

Centerline Locators

Reference Spheres

Pins

3/8-24

M6 and 1/4-20

M5

M4

M3

M2

Contents

RS

Reference Sphere, Type "A"

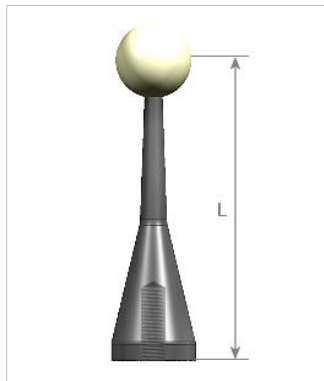


- ⊕ Ball: Ceramic or Stainless Steel
- ⊕ Shank: Stainless Steel
- ⊕ 70 mm extension, base plate and fastening bolts (1 each: M6, M8 and M10) included.



Order No.	Ball	dk	L	D	Deviation
STY-N15NRKA	Ceramic	15.0	85.0	80.0	<0.25µm
STY-N20NRKA	Ceramic	20.0	85.0	80.0	<0.25µm
STY-N25NRKA	Ceramic	25.0	85.0	80.0	<0.25µm
STY-N30NRKA	Ceramic	30.0	85.0	80.0	<0.25µm
STY-N25NRSA	Steel	25.0	85.0	80.0	<0.25µm

Reference Sphere, Type "B"



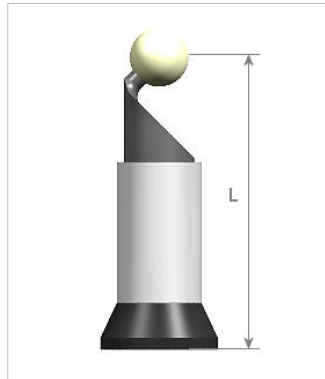
- ⊕ Ball: Ceramic or Stainless Steel
- ⊕ Shank: Stainless Steel, with M8 female thread
- ⊕ Compatible with N70NVR extension on page 159
- ⊕ Optional fastening bolts and mounting base available, see pages 160–161

Reference Spheres
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Order No.	Ball	dk	L	D	Deviation
STY-N15NRKB	Ceramic	15.0	100.0	28.0	<0.25µm
STY-N20NRKB	Ceramic	20.0	100.0	28.0	<0.25µm
STY-N25NRKB	Ceramic	25.0	100.0	28.0	<0.25µm
STY-N30NRKB	Ceramic	30.0	100.0	28.0	<0.25µm
STY-N25NRSB	Steel	25.0	100.0	28.0	<0.25µm

Reference Sphere, Type "C"

RS



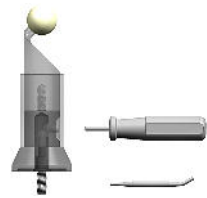
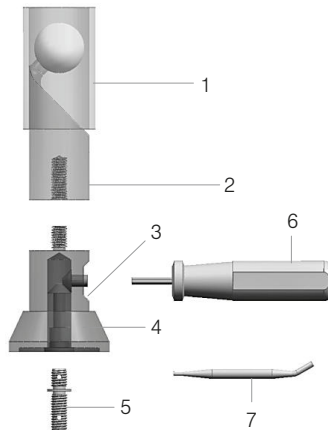
- ⊕ Ball: Ceramic or Stainless Steel
- ⊕ Shank: Stainless Steel
- ⊕ Includes 50 mm extension
- ⊕ Protective sleeve

Order No.	Ball	dk	L	D	Deviation
STY-N15NRKC	Ceramic	15.0	125.0	50.0	<0.25μm
STY-N20NRKC	Ceramic	20.0	125.0	50.0	<0.25μm
STY-N25NRKC	Ceramic	25.0	125.0	50.0	<0.25μm
STY-N30NRKC	Ceramic	30.0	125.0	50.0	<0.25μm
STY-N25NRSC	Steel	25.0	125.0	50.0	<0.25μm

SOLUTIONS® How it works

Contents:

1. Protective sleeve for sphere
2. Shank, angled at 30°
3. Extension, 50 mm
4. Base
5. Fastening bolts, 1 each: M6, M8 and M10, other sizes available.
6. Hex key 3.0 mm
7. Pin key 2.0 mm
8. Certification



