181J-8	64645
0.01mm	1.0mm	2.5mm	0-100	.375" (8mm)	81-281J	53438
				.375" (8mm)	81-281J-8	64646



81-141J



81-161J



# DIAL INDICATORS

## 81 DIAL INDICATORS WITH DOUBLE ROW FIGURES

AGD GROUP 1  
RANGES UP TO .075"

These indicators have the exact same features as our 81 Dial Indicators on the previous page, except the dials have double-row figures, as illustrated, and they cannot be specified with a special non-shock mechanism.

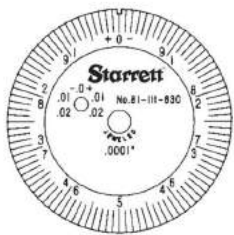
If lift lever is desired, indicator must be ordered with case stem cap.

81 Dial Indicators with double row figures							
Graduation	Dial Reading	Figures Direction	Color	Range		Cat. No.	EDP
				One Rev.	Total		
.0001"	+0-10	Clockwise	Black	.010"	.025"	81-111-624J	53380
	-0-10	Counter-clockwise	Red				
	+0-10	Counter-clockwise	Black				
	-0-10	Clockwise	Red				
.0005"	+0-30	Clockwise	Black	.030"	.075"	81-136-622J	53394
	-0-30	Counter-clockwise	Red				
	+0-30	Counter-clockwise	Black				
	-0-30	Clockwise	Red				
.001"	+0-30	Clockwise	Black	.030"	.075"	81-143-628J	53406
	-0-30	Counter-clockwise	Red				
	+0-30	Counter-clockwise	Black				
	-0-30	Clockwise	Red				

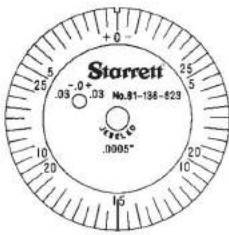
Other models with double-row figures can be furnished by request.



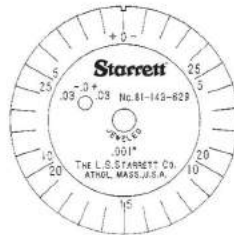
81-111-624J



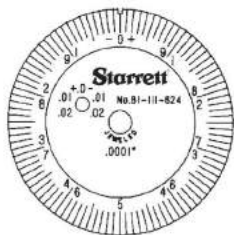
81-111-630J



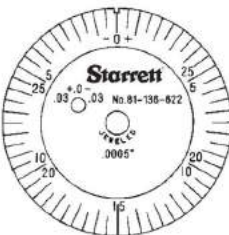
81-136-623J



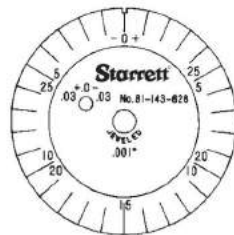
81-143-629J



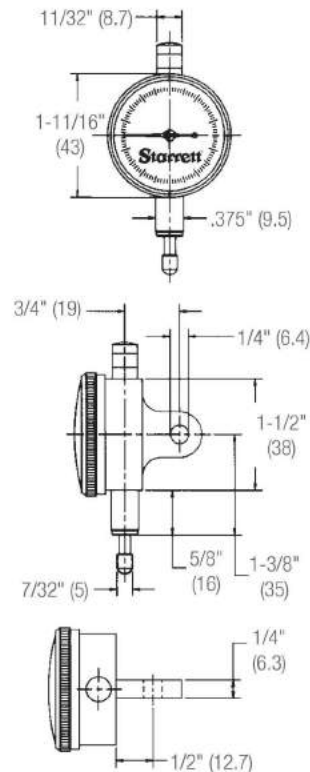
81-111-624J



81-136-622J



81-143-628J



Free drafting template available for this size.  
Write The L. S. Starrett Co. at:  
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Athol, MA 01331.



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## DIAL INDICATORS

### 25 DIAL INDICATORS

**AGD GROUP 2  
RANGES UP TO 1" AND 25MM**



These indicators have a shockless, hardened steel gear train and jewel bearings, except where noted. They are furnished with a lug-on-center back. Antimagnetic mechanism is optional for all models. Special non-shock mechanism is available for all models except 25-109, 25-209 and 25-116. For more information on these and other attachments, accessories and contact points, refer to the end of the AGD Dial Indicator listings. For dial styles, see previous pages.

If lift lever is desired, indicator must be ordered with case stem cap.

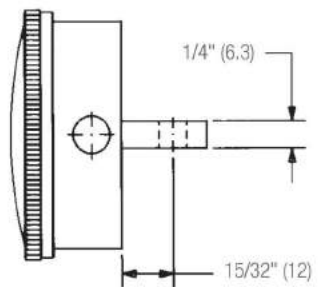
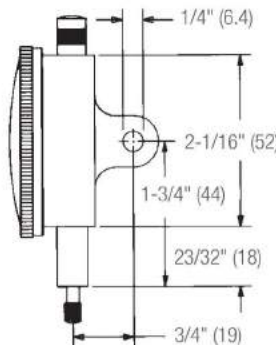
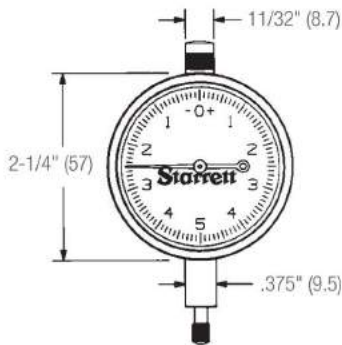


25-111J

25-161J

#### 25 Dial Indicators with Jewel Bearings

Graduation	Range One Rev.	Total	Dial Reading	Stem Dia.	Cat. No.	EDP
0.001mm	0.1mm	0.25mm	0-50-0	.375" (9.5mm)	25-151J	67644
			0-100	.375" (9.5mm)	25-151J-8	68646
			0-10-0	.375" (9.5mm)	25-251J	68118
			0-20	.375" (9.5mm)	25-251J-8	68647
0.002mm	0.2mm	0.5mm	0-10-0	.375" (9.5mm)	25-161J	53250
			0-20	.375" (9.5mm)	25-161J-8	64651
			0-25-0	.375"	25-261J	53281
			0-50-0	.375" (9.5mm)	25-261J-8	64652
0.005mm	0.5mm	1.25mm	0-25-0	.375"	25-171J	68643
			0-50-0	.375" (9.5mm)	25-181J	53252
			0-100	.375" (9.5mm)	25-181J-8	64653
			0-100	.375" (9.5mm)	25-281J	53283
0.01mm	1.0mm	2.5mm	0-50-0	.375" (9.5mm)	25-281J-8	64654
			0-100	.375" (9.5mm)	25-381J	53289
			0-50-0	.375" (9.5mm)	25-381J-8	64655
			0-100	.375" (9.5mm)	25-481J	53297
0.01mm	1.0mm	10mm	0-50-0	.375" (9.5mm)	25-481J-8	64656
			0-100	.375" (9.5mm)	25-781J	53305
			0-50-0	.375" (9.5mm)	25-781J-8	64657
			0-100	.375" (9.5mm)	25-881J	53307
0.01mm	1.0mm	25mm	0-50-0	.375" (9.5mm)	25-881J-8	64658
			0-100	.375" (9.5mm)		



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25-441J  
with top lift

656-129J  
case stem cap design required  
for use with lift lever  
see page 170





# DIAL INDICATORS

## 25 Dial Indicators with Jewel Bearings

Graduation	Range		Dial Reading	Cat. No.	EDP
	One Rev.	Total			
.00005"	.006"	.015"	0-3-0	25-109J	53222
			0-6	25-209J	53254
.0001"	.006"	.015"	0-3-0	25-116J	53225
			0-4-0	25-118J	53226
.0001"	.008"	.020"	0-8	25-218J	53257
			0-5-0	25-111J	53223
.0001"	.010"	.025"	0-10	25-211J	53255
			0-5-0	25-511J	53299
.0001"	.010"	.200"	0-10	25-611J	53301
			0-5-0	25-124J	53228
.00025"	.010"	.025"	0-10	25-224J	53259
			0-10-0	25-128J	53230
.00025"	.020"	.050"	0-20	25-228J	53261
			0-10-0	25-134J	53234
.0005"	.020"	.050"	0-20	25-234J	53265
			0-15-0	25-136J	53236
.0005"	.030	.075"	0-30	25-236J	53267
			0-20-0	25-138J	53238
.0005"	.040"	.100"	0-40	25-238J	53269
			0-25-0	25-131J	53232
.0005"	.050"	.125"		25-231J	53263
			0-50	25-431J	53292
.0005"	.050"	1.000"		25-631J	53304
			0-10-0	25-142J	53242
.001"	.020"	.050"	0-20	25-242J	53273
			0-15-0	25-143J	53244
.001"	.030"	.075"	0-30	25-243J	53275
			0-20-0	25-144J	53246
.001"	.040"	.100"	0-40	25-244J	53277
			0-25-0	25-145J	53248
.001"	.050"	.125"	0-50	25-245J	53279
			0-50-0	25-141J	53240
.001"	.100"	.250"	0-100	25-241J	53271
			0-50-0	25-341/5J	53285
.001"	.100"	.500"		25-441/5J	53293
			0-100	25-441/5J W/SLC*	66864
.001"	.100"	1.000"	0-50-0	25-341J	53287
			0-100	25-441J	53295
.001"	.100"	1.000"	0-100	25-441/J W/SLC*	66863

## 25 Dial Indicators Inch Reading Models with Plain Bearings

.001"	.100"	.500"	0-50-0	25-341/5P	53286
			0-100	25-441/5P	53294
.001"	.100"	1.000"	0-50-0	25-341P	53288
			0-100	25-441P	53296

\* Includes redemption card for Standard Letter of Certification.

