

DIAL AND ELECTRONIC
INDICATORS AND GAGES

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)



657H

PT22428

58S

657R

PT16846

665D

657S
PT18718
PT18724

57S

665L

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 can be more adaptable to smaller, confined working areas.

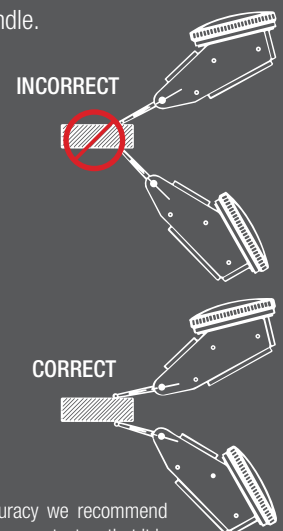
Unlike other indicators, the lever style's contact moves in an arc rather than in a straight line. This can cause a slight inaccuracy called "cosine error" if the angle of the lever to the workpiece is too steep. If, for example, a lever was set off an additional 20°, there could be an error of .0006"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



For extreme accuracy we recommend positioning the lever contact so that it is approximately 15° (708/709) or 0° (all other lever styles) from being horizontal with the workpiece



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

INDICATORS AND GAGES

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

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

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



709BCZ

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

| 708M, 709M Dial Test Indicators with Dovetail Mounts | | | | | | | | | | |
|--|-------|---------------|-------|---------|-------|--------------|-----------------------|-------------|------------|---------------------|
| Cat. No. | EDP | With SLC** | | Grad | Range | Dial Reading | Carbide Contact Point | | | Description |
| | | Cat. No. | EDP | | | | Length | Ball Dia. | Dial Color | |
| 708MAZ | 65864 | 708MAZ W/SLC | 66872 | 0.002mm | 0.2mm | 0-100-0 | 5/8" (16mm) | .078" (2mm) | Yellow | Without attachments |
| 708MACZ | 65865 | 708MACZ W/SLC | 66873 | | | | | | Yellow | With attachments* |
| 709MAZ | 64216 | | | 0.01mm | 0.8mm | 0-40-0 | 13/16" (20mm) | .078" (2mm) | Yellow | Without attachments |
| 709MACZ | 64221 | | | | | | | | Yellow | With attachments* |
| 709MALZ | 67092 | | | 0.01mm | 1.0mm | 0-50-0 | 1-5/64" (28.4mm) | .078" (2mm) | Yellow | Without attachments |
| 709MALCZ | 67093 | | | | | | | | Yellow | With attachments* |

*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



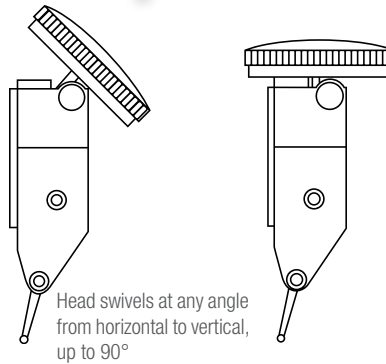
TEST INDICATORS

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

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

811, Dial Test Indicators with Swivel Head

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

811M Dial Test Indicators with swivel head

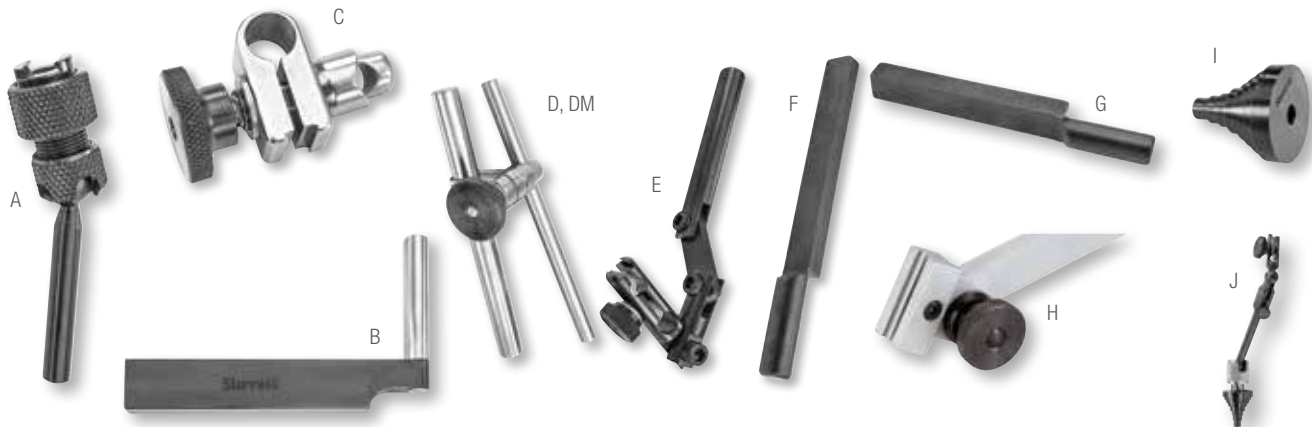
| Cat. No. | EDP | Grad. | Range | Dial Reading | Steel Contact Points | | Dial Color | Description |
|----------|-------|--------|-------|--------------|----------------------|---------------|------------|-----------------------------|
| | | | | | Length | Ball Diameter | | |
| 811-MPZ | 57084 | 0.01mm | 0.8mm | 0-40-0 | 5/8" (16mm) | .078" (2mm) | Yellow | In case without attachments |
| 811-MCZ | 57083 | | | | | | | In case with attachments* |

*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 ADAPTERS

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 Adapter, for use on any dovetail test indicator.

| Attachments for 708, 709, and 811 Test Indicators | | | |
|---|----------|-------|--------------------------------------|
| Photo Key | Part No. | EDP | Description |
| A* | PT22429 | 72441 | Dovetail Body Clamp |
| B* | PT11770A | 71361 | Tool Post Holder |
| C* | PT22428 | 72440 | Swivel Post Snug with Clamp |
| D* | PT22430 | 72442 | Snug and Rod Unit |
| DM | PT27171 | 66457 | Metric Snug and Rod Unit |
| E | PT26007 | 65101 | Indicator Axial Support |
| F | 711-49 | 52941 | Height Gage Attachment |
| G | 711-35 | 52942 | |
| H | PT99454 | 68713 | Indicator Attachment, dovetail style |
| I | PT28315 | 68847 | Collet Adapter |
| J | PT28316 | 68848 | |

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



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)

| Part No. | EDP | Length | | Ball Diameter | | Material |
|----------|-------|--------|----|---------------|-----|----------|
| | | in | mm | in | mm | |
| PT07137 | 70945 | 5/32 | 4 | .035 | 0.9 | Steel |
| PT07136 | 70944 | | | .062 | 1.6 | |
| PT07087 | 70912 | | | .120 | 3 | |
| PT07137X | 52964 | 5/32 | 4 | .035 | 0.9 | Carbide |
| PT07136X | 52965 | | | .062 | 1.6 | |
| PT07087X | 52966 | | | .120 | 3 | |

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

| Cat. No. | EDP | Grad. | Range | Dial Reading | Steel Contact Points | | Description |
|----------|-------|--------|-------|--------------|----------------------|---|---|
| | | | | | Length | Ball Diameter | |
| 711FSAZ | 52925 | .001" | .030" | 0-15-0 | 5/32" (4mm) | One: .120" (3mm) | Indicator with universal shank complete with long and short arm, body clamp |
| 711FSBZ | 52927 | | | | | | Indicator with gooseneck shank |
| 711FSZ | 52929 | | | | | | Indicator with body clamp only |
| 711GPSZ | 52944 | | | | | | Indicator with universal friction holder with shank |
| 711GCSZ | 52943 | .001" | .030" | 0-15-0 | 5/32" (4mm) | Three: .035" (0.9mm) .062" (1.6mm) .120" (3mm) | Indicator complete with all attachments* |
| 711HSAZ | 52951 | .0005" | .030" | 0-15-0 | 5/32" (4mm) | One: .120" (3mm) | Indicator with universal shank complete with long and short arm, body clamp |
| 711HSZ | 52953 | | | | | | Indicator with body clamp only |
| 711LPSZ | 52958 | | | | | | Indicator with universal friction holder with shank |
| 711LCSZ | 52957 | .0005" | .030" | 0-15-0 | 5/32" (4mm) | Three: .035" (0.9mm) .062" (1.6mm) .120" (3mm) | Indicator complete with all attachments* |

711M Last Word® Dial Test Indicators

| Cat. No. | EDP | Grad. | Range | Dial Reading | Steel Contact Points | | Description |
|----------|-------|--------|-------|--------------|----------------------|---|---|
| | | | | | Length | Ball Diameter | |
| 711MFAZ | 52926 | 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 |
| 711MFSZ | 52930 | | | | | | Indicator with body clamp only |
| 711MGPSZ | 52946 | | | | | | Indicator with universal friction holder with shank |
| 711MGCSZ | 52945 | 0.01mm | 0.7mm | 0-35-0 | 5/32" (4mm) | Three: .035" (0.9mm) .062" (1.6mm) .120" (3mm) | Indicator complete with all attachments* |

*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



711FS-GS



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 711EA 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 ADAPTER

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

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



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

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

*Indicator, .078" contact point, 3/8" and 5/32" dovetail clamps and case

**Indicator, .078" contact point, 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

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

*Indicator, 2mm 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



650, 651 Back Plunger Dial Indicators

| With Deep Hole Attachment | | Without Deep Hole Attachment | | Grad. | Range | Dial Reading | Description |
|---------------------------|-------|------------------------------|-------|-------|-------|--------------|--|
| Cat. No. | EDP | Cat. No. | EDP | | | | |
| 650A1Z | 64475 | 651A1Z | 64483 | .001" | .200" | 0-100 | Indicator with 3 contact points, 3 attachments*, in case |
| 650B1 | 64477 | 651B1 | 64485 | | | | Indicator with 3 contact points only |
| 650A5Z | 64474 | 651A5Z | 64484 | | | | Indicator with 3 contact points, 3 attachments*, in case |
| 650B5 | 64476 | 651B5 | 64486 | .001" | .200" | 0-50-0 | Indicator with 3 contact points only |

650, 651 Back Plunger Dial Indicators

| With Deep Hole Attachment | | Without Deep Hole Attachment | | Grad. | Range | Dial Reading | Description |
|---------------------------|-------|------------------------------|-------|-------|--------|------------------|--|
| Cat. No. | EDP | Cat. No. | EDP | | | | |
| 650MA1Z | 65261 | 651MA1Z | 65263 | 5mm | 0.01mm | 0-100 | Indicator with 3 contact points, 3 attachments*, in case |
| 650MB1 | 65262 | 651MB1 | 65264 | | | Yellow Dial Face | Indicator with 3 contact points only |

* 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 |



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



196R, 196MR



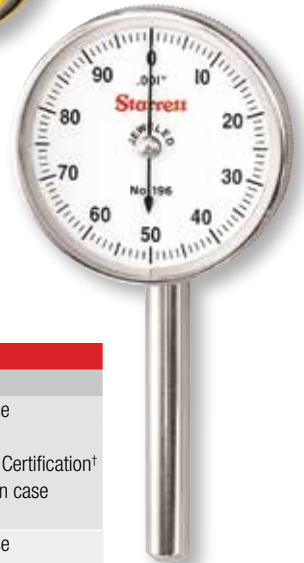
PT05471



PT05472



PT05473

Left: 196MB1
Below: 196B1

Contact Points and Adapters Only for 196 and 196M Universal Back Plunger Dial Indicators

| Catalog/Part No. | EDP | Description |
|------------------|-------|------------------------------|
| 196R | 50711 | Adapter** |
| 196MR | 67457 | Adapter (metric threads) |
| PT05471 | 70617 | Hardened steel contact point |
| PT05472 | 70618 | |
| PT05473 | 70619 | |

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

196 Universal Back Plunger Dial Indicators (1/4" Shank Diameter)

| Cat. No. | EDP | Grad. | Range | Dial Reading | Description |
|-------------|-------|-------|-------|--------------|---|
| 196A1Z | 50697 | | | | Indicator with 3 contact points, adapter, 4 attachments* in case |
| 196B1 | 50699 | | | | Indicator with 3 contact points and adapter only |
| 196B1 W/SLC | 66865 | .001" | .200" | 0-100 | Indicator with 3 contact points, adapter, and Standard Letter of Certification† |
| 196A6Z | 50701 | | | | Antimagnetic Indicator with 3 contact points, 4 attachments* in case |
| 196B6 | 50702 | | | | Antimagnetic Indicator with 3 contact points only |
| 196A5Z | 50714 | .001" | .200" | 0-50-0 | Indicator with 3 contact points, adapter, 4 attachments* in case |
| 196B5 | 50717 | | | | Indicator with 3 contact points and adapter only |

196M Universal Back Plunger Dial Indicators (6.3mm Shank Diameter)

| Cat. No. | EDP | Grad. | Range | Dial Reading | Description |
|----------|-------|--------|-------|-------------------------|---|
| 196MA1Z | 65251 | | | | Indicator with 3 contact points, adapter, 4 attachments* in case |
| 196MB1 | 65252 | 0.02mm | 5mm | 0-100 Yellow Dial Face | Indicator with 3 contact points and adapter only |
| 196MA5Z | 65253 | 0.02mm | 5mm | 0-50-0 Yellow Dial Face | Indicator with 3 contact points, adapter 196R, 4 attachments* in case |
| 196MB5 | 65254 | | | | Indicator with 3 contact points and adapter only |

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

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

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.



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

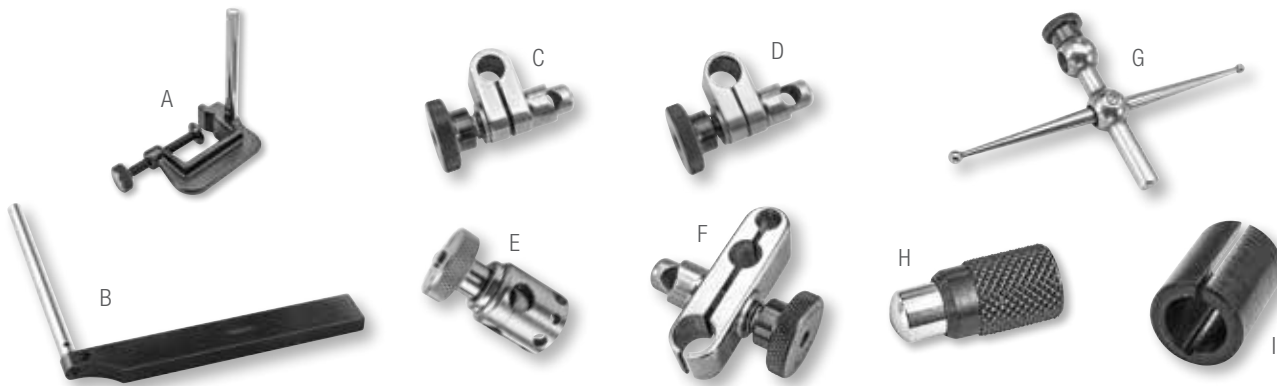
PT18724. Post hole has a 3/8" diameter (9.5mm) and 3/32-1/4" (2.4-6.3mm) holding capacity. Can be used with our 57 and 257C and D Surface Gages or 657AA Magnetic Base with upright post.

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

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.

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.



DIAL INDICATORS

MECHANICAL DIAL INDICATORS AND ATTACHMENTS

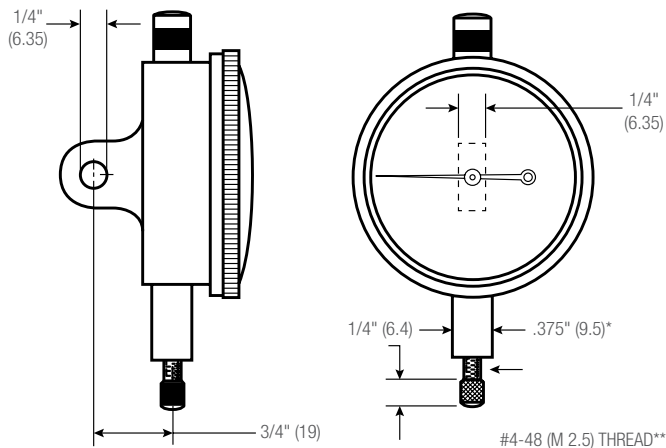
ELECTRONIC INDICATORS/INDICATOR HOLDERS

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

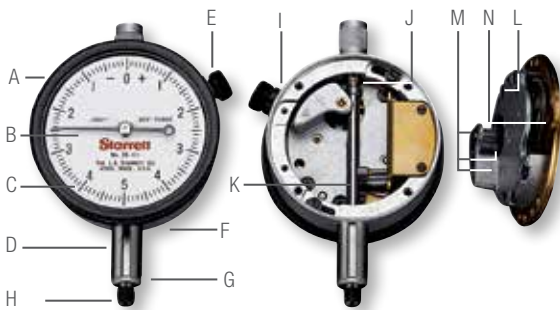
1. Regular analog styles with indicating hands are more readable than digital styles when the measurements are being visually monitored by an operator.
2. Select the dial size that gives you the readability you need. We offer five regular dial sizes which will fit most applications that have both space 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

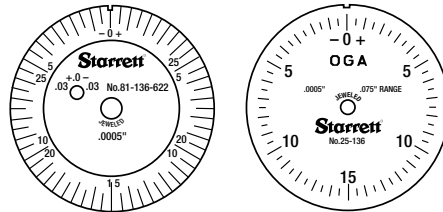
DIALS, ACCESSORIES AND OPTIONS

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

Special Dials – Starrett dial indicators can be furnished with any standard dial



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

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



DIAL INDICATORS

80 MINIATURE DIAL INDICATORS AND ACCESSORIES

ANSI GROUP 0

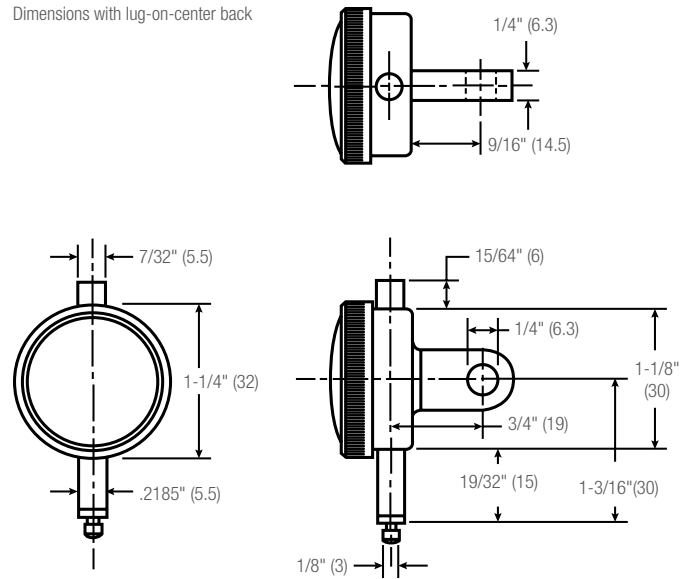
RANGES UP TO .100"

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".

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 Miniature Dial Indicators

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



80-114J



80-134J

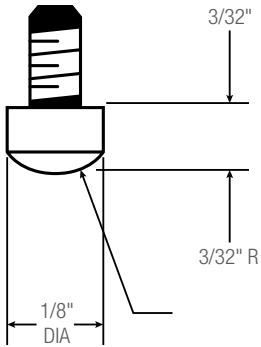


80-144J

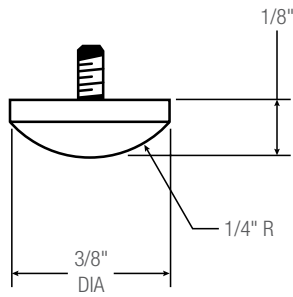


CONTACT POINTS

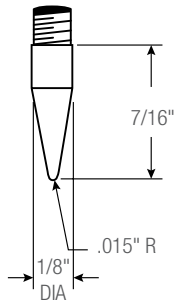
The regular contact point is furnished standard on all 80 Dial Indicators. Button, cone and flat contact points are available individually, as listed. All have #0-80 thread.



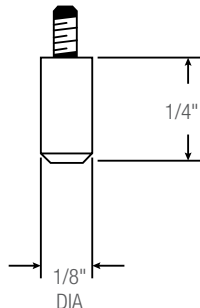
PT25044 Regular Contact Point
(Standard on all 80 Dial Indicators)



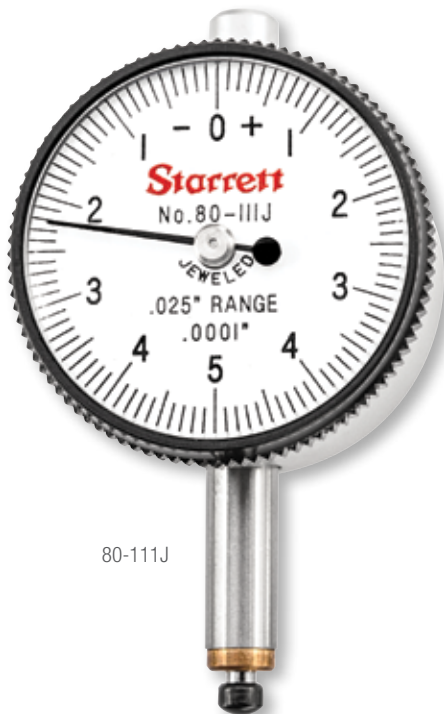
PT25159 Button Contact Point



PT25161 Cone Contact Point



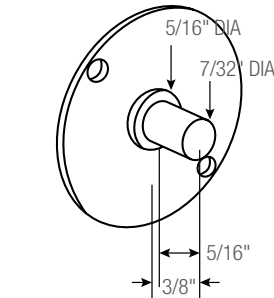
PT25160 Flat Contact Point



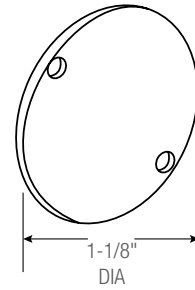
80-111J

BACKS

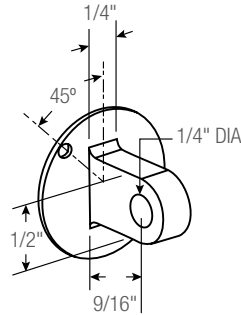
The lug-on-center back is furnished standard on all 80 Dial Indicators.



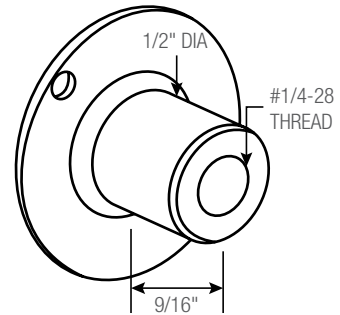
PT25158 Post-Type Lug Back



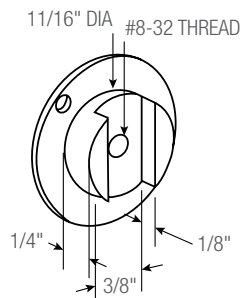
PT25079 Flat Back



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.