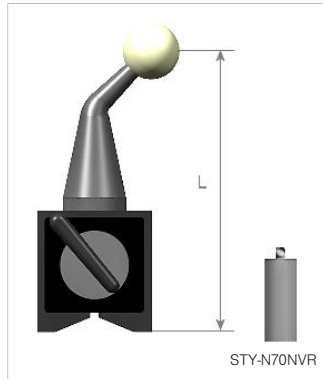
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Reference Spheres
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Reference Spheres

RS

Reference Sphere, Type "D"



- ⊕ Ball: Ceramic or Stainless Steel
- ⊕ Shank: Stainless Steel
- ⊕ Magnetic base is on / off switchable
- ⊕ 70 mm extension included.
- ⊕ Wooden storage case included.
- ⊕ Ideal for portable machines.

Order No.	Ball	dk	L	Deviation
STY-N15NRKD	Ceramic	15.0	125.0	<0.25 μ m
STY-N20NRKD	Ceramic	20.0	125.0	<0.25 μ m
STY-N25NRKD	Ceramic	25.0	125.0	<0.25 μ m
STY-N30NRKD	Ceramic	30.0	125.0	<0.25 μ m
STY-N25NRSD	Steel	25.0	125.0	<0.25 μ m

SOLUTIONS®
How it works

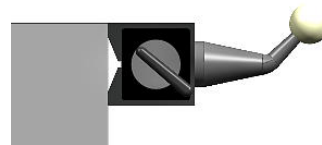
Reference spheres with magnetic bases can be attached to tubular parts (a), base plates (b), the side of a part (c) or anywhere, in any orientation, the magnetic base will hold.



a



b



c

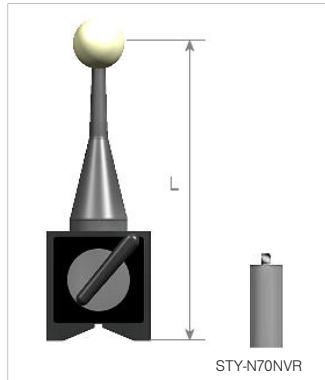
Reference Spheres
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Reference Sphere, Type "E"

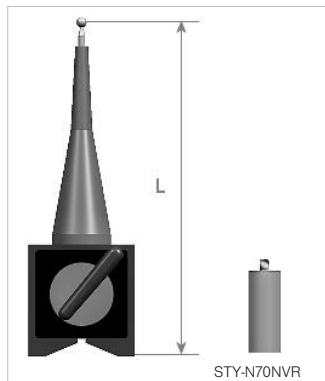
RS



- ⊕ Ball: Ceramic or Stainless Steel
- ⊕ Shank: Stainless Steel
- ⊕ Magnetic base is on / off switchable
- ⊕ 70 mm extension and wooden storage case are included.

Order No.	Ball	dk	L	Deviation
STY-N15NRKE	Ceramic	15.0	140.0	<0.25µm
STY-N20NRKE	Ceramic	20.0	140.0	<0.25µm
STY-N25NRKE	Ceramic	25.0	140.0	<0.25µm
STY-N30NRKE	Ceramic	30.0	140.0	<0.25µm
STY-N25NRSE	Steel	25.0	140.0	<0.25µm

Reference Sphere, Type "F"



- ⊕ Ball: Carbide
- ⊕ Shank: Stainless Steel
- ⊕ 3 interchangeable carbide balls: 2.0 mm, 4.0 mm and 5.0 mm
- ⊕ Magnetic base is on / off switchable
- ⊕ 70 mm extension and wooden storage case included.

Order No.	Ball	dk	L	Deviation
STY-N245NRKF	Carbide	2 / 4 / 5	155.0	<0.25µm

SOLUTIONS®
"How it works"

Reference spheres with magnetic bases are great for portable machines.