## 253 DIAL INDICATOR SETS



### INCH AND MILLIMETER READING

These sets provide in one handy, compact kit three 25 Dial Indicators to handle most gaging jobs at a minimum cost. Sets are ideal for tool and die shops, machine shops and toolrooms having occasional work where a heavy investment in dial indicators would not be practical. The indicators are furnished with jewel bearings.

#### 253 Dial Indicator Sets

Description	Cat. No.	EDP
Set of 3 Inch Reading Dial Indicators: 25-111J, 25-131J and 25-441J	S253Z	51218
Set of 3 Millimeter Reading Dial Indicators: 25-161J, 25-181J and 25-881J	S253MZ	56283

Sets furnished in attractive, protective case.



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## DIAL INDICATORS

### 655 DIAL INDICATORS

#### AGD GROUP 3

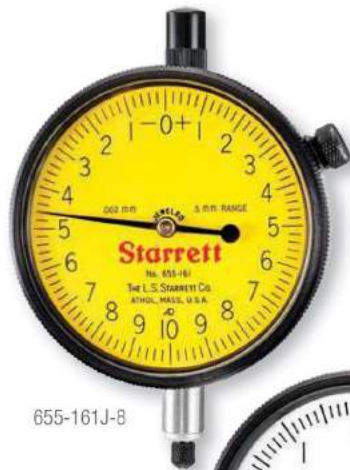
#### RANGES UP TO 1" AND 25MM

These indicators have a shockless, hardened steel gear train and jewel bearings. They are furnished with a lug-on-center back. Antimagnetic and special non-shock mechanisms are options available for all models. For more information on these and other attachments, accessories and contact points, refer to the end of the AGD Dial Indicator listings. For dial styles, see previous pages.

If lift lever is desired, indicator must be ordered with case stem cap.

655 Dial Indicators						
Graduation	Range One Rev.	Total	Dial Reading	Stem Dia.	Cat. No.	EDP
0.002mm	0.2mm	0.5mm	0-10-0	.375" (9.5mm)	655-161J 655-161J-8	53533 64659
0.002mm	0.2mm	0.5mm	0-20	.375" (9.5mm)	655-261J 655-261J-8	53603 64660
0.01mm	1.0mm	2.5mm	0-50-0	.375" (9.5mm)	655-181J 655-181J-8	53535 64661
0.01mm	1.0mm	2.5mm	0-100	.375" (9.5mm)	655-281J 655-281J-8	53605 64868
0.01mm	1.0mm	25mm	0-100	.375" (9.5mm)	655-881J 655-881J-8	56229 64869

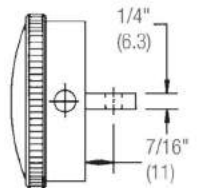
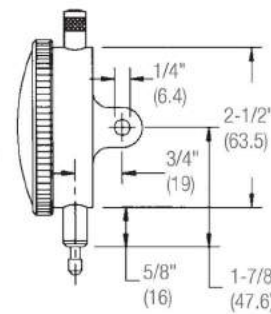
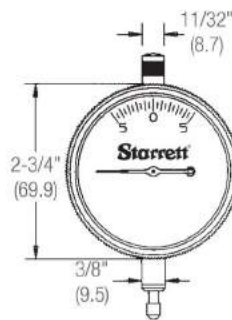
655 Dial Indicators					
Graduation	Range One Rev.	Total	Dial Reading	Cat. No.	EDP
.0001"	.008"	.020"	0-4-0	655-118J	53507
.0001"	.010"	.025"	0-5-0	655-111J	53505
			0-10	655-211J	53537
.0001"	.010"	.200"	0-5-0	655-511J	53615
			0-10	655-611J	53617
.00025"	.010"	.025"	0-5-0	655-124J	53509
			0-10	655-224J	53539
.00025"	.020"	.050"	0-10-0	655-128J	53511
			0-20	655-228J	53541
.00025"	.030"	.075"	0-15-0	655-129J	53513
			0-30	655-229J	53543
.0005"	.020"	.050"	0-10-0	655-134J	53517
			0-20	655-234J	53587
.0005"	.030"	.075"	0-15-0	655-136J	53519
			0-30	655-236J	53589
.0005"	.040"	.100"	0-20-0	655-138J	53521
			0-40	655-238J	53591
.0005"	.050"	.125"	0-25-0	655-131J	53515
			0-50	655-231J	53585
.001"	.020"	.050"	0-10-0	655-142J	53525
			0-20	655-242J	53595
.001"	.030"	.075"	0-15-0	655-143J	53527
			0-30	655-243J	53597
.001"	.040"	.100"	0-20-0	655-144J	53529
			0-40	655-244J	53599
.001"	.050"	.125"	0-25-0	655-145J	53531
			0-50	655-245J	53601
.001"	.100"	.250"	0-50-0	655-141J	53523
			0-100	655-241J	53593
.001"	.100"	.500"	0-50-0	655-341/5J	53607
			0-100	655-441/5J	53611
.001"	.100"	1.000"	0-50-0	655-341J	53609
			0-100	655-441J	53613



655-161J-8



655-111J



655-131J  
with top lift



655-341J  
with stem cap



# DIAL INDICATORS

## 656 DIAL INDICATORS

### AGD GROUP 4

### RANGES UP TO 1" AND 25MM

These indicators have a shockless, hardened steel gear train and jewel bearings. They are furnished with a lug-on-center back. Antimagnetic mechanism is optional for all models. Special non-shock mechanism is available for all models except 656-109 and 656-209. For more information on these and other attachments, accessories and contact points, refer to the end of the AGD Dial Indicator Listings. For dial styles, see previous pages.

If lift lever is desired, indicator must be ordered with case stem cap.

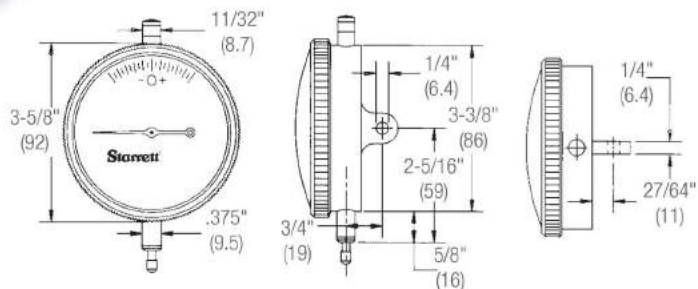
Graduation	Range One Rev.	Total	Dial Reading	Stem Dia.	Cat. No.	EDP
0.002mm	0.2mm	0.5mm	0-10-0	.375" (9.5mm)	656-161J 656-161J-8	53690 64870
0.002mm	0.2mm	0.5mm	0-20	.375" (9.5mm)	656-261J 656-261J-8	53779 64871
0.01mm	1.0mm	2.5mm	0-50-0	.375" (9.5mm)	656-181J 656-181J-8	53692 64872
0.01mm	1.0mm	2.5mm	0-100	.375" (9.5mm)	656-281J 656-281J-8	53781 64873
0.01mm	1.0mm	25mm	0-100	.375" (9.5mm)	656-881J 656-881J-8	56234 64874



656-161J-8



656-111J



656-441J with top lift

656-129J stem cap required for use with lift lever see page 170



Free drafting template available for this size. Write The L. S. Starrett Co. at: 121 Crescent Street Athol, MA 01331.

