



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.

Application Specification Factors

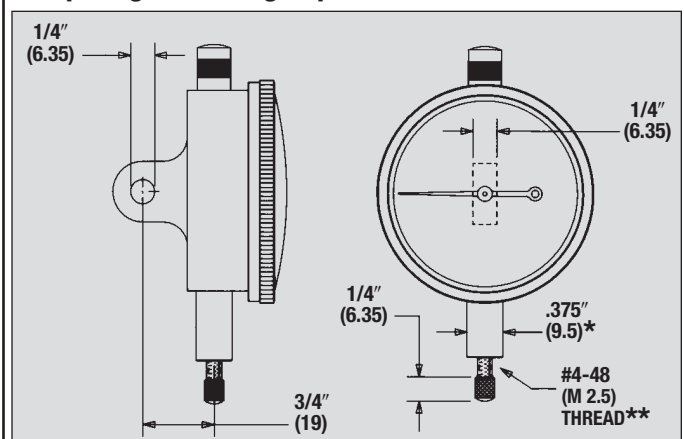
1. Regular analog styles with indicating hands are more readable than digital styles when the measurements are being visually monitored by an operator.
2. Select the dial size that gives you the readability you need. We offer five regular dial sizes which will fit most applications that have both space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

The AGD Design Specifications

Bezel Diameters

	Size Group	Minimum Diameter		Maximum Diameter	
		Inch	mm	Inch	mm
	0	1"	25mm	1-3/8"	35mm
AGD	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

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.

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.



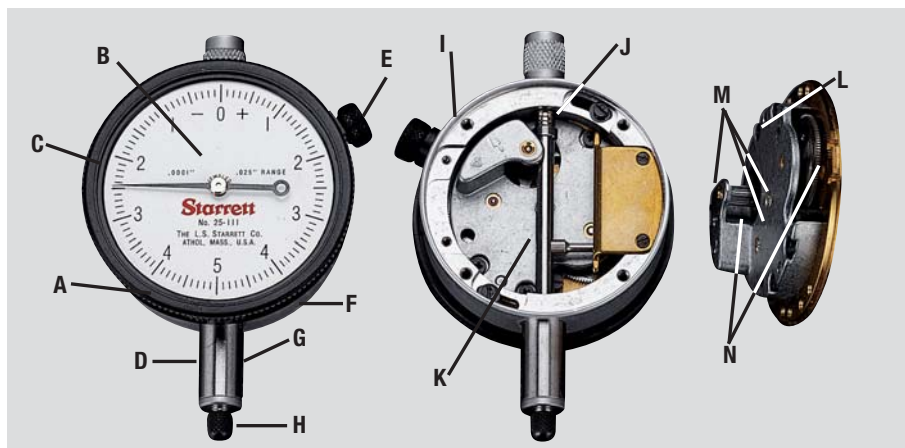
DIAL AND ELECTRONIC INDICATORS AND HOLDERS

Starrett®

Starrett Dial Indicator Design Features

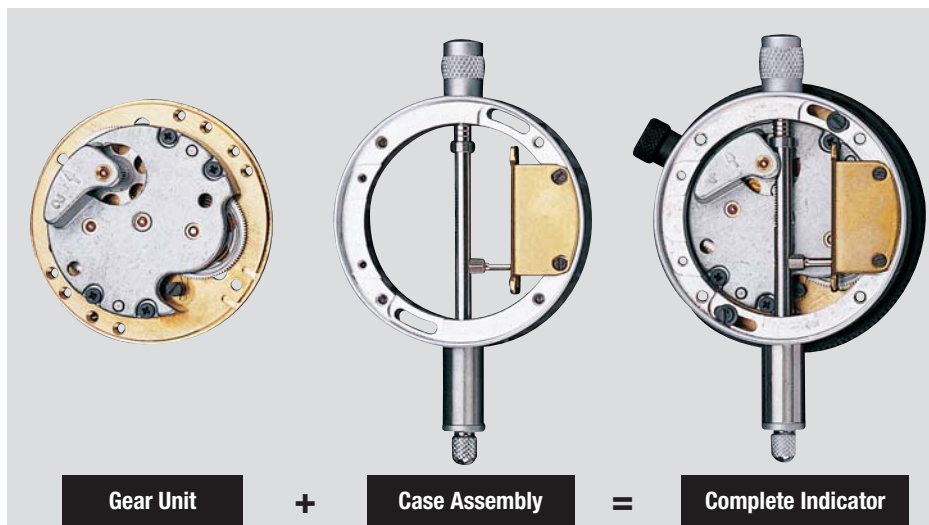
Unit construction is rugged and simple with a “universally fitting” design as shown in the photo below. (The same gear unit assembly fits the following:)

