



## ***Premium Connection Inspection***





# PREMIUM CONNECTION GAGES





### **Premium Connection Inspection Gages**

As drilling requirements become more difficult and as the demand for performance increases, companies respond with new and improved connection designs to meet those customer demands. When companies design new proprietary connections their first call is to Gagemaker to discuss gauging requirements. Over the past 25 years Gagemaker has designed and built gauging solutions that ensure consistent quality of premium connections. Many of the gages have multiple applications and can be shipped with short lead times. This section of the catalog is focused on those specialty gages that apply directly to the premium or non-API connection industry.

#### ***CONFIDENTIALITY STATEMENT***

Gagemaker maintains confidentiality of all proprietary connection designs through signed agreements. Gagemaker will not provide any quotations nor ship any gages or setting standards to any unauthorized party. Customers doing work for companies that require proprietary gages will be required to submit approval in writing prior to receiving any quotes or gages.





**Thread Diameter Gages**



**Shoulder Location Gages**



**Pipe Straightness Gages**



**Seal Gages**

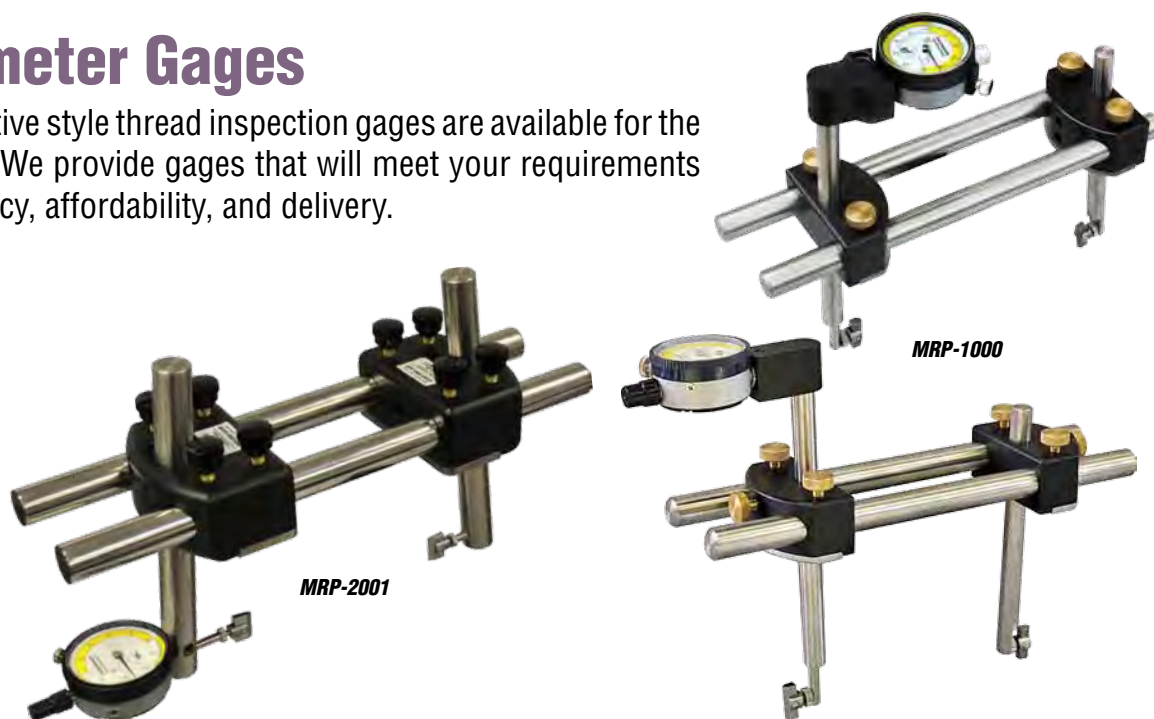


**Thread Runout Gages**



## Thread Diameter Gages

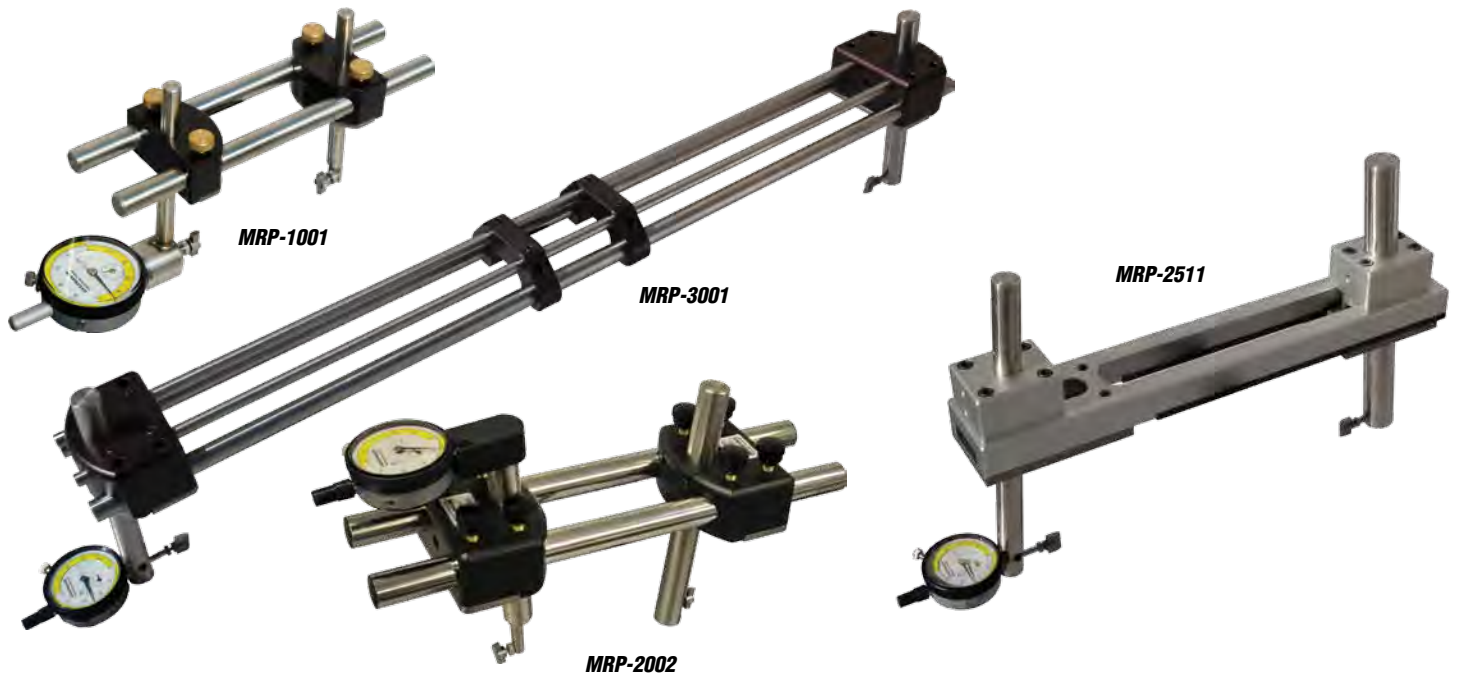
A variety of comparative style thread inspection gages are available for the proprietary market. We provide gages that will meet your requirements of size range, accuracy, affordability, and delivery.



