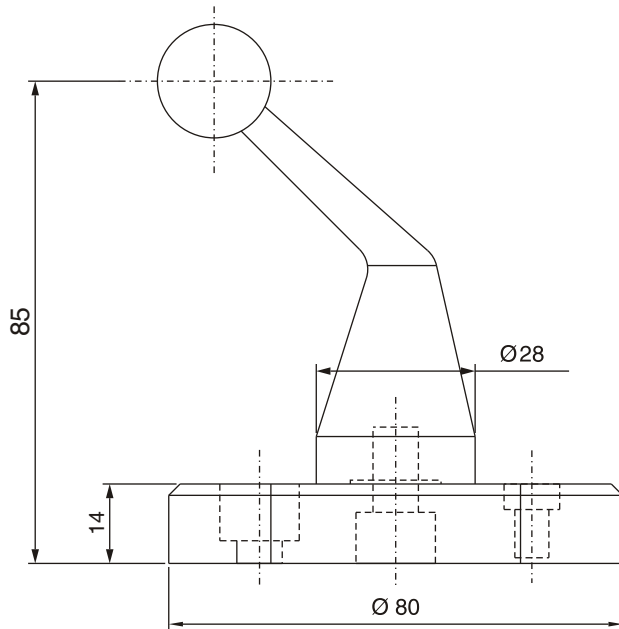


REFERENCE SPHERES

Reference spheres
Reference spheres with base plate (Type A)

Probing from all 6 semi-axes.



Order No.	Ball Material	Ball-Ø mm
15 NRKA	Ceramic	15.0
20 NRKA	Ceramic	20.0
25 NRKA	Ceramic	25.0
30 NRKA	Ceramic	30.0
25 NRSA	Steel	25.0

Supplied equipment:

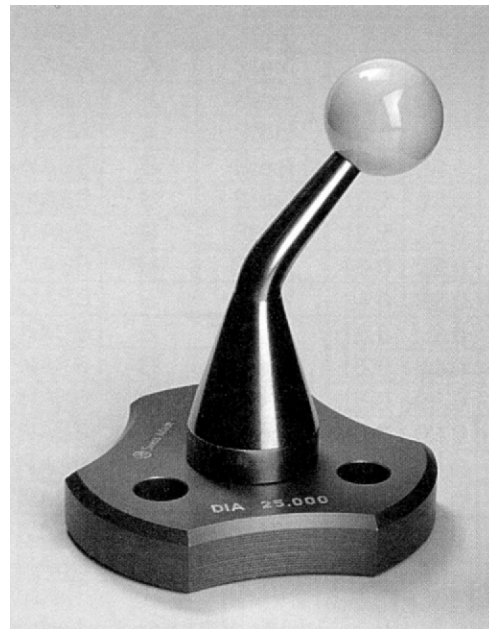
- Ball holder bent 45° with reference sphere L=85mm
- Base plate with 3-Point stand (see draw. Page 75)
- Extension L=70mm (see draw. Page 75)
- Fixing screws (1X M6, 1X M8, 1X M10)
- Test certificate

Technical data:

Each reference sphere is supplied with a test certificate with exact diameter and roundness values of the ball.

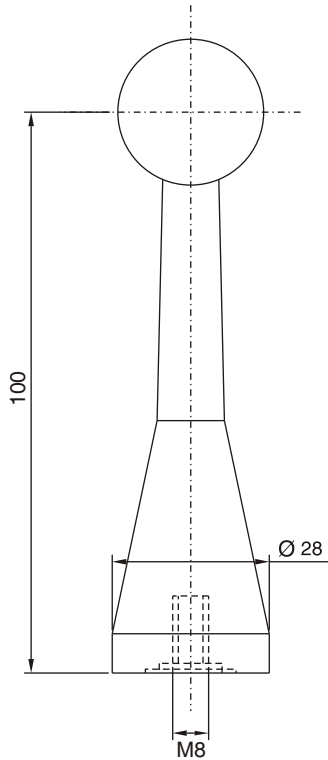
Ceramic-Ball Ø	Material	Form-deviation
15.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
20.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
25.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
30.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm

Steel-Ball Ø	Material	Form-deviation
25.0 mm	Steel AISI440C	< 0.25 µm



REFERENCE SPHERES

Reference spheres	Order No.	Ball Material	Ball-Ø mm
Reference spheres (Type B)	15 NRKB	Ceramic	15.0
	20 NRKB	Ceramic	20.0
	25 NRKB	Ceramic	25.0
	30 NRKB	Ceramic	30.0
	25 NRSB	Steel	25.0



Supplied equipment:

- Ball holder with reference spheres L=100mm
- Test certificate

Please order the appropriate size Fixing bolt to your CMM (Page 75).

