



Mahr | Precision gages

Mahr Inc. Product line update

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Your presenter







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If you have any questions during the presentation – use the question feature and I will respond to your question after the webinar by email.



What is a plug gage and where to use it?

Marameter 844 D plug gages to Dimentron assembly

Mahr plug gages

6 How to quote new and replacements

Product changes and consolidations



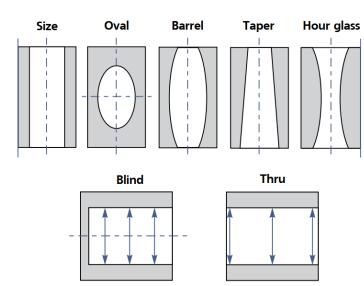
What is a plug gage and where to use it?

Plug gages are gaging instruments that determine whether the dimension of a part is smaller or larger than predetermined standards.

- External standards, i.e. masters
- Tends to be faster and more accurate than measuring hand tools
- Generally, more dedicated to the task

- Tight tolerances
- High accuracy
- High volume parts
- Shop environment
- Little operator skill
- Know part variation
- Low cost to operate
- Portable



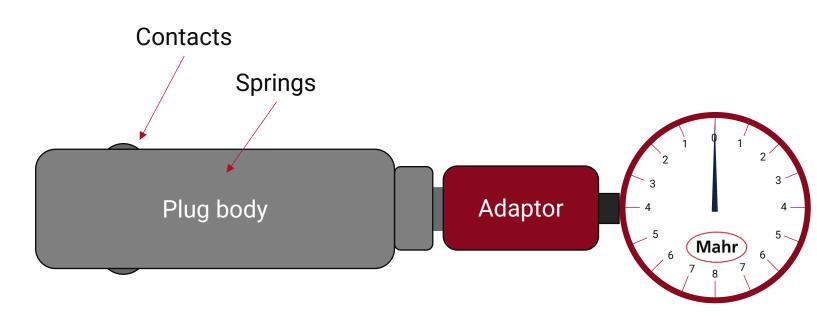




What makes up a plug gage?

- Plug body Hardened steel cylinder
- Two-point mechanical transfer mechanism
- An adaptor connection between plug and readout
- A display instrument that relates the transfer motion to diameter
- Setting master





Transfer rod provides 1:1 ratio

As the contacts are compressed the motion forces the transfer the rod back.



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Mahr plug gages

Dimentron

- Made in Providence
- Repairable
- Special applications
- M12 thread
- Hysterisis ≤ 0.5μm / 20μ"
- Repeatability ≤ 1μm / 20μ"
- Linearity ≤ 2% of measuring range



Marameter 844 D

- Made in Germany
- Repairable
- Special applications
- M10 or M6 thread
- Hysterisis ≤ 0.4μm / 16μ"
- Repeatability ≤ 1µm / 40µ"
- Linearity ≤ 1% of measuring range





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Product changes and consolidations

Dimentron / 844 D Plug Gages

- Dimentron and the 844 D are successful fixed plug gaging products
 - High performance, fast and easy to use, can be used with many different digital readout options
 - They represent a duplicate product line
- The 844 D has been updated with improved offering, better deliveries, more standard options and at pricing to allow Mahr to be more competitive

 Going forward the 844 D is the plug gage for all plug gage applications.





Product changes and consolidations



Product Consolidation

- Mahr Inc. has adaptors to use new 844 D plugs in existing Dimentron holders.
- Mahr Inc. can supply "special" Dimentron style plugs.
- Spare parts levers, Vee Rods, contacts for Dimentron will be maintained.