656 Dial Indicators					
Graduation	Range One Rev.	Total	Dial Reading	Cat. No.	EDP
.00005"	.006"	.015"	0-3-0	656-109J	53661
			0-6	656-209J	53694
.0001"	.008"	.020"	0-4-0	656-118J	53664
			0-5-0	656-111J	53662
.0001"	.010"	.025"	0-10	656-211J	53695
			0-5-0	656-511J	53791
.0001"	.010"	.200"	0-10	656-611J	53795
			0-10-0	656-517J	53793
.0001"	.020"	.400"	0-20	656-617J	53797
			0-5-0	656-124J	53666
.00025"	.010"	.025"	0-10	656-224J	53697
			0-10-0	656-128J	53668
.00025"	.020"	.050"	0-20	656-228J	53699
			0-15-0	656-129J	53670
.00025"	.030"	.075"	0-30	656-229J	53701
			0-10-0	656-134J	53674
.0005"	.020"	.050"	0-20	656-234J	53705
			0-15-0	656-136J	53676
.0005"	.030"	.075"	0-30	656-236J	53707
			0-20-0	656-138J	53678
.0005"	.040"	.100"	0-40	656-238J	53709
			0-25-0	656-131J	53672
.0005"	.050"	.125"	0-50	656-231J	53703
			0-10-0	656-142J	53682
.001"	.020"	.050"	0-20	656-242J	53713
			0-15-0	656-143J	53684
.001"	.030"	.075"	0-30	656-243J	53715
			0-20-0	656-144J	53686
.001"	.040"	.100"	0-40	656-244J	53717
			0-25-0	656-145J	53688
.001"	.050"	.125"	0-50	656-245J	53719
			0-50-0	656-141J	53680
.001"	.100"	.250"	0-100	656-241J	53711
			0-50-0	656-341/5J	53783
.001"	.100"	.500"	0-100	656-441/5J	53787
			0-50-0	656-341J	53785
.001"	.100"	1.000"	0-100	656-441J	53789



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## DIAL INDICATORS

### 25, 655, 656 DIAL INDICATORS WITH LONG RANGE



#### 2-5" RANGES

These indicators have a shockless, hardened steel gear train and are furnished with jewel bearings and lug-on-center backs unless otherwise ordered.

- Conforms to AGD specifications except for range
- Stem cap supplied as standard – top lift available when specified
- Furnished with continuous reading double dial with direct reading count hands

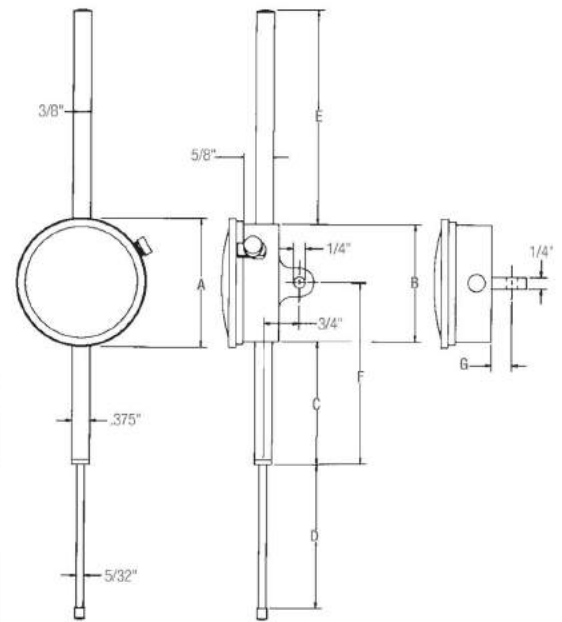
#### 25, 655, 656 Dial Indicators with Long Range

Graduation	Range	Dial Reading	Revs. of Hand	AGD Group	Bezel Diameter	Cat. No.	EDP
.001"	2.000"	0-100	20	2	2-1/4"	25-2041J	53309
				3	2-3/4"	655-2041J	53619
				4	3-5/8"	656-2041J	53799
.001"	3.000"	0-100	30	2	2-1/4"	25-3041J	53310
				3	2-3/4"	655-3041J	53620
				4	3-5/8"	656-3041J	53800
.001"	4.000"	0-100	40	2	2-1/4"	25-4041J	53311
				3	2-3/4"	655-4041J	53621
				4	3-5/8"	656-4041J	53801
.001"	5.000"	0-100	50	2	2-1/4"	25-5041J	53312
				3	2-3/4"	655-5041J	53622
				4	3-5/8"	656-5041J	53802

Not available with special non-shock mechanism. For other attachments, accessories and contact points, refer to the end of the AGD Dial Indicator listings.

#### Approximate Dimensions

Cat. No.	A	B	C	D	E	F	G
25-2041J	2-1/4"	2-1/16"	1-13/16"	2-1/16"	3-3/32"	2-7/8"	15/32"
655-2041J	2-3/4"	2-1/2"	1-5/8"	2-1/16"	3-3/32"	2-7/8"	7/16"
656-2041J	3-5/8"	3-3/8"	1-1/4"	2-1/16"	3-3/32"	3"	27/64"
25-3041J	2-1/4"	2-1/16"	2-13/16"	3-1/16"	4-9/16"	3-7/8"	15/32"
655-3041J	2-3/4"	2-1/2"	2-5/8"	3-1/16"	4-9/16"	3-7/8"	7/16"
656-3041J	3-5/8"	3-3/8"	2-1/4"	3-1/16"	4-9/16"	4"	27/64"
25-4041J	2-1/4"	2-1/16"	3-13/16"	4-1/16"	6"	4-7/8"	15/32"
655-4041J	2-3/4"	2-1/2"	3-5/8"	4-1/16"	6"	4-7/8"	7/16"
656-4041J	3-5/8"	3-3/8"	3-1/4"	4-1/16"	6"	5"	27/64"
25-5041J	2-1/4"	2-1/16"	4-13/16"	5-1/16"	7-1/4"	5-7/8"	15/32"
655-5041J	2-3/4"	2-1/2"	4-5/8"	5-1/16"	7-1/4"	5-7/8"	7/16"
656-5041J	3-5/8"	3-3/8"	4-1/4"	5-1/16"	7-1/4"	6"	27/64"



25-2041J



# DIAL INDICATORS

## 25, 655 METRIC DIAL INDICATORS WITH LONG RANGE



### 50-125MM RANGES

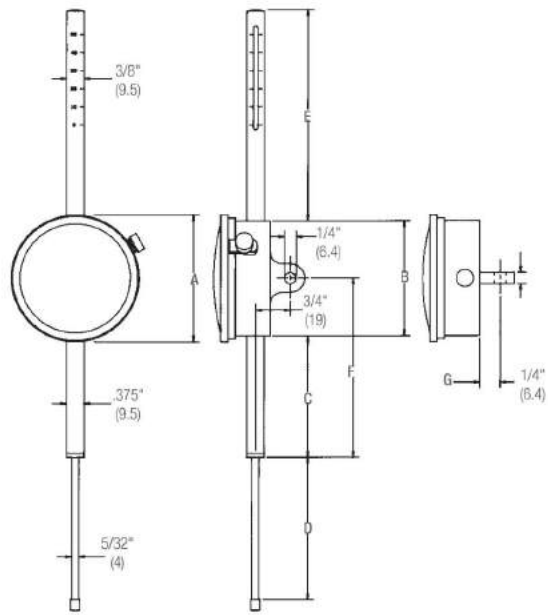
These indicators have a shockless, hardened steel gear train and are furnished with jewel bearings and lug-on-center backs unless otherwise ordered.

- Conforms to AGD specifications except for range
- Furnished with continuous reading double dial
- Direct readout accomplished by (1) graduated top tube which indicates each 10mm of spindle travel, (2) revolution counter which indicates each 1mm full turn of the indicator hand, and (3) indicator hand which shows each 0.01mm of spindle movement

25, 655 Metric Dial Indicators with Long Range							
Graduation	AGD Group	Stem Diameter	Range	Dial Reading	Revs. of Hand	Cat. No.	EDP
0.01mm	2	.375"	50mm	0-100	50	25-2081J	56225
	3	(9.5mm)					655-2081J
0.01mm	2	.375"	75mm	0-100	75	25-3081J	56226
	3	(9.5mm)					655-3081J
0.01mm	2	.375"	100mm	0-100	100	25-4081J	56227
	3	(9.5mm)					655-4081J
0.01mm	2	.375"	125mm	0-100	125	25-5081J	56228
	3	(9.5mm)					655-5081J

Not available with special non-shock mechanism. For contact points, attachments and accessories, refer to the end of the AGD Dial Indicator listings.