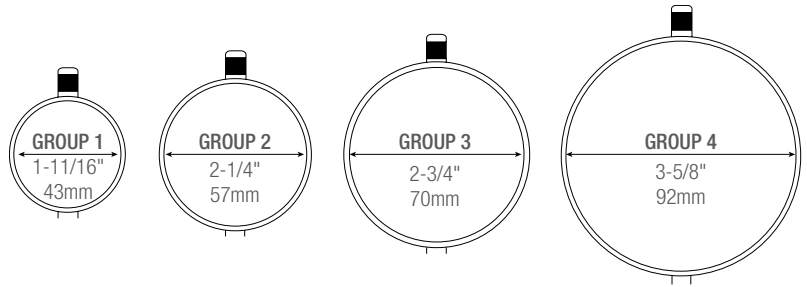
| Part No. | EDP | Description |
|----------|-------|-------------------------|
| PT25044 | 72023 | Regular Contact Point |
| PT25159 | 72024 | Button Contact Point |
| PT25161 | 72025 | Cone Contact Point |
| PT25160 | 72026 | Flat Contact Point |
| PT25079 | 72028 | Flat Back |
| PT25071 | 72030 |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



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 | | 25-116 | | |
| .0001" | .008" | .020" | 0-4-0 0-8 | | 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" | 0.1 -0.10 -0.10 0.1 | 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" | 0.3 -0.30 -0.30 0.3 | 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** | | |
| .0005" | .050" | 1.000" | 0-50 | | 25-631** | | |

* With revolution counter on dial

† With top lift mechanism

AGD Design Specifications: Bezel Diameters

| Design | Size Group | Minimum Diameter | | Maximum Diameter | |
|--------|------------|------------------|------|------------------|------|
| | | in | mm | in | 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 One Rev. | Total | Dial Reading | Group 1 81 Indicators | Group 2 25 Indicators | Group 3 655 Indicators | Group 4 656 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" 3.000" 4.000" 5.000" 6.000" 7.000" 8.000" 9.000" 10.000" 11.000" 12.000" | 0-100 | | 25-2041* 25-3041* 25-4041* 25-5041* | 655-2041* 655-3041* 655-4041* 655-5041* | 656-2041* 656-3041* 656-4041* 656-5041* 656-6041* 656-7041* 656-8041* 656-9041* 656-10041* 656-11041* 656-12041* |

81, 25, 655 and 656 AGD Dial Indicators (Yellow 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 |
|------------|-------------------|--------|-----------------|--------------------------|--------------------------|---------------------------|---------------------------|
| 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

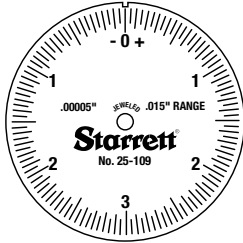
† With top lift mechanism



DIAL INDICATORS

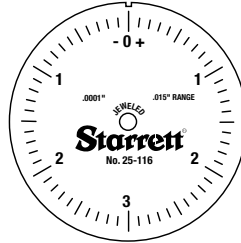
STARRETT DIAL NUMBERING AND LINE STYLES FOR DIAL INDICATORS

These next three 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).



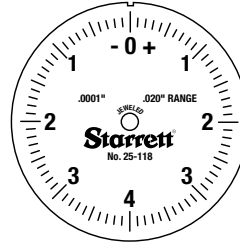
.00005" Graduation

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

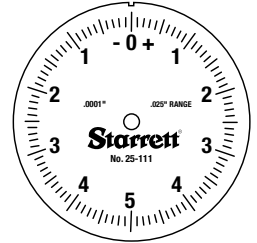


.0001" Graduation

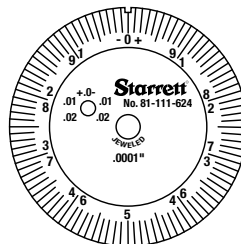
| | |
|-------------|--------|
| Total Range | .015" |
| Cat. No. | 25-116 |



| | |
|-------------|------------------------------|
| Total Range | .020" |
| Cat. No. | 25-118 655-118 656-118 |

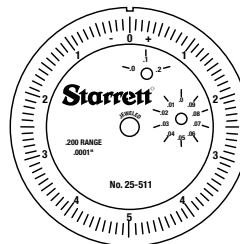


| | |
|-------------|--|
| Total Range | .025" |
| Cat. No. | 25-111 80-111 81-111 655-111 656-111 |

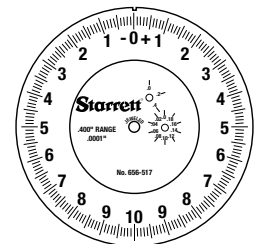


.0001" Graduation

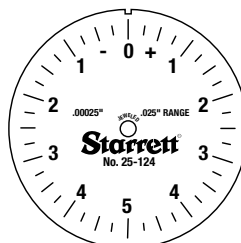
| | |
|-------------|--------------------------------------|
| Total Range | .025" |
| Cat. No. | 81-111-624 (with double row figures) |



| | |
|-------------|------------------------------|
| Total Range | .200" |
| Cat. No. | 25-511 655-511 656-511 |

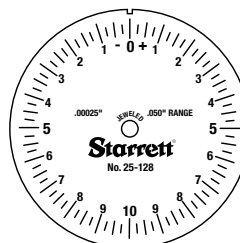


| | |
|-------------|---------|
| Total Range | .400" |
| Cat. No. | 656-517 |

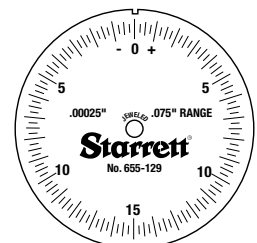


.00025" Graduation

| | |
|-------------|--|
| Total Range | .025" |
| Cat. No. | 81-124 25-124 655-124 656-124 |

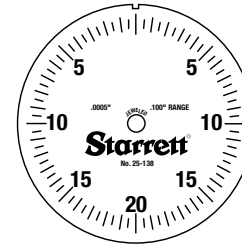
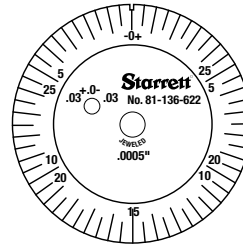
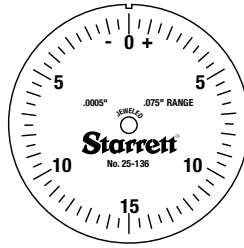
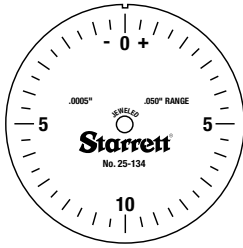


| | |
|-------------|--|
| Total Range | .050" |
| Cat. No. | 81-128 25-128 655-128 656-128 |



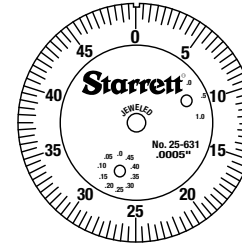
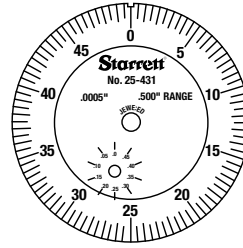
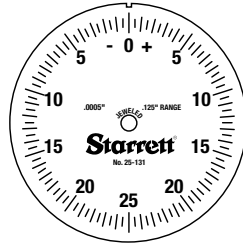
| | |
|-------------|--------------------|
| Total Range | .075" |
| Cat. No. | 655-129 656-129 |





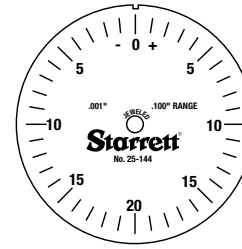
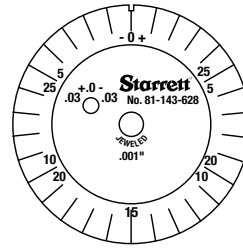
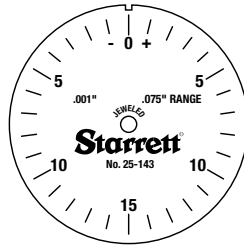
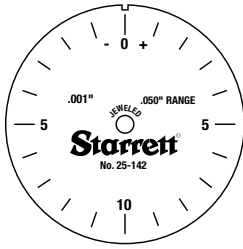
.0005" Graduation

| | | | | |
|--------------------|--|--|--------------------------------------|--|
| Total Range | .050" | .075" | .075" | .100" |
| Cat. No. | 81-134 25-134 655-134 656-134 | 81-136 25-136 655-136 656-136 | 81-136-622 (with double row figures) | 81-138 25-138 655-138 656-138 |



.0005" Graduation

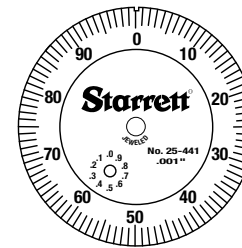
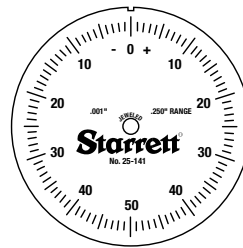
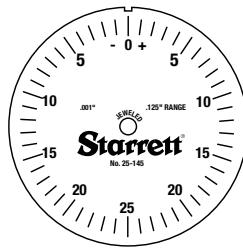
| | | | |
|--------------------|--|--------|--------|
| Total Range | .125" | .500" | 1.000" |
| Cat. No. | 81-131 25-131 655-131 656-131 | 25-431 | 25-631 |



.001" Graduation

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

* Also on long range models.



.001" Graduation

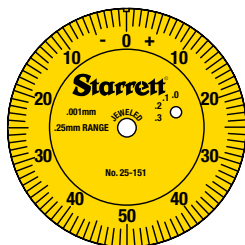
| | | | |
|--------------------|---|---|--|
| Total Range | .125" | .250" | .500", 1.000" |
| Cat. No. | 81-145 *25-145 *655-145 *656-145 | 81-141 *25-141 *655-141 *656-141 | 25-441, 25-441/5 655-441, 655-441/5 656-441, 656-441/5 |

* Also on long range models.

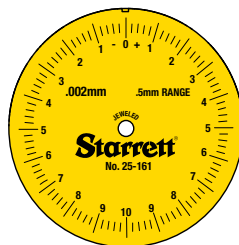


DIAL INDICATORS

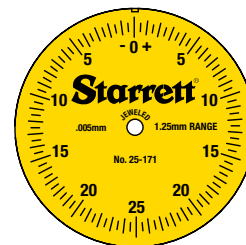
STARRETT DIAL NUMBERING AND LINE STYLES FOR DIAL INDICATORS



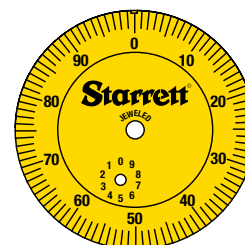
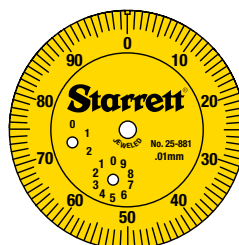
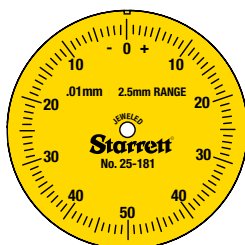
| 0.001mm Graduation | |
|--------------------|--------|
| Total Range | .25mm |
| Cat. No. | 25-151 |



| 0.002mm Graduation | |
|--------------------|---|
| Total Range | 0.5mm |
| Cat. No. | No.81-161 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 |
| | | | | |



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.



81-141J



81-161J

81 Dial Indicators

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

81 Dial Indicators

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



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.

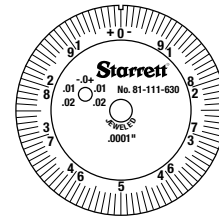
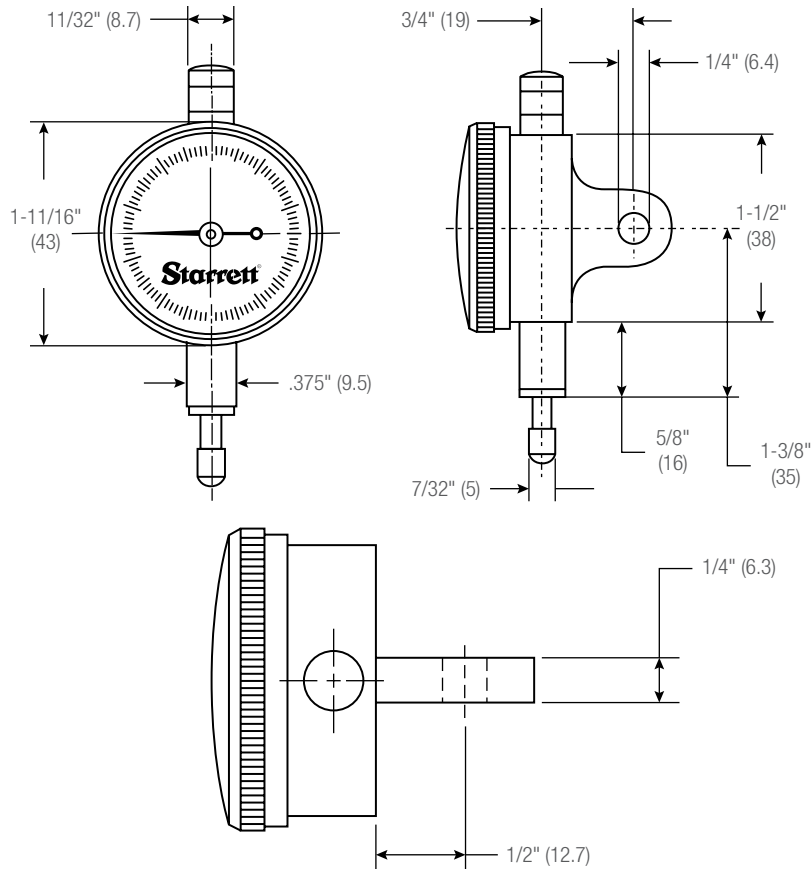
81 Dial Indicators with Double Row Figures

| Cat. No. | EDP | Graduation | Dial Reading | Figures Direction | Color | Range One Rev. | Total |
|-------------|-------|------------|--------------|--------------------------------|--------------|----------------|-------|
| 81-111-624J | 53380 | .0001" | -10 -0-10 | Clockwise Counter-clockwise | Black Red | .010" | .025" |
| 81-111-630J | 53382 | .0001" | -10 -0-10 | Counter-clockwise Clockwise | Black Red | .010" | .025" |
| 81-136-622J | 53394 | .0005" | -30 -0-30 | Clockwise Counter-clockwise | Black Red | .030" | .075" |
| 81-136-623J | 53396 | .0005" | -30 -0-30 | Counter-clockwise Clockwise | Black Red | .030" | .075" |
| 81-143-628J | 53406 | .001" | -30 -0-30 | Clockwise Counter-clockwise | Black Red | .030" | .075" |
| 81-143-629J | 66666 | .001" | -30 -0-30 | Counter-clockwise Clockwise | Black Red | .030" | .075" |

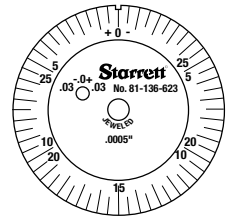
Other models with double-row figures can be furnished by request.



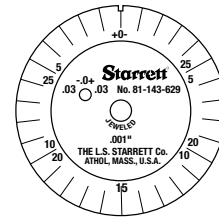
81-111-624J



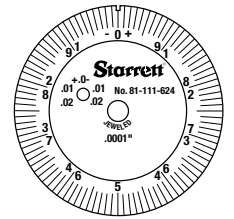
81-111-630J



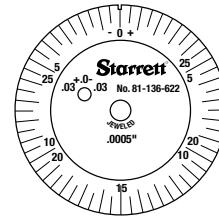
81-136-623J



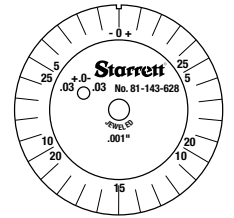
81-143-629J



81-111-624J



81-136-622J



81-143-628J

Free drafting template available for this size.

Write The L. S. Starrett Co. at:

121 Crescent Street

Athol, MA 01331



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.

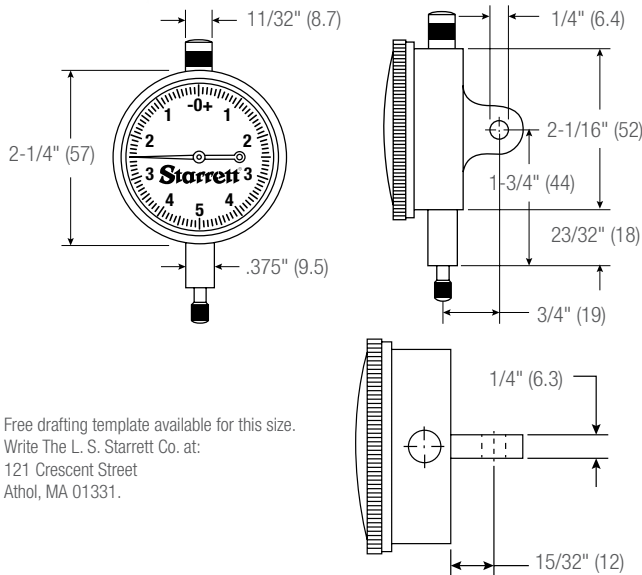
If lift lever is desired, indicator must be ordered with case stem cap.



25-111J



25-161J



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

25-441J with top lift



656-129J case stem cap design required for use with lift lever See page 171



25 Dial Indicators with Jewel Bearings

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

25 Dial Indicators with Jewel Bearings

| Cat. No. | EDP | Graduation | Range One Rev. | Total | Dial Reading |
|------------------|-------|------------|----------------|--------|--------------|
| 25-109J | 53222 | | .0005" | .015" | 0-3-0 |
| 25-209J | 53254 | | .006" | .015" | 0-6 |
| 25-116J | 53225 | .0001" | .006" | .015" | 0-3-0 |
| 25-118J | 53226 | | .008" | .020" | 0-4-0 |
| 25-218J | 53257 | | .008" | .020" | 0-8 |
| 25-111J | 53223 | | .010" | .025" | 0-5-0 |
| 25-211J | 53255 | | .010" | .025" | 0-10 |
| 25-511J | 53299 | | .010" | .200" | 0-5-0 |
| 25-611J | 53301 | | .010" | .200" | 0-10 |
| 25-124J | 53228 | | .010" | .025" | 0-5-0 |
| 25-224J | 53259 | .00025" | .010" | .025" | 0-10 |
| 25-128J | 53230 | | .020" | .050" | 0-10-0 |
| 25-228J | 53261 | .00025" | .020" | .050" | 0-20 |
| 25-134J | 53234 | | .020" | .050" | 0-10-0 |
| 25-234J | 53265 | .0005" | .020" | .050" | 0-20 |
| 25-136J | 53236 | | 0.03 | .075" | 0-15-0 |
| 25-236J | 53267 | .0005" | 0.03 | .075" | 0-30 |
| 25-138J | 53238 | | .040" | .100" | 0-20-0 |
| 25-238J | 53269 | .0005" | .040" | .100" | 0-40 |
| 25-131J | 53232 | | .050" | .125" | 0-25-0 |
| 25-231J | 53263 | .0005" | .050" | .125" | |
| 25-431J | 53292 | | .050" | .500" | 0-50 |
| 25-631J | 53304 | | .050" | 1.000" | |
| 25-142J | 53242 | | .020" | .050" | 0-10-0 |
| 25-242J | 53273 | .001" | .020" | .050" | 0-20 |
| 25-143J | 53244 | | .030" | .075" | 0-15-0 |
| 25-243J | 53275 | .001" | .030" | .075" | 0-30 |
| 25-144J | 53246 | | .040" | .100" | 0-20-0 |
| 25-244J | 53277 | .001" | .040" | .100" | 0-40 |
| 25-145J | 53248 | | .050" | .125" | 0-25-0 |
| 25-245J | 53279 | .001" | .050" | .125" | 0-50 |
| 25-141J | 53240 | | .100" | .250" | 0-50-0 |
| 25-241J | 53271 | .001" | .100" | .250" | 0-100 |
| 25-341/5J | 53285 | | .100" | .500" | 0-50-0 |
| 25-441/5J | 53293 | | .100" | .500" | 0-100 |
| 25-441/5J W/SLC* | 66864 | .001" | .100" | .500" | 0-100 |
| 25-341J | 53287 | | .100" | 1.000" | 0-50-0 |
| 25-441J | 53295 | | .100" | 1.000" | 0-50-0 |
| 25-441J W/SLC* | 66863 | .001" | .100" | 1.000" | 0-100 |

25 Dial Indicators with Jewel Bearings

| Cat. No. | EDP | Graduation | Range One Rev. | Total | Dial Reading |
|-----------|-------|------------|----------------|--------|--------------|
| 25-341/5P | 53286 | | .100" | .500" | 0-50-0 |
| 25-441/5P | 53294 | .001" | .100" | .500" | 0-100 |
| 25-341P | 53288 | | .100" | 1.000" | 0-50-0 |
| 25-441P | 53296 | .001" | .100" | 1.000" | 0-100 |

* Includes redemption card for Standard Letter of Certification.



DIAL INDICATORS

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

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

Sets furnished in attractive, protective case.

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

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

655 Dial Indicators

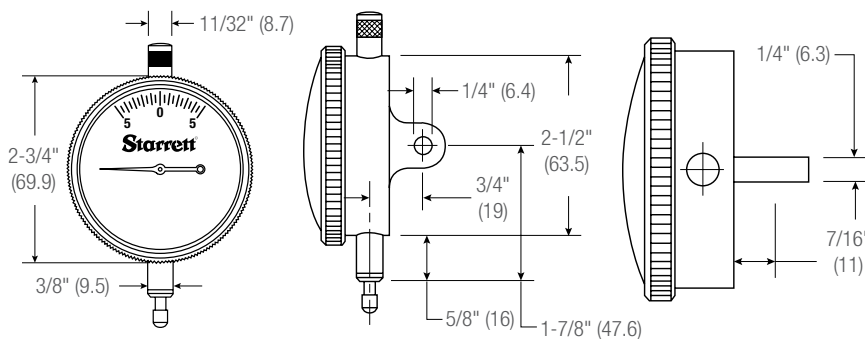
| Cat. No. | EDP | Graduation | Range One Rev. | Total | Dial Reading |
|------------|-------|------------|----------------|--------|--------------|
| 655-118J | 53507 | .0001" | .008" | .020" | 0-4-0 |
| 655-111J | 53505 | .0001" | .010" | .025" | 0-5-0 |
| 655-211J | 53537 | | | | 0-10 |
| 655-511J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



655-111J



655-161J-8



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.

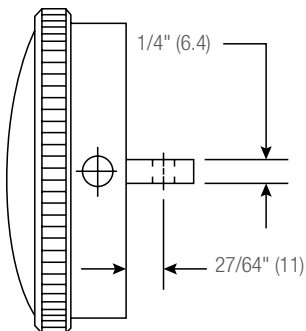
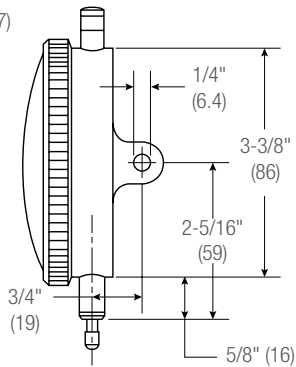
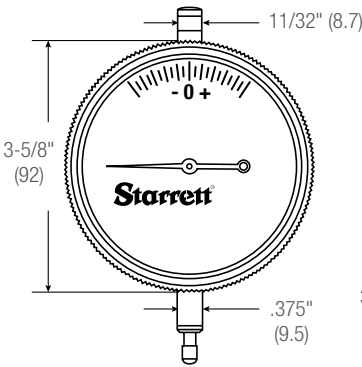
If lift lever is desired, indicator must be ordered with case stem cap.