## MRP Pitch Diameter and Ovality Gages

This **MRP** series of pitch diameter gages detects variations in pitch diameter by the use of a gage shoe that rests on the crest of the threads. Variation in diameter is detected by the indicator readout. These gages must be set to nominal size with one of a variety of setting options offered. Refer to the setting option section that follows. All of these gages are API approved for use on casing and tubing.

Model	Description	Range
MRP-1000	Internal/External Pitch Diameter Gage	1½" - 4½"
MRP-1001	External Pitch Diameter Gage	External 1½" - 4½"
MRP-1000-45	Internal Seal Diameter Gage. Contacts on a 45° angle. Arms- .375" upper, .375" lower	Internal 1" - 4½"
MRP-1007	Internal Seal Diameter Gage. Contacts on a 45° angle. Arms- .740" upper, .500" lower	Internal 1½" - 4½"
MRP-1008	Internal Seal Diameter Gage. Contacts on a 45° angle. Arms- .740" upper, .740" lower	Internal 1¾" - 4½"
MRP-1009	Internal Seal Diameter Gage. Contacts on a 45° angle. Arms- .740" upper, .500" lower	Internal 1¾" - 4½"
MRP-1012-TSS	Internal/External Pitch Diameter Gage for Two Step Seal. Upper and lower arms are .740" diameter. Upper arm has standard travel of .150". Shipped with T105 pts.	Internal 2¾" - 4½" External 1¾" - 4½"
MRP-1012-TST	Internal/External Pitch Diameter Gage, Two Step Thread, w/ 1.030" Horseshoe standoff for front and rear measurements. Upper and lower arms have .740" diameter. Upper arm has extended travel of .350"	Internal 2¾" - 4½" External 1¾" - 4½"
MRP-1500	Internal/External Pitch Diameter Gage, Solid Body	Internal 1½" - 4½" External 2¾" - 4½"
MRP-2001	External Pitch Diameter Gage	External 2¾" - 20"
MRP-2001-S	External Pitch Diameter Gage, 4½" reach, Straight Blocks	
MRP-2001-7	External Pitch Diameter Gage, 7" reach	
MRP-2001-10	External Pitch Diameter Gage, 10" reach	