Approximate Dimensions Inch and Millimeter							
Cat. No.	A	B	C	D	E	F	G
25-2081J	2-1/4" (57mm)	2-1/16" (52mm)	1-13/16" (46mm)	2-1/16" (52mm)	3-3/32" (79mm)	2-7/8" (73mm)	15/32" (12mm)
655-2081J	2-3/4" (70mm)	2-1/2" (63.5mm)	1-5/8" (41mm)	2-1/16" (52mm)	3-3/32" (79mm)	2-7/8" (73mm)	7/16" (11mm)
25-3081J	2-1/4" (57mm)	2-1/16" (52mm)	2-13/16" (71mm)	3-1/16" (78mm)	4-9/16" (116mm)	3-7/8" (98mm)	15/32" (12mm)
655-3081J	2-3/4" (70mm)	2-1/2" (63.5mm)	2-5/8" (67mm)	3-1/16" (78mm)	4-9/16" (116mm)	3-7/8" (98mm)	7/16" (11mm)
25-4081J	2-1/4" (57mm)	2-1/16" (52mm)	3-13/16" (81mm)	4-1/16" (103mm)	5-61/64" (151mm)	4-7/8" (124mm)	15/32" (12mm)
655-4081J	2-3/4" (70mm)	2-1/2" (63.5mm)	3-5/8" (92mm)	4-1/16" (103mm)	5-61/64" (151mm)	4-7/8" (124mm)	7/16" (11mm)
25-5081J	2-1/4" (57mm)	2-1/16" (52mm)	4-13/16" (122mm)	5-1/16" (129mm)	7-1/4" (184mm)	5-7/8" (149mm)	15/32" (12mm)
655-5081J	2-3/4" (70mm)	2-1/2" (63.5mm)	4-5/8" (117.5mm)	5-1/16" (129mm)	7-1/4" (184mm)	5-7/8" (149mm)	7/16" (11mm)



655-2081J



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## DIAL INDICATORS

### 656 DIAL INDICATORS WITH EXTRA LONG RANGE

#### AGD GROUP 4 6-12" RANGES

These indicators have a shockless, hardened steel gear train and are furnished with jewel bearings and lug-on-center backs unless otherwise ordered.

- Use anywhere a long reach is needed – positioning of stops, measuring travel of slides and cam throws, and use in deep slots or holes
- Conforms to AGD specifications except for range, stems and contact point
- Top stem graduated in 1" increments, called out by red colored pointer
- Furnished with continuous reading double dial with direct reading count hand

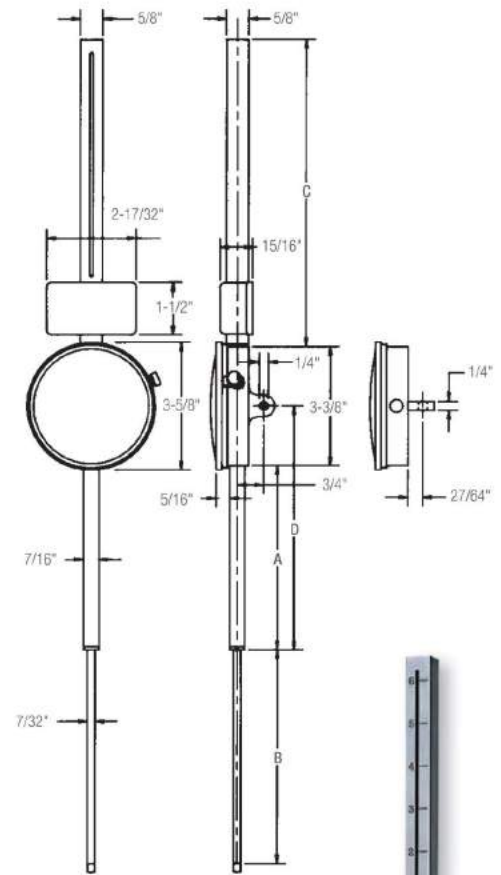
#### 656 Dial Indicators with Extra-Long Range

Graduation	AGD Group	Dial Diameter	Range	Dial Reading	Revs. of Hand	Cat. No.	EDP
.001"	4	3-5/8"	6.000"	0-100	60	656-6041J	53803
			7.000"		70	656-7041J	53804
			8.000"		80	656-8041J	53805
			9.000"		90	656-9041J	53806
			10.000"		100	656-10041J	53807
			11.000"		110	656-11041J	53808
			12.000"		120	656-12041J	53809

Not available with special non-shock mechanism. For contact points, attachments and accessories, refer to the end of the AGD Dial Indicator Section

#### Dimensions

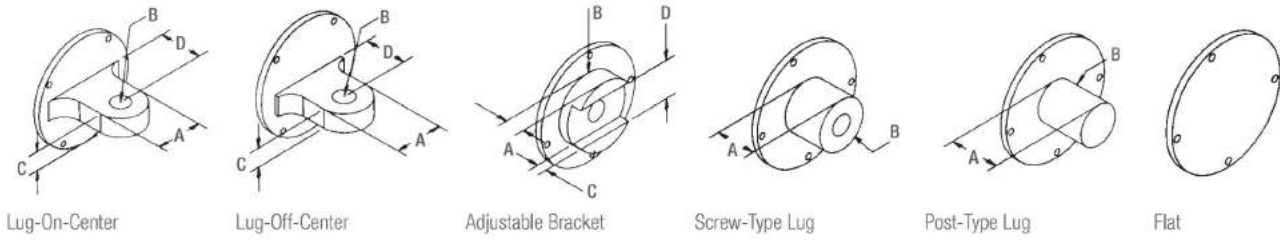
Cat. No.	A	B	C	D
656-6041J	5-1/4"	6-1/16"	8-3/4"	6-15/16"
656-7041J	6-1/4"	7-1/16"	9-3/4"	7-15/16"
656-8041J	7-1/4"	8-1/16"	10-3/4"	8-15/16"
656-9041J	8-1/4"	9-1/16"	11-3/4"	9-15/16"
656-10041J	9-1/4"	10-1/16"	12-3/4"	10-15/16"
656-11041J	10-1/4"	11-1/16"	13-3/4"	11-15/16"
656-12041J	11-1/4"	12-1/16"	14-3/4"	12-15/16"



656-6041J



# INDICATOR BACKS



AGD Dial Indicator Backs											
Type	Fits Starrett Indicator Models	Part No.	EDP	Dimensions							
				A		B		C		D	
				Inch	mm	Inch	mm	Inch	mm	Inch	mm
*Lug-On-Center	81	PT06836-1	70856							1/2"	12.7mm
	25, 2600	PT07206-1	70960	5/8"	16mm	1/4"	6.3mm	1/4"	6.3mm	15/32"	12mm
	655	PT06966-1	70888							7/16"	11mm
	656	PT07317-1	70980							27/64"	10.7mm
**Lug-Off-Center	81	PT06836	70855							1/2"	12.7mm
	25, 2600	PT06608-1	70770	5/8"	16mm	1/4"	6.3mm	1/4"	6.3mm	15/32"	12mm
	655	PT06966A	71996							7/16"	11mm
	656	PT07317A	71997							27/64"	10.7mm
†Adjustable Bracket (#1/4-20 Thread)	81	PT06836M	70859			7/8"	22mm				
	25, 2600	PT06608M	70776	1/4"	6.3mm	1-1/4"	32mm	1/8"	3mm	1/2"	12.7mm
	655	PT06878M	70874								
	656	PT06903M	70882								
†Screw-Type Lug (#1/4-20 Thread)	81	PT24074	72482								
	25, 2600	PT24076	72483	1/2"	12.7mm	5/8"	16mm				
	655	PT24078	72484								
	656	PT24080	72485								
†Screw-Type Lug (#3/8-24 Thread)	81	PT06836S	72223								
	25, 2600	PT06608E	70772	1/2"	12.7mm	5/8"	16mm				
	655	PT06878E	72224								
	656	PT06903E	72225								
†Screw-Type Lug (#1/4-28 Thread)	81	PT24073	72486								
	25, 2600	PT24075	72487	1/2"	12.7mm	5/8"	16mm				
	655	PT24077	72488								
	656	PT24079	72489								
†Post-Type Lug	81	PT06836F	70857								
	25, 2600	PT06608F	70773	1-1/4"	32mm	1/2"	12.7mm				
	655	PT06878F	71992								
	656	PT06903F	71994								
**Flat	81	PT06836J	70858								
	25, 2600	PT06608J	70774								
	655	PT06878J	70873								
	656	PT06903J	71995								
Flat (Plastic)	81	PT24921	67295								
	25, 2600	PT26160	67405								

\* Regularly furnished on all listed indicators at no extra charge.

\*\* When specified, available on all listed indicators at no extra charge.

† When specified, available at extra charge on all listed indicators. Backs for special requirements are also available; priced on application.



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NEW!

## DIAL INDICATORS

INDICATORS AND GAGES

### 647 AND 647M DIAL COMPARATOR INDICATORS

The 647 Dial Comparator Indicators offer a high degree of security and precision. They are based on a solid and well thought-out construction taking into account the latest technology. They are manufactured by the most up-to-date methods.

