

Custom Master Setting Discs from .1500" to 8.0100"

CALIBRATE YOUR MEASURING EQUIPMENT

Use these Vermont Gage Master Setting Discs to calibrate your measuring equipment. Designed to satisfy traceability requirements of your quality control system, these masters are a must for your calibration lab and inspection areas. Vermont Master Setting Discs are available in three (3) styles and come complete with grips and Certificate of Accuracy.

- *Class XX, X or Y*
- *See page 116 for tolerance specifications*
- *Bilateral (+/-) tolerance*
- *NIST traceable*
- *Tool Steel; 60/62 Rc (Cold Stabilized)*
- *Chrome Plated Tool Steel; 70/72 Rc*
- *4 microinch finish or better on Class XX or X*
- *Round within 1/2 of tolerance*
- *Complete with end grips*
- *Marked with size and direction of tolerance on Master Setting Discs over 1.5100"*
- *Certificate of Accuracy included*
- *See page 111 for Calibration Services*



How to Order:

25 0

Material

- [1] Tool Steel
- [2] Chrome Plated Tool Steel

Tolerance

- [1] Class XX
- [2] Class X
- [3] Class Y

Range

- | | |
|-------------------------|------------------------|
| [01] .1500" to .2300" | [3.81mm to 5.84mm] |
| [02] .2301" to .3650" | [5.85mm to 9.27mm] |
| [03] .3651" to .5100" | [9.28mm to 12.95mm] |
| [04] .5101" to .8250" | [12.96mm to 20.95mm] |
| [05] .8251" to 1.1350" | [20.96mm to 28.83mm] |
| [06] 1.1351" to 1.5100" | [28.84mm to 38.35mm] |
| [07] 1.5101" to 2.0100" | [38.36mm to 51.05mm] |
| [08] 2.0101" to 2.5100" | [51.06mm to 63.75mm] |
| [09] 2.5101" to 3.0100" | [63.76mm to 76.45mm] |
| [10] 3.0101" to 3.5100" | [76.46mm to 89.15mm] |
| [11] 3.5101" to 4.0100" | [89.16mm to 101.85mm] |
| [12] 4.0101" to 4.5100" | [101.86mm to 114.55mm] |
| [13] 4.5101" to 5.0100" | [114.56mm to 127.75mm] |
| [14] 5.0101" to 5.5100" | [127.76mm to 139.95mm] |
| [15] 5.5101" to 6.0100" | [139.96mm to 152.65mm] |
| [16] 6.0101" to 6.5100" | [152.66mm to 165.35mm] |
| [17] 6.5101" to 7.0100" | [165.36mm to 178.05mm] |
| [18] 7.0101" to 7.5100" | [178.06mm to 190.75mm] |
| [19] 7.5101" to 8.0100" | [190.76mm to 203.45mm] |

Direction of Tolerance

- [1] Master (1 member, bi-lateral tolerance)
- [2] Go (1 member, Plus tolerance)
- [3] No-Go (1 member, Minus tolerance)

Package

- [1] Style I Master Disc with End Grips
- [2] Style II Master Disc with End Grips
- [3] Style III Master Disc with End Grips

Size (Specify size of gage members)

Configure part number and add size of gage member.
Example: **251204310 - .6250"**

Custom Master Setting Discs from .1500" to 8.0100"

Range	Tolerance Class	Price Style 1	Price Style 2	Price Style 3
.1500" to .2300" 3.81mm to 5.84mm [01]	XX	\$110.00	\$200.00	\$100.00
	X	\$95.00	\$160.00	\$80.00
	Y	\$88.00	\$155.00	\$70.00
.2301" to .3650" 5.85mm to 9.27mm [02]	XX	\$110.00	\$200.00	\$100.00
	X	\$95.00	\$160.00	\$80.00
	Y	\$88.00	\$155.00	\$70.00
.3651" to .5100" 9.28mm to 12.95mm [03]	XX	\$115.00	\$205.00	\$98.00
	X	\$95.00	\$168.00	\$84.00
	Y	\$88.00	\$160.00	\$78.00
.5101" to .8250" 12.96mm to 20.95mm [04]	XX	\$115.00	\$215.00	\$105.00
	X	\$100.00	\$180.00	\$90.00
	Y	\$95.00	\$165.00	\$78.00
.8251" to 1.1350" 20.96mm to 28.83mm [05]	XX	\$125.00	\$220.00	\$110.00
	X	\$106.00	\$190.00	\$95.00
	Y	\$100.00	\$170.00	\$88.00
1.1351" to 1.5100" 28.84mm to 38.35mm [06]	XX	\$135.00	\$235.00	\$115.00
	X	\$112.00	\$200.00	\$100.00
	Y	\$105.00	\$190.00	\$95.00
1.5101" to 2.0100" 38.36mm to 51.05mm [07]	XX	\$150.00	\$250.00	\$140.00
	X	\$125.00	\$220.00	\$112.00
	Y	\$110.00	\$200.00	\$100.00
2.0101" to 2.5100" 51.06mm to 63.75mm [08]	XX	\$175.00	\$295.00	\$160.00
	X	\$140.00	\$235.00	\$130.00
	Y	\$125.00	\$220.00	\$115.00
2.5101" to 3.0100" 63.76mm to 76.45mm [09]	XX	\$190.00	\$325.00	\$180.00
	X	\$155.00	\$280.00	\$140.00
	Y	\$140.00	\$250.00	\$125.00
3.0101" to 3.5100" 76.46mm to 89.15mm [10]	XX	\$255.00	\$415.00	\$240.00
	X	\$220.00	\$365.00	\$200.00
	Y	\$200.00	\$340.00	\$190.00
3.5101" to 4.0100" 89.16mm to 101.85mm [11]	XX	\$310.00	\$455.00	\$260.00
	X	\$265.00	\$410.00	\$220.00
	Y	\$250.00	\$365.00	\$200.00
4.0101" to 4.5100" 101.86mm to 114.55mm [12]	XX	\$345.00	\$520.00	\$290.00
	X	\$300.00	\$460.00	\$240.00
	Y	\$285.00	\$420.00	\$225.00
4.5101" to 5.0100" 114.56mm to 127.75mm [13]	XX	\$445.00	\$540.00	\$300.00
	X	\$400.00	\$470.00	\$245.00
	Y	\$375.00	\$430.00	\$230.00