Standard .250" Plug Gage





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Marameter 844 D bore gages

3 basic types

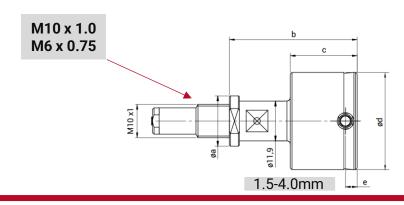
- 844 **D**
 - For blind bores

- 844 **DR**
 - For thru bores

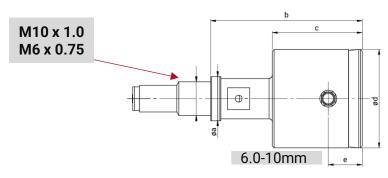
- 844 **DS**
 - For super blind bores



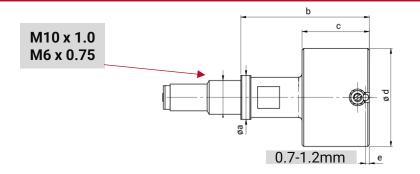














Marameter 844 D bore gages

844 D-C / 844 DR-C / 844 DS-C

Chrome plated contacts: for soft, porous materials such as aluminum.

844 D-R / 844 DR-R / 844 DS-R

Ruby contacts: for when part marring must be prevented.

844 D-D / 844 DR-D

Diamond contacts: for abrasive material or extreme high usage applications.

844 D-FD / 844 DR-FD

Different front contact centerline "e": reducing the guide plug body to measure Closer, or at a defined position.

844 D-M / 844 DR-M / 844 DS-M

Extended measuring range: for measuring large tolerances, $600\mu m / 0.024\mu''$.

844 D-HR / 844 DR-HR / 844 DS-HR

High Resolution for tight tolerances: for measuring bores with thight tolerances, less than $10\mu m$. minimum body clearance.

844 DS-F

Only with front chamfer: for masuring very short blind bores.

844 D-3 / 844 DR-3

3-point contacts (3 x 120°): for fast measurement of intruppted diameters and detection of form error in polygons.









9	Size		Radius	of	contact	
From (mm)	То		mm		inch	
-	•	-		þ		þ
2.5	3		0.4		0.016	
3.1	3.4		0.6		0.024	
3.4	4		0.7		0.028	
4.1	4.8		0.85		0.033	
4.9	5.6		1		0.039	
5.7	6		1.1		0.043	
6.1	20		1.2		0.047	
20.1	60		1.5		0.059	
60.1	500		2.5		0.098	