- ◆ AGD Group 2 (our No. 25 Series)
- ◆ AGD Group 3 (our No. 655 Series)
- ◆ AGD Group 4 (our No. 656 Series)
- ◆ 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 nonshock 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. Nonreflecting 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



Gear Unit

+

Case Assembly

=

Complete Indicator



Dials, Accessories and Options

- ◆ **Balanced or Continuous Dials** – Starrett AGD indicators are available with a balanced dial (plus on right) or a continuous dial (reading clockwise). A balanced dial is sent unless otherwise ordered



Balanced Dial



Continuous Dial

- ◆ **Plus and Minus Graduations** – Plus and minus readout – black figures read clockwise, red figures read counterclockwise, or colors reversed – are available on some No. 81 Series Dial Indicators



Dial with Plus and Minus Graduations



Dial with Special Trademark Imprint

- ◆ **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 marked with your company name or trademark. There is 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 Series Nos. 81, 25, 655 and 656 Dial Indicators (and also on our No. 196B6 Universal Dial Indicator). 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

These include:

- ◆ Backs
- ◆ Contact Points
- ◆ Dust Guard
- ◆ Hole Attachments
- ◆ Special Nonshock Mechanism
- ◆ Spindle Travel Controls
- ◆ Stem and Back Mounting Accessories
- ◆ Tolerance and Maximum Reading Hands



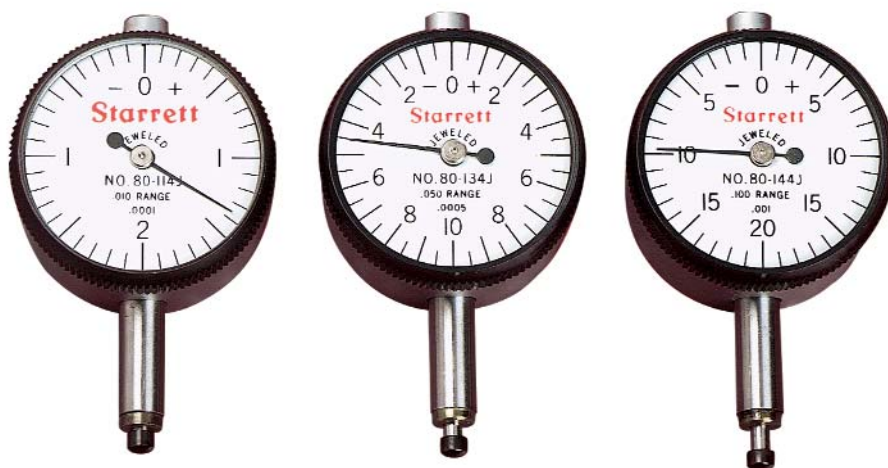
DIAL AND ELECTRONIC INDICATORS AND HOLDERS



Miniature Dial Indicators

**No. 80 Series
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.

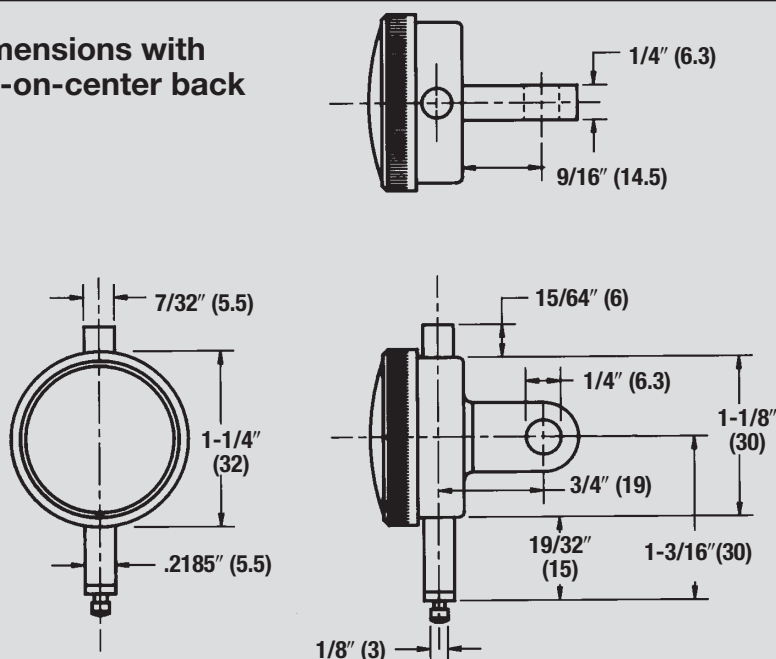


Left-to-right: No. 80-114J, No. 80-134J, No. 80-144J.