### MRP Pitch Diameter and Ovality Gages (Continued)

Model	Description	Range
MRP-2002	Internal Pitch Diameter Gage, 4 1/4" reach	Internal 2 3/8" - 20"
MRP-2002-S	Internal Pitch Diameter Gage, 4 1/4" reach, Straight Blocks	
MRP-2002-7	Internal Pitch Diameter Gage, 7" reach	
MRP-2002-10	Internal Pitch Diameter Gage, 10" reach	Internal 3 1/2" - 20"
MRP-2003	Internal/External Pitch Diameter Gage, 4 1/4" reach	
MRP-2003-S	Internal/External Pitch Diameter Gage, 4 1/4" reach, Straight Blocks	
MRP-2003-7	Internal/External Pitch Diameter Gage, 7" reach	Internal 3 1/2" - 20" External 2 3/8" - 20"
MRP-2003-10	Internal/External Pitch Diameter Gage, 10" reach	
MRP-2511	External Pitch Diameter Gage, 4" reach	
MRP-2511-7	External Pitch Diameter Gage, 7" reach	External 4 1/2" - 9 5/8"
MRP-2512	Internal Pitch Diameter Gage, 3 3/8" reach	
MRP-2512-7	Internal Pitch Diameter Gage, 7" reach	
MRP-2521	External Pitch Diameter Gage, 4" reach	External 4 1/2" - 13 3/8"
MRP-2522	Internal Pitch Diameter Gage, 3 3/8" reach	
MRP-2513	Internal/External PD Gage, 3 3/8" reach	
MRP-2523	Internal/External PD Gage, 3 3/8" reach	4 1/2" - 13 3/8"
MRP-3001	External Pitch Diameter Gage, 3 3/8" reach	
MRP-3002	Internal Pitch Diameter Gage, 3 3/8" reach	
MRP-3003	Internal/External Pitch Diameter Gage, 3 3/8" reach	8 5/8" - 24"
MRP-3004	Internal/External Pitch Diameter Gage, 3 3/8" reach	
MRP-3501	External Pitch Diameter Gage, w/ 6 1/4" reach	
MRP-3502	Internal Pitch Diameter Gage, w/ 6 1/4" reach	Internal 8 5/8" - 24"
MRP-3503	Internal/External PD Gage, w/ 6 1/4" reach	

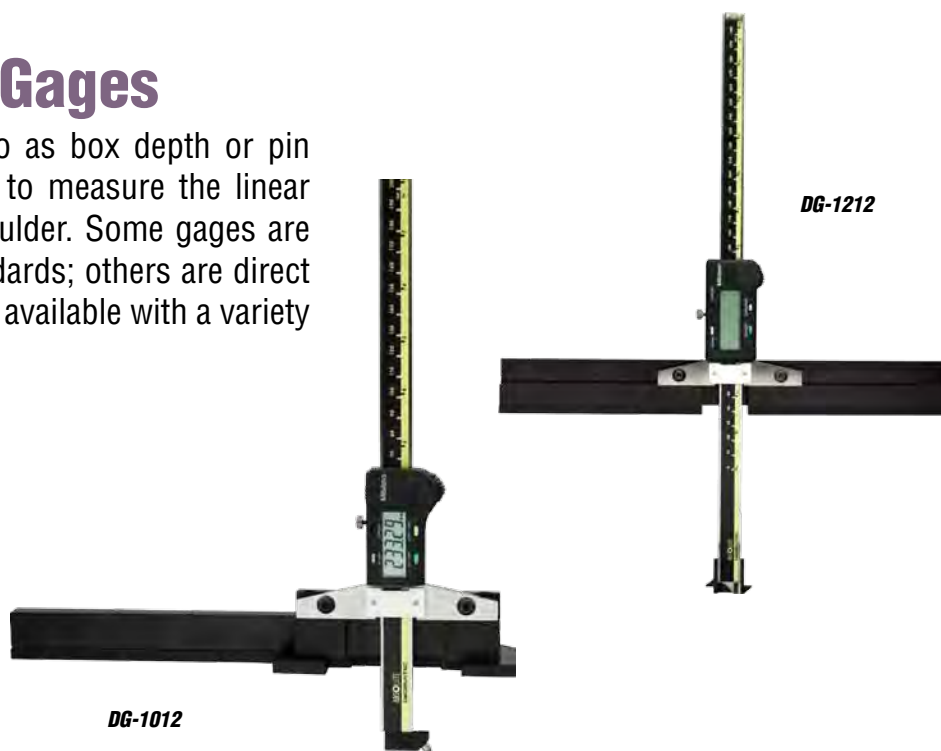
*Gage parts and accessories can be found on page 105.*





