

# Custom Trilocks from .7600" to 6.0100"

## FOR LARGE DIMENSIONS

When you need to inspect large diameters, Trilock Plug Gages are your best solution. Much like Reversible Plug Gages, when one end wears out, simply turn the member around and continue gaging, significantly increasing the gaging life. Members are securely attached to your trilock handle with mounting bolts. Custom Plug Gage assemblies can be marked with your tool number. Go/NoGo assemblies include 1 line (up to 25 characters) of custom marking. These Trilock Plug Gages are available up to 6" in all class tolerances to meet your unique requirements.

- **Class XX, X, Y, Z or ZZ**
- **See page 116 for tolerance specifications**
- **Go, NoGo tolerances**
- **NIST traceable**
- **Tool Steel; 60/65 Rc (Cold Stabilized)**
- **Chrome Plated Tool Steel; 70/72 Rc**
- **4 microinch finish or better on Class XX or X**
- **Handles custom marked 1 line (up to 25 characters) included, additional text quoted upon request**
- **Inch handles – light blue**
- **Metric handles – yellow**
- **Certificate of Accuracy included**
- **See page 111 for Calibration Services**

### How to Order:

19

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#### Material

- [1] Tool Steel
- [2] Chrome Plated Tool Steel
- [4] Black Guard™

#### Tolerance

- [1] Class XX
- [2] Class X
- [3] Class Y
- [4] Class Z
- [5] Class ZZ

#### Range

- [01] .7600" to .9470" [19.30mm to 24.05mm]
- [02] .9471" to 1.1350" [24.06mm to 28.83mm]
- [03] 1.1351" to 1.5100" [28.84mm to 38.35mm]
- [04] 1.5101" to 2.0100" [38.36mm to 51.05mm]
- [05] 2.0101" to 2.5100" [51.06mm to 63.75mm]
- [06] 2.5101" to 3.0100" [63.76mm to 76.45mm]
- [07] 3.0101" to 3.5100" [76.46mm to 89.15mm]
- [08] 3.5101" to 4.0100" [89.16mm to 101.85mm]
- [09] 4.0101" to 4.5100" [101.86mm to 114.55mm]
- [10] 4.5101" to 5.0100" [114.56mm to 127.25mm]
- [11] 5.0101" to 5.5100" [127.26mm to 139.95mm]
- [12] 5.5101" to 6.0100" [139.96mm to 152.65mm]

#### Direction of Tolerance

- [1] Go [1 member, (Plus) unilateral tolerance]
- [2] NoGo [1 member, (Minus) unilateral tolerance]
- [3] Go/NoGo [2 members, (1) Plus, (1) Minus tolerance]
- [4] Go Assembly [1 member, Plus unilateral tolerance]
- [5] NoGo Assembly [1 member, Minus unilateral tolerance]

#### Package

- [1] Member only
- [2] Assembly [Gage(s) with Handle]

#### Size (Specify size of gage members)

Configure part number and add size of gage member.

Example: 191206320 - Go 2.4480"/NoGo 2.5000"

#### Handle Marking:

(up to 25 characters included at no charge)