656-111J



656-161J-8



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

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

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

656-441J with top lift



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



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

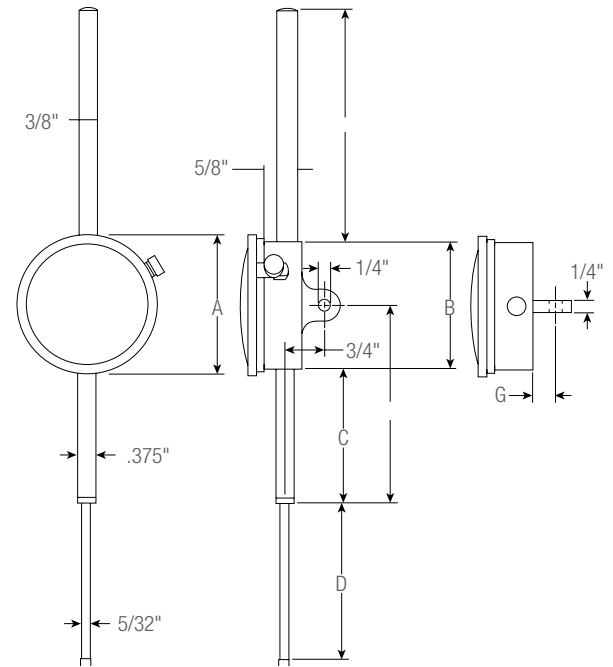
25, 655, 656 Dial Indicators with Long Range

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

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



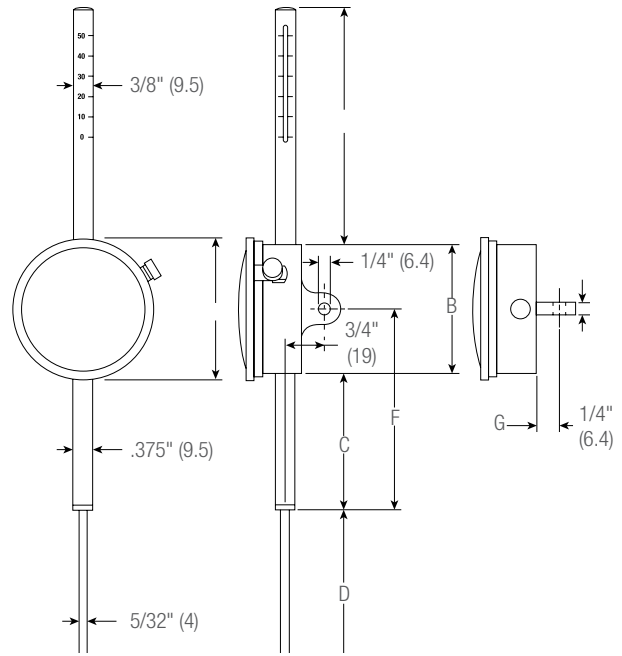
DIAL INDICATORS

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 | | | | | | | |
|--|-------|------------|-----------|---------------|-------|--------------|---------------|
| Cat. No. | EDP | Graduation | AGD Group | Stem Diameter | Range | Dial Reading | Revs. of Hand |
| 25-2081J | 56225 | 0.01mm | 2 | .375" (9.5mm) | 50mm | 0-100 | 50 |
| 655-2081J | 56230 | 0.01mm | 3 | .375" (9.5mm) | 75mm | 0-100 | 75 |
| 25-3081J | 56226 | 0.01mm | 2 | .375" (9.5mm) | 100mm | 0-100 | 100 |
| 655-3081J | 56231 | 0.01mm | 3 | .375" (9.5mm) | 125mm | 0-100 | 125 |
| 25-4081J | 56227 | 0.01mm | 2 | .375" (9.5mm) | | | |
| 655-4081J | 56232 | 0.01mm | 3 | .375" (9.5mm) | | | |
| 25-5081J | 56228 | 0.01mm | 2 | .375" (9.5mm) | | | |
| 655-5081J | 56233 | 0.01mm | 3 | .375" (9.5mm) | | | |

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) |



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

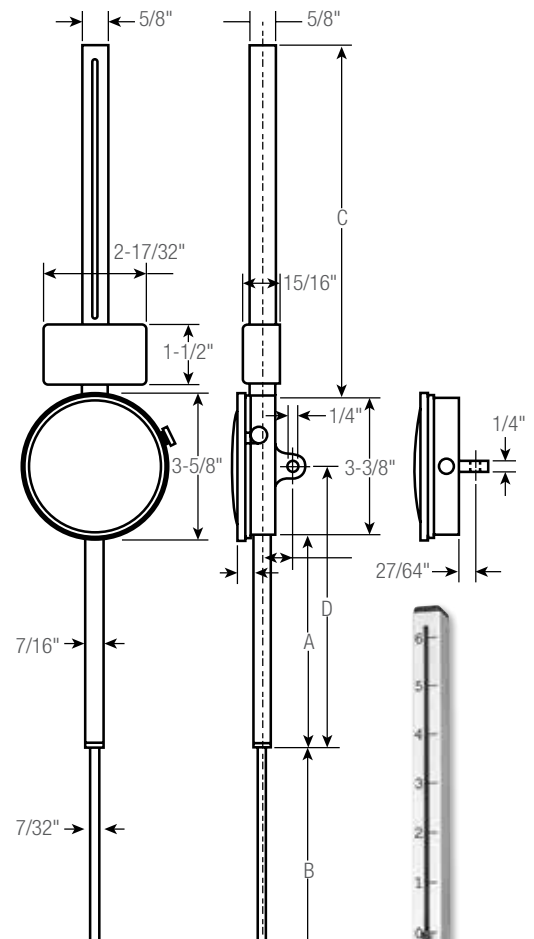
656 Dial Indicators with Extra-Long Range

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

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

Dimensions

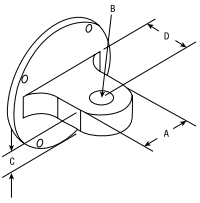
| Cat. No. | A | B | C | D |
|------------|---------|----------|---------|-----------|
| 656-6041J | 5-1/4" | 6-1/16" | 8-3/4" | 6-15/16" |
| 656-7041J | 6-1/4" | 7-1/16" | 9-3/4" | 7-15/16" |
| 656-8041J | 7-1/4" | 8-1/16" | 10-3/4" | 8-15/16" |
| 656-9041J | 8-1/4" | 9-1/16" | 11-3/4" | 9-15/16" |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



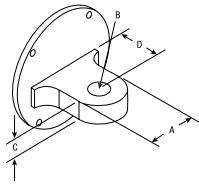
656-6041J



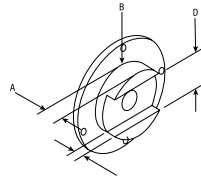
INDICATOR BACKS



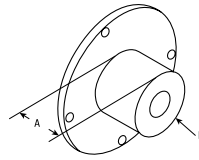
Lug-On-Center



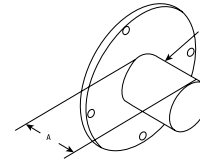
Lug-Off-Center



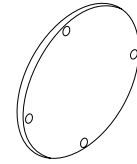
Adjustable Bracket



Screw-Type Lug



Post-Type Lug



Flat

AGD Dial Indicator Backs

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

* 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.



DIAL INDICATORS

647 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.

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 |

FEATURES AND SPECIFICATIONS

- 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

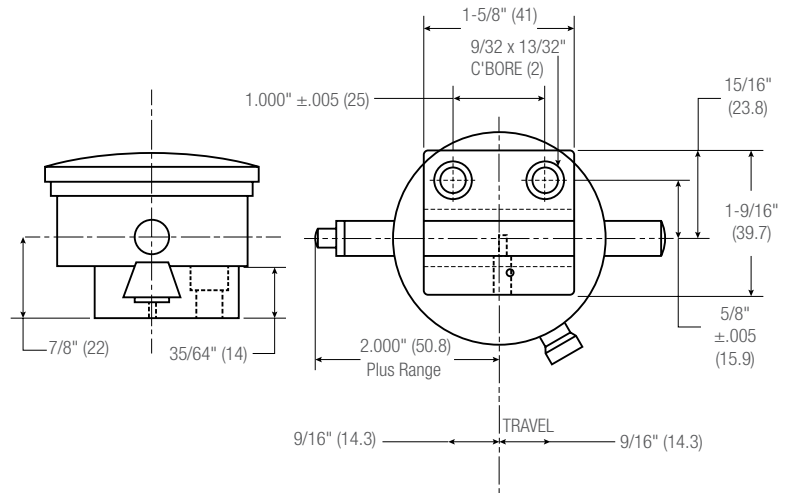


INDICATOR BACKS

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

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

674-2

676 MAGNETIC BACKS

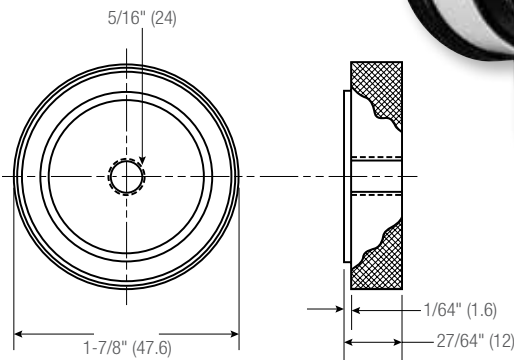
These magnetic backs provide a quick and easy means of attaching any Starrett AGD indicator to flat, ferrous metal surfaces. A real time-saver for machine, jig and fixture set up. Requires no clamps, rods or snugs. A special 5/16"-24 threaded stud back is provided to replace the standard lug back. The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

676 Magnetic Backs

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



676-2



672 UNIVERSAL BACKS

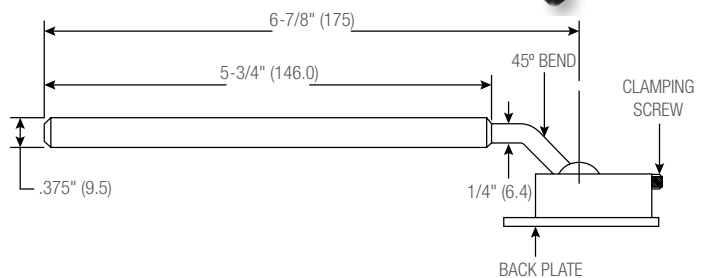
Featuring a universal ball joint attached to the end of a gooseneck shank, these attachments make it possible to position an AGD indicator at any desired setting. The indicator can be rotated 360° and angularly up to 90° and locked in the desired position by tightening a single knurled nut. Straight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

672 Universal Backs

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



672-2



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 | | | | | |
|-------------------------------|-------|-----------------|------|---------------------|----|
| Cat. No. | EDP | Range (Approx.) | | For Hole Depths to: | |
| | | in | mm | in | mm |
| 670A | 52884 | 3/8 | 9.5 | 13/16 | 20 |
| 670B | 52724 | 9/16 | 14.3 | 1-11/16 | 42 |

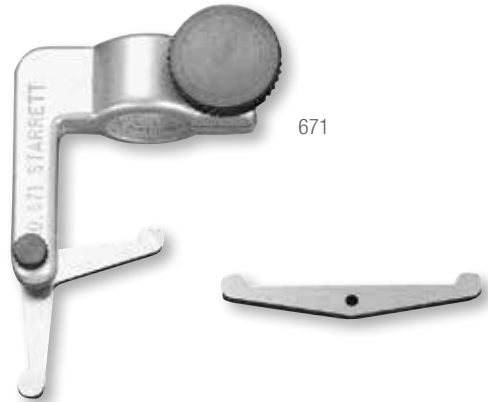


670A

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 | | | | |
|--------------------------|-------|-----------------|----|--|
| Cat. No. | EDP | Range (Approx.) | | |
| | | in | mm | |
| 671 | 52886 | 1/8 | 3 | |



671

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.



25-111JNS with Special Non-Shock Mechanism



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

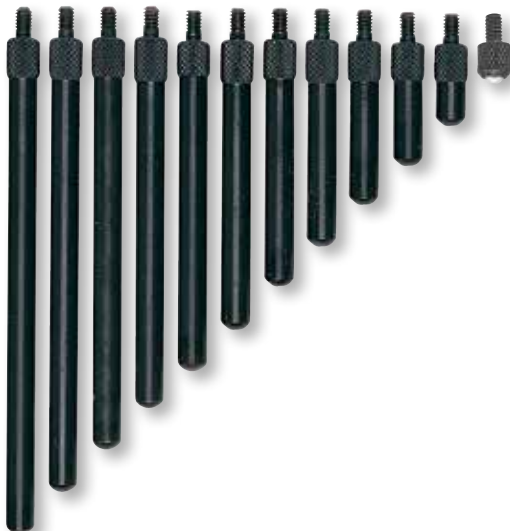
1/4-4"/6-100MM

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



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.

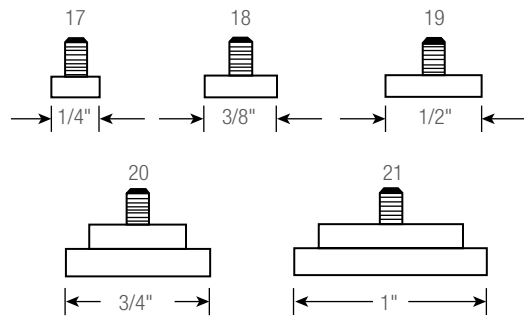
| Shock Absorbing Anvil | |
|-----------------------|-------|
| Cat. No. | EDP |
| 28 | 50199 |



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 | | | | |
|-----------------------|-------|----------|------|-----------|
| Part No. | EDP | Diameter | | Style No. |
| | | in | mm | |
| PT06632-17 | 70804 | 1/4 | 6.4 | 17 |
| PT06632-18 | 70805 | 3/8 | 9.5 | 18 |
| PT06632-19 | 70806 | 1/2 | 12.7 | 19 |
| PT06632-20 | 70808 | 3/4 | 19 | 20 |
| PT06632-21 | 70807 | 1 | 25 | 21 |



INDICATOR ACCESSORIES

AGD INDICATOR SPECIAL CONTACT POINTS AND ACCESSORIES

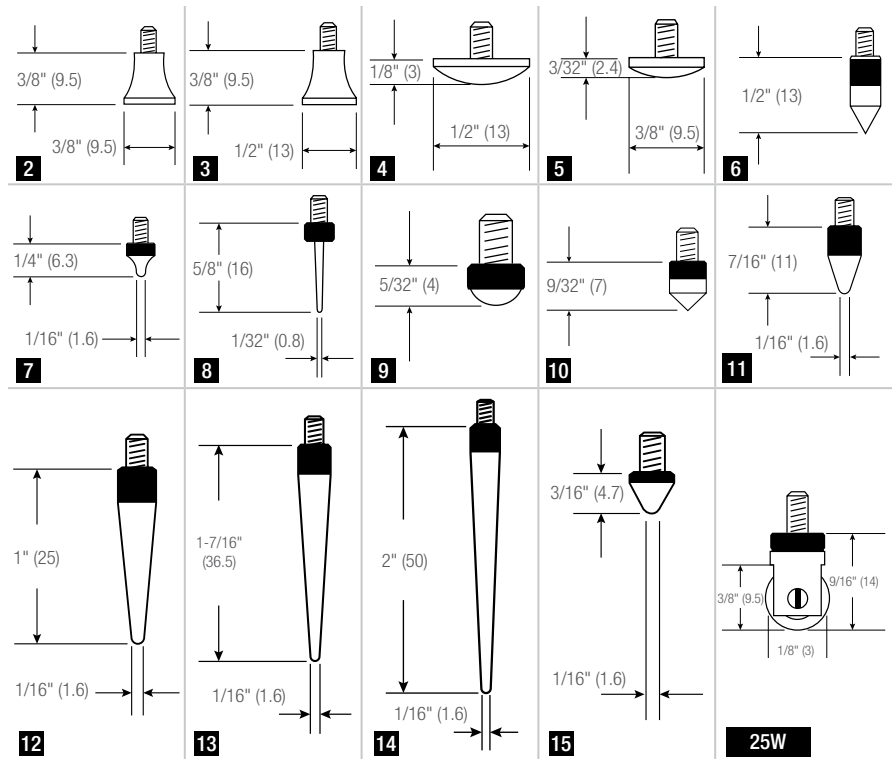
SPECIAL FORM CONTACT POINTS

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.

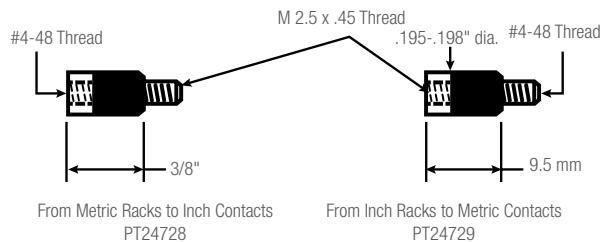
Carbide, sapphire, diamond or teflon-coated contact points are also available by request.

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).



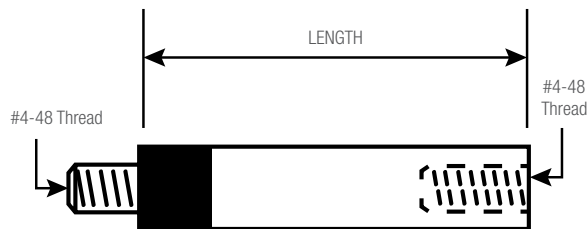
AGD CONTACT ADAPTERS



From Metric Racks to Inch Contacts
PT24728

From Inch Racks to Metric Contacts
PT24729

AGD CONTACT POINT EXTENSIONS



AGD Contact Point Extensions

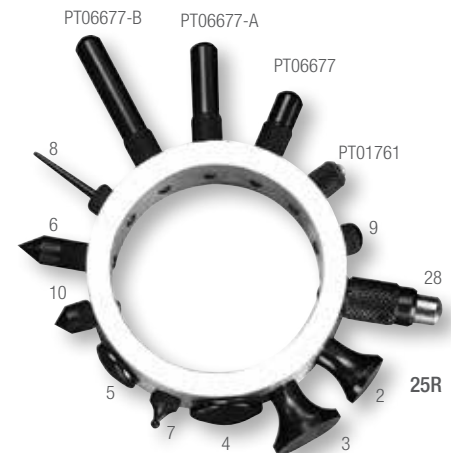
| Part No. | EDP | Length |
|-------------|-------|--------|
| PT21697-1/2 | 64632 | 1/2" |
| PT21697-1 | 64633 | 1" |
| PT21697-2 | 64634 | 2" |
| PT21697-3 | 64635 | 3" |
| PT21697-4 | 64636 | 4" |

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



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.

| Split Bushings for 80 Miniature Dial Indicators | | | | |
|---|-------|--------|----------|---------|
| Cat. No. | EDP | Length | Diameter | |
| | | | Inside | Outside |
| 80SB | 56008 | 1/2" | .219" | .375" |
| Split Bushings for AGD English Indicators | | | | |
| Cat. No. | EDP | Length | Diameter | |
| | | | Inside | Outside |
| 25SB | 50154 | 1/2" | .375" | .500" |
| Split Bushings for AGD Metric Indicators | | | | |
| Cat. No. | EDP | Length | Diameter | |
| | | | Inside | Outside |
| 25MSB | 56007 | 12.7mm | 8mm | 9.5mm |

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 | | | |
|---------------------------------------|-------|-----------|-----|
| Cat. No. | EDP | Base Size | |
| | | in | mm |
| 648-4 | 65850 | 4 | 100 |
| 648-6 | 65851 | 6 | 150 |
| 648-8 | 65852 | 8 | 200 |

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.



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.

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 |



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

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 2700 or 2900 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.



716MX

| 716 Indicator Tester (0-1" Range) | | | |
|---|-------|------------------------------------|---|
| Cat. No. | EDP | Micrometer Head Graduation* | Description |
| 716X | 67228 | .0001" | Tester with carbide faced spindle, indicator mounting and offset attachment |
| 716M Indicator Tester (0-25mm Range) | | | |
| Cat. No. | EDP | Micrometer Head Graduation* | Description |
| 716MX | 67229 | 0.002mm | Tester with carbide faced spindle, indicator mounting and offset attachment |
| Accessory for 716, 716M Indicator Testers | | | |
| Cat. No. | EDP | Description | |
| PT26009 | 65102 | Indicator mounting attachment only | |

*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



NEW!

ELECTRONIC INDICATORS

2900 ELECTRONIC INDICATORS

RANGES FROM .5" (12MM) TO 2" (50MM)
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.

FEATURES

- Intuitive design and layout – easy to learn and use
- Positive, tactile-feel button activation
- Long battery life
- CE compliant
- Data output to SPC on all models
- Choice of Basic, Standard and Advanced feature levels
- Fixed ratio measurement systems available
- Compatible with 25 Indicator backs
- Origin set, zero set
- All compatible with 2900 SCM, SCU and SCKB cables
- Counting direction switching (±)

INDICATORS AND GAGES



| Inch/Metric -.375" Stem - #4-48 UNF Thread | | | | | | | | | | | | | | | | |
|--|-------|-------|----|--------------------|------------|----------|--------|---------------------|-----------|--------------|--------------|-----------|------------------------------|------------------------|------------------|------------------|
| Cat. No. | EDP | Range | | Resolution | | Accuracy | | Additional Features | | | | Ftr. Lock | Max/Min/Runout Value Holding | True Abs. Sensor Tech. | Lug On Ctr. Bck. | CR2032 Btry. (2) |
| | | in | mm | in | mm | in | mm | in/mm Cnv. | Limit Set | Value Preset | Reading Hold | | | | | |
| 2900-1 | 09980 | .5 | 12 | .0005 | 0.001 | ±.00012 | ±0.003 | x | | | | | | x | x | x |
| 2900-2 | 09981 | .5 | 12 | .0001 | 0.002 | ±.00012 | ±0.003 | x | | | | | | x | | |
| 2900-4 | 09983 | .5 | 12 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-6 | 09985 | .5 | 12 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-1-1 | 09960 | 1 | 25 | .0005 | 0.001 | ±.00012 | ±0.003 | x | | | | | | x | x | x |
| 2900-2-1 | 09962 | 1 | 25 | .0001 | 0.01 | ±.00012 | ±0.003 | x | | | | | | x | | |
| 2900-3-1 | 09963 | 1 | 25 | .0005 | 0.01 | ±0.001 | ±0.03 | x | | | | | | | x | x |
| 2900-4-1 | 09965 | 1 | 25 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-5-1 | 09967 | 1 | 25 | .0005 | 0.01 | ±0.001 | ±0.03 | x | x | x | | | | | x | x |
| 2900-6-1 | 09969 | 1 | 25 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-1-2 | 72676 | 2 | 50 | .00005 | 0.001 | ±.00012 | ±0.003 | x | | | | | | x | x | x |
| 2900-4-2 | 72677 | 2 | 50 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-6-2 | 72678 | 2 | 50 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |

| Inch/Metric - 8mm Stem - M2.5 x 0.45 Thread | | | | | | | | | | | | | | | | |
|---|-------|-------|----|--------------------|------------|----------|--------|---------------------|-----------|--------------|--------------|-----------|------------------------------|------------------------|------------------|------------------|
| Cat. No. | EDP | Range | | Resolution | | Accuracy | | Additional Features | | | | Ftr. Lock | Max/Min/Runout Value Holding | True Abs. Sensor Tech. | Lug On Ctr. Bck. | CR2032 Btry. (2) |
| | | in | mm | in | mm | in | mm | in/mm Cnv. | Limit Set | Value Preset | Reading Hold | | | | | |
| 2900-1ME | 09971 | .5 | 12 | .0005 | 0.001 | ±.00012 | ±0.003 | x | | | | | | x | x | x |
| 2900-4ME | 09976 | .5 | 12 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-6ME | 09979 | .5 | 12 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-1ME-25 | 09972 | 1 | 25 | .0005 | 0.001 | ±.00012 | ±0.003 | x | | | | | | x | x | x |
| 2900-3ME-25 | 09975 | 1 | 25 | .0005 | 0.01 | ±0.001 | ±0.03 | x | | | | | | | x | x |
| 2900-4ME-25 | 09977 | 1 | 25 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-5ME-25 | 09978 | 1 | 25 | .0005 | 0.01 | ±0.001 | ±0.03 | x | x | x | x | | x | | x | x |
| 2900-6ME-25 | 09991 | 1 | 25 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-1ME-50 | 72679 | 2 | 50 | .00005 | 0.001 | ±.00012 | ±0.003 | x | | | | | | x | x | x |
| 2900-4ME-50 | 72681 | 2 | 50 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |
| 2900-6ME-50 | 72683 | 2 | 50 | .0005/.0001/.00005 | 0.01/0.001 | ±.00012 | ±0.003 | x | x | x | x | x | x | x | x | x |

| Metric Only - 8mm Stem - M2.5 x 0.45 Thread | | | | | | | | | | | | | | | | |
|---|-------|-------|----|------------|------------|----------|--------|---------------------|-----------|--------------|--------------|-----------|------------------------------|------------------------|------------------|------------------|
| Cat. No. | EDP | Range | | Resolution | | Accuracy | | Additional Features | | | | Ftr. Lock | Max/Min/Runout Value Holding | True Abs. Sensor Tech. | Lug On Ctr. Bck. | CR2032 Btry. (2) |
| | | in | mm | in | mm | in | mm | in/mm Cnv. | Limit Set | Value Preset | Reading Hold | | | | | |
| 2900-1M | 09986 | .5 | 12 | | 0.001 | | ±0.003 | | | | | | | x | x | x |
| 2900-4M | 09988 | .5 | 12 | | 0.01/0.001 | | ±0.003 | | x | x | x | x | x | x | x | x |
| 2900-6M | 09990 | .5 | 12 | | 0.01/0.001 | | ±0.003 | | x | x | x | x | x | x | x | x |
| 2900-1M-25 | 09961 | 1 | 25 | | 0.001 | | ±0.003 | | | | | | | x | x | x |
| 2900-3M-25 | 09964 | 1 | 25 | | 0.01 | | ±0.03 | | | | | | | | x | x |
| 2900-4M-25 | 09966 | 1 | 25 | | 0.01/0.001 | | ±0.003 | | x | x | x | x | x | | x | x |
| 2900-5M-25 | 09968 | 1 | 25 | | 0.01 | | ±0.03 | | x | x | x | | x | | x | x |
| 2900-6M-25 | 09970 | 1 | 25 | | 0.01/0.001 | | ±0.003 | | x | x | x | x | x | x | x | x |
| 2900-1M-50 | 72680 | 2 | 50 | | 0.001 | | ±0.003 | | | | | | | x | x | x |
| 2900-4M-50 | 72682 | 2 | 50 | | 0.01/0.001 | | ±0.003 | | x | x | x | x | x | x | x | x |
| 2900-6M-50 | 72684 | 2 | 50 | | 0.01/0.001 | | ±0.003 | | x | x | x | x | x | x | x | x |

*Fixed ratios available with special order. (exception of 2900-5M-25)



ELECTRONIC INDICATORS

NEW!