## Shoulder Location Gages

These gages are often referred to as box depth or pin length gages. They are designed to measure the linear distance from the face to the shoulder. Some gages are comparative and preset with standards; others are direct read and need no masters. All are available with a variety of tips and contact points.



### Digital Depth Gages

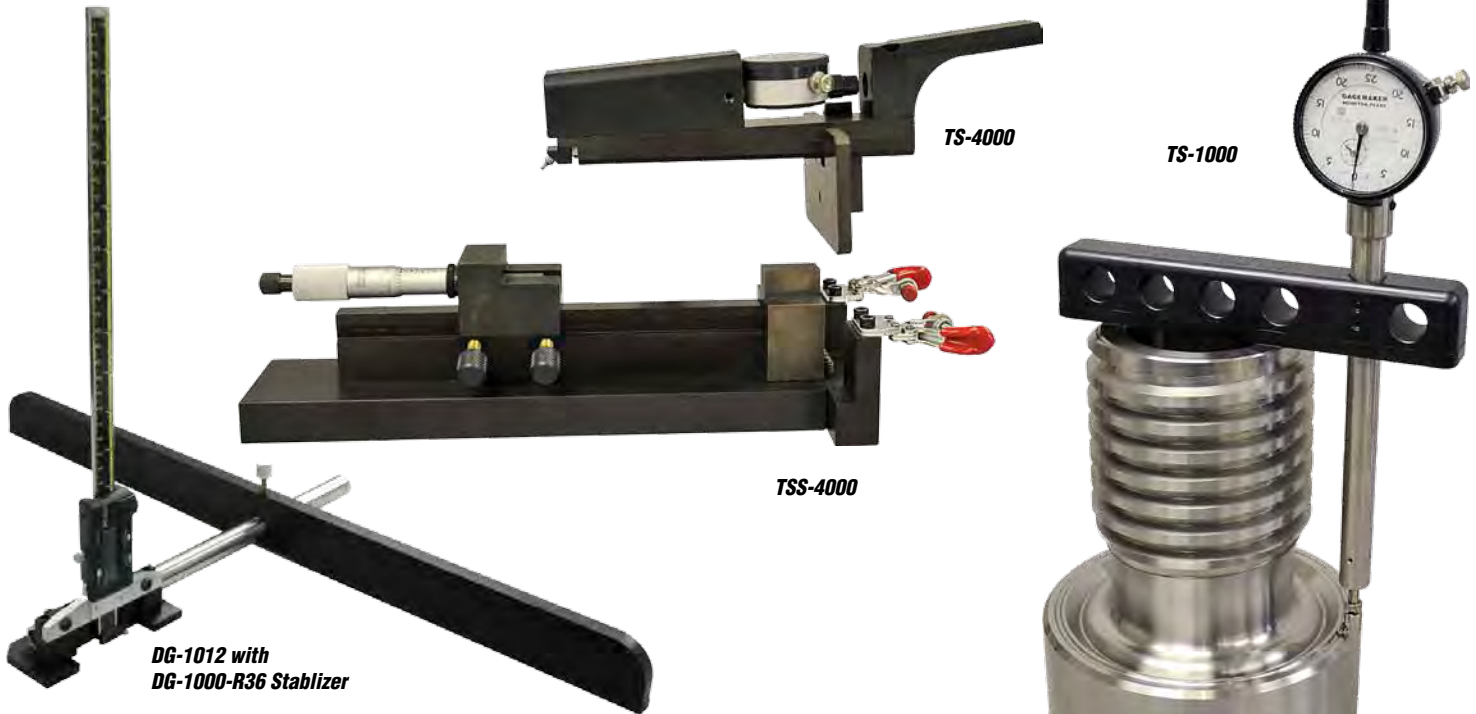
Our digital depth gages inspect the location of internal and external shoulders and grooves from the face of the pin and box connections or other datum surfaces. The DG-1000 Series is available with the standard base, a 12" base, and a 20" base. These gages are available in ranges: 0"-8", 0"-12", 0"-18", and 0"-24".