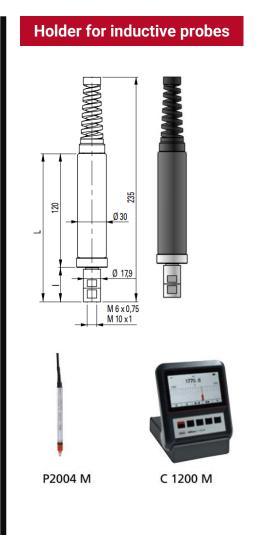


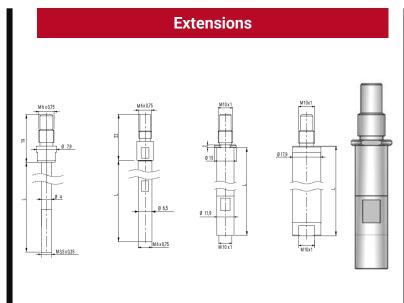


Marameter 844 D Accessories

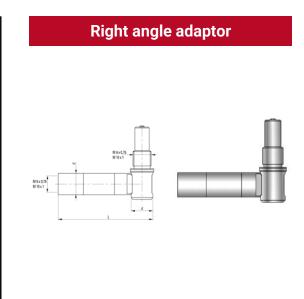
Holders for indicators







Order no.	1300	Difficultion		G.E.	Connection tinead
		mm	mm	mm	
4484770	844 Dv	49	4	7.9	M6 x 0.75 / M3.5x0.35
4484771	844 Dv	99	4	7.9	M6 x 0.75 / M3.5x0.35
4484772	844 Dv	149	4	7.9	M6 x 0.75 / M3.5x0.35
4484773	844 Dv	249	4	7.9	M6 x 0.75 / M3.5x0.35
4484774	844 Dv	50	6.5	7.9	M6 x 0.75
1484775	844 Dv	100	6.5	7.9	M6 x 0.75
1484776	844 Dv	150	6.5	7.9	M6 x 0.75
1484777	844 Dv	250	6.5	7.9	M6 x 0.75
1484778	844 Dv	500	6.5	7.9	M6 x 0.75
1484779	844 Dv	48	11.9	15	M10x1
1484780	844 Dv	98	11.9	15	M10x1
484781	844 Dv	248	11.9	15	M10x1
1484782	844 Dv	498	11.9	15	M10x1
1484783	844 Dv	750	11.9	15	M10x1
1484784	844 Dv	1000	11.9	15	M10x1
4484785	844 Dv	100	17.9		M10x1
1484786	844 Dv	250	17.9		M10x1
4484787	844 Dv	500	17.9		M10x1
4484788	844 Dv	750	17.9		M10x1
4484789	844 Dv	1000	17.9		M10x1



uer no.	туре	Dimension L		Connection thread
		mm	mm	
3409	844 Kw	29	7.9	M6 x 0.75
34790	844 Dw	53	11.9	M10x1
34791	844 Dw	56	17.9	M10x1



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How to quote new and replacements

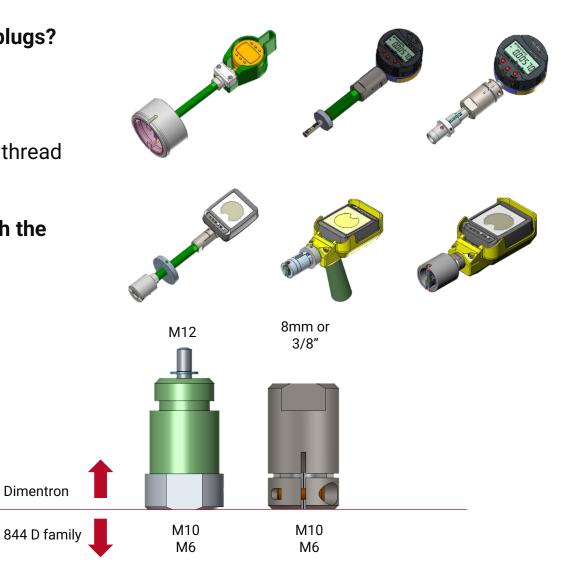
Product changes and consolidations



Marameter 844 D bore gages to Dimentron assembly

- Will my current Dimentron assembly work with 844D family plugs?
 - **Dimentron** plugs and accessories use M12 thread
 - Marameter 844D plugs and accessories use M6 or M10 thread
- Mahr has adaptors that will allow the 844D plugs to work with the existing Dimentron setup.

Part number	Description 1	Description 2
2064894	ADAPTER ASSY, 844D SERIES 10 TO EKT-1120	M10 to M12
2064893	ADAPTER ASSY, 844D SERIES 6.0 TO EKT-1120	M6 to M12
2263799	ADAPTER KIT, 844D, M10X1.0 THREAD	M10
2263800	ADAPTER KIT, 844D, M6 X .75 THREAD	M6



Dimentron



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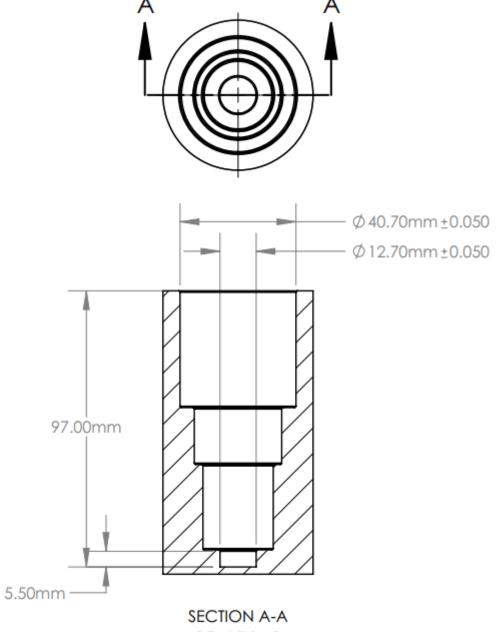
3 Product changes and consolidations