INDICATORS AND GAGES

2700 BACKLIGHT ELECTRONIC INDICATORS

The 2700 Backlight Electronic Indicators are offered in 1", 2" and 4" ranges. The deep backlight color indicates tolerances to read the indicator at far distances, in poor lighting, and with limited operator experience. A CD drive is required to use the software.

| Cat. No. | EDP | Range | SPC Output | Accuracy | Resolution |
|----------|-------|-------|------------|-------------|------------|
| 2700-800 | 72758 | 1" | x | (±) 2. Res. | .0001" |
| 2700-801 | 72759 | 1" | x | (±) 2. Res. | .000050" |
| 2700-802 | 72760 | 2" | x | (±) 2. Res. | .0005" |
| 2700-803 | 72761 | 2" | x | (±) 2. Res. | .0001" |
| 2700-804 | 72762 | 4" | x | (±) 2. Res. | .0005" |
| 2700-805 | 72763 | 4" | x | (±) 2. Res. | .0001" |

Accessories, Power Source, Cables

| Part No. | EDP | Description |
|----------|-------|--|
| PT60646 | 72592 | Cable to SPC computer, not foot switch |
| 2700SCKB | 69891 | USB cable to PC (In focused window), all 2700 Series |
| 2700SCU | 23956 | USB Cable, all 2700 Series |
| 2700SCM | 69896 | SmartCable Gage MUX - all 2700 Series |

Backs/Lever*

| Part No. | EDP | Description |
|----------|-------|----------------------------------|
| PT26406 | 65886 | Flat back |
| PT26407 | 65887 | Offset lug back |
| PT26411 | 65891 | Adjustable lug back |
| PT26408 | 65888 | Adjustable back |
| PT26409 | 65889 | Post-type back |
| PT26410 | 65890 | Screw bracket back |
| PT26848 | 66293 | Adjustable mounting bracket back |
| PT26405 | 65885 | Lifting lever |

*Other backs, styles and accessories also available by request.

FEATURES

- Backlight relates a reading to tolerance values
- SPC Cables USB, MTI, RS232
- Inch/metric display
- Analog visual display
- Travel reverse
- Maximum reading hold
- Display/freeze hold
- Single gage simple data collection included
- Floating zero
- Minimum reading hold
- Abs./preset measuring mode
- T.I.R. with low and high storage recall
- Lock combination
- USB/AC power cable included
- Software included
- AC power source



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 adapter or through data port
- Output jack allows data transmission



Inch/Metric - .375" Stem - #4-48 UNF Thread

| Cat. No. | EDP | Range | | Resolution | | Accuracy | |
|-----------|-------|-------|-----|-------------------------|-----------------------|-------------|-------------|
| | | in | mm | in | mm | in | mm |
| F2720IQ | 49508 | 0.6 | 15 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | \pm .0001 | \pm 0.002 |
| F2720AD | 49500 | 0.6 | 15 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | \pm .0001 | \pm 0.002 |
| F2720-1AD | 00043 | 0.6 | 15 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0001 | \pm 0.002 |
| F2730IQ | 49509 | 1 | 25 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | \pm .0001 | \pm 0.002 |
| F2730-1IQ | 49516 | 1 | 25 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2730AD | 49501 | 1 | 25 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | \pm .0001 | \pm 0.002 |
| F2730-1AD | 00045 | 1 | 25 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2740IQ | 49510 | 2 | 50 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2740AD | 49502 | 2 | 50 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2750IQ | 49511 | 4 | 100 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2750AD | 49503 | 4 | 100 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |

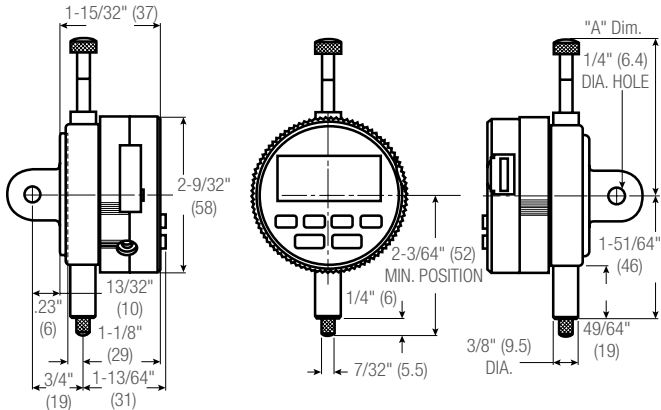
Inch/Metric - 8mm Stem - M2.5 x 0.45 Thread

| Cat. No. | EDP | Range | | Resolution | | Accuracy | |
|------------|-------|-------|-----|-------------------------|-----------------------|-------------|-------------|
| | | in | mm | in | mm | in | mm |
| F2720IQM | 49512 | 0.6 | 15 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | \pm .0001 | \pm 0.002 |
| F2720ADM | 49504 | 0.6 | 15 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | \pm .0001 | \pm 0.002 |
| F2720-1ADM | 09993 | 0.6 | 15 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2730IQM | 49513 | 1 | 25 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | \pm .0001 | \pm 0.002 |
| F2730-1IQM | 09992 | 1 | 25 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2730ADM | 49505 | 1 | 25 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | \pm .0001 | \pm 0.002 |
| F2730-1ADM | 09994 | 1 | 25 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2740IQM | 49514 | 2 | 50 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2740ADM | 49506 | 2 | 50 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2750IQM | 49515 | 4 | 100 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |
| F2750ADM | 49507 | 4 | 100 | .001/.0005/.0001 | 0.02/0.01/0.002 | \pm .0002 | \pm 0.004 |



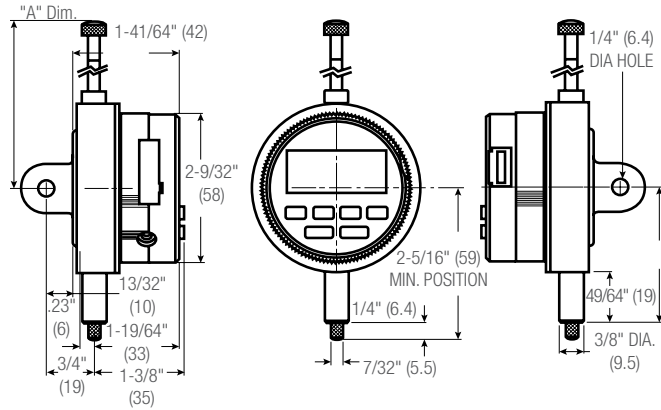
ELECTRONIC INDICATORS

.250"/6MM AND .600"/15MM MODELS



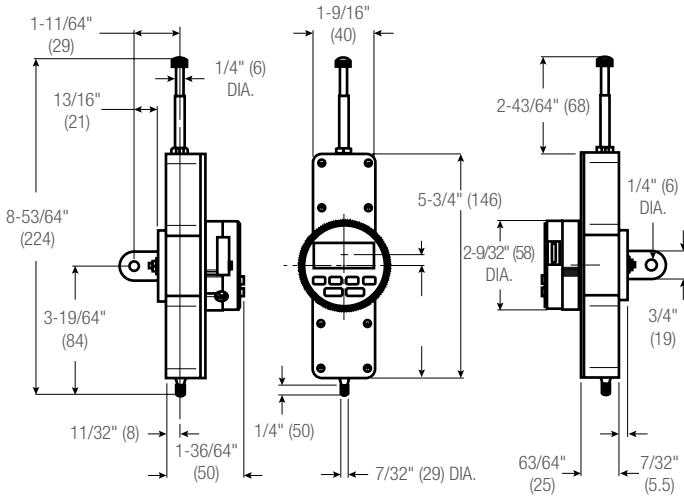
| Travel | | A Dimension | |
|--------|-----|-------------|----|
| in | mm | in | mm |
| .600 | 15 | 2-13/32 | 61 |
| .250 | 6.4 | 2-1/16 | 52 |

1"/25MM MODELS

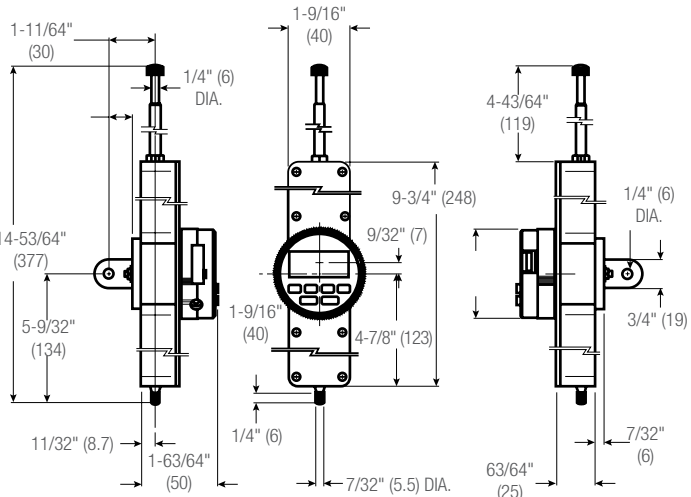


| Travel | | A Dimension | |
|--------|------|-------------|----|
| in | mm | in | mm |
| 1 | 25.4 | 2-7/8 | 73 |

2"/50 MM MODELS



4"/100MM MODELS



Accessories, Power Source, Cables

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

Backs/Lever*

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

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

Extension Cables

| Part No. | EDP | Description |
|----------|-------|-------------------------------------|
| PT05679 | 68752 | 6' Extension Cable |
| 2700SCKB | 69891 | USB cable to PC (In focused window) |

Backs/Lever*

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

*Other backs, styles and accessories also available by request. To order contact points individually, see previous pages.
NOTE: Probe and display resolutions must be the same for accurate readings.



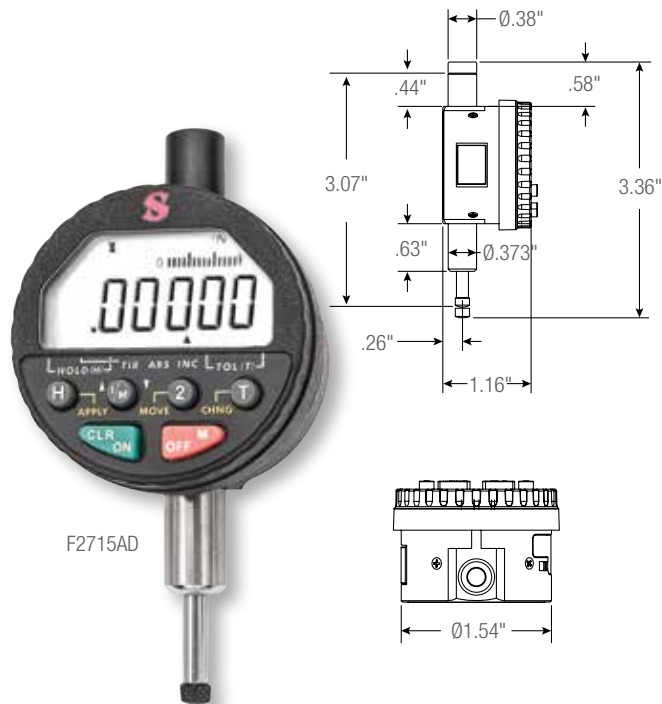
ELECTRONIC INDICATORS

2700 GROUP 1 DIGITAL INDICATORS

AGD GROUP 1

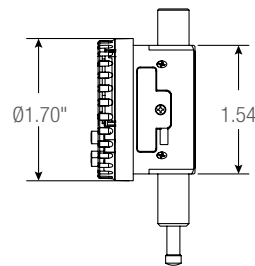
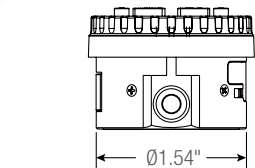
FEATURES

- 270 degree Rotating Bezel - Allows viewing at different attitudes
- Smaller Diameter - A dimensional match to AGD Group one mechanical indicators (1.700"/43mm)
- Two Available Displays - Single LCD Numeric IQ model (largest of its class) with low battery warning and programmable ratios or Numeric/Analog AD model showing its two displays simultaneously
- .400 travel
- Allows storage of 200 readings internally and viewed, stored readings can be downloaded with included software and USB style cable
- Easy wired communication with cables or using Starrett DataSure® wireless (contact Starrett)
- Long battery life (with one CR232 cell) 3,000 hours under typical use also can be powered by plugging into your computer



F2715AD

| Inch/Metric - 8mm Stem - M2.5 x 0.45 Thread | | | | | | | |
|---|-------|-------|----|-------------------------|-----------------------|----------|--------|
| Cat. No. | EDP | Range | | Resolution | | Accuracy | |
| | | in | mm | in | mm | in | mm |
| F2715IQ | 72970 | 0.4 | 10 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | ±.0001 | ±0.002 |
| F2715AD | 72971 | 0.4 | 10 | .001/.0005/.0001/.00005 | 0.02/0.01/0.002/0.001 | ±.0001 | ±0.002 |
| F2714IQ | 73273 | 0.4 | 10 | .001/.0005/.0001 | 0.02/0.01/0.002 | ±.0001 | ±0.002 |
| F2714AD | 73274 | 0.4 | 10 | .001/.0005/.0001 | 0.02/0.01/0.002 | ±.0001 | ±0.002 |



3900 ELECTRONIC INDICATORS

AGD GROUP 2

RANGES UP TO .500" AND 12.7MM

The 3900 Electronic Indicators have simple, powerful, easy-to-use functions, all at an attractive price. Versions are available for inch/metric and metric only.

FEATURES

- Large, easy-to-read LCD
- Power On/Off button
- Reverse travel (\pm control indicates direction)
- Zero setting at any position
- Long battery life
- 3/8" diameter stem for inch/mm model (8mm on metric-only model)
- 4-48 spindle thread on inch/mm model (M2.5 X .45 thread on metric-only model)
- Lug-on-center back with additional flat back
- Dust cap
- Plastic storage case with clear cover



3900-5

| Cat. No. | EDP | Range | | Resolution | | Accuracy | |
|----------|-------|-------|------|------------|------|----------|-------|
| | | in | mm | in | mm | in | mm |
| 3900-5 | 72538 | .5 | 12.7 | .0005 | 0.01 | ±0.001 | ±0.03 |
| 3900M-5 | 72537 | | 12.7 | | 0.01 | | ±0.03 |

| Accessory | | |
|-----------|-------|--------------|
| Cat. No. | EDP | Description |
| PT61918 | 67169 | SR44 battery |



INDICATOR HOLDERS

3670 DIAL INDICATOR STANDS

The 3670 Dial Gage Stands are versatile and easily adapted to thickness gages for comparator work.

A perfect companion for the 647 Comparator Indicator.

FEATURES

- Designed for comparison measurements using a dial indicator or digital indicator
- Vertical fine adjustment is standard on all models
- Rugged bracket holds indicator firmly in place
- Can be used with any A.G.D. dial or digital indicator
- Furnished with a serrated or flat anvil which is ground, lapped and removable



3671 with 647M
Comparator Indicator

| 3670 Dial Gage Stands (3/8" stem hole; 8mm bushing) | | |
|---|-------|--|
| Cat. No. | EDP | Description |
| 3671 | 69901 | Indicator stand with round flat anvil |
| 3672 | 69902 | Indicator stand with round serrated anvil |
| 3673 | 69903 | Indicator stand with square serrated anvil |



3671



3672



3673

NEW!

INDICATORS AND GAGES



INDICATOR HOLDERS

657 INDICATOR HOLDERS

Base has three precision ground, magnetic contact surfaces. Grips horizontally, vertically or upside down. V-step holds base to round surfaces. Extra #1/4-20 tapped hole in one side of base (not shown) for mounting post.

Available with or without Starrett AGD Dial Indicators: inch reading 25-131J (graduation .0005", dial reading 0-25-0, range .125") or millimeter reading 25-181J (graduation 0.01mm, dial reading 0-50-0, range 2.5mm). Other indicators can be furnished on request.

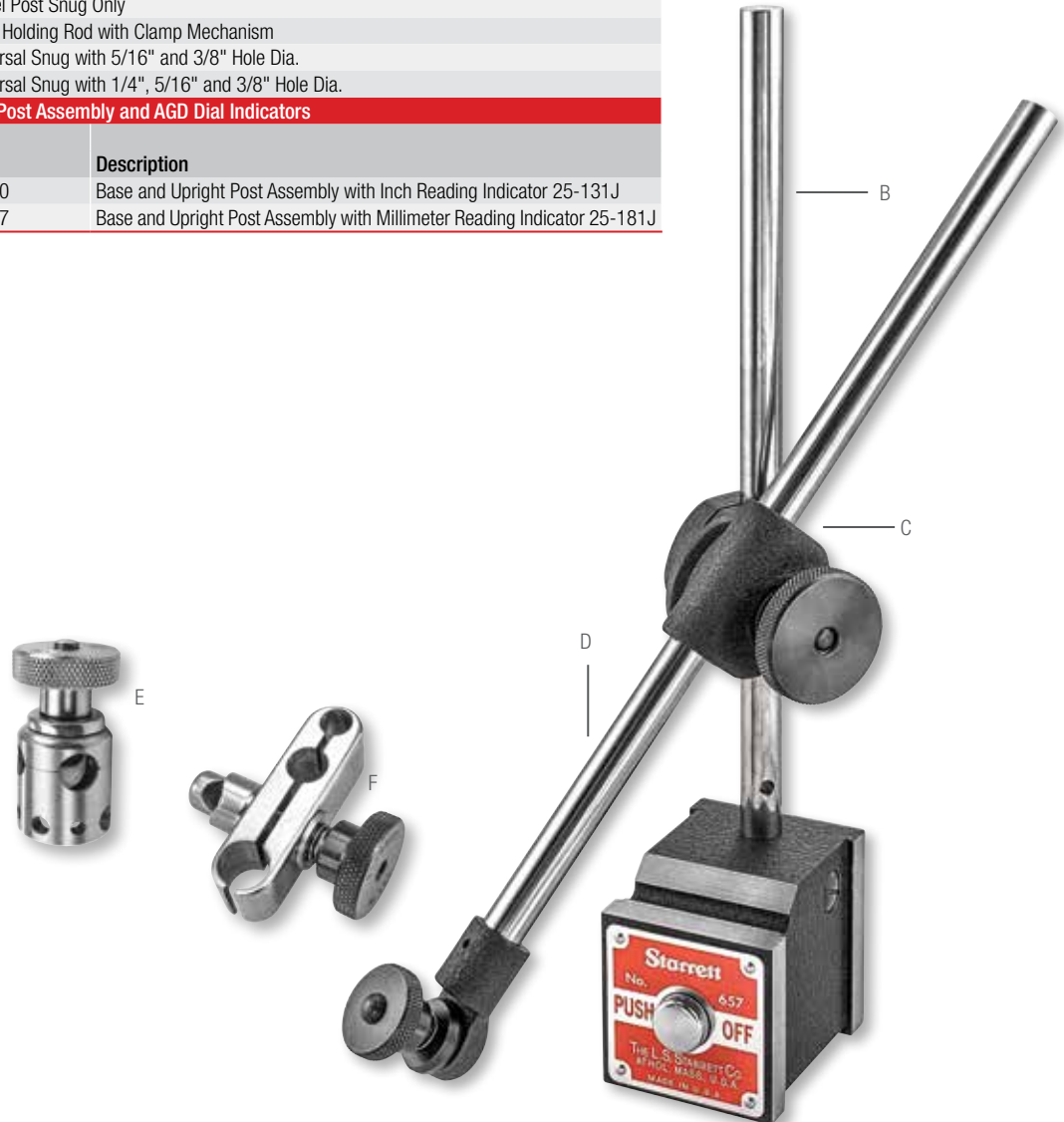
- A. 657P Magnetic Base. 1-15/16" x 1-5/8" x 1-7/8" (50 x 40 x 48mm) deep. Push button on/off switch for one-hand operation.
- B. 657G Upright Base Post. 3/8" (9.5mm) diameter x 7-7/16" (190mm) length overall.
- C. 657H Swivel Post Snug. Allows universal indicator adjustment – up-and-down, any vertical angle, for a complete 360°. Two 3/8" (9.5mm) holes.
- D. PT06784-A Gage Holding Rod. 3/8" x 9-1/2" (9.5 x 240mm) with clamping mechanism for gripping the indicator lug back (see photo below).
- E. F. 57S and 58S Universal Snugs. Adapt various scribes and indicator shanks to rods and posts.

657 Base Holder Assembly and Individual Components

| Photo Key | Cat. No. | EDP | Description |
|-----------|-----------|-------|--|
| | 657D | 52749 | Magnetic Base, Upright Post Assembly Including Post, Swivel Post Snug and Gage Holding Rod |
| A | 657P | 52757 | Magnetic Base Only |
| B | 657G | 52753 | Upright Base Post Only |
| C | 657H | 52785 | Swivel Post Snug Only |
| D | PT06784-A | 52755 | Gage Holding Rod with Clamp Mechanism |
| E | 57S | 50296 | Universal Snug with 5/16" and 3/8" Hole Dia. |
| F | 58S | 56613 | Universal Snug with 1/4", 5/16" and 3/8" Hole Dia. |

Sets Including Magnetic Base, Upright Post Assembly and AGD Dial Indicators

| w/Finished Wood Case | | Without Case | | Description |
|----------------------|-------|--------------|-------|--|
| Cat. No. | EDP | Cat. No. | EDP | |
| 657EZ | 52751 | 657E | 52750 | Base and Upright Post Assembly with Inch Reading Indicator 25-131J |
| 657MEZ | 56358 | 657ME | 56357 | Base and Upright Post Assembly with Millimeter Reading Indicator 25-181J |



INDICATOR HOLDERS

657AA MAGNETIC BASE INDICATOR HOLDER

For use with all Starrett Test, Back-Plunger, AGD, Dial and Miniature-Dial Indicators. Also accommodates similar indicators of other manufacturers.

- A. 657P Magnetic Base. 1-15/16 x 1-5/8 x 1-7/8" (50 x 40 x 48mm). Push-button on/off switch for one-hand operation. Base has three precision ground magnetic contact points. Grips horizontally, vertically, and upside down. V-step holds base to arbors, shafts, etc. Base has extra 1/4-20 tapped hole on one side for mounting post. Black wrinkle finish on non-working surfaces.
- B. 657G Upright Base Post. 3/8" (9.5mm) diameter x 7-7/16" (190mm) length overall. 57S and 58S Universal Snugs may also be used.
- C. 657S Snug. Two 1/4" (6.3mm) diameter holes. Adapts 196, 650, and 651 Dial Indicators and 657Y Indicator Attachment to 657X Rod.
- D. 657X Rod. 1/4" (6.3mm) diameter x 6" (150mm) long. Accommodates Starrett 708, 709, 811 and 711F Dial Test Indicators and 657S Sleeve.
- E. 657Y Indicator Attachment. 1/4" (6.3mm) O.D. one end, other end threaded and fits lug backs of all AGD indicators (81, 25, 655, 656) and 80 Miniature Indicators.
- F. PT18724 Snug. 3/8" (9.5mm) diameter post hole. 1/4" (6.3mm) diameter gripping hole accommodates 657X Rod.