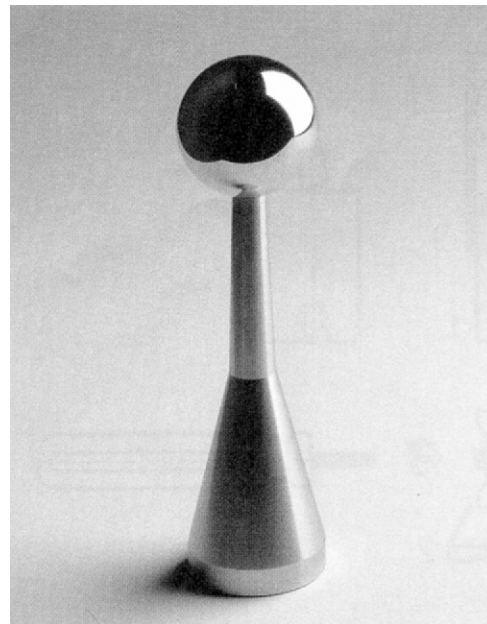
Extensions see Page 75.

Technical data:

Each reference sphere is supplied with a test certificate with exact diameter and roundness values of the ball.

Ceramic-Ball Ø	Material	Form-deviation
15.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
20.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
25.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
30.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm

Steel-Ball Ø	Material	Form-deviation
25.0 mm	Steel AISI440C	< 0.25 µm



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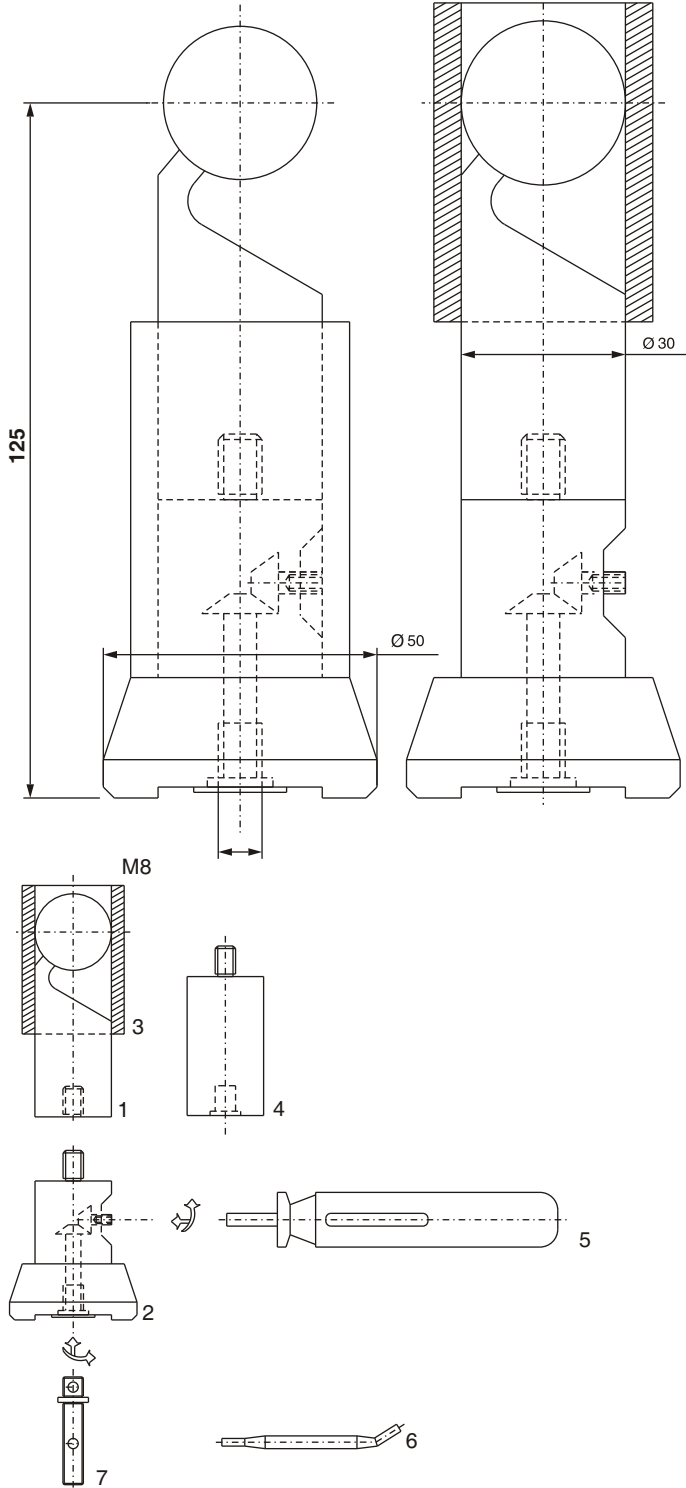
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REFERENCE SPHERES