# Custom Trilocks from .7600" to 6.0100"

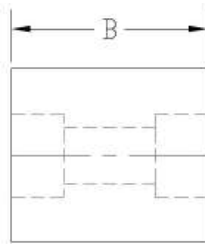
| Range  | Tolerance Class | Steel    |          |            |            |               | Tolerance Class | Black Guard™ |          |            |            |               |
|--|-----------------|----------|----------|------------|------------|---------------|-----------------|--------------|----------|------------|------------|---------------|
|  |                 | Price Go | Price Go | Price NoGo | Price NoGo | Price Go/NoGo |                 | Price Go     | Price Go | Price NoGo | Price NoGo | Price Go/NoGo |
|  |                 | Member   | Assembly | Member     | Assembly   | Assembly      |                 | Member       | Assembly | Member     | Assembly   | Assembly      |
| .7600" to .9470"<br>19.30mm to 24.05mm<br>[01]     | XX              | \$78.00  | \$92.00  | \$76.00    | \$90.00    | \$169.00      |                 |              |          |            |            |               |
|  | X               | \$58.00  | \$72.00  | \$56.00    | \$70.00    | \$129.00      |                 |              |          |            |            |               |
|  | Y               | \$52.00  | \$66.00  | \$50.00    | \$64.00    | \$117.00      | Z               | \$68.00      | \$82.00  | \$50.00    | \$64.00    | \$133.00      |
|  | Z, ZZ           | \$40.00  | \$54.00  | \$35.00    | \$49.00    | \$90.00       | ZZ              | \$48.00      | \$62.00  | \$43.00    | \$57.00    | \$106.00      |
| .9471" to 1.1350"<br>24.06mm to 28.83mm<br>[02]    | XX              | \$80.00  | \$95.00  | \$76.00    | \$91.00    | \$172.00      |                 |              |          |            |            |               |
|  | X               | \$60.00  | \$75.00  | \$58.00    | \$73.00    | \$134.00      |                 |              |          |            |            |               |
|  | Y               | \$54.00  | \$69.00  | \$52.00    | \$67.00    | \$122.00      | Z               | \$56.00      | \$71.00  | \$51.00    | \$66.00    | \$123.00      |
|  | Z, ZZ           | \$42.00  | \$57.00  | \$37.00    | \$52.00    | \$95.00       | ZZ              | \$50.00      | \$65.00  | \$43.00    | \$58.00    | \$109.00      |
| 1.1351" to 1.5100"<br>28.84mm to 38.35mm<br>[03]   | XX              | \$82.00  | \$98.00  | \$78.00    | \$94.00    | \$177.00      |                 |              |          |            |            |               |
|  | X               | \$65.00  | \$81.00  | \$61.00    | \$77.00    | \$143.00      |                 |              |          |            |            |               |
|  | Y               | \$56.00  | \$72.00  | \$54.00    | \$70.00    | \$127.00      | Z               | \$66.00      | \$82.00  | \$59.00    | \$75.00    | \$142.00      |
|  | Z, ZZ           | \$48.00  | \$64.00  | \$43.00    | \$59.00    | \$108.00      | ZZ              | \$56.00      | \$72.00  | \$51.00    | \$67.00    | \$124.00      |
| 1.5101" to 2.0100"<br>38.36mm to 51.05mm<br>[04]   | XX              | \$118.00 | \$136.00 | \$112.00   | \$130.00   | \$249.00      |                 |              |          |            |            |               |
|  | X               | \$94.00  | \$112.00 | \$90.00    | \$108.00   | \$203.00      |                 |              |          |            |            |               |
|  | Y               | \$80.00  | \$98.00  | \$84.00    | \$102.00   | \$183.00      | Z               | \$98.00      | \$116.00 | \$90.00    | \$108.00   | \$207.00      |
|  | Z, ZZ           | \$72.00  | \$90.00  | \$66.00    | \$84.00    | \$157.00      | ZZ              | \$86.00      | \$104.00 | \$78.00    | \$96.00    | \$183.00      |
| 2.0101" to 2.5100"<br>51.06mm to 63.75mm<br>[05]   | XX              | \$130.00 | \$150.00 | \$124.00   | \$144.00   | \$275.00      |                 |              |          |            |            |               |
|  | X               | \$100.00 | \$120.00 | \$94.00    | \$114.00   | \$215.00      |                 |              |          |            |            |               |
|  | Y               | \$92.00  | \$112.00 | \$88.00    | \$108.00   | \$201.00      | Z               | \$116.00     | \$136.00 | \$108.00   | \$128.00   | \$245.00      |
|  | Z, ZZ           | \$86.00  | \$106.00 | \$80.00    | \$100.00   | \$187.00      | ZZ              | \$100.00     | \$120.00 | \$94.00    | \$114.00   | \$215.00      |
| 2.5101" to 3.0100"<br>63.76mm to 76.45mm<br>[06]   | XX              | \$160.00 | \$182.00 | \$148.00   | \$170.00   | \$332.00      |                 |              |          |            |            |               |
|  | X               | \$120.00 | \$142.00 | \$110.00   | \$132.00   | \$254.00      |                 |              |          |            |            |               |
|  | Y               | \$105.00 | \$127.00 | \$93.00    | \$115.00   | \$222.00      | Z               | \$124.00     | \$146.00 | \$108.00   | \$130.00   | \$256.00      |
|  | Z, ZZ           | \$90.00  | \$112.00 | \$80.00    | \$102.00   | \$194.00      | ZZ              | \$108.00     | \$130.00 | \$94.00    | \$116.00   | \$226.00      |
| 3.0101" to 3.5100"<br>76.46mm to 89.15mm<br>[07]   | XX              | \$230.00 | \$252.00 | \$202.00   | \$224.00   | \$476.00      |                 |              |          |            |            |               |
|  | X               | \$190.00 | \$212.00 | \$168.00   | \$190.00   | \$402.00      |                 |              |          |            |            |               |
|  | Y               | \$155.00 | \$177.00 | \$133.00   | \$155.00   | \$332.00      | Z               | \$190.00     | \$212.00 | \$158.00   | \$180.00   | \$392.00      |
|  | Z, ZZ           | \$138.00 | \$160.00 | \$116.00   | \$138.00   | \$298.00      | ZZ              | \$164.00     | \$186.00 | \$138.00   | \$160.00   | \$346.00      |
| 3.5101" to 4.0100"<br>89.16mm to 101.85mm<br>[08]  | XX              | \$260.00 | \$282.00 | \$232.00   | \$254.00   | \$536.00      |                 |              |          |            |            |               |
|  | X               | \$210.00 | \$232.00 | \$182.00   | \$204.00   | \$436.00      |                 |              |          |            |            |               |
|  | Y               | \$185.00 | \$207.00 | \$157.00   | \$179.00   | \$386.00      | Z               | \$232.00     | \$254.00 | \$194.00   | \$216.00   | \$470.00      |
|  | Z, ZZ           | \$170.00 | \$192.00 | \$152.00   | \$174.00   | \$366.00      | ZZ              | \$200.00     | \$222.00 | \$168.00   | \$190.00   | \$412.00      |
| 4.0101" to 4.5100"<br>101.86mm to 114.55mm<br>[09] | XX              | \$380.00 | \$402.00 | \$308.00   | \$330.00   | \$732.00      |                 |              |          |            |            |               |
|  | X               | \$320.00 | \$342.00 | \$250.00   | \$272.00   | \$614.00      |                 |              |          |            |            |               |
|  | Y               | \$298.00 | \$320.00 | \$220.00   | \$242.00   | \$562.00      |                 |              |          |            |            |               |
|  | Z, ZZ           | \$290.00 | \$312.00 | \$216.00   | \$238.00   | \$550.00      |                 |              |          |            |            |               |
| 4.5101" to 5.0100"<br>114.56mm to 127.25mm<br>[10] | XX              | \$425.00 | \$447.00 | \$330.00   | \$352.00   | \$799.00      |                 |              |          |            |            |               |
|  | X               | \$350.00 | \$372.00 | \$280.00   | \$302.00   | \$674.00      |                 |              |          |            |            |               |
|  | Y               | \$325.00 | \$347.00 | \$250.00   | \$272.00   | \$619.00      |                 |              |          |            |            |               |
|  | Z, ZZ           | \$310.00 | \$332.00 | \$240.00   | \$262.00   | \$594.00      |                 |              |          |            |            |               |
| 5.0101" to 5.5100"<br>127.26mm to 139.95mm<br>[11] | XX              | \$460.00 | \$482.00 | \$340.00   | \$362.00   | \$844.00      |                 |              |          |            |            |               |
|  | X               | \$395.00 | \$417.00 | \$310.00   | \$332.00   | \$749.00      |                 |              |          |            |            |               |
|  | Y               | \$360.00 | \$382.00 | \$280.00   | \$302.00   | \$684.00      |                 |              |          |            |            |               |
|  | Z, ZZ           | \$350.00 | \$372.00 | \$270.00   | \$292.00   | \$664.00      |                 |              |          |            |            |               |
| 5.5101" to 6.0100"<br>139.96mm to 152.65mm<br>[12] | XX              | \$500.00 | \$522.00 | \$355.00   | \$377.00   | \$899.00      |                 |              |          |            |            |               |
|  | X               | \$425.00 | \$447.00 | \$325.00   | \$347.00   | \$794.00      |                 |              |          |            |            |               |
|  | Y               | \$380.00 | \$402.00 | \$305.00   | \$327.00   | \$729.00      |                 |              |          |            |            |               |
|  | Z, ZZ           | \$370.00 | \$392.00 | \$295.00   | \$317.00   | \$709.00      |                 |              |          |            |            |               |