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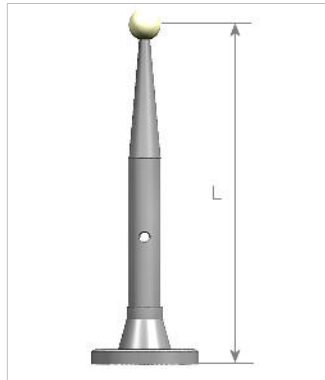
157

Fax: (586) 759-2423
pwminc@covad.net

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RS

Reference Sphere, Type "G"

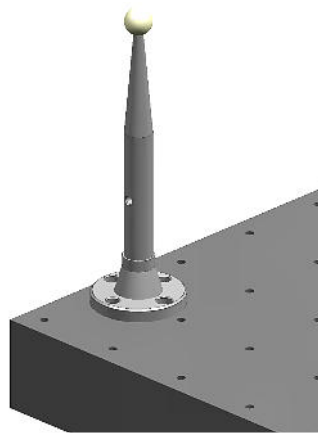
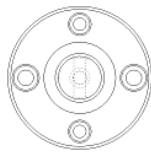


- ⊕ Ball: Ceramic or Stainless Steel
- ⊕ Shank: Stainless Steel
- ⊕ Shown with included 200 mm extension and base
- ⊕ 3 fastening bolts included: 1 each, M6, M8 and M10, other sizes available

Order No.	Ball	dk	L	Deviation
STY-N20NRKG	Ceramic	20.0	320.0	<0.25μm
STY-N25NRKG	Ceramic	25.0	320.0	<0.25μm
STY-N30NRKG	Ceramic	30.0	320.0	<0.25μm
STY-N50NRKG	Ceramic	50.0	320.0	<0.25μm
STY-N25NRSG	Steel	25.0	320.0	<0.25μm

SOLUTIONS®
How it works

Extended height spheres are ideal for large machines and special duty applications



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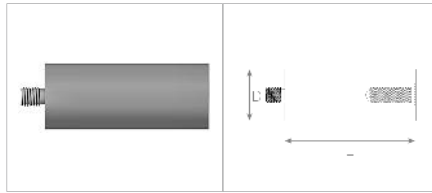
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Reference Spheres
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Reference Sphere Extension

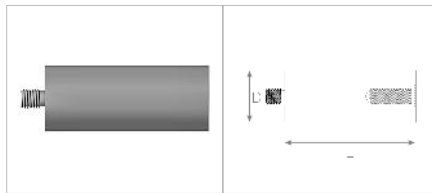
RS



- ⊕ Stainless Steel
- ⊕ For use with Type A, B, D, E or F reference spheres

Order No.	L	D	Material	For Sphere
STY-N70NVR	70.0	28.0	Steel	A, B, D, E, F

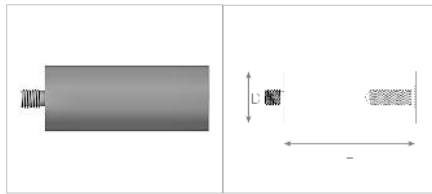
Reference Sphere Extension



- ⊕ Stainless Steel
- ⊕ For use with Type G reference spheres

Order No.	L	D	Material	For Sphere
STY-N200NVRG	200.0	30.0	Steel	G

Reference Sphere Extension



- ⊕ Aluminum, Anodized
- ⊕ For use with Type C reference spheres

Order No.	L	D	Material	For Sphere
STY-N50NVRC	50.0	30.0	Aluminum	C
STY-N100NVRC	100.0	30.0	Aluminum	C

SOLUTIONS®
"How it works"

All reference spheres include a 70 mm extension, except where noted.

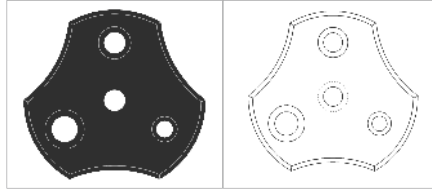


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Extensions
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Reference Spheres

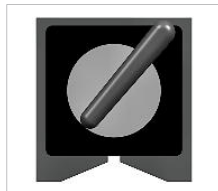
RS Mounting Base for Reference Spheres



- ⊕ Aluminum
- ⊕ Fits Type A or B reference spheres
- ⊕ Includes one each: M6, M8 or M10 fastening bolts (see page 161)

Order No.	H	D
STY-N80NGRA	14.0	80.0

Magnetic Base for Reference Spheres




- ⊕ Aluminum
- ⊕ Fits Type A or B reference spheres
- ⊕ Use Cup point set screw (page 161) to secure reference sphere to base


Order No.	
STY-MABA659P	Available by special order

SOLUTIONS®
"How it works"


Diverse base plate designs provide modularity and versatility when mounting reference spheres