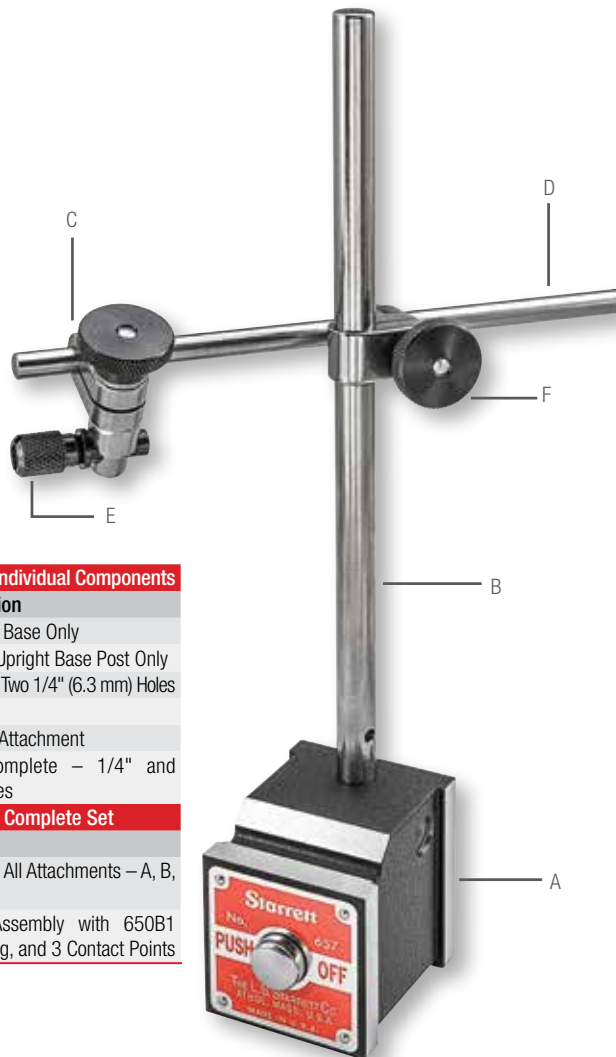
657Y with lug-on-center back



657AA with 196B1 Universal Dial Indicator



657AA with 711FS Last Word® Dial Test Indicator



657AA Magnetic Base Indicator Holder - Individual Components

| Photo Key | Cat. No. | EDP | Description |
|-----------|----------|-------|-------------------------------------|
| A | 657P | 52757 | Magnetic Base Only |
| B | 657G | 52753 | 7-7/16" Upright Base Post Only |
| C | 657S | 52759 | Snug with Two 1/4" (6.3 mm) Holes |
| D | 657X | 52764 | Rod |
| E | 657Y | 52765 | Indicator Attachment |
| F | PT18724 | 50710 | Snug Complete - 1/4" and 3/8" Holes |

657AA Magnetic Base Indicator Holder - Complete Set

| Cat. No. | EDP | Description |
|----------|-------|--|
| 657AA | 52743 | Magnetic Base with All Attachments - A, B, C, D, E, F |
| 657-650Z | 65259 | Base and Post Assembly with 650B1 Indicator, 657S Snug, and 3 Contact Points |



INDICATOR HOLDERS

657A MAGNETIC BASE INDICATOR HOLDER WITH SWIVEL POST ASSEMBLY

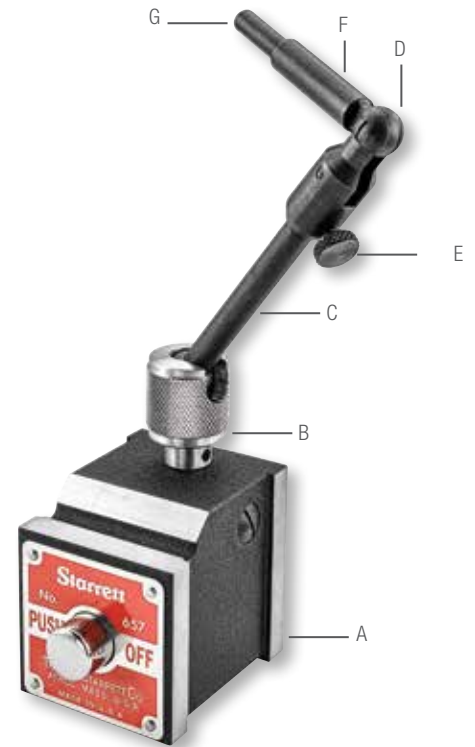
The swivel post assembly on these holders provides universal adjustment in both horizontal and vertical planes. Available with inch or millimeter Dial Test or Back-Plunger Indicators, they save time in shop set-up and other inspection jobs.

For use with all Test, Back-Plunger, AGD, Dial and Miniature-Dial Indicators. Also accommodates similar indicators of other manufacturers.

Powerful, permanent magnetic base holds firmly to steel or iron surfaces – horizontally, vertically, upside-down. Push-button turns magnetic force on or off for quick, one-hand set-up and take-down. V-step adapts base to horizontal or vertical arbors and chucks. There is an extra 1/4-20 NC tapped hole in side of base for indicator mounting post. Three precision ground magnetic contact surfaces (plus V-step). Black wrinkle finish on non-working surfaces.

MAGNETIC BASE ASSEMBLY FEATURES:

- A. 657P Magnetic Base is 1-15/16" x 1-5/8" x 1-7/8" (50 x 40 x 48mm) deep.
- B. Swivel Cap Slot permits 90° post travel to horizontal position.
- C. Post rotates 360°.
- D. 657F Indicator Swivel Post Assembly is 6-1/2" (165mm) high (less threaded end). Assembly consists of items B, C, E, F, G.
- E. Fine-Adjusting Screw. Turn to zero set indicator.
- F. Upper arm is 2" (50mm) long with a 5/16" (8mm) diameter and swings more than 180°; friction joint holds it in position.
- G. 7/32" (5.5mm) diameter step, 1/2" (13mm) long.



657A with 196B1 Universal Dial Indicator setting up workpiece on milling machine.



657A with 711LS Last Word Dial Test Indicator setting up workpiece on surface grinder.

657A Magnetic Base Indicator Holder - Individual Components

| Cat. No. | EDP | Description |
|----------|-------|---|
| 657A | 52744 | Magnetic Base with Swivel Post Assembly |
| 657P | 52757 | Magnetic Base Only |
| 657F | 52752 | Swivel Post Assembly Only |

657 SETS

These sets have been put together for your ordering convenience, but you can mix and match other Starrett test or back-plunger indicators and attachments with the 657A Magnetic Base and Swivel Post Assembly to suit your needs.

657T Flex-O-Post Indicator Holders with magnetic base - Individual Components

| Photo Key | Cat. No. | EDP | Description |
|-----------------|----------|-------|--|
| F | 657P | 52757 | Magnetic Base Only |
| (A, B, C, D, E) | 3657U | 12695 | Flex-O-Post with Locking Lever and Snug Only |
| G | 657W | 52763 | Fine-Adjustment Attachment |
| A | PT17850 | 72400 | Indicator Holding Rod |

657T Flex-O-Post Indicator Holders with magnetic base - Complete Assemblies

| Cat. No. | EDP | Description |
|----------|-------|--|
| 657T | 52760 | Magnetic Base with Flex-O-Post Assembly |
| 657TW | 52761 | Magnetic Base with Flex-O-Post Assembly and Fine-Adjustment Attachment |



INDICATOR HOLDERS

657T Flex-O-Post Indicator Holders with Magnetic Base

For use with all Starrett Test, Back-Plunger, AGD, Dial, and Miniature Dial Indicators. Also accommodates similar indicators of other manufacturers. The flexible post is an assembly of short tubular steel sections and precision ball joints, linked by an internal steel cable. It can be adjusted to any position and locked by turning a lever near the magnetic base. This makes it possible to use indicators in awkward places that are hard to reach with conventional holding devices.

Assembled to the magnetic base, the post has a vertical reach of approximately 15" (380mm) and a horizontal reach of approximately 10" (250mm). The indicator snug on the end of the post can be rotated through 360° and locked in any position.

The base has three precision ground magnetic contact surfaces. Grips horizontally, vertically or upside down. V-step holds base to arbors, shafts, chucks.

The 657W Attachment allows fine adjustments to be made, operated by turning the fine-adjusting thumb screw (with post locked in rigid position) to zero, then set the indicator.

- A. Gage Rod. 3/8" x 3" (9.5mm x 75mm) has 5/16, 1/4 and 7/32" (8, 6.3, and 5.5mm) steps. Holds 708, 709, 711 and 811 Dial Test Indicators by body clamp. See attachment specifications for the appropriate indicator body clamp on previous pages.
- B. Adjusting Take-up Sleeve with locking nut for maintaining proper degree of post rigidity.
- C. Post Snug has 3/8" (9.5mm) hole (which will also grip AGD dial indicators by the stem).
- D. Flex-O-Post 3657U.
- E. Locking Lever tightens internal steel cable to make post rigid and lock it in position.
- F. Magnetic Base 657P has push-button on/off switch.



651B1 Indicator gripped directly to its stem via the post snug.



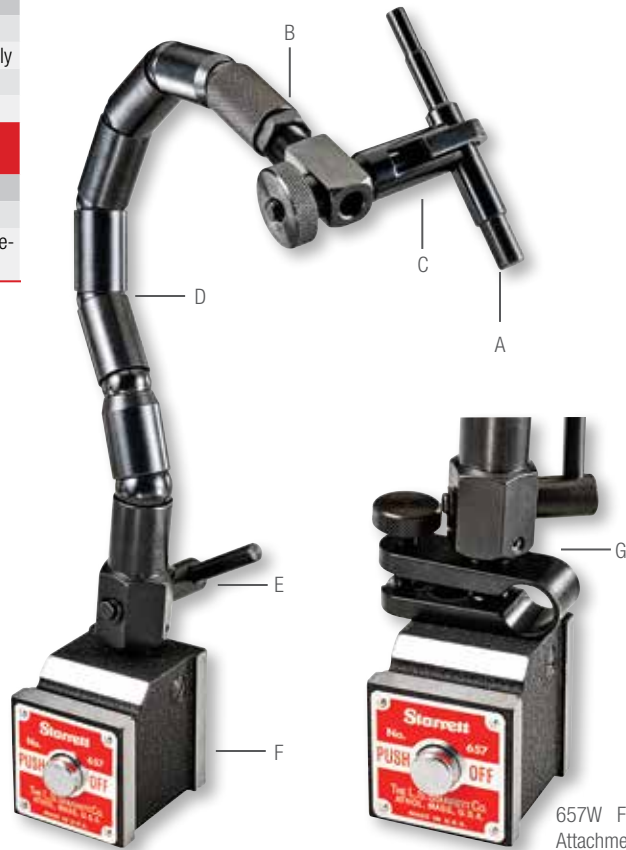
196B1 Indicator via a 657S Snug.

657T Flex-O-Post Indicator Holders with magnetic base - Individual Components

| Photo Key | Cat. No. | EDP | Description |
|-----------------|----------|-------|--|
| F | 657P | 52757 | Magnetic Base Only |
| (A, B, C, D, E) | 3657U | 12695 | Flex-O-Post with Locking Lever and Snug Only |
| G | 657W | 52763 | Fine-Adjustment Attachment |
| A | PT17850 | 72400 | Indicator Holding Rod |

657T Flex-O-Post Indicator Holders with magnetic base - Complete Assemblies

| Cat. No. | EDP | Description |
|----------|-------|--|
| 657T | 52760 | Magnetic Base with Flex-O-Post Assembly |
| 657TW | 52761 | Magnetic Base with Flex-O-Post Assembly and Fine-Adjustment Attachment |



657W Fine-Adjustment Attachment



INDICATOR HOLDERS

657-1, 657-2 MAGNETIC BASE UNIVERSAL INDICATOR HOLDER

WITH TRIPLE JOINTED ARM AND FINE ADJUSTMENT

This versatile indicator holder has three pivots available for positioning the indicator where needed. All pivots are controlled by one tightening knob. It will hold:

- Any indicator with a 3/8" (9.5mm) stem (such as our 25, 650 and 651 Indicators)
- Any indicator with a standard dovetail mount (such as our 708, 709, and 811 Indicators)
- Any indicator with a 1/4" (6.3mm) shank (such as our 196 Indicator)
- Any indicator with a 3/16" (4.7mm) shank (such as our 708, 709, 811 and 711 Indicators)
- Any indicator with a body clamp (such as our 711 Indicators)
- The working area is within a hemisphere having a radius of approximately 12" (300mm)
- The very sensitive fine-adjustment is located on the magnetic base to eliminate indicator deflection when it is being adjusted
- The 657-3 Universal Indicator Holder Arm Assembly can also be used on the 659P Base using the 659 Thread Adapter, PT18318

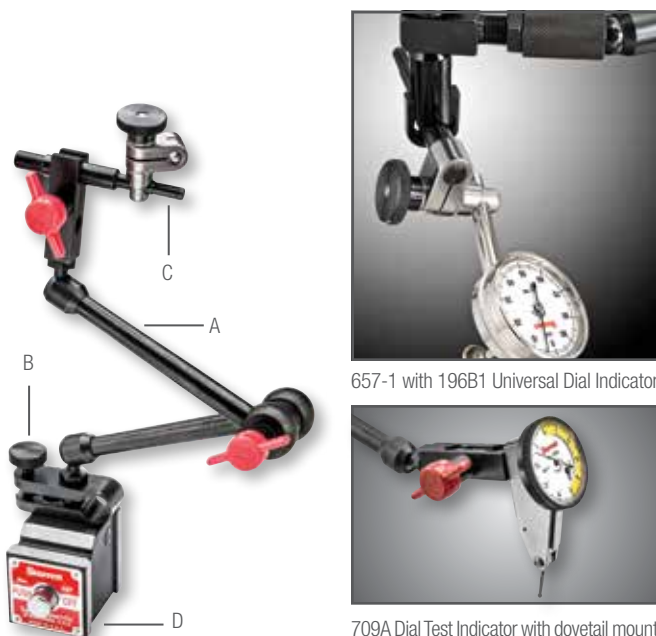
657-1 and 657-2 Magnetic Base Universal Indicator Holders - Individual Components

| Photo Key | Cat. No. | EDP | Description |
|-----------|----------|-------|--|
| A | 657-3 | 64438 | Universal Indicator Holder Arm Assembly Only |
| B* | 657W | 52763 | Fine-Adjustment Attachment |
| C* | PT17850 | 72400 | Indicator Holding Rod |
| D | 657P | 52757 | Magnetic Base Only |
| E | 657S | 52759 | Snug with Two 1/4" (6.3 mm) Holes |

657-1 and 657-2 Magnetic Base Universal Indicator Holders - Complete Assemblies

| Cat. No. | EDP | Description |
|----------|-------|---|
| 657-1 | 64436 | Universal Indicator Holder, 657W Fine-Adjustment including 657P Magnetic Base, PT17850 Indicator Holding Rod, and 657S Snug |
| 657-2 | 64437 | Universal Indicator Holder with 657 Magnetic Base |

* Not included with the 657-2



660 MAGNETIC BASE INDICATOR HOLDER

WITH TRIPLE JOINTED ARM

The compact and versatile 660 Magnetic Base Indicator Holder has three adjustable pivots controlled by a single knob for fast, easy indicator positioning.

- Small but powerful magnetic base with 70lb (320N) holding force
- Positive On/Off switch
- Base Dimensions: 1-3/16" x 1-9/16" x 1-3/8" (30mm x 40mm x 35mm)
- Horizontal and vertical mounting positions
- Will hold any indicator with a 3/8" (9.5mm) stem or standard dovetail mount
- Articulating arm with powerful central locking knob, provides full 360° horizontal positioning and over 180° vertical positioning
- Maximum Horizontal Reach: 4.750" (120mm); Maximum Vertical Reach: 7.500" (190mm)
- Very sensitive fine-adjustment thumb screw

660 Magnetic Base Indicator Holder

| Cat. No. | EDP | Description |
|----------|-------|-----------------------|
| 660 | 68621 | Base Indicator Holder |



INDICATOR HOLDERS

661 MINI MAGNETIC INDICATOR HOLDER

The Mini Magnetic Tool Holder is a simple, versatile, effective and economical tool for a variety of indicator holding tasks. It has no levers or switches – simply place the holder on the measuring surface, attach the indicator and position as required.

FEATURES AND SPECIFICATIONS

- 30 lb (133 N) of holding force
- Base Diameter: 1.180" (30mm)
- Base Height: 1" (25.4mm)
- Overall Height 4.173" (106mm)
- Holds indicators with 3/8" stems or standard dovetail mounts
- Fits over spindles and posts with diameter of 1/4" (6.3mm), such as the 196 Dial Indicator
- Includes an 8mm adapter for indicators with metric (8mm) stems

| 661 Mini Magnetic Indicator Holder | | |
|------------------------------------|-------|------------------|
| Cat. No. | EDP | Description |
| 661 | 68620 | Indicator Holder |



659 HEAVY-DUTY MAGNETIC BASE INDICATOR HOLDER

WITH ROTARY ON/OFF SWITCH. FURNISHED WITH OR WITHOUT STARRETT AGD DIAL INDICATORS

This holder has a powerful magnetic base that attaches to flat surfaces or on round work up to 5" (125mm) in diameter by a form-ground involute vee for accurate seating. It has approximately twice the holding power of our 657 Magnetic Base and has a rotary on/off switch.

A post snug with two 3/4" (19mm) gripping holes positions the dial indicator at any height and at any vertical angle and allows for 360° rotation of the gage rod. After locking the gage in place, the final indicator setting is made by an independent fine adjustment at the back end of the gage rod.

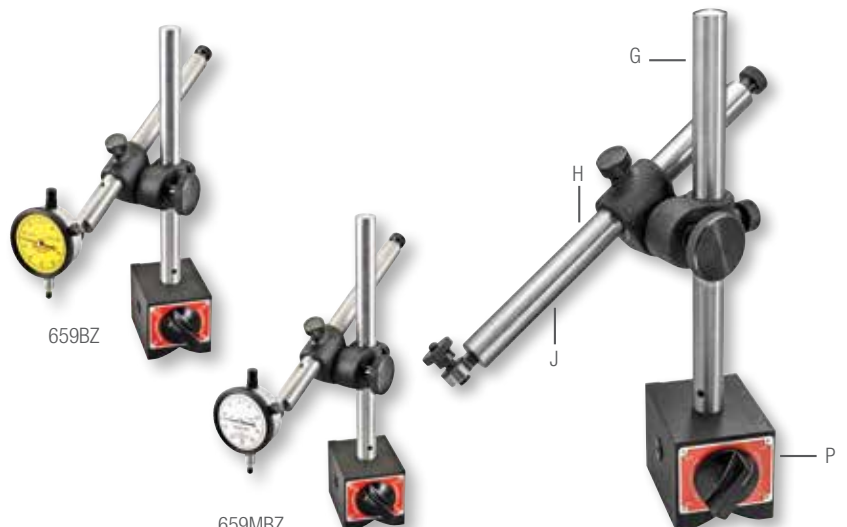
A second tapped hole (3/8"-24) in one side of the base is for mounting the post horizontally or adding another post for multiple inspection work. The base is furnished with a threaded adapter, making it possible to use the 657 Magnetic Base post and attachments. Base and snug have a black wrinkle finish with precision ground contact surfaces.

Available with or without Starrett AGD Dial Indicators: inch reading 25-131J (.0005" graduation) or millimeter reading 25-181J (0.01mm graduation). Other mechanical AGD indicators are available on request. Electronic indicators, 2600 and 2700, are also available on request.

Both the upright post and the gage rod are approximately 9 3/8" (238mm) long and 3/4" (19mm) in diameter.

| Base Holder Assembly and Individual Components | | | |
|--|----------|-------|--|
| Photo Key | Cat. No. | EDP | Description |
| | 659A | 56687 | Magnetic Base, Upright Post Assembly Including Post, Snug, Gage Rod with Clamp and Fine Adjust, and Thread Adapter, without Case |
| | 659AZ | 55947 | Complete Assembly (Above) in Case |
| P | 659P | 55949 | Magnetic Base, Including Thread Adapter |
| G | 659G | 56688 | Upright Base Post Only |
| H | PT16846 | 71597 | Swivel Post Snug Only with Two 3/4" (19mm) Gripping Holes |
| J | PT08903 | 72032 | Gage Holding Rod Only, Including Clamp Mechanism and Fine-Adjustment |
| | PT18318 | 72040 | Thread Adapter Only |

| Sets, Including Magnetic Base, Upright Post Assembly and AGD Dial Indicators | | |
|--|-------|--|
| Cat. No. | EDP | Description |
| 659BZ | 55948 | Base and Upright Post Assembly with Inch Reading Indicator 25-131J in Case |
| 659MBZ | 64892 | Base and Upright Post Assembly with Millimeter Reading Indicator 25-181J in Case |



INDICATOR HOLDERS

COMMON TEST AND BACK PLUNGER INDICATOR APPLICATIONS

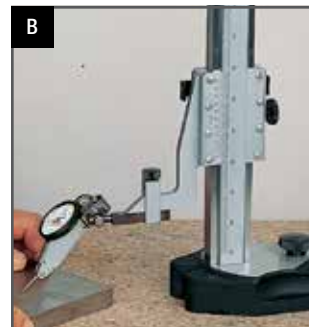
- A. Models with tool post holders, generally used for lathe work.
- B. Indicators may be used on our 665 Inspection Holder.
- B, C. Some indicator holders have flexible joints for holding in different places.
- C, D. Indicators with straight stems or shanks can be held in snugs or in chucks and collets.



REFERENCES FOR OTHER TEST INDICATOR HOLDING METHODS

In addition to the magnetic base indicator holders on the preceding pages, we also offer the following:

- A. For very precise measurements such as comparing a part to a gage block set, we have our 252 Height Transfer Gage with our DIGI-CHEK® Height Gages
- B. Any of our great variety of height gages - 250, 254, 255, and 3752 - can be used for comparing and for actual vertical measurements
- C. Our 57 or 257 Surface Gages. These are for comparison and the truing-up of surfaces



INDICATOR HOLDERS

665 INSPECTION HOLDER AND DIAL INDICATORS

This is the most versatile dial indicator holder with an extremely stable base (A) that is 8-1/2" (215mm) long x 2-1/4" (57mm) wide at the bottom. It can inspect workpieces on the top surface of the ground base or within a working area defined by the 8" (200mm) upright base post (B) and the 9-1/2" (238mm) long gage-holding rod (C). The base post can be conveniently located anywhere along the 8-1/2" (215mm) T-slot in the base.

This tool can be held in a vise or by a bolt in a machine T-slot coming up through one of the two 3/8" (9.5mm) holes in the base and fastening down on the top surface.

D. Swivel Post Snug 665D

Snug has a .375" (9.5mm) hole for the gage holding rod and a .465" (11.8mm) hole for the upright post. Also comes with the 665L Reducing Bushing (J) that can reduce the .465" (11.8mm) hole to 3/8" (9.5mm).

| Individual Components | | | |
|-----------------------|-----------|-------|--|
| Key | Cat. No. | EDP | Description |
| A | 665A | 52783 | Base Only |
| B | 665B | 52784 | Upright Base Post .464" x 8" (11.8 x 200mm) with Clamp Mechanism |
| C | PT06784-A | 52755 | Gage Holding Rod 3/8" x 9-1/2" (9.5 x 240mm) with Clamp Mechanism |
| D | 665D | 52754 | Swivel Post Snug with .465" and 3/8" (11.8 and 9.5mm) holes with 665L Reducing Bushing |
| G | 665G | 52792 | Clamp with .464" x 5-3/4" (11.8 x 146mm) Post |
| | 665G-1/4 | 52793 | Clamp with 1/4" (6.3mm) Diameter Post |
| | 665G-5/16 | 52794 | Clamp with 5/16" (7.9mm) Diameter Post |
| | 665G-3/8 | 52795 | Clamp with 3/8" (9.5mm) Diameter Post |
| H | 665H | 52790 | Tool Post Holder Approximately 1" x 7/16" (25 x 11mm) |
| I | 665G-1 | 52789 | Offset Arm 3/8" (9.5mm) Diameter 3" and 5 1/2" (75 and 140mm) Arms |
| J | 665L | 52756 | Reducing Bushing Only (for Swivel Post Snug) .465" (11.8mm) O.D. .375" (9.5mm) I.D. |

| Inspection Sets with AGD Dial Indicators | | |
|--|-------|---|
| Cat. No. | EDP | Description |
| 665JZ | 56275 | Complete with Components and 25-131J Inch Reading Indicator in Case |
| 665MJZ | 56276 | Complete with Components and 25-181J Millimeter Reading Indicator in Case |

Three very useful inspection combinations can be made by removing the complete swivel post snug and gage holding rod as follows:

G. Clamp 665G

Take the clamp and put the clamp post into the snug and lock it. Now this combination can be used to clamp the gage holding rod and the indicator into hard-to-reach places for inspecting jigs, fixtures, lining up work on centers and machine tables.