Reference spheres

Reference spheres (Type C)

Probing from all 6-semi axes.
Can be fixed to the surface plate with angle gear.



Order No.	Ball Material	Ball-Ø mm
15 NRKC	Ceramic	15.0
20 NRKC	Ceramic	20.0
25 NRKC	Ceramic	25.0
30 NRKC	Ceramic	30.0
25 NRSC	Steel	25.0

Supplied equipment:

- 1) Ball holder bent 45° with reference sphere
L=125mm
- 2) Base plate with angle gear and 3-point stand
- 3) Sliding sleeve to protect the reference sphere
- 4) Extension L=50mm (see draw. Page 75)
- 5) Hexagon key 3.0mm
- 6) Pin key 2.9mm (see draw. Page 60)
- 7) Fixing bolts (1X M6, 1X M8, 1X M10. draw (Page 75))

-Test certificate

Technical data:

Each reference sphere is supplied with a test certificate with exact diameter and roundness values of the ball.

Ceramic-Ball Ø	Material	Form-deviation
15.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
20.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
25.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
30.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm

Steel-Ball Ø	Material	Form-deviation
25.0 mm	Steel AISI440C	< 0.25 µm



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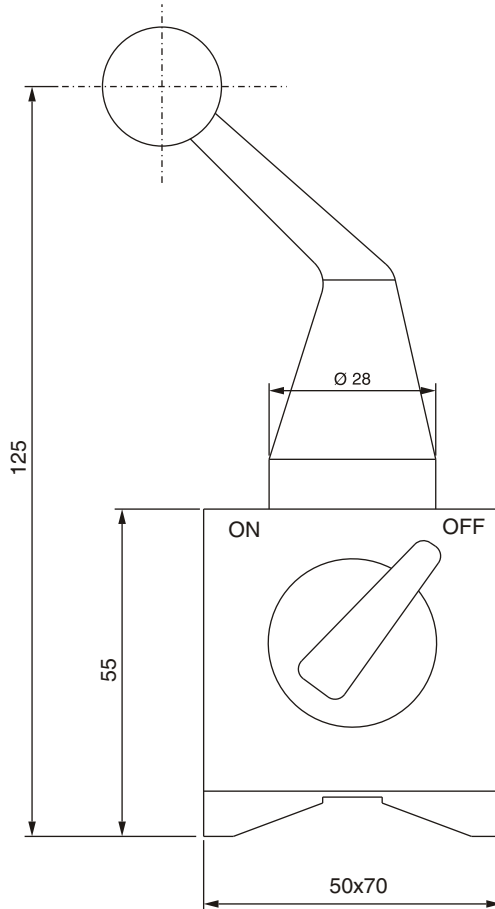
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REFERENCE SPHERES

Reference spheres
Reference spheres with magnetic base (Type D)

Order No.	Ball Material	Ball-Ø mm
15 NRKD	Ceramic	15.0
20 NRKD	Ceramic	20.0
25 NRKD	Ceramic	25.0
30 NRKD	Ceramic	30.0
25 NRSD	Steel	25.0

Probing from all 6-semi axes.



Supplied equipment:

- Ball holder bent 45° with reference sphere L=125mm
- Magnetic base (with on/off switch)
- Extension L=70mm (see draw. Page 75)
- Test certificate

Technical data:

Each reference sphere is supplied with a test certificate with exact diameter and roundness values of the ball.