#### FEATURES AND SPECIFICATIONS

647 and 647M Dial Comparator Indicators				
Cat. No.	EDP	Range	Graduation	Dial Reading
647	00001	.004"	.00005"	20-0-20
647M	00002	0.1mm	0.001mm	50-0-50

647 and 647M Dial Comparator Indicator Accessories		
Part No.	EDP	Description
PT15052	00537	Lug-on-center back
PT15053	00538	Lift cable

- Effective non-shock mechanism
- Pinions and shafts of the movement are jeweled
- After removal of the safety cap and adjustment screw on top of the case allows simple and safe zero setting of the instrument over the total measuring range
- A safety cap prevents unintentional turning of the fine adjustment screws
- Stem and spindle are made of hardened stainless steel
- The measuring spindles are very sensitive on account of their accurate guides
- Additional overtravel assists with the insertion of work pieces into the measuring device
- The clear scale is shadow free
- The red tolerance markers are easy to recognize and to set
- Furnish with flat back



647



647M





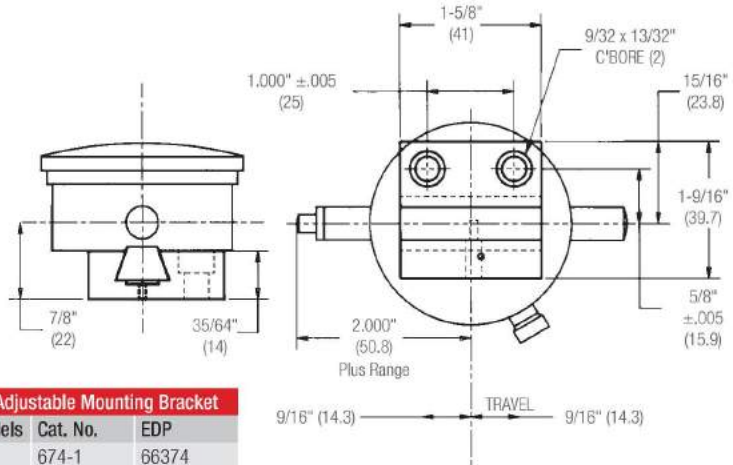
# INDICATOR BACKS

## SPECIAL INDICATOR BACKS



### 674 BACKS WITH ADJUSTABLE MOUNTING BRACKET

For use with gages and gaging fixtures where an adjustable indicator mounting is required. A dovetail with rack and pinion adjustment provides 1-1/8" (28mm) indicator travel. A 1/8" hex wrench is used to adjust and lock the indicator in final position. The bracket has two counter-bored mounting holes (for 1/4" socket head screws), and the back has four screw holes so the indicator back can be rotated.

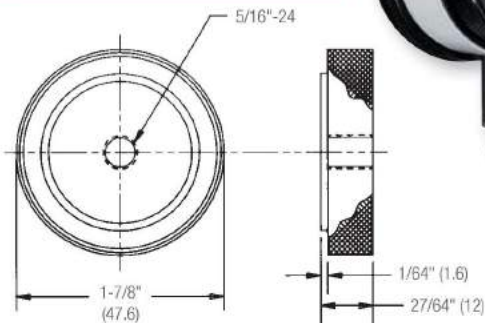


674 Backs with Adjustable Mounting Bracket		
Fits Starrett Models	Cat. No.	EDP
81	674-1	66374
25, 2600, 2900	674-2	52892
655	674-3	52893
656	674-4	52894

### 676 MAGNETIC BACKS

These magnetic backs provide a quick and easy means of attaching any Starrett AGD indicator to flat, ferrous metal surfaces. A real time-saver for machine, jig and fixture set up. Requires no clamps, rods or snugs. A special 5/16"-24 threaded stud back is provided to replace the standard lug back. The powerful, permanent magnet is then attached to the threaded stud. Anti-magnetic indicators are not required.

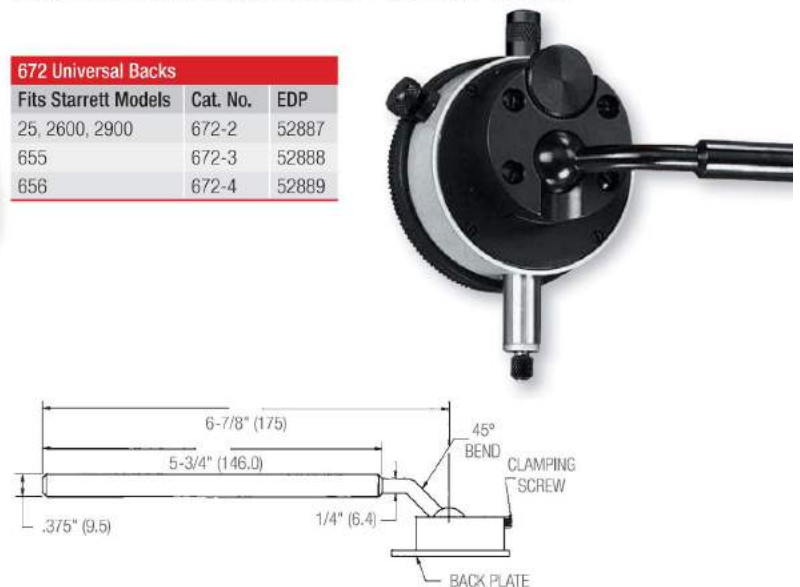
676 Magnetic Backs		
Fits Starrett Models	Cat. No.	EDP
81	676-1	56647
25, 2600, 2900	676-2	56648
655	676-3	56649
656	676-4	56650



### 672 UNIVERSAL BACKS

Featuring a universal ball joint attached to the end of a gooseneck shank, these attachments make it possible to position an AGD indicator at any desired setting. The indicator can be rotated 360° and angularly up to 90° and locked in the desired position by tightening a single knurled nut. Straight shank is 3/8" (9.5mm) in diameter.

672 Universal Backs		
Fits Starrett Models	Cat. No.	EDP
25, 2600, 2900	672-2	52887
655	672-3	52888
656	672-4	52889



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## INDICATOR ACCESSORIES

### AGD INDICATOR ATTACHMENTS AND ACCESSORIES

#### 670 INDICATOR HOLE ATTACHMENT

These hole attachments make it possible to measure the inside of holes and other surfaces that cannot be reached with the regular indicator spindle. Both attachments have a .375" (9.5mm) diameter hole to fit all indicators made to AGD standards and can be securely clamped to the indicator stem. The ball end on the swivel arm which contacts the work is 1/8" (3mm) in diameter.

670 Indicator Hole Attachment					
Range (Approx.)		For Hole Depths to:		Cat. No.	EDP
Inch	mm	Inch	mm		
3/8"	9.5mm	13/16"	20mm	670A	52884
9/16"	14mm	1-11/16"	42mm	670B	52724



#### 671 UNIVERSAL ATTACHMENT

This Universal Attachment is for use with indicators having standard AGD .375" (9.5mm) stem diameters. It clamps on the indicator stem and its movement is transmitted through the contact point to the indicator. Furnished with two interchangeable arms, one straight for measuring internal surfaces and one angular for measuring at right angles to the indicator spindle.

671 Universal Attachment		
Range (Approx.)	Cat. No.	EDP
1/8" (3mm)	671	52886



#### SPECIAL NON-SHOCK MECHANISM

Starrett dial indicators have hardened, stainless steel gears, pinions and racks for maximum resistance to shock. Where the rack is subject to repeated, severe and/or excessive mechanical shocks, many Starrett AGD dial indicators may be ordered with a special non-shock mechanism. Based on a positive-loaded, split gear assembly, this simple device protects indicator accuracy, prolongs life, and reduces service costs.

When ordering, specify "N/S" after the dial indicator catalog number.

The following indicators are not available with non-shock mechanism: 25-109, 25-209, 2600 and 2700 Indicators; 656-109, 656-209 and all other indicators with 2" (50mm) range and above.



# INDICATOR ACCESSORIES

## AGD INDICATOR CONTACT POINTS AND ACCESSORIES

Any of the contact points listed here can also be used with the 650 and 651 Indicators and with the 196 Indicators by using the 196R Adapter.

### EXTRA-LENGTH REGULAR-STYLE CONTACT POINTS WITH ROUND OR FLAT ENDS

#### 1/4-4"/6-100MM

All Starrett AGD indicators are regularly furnished with 1/4" (6.4mm) length interchangeable contact points. Available in standard lengths to 4" (100mm). Diameter is 13/64" (5mm), with a #4-48 screw thread. Made from high grade steel, hardened and ground. Other lengths are also available priced on application. Available with round or flat ends as listed.

### REGULAR-STYLE CARBIDE CONTACT POINTS WITH ROUND OR FLAT END

Two round points are available in standard lengths. 1/4" (6.3mm), PT08399-X (EDP 66053) – or – 1/2" (13mm), PT06677-X (EDP 66054). One flat point is available in standard length; 1/4" (6.3mm), PT10453-X (EDP 66068). Interchangeable points have a #4-48 screw thread. Longer lengths can be easily obtained by adding contact point extensions (see next page). Other sizes also available by request.