*Assemblies 3" and over will come on separate single-end handles*

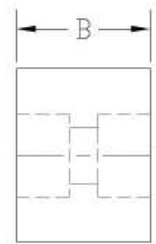
Chrome Plated Tool Steel - Add 50% to Steel price.

**QTY DISCOUNTS**  
2 pcs. & Up... Less 10%  
Combine identical sizes for quantity discount  
*(Excludes Class XX products)*

| Range                    | Blank Specs |        |        |
|--------------------------|-------------|--------|--------|
|                          | Handle      | B Go   | B NoGo |
|                          | No          | Member | Member |
| [01]                     | 2 1/2       | 1.250  | 0.750  |
| [02]                     | 3 1/2       | 1.375  | 0.750  |
| [03]                     | 4 1/2       | 1.500  | 0.750  |
| [04]                     | 5 1/2       | 1.875  | 0.875  |
| [05]                     | 6           | 2.000  | 0.875  |
| [06] [07]                | 7           | 2.000  | 1.000  |
| [08] [09] [10] [11] [12] | 7           | 2.125  | 1.000  |



**Go**



**NoGo**

# Gage Fact Sheet

## What are Gages used for?

Fixed limit gages are primarily used to check dimensions and geometries; plug gages check internal and ring gages external dimensions and geometries. They effectively ensure that a part being measured is within its designed tolerance limits. Fixed limit gages are highly accurate, economical and easy to use.