Mahr

Quoting plug gages

You need to know the:

- Size
- Tolerance
- Type of the bore
- Where the measurement is to be made
- Readout



SCALE 1:2

Mahr

Quoting plug gages

You need to know the:

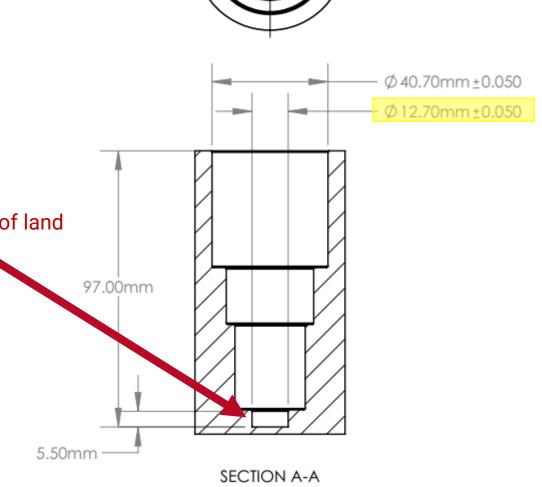
• Size: 12.70mm

• Tolerance: ±50μm

Type of the bore: Blind

Where the measurement is to be made: ~Middle of land

Readout: 2000 Wi or 1086 Ri



SCALE 1:2

Marameter 844 D bore gages

Mahr

Measuring range: 0.2mm / 0.0078"