Extra-Length Contact Points, Regular Style					
Length		Rounded End		Flat End	
Inch	mm	Part No.	EDP	Part No.	EDP
1/4"	6.4mm	PT07215	70965	PT10453	72048
		PT01761	75263		
1/2"	13mm	PT06677	70823	PT09560	71260
3/4"	19mm	PT06677A	70824	PT09560A	71261
1"	25mm	PT06677B	70825	PT09560B	71262
1-1/4"	32mm	PT06677C	70826	PT09560C	71263
1-1/2"	38mm	PT06677D	70827	PT09560D	71264
1-3/4"	44mm	PT06677E	70828	PT09560E	71265
2"	50mm	PT06677F	70829	PT09560F	71266
2-1/4"	57mm	PT06677G	70830	PT09560G	71267
2-1/2"	63mm	PT06677H	70831	PT09560H	71268
2-3/4"	70mm	PT06677J	70832	PT09560J	71269
3"	75mm	PT06677K	70833	PT09560K	71270
4"	100mm	PT10459	71327		



## 28 SHOCK ABSORBING ANVIL

Anvil replaces the regular contact point on any AGD indicator, protecting its movement against mechanical shock. Any sudden impact telescopes the anvil into the body of the unit against an internal spring. Acts as a solid contact point when the indicator is used normally. Furnished with #4-48 AGD standard screw thread.

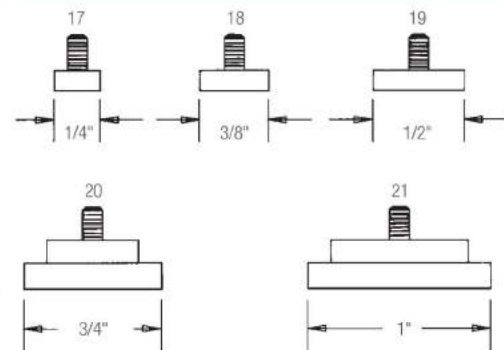
Shock Absorbing Anvil	
Cat. No.	EDP
28	50199



## FLAT-END STEEL POINTS

The flat-end contact points have hardened steel contact surfaces, ground flat and lapped. They are furnished with a #4-48 screw thread for use on any AGD Indicator.

Flat-End Steel Points				
Diameter		Style No.	Part No.	EDP
Inch	mm			
1/4"	6.4	17	PT06632-17	70804
3/8"	9.5	18	PT06632-18	70805
1/2"	12.7	19	PT06632-19	70806
3/4"	19	20	PT06632-20	70808
1"	25	21	PT06632-21	70807



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# INDICATOR ACCESSORIES

## AGD INDICATOR SPECIAL CONTACT POINTS AND ACCESSORIES

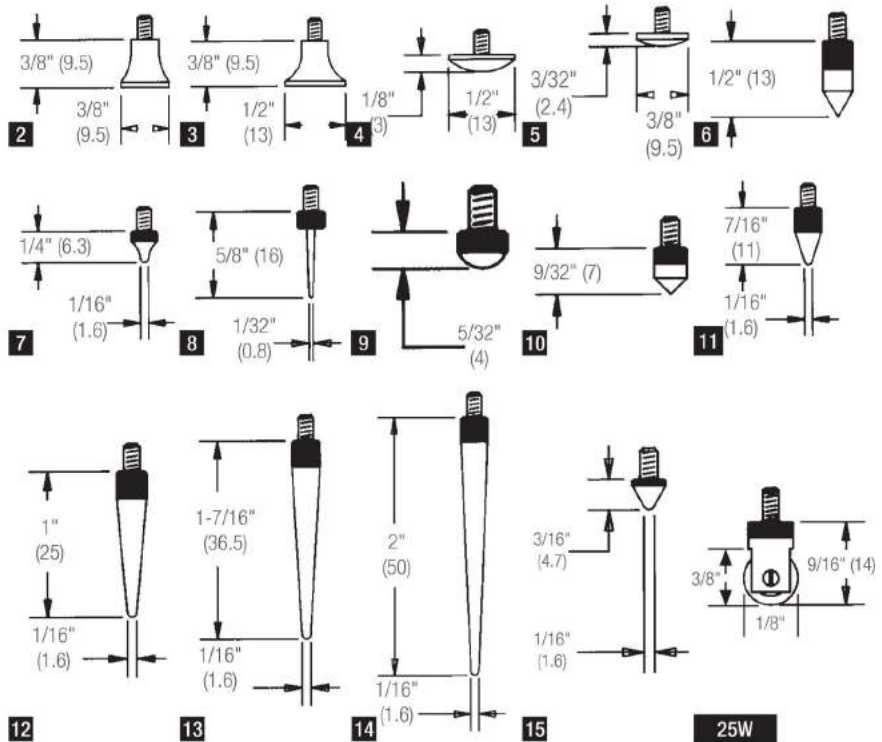
### SPECIAL FORM CONTACT POINTS

Starrett Special Contact Points are furnished in fourteen shapes. Knurled diameter is approximately 13/64" (5mm). All have #4-48 screw thread and can be used on any AGD indicator. Other special shapes are available on special order.

Carbide, sapphire, diamond or teflon-coated contact points are also available by request.

### 25W ROLLER CONTACT POINT

This contact has a small, hardened roller 3/8" (9.5mm) in diameter for continuous gaging of moving material where the material movement is at a slow speed. Contact has #4-48 screw thread and substitutes for the regular contact point provided on Starrett and other AGD indicators. Furnished with a knurled check nut for positioning the contact on the indicator spindle. See drawing (right).



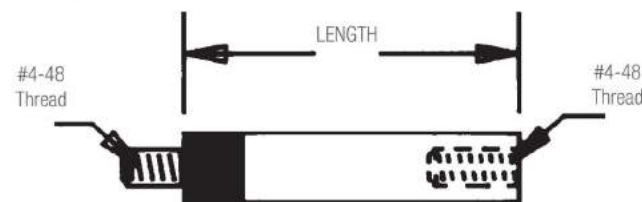
### AGD CONTACT ADAPTORS



From Metric Racks to Inch Contacts  
PT24728

From Inch Racks to Metric Contacts  
PT24729

### AGD CONTACT POINT EXTENSIONS



AGD Contact Point Extensions		
Length	Part No.	EDP
1/2"	PT21697-1/2	64632
1"	PT21697-1	64633
2"	PT21697-2	64634
3"	PT21697-3	64635
4"	PT21697-4	64636

### 25R CONTACT POINT SET

14 points with #4-48 screw thread to fit AGD indicators: a regular 1/4" (6.3mm) long point; 9 special form points; a 28 Shock Absorbing Anvil; and 3 extra long points 1/2", 3/4" and 1" (13, 19, 25mm) long. High grade steel, hardened and ground. All points are mounted on a convenient aluminum ring for safe keeping and easy selection.

Contact Points		
Style No.	Part No.	EDP
2	PT06632-2	70790
3	PT06632-3	70791
4	PT06632-4	70792
5	PT06632-5	70793
6	PT06632-6	70794
7	PT06632-7	70795
8	PT06632-8	70796
9	PT06632-9	70797
10	PT06632-10	70798
11	PT06632-11	70799
12	PT06632-12	70800
13	PT06632-13	70801
14	PT06632-14	70802
15	PT06632-15	70803
	25W	53916
	25R	50153
	PT24728	64963
	PT24729	64964



# INDICATOR ACCESSORIES

## AGD INDICATOR ACCESSORIES

### 25SC SPLIT COLLETS

#### ENGLISH AND METRIC THREADS

For mounting AGD Indicators with 3/8" (9.5 mm) or 8 mm stems in gaging and work location fixtures, these collets simplify fixture mounting. Screw the collet into the fixture or into our 648 Depth Gage Base, insert the indicator into the collet and tighten it in place with the hexagonal nut. Internal collet fingers grip the stem with equal pressure to eliminate spindle binding. Made of steel with black finish. Overall length of collet and threads is 1".

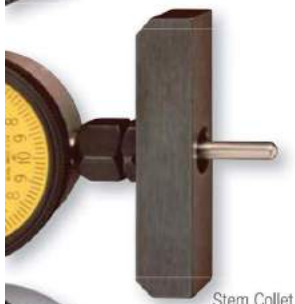
25SC Split Collets English Thread				
Thread Size	Thread Length	Hole for Indicator Stem	Cat. No.	EDP
3/8-24NF	9/32" (7mm)	.375" (9.5mm) Diameter to 1/2" (12.7mm) Depth; 1/4" (6.3mm) Diameter through Hole	25SC14	50155
1/2-20NF		.375" (9.5mm) Dia. through Hole	25SC38	50156
1/2-32UN		.375" (9.5mm) Dia. through Hole	25SC38B	55995
25SC Split Collets Metric Thread				
M12 x 1.75	7mm	8mm Diameter through Hole	25SC8M	64885



Split Bushing Attachment



Threaded Stem Attachment



Stem Collet



Range Limit Cap

#### SPLIT BUSHINGS

Split bushings fit over the indicator stem to increase the overall diameter for mounting in fixtures.

#### THREADED STEMS

Threaded stems on Starrett indicators with a .375" (9.5mm diameter stem up to 1" (25mm) range (except long stem models) are available at additional cost. A threaded stem is often desirable for attaching the indicator to machine tools or fixtures. A 3/8-24 thread is furnished unless otherwise specified.