No. 80-111J.

Dimensions with lug-on-center back



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

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

Packed one in a box.

See following page for information on contact points and backs.

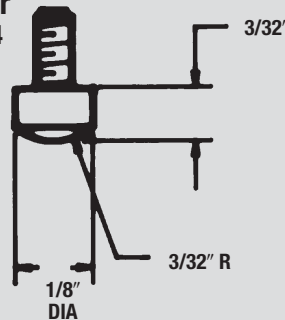


Miniature Dial Indicator Accessories – No. 80 Series

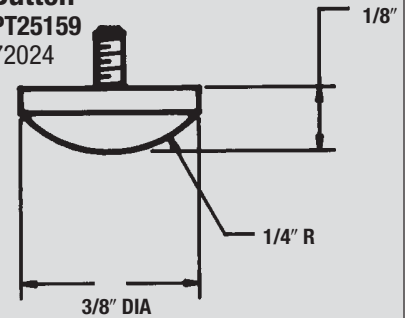
Contact Points

The regular contact point is furnished as standard on all No. 80 Series Dial Indicators. Button, cone and flat contact points are available individually, as listed. All have #0-80 thread.

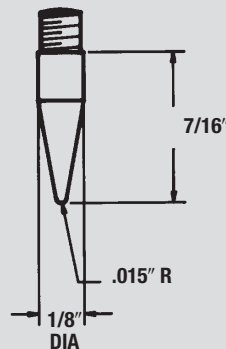
Regular
PT25044
72023



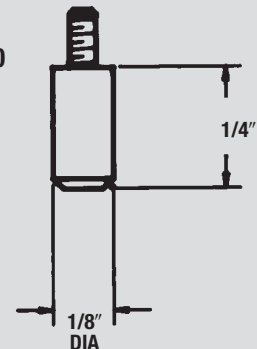
Button
PT25159
72024



Cone
PT25161
72025



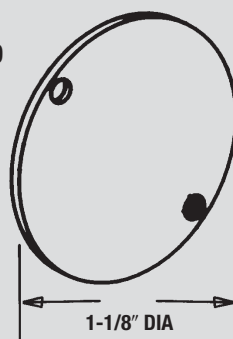
Flat
PT25160
72026



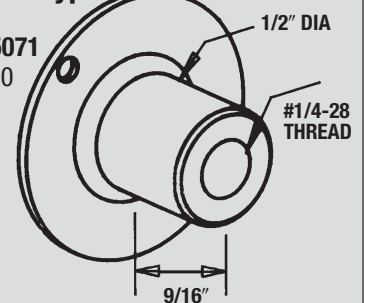
Backs

The lug-on-center back is furnished standard on all No. 80 Series Dial Indicators.

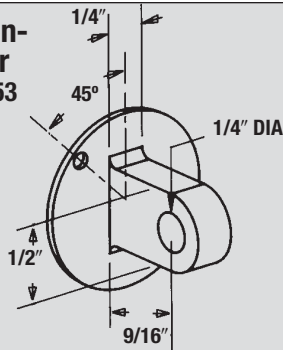
Flat
PT25079
72028



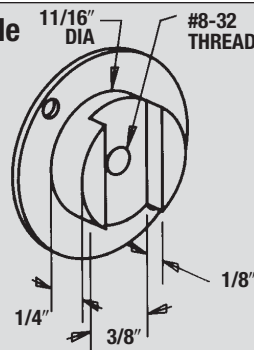
Screw-Type Lug
PT25071
72030



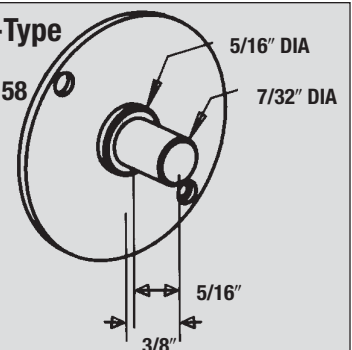
Lug-on-Center
PT25053
72027



Adjustable Bracket
PT25157
72029



Post-Type Lug
PT25158
72031



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