Attach sphere to base plate



Attach sphere directly to surface plate



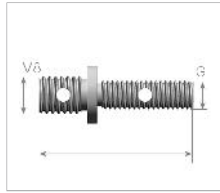
Attach sphere to magnetic base

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Bases
Reference Spheres

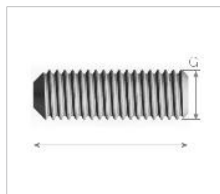
Fastening Bolts for Reference Spheres RS



- ⊕ Stainless Steel
- ⊕ Used to mount reference sphere base plate to surface plate

Order No.	L	G
STY-N60-6NBB	32.0	M6
STY-N60-8NBB	32.0	M8
STY-N60-10NBB	32.0	M10
STY-N60-1/4NBB	32.0	1/4-20 UNC
STY-N60-3/8NBB	32.0	3/8-16UNC

Cup Point Set Screws for Reference Spheres

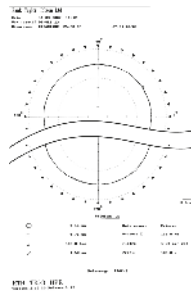


- ⊕ Stainless Steel
- ⊕ M8 or M10
- ⊕ Used to mount reference sphere to base plate or surface plate

Order No.	L	G
STY-CPSM8X25	25.0	M8 x 1.25
STY-CPSM10X25	25.0	M10 x 1.5

SOLUTIONS@
"How it works"

Each PWM Reference Sphere includes certification that lists its exact diameter and tolerance.



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Reference Spheres Fastening Bolts and Screws
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RS OEM M2 Stylus/Sphere Kit, 24 Pieces



- ⊕ Kit features our most requested styli and accessories
- ⊕ Kit contents: 1 reference sphere, 8 ruby styli, 1 point, 4 extensions, 2 adapters, 3 screws, 4 tools and 1 wooden case

PWM Order Number	Size of Sphere	
STY-N15-2NTRK	Reference Sphere 15mm dia. Ceramic	
STY-N20-2NTRK	Reference Sphere 20mm dia. Ceramic	
STY-N25-2NTRK	Reference Sphere 25mm dia. Ceramic	
STY-N30-2NTRK	Reference Sphere 30mm dia. Ceramic	
Contents (Includes choice of one sphere from chart above)		
Item Number	Qty	Description
STY-N1.0-10.5-2NTB	1	Stylus 10.5mm x 1.0mm
STY-N1.0-15.5-2NTB	1	Stylus 15.5mm x 1.0mm
STY-N2.0-11-2NTC	1	Stylus 11mm x 2.0mm
STY-N2.0-16-2NTC	1	Stylus 16mm x 2.0mm
STY-N4.0-12-2NTC	1	Stylus 12mm x 4.0mm
STY-N4.0-22-2NTC	1	Stylus 22mm x 4.0mm
STY-N6.0-13-2NTD	1	Stylus 13mm x 6.0mm
STY-N6.0-28-2NTD	1	Stylus 28mm x 6.0mm
STY-N30-10NTS	1	Stylus point 10mm x 30°
STY-N5NV	1	Extension 5mm
STY-N10NV	1	Extension 10mm
STY-N20NV	1	Extension 20mm
STY-N40NV	1	Extension 40mm
STY-N4.0-16-2NGBD	1	Knuckle Joint 16mm x 4.0mm
STY-N10.0-9-2NTHC	1	Holder for 5 M2 Styli
STY-N0.9NWSE	1	Hexagon Key 0.9mm
STY-N1.0NWST	2	Pin Key 1.0mm
STY-N2.5NWKR	1	Cross-Point Key 2.5mm
STY-N60-6NBB	1	Screw M6
STY-N60-8NBB	1	Screw M8
STY-N60-10NBB	1	Screw M10
Each reference sphere includes a certificate indicating its exact diameter and tolerance.		

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 OEM Stylus Kit
 Reference Spheres

OEM M2 Stylus/Sphere Kit, 24 Pieces RS

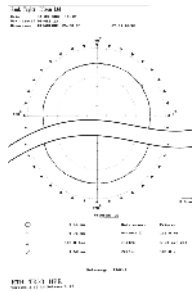
SOLUTIONS®
"How it works"

OEM stylus kits include one Type B reference sphere in your choice of diameter and a diverse selection of the most requested styli and accessories needed to carry out even the most complicated measurements.