#### 648 DEPTH GAGE BASES WITH STEM COLLET

Depth gage base with 25SC38 Stem Collet to fit 3/8" (9.5mm) stem dia. (as per AGD). Split bushings for adapting stem diameter are available but not included.

648 Depth Gage Bases with Stem Collet		
Base Size	Cat. No.	EDP
4" (100mm)	648-4	65850
6" (150mm)	648-6	65851
8" (200mm)	648-8	65852

#### LONG STEM DIAL INDICATORS

Starrett 81, 25, 2600, 655 and 656 Indicators through the 1" (25mm) range can be furnished with long stems up to 12" (300mm). These are especially useful for gaging in deep holes or where obstructions prevent the use of regular indicators. Specify stem length from outside case diameter when ordering.

Long stems not available on 80 Miniature Dial Indicators.



#### Split Bushings for 80 Miniature Dial Indicators

Length	Diameter		Cat. No.	EDP
	Inside	Outside		
1/2"	.219"	.375"	80SB	56008

#### Split Bushings for AGD English Indicators

1/2"	.375"	.500"	25SB	50154
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#### Split Bushings for AGD Metric Indicators

12.7mm	8mm	9.5mm	25MSB	56007
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#### 25LC RANGE LIMIT CAP

The Range Limit Cap replaces the stem cap furnished on most 81, 25, 2600, 655 and 656 AGD Indicators, preventing the possible error of a complete revolution. It can be adjusted to limit an indicator's measuring range any amount up to 3/8" (9.5mm).

#### 25LC Range Limit Cap

Part No.	EDP
25LC	50152



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## INDICATOR ACCESSORIES

### AGD INDICATOR ACCESSORIES

#### TOP LIFT

A knurled grip allows the spindle to be manually lifted and returned by spring action to contact the work. Furnished in place of the stem cap on .500", 1.000", 10mm and 25mm range indicators. No extra charge on AGD Indicators up to 1" (25mm) range; over 1" (25mm) range, priced on request. To order, specify "with Top Lift" after the indicator catalog number.

**NOTE:** Will not fit on 2700 Indicators.

#### RUBBER DUST GUARD

Protects the rack of AGD Indicators from foreign matter under adverse gaging conditions. Made in lengths to fit 81, 25, 2600, 655 and 656 Indicators up to 1" (25mm) range.

Rubber Dust Guard		
Indicator Range	Part No.	EDP
.400", .500", 1.000" (10mm, 12.7mm, 25mm)	PT09545	71256
Ranges under .400" (10mm)	PT09763	71289

#### AGD DIAL INDICATOR TOLERANCE HANDS

Starrett dial indicators may be ordered with crystal-mounted or bezel-mounted tolerance hands for visually checking limits of a given dimension.

Crystal-mounted hands, both colored red, are positioned under the crystal and are individually adjustable through 360° by turning concentric knurled knobs on the outside of the crystal. Available for all 81, 25, 655 and 656 AGD Dial Indicators.

Bezel-mounted hands, both colored red, rotate inside the bezel. They are mounted outside the crystal and are independently adjustable through 360°. Available for 81 and 25 AGD Indicators only.

Snap-on bezel-mounted hands, two hands colored red, are easily mounted on the outside of the bezel and are adjustable through 360°. Available for 25 AGD Indicators only. Order PT99513 (EDP 66038).

#### MAXIMUM HAND

This red-colored hand records the maximum position reached by the indicator hand within a single revolution. Mounted under the crystal, it has a small nib at its point. The indicator hand contacts the nib, advancing the maximum hand which remains in position when the indicator hand returns to its at-rest position. To reset the maximum hand, turn the knurled knob mounted outside the crystal.

To order Tolerance or Maximum Hands, specify the indicator catalog number followed by the type of hand desired.

#### LEVER CONTROL

Handy attachment mounts in place of stem cap and is interchangeable on most Starrett 81, 25, 2600, 655 and 656 AGD Indicators up to 1" or 25mm range. Pressing down lever lifts spindle; releasing it lets spindle contact the work. Easy to install in the left or right hand position using a screwdriver and an open end wrench. If ordered on a new indicator, specify left or right hand position. (Furnished at left unless otherwise ordered.)

**NOTE:** Fits only indicators with a case stem cap.

Lever Control	
Part No.	EDP
PT99356	72088



Top Lift

Dust Guard



Indicators with snap-on bezel-mounted hands (left), crystal-mounted hands (above), and bezel-mounted hands (right).



Maximum Hand in at-rest position with indicator hand (left), and in recording position (right).



# INDICATOR TESTERS

## 716, 716M INDICATOR TESTERS

### 0-1"/0-25MM

With direct reading capability to .0001" or 0.002mm, these gages provide a rapid means for calibrating both AGD and dial test indicators for linearity and repeatability through ranges up to 1" or 25mm. This tester design is unlike others because it can be swung to any position between vertical and horizontal by loosening a large hand knob which fastens the gage assembly to the base.

In addition, the micrometer head can be turned on its axis and its scale positioned to suit the operator's convenience by loosening a single set screw. Tensioned locking screws prevent tipping of both the gage assembly and the indicator holding clamp during set-up and adjustment.

The micrometer head is our 469 super-precision head with reverse reading capability. When testing a 2600 or 2700 Electronic Indicator, a .000050" graduated head is advisable, available on special order.

An indicator mounting attachment holds dovetail mount indicators, AGD indicators with 3/8" (9.5mm) stems and indicators with a holder that has a 3/16" (4.7mm) shank. Unit also has a fine adjustment to zero the indicator.



#### 716 Indicator Tester (0-1" Range)

Micrometer Head Graduation*	Description	Cat. No.	EDP
.0001"	Tester with carbide faced spindle, indicator mounting and offset attachment	716X	67228

#### 716M Indicator Tester (0-25mm Range)

0.002mm	Tester with carbide faced spindle, indicator mounting and offset attachment	716MX	67229
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#### Accessory for 716, 716M Indicator Testers

Description	Cat. No.	EDP
Indicator mounting attachment only	PT26009	65102

\*Available on special order with resolution to .000050" or 0.001mm.



Dial test indicator held in place by an offset attachment



Checking AGD dial indicator



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NEW!

INDICATORS AND GAGES

## ELECTRONIC INDICATORS

### 2900 ELECTRONIC INDICATORS



RANGES UP TO .5"/1" AND 12MM/25MM  
AGD GROUP 2

The 2900 Electronic Indicators are available in a choice of configurations to meet a range of requirements. Innovative True Absolute Sensor Technology minimizes the chance of data loss for exceptional reliability. Built with IP67 protection and renowned Starrett quality, they maintain their reliability in hostile shop environments.

2900 Electronic Indicators - Inch/Metric .375" Stem: #4-48 UNF Thread							
Range		Resolution		Accuracy		Cat. No.	EDP
in	mm	in	mm	in	mm		
.5"	12mm	.00005"	0.001mm	±.00012"	±0.003mm	2900-1	09980
.5"	12mm	.0001"	0.001mm	±.00012"	±0.003mm	2900-2	09981
1"	25mm	.0005"	0.01mm	±0.001"	±0.03mm	2900-3-1	09963
.5"	12mm	.0005"/.0001"/.00005"	0.01mm/0.001mm	±0.001"	±0.03mm	2900-4	09983
1"	25mm	.0005"	0.01mm	±0.001"	±0.03mm	2900-5-1	09967
.5"	12mm	.0005"/.0001"/.00005"	0.01mm/0.001mm	±.00012"	±0.003mm	2900-6	09985
2900 Electronic Indicators - Inch/Metric 8mm Stem: M2.5 x 0.45 Thread							
.5"	12mm	.00005"	0.001mm	±.00012"	±0.003mm	2900-1ME	09975
1"	25mm	.0005"	0.01mm	±0.001"	±0.03mm	2900-3ME-25	09975
.5"	12mm	.0005"/.0001"/.00005"	0.01mm/0.001mm	±.00012"	±0.003mm	2900-4ME	09976
1"	25mm	.0005"	0.01mm	±0.001"	±0.03mm	2900-5ME-25	09978
.5"	12mm	.0005"/.0001"/.00005"	0.01mm/0.001mm	±0.00012"	±0.003mm	2900-6ME	09979
2900 Electronic Indicators - Metric Only 8mm Stem: M2.5 x 0.45 Thread							
	12mm		0.001mm		±0.003mm	2900-1M	09986
	25mm		0.01mm		±0.03mm	2900-3M-25	09964
	12mm		0.01mm/0.001mm		±0.003mm	2900-4M	09988
	25mm		0.01mm		±0.03mm	2900-5M-25	09968
	12mm		0.01mm/0.001mm		±0.003mm	2900-6M	09990
2900 Electronic Indicators - Accessories							
Cat. No.	EDP	Spindle Thread	Description				
PT99543	00004	4-48	Top lift lever for 2900 Electronic Indicators (English)				
PT99556	73065	M2.5X	Top lift lever for 2900 Electronic Indicators (metric)				

### FEATURES

- Intuitive design and layout – easy to learn and use
- Positive, tactile-feel button activation
- Long battery life
- CE compliant
- Data output on all models
- Choice of Basic, Standard and Advanced feature levels
- One micron resolution available
- Selectable resolution models available
- Fixed ratio measurement systems available
- Metric-only versions available
- Compatible with 25 Indicator backs
- IP67 compliant



### IP PROTECTION

An IP number is composed of two numbers, the first referring to protection against solid objects and the second against liquids.