M10 x 1.0 M6 x 0.75

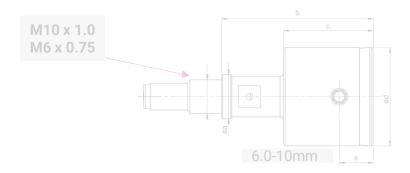
• 844 **D**

3 basic types

For blind bores

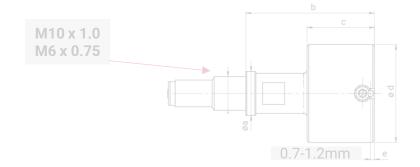
- 844 **DR**
 - For thru bores



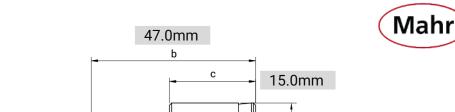


- 844 **DS**
 - For super blind bores





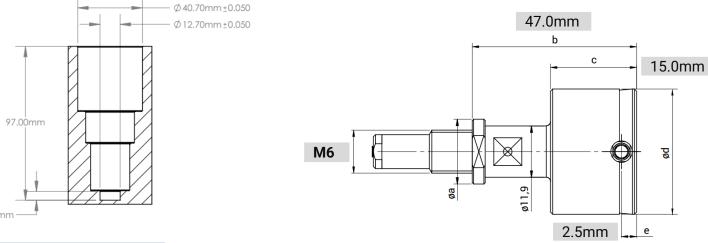
Quoting plug gages





844 **D**

For blind bores



TECHNICAL DATA

Order no.	Type	Measuring range	Mea- suring span	Manu- facturing tolerance	Linearity deviation fe	Repeata- bility f _w	a	b	С	e	g	Connection thread
		mm	mm	mm/mm		μm	mm	mm	mm	mm	mm	
4484007	844 D	2- <3	0.15	-0.015 / -0.025	1 %, min. 1 µm	1		21.5	15	1.5	15	M6 x 0.75 / M3.5x0.35
4484008	844 D	3–4	0.2	-0.015 / -0.025	1 %, min. 1 µm	1		33.5	24	1.5	24	M6 x 0.75 / M3.5x0.35
4484009	844 D	>4-7	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	4	33.5	10	1.5	27	M6 x 0.75 / M3.5x0.35
4484010	844 D	>7-9	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	6.9	47	15	2.5	35	M6 x 0.75
4484011	844 D	>9–12	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	7.9	47	15	2.5	47	M6 x 0.75
4484012	844 D	>12-13	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	7.9	47	15	2.5	47	M6 x 0.75
4484013	844 D	>13–16	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	11.9	47	15	2.5	47	M6 x 0.75
4484014	844 D	>16 - 20	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	15	37.3	15	2.5		M10x1
4484015	844 D	>20 - 30	0.2	-0.02 / -0.03	1 %, min. 1 µm	1	15	38.2	20	3.5		M10x1
4484016	844 D	>30 - 40	0.2	-0.02 / -0.03	1 %, min. 1 µm	1	15	38.2	20	3.5		M10x1
4484017	844 D	>40 -	0.2	-0.02 / -0.03	1 %, min.	1	15	38.2	28	3.5		M10x1

5.50mm -

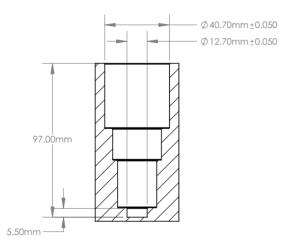
	L C	U	E
Description	Description	DISCOUNT CODE	2024 LIST PRICES
Gage >12-13 mm	for bore meas., M6x0,75	G09001	\$585.00
	Description Gage >12-13 mm		

THIS LIST CONTAINS OUR 2024 PRICES WITH NO PROMOTIONS

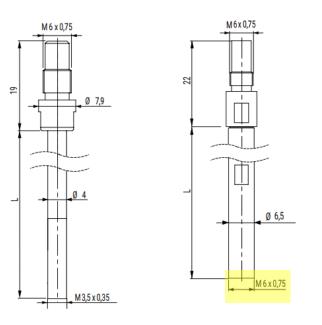
VALID 4/1/2024

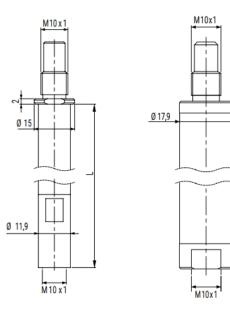
ORDER NO	DESCRIPTION_1	DESCRIPTION_2	DISCOUNT CODE	LIST PRICE
.1250 XX	MASTER RING, .1250 XX, STEEL,	1/4" THK, WITHOUT CERTIFICATION	G13001	218.00
.1560 XX	MASTER RING	WITHOUT CERTIFICATION	G13001	201.00
.1875 XX	MASTER RING, .1875 XX, STEEL,	WITHOUT CERTIFICATION	G13001	217.00
.2500 XX	MASTER RING, .2500 XX, STEEL,	1/4" WITHOUT CERTIFICATION	G13001	189.00
.2500 XXKAL	MASTER RING, .2500 XX, STEEL,	1/4" WITH CERTIFICATION	G13001	269.00
.3125 XX	MASTER RING, .3125 XX, STEEL,	5/16" WITHOUT CERTIFICATION	G13001	189.00
.3125 XXKAL	MASTER RING, .3125 XX, STEEL,	5/16" WITH CERTIFICATION	G13001	269.00
.3750 XX	MASTER RING, .375 XX, STEEL,	3/8" WITHOUT CERTIFICATION	G13001	189.00
.3750 XXKAL	MASTER RING, .375 XX, STEEL,	3/8" WITH CERTIFICATION	G13001	269.00
.4375 XX	MASTER RING, .4375 XX, STEEL,	7/16" WITHOUT CERTIFICATION	G13001	189.00
.4375 XXKAL	MASTER RING, .4375 XX, STEEL,	7/16" WITH CERTIFICATION	G13001	269.00
.5000 XX	MASTER RING, .5000 XX, STEEL,	1/2" WITHOUT CERTIFICATION	G13001	189.00
EUUU AANVI	MARCTED DINIC FOOD VV CTEEL	1/3" WITH CERTIFICATION	C12001	250.00

