

## 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



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 is more adaptable to smaller, confined working areas.

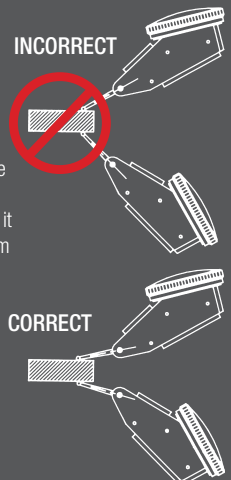
Unlike other indicators, the lever style's contact moves in an arc rather than in a straight line. This can cause a slight inaccuracy called "cosine error" if the angle of the lever to the workpiece is too steep. If, for example, a lever was set off an additional 20°, there could be an error of .0006"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

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

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

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

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



For extreme accuracy we recommend positioning the lever contact so that it is approximately 15° from being horizontal with the workpiece



# BACK PLUNGER INDICATORS

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

### A. CLAMP

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

### B. TOOL POST HOLDER

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

### C. SNUG COMPLETE

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

### D. SNUG COMPLETE

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

### E. UNIVERSAL SNUG

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

### F. UNIVERSAL SNUG

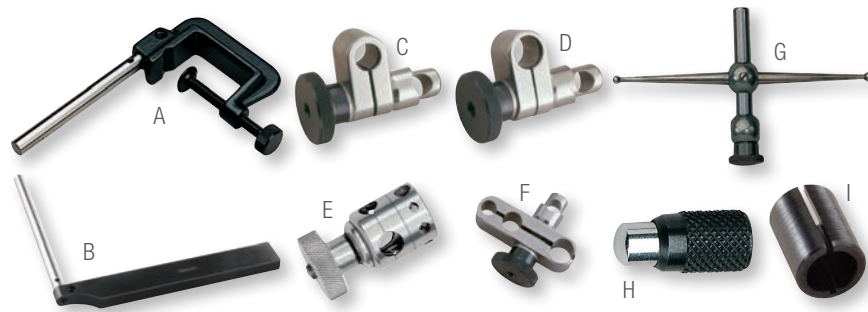
58S. With spindle hole diameters 1/4", 5/16", 3/8" (6.3, 8, 9.5mm). Gripping hole diameters range from 3/32-1/4" used on holders with smaller clamp hole.

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

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

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

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



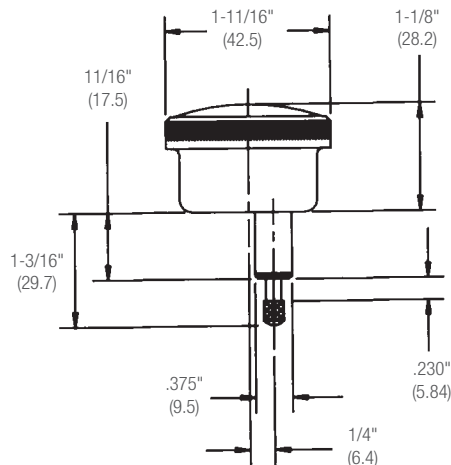
## 641, 641M BACK PLUNGER DIAL INDICATORS

.200"/5MM

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

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

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



## ATTACHMENTS FOR 196 AND 196M ONLY

### G. HOLE ATTACHMENT

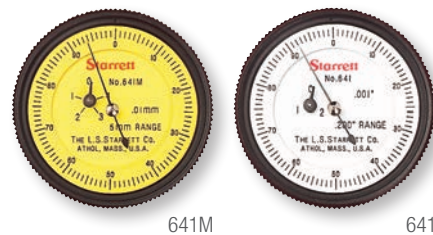
196F. allows indicator be used over obstructions and inside holes to a depth of approximately 1-5/8" (40mm).

### H. SHOCK ABSORBING ANVIL

PT08726A.

### I. SPLIT BUSHING

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



# 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.

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

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

- 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.





# SURFACE GAGES

## 57 FULL-SIZED SURFACE GAGES

(CAST IRON BASE)

- Full-size surface gage with attractive finish
- Base is ground flat with two frictionally held gage pins that can be pushed down and referenced against the edge of a surface plate or T-slot for linear work

## 257 FULL-SIZED SURFACE GAGES

(HARDENED STEEL BASE)

- Finest full-size surface gage
- Stable steel base is fully hardened, ground and nicely finished
- Four frictionally held gage pins that add versatility for referencing the tool

### 257 Full-sized Surface Gages

Spindle Length	Base - Length x Width	Cat. No.	EDP
9" (225mm)	2-7/8 x 2-3/8"	257A	51240
9" and 12" (225 and 300mm)	(72 x 60mm)	257B	51241
12" (300mm)	3-1/2 x 3-3/16"	257C	51242
12" and 18" (300 and 450mm)	(90 x 80mm)	257D	51243

## 57S, 58S UNIVERSAL SNUGS FOR SURFACE GAGES, INDICATORS AND ACCESSORIES

- Convenient attachment of scribes and test indicator shanks to surface gages, magnetic bases, indicator tool post holders and gage rods
- Fits all 57 and 257 Surface Gages and test indicator clamps and post holders
- Permit the use of all of our test indicators: 196, 564\*, 650, 651, 708\*, 709\*, 711\*, and 811\*. (\*Snugs must be used with the proper indicator holder)

### Universal Snugs for Surface Gages

Spindle Hole Diameters		Gripping Hole Diameters		Cat. No.	EDP
Inch	mm	Inch	mm		
5/16, 3/8	8, 9.5	9/64, 5/32, 3/16, 1/4	3.5, 4, 4.8, 6.35	57S	50296
1/4, 5/16, 3/8	6.35, 8, 9.5	Range from 3/32-1/4	Range from 2.4-6.35	58S	56613