The standard gage (DG-1000 Series) is supplied with a 7" extension arm and a 0° and 45° contact point holder for use with any #4-48 threaded contact point (one .072" contact point (T072) supplied unless otherwise requested). Longer extension arms and other contact point configurations and adapters are available upon request. The 12" (DG-1200 Series) and 20" (DG-2000 Series) gages include one double sided blade contact instead of a contact point and a contact point holder.

Digital depth gages do not require a setting standard. The gage is preset to zero on any flat surface and then applied to the product. Actual length measurements display on the gage's .0005"/.01 mm resolution digital readout. The digital readout easily converts from inches to metric and has an SPC output.

Additional gages and accessories are available, see page 148. See pages 124-125 for additional contact points.

Model	Description	Range
<b>Depth Gage with Digital Display (in/mm)</b>		
DG-1008	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution	0" - 8"
DG-1012	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution	0" - 12"
DG-1018	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution	0" - 18"
DG-1024	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution	0" - 24"
<b>Depth Gage with Digital Display and 12" Base (in/mm)</b>		
DG-1208	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution, 12" base	0" - 8"
DG-1212	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution, 12" base	0" - 12"
DG-1218	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution, 12" base	0" - 18"
DG-1224	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution, 12" base	0" - 24"



## Digital Depth Gages (cont.)

Model	Description	Range
<b>Depth Gage with Digital Display and 20" Base (in/mm)</b>		
DG-2012	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution, 20" base	0" - 12"
DG-2018	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution, 20" base	0" - 18"
DG-2024	Depth Gage w/ digital display (in/mm), .0005"/.01 mm resolution, 20" base	0" - 24"

## Torque Shoulder Gages and Standards

Both the TS-1000 and TS-4000 series of gages accurately measure the distance between the primary and secondary torque shoulders on both internal and external threaded connections. Used industry wide to measure the shoulder-to-shoulder distance on premium tool joints and the face-to-seal location on premium couplings, Gagemaker TS gages are also perfectly suited to locate grooves from various datum surfaces.

The TS gages require a setting standard. The gage is preset to the desired dimension and deviation is read from the gage's dial indicator.

The TS-1000 is supplied with a 6" extension arm, while the TS-1012 has a 10" extension arm. A 45° contact point holder for use with any #4-48 threaded contact point is also supplied. One contact point included, please specify. Higher resolution indicators, longer extension arms, other contact points, and adapters are available upon request.

Model	Description	Range
TS-1000	Shoulder Depth Gage, Base length 6"	1" - 6"
TS-1012	Shoulder Depth Gage, Base length 12"	1" - 10"
TS-4000	Shoulder Depth Gage (Specify Taper)	2 3/4" & Larger
TSS-1000	TS-1000 Setting Standard	
TSS-4000	TS-4000 Setting Standard	





## Pipe Straightness Gages

Identifying hooked or bent pipe ends is critical when machining or swedging. These gages are direct reading and do not require setting masters. Used in a variety of applications, the most predominant use relates to threading upset end pipe.



### Saddle Gage

The Saddle Gage measures the amount of hook or bend at the end of a joint of pipe. The SG-8001 uses the RC-375 roller contact. For replacements parts, please see page 147. Larger ranges available by special request only.