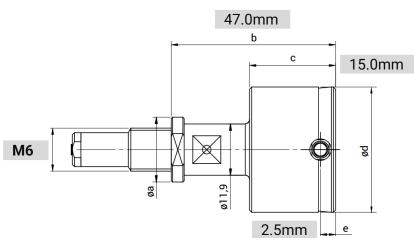
Quoting plug gages

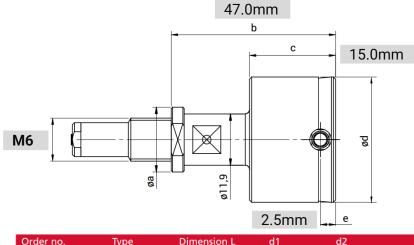


Extensions









Order no.	Type	Dimension L	d1	d2	Connection thread
		mm	mm	mm	
4484770	844 Dv	49	4	7.9	M6 x 0.75 / M3.5x0.35
4484771	844 Dv	99	4	7.9	M6 x 0.75 / M3.5x0.35
4484772	844 Dv	149	4	7.9	M6 x 0.75 / M3.5x0.35
4484773	844 Dv	249	4	7.9	M6 x 0.75 / M3.5x0.35
4484774	844 Dv	50	6.5	7.9	M6 x 0.75
4484775	844 Dv	100	6.5	7.9	M6 x 0.75
4484776	844 Dv	150	6.5	7.9	M6 x 0.75
4484777	844 Dv	250	6.5	7.9	M6 x 0.75
4484778	844 Dv	500	6.5	7.9	M6 x 0.75
4484779	844 Dv	48	11.9	15	M10x1
4484780	844 Dv	98	11.9	15	M10x1
4484781	844 Dv	248	11.9	15	M10x1
4404700	044 0	400	11.0	4 =	N 44 O 4

<u> * </u>				
Quick Price Look up				
Enter Order No. Below	Description	Description	DISCOUNT CODE	2024 LIST PRICES
4484774	844 Dv Extension Ø 6,5 mm	length 50 mm, M6 x 0,75	G09001	\$225.00

THIS LIST CONTAINS OUR 2024 PRICES WITH NO PROMOTIONS

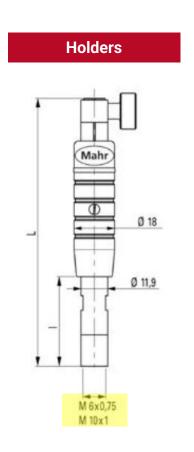
LID 4		

ORDER NO	DESCRIPTION_1	DESCRIPTION_2	DISCOUNT CODE	LIST PRICE
.1250 XX	MASTER RING, .1250 XX, STEEL,	1/4" THK, WITHOUT CERTIFICATION	G13001	218.00
1560 XX	MASTER RING	WITHOLIT CERTIFICATION	G13001	201 00



Quoting plug gages





Order no.	Connection thread	Dimension L	d1	d2	1
		mm	mm	mm	mm
4484750	M10 x 1	59	11.9	18	11
4484751	M10 x 1	83	11.9	18	36
4484752	M6 x 0.75	109	11.9	18	30
4484753	M10 x 1	109	11.9	18	40
4484754	M6 x 0.75	239	11.9	18	137
4484755	M10 x 1	249	11.9	18	147
4484756	M10 x 1	154	17.9	26	38
4484757	M10 x 1	244	17.9	26	128
4484758	M10 x 1	59	11.9	18	11
4484759	M10 x 1	109	11.9	18	30

Quick Price Look up				
Enter Order No. Below	Description	Description	DISCOUNT CODE	2024 LIST PRICES
4484752	844 Dg Holder f. measur. head	length 109 mm, M6 x 0,75	G09001	\$401.00