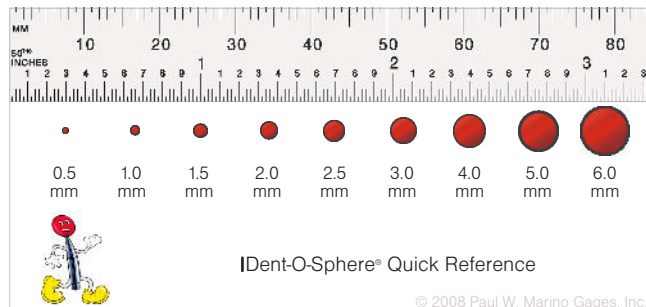
The threaded storage plate contains several extra recesses allowing for the expansion or customization of standard kits.

A well-built wooden case that protects your collection from dust or damage is also included.

M3, M4 and M5 kits are also available. Contact us for details.



Each reference sphere includes a certificate indicating its exact diameter and tolerance.



Reference Spheres
OEM Stylus Kit
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RS

Probe Heads



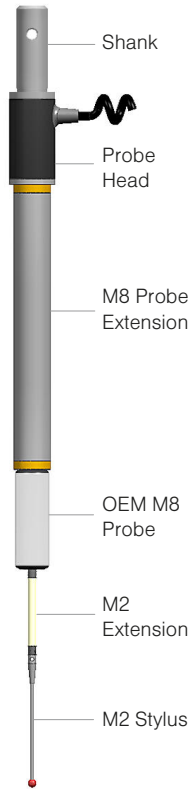
- ⊕ Probe Head
- ⊕ Cables are mounted
- ⊕ Order the holding shaft of your choice from page 165.

Order No.	Type	Cable Range
STY-N100ANTK16	A	100-300 mm
STY-N250ANTK16	A	250-750 mm
STY-N500ANTK16	A	500-1500 mm

SOLUTIONS® "How it works"

Be creative and add probe extensions, stylus extensions, knuckles, adapters and styli to design a configuration that meets your requirements.

Shanks, shown on the next page, hold the probe head in the CMM. Probe head cables are fixed. Please order the correct length cable and the correct diameter shank for your CMM.



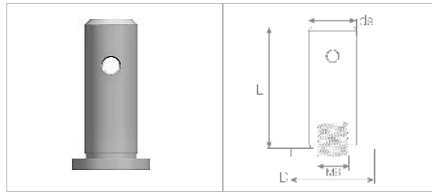
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 Probe Heads



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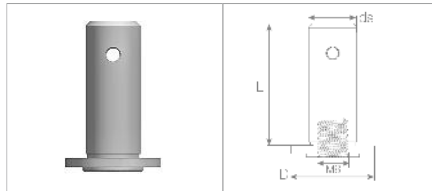
Mounting Shank / Probe Heads Type "A" RS



- ⊕ Probe head shank adapters
- ⊕ Stainless Steel
- ⊕ Specify shank diameter (see "ds" column below)

Order No.	L	ds	D
STY-N9.5-25.4NASA	25.4	9.5	14.0
STY-N9.5-43.9NASA	43.9	9.5	14.0
STY-N10.0-36.7NASA	36.7	10.0	14.0
STY-N10.0-45.6NASA	45.6	10.0	14.0

Mounting Shank / Probe Head Type "B"



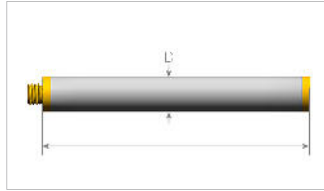
- ⊕ Probe head shank adapters
- ⊕ Stainless Steel
- ⊕ Specify shank diameter (see "ds" column below)

Order No.	L	ds	D
STY-N12.0-50.0NASB	50.0	12.0	22.0
STY-N12.7-31.7NASB	31.7	12.7	22.0
STY-N12.7-38.1NASB	38.1	12.7	22.0
STY-N14.0-40.0NASB	40.0	14.0	22.0
STY-N14.0-50.0NASB	50.0	14.0	22.0
STY-N15.0-26.0NASB	26.0	15.0	22.0
STY-N15.0-56.0NASB	56.0	15.0	22.0
STY-N16.0-35.0NASB	35.0	16.0	22.0
STY-N20.0-25.0NASB	25.0	20.0	33.0
STY-N20.0-45.0NASB	45.0	20.0	33.0
STY-N25.0-32.0NASB	32.0	25.0	33.0
STY-N25.0-50.8NASB	50.8	25.0	33.0
STY-N25.0-85.0NASB	85.0	25.0	33.0