The clamp has a 3" (75mm) capacity and a post with an approximately 5-3/4" (145mm) length. The clamp post is .464" (11.8mm) diameter that fits into the regular swivel post snug 665D.

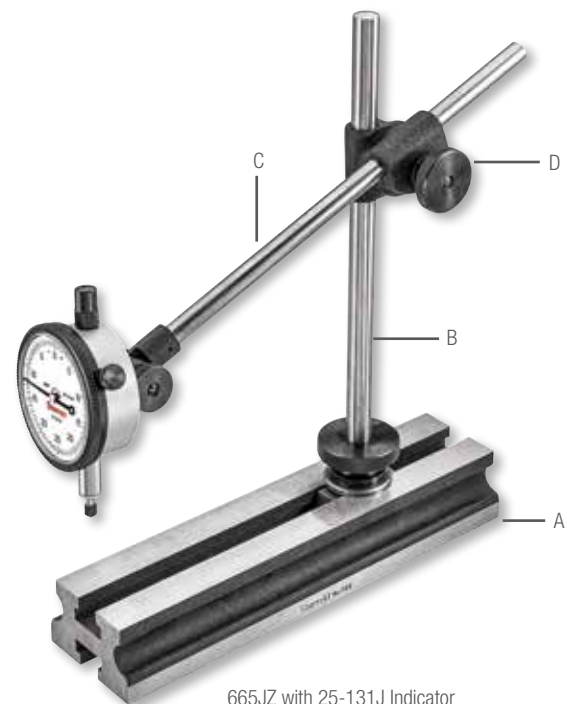
Three other clamp post diameter options available – 665G-3/8 is a 3/8" (9.5mm) diameter clamp post that can be used in the regular swivel post snug 665D with the addition of the 665L reducing bushing. The 665G-5/16 (7.9mm) and 665G-1/4 (6.3mm) can be used with other snugs to hold an indicator.

H. Tool Post Holder 665H

Put one end of the offset arm into the swivel post snug 665D (with the 665L reducing bushing in it). Then put this rectangular tool post holder 665H onto the other arm. This combination now allows for a good, tight setup in lathe tool posts and other machine setups.

I. Offset Arm 665G-1

Another very popular measuring combination is to put the reducing bushing (which is furnished) into the snug and then put one leg of the offset arm into it. Now the tool can be used in a 3/8" (9.5mm) chuck or collet to sweep a large area.



665JZ with 25-131J Indicator



INDICATOR HOLDERS

675 DIAL COMPARATORS WITH GRANITE BASE

Extremely rugged and universally adjustable to any position, these gages are well suited for inspection, layout, checking and lineup operations anywhere in the shop. All settings are individually made without disturbing others.

These versatile stands allow the indicator to be positioned at any height within the capacity of the upright base post – 360° both horizontally and vertically.

The indicator can also be moved lengthwise within the capacity of the 3/4" x 9-7/8" (19 x 250mm) horizontal gage-holding rod.

A special feature of this tool is the sensitive, fine-adjustment at the end of the gage rod. The fine-adjustment range is approximately 1/4" (6.3mm).

A 1/4" (6.3mm) steel indicator contact point is provided, but contact points in other lengths and materials are also available – see previous accessory pages.

This holder has a Starrett Grade-A Crystal Pink® Granite base that is 8" x 12" x 2" (200 x 300 x 50mm), and is finished to an overall tolerance of .0001" (0.0025mm).

NOTE: Not recommended for electronic indicators 2" and above.

| 675 Complete Units | | | | | |
|--------------------|-------|-------------------------------|--------------|-------|---------------|
| With Granite Base | | Dial Indicator Specifications | | | |
| Cat. No. | EDP | Graduation | Dial Reading | Range | Indicator No. |
| 675GJ | 55964 | .0005" | 0-25-0 | .125" | 25-131J |
| 675GMJ | 56129 | 0.01mm | 0-50-0 | 2.5mm | 25-181J |

| Individual Components | | |
|-----------------------|-------|---|
| Cat. No. | EDP | Description |
| 675G | 66051 | Granite Base, Upright Base Post and Gage Holding Rod, Including Clamp Mechanism and Fine-Adjustment |
| PT08903 | 72032 | Gage Holding Rod Only, Including Clamp Mechanism and Fine-Adjustment |
| PT16846 | 71597 | Swivel Post Snug Only with Two 3/4" (19mm) Gripping Holes |

Available with special non-shock mechanism or without indicator. Any Starrett AGD Dial or Electronic Indicator can be interchanged with indicators listed. Please specify when ordering.



653 DIAL COMPARATORS

WITH CAST IRON BASE, INCH AND MM READING

653G DIAL COMPARATORS

WITH GRANITE BASE, INCH AND MM READING

These bench-type comparator gages are ruggedly built for in-process and final inspection work.

The dial indicator can be adjusted vertically and locked in any position. A sliding ring with locking screw below the beam permits swinging the indicator to either side. The ring also acts as a safety device, preventing the beam from accidentally dropping. There is a fine adjustment on the beam for final indicator setting.

The hand lifting lever on the indicator raises the spindle and releases it to contact the work. Left hand lever furnished unless otherwise specified.

Both gages have a maximum vertical capacity of 9-1/4" (235mm) and a throat depth of 5" (125mm) and a vertical indicator fine adjustment of up to 1/2" (12.7mm). Post diameter is 1-1/2".

653 Dial Comparator has a precision ground cast iron base measuring approximately 8" x 9" (200 x 225mm).

653G Dial Comparator has a Starrett Grade A, Crystal Pink® Granite base, measuring 8" x 12" x 2" (200 x 300 x 50mm). Base is finished to an overall tolerance of .0001" (0.0025mm).

NOTE: Recommended for electronic indicators 2" and above.

| 653 Complete Units | | | | | | | | |
|---------------------|-------|-------------------|-------|-------------------------------|------------|--------------|-------|--|
| With Cast Iron Base | | With Granite Base | | Dial Indicator Specifications | | | | |
| Cat. No. | EDP | Cat. No. | EDP | Indicator No. | Graduation | Dial Reading | Range | |
| 653J | 52737 | 653GJ | 55966 | 655-141J | .001" | 0-50-0 | .250" | |
| 653MJ | 56146 | 653GMJ | 56127 | 655-181J | 0.01mm | | 2.5mm | |

| Individual Components | | |
|-----------------------|-------|---|
| Cat. No. | EDP | Description |
| 653J | 55917 | Comparator with Cast Iron Base, without Indicator |
| 653G | 56646 | Comparator with Granite Base, without Indicator |

Available with special non-shock mechanism or without indicator. Any Starrett AGD Dial or Electronic Indicator can be interchanged with indicators listed. Please specify accordingly.



SPECIAL FUNCTION DIAL GAGES

This section includes special function dial gages that we list as regular items. Gages are also available with electronic indicators on request, where noted.

- Chamfer Gages
- Countersink Gages
- Hole Gages
- Bore Gages — See Bore Gage Section
- Direct-Reading Thickness Gages
- Snap Gages
- Groove Gages
- Caliper Gages
- Depth Gages
- Out-of-roundness Gages
- Inside Dial Gages
- Automotive Gages
- Crankshaft Distortion Gages
- Cylinder Gages
- Disc Brake Gages
- Large Diameter Gages

In addition, we have made many other special function gages to suit a wide variety of our customers' specific requirements. If you have a special application, we invite you to submit your drawings and specifications to our Special Order Department at 121 Crescent Street, Athol, MA 01331, USA. We will be happy to provide a prompt quotation.

SPECIAL FUNCTION INDICATORS

CHAMFER GAGES

FOR INTERNAL CHAMFERS:

683 CHAMFER GAGE 0-90°

684 CHAMFER GAGE 90-127°

FOR EXTERNAL CHAMFERS:

685 CHAMFER GAGE 0-90°

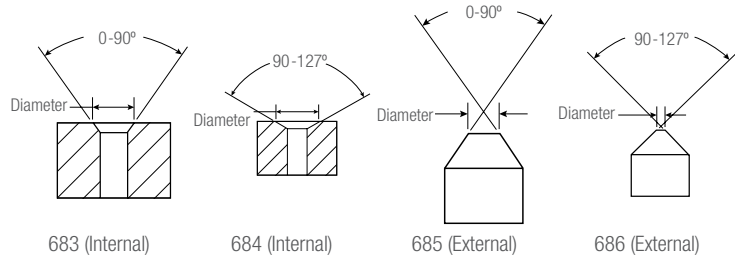
686 CHAMFER GAGE 90-127°

These gages directly measure the diameter of chamfered holes. No setting master is necessary. When the three-blade plunger is pressed against a flat surface, the gage should read the set number stamped on the back of the indicator. In case of wear, the gage may be adjusted to read the proper number.

All ground surfaces are of hardened tool steel. Indicators are AGD design.

Internal gages will measure the largest diameter of any chamfer that has an included angle within the range of angles printed on the dial face of the gage.

External gages will measure the smallest diameter of any chamfer within the range of angles printed on the dial face of the gage.



685-2Z Internal Chamfer Gage with 695 Check Stand with F2720-4IQ Electronic Indicator



| 683 Inch Reading Internal Gages | | | | | 684 Millimeter Reading Internal Gages with Yellow Dials | | | | |
|---------------------------------|-------|---------------|-------|----------|---|-------|---------------|-------|------------|
| 0-90° Angle | | 90-127° Angle | | | 0-90° Angle | | 90-127° Angle | | |
| Cat. No. | EDP | Cat. No. | EDP | Range | Cat. No. | EDP | Cat. No. | EDP | Range |
| 683-1Z | 63684 | 684-1Z | 63688 | 0-3/8" | 683M-1Z | 64989 | 684M-1Z | 64993 | 0-9.5mm |
| 683-2Z | 63685 | 684-2Z | 63689 | 0-1/2" | 683M-2Z | 64990 | 684M-2Z | 64994 | 0-12.7mm |
| 683-3Z | 63686 | 684-3Z | 63690 | 0-1" | 683M-3Z | 64991 | 684M-3Z | 64995 | 0-25mm |
| 683-4Z | 63687 | 684-4Z | 63691 | 1-2" | 683M-4Z | 64992 | 684M-4Z | 64996 | 25-50mm |
| 685 Inch Reading External Gages | | | | | 686 Millimeter Reading External Gages with Yellow Dials | | | | |
| 0-90° Angle | | 90-127° Angle | | | 0-90° Angle | | 90-127° Angle | | |
| Cat. No. | EDP | Cat. No. | EDP | Range | Cat. No. | EDP | Cat. No. | EDP | Range |
| 685-1Z | 63692 | 686-1Z | 63695 | 1/8-1/2" | 685M-1Z | 64997 | 686M-1Z | 65000 | 3.2-12.7mm |
| 685-2Z | 63693 | 686-2Z | 63696 | 3/16-1" | 685M-2Z | 64998 | 686M-2Z | 65001 | 4.7-25mm |
| 685-3Z | 63694 | 686-3Z | 63697 | 1-2" | 685M-3Z | 64999 | 686M-3Z | 65002 | 25-50mm |

Also available with electronic indicators. Please specify.
Gages furnished in deluxe padded case.



SPECIAL FUNCTION INDICATORS

COUNTERSINK GAGES

687 COUNTERSINK GAGE 82°

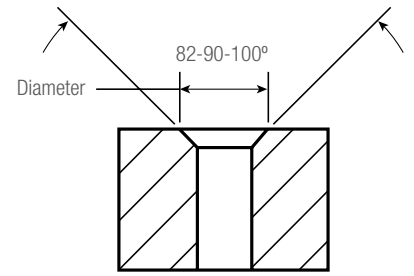
688 COUNTERSINK GAGE 90°

689 COUNTERSINK GAGE 100°

Starrett Countersink Gages are offered in three different angles so that the gage sets on the angular side of the countersink, as opposed to a chamfer gage which sets on the top edge of the chamfer.

This gage directly reads the large diameter of the countersink in .002" or 0.05 mm increments. A set master ring is furnished with each gage for calibration and setting. Press the button on top of the indicator to firmly depress the gage head into the countersink. When the gage is removed, the indicator reading is held in place until the reset button is activated.

All ground surfaces are of hardened tool steel. Indicators are AGD design.



687, 688, 689

Inch Reading Countersink Gages

| 82° Angle | | 90° Angle | | 100° Angle | | Range |
|-----------|-------|-----------|-------|------------|-------|------------|
| Cat. No. | EDP | Cat. No. | EDP | Cat. No. | EDP | |
| 687-1Z | 63698 | 688-1Z | 63702 | 689-1Z | 63706 | .020-.170" |
| 687-2Z | 63699 | 688-2Z | 63703 | 689-2Z | 63707 | .160-.360" |
| 687-3Z | 63700 | 688-3Z | 63704 | 689-3Z | 63708 | .360-.560" |
| 687-4Z | 63701 | 688-4Z | 63705 | 689-4Z | 63709 | .560-.780" |

Millimeter Reading Countersink Gages with Yellow Dials

| 82° Angle | | 90° Angle | | 100° Angle | | Range |
|-----------|-------|-----------|-------|------------|-------|-------------|
| Cat. No. | EDP | Cat. No. | EDP | Cat. No. | EDP | |
| 687M-1Z | 65003 | 688M-1Z | 65007 | 689M-1Z | 65011 | 0.5-4.3mm |
| 687M-2Z | 65004 | 688M-2Z | 65008 | 689M-2Z | 65012 | 4-9mm |
| 687M-3Z | 65005 | 688M-3Z | 65009 | 689M-3Z | 65013 | 9-14.2mm |
| 687M-4Z | 65006 | 688M-4Z | 65010 | 689M-4Z | 65014 | 14.2-19.8mm |

Check Gage Stand for Chamfer, Countersink and Hole Gages

| Cat. No. | EDP | Description |
|----------|-------|---|
| 695 | 63875 | 8-3/16" H x 6" W x 4" D (212 x 150 x 100mm) Hold Downs - 5" (125mm) on Center - 1/4" (6.3mm) Holes |

Also available with electronic indicators. Please specify.



687-3Z Countersink Gage with 695 Check Stand with F2720-4IQ Electronic Indicator



SPECIAL FUNCTION INDICATORS

HOLE GAGES

690 HOLE GAGE

.010-.330"

690M HOLE GAGE

0.25-8.35MM

These hole gages will check hole diameters to .001" and 0.02mm. They are fast, accurate, easy to read and have a balanced design for easy one- hand operation.

The gage can be pressed down on a flat surface and checked so the size should read the same as the set number stamped on the back of the indicator. It can also be checked and set with an optional "setting master".

All ground surfaces are of hardened tool steel. Indicators are AGD design.

Holes that need to be accurately checked must have no chamfers or countersinks.



Inch Reading Hole Gages

| Gages | | Set Masters (Optional) | | |
|----------|-------|------------------------|-------|------------|
| Cat. No. | EDP | Part No. | EDP | Range |
| 690-1Z | 63710 | PT23710-1 | 63879 | .010-.040" |
| 690-2Z | 63711 | PT23710-2 | 63880 | .030-.130" |
| 690-3Z | 63712 | PT23710-3 | 63881 | .130-.230" |
| 690-4Z | 63713 | PT23710-4 | 63882 | .230-.330" |

Millimeter Reading Hole Gages with Yellow Dials

| Gages | | Set Masters (Optional) | | |
|----------|-------|------------------------|-------|-------------|
| Cat. No. | EDP | Part No. | EDP | Range |
| 690M-1Z | 63714 | PT23710-5 | 63883 | .25-1.00mm |
| 690M-2Z | 63715 | PT23710-6 | 63884 | .75-3.30mm |
| 690M-3Z | 63716 | PT23710-7 | 63885 | 3.30-5.85mm |
| 690M-4Z | 63717 | PT23710-8 | 63886 | 5.85-8.35mm |

Check Gage Stand for Chamfer, Countersink and Hole Gages

| Cat. No. | EDP | Description |
|----------|-------|--|
| 695 | 63875 | 8-3/16" H x 6" W x 4" D (212 x 150 x 100mm) Hold Downs - 5" (125mm) on Center - 1/4" (6.3mm) Holes |

Also available with electronic indicators. Please specify.

170 DIAL SHEET GAGES

.150"

Measures the thickness of sheet materials like paper, cardboard, leather, plastics and metals. Raise the movable contact, insert the work, remove thumb, and spring pressure holds the work parallel with the contacts. Thickness is registered on the dial. By turning the knurled bezel, the dial may be moved to bring the hand to zero.

- Contact edges are radiused to prevent work from being marred or deflected
- The flat contact area measures 5/16" in diameter
- Black finish
- 1-1/8" throat depth
- Furnished in deluxe padded case



170 Dial Sheet Gages, Inch Reading

| Cat. No. | EDP | Range | Graduation | Dial Reading |
|----------|-------|-------|------------|--------------|
| 170Z | 50647 | .150" | .001" | 0-100 |



SPECIAL FUNCTION INDICATORS

649 SPINDLE SQUARES™

The 649 Spindle Square™ offers accuracy, convenience and significant time saving with the common shop task of trammung the head of a vertical milling machine. This must be done regularly to ensure squariness and perpendicularity between the spindle and work surface.

The spindle square is easier to use and more precise than the traditional method of trammung with a dial test indicator.

USING THE SPINDLE SQUARE

After setting the spindle square indicators to "0" on a surface plate, place the Spindle Square™ into the collet of the milling machine and bring the head down to the table until both indicator needles have rotated approximately one full rotation.

The needles do not need to point in the same direction. Identical numerical readings, not the needle positions, indicate squareness.

To tram the milling machine, adjust the machine per normal procedures until both indicators read the same numerical value. After setting the X-axis, repeat the same procedure with the Y-axis.

FEATURES AND SPECIFICATIONS

- Fully assembled with two AGD Group 2 dial indicators
- Patented design
- Solid steel body construction with durable black oxide finish
- Ground gaging surface
- Approximately 4lbs with custom case
- 3/8" inch shank diameter
- 4" (100mm) between contact points
- Approximately 6-3/4" (172mm) wide and 5" (140mm) from the top of shank to the end of the contact points

| 649 Spindle Square | | | | |
|--------------------|-------|-------|------------|--------------|
| Cat. No. | EDP | Range | Graduation | Dial Reading |
| 649-1 | 52080 | .250" | .001" | 0-50-0 |
| 649-5 | 52081 | .125" | .0005" | 0-25-0 |
| 649-1M | 52082 | 2.5mm | 0.01mm | 0-50-0 |



SPECIAL FUNCTION INDICATORS

765A ELECTRONIC SNAP GAGE

0-1/2"/0-12.7MM

High quality, economical gage that is ideal for inspectors, purchasing agents, sales people and other who need to quickly measure materials up to 1/2" or 12.7mm thick.

- Balanced, compact design
- Simple, logical control buttons
- Easy-to-read LCD
- Single, long-life battery with easy access
- Light-weight aluminum frame
- Inch/millimeter conversion
- Zero at any position
- Manual ON/OFF, AUTO OFF
- Furnished in fitted plastic case



765A

765A* Electronic Snap Gage

| Cat. No. | EDP | Range | | Linear Accuracy | | Resolution | |
|----------|-------|-------|--------|-----------------|-------|------------|------|
| | | in | mm | in | mm | in | mm |
| 765A | 67659 | 0-1/2 | 0-12.7 | ±.0010 | ±0.02 | .0005 | 0.01 |

Accessories

| Part No. | EDP | Description |
|----------|-------|-----------------------------------|
| PT99492 | 65650 | Two Replacement Batteries, CR2032 |

* No output available on the 765A.

1010, 1010M DIAL INDICATOR POCKET GAGES

.375"/9MM

Handy pocket gage is approximately the size of a thin pocket watch. Ideal for inspectors, purchasing agents and sales people to check the size of materials up to 3/8" or 9mm thick. The gage fits naturally in the curve between the thumb and index finger. A slight pull on the serrated top plate raises the spindle.

- Throat depth ranges from 1/2" (12.7mm) down to 5/16" (8mm)
- Models are available with flat or rounded contacts as listed
- The diameter of both the flat or round contacts are 1/4" (6.3mm)
- Gage has a small count hand for recording each revolution of large hand
- Chrome plated case, unbreakable crystal dial cover
- Furnished in attractive, protective case

1010 Dial Indicator Pocket Gages, Inch Reading

| Cat. No. | EDP | Range | Graduation | Dial Reading | Contacts |
|----------|-------|-------|------------|--------------|----------|
| 1010Z | 53114 | .375" | .001" | 0-100 | Flat |
| 1010EZ | 53115 | .375" | .0005" | 0-50 | Flat |
| 1010RZ | 56067 | .275" | .001" | 0-100 | Round |

1010M Dial Indicator Pocket Gages, Millimeter Reading

| Cat. No. | EDP | Range | Graduation | Dial Reading | Contacts |
|----------|-------|-------|------------|--------------|----------|
| 1010MZ | 53116 | 9mm | 0.01mm | 0-100 | Flat |



1010Z



INDICATORS AND GAGES



SPECIAL FUNCTION INDICATORS

1015, 1015M PORTABLE DIAL THICKNESS GAGES

0-1" / 0-25MM

After inserting work between the measuring contacts, releasing the lever will cause the spindle to contact the work, giving an accurate size reading because measuring pressure is independent of the user. Indicators have jewel bearings and continuous dials. Models with balanced dials, other graduations and ranges are also available on special order. Electronic indicators can also be furnished. Throat depths include 2-1/2", 4", and 6". The contact edges are radiused to prevent the work from being marred or deflected. The flat contact area measures 1/4" (6.3mm) in diameter and is 1/8" (0.125mm) thick. Special contact sizes and shapes are available by request.



1015 Portable Dial Thickness Gages, Inch Reading

| Without Case | | Case Only | | Throat Depth | Range | Graduation | Dial Reading | Dial Indicator Model No. |
|--------------|-------|-----------|-------|--------------|-------|------------|--------------|--------------------------|
| Cat. No. | EDP | Cat. No. | EDP | | | | | |
| 1015A | 53119 | 1015AZZ | 55407 | 2-1/2" | 1/2" | .0005" | 0-50 | 1015A-431J |
| 1015B | 53121 | 1015BZZ | 55408 | | 1" | .001" | 0-100 | 1015B-441J |
| 1015A-4 | 67646 | | | 4" | 1/2" | .0005" | 0-50 | 1015A-431J |
| 1015B-4 | 67649 | | | | 1" | .001" | 0-100 | 1015B-441J |
| 1015A-6 | 67652 | | | 6" | 1/2" | .0005" | 0-50 | 1015A-431J |
| 1015B-6 | 67655 | | | | 1" | .001" | 0-100 | 1015B-441J |

1015M Portable Dial Thickness Gages, Millimeter Reading

| Without Case | | Case Only | | Throat Depth | Range | Graduation | Dial Reading | Dial Indicator Model No. |
|--------------|-------|-----------|-------|--------------|-------|------------|--------------|--------------------------|
| Cat. No. | EDP | Cat. No. | EDP | | | | | |
| 1015MA | 56131 | 1015AZZ | 55407 | 63mm | 10mm | 0.01mm | 0-100 | 1015MA-481J |
| 1015MB | 56133 | 1015BZZ | 55408 | | 25mm | | | 1015MB-881J |
| 1015MA-100 | 67647 | | | 100mm | 10mm | 0.01mm | 0-100 | 1015MA-481J |
| 1015MB-100 | 67650 | | | | 25mm | | | 1015MB-881J |
| 1015MA-150 | 67653 | | | 150mm | 10mm | 0.01mm | 0-100 | 1015MA-481J |
| 1015MB-150 | 67656 | | | | 25mm | | | 1015MB-881J |



SPECIAL FUNCTION INDICATORS

1150 DIAL INDICATOR SNAP GAGES

0-8"

These compact gages have rigid aluminum alloy frames protected from hand heat by insulating handles. They are used to gage outside diameters to an accuracy of .0001".