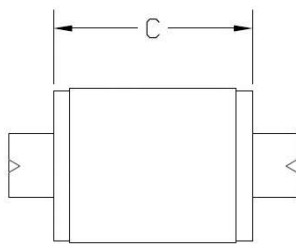
Chrome Plated Tool Steel - Add 50% to Steel price.

Custom Master Setting Discs from .1500" to 8.0100"

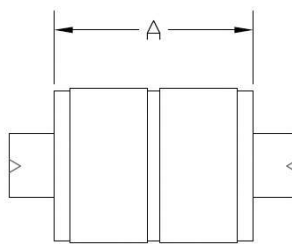
Range	Tolerance Class	Price Style 1	Price Style 2	Price Style 3
5.0101" to 5.5100" 127.76mm to 139.95mm [14]	XX	\$450.00	\$560.00	\$310.00
	X	\$405.00	\$505.00	\$270.00
	Y	\$385.00	\$465.00	\$245.00
5.5101" to 6.0100" 139.96mm to 152.65mm [15]	XX	\$455.00	\$610.00	\$315.00
	X	\$410.00	\$540.00	\$275.00
	Y	\$390.00	\$495.00	\$255.00
6.0101" to 6.5100" 152.66mm to 165.35mm [16]	XX	\$480.00	\$660.00	\$345.00
	X	\$430.00	\$575.00	\$280.00
	Y	\$410.00	\$540.00	\$265.00
6.5101" to 7.0100" 165.36mm to 178.05mm [17]	XX	\$750.00	\$830.00	\$445.00
	X	\$645.00	\$740.00	\$375.00
	Y	\$605.00	\$700.00	\$360.00
7.0101" to 7.5100" 178.06mm to 190.75mm [18]	XX	\$760.00	\$855.00	\$450.00
	X	\$675.00	\$770.00	\$400.00
	Y	\$630.00	\$725.00	\$375.00
7.5101" to 8.0100" 190.76mm to 203.45mm [19]	XX	\$800.00	\$885.00	\$455.00
	X	\$670.00	\$755.00	\$385.00
	Y	\$670.00	\$755.00	\$385.00

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

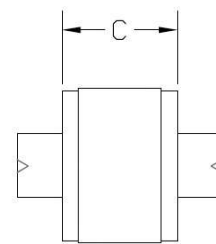
Range		Grip No.	C Style 1	A Style 2	C Style 3
Inch	Metric				
.1500" to .2300"	3.81mm to 5.84mm	0	1 3/16"	1 3/16"	3/4"
.2301" to .3650"	5.85mm to 9.27mm	1	1 5/16"	1 5/16"	13/16"
.3651" to .5100"	9.28mm to 12.95mm	2	1 7/16"	1 7/16"	7/8"
.5101" to .8250"	12.96mm to 20.95mm	3	1 9/16"	1 9/16"	15/16"
.8251" to 1.1350"	20.96mm to 28.83mm	4	1 11/16"	1 11/16"	1"
1.1351" to 1.5100"	28.84mm to 38.35mm	5	1 15/16"	1 15/16"	1 1/8"
1.5101" to 2.0100"	38.36mm to 51.05mm	6	1 7/8"	7/8"	7/8"
2.0101" to 2.5100"	51.06mm to 63.75mm	6	2"	7/8"	7/8"
2.5101" to 3.5100"	63.76mm to 89.15mm	7	2"	1"	1"
3.5101" to 8.0100"	89.16mm to 203.45mm	7	2 1/8"	1"	1"



STYLE 1



STYLE 2



STYLE 3

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
Above - Including 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.