Reference Spheres
Shanks for Probe Heads
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RS

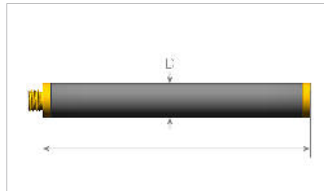
Probe Extensions, Aluminum



- ⊕ Aluminum
- ⊕ Thread: M8

Order No.	L	D	Wt.
STY-N50NVMA	50.0	13.0	22g
STY-N100NVMA	100.0	13.0	30g
STY-N150NVMA	150.0	13.0	35g
STY-N200NVMA	200.0	13.0	45g
STY-N300NVMA	300.0	13.0	58g

Probe Extensions, Stainless Steel



- ⊕ Stainless Steel
- ⊕ Thread: M8

Order No.	L	D	Wt.
STY-N50NVMS	50.0	13.0	30g
STY-N100NVMS	100.0	13.0	50g
STY-N150NVMS	150.0	13.0	75g
STY-N200NVMS	200.0	13.0	95g

Probe Extensions
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Reference Spheres

SOLUTIONS®
How it works

Slim lines provide unobstructed access.



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Probe Extensions, Carbon Fiber

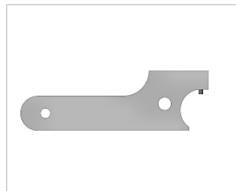
RS



- ⊕ Carbon Fiber
- ⊕ Thread: M8
- ⊕ Used with small or large diameter probes

Order No.	L	D	Wt.
STY-N50NVMC	50.0	13.0	20g
STY-N100NVMC	100.0	13.0	22g
STY-N150NVMC	150.0	13.0	24g
STY-N200NVMC	200.0	13.0	26g
STY-N300NVMC	300.0	13.0	32g
STY-N300-20NVMC	300.0	20.0	39g
STY-N400NVMC	400.0	13.0	95g
STY-N400-20NVMC	400.0	20.0	105g
STY-N500-20NVMC	500.0	20.0	115g

Tools for Probe Extensions



- ⊕ Hook spanner
- ⊕ Used to tighten probe extensions
- ⊕ Supplied in packs of two spanners

Order No.	L	Diameter
STY-N13.0NWA	57.0	13.0

SOLUTIONS® "How it works"

Use proper tools for proper assembly and extend the life of your probes and styli. More tools can be found on pages 40-42.



STY-R70S8



STY-N1.0NWST



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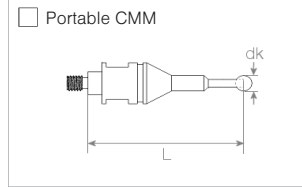
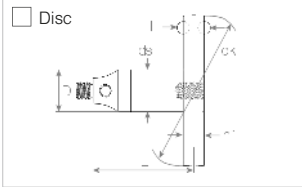
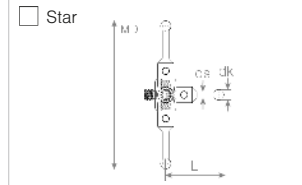
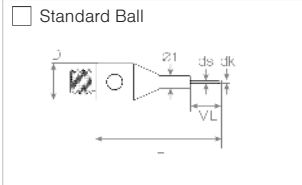
Phone (586) 759-2400
www.pmarginc.com

Fax: (586) 759-2423
pwminc@covad.net

RS

Specification Form for Special Styli

Check box for the style needed:



Enter Dimensions (fill out as completely as possible, not all will apply)

dk mm	ds mm	L mm	ML mm	H mm	MD mm	D mm	Thread	Qty
CMM				Head				

Ball Material	Shank Material	Ferrule Material
Ruby	Stainless Steel	Stainless Steel
Carbide	Carbide	Aluminum
Ceramic	Ceramic	
Sapphire	Carbon Fiber	
Notes:		

Custom Stylus Form
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Reference Spheres

Contact Information:

Company _____

Contact _____

Phone _____ Fax _____

Email _____ Reqd. Dely. _____

Please fill out this form as completely as possible and return to the fax number below. This form is also available at our website. Please make copies as needed, or attach your own drawing.