Dimensional variations are transmitted to the dial indicator through a linear friction-free transfer mechanism totally enclosed for protection against side thrust, foreign matter and coolants. Flat gaging contacts simplify measurement close to shoulders. The top sensitive contact may be reversed to present a spherical face to the work. An adjustable backstop simplifies centering the work.

The contacts and backstop are 5/16" diameter hardened tool steel, precision ground and lapped flat. The contacts are individually adjustable to a maximum 2" range and are locked in position by tightening parallel-lock clamps to maintain parallelism of faces. Both contacts are also keyed to maintain orientation of faces regardless of adjustment.

Plus or minus tolerances are read directly from the indicator since the dial face has a double row of graduations reading in opposite directions from zero, with "minus" graduations in red and "plus" in black. The indicator can be rotated 360° and locked in position to read from any angle, and a fine-adjusting screw provides for zero setting the hand. A guard protects the dial indicator when the gage is laid down.

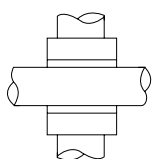
A bench stand is available to convert the gage to a bench comparator. T1150 Dial Indicator Snap Gages also available with indicators other than those listed, a 717 Gage Amplifier and gaging head in place of the indicator, carbide faces on the contacts, special contact and backstop shapes and sizes, variable gaging pressure control, disc setting and other special masters, and larger ranges.

| 1150 Dial Indicator Snap Gages, Inch Reading | | | | | | |
|--|-------|------------------|----------------|--------------|-------|-------------|
| Without Stand | | | Dial Indicator | | | |
| Cat. No. | EDP | Range | Graduation | Dial Reading | Range | Model No. |
| 1150Z-2 | 53168 | 0-2" | .0001" | 10 - 10 | .040" | 81-111-1150 |
| 1150Z-4 | 53169 | 2-4" | | | | |
| 1150Z-6 | 53170 | 4-6" | | | | |
| 1150Z-8 | 53171 | 6-8" | | | | |
| Accessory for 1150 Dial Indicator Snap Gages | | | | | | |
| Cat. No. | EDP | Description | | | | |
| 1150 | 53172 | Bench Stand Only | | | | |

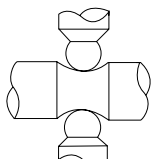
Gages furnished in case.

SPECIAL CONTACTS

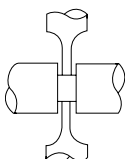
Some of the many interchangeable anvil configurations designed to suit special applications.



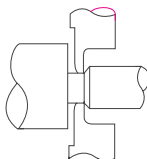
Wide Face up to 9/16" Square



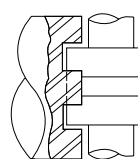
Ball or Roll



Blade Type



Offset



Offset for Face Groove

1150Z-2 mounted on
1150 Bench Stand



INDICATORS AND GAGES



1150Z-2 with F2720AD
Electronic Indicator



SPECIAL FUNCTION INDICATORS

1175, 1175M Dial Indicator Groove Gages

.375-6"/9.5-150MM

This lightweight gage is used for in-process or bench inspection of oil grooves, snap ring retainer grooves, "O" ring seat retainer grooves and similar internal recesses. It is also useful for checking bore dimensions and testing for taper, bell-mouth and out-of-roundness.

The movable, sensitive gaging contact has a 1/2" (12.7mm) retractable range and transfers the measurement through a linear, friction-free transfer mechanism to the dial indicator. The lower reference jaw is fixed and supports the entire weight of the gage and the operator's hands, thus preventing incorrect gaging pressure and false readings.

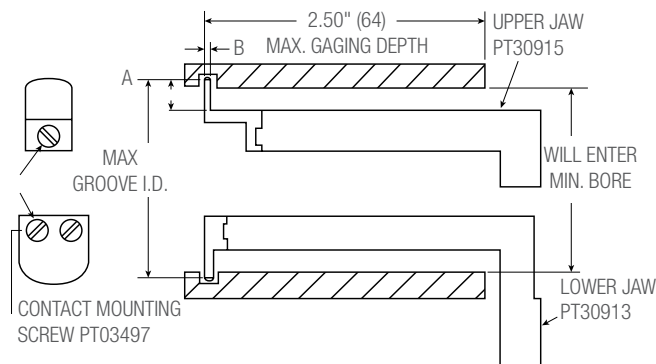
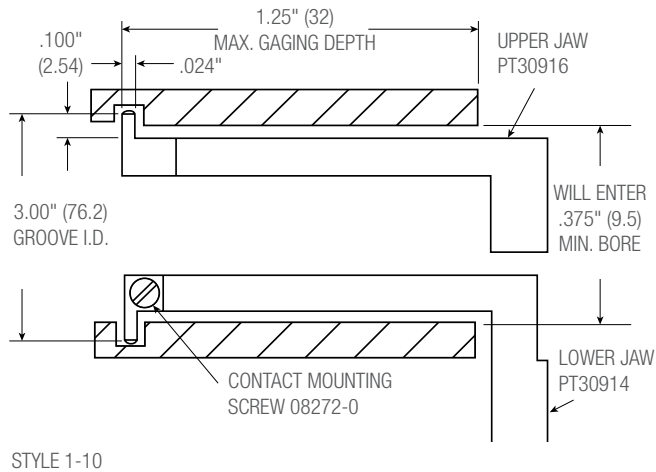
The reference jaw can be mounted in two positions on the range adjusting bar. The bar itself is also adjustable for greater or lesser range. A fine adjustment screw and a lock are also provided.

1175 and 1175M Dial Indicator Groove Gages

| Cat. No. | EDP | Range | Dial Indicator | | | |
|----------|-------|-----------|----------------|------------|---------|-------|
| | | | Model No. | Graduation | Reading | Range |
| 1175Z | 53173 | .375-6" | 81-136-1175 | .0005" | ±30 | .060" |
| 1175MZ | 65032 | 9.5-150mm | 81-181-1175 | 0.01mm | ±100 | 2.5mm |

1175 Dial Indicator Groove Gage Contact Sets

| Part No. | Upper | Lower | Contact Set | Will Enter Minimum Bore | | Maximum Groove I.D. | | Minimum-A Groove Depth | | Minimum-B Groove Width | |
|----------|---------|---------|-------------|-------------------------|------|---------------------|-----|------------------------|-----|------------------------|-----|
| | | | | in | mm | in | mm | in | mm | in | mm |
| PT30917 | PT30917 | PT30917 | Style 1-10 | .375" | 9.5 | 3.00" | 75 | .100" | 2.5 | .024" | 0.6 |
| PT30918 | PT30919 | PT30919 | Style 2-10 | .690" | 17.5 | 5.00" | 125 | .140" | 3.6 | .034" | 0.8 |
| PT30920 | PT30921 | PT30921 | Style 2-20 | 1.00" | 25 | 6.00" | 150 | .265" | 6.7 | .051" | 1.3 |



FEATURES

- Supplied with two sets of jaws, both readily interchangeable
- Three sets of contacts are furnished (Styles 1-10, 2-10, 2-20) that can be attached to the ends of the jaws without replacing the entire jaw. Contacts have flush ends so that grooves at the bottom of blind holes can be gaged. The contacts are hardened steel with a hard chrome finish for long life.
- Gage can be set with gage blocks or other methods such as micrometers, vernier calipers and ring gages
- Furnished with storage case

Special jaws for 4" and 6" (100mm and 150mm) gaging depths, a diameter range extension bar from 6-12" (150-300mm), dial indicators graduated in .001", or any special modification of gaging contacts and jaws, are also available by request through our Special Order Department.



SPECIAL FUNCTION INDICATORS

1017 OUTSIDE DIAL CALIPER GAGES

0-2"/0-50MM

These gages are designed for use in measuring castings, forgings and sheet metal work. Large clearances have been provided to reach over part configurations for easy measurement of small sections. The convenient retraction lever allows for one-hand operation and good gage control.

The dial indicator has a direct reading count hand. The contacts are cylindrical carbide for long wear life.



1017-4

| 1017 Outside Dial Caliper Gages | | | | |
|---------------------------------|-------|--------|------------|--------------|
| Cat. No. | EDP | Range | Graduation | Throat Depth |
| 1017-4 | 65091 | 0-2" | .001" | 4" |
| 1017-8 | 64959 | | | 8" |
| 1017M-100 | 64179 | 0-50mm | 0.02mm | 100mm |
| 1017M-200 | 64180 | | | 200mm |

1019, 1019M INTERNAL DIAL CALIPER GAGES

.400-1.4"/10-35MM

These indicating gages are ideal for obtaining fast, comparative I.D. measurements, especially in hard-to-reach locations. The user depresses the button on the indicator housing and releases, allowing the arms to make contact with the work.

- Makes convenient, accurate I.D. measurements
- Spring loaded design provides constant pressure and positive contact for reliable measurements
- Can be set with a micrometer or ring gage
- 3-1/4" arm length for ample reach
- Rotatable bezel for zero setting and bezel lock
- Jewel bearings
- .040" (1.016mm) dia. carbide ball measuring contacts



1019

1019M

| 1019 and 1019M Internal Dial Caliper Gages | | | |
|--|-------|-----------|---------------------------------|
| Cat. No. | EDP | Range | Description |
| 1019-1 | 66559 | .400-1.4" | .001" with Revolution Counter |
| 1019M-25 | 67120 | 10-35mm | 0.025mm with Revolution Counter |

697, 697M INSIDE DIAL GAGES

2-3/8-18"/61-458MM

These gages are used between two walls to check parallelism and also to take comparative measurements of internal diameters. There are ten rods and one extension furnished. The rods are marked to designate the approximate overall length of the gage. All measuring contacts are rounded. Tool can be set with a micrometer.

The indicator bezel is rotated to adjust the dial in relation to the hand and has a non-breakable crystal. The movement of the dial indicator is approximately 5/32" (4mm). Rods of different lengths can also be furnished on request.



697Z

| 697 and 697M Inside Dial Gages | | | | | |
|--------------------------------|-------|-----------|------------|--------------|----------------|
| Cat. No. | EDP | Range | Graduation | Dial Reading | One Revolution |
| 697Z | 52907 | 2-3/8-18" | .001" | 0-20-0 | .040" |
| 697MZ | 52908 | 61-458mm | 0.02mm | 0-50-0 | 1.0mm |



SPECIAL FUNCTION INDICATORS

668 SHAFT ALIGNMENT CLAMP SETS

The 668 Shaft Alignment Clamp is designed for fast, precise alignment of motors, pumps, compressors, etc. This system is capable of addressing radial and angular misalignment problems and can be set up within minutes.

668 Shaft Alignment Clamp Sets

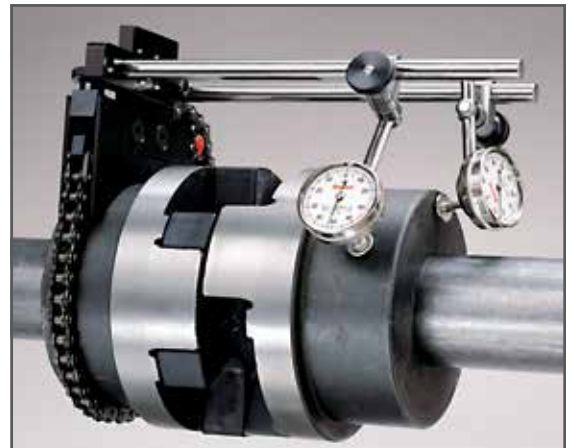
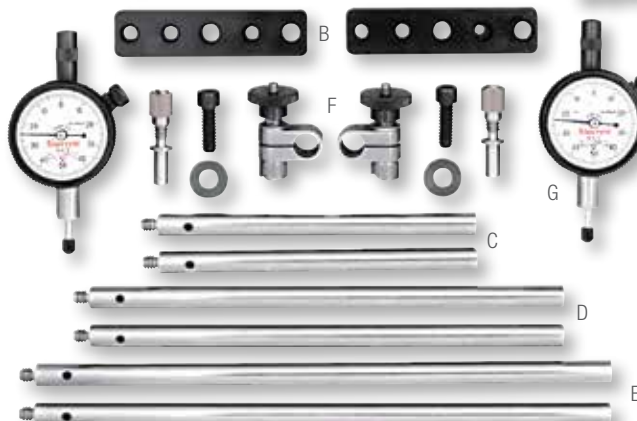
| Cat. No. | EDP | Description |
|----------|-------|---|
| S668A | 67150 | 1 each: Chain Clamp, Extension Plate, Posts (5", 7-7/16", 9"), without Case |
| S668BZ | 67151 | 2 each: Chain Clamp, Extension Plate, Posts (5", 7-7/16", 9"), with Fitted Case |
| S668CZ | 67152 | 2 each: Chain Clamp, 196B5 Indicator, PT18724 Snug, Extension Plate, Posts (5", 7-7/16", 9"), with Fitted Case |
| S668DZ | 67153 | 2 each: Chain Clamp, 81-141J Indicator, 657Y Indicator Attachment, PT18724 Snug, Extension Plate, Posts (5", 7-7/16", 9"), with Fitted Case |
| 27984-0 | - | Extra Length Chain: 24" #35 ANSI Chain with Link |

668 Shaft Alignment Clamp

| Photo Key | Cat. No. | EDP | Individual Components |
|-----------|----------|-------|-------------------------------|
| A | 668 | 67155 | Chain Clamp Only |
| B | PT99529 | 67454 | Extension Plate Screw, Washer |
| C | PT27981 | 67302 | 5" Post |
| D | 657G | 52753 | 7-7/16" Post |
| E | PT27982 | 67303 | 9" Post |
| F | PT18724 | 50710 | Snug Complete |
| G | 657Y | 52765 | Indicator Attachment |

FEATURES

- Lightweight clamp design made of black anodized aluminum
- Rigid 3/8" diameter stainless steel indicator posts provided in three lengths (5", 7-7/16", and 9")
- Extension plate allows for added radial clearance
- Heavy-duty roller chain can accommodate up to a 7-1/2" diameter shaft
- Sets are available with either two 196B5 or 81-141J Indicators
- Excess roller chain can be secured to the side of the chain clamp
- A second shaft alignment clamp can be mounted across from the first clamp to act as a vertical "target" for face alignment



SPECIAL FUNCTION INDICATORS

696, 696M CRANKSHAFT DISTORTION DIAL/STRAIN GAGE

2-3/8-18"/61-458MM

Ideal gage for checking bearing alignment or shaft deflection without dismantling the engine. Also useful as a strain gage on engine frames. This inside measuring gage checks the distortion of crankshaft webs and bears a direct relation to existing misalignment or excessive bearing wear. Used on all diesel engine shafts and center crankshafts on any type of engine or compressor, the gage can also be applied as a strain gage on engine frames while the engine is operating. A comparison of readings taken at top and bottom positions indicates any misalignment of cylinder and frame which results in local over-stress and eventual cracking of the frame neck.

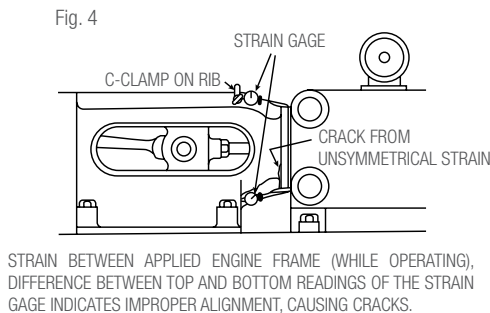
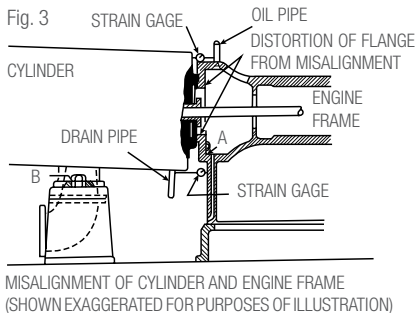
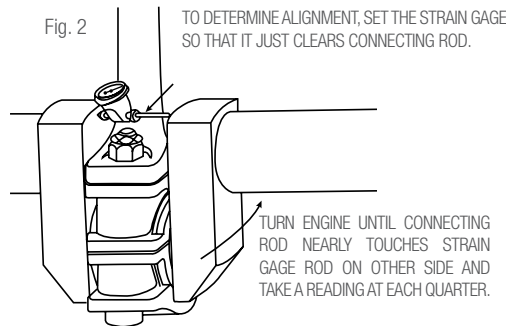
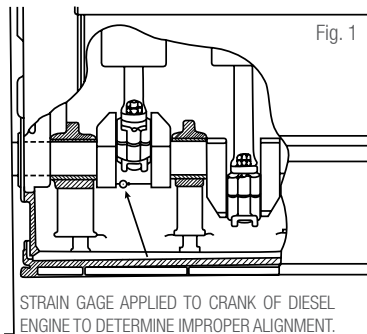
With a special spring tension in the dial indicator, the gage is self-sustaining in any position without sacrificing necessary rigidity, leaving the operator's hands free. Hardened and ground to a sharp point, conical contact points have an approximate 60° included angle, and will stay in place on 45° surfaces.



696 and 696M Crankshaft Distortion Dial/Strain Gages

| Cat. No. | EDP | Range | Dial Indicator | | | Description |
|----------|-------|---------------------------|----------------|--------------|----------------|--|
| | | | Graduation | Dial Reading | Range One Rev. | |
| 696Z | 52901 | 2-3/8-18" | .001" | 0-20-0 | .040" | Strain Gage with Balancing Attachment |
| 696MZ | 52902 | 61-458mm | 0.02mm | 0-50-0 | 1mm | Millimeter Strain Gage with Balancing Attachment |
| 696B | 52903 | Balancing Attachment Only | | | | |

Gage furnished with 10 rods, sharp points and balancing attachment in attractive, protective case.



696B Balancing Attachment is furnished with the gage. For certain applications, like turning the crank under test with the gage in place, the attachment can be adjusted to maintain the face of the indicator upward or in desired position. To install on a strain gage in use, remove the knurled clamping nut, then the doweled plate or end strap at either end by the screw. The unit is then positioned over the hubs on two sides of the indicator head. A spring plunger provides the friction that holds the balance in proper relation to position. The parts are nickel plated.

The dial indicator movement is approximately 5/32" (4mm) and with rods and extension, provides a range from 2 3/8-18" or 61-458mm. There are 10 rods and one extension furnished. Rods are marked to designate the approximate overall length of the gage. Indicator has a movable bezel to adjust the dial in relation to the hand and a non-breakable crystal.

Designed in collaboration with Hartford Steam Boiler Inspection and Insurance Company. It was known as the Hartford Steam Boiler Engine Strain Gage and is used by their inspectors to check the distortion of engine shafts and frames.



696B Balancing Attachment



SPECIAL FUNCTION INDICATORS

452 CYLINDER GAGES

2-1/2–9"

These convenient, easy-to-use gages are used to determine taper and out-of-roundness of bores, offering a quick and accurate way to show your customer whether new rings or reconditioning is necessary.

The ranges are achieved by the use of two measuring contact rods. The gage is easily and accurately set to a micrometer.

FEATURES:

- Dial is graduated to show plus or minus
- Bezel may be rotated for zero setting
- Sled is hardened and ground for long, accurate life and has two long-line contacts in constant alignment with the cylinder wall. These reference points are spring loaded, making the gage self-centering and non-collapsible.
- The locking screw (stem protruding above the dial) clamps the contact points in position for measurement with a micrometer
- The handle can be locked in any perpendicular or angular position and may also be transformed by a slight turn into a toggle joint with a wide sweep
- Extra handles may be ordered to make a long extension

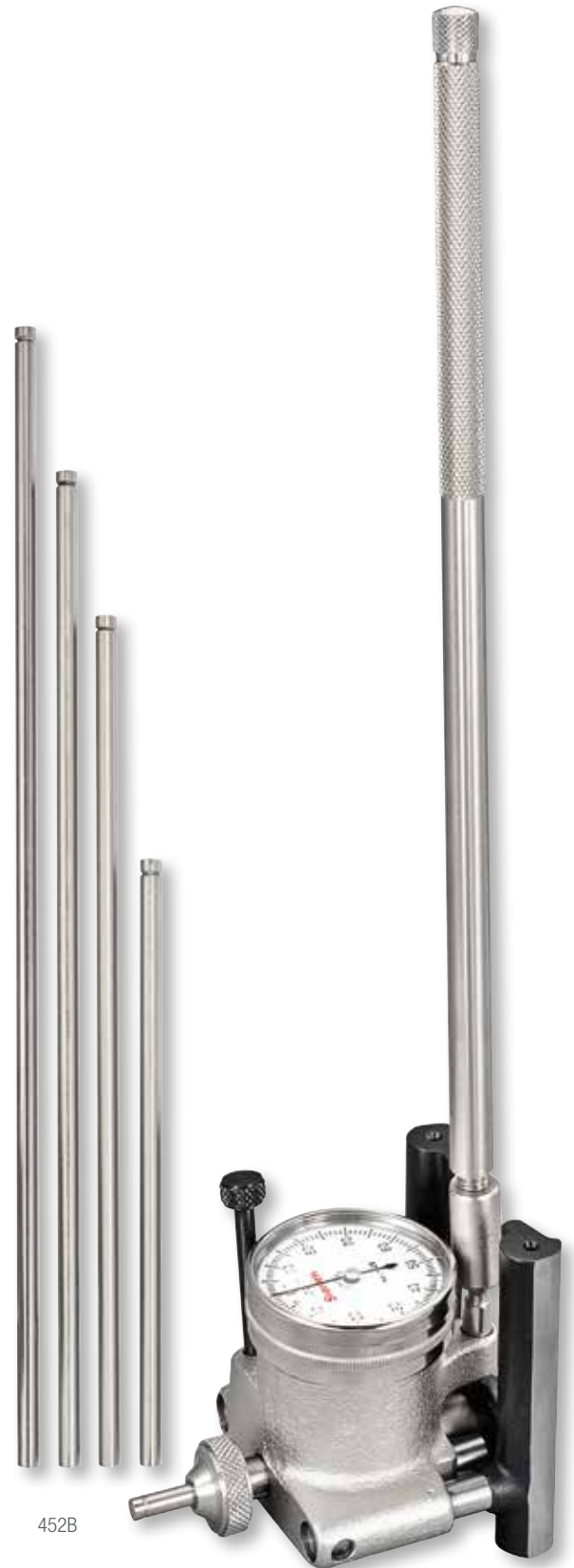
452 Cylinder Gages

| Cat. No. | EDP | Range | Graduation | Dial Reading | One Rev. |
|----------|-------|----------|------------|--------------|----------|
| 452B | 52339 | 2-1/2–6" | .001" | 0-100 | .100" |
| 452B-9 | 52341 | 2-1/2–9" | | | |

Accessories

| Cat. No. | EDP | Length | Description |
|----------|-------|--------|--------------------------------------|
| PT06722 | 72275 | 8-5/8" | Handle Extension for 452B and 452B-9 |

Height from contact points to top of handle is 10" (250mm).





DIAL INDICATOR DIAMETER GAGES

These gages measure both outside and inside diameters by comparing dimensions to gage blocks or an adjustable setting master. Each gage consists of a strong rectangular box beam with a sensitive gaging contact at one end and a reference gaging contact at the other.

- All of the diameter gages have these features:
- The sensitive contact transfers dimensions to the dial indicator through a linear friction-free mechanism
- There are two gage feet at the reference end of the gage and one foot at the sensitive end of the gage to set the gage on the work and align the contacts
- Gage depth is set by adjusting the gage feet up or down
- A lever-actuated reverse mechanism loads the gage for either inside or outside diameter measurements
- The gage contacts are easily changed to I.D. or O.D. gaging by turning them end for end
- Unless otherwise specified, the dial indicator sent with the gage reads in .0005" increments with a total range of $\pm .030$ ". The dial has a double row of graduations reading in opposite directions – minus in red and plus in black

On the following pages we list our standard line but to suit other needs we also can furnish the following:

1. Any length that is required
2. Any dial indicator with inch or millimeter reading
3. 717 Electronic Gage Amplifier and Gaging Head in place of the indicator
4. Electronic indicators can also be furnished on any of these gages except the 1102
5. Special contact shapes
6. Gaging contacts with more depth



INDICATOR DIAMETER GAGES



1102, 1102M Dial Indicator Diameter Gages

1-12"/25-300MM

This is a light, easy-to-handle gage that is a workhorse in its range. Approximate weight is 1lb, 12oz. (0.8kg). The gaging depth can be set within a range of 0-1" (0-25mm) by adjusting the rest foot. Dial indicators are the 81-136-623 Inch Reading (.0005") or 81-181-623 Millimeter Reading (0.01mm) models.