Model	Description	Range
SG-8001	Saddle Gage	18" Max

### Squareness Gage

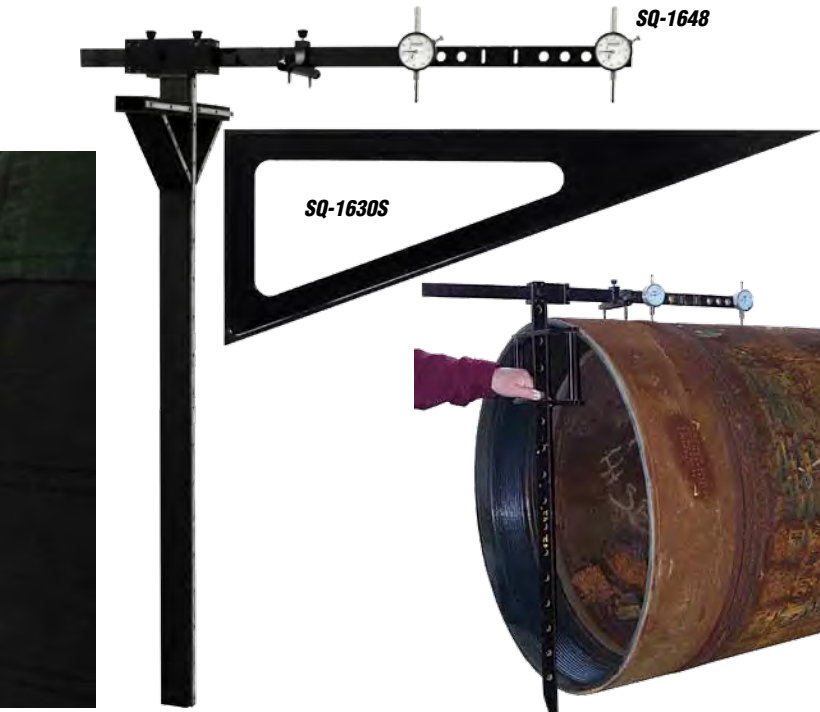
The SQ-1630 Squareness Gage monitors the alignment of weld-on connectors to the pipe body. Requires setting by a qualified standard. The SQ-1630S, our precision calibration square, is strongly recommended for best results. Standard sold separately.

Model	Description	Range
SQ-1636	Squareness Gage, 30" reach	up to 36" diameter
SQ-1648	Squareness Gage, 30" reach	up to 48" diameter
SQ-1630S	Squareness Gage Standard	14" X 36" Square

### Straight Edge Gage

The SE-1000 Straight Edge Gage measures the straightness of well tubing and casing. The gage price includes an SES-1000 Standard. Replacement standards are available.

Model	Description	Range
SE-1000	Straight Edge	36" - 64"
SES-1000	Replacement Straight Edge Standard	



LA-3600



## Laser Alignment Gage

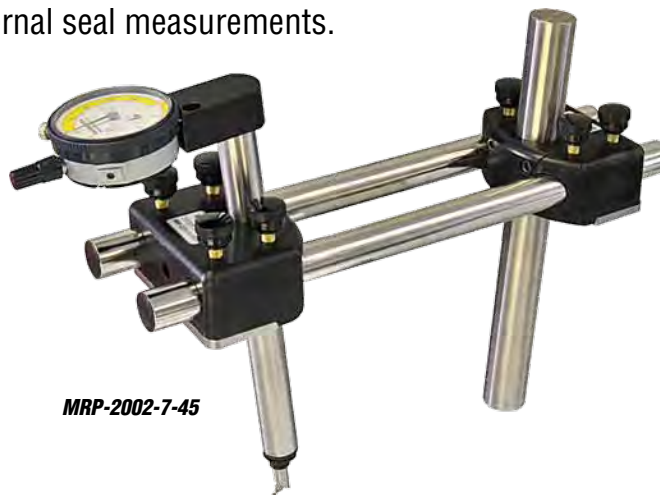
The Laser Alignment Gage ensures proper angular and parallel alignment during assembly of weld-on connectors. Replacement parts are available.