**First number 6:** Totally protected against dust

**Second number 7:** Protection against submersion in water under standardized conditions of pressure for 30 minutes

**IP67**





# ELECTRONIC INDICATORS

## 2700 WISDOM® ELECTRONIC INDICATORS

The 2700 Wisdom Electronic Indicator is one of the most versatile of the electronic indicators. All indicators feature a glass scale design with an unsurpassed accuracy of  $\pm$  two resolutions when measuring from a known standard. All have rugged, sealed enclosures as well.

### FEATURES

- 8 resolutions and 4 measuring ranges available
- Plus or minus travel direction
- Zero the tool at any position of the spindle
- Rotating bezel
- Auto Off after 10 minutes of non-use
- Three power sources - operate by battery, A/C adaptor or through data port
- Output jack allows data transmission



INDICATORS AND GAGES

### 2700 Wisdom Electronic Indicators - Inch/Metric .375" Stem: #4-48 UNF Thread

Range		Resolution		Accuracy		Cat. No.	EDP
in	mm	in	mm	in	mm		
1"	25mm	.001"/.0005"/.0001"/.00005"	0.02mm/0.01mm/0.002mm/0.001mm	$\pm$ .0001"	$\pm$ 0.002mm	F2730IQ	49509
1"	25mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm/0.001mm	$\pm$ .0002"	$\pm$ 0.004mm	F2730-1IQ	49516
2"	50mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2740IQ	49510
4"	100mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2750IQ	49511
0.6"	15mm	.001"/.0005"/.0001"/.00005"	0.02mm/0.01mm/0.002mm/0.001mm	$\pm$ .0001"	$\pm$ 0.002mm	F2720AD	49500
0.6"	15mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2720-1AD	00043
1"	25mm	.001"/.0005"/.0001"/.00005"	0.02mm/0.01mm/0.002mm/0.001mm	$\pm$ .0001"	$\pm$ 0.002mm	F2730AD	49501
1"	25mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2730-1AD	00045
2"	50mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2740AD	49502
4"	100mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2750AD	49503

### 2700 Wisdom Electronic Indicators - Inch/Metric 8mm Stem: M2.5 x 0.45 Thread

1"	25mm	.001"/.0005"/.0001"/.00005"	0.02mm/0.01mm/0.002mm/0.001mm	$\pm$ .0001"	$\pm$ 0.002mm	F2730IQM	49513
1"	25mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2730-1IQM	09992
2"	50mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm/0.001mm	$\pm$ .0002"	$\pm$ 0.004mm	F2740IQM	49514
4"	100mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2750IQM	49515
0.6"	15mm	.001"/.0005"/.0001"/.00005"	0.02mm/0.01mm/0.002mm/0.001mm	$\pm$ .0001"	$\pm$ 0.002mm	F2720ADM	49504
0.6"	15mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2720-1ADM	09993
1"	25mm	.001"/.0005"/.0001"/.00005"	0.02mm/0.01mm/0.002mm/0.001mm)	$\pm$ .0001"	$\pm$ 0.002mm	F2730ADM	49505
1"	25mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2730-1ADM	09994
2"	50mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2740ADM	49506
4"	100mm	.001"/.0005"/.0001"	0.02mm/0.01mm/0.002mm	$\pm$ .0002"	$\pm$ 0.004mm	F2750ADM	49507

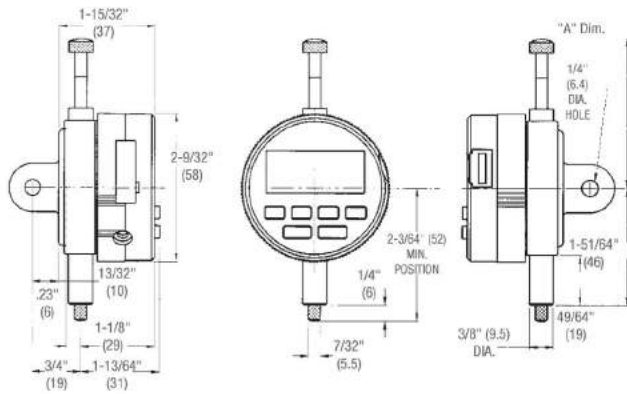


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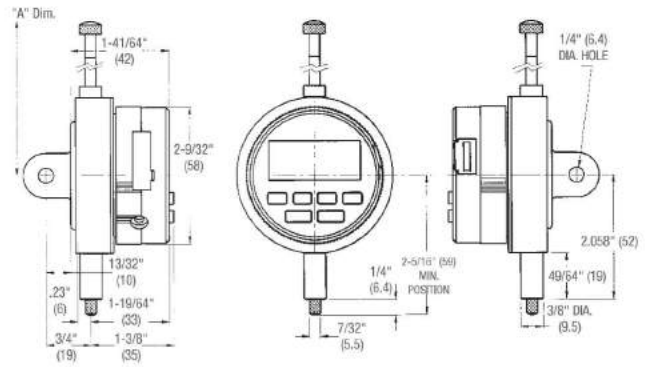


# ELECTRONIC INDICATORS



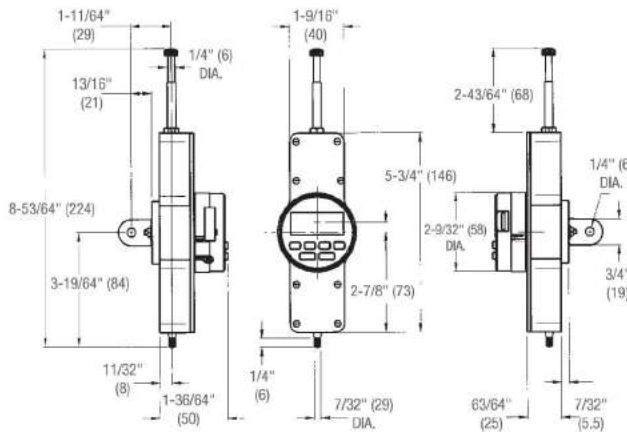
**.250"/6mm and .600"/15mm Models**

Travel		"A" Dimension	
Inch	mm	Inch	mm
.600"	15mm	2-13/32"	61mm
.250"	6.4mm	2-1/16"	52mm



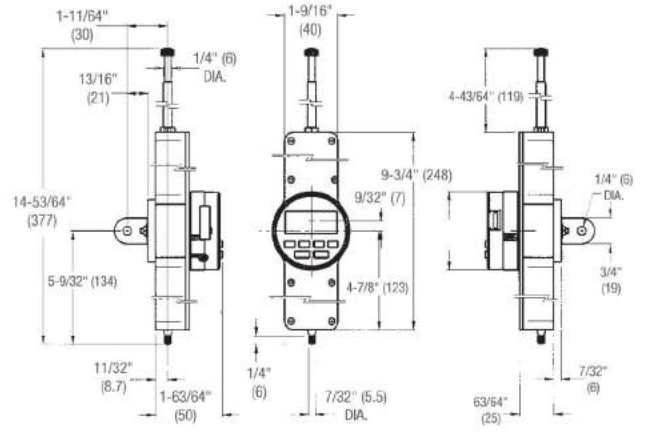
**1"/25mm Models**

Travel		"A" Dimension	
Inch	mm	Inch	mm
1"	25.4mm	2-7/8"	73mm



**2"/50 mm Models**

Accessories, Power Source, Cables		
Description	Part No.	EDP
A/C Adaptor, 110-Volt	PT26413	65880
Replacement Zinc Air Batteries, 4-Pack	PT26404	65884
Replacement Battery, 1-Pack (req. 2)	PT61120	65446
Cable to Module PT61490, to Connect to 772 Data Collectors and 761 Multiplexers	PT61489	65904
Cable for Wisdom Indicator to Wisdom Remote Display	PT26415	65882
USB Cable to RS232 (PC/Compatible)	PT26441	65893
7612 Data Multiplexer Gage Interface	2700SCM	69896



**4"/100mm Models**

Backs/Lever*		
Description	Part No.	EDP
Flat Back	PT26406	65886
Offset Lug Back	PT26407	65887
Adjustable Lug Back	PT26411	65891
Adjustable Back	PT26408	65888
Post-Type Back	PT26409	65889
Screw Bracket Back	PT26410	65890
Adjustable Mounting Bracket Back	PT26848	66293
Lifting Lever	PT26405	65885

\* Other backs, styles and accessories also available by request. To order contact points individually, see previous pages.