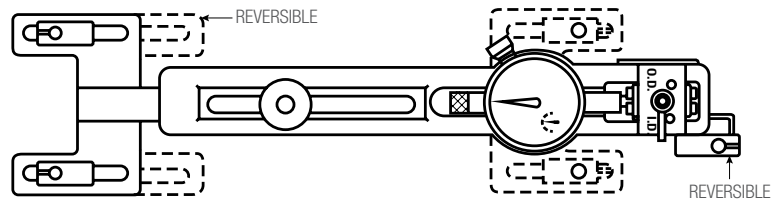
The gage should be checked against our 1127 Master for a precise reference standard during production gaging (See the following pages). Also available on request with .0001" or 0.002mm graduations.

1102 and 1102M Dial Indicator Diameter Gages

| Cat. No. | EDP | Length Range | Height Adjustment |
|----------|-------|--------------------------|-------------------|
| 1102 | 56134 | 1-12" (.0005" Indicator) | 0-1" |
| 1102-1 | 69004 | 1-12" (.0001" Indicator) | 0-1" |
| 1102M | 65020 | 25-300mm | 0-25mm |

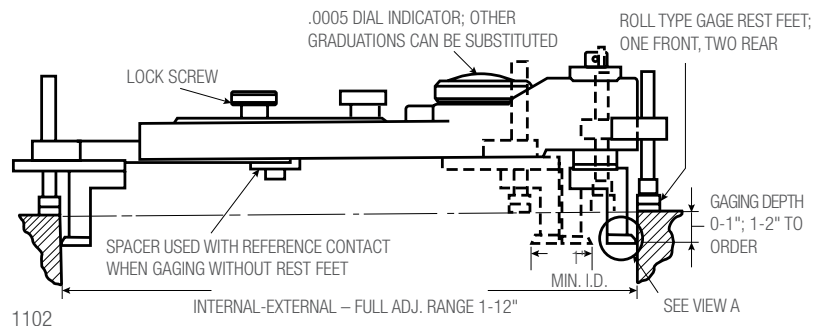
Case for 1102 and 1102M Dial Indicator Diameter Gages

| Cat. No. | EDP | Description |
|----------|-------|--|
| 1102ZZ | 56136 | Storage Case to Hold Both Gage and 1127 Master |



1102 and 1102M Dial Indicator Diameter Gages

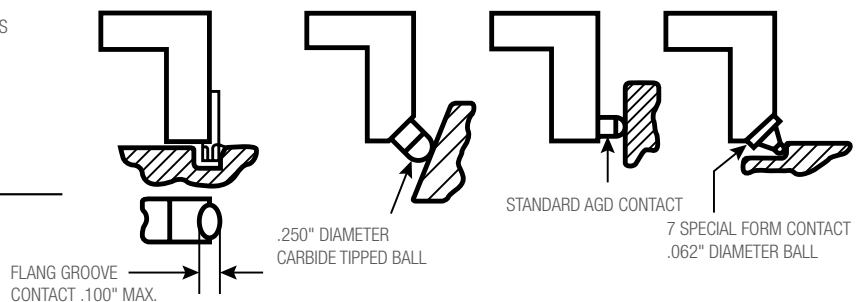
| Photo Key | Description |
|-----------|---|
| A | Range Lock Screw |
| B | I.D.-O.D. Preload Reversing Mechanism Lever |
| C | Rest Foot |
| D | Reference Contact |
| E | Sensitive Contact |



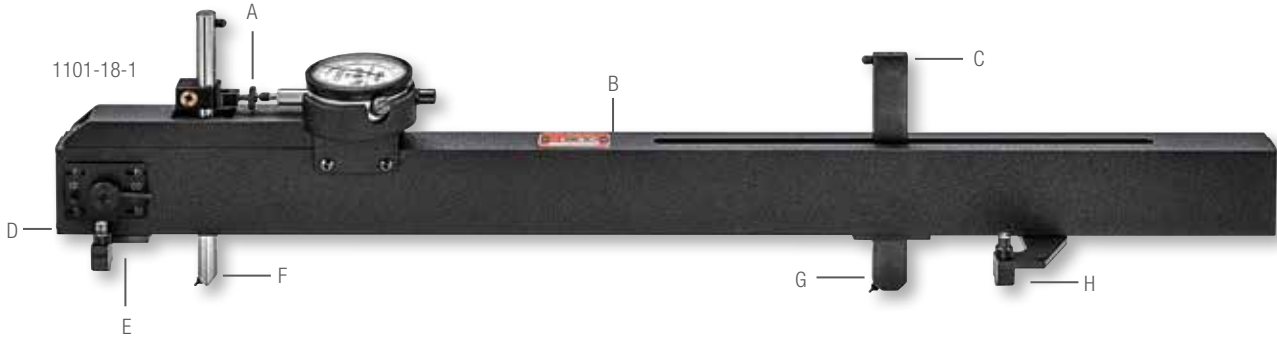
STANDARD CONTACTS FURNISHED WITH GAGE



SPECIAL CONTACTS DESIGNED TO ORDER



INDICATOR DIAMETER GAGES



1101, 1101M DIAL INDICATOR DIAMETER GAGES

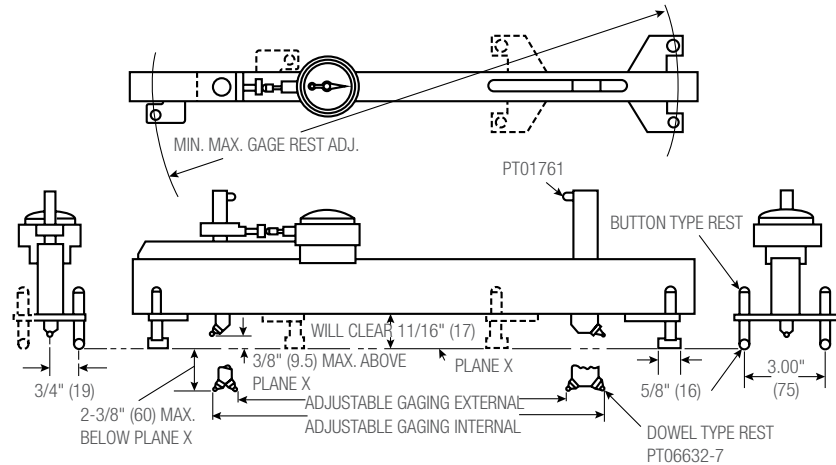
12-60"/300-1500MM

These gages allow for measurement beyond the size range of our 1102 models. Each gage adjusts a full 6" or 150mm. The contact carriers are vertically adjustable to handle various work depth. Special contacts are available.

This tool has dowel (line) contacts at one end of the gage feet, and a button (point) contact gage at the other end of the feet. These can be reversed as needed and the gaging depth can be set within a range of 2-3/4" or 70mm.

This gage should be checked against our 1126 Master for a precise reference standard during production gaging (See the following pages).

| 1101 and 1101M Dial Indicator Diameter Gages | |
|--|--|
| Photo Key | Description |
| A | Dial Indicator Fine-Adjusting Screw |
| B | Beam – Rectangular Box Section |
| C | Contact for Added Applications |
| D | I.D.-O.D. Preload Reversing Mechanism Lever |
| E | Combination Dowel/Button Rest Feet |
| F | Sensitive Contact |
| G | Reference Contact |
| H | Mounting Plate with Combination Dowel and Button Rest Feet |



| 1101 and 1101M Dial Indicator Diameter Gages | | | | | | | | | |
|--|-----------|-----------------------------------|-------|--|-------|-----------------------------------|-------|---|-------|
| Length | | Inch Reading - .0005" Graduations | | Millimeter Reading - .01mm Graduations | | Inch Reading - .0001" Graduations | | Millimeter Reading - .002mm Graduations | |
| in | mm | Cat. No. | EDP | Cat. No. | EDP | Cat. No. | EDP | Cat. No. | EDP |
| 12-18 | 300-450 | 1101-18 | 53144 | 1101M-450 | 65015 | 1101-18-1 | 69005 | 1101M-450-2 | 69021 |
| 18-24 | 450-600 | 1101-24 | 53146 | 1101M-600 | 65016 | 1101-24-1 | 69006 | 1101M-600-2 | 69022 |
| 24-30 | 600-750 | 1101-30 | 53148 | 1101M-750 | 65017 | 1101-30-1 | 69007 | 1101M-750-2 | 69023 |
| 30-36 | 750-900 | 1101-36 | 53150 | 1101M-900 | 65018 | 1101-36-1 | 69008 | 1101M-900-2 | 69024 |
| 36-42 | 900-1050 | 1101-42 | 53152 | 1101M-1050 | 65019 | 1101-42-1 | 69009 | 1101M-1050-2 | 69025 |
| 42-48 | 1050-1200 | 1101-48 | 53154 | 1101M-1200 | 65021 | 1101-48-1 | 69010 | 1101M-1200-2 | 69026 |
| 48-54 | 1200-1350 | 1101-54 | 53156 | 1101M-1350 | 65022 | 1101-54-1 | 69011 | 1101M-1350-2 | 69027 |
| 54-60 | 1350-1500 | 1101-60 | 53158 | 1101M-1500 | 65023 | 1101-60-1 | 69012 | 1101M-1500-2 | 69028 |
| Gaging Contact Range: | | ±.050" | | ±1.3mm | | ±.050" | | ±1.3mm | |

Sent without case unless otherwise ordered. To order case, specify the Catalog and "ZZ" (For example: 1101ZZ-18).



INDICATOR DIAMETER GAGES



1100, 1100M Heavy-Duty Dial Indicator Diameter Gages

12-60"/300-1500MM

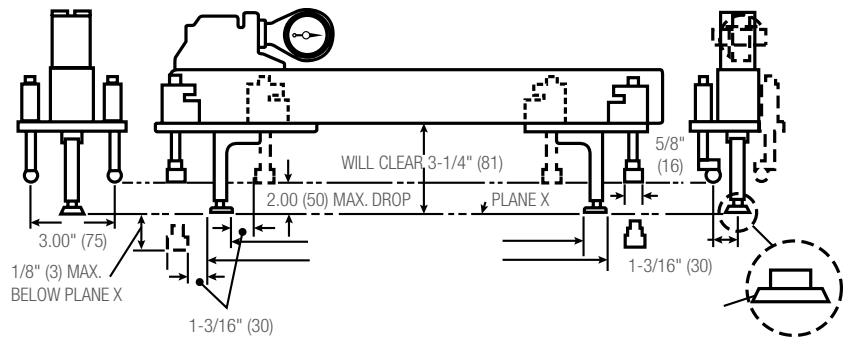
These gages combine heavy-duty construction features with adaptability for a wide range of internal and external measurements. The adjustable dowel rest legs ride on slotted mounting plates for horizontal adjustment. Each of the legs are vertically adjustable to obtain the proper rest position on the work and correct alignment on the gaging contacts. 2" or 50 mm range is the vertical adjustment.

The gaging contacts are radiused but may be modified by request to suit special gaging conditions.

The indicator and its housing can be rotated through to 360° so that the indicator may be read at the most convenient angle. The gage should be checked against our 1126 Master for a precise reference standard during production gaging (See the following pages).

1100 and 1100M Heavy-Duty Dial Indicator Diameter Gages

| Photo Key | Description |
|-----------|---|
| A | I.D.-O.D. Preload Reversing Mechanism Lever |
| B | Tamper Proof Dial Indicator Fine-Adjust Screw |
| C | Beam – Rectangular Box Section |
| D, E | Adjustable Dowel Rest Leg |
| F, K | Dowel Rest |
| G | Sensitive Contact |
| H | Slotted Rest Leg Mounting Plate |
| I | Reference Contact |
| J | Reference Contact Carrier |



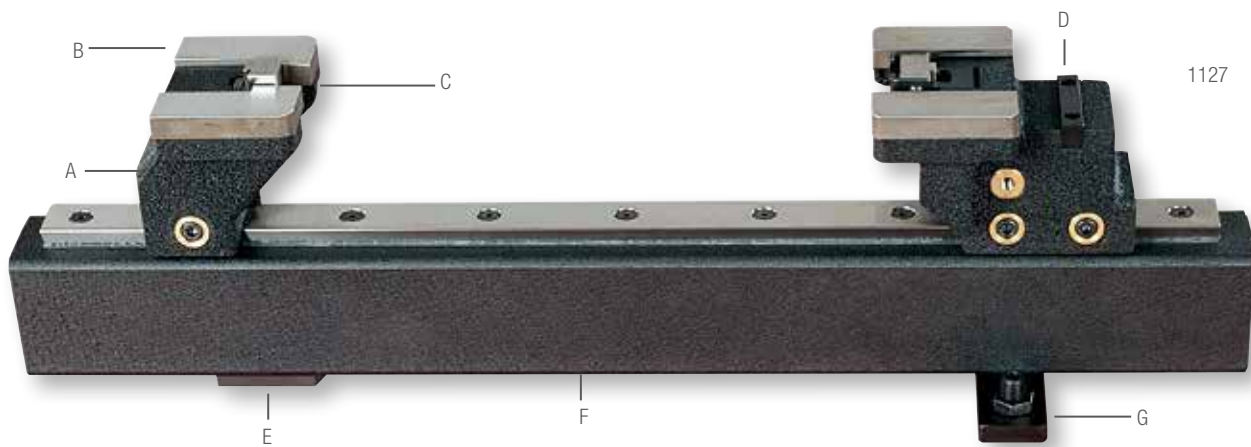
1101 and 1101M Dial Indicator Diameter Gages

| Length in mm | Inch Reading - .0005" Graduations | | Millimeter Reading - .01mm Graduations | | Inch Reading - .0001" Graduations | | Millimeter Reading - .002mm Graduations | | |
|------------------------------|-----------------------------------|---------|--|------------|-----------------------------------|-----------|---|--------------|-------|
| | Cat. No. | EDP | Cat. No. | EDP | Cat. No. | EDP | Cat. No. | EDP | |
| 12-18 | 300-450 | 1101-18 | 53144 | 1101M-450 | 65015 | 1101-18-1 | 69005 | 1101M-450-2 | 69021 |
| 18-24 | 450-600 | 1101-24 | 53146 | 1101M-600 | 65016 | 1101-24-1 | 69006 | 1101M-600-2 | 69022 |
| 24-30 | 600-750 | 1101-30 | 53148 | 1101M-750 | 65017 | 1101-30-1 | 69007 | 1101M-750-2 | 69023 |
| 30-36 | 750-900 | 1101-36 | 53150 | 1101M-900 | 65018 | 1101-36-1 | 69008 | 1101M-900-2 | 69024 |
| 36-42 | 900-1050 | 1101-42 | 53152 | 1101M-1050 | 65019 | 1101-42-1 | 69009 | 1101M-1050-2 | 69025 |
| 42-48 | 1050-1200 | 1101-48 | 53154 | 1101M-1200 | 65021 | 1101-48-1 | 69010 | 1101M-1200-2 | 69026 |
| 48-54 | 1200-1350 | 1101-54 | 53156 | 1101M-1350 | 65022 | 1101-54-1 | 69011 | 1101M-1350-2 | 69027 |
| 54-60 | 1350-1500 | 1101-60 | 53158 | 1101M-1500 | 65023 | 1101-60-1 | 69012 | 1101M-1500-2 | 69028 |
| Gaging Contact Range: | | ±.050" | | ±1.3mm | | ±.050" | | ±1.3mm | |

Sent without case unless otherwise ordered. To order case, specify the Catalog and "ZZ" (For example: 1101ZZ-18).



INDICATOR DIAMETER GAGES



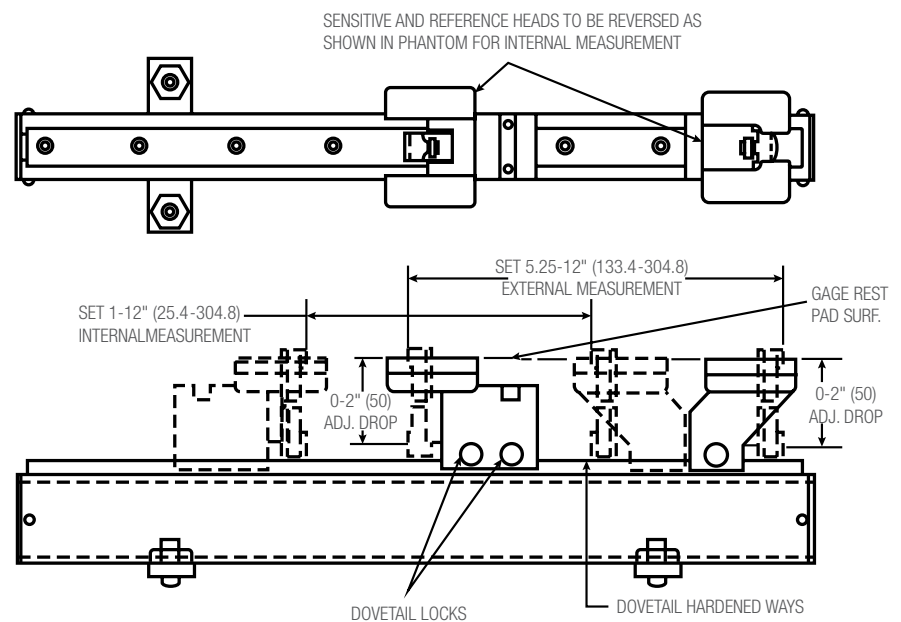
1127 INTERNAL-EXTERNAL ADJUSTABLE SETTING MASTER FOR STARRETT 1102 DIAMETER GAGES

EDP 56135

This set master is used with our 1102 Diameter Gages. The internal adjustment range is 1–12" (25-300mm) and external adjustment is 5-1/4–12" (133-300mm). Storage case is available to hold both the gage and master (Catalog 1102ZZ, EDP 56136).

1127 Internal-External Adjustable Setting Master for Starrett 1102 Diameter Gages

| Photo Key | Description |
|-----------|--------------------------------|
| A | Sensitive Head |
| B | Hardened Rest Platen |
| C | Anvil |
| D | Reference Head |
| E | Fixed Single Point Button Rest |
| F | Beam – Rectangular Box Section |
| G | Leveling Screws (2) |



SETTING MASTERS FOR DIAL INDICATOR DIAMETER GAGES

These setting masters are used to check and reset diameter gages under production gaging conditions. Each master consists of a rigid box beam with reference and sensitive heads which are individually adjustable along dovetail ways.

A platen on each head locates the diameter gage from its feet. The position of the gage contacts is matched by the anvils on the masters which are vertically adjustable. The reference head anvil has a fine adjustment for final settings, plus a restrictor to help position the gage in the master.

Both heads can be reversed for I.D. or O.D. settings. Each master has a fixed single point rest and two leveling screws which provide a three-point suspension. All contact and working surfaces are hardened and ground.

The setting procedure is as follows: set the diameter gage precisely to gage blocks or height gages. Then, using the diameter gage, set the master which can then be used as a precise reference standard for the diameter gage during production gaging.



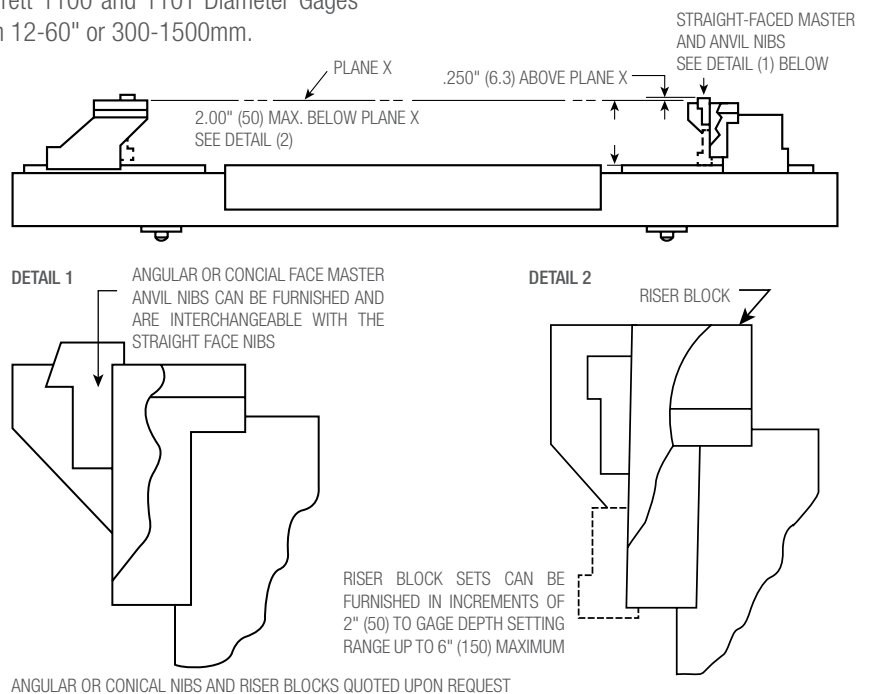
INDICATOR DIAMETER GAGES



1126 INTERNAL-EXTERNAL ADJUSTABLE SETTING MASTERS FOR STARRETT 1100 AND 1101 DIAMETER GAGES

12-60"/300-1500MM

These set masters are used to check and reset Starrett 1100 and 1101 Diameter Gages under production gaging conditions. The range is from 12-60" or 300-1500mm.



1126 Internal-External Adjustable Setting Masters for Starrett 1100 and 1101 Diameter Gages

| Photo Key | Description |
|-----------|--------------------------------|
| A | Sensitive Head |
| B | Hardened Rest Platen |
| C | Anvil |
| D | Reference Head |
| E | Leveling Screws (2) |
| F | Beam – Rectangular Box Section |
| G | Fixed Single Point Button Rest |

1126 Internal-External Adjustable Setting Masters for Starrett 1100 and 1101 Diameter Gages

| Cat. No. | EDP | Case Only Cat. No. | Length Range | For Use With Diameter Gage Nos. | | | | | |
|----------|-------|--------------------|--------------|---------------------------------|---------|------------|---------|------------|----|
| | | | | in | mm | in | mm | in | mm |
| 1126-18 | 53160 | 1126ZZ-18 | 12-18 | 300-450 | 1100-18 | 1100M-450 | 1101-18 | 1101M-450 | |
| 1126-24 | 53161 | 1126ZZ-24 | 18-24 | 450-600 | 1100-24 | 1100M-600 | 1101-24 | 1101M-600 | |
| 1126-30 | 53162 | 1126ZZ-30 | 24-30 | 600-750 | 1100-30 | 1100M-750 | 1101-30 | 1101M-750 | |
| 1126-36 | 53163 | 1126ZZ-36 | 30-36 | 750-900 | 1100-36 | 1100M-900 | 1101-36 | 1101M-900 | |
| 1126-42 | 53164 | 1126ZZ-42 | 36-42 | 900-1050 | 1100-42 | 1100M-1050 | 1101-42 | 1101M-1050 | |
| 1126-48 | 53165 | 1126ZZ-48 | 42-48 | 1050-1200 | 1100-48 | 1100M-1200 | 1101-48 | 1101M-1200 | |
| 1126-54 | 53166 | 1126ZZ-54 | 48-54 | 1200-1350 | 1100-54 | 1100M-1350 | 1101-54 | 1101M-1350 | |
| 1126-60 | 53167 | 1126ZZ-60 | 54-60 | 1350-1500 | 1100-60 | 1100M-1500 | 1101-60 | 1101M-1500 | |

Setting masters for larger diameters are also available by request – priced on the application.

In addition to the products detailed in this section, we have made many other special function gages to suit a wide variety of our customers' specific requirements.

If you have a special application, we invite you to submit your drawings and specifications to our Special Order Department at 121 Crescent Street, Athol, MA 01331, USA. We will be happy to provide a prompt quotation.