Model	Description	Inside Diameter Range	Outside Diameter Range
LA-3600	Laser Alignment Gage	11" - 55"	8" - 50"

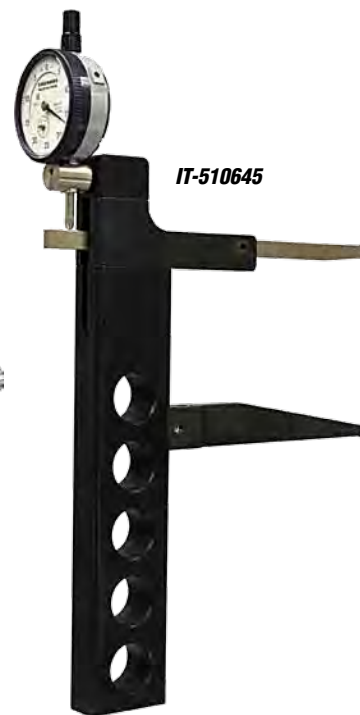


## Seal Gages

Ensure the integrity of a premium connection's seal by monitoring metal-to-metal seal interference. Our seal diameter gages accurately check diameter and ovality to guarantee the quality of your product. Gages are available for internal and external seal measurements.



MRP-2002-7-45



IT-510645

## Box Seal Gage

Box Seal gages measure coupling and box seal diameters. Gage must be preset with a standard. For standards, please contact customer service for information.

Model	Description	Range
IT-5106-30	Box Seal Gage, points at 30° angle	6" Depth, 1½" - 10" Dia.
IT-5106-45	Box Seal Gage, points at 45° angle	6" Depth, 1½" - 10" Dia.

## Box Seal Gage

Our MRP style box seal gage uses contact points to inspect critical seal diameters at the back of premium connection boxes.

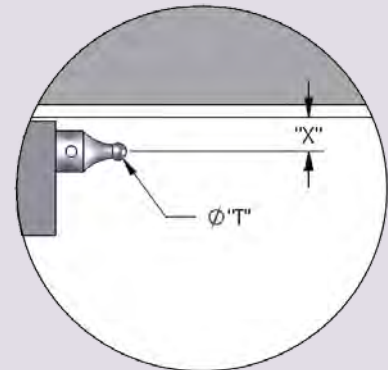
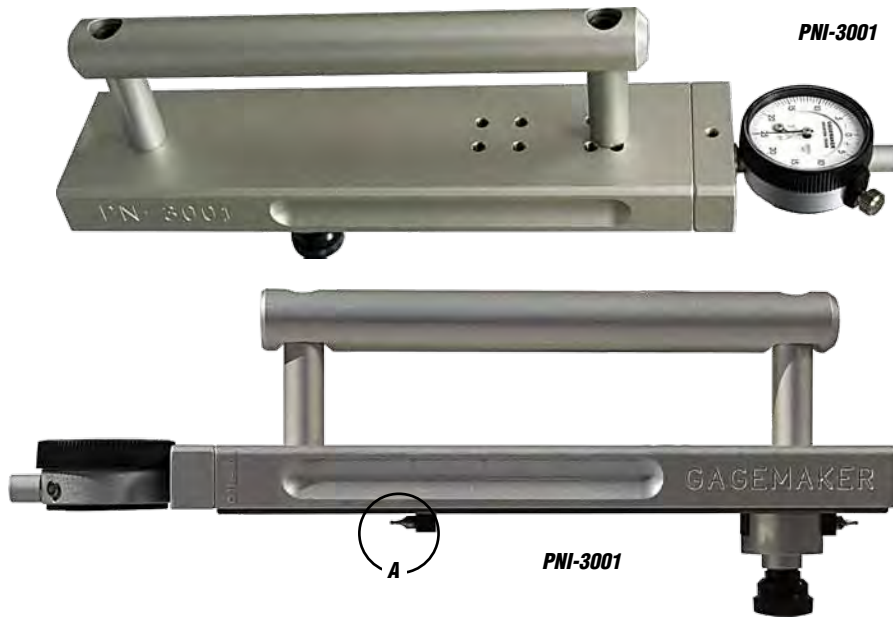
Model	Description	Range
MRP-2002-7-45	Back-of-Box Seal Gage, MRP Style, 7" Depth, points at 45° angle	2¾" - 20"

## PN-3000 Series Pin Seal Diameter Gages

The PN-3000 Series of gages inspect critical pin seal diameters on premium connections ranging from 2¾" - 25½". Gagemaker pin nose gages provide accurate measurements at the critical sealing point of the pin. The gage also inspects seal tapers with the addition of stand-off plates.

The PN-3000 gages use precision interchangeable contact points that position on the seal at a fixed distance from the connection face. Pin nose gage indicators have resolution of .0005". Each model covers a specific range of connection sizes, making the PN-3000 gages extremely versatile and economical. Before inspecting parts, these gages must be preset to a nominal predetermined dimension using gage blocks, MIC TRAC, or frame standards. For additional parts and stand-off plates, please see pages 144-145.