## Principles of Go/NoGo Gaging

To use as a "Go/NoGo" functional check, try and fit both the "Go" and "NoGo" gages into or onto a part being measured. The measured part passes if the "Go" gage fits and the "NoGo" doesn't, otherwise the part fails. A "Go/NoGo" check is strictly a pass/fail test. The actual part size is never measured.

## Types of Fixed Limit Gages

Plug gages are available in two types, plain cylindrical and thread, and in several popular styles: reversible, taperlock and trilock. Style is usually determined by the size of the gage. Ring gages are also available as plain cylindrical and thread type gages.

## Wear Resistance and Tolerance

Gages are available in tool steel, Black Guard™, chrome plate, and carbide. Chrome plate and carbide are harder and therefore provide additional wear resistance. A choice of tolerance is also available. See chart for explanation of Gagemaker's tolerances.

## Calculate Gage Tolerance

Normal practice for determining gage tolerance is to allow 10% of product tolerance to be divided between the "Go" and "NoGo"

## GAGEMAKER'S TOLERANCE CHART (ASME B89.1.5)

| Diameter Range           | XXX      | XX       | X        | Y        | Z        | ZZ       |
|--------------------------|----------|----------|----------|----------|----------|----------|
| <b>Above - Including</b> |          |          |          |          |          |          |
| Inch                     |          |          |          |          |          |          |
| .010" - .825"            | .000010" | .000020" | .000040" | .000070" | .0001"   | .0002"   |
| .825" - 1.510"           | .000015" | .000030" | .000060" | .000090" | .00012"  | .00024"  |
| 1.510" - 2.510"          | .000020" | .000040" | .000080" | .00012"  | .00016"  | .00032"  |
| 2.510" - 4.510"          | .000025" | .000050" | .0001"   | .00015"  | .0002"   | .0004"   |
| 4.510" - 6.510"          | .000033" | .000065" | .00013"  | .00019"  | .00025"  | .0005"   |
| 6.510" - 9.010"          | .000040" | .000080" | .00016"  | .00024"  | .00032"  | .00064"  |
| 9.010" - 12.010"         | .000050" | .0001"   | .0002"   | .0003"   | .0004"   | .0008"   |
| Metric                   |          |          |          |          |          |          |
| .254mm - 20.96mm         | .00025mm | .00051mm | .00102mm | .00178mm | .00254mm | .00508mm |
| 20.96mm - 38.35mm        | .00038mm | .00076mm | .00152mm | .00229mm | .00305mm | .00610mm |
| 38.35mm - 63.75mm        | .00051mm | .00102mm | .00203mm | .00305mm | .00406mm | .00813mm |
| 63.75mm - 114.55mm       | .00064mm | .00127mm | .00254mm | .00381mm | .00508mm | .01016mm |
| 114.55mm - 165.35mm      | .00084mm | .00165mm | .00330mm | .00483mm | .00635mm | .01270mm |
| 165.35mm - 228.85mm      | .00102mm | .00203mm | .00406mm | .00610mm | .00813mm | .01626mm |
| 228.85mm - 305.05mm      | .00127mm | .00254mm | .00508mm | .00762mm | .01016mm | .02032mm |

gages. For plug gages "Go" is normally a plus tolerance and "NoGo" a minus tolerance. For ring gages the opposite is true; "Go" is normally a minus tolerance and "NoGo" a plus tolerance.

Using this practice as a guideline, gage tolerance is always included in the part tolerance and accounts for up to 10%. This means that 10% of good product could potentially fail the inspection but that no bad product would ever pass!

## Care and Use of Gages

- 1.) Dimensions to be gaged must be cleaned and free from burrs to prevent gaging interference.
- 2.) Gage should be turned slowly into or onto the part being checked. The fit should be snug but not forced. Air flats on a "Go" gage can facilitate the inspection of blind holes where air pressure is a problem.
- 3.) Temperature of the gage and the part should be the same. This is because of the effects of thermal

expansion on material. The normal temperature at which gages are calibrated is 68 degrees Fahrenheit. This is therefore the best temperature at which both part and gage should be when inspected. This effectively eliminates any error due to thermal expansion.

- 4.) Gages should be protected from exposure to excessive heat, moisture, and corrosive chemicals. After use, gages should be cleaned and then coated with a thin-film rust preventative and stored properly.
- 5.) Gages should be periodically calibrated to ensure accuracy. Gages and "Go" gages in particular, will wear with normal use and require recalibration. Frequency of calibration is dependent on such factors as frequency of use, part abrasiveness, tolerance, and applicable quality procedures. All gages should be monitored and maintained accordingly.