

# ROTARY SHOULDERS CONNECTION- Internal Pitch Diameter



# GAGEMAKER

## Pitch Diameter Gage- IT-5104-RSC

### Pitch Diameter:

Pitch diameter is the most critical measurement in matching threads. When pitch diameters do not meet specification it allows the connection to flex while drilling, ultimately causing galling and connection failure.

### Purpose:

The IT-5104-RSC gage measures the deviation from nominal pitch diameter for the connector being inspected. The gage uses fixed and a moveable contact balls that are set into the thread's helical path at a predetermined location. The deviation is read directly from the indicator.



IT-5104-RSC



Easily Inspect Parts



LPB Template

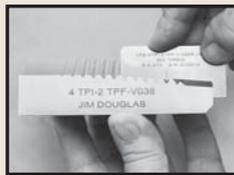
## Internal Thread Inspection with IT-5104-RSC

### Gage Setup

1. Ensure the proper insert is on the machine using the correct insert identifier.

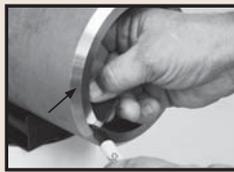


2. With the profile's reference mark facing you and the connector shoulder to your left, place a pin pitch diameter location template, or LPB template, on the box threaded connection so the template teeth seat fully into the threads. When the template is first placed in the thread, there should be a gap between the L-edge of the template and the box face.

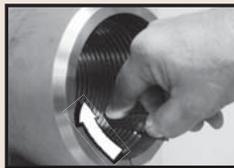


3. With the LPB template seated in the threads, slide the LPB clockwise or to the left until the L-edge contacts the box face.

4. Using a Sharpie<sup>®</sup> felt marker, place a mark on the box face next to where the template contacts the face. Jog or rotate the machine spindle until this mark is at the 6:00 o'clock position. This makes it easier to locate and mark the measurement position.



5. Place the template back into the box threads just to the right of the mark on the box face. Be sure that the template threads are fully seated and parallel to the box centerline. Slide the template in a clockwise direction until the L-edge contacts the face, this time using a slight twisting motion. The twisting motion ensures that the template is seated properly in the threads and square against the box face.



6. Using a Sharpie<sup>®</sup> felt marker, mark the counter bore and starting thread on the left side of the template. This is where the fixed contact ball of the IT-5104-RSC gage will be placed when measuring the pitch diameter.



### Gage Setting

1. The IT-5104-RSC gage must be preset and locked to a calculated dimension for the particular connector you are inspecting. It is recommended that a ground setting standard rod or a MIC TRAC is used for presetting the gage. Gages, setting standards, and parts should be at the same temperature.



2. To preset the gage, loosen the lower arm bent bolt and slide it to the approximate location where the ears of the standard will fit over the contact points of the gage.

3. With the lower arm loose, slide the arm away from the indicator approximately .100" and lock the arm in place.

4. Place the ears of the standard over the contact points and sweep in a circular motion to obtain the smallest indicator value, and then zero the indicator.

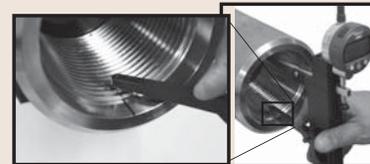
### Gage Operation

1. With the connector in a horizontal position, retract the gage upper arm with your thumb, turn the gage upside down, put the movable ball contact into the first full form thread, which was previously marked.



2. Rotate the gage clockwise while holding the ball contact in the thread groove to the 12:00 o'clock position.

3. Place the lower fixed ball contact next to the location mark made previously using the LPB template.



4. While holding the fixed ball contact at the marked location, place your left index finger on the lower arm to hold its position. Sweep the gage back and forth pivoting on the fixed ball contact to locate the largest indicator reading.