**View A**  
**X = Distance to Face**  
**T = Contact Ball Diameter**

## PN-3000 Series Pin Nose Diameter Gages\*

The PN series measure pin nose diameter using contact points. Specify the distance from the face of the connection to the measuring plane and desired contact point diameter when ordering.

Model	Description	Range	Model	Description	Range
PN-3001	Pin Nose Diameter Gage	0" - 5½"	PN-3004	Pin Nose Diameter Gage	0" - 19½"
PN-3002	Pin Nose Diameter Gage	0" - 9½"	PN-3005	Pin Nose Diameter Gage	0" - 25½"
PN-3003	Pin Nose Diameter Gage	0" - 13½"			

*\*There is a separate cost to reposition the point standoff of PN-3000 Gages. Quotation available upon request.*

## PN-3000 Series Internal "Ball Contact" Seal Diameter Gages

The PNI series measure the internal ball contact seal diameter using contact points. Specify the distance from the face of the connection to the measuring plane and desired contact point diameter when ordering.

Model	Description	Range
PNI-3001-VMB	Internal "Ball Contact" Seal Diameter Gage	2" - 5½"
PNI-3002-VMB	Internal "Ball Contact" Seal Diameter Gage	2" - 9½"
PNI-3003-VMB	Internal "Ball Contact" Seal Diameter Gage	2" - 13½"

## PN-3000 Series 30° External Apex Diameter Gages

The PNA model gages measure only the external apex diameter of the connection.

Model	Description	Range
PNA-3001-VMA	30° External Apex Diameter Gage, Anvils	2" - 4¼"
PNA-3002-VMA	30° External Apex Diameter Gage, Anvils	2" - 9½"
PNA-3003-VMA	30° External Apex Diameter Gage, Anvils	2" - 13½"

## PN-3000 Series 30° Internal/External Apex Seal Diameter Gages

The PN-3000 Series 30° Internal/External Apex Seal Diameter gages measure both the internal and external diameters of the apex seal for the connection.

Model	Description	Range
PN-31VM-30	30° Internal/External Apex Seal Diameter "V"	Internal 2¾" - 6¾", External 4" - 6¾"
PN-33VM-30	30° Internal/External Apex Seal Diameter "V"	Internal 2¾" - 14", External 4" - 14"



### Thread Runout Gages

Maximize efficiency of the threading process by ensuring the insert pulled out at the right time on external threads. We manufacture runout gages for both internal and external designs.

The run out gage is a three point gage having two fixed points and one movable point attached to a balanced dial indicator. Accuracy of the gage is verified by zeroing the dial indicator on a flat surface.



### Buttress Runout Gage

Buttress runout gages ensure proper thread pullout on runout type threads. Thread runout is the measurement of the abruptness with which the buttress thread is terminated at the triangle end of the thread. A rapid pull-out of the cutting tool results in a steep slope at the end of the thread causing high stress when the coupling is made-up. Buttress runout gages have standard 1" and 2" point spacing. Includes one contact point (TBR) and shoes.

Model	Description	Range
BR-2001	Buttress Runout Gage	All Sizes
BRB-2001	Buttress Runout Base Only	All Sizes
BRS-2001	Replacement Shoes (2)	

## Premium Setting Standards

*Premium Round Standards*



*Premium Frame Standards*

### *Premium Setting Standards*

We manufacture master setting standards of various styles for numerous API as well as premium connections. Setting standards duplicate critical dimensions that are then compared to the machined product. Standards can be as simple as a single diameter or length or can combine diameters, lengths, seal groove locations, tapers, sealing surfaces and thread gauging locations.

Standards are designed round as well as frame style. Setting surfaces may be cylindrical, conical, or flat and tapered. The choice of style is very much an individual's decision. All styles are manufactured to the same accuracy and precision.

All standards are put through a methodical process of rough machining, stress relieving, heat treat hardening, surface coating, and finish grinding. The result of the process produces a master size standard with accuracies where required to  $\pm.00025$ ".

Standards are calibrated and certified with traceability to NIST and come complete with a long form dimensional certificate.

**Please Note:** Premium connection standards will only be manufactured for companies with the proper permission or complete ownership of the product. Product drawings are required on the company's title block with an authorized signature. An NDA may be required to protect both parties as proprietary information is often involved.