THIS LIST CONTAINS OUR 2024 PRICES WITH NO PROMOTIONS

VALID 4/1/2024

ORDER NO	DESCRIPTION_1	DESCRIPTION_2	DISCOUNT CODE	LIST PRICE	
.1250 XX	MASTER RING, .1250 XX, STEEL,	1/4" THK, WITHOUT CERTIFICATION	G13001	218.00	
.1560 XX MASTER RING		WITHOUT CERTIFICATION	G13001	201.00	
		•	'	•	



Quoting plug gages

Readout

ACCESSORIES

Order no.	Description	Туре		
4334000	Millimess 1 μm, ± 50 μm	1003		
4334102	Millimess 0.5 μm, ± 25 μm	1002		
4337620	Digital indicator, 0.0005 mm, 12.5 mm	1086 R		
4337624	Digital indicator, 0.0005 mm, 12.5 mm	1086 Ri		
4337697	Digital indicator, 0.0001 mm, 12.5 mm	1086 R-HR		
4346701	Inductive dial comparator ±1 mm	2000 Wi		



TECHNICAL DATA

Order no.		4337624	4337625	4337626	4337627	4337628		
Туре				1086 Ri				
Measuring span	mm	12.5	25	50	100	25		
Measuring span	inch	.5"	1"	2"	4"	1"		
Resolution	mm		0.0005, 0	.001, 0.002, 0.	005, 0.01			
Resolution in		.00002", .00005", .0001", .0002", .0005"						
Error limit	mm	0.004 0.007 0.008				0.004		
Error limit over 50 graduations	mm			0.002				
Measuring force	N	0.65 -0.9	0.65 -1.15	1.25 -2.7	1.8 -3.5	0-0		
Standard			F	actory standar	d			
Lifting protection cap				•				

TECHNICAL DATA

M 10x1

Order no.		4346800	4346801			
Туре		2001 W	2001 Wi			
Measuring range	mm	± 1				
Measuring range	inch	± .04"				
Resolution	mm	0.0001, 0.0002, 0.0005, 0.001, 0.002, 0.005, 0.01				
Resolution	inch	.000005", .00001", .00002",	.00005", .0001", .0002", .0005"			
Error limit	μm	± (0.2 + L/2) L in mm				
Measuring value hysteresis f _u	μm	0.3				
Repeatability f _w	μm	0.1				
Standard		Factory standard				
Free stroke	mm	2.5				
Measuring force	N	0.9 ±0.1 (at the electrical zero point)				
Range of analog display	mm	\pm 0.002, \pm 0.004, \pm 0.01, \pm 0.02, \pm 0.04, \pm 0.1, \pm 0.2				
IP protection category		I	P 64			
Data interface		USB, Digimatic	Integrated Wireless, USB, Digimatic			
Supply voltage		100–240 V				



We can also offer stop collar...



Quoting plug gages

Note:

 If customer prefers to have a protective housing for their indicator we have adaptors that will allow this



SHG-102



EHG-1172

Part number	Description 1	Description 2
2263799	ADAPTER KIT, 844D, M10X1.0 THREAD	M10
2263800	ADAPTER KIT, 844D, M6 X .75 THREAD	M6







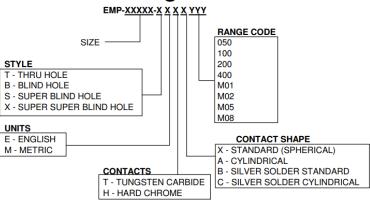
Quoting plug gages - replacement



EMP - 2.25220- TETX 100

EMP	Dimentron plug
2.25220	Nominal size
Т	Thru
Е	English
Т	Tungsten Carbide
Χ	Standard contact
100	Range code

How Tooling is Identified



			Maximum Part Tolerance				
Sizes above	To and include	Metric M01 Inch 050	M02 100	M05 200	M08 400		
3.18 mm/ .1250"	3.62 mm/ .145 "	±0.025 mm/ ±0010"	±0.038 mm/ ±.0015"				
3.62 mm/ .1426"	5.52 mm/ .217 "	±0.025 mm/ ±.0010"	±0.046 mm/ ±.0018"	±0.076 mm/ ±0030"			
5.50 mm/ .2171 "	7.94 mm/ .312 "	±.0.025 mm/ ±0010"	±0.046 mm/ ±.0018"	±0.069 mm/ ±0027"	±0.102 mm/ ±0040"		
7.94 mm/ <i>.3125"</i>	9.5 mm/ .375"	±.0.030 mm/ ±0012"	±0.051 mm/ ±.0020"	±0.069 mm/ ±0027"	±0.127 mm/ ±0050"		
9.50 mm/ .3750 "	12.7 mm/ .50"	±0.038 mm/ ±.0015"	±0.058 mm/ ±.0023"	±0.086 mm/ ±0034"	±0.137 mm/ ±0054"		
12.7 mm/ .5000"	19.05 mm/ .75"	±0.038 mm/ ±.0015"	±0.069 mm/ ±.0027"	±0.102 mm/ ±0040"	±0.165 mm/ ±0065"		
19.05 mm/ .750"	25.4 mm/ 1.00"	±0.038 mm/ ±.0015"	±0.076 mm/ ±.0030"	±0.127 mm/ ±0050"	±0.180 mm/ ±0071"		
25.4 mm/ 1.000"	38 mm/ 1.50"	±0.038 mm/ ±.0015"	±0.076 mm/ ±.0030"	±0.152 mm/ ±0060"	±0.221 mm/ ±0087"		
38 mm/ 1.500"	114.3 mm/ 4.5 "		±0.076 mm/ ±.0030"	±0.152 mm/ ±0060"	±0.254 mm/ ±0100"		
114.3 mm/ 4.5"	229 mm/ 9.00"			±0.152 mm/ ±0060"	±0.254 mm/ ±0100"		
Order Maxµm Indicato	r and Accessories separc	ately.					



Quoting plug gages - replacement



EMP - 2.25220- TETX 100

2.25220 Nominal size

Thru

English

Tungsten Carbide

Χ Standard contact

100 Range code

844 **DR** for 2.2522" = 57.206mm

TECHNICAL DATA

Order no.	Type	Measuring range	Mea- suring span	Manu- facturing tolerance	Linearity deviation fe	Repeata- bility f _w	а	b	C	е	g	Connection thread
		mm	mm	mm/mm		μm	mm	mm	mm	mm	mm	
4484039	844 DR	4–7	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	4	38	14.5	6	31.5	M6 x 0.75 / M3.5x0.35
4484040	844 DR	>7 - 9	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	6.9	50.5	18.5	6	38.5	M6 x 0.75
4484041	844 DR	>9 - 12	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	7.9	54.5	22.5	10	54.5	M6 x 0.75
4484042	844 DR	>12 - 13	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	7.9	54.5	22.5	10	54.5	M6 x 0.75
4484043	844 DR	>13 - 16	0.2	-0.015 / -0.025	1 %, min. 1 μm	1	11.9	54.5	22.5	10	54.5	M6 x 0.75
4484044	844 DR	>16 - 20	0.2	-0.015 / -0.025	1 %, min. 1 µm	1	15	44.8	22.5	10		M10x1
4484045	844 DR	>20 - 30	0.2	-0.02 / -0.03	1 %, min. 1 µm	1	15	44.7	27	10		M10x1
4484046	844 DR	>30 - 40	0.2	-0.02 / -0.03	1 %, min. 1 µm	1	15	44.7	27	10		M10x1
4484047	844 DR	>40 - 60	0.2	-0.02 / -0.03	1 %, min. 1 µm	1	15	44.7	28	10		M10x1



PN# 4484047 57.206mm ± 76μm



Summary

- Bore gages
- Mahr bore gage family
- Product consolidation
- Marameter 844 D bore gages
- Adaptors for 844 D to work with Dimentron
- Quoting new and replacement gages





Questions?

orders@mahr.com