Ceramic-Ball Ø	Material	Form-deviation
15.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
20.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
25.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
30.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm

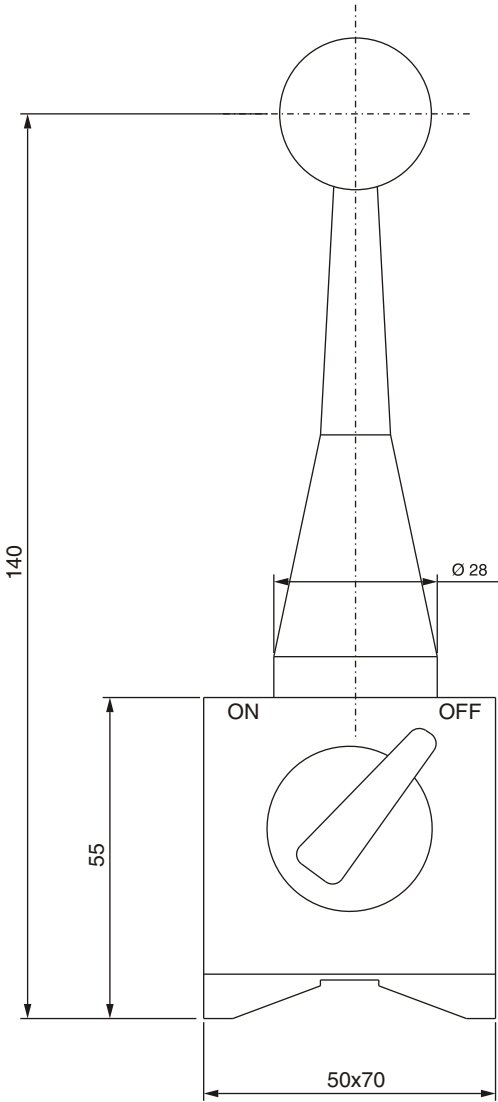
Steel-Ball Ø	Material	Form-deviation
25.0 mm	Steel AISI440C	< 0.25 µm

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REFERENCE SPHERES

Reference spheres	Order No.	Ball Material	Ball-Ø mm
Reference spheres with magnetic base (Type E)	15 NRKE	Ceramic	15.0
	20 NRKE	Ceramic	20.0
	25 NRKE	Ceramic	25.0
	30 NRKE	Ceramic	30.0
	25 NRSE	Steel	25.0



Supplied equipment:

- Ball holder with reference sphere L=155mm
- Magnetic base (with on/off switch)
- Extension L=70mm (see draw. Page 75)
- Test certificate

Technical data:

Each reference sphere is supplied with a test certificate with exact diameter and roundness values of the ball.

Ceramic-Ball Ø	Material	Form-deviation
15.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
20.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
25.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
30.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm

Steel-Ball Ø	Material	Form-deviation
25.0 mm	Steel AISI440C	< 0.25 µm

REFERENCE SPHERES

Reference spheres	Order No.	Ball Material	Ball-Ø mm
Reference spheres for spark machine (Type F)	245 NRKF	TC	2 / 4 / 5

Electrically conductive reference spheres.

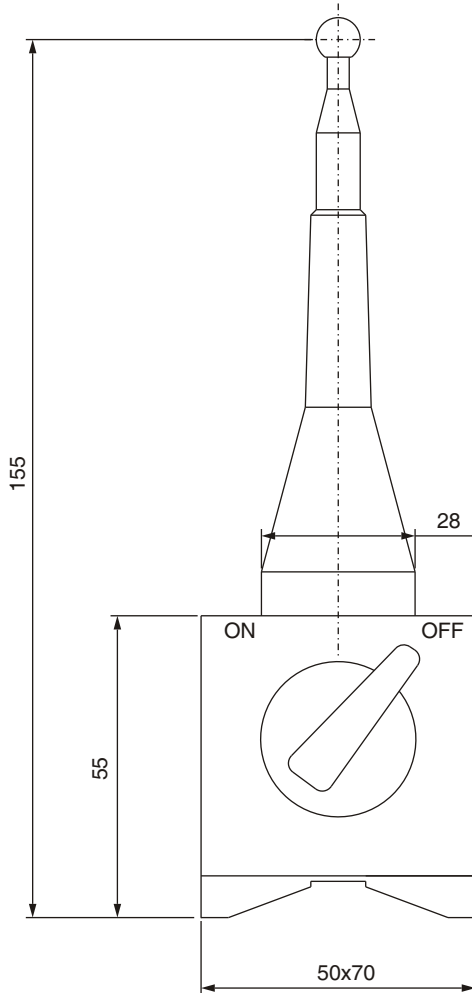
Supplied equipment:

- Ball holder with reference sphere
L=155mm
- 3 reference spheres exchangeable
(1XØ2mm, 1XØ4mm, 1XØ5mm)
- Magnetic base (with on/off switch)
- Extension L=70mm (see draw. Page 75)

Technical data of reference spheres:

Diameter tolerance: $\pm 1 \mu\text{m}$
Form deviation: $< 0.25 \mu\text{m}$

TC=Tungsten Carbide



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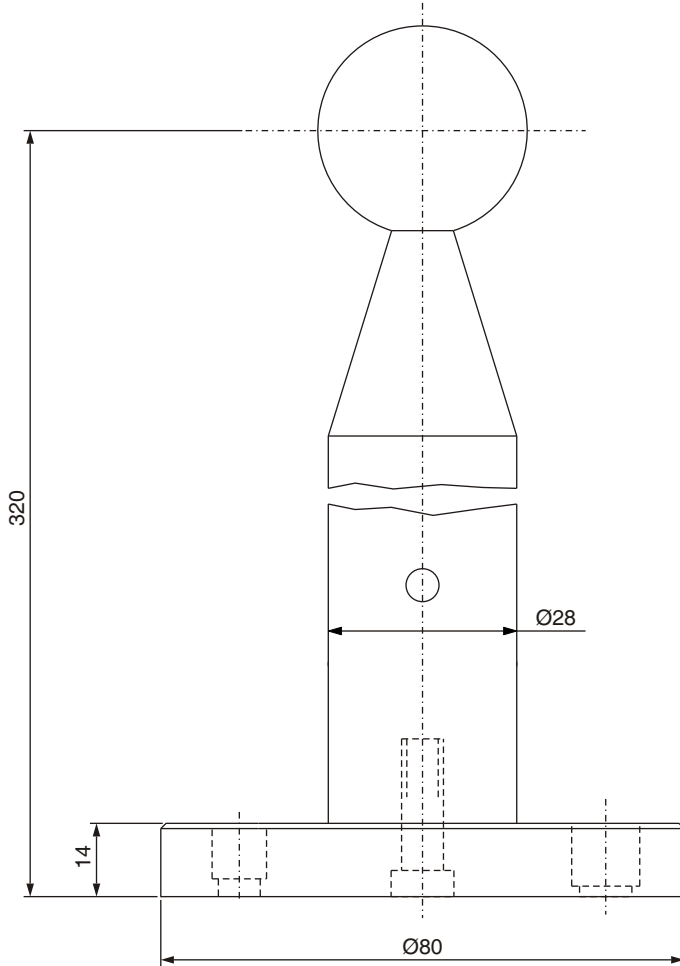
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REFERENCE SPHERES

Reference spheres
Reference spheres with base plate (Type G)

Order No.	Ball Material	Ball-Ø mm
20 NRKG	Ceramic	20.0
25 NRKG	Ceramic	25.0
30 NRKG	Ceramic	30.0
50 NRKG	Ceramic	50.0
25 NRSK	Steel	25.0

Large design.



Supplied equipment:

- Ball holder with reference sphere
L=320mm
- Base plate
- Extension L=200mm (see draw. below)
- Fixing screws(1X M6, 1X M8, 1X M10)
- Test certificate

Technical data:

Each reference sphere is supplied with a test certificate with exact diameter and roundness values of the ball.

Ceramic-Ball Ø	Material	Form-deviation
20.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
25.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
30.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm
50.0 mm	Ceramic Al ₂ O ₃	< 0.25 µm

Steel-Ball Ø	Material	Form-deviation
25.0 mm	Steel AISI440C	< 0.25 µm

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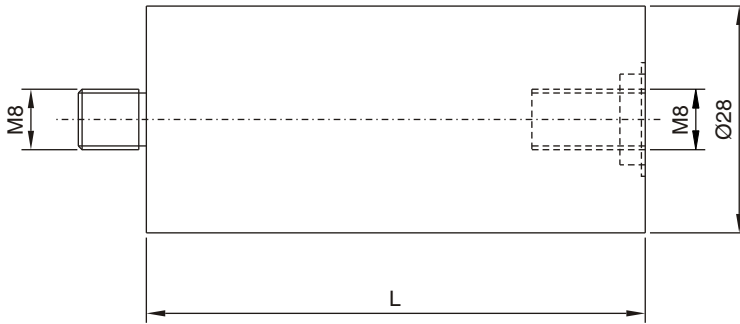
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REFERENCE SPHERES

Accessories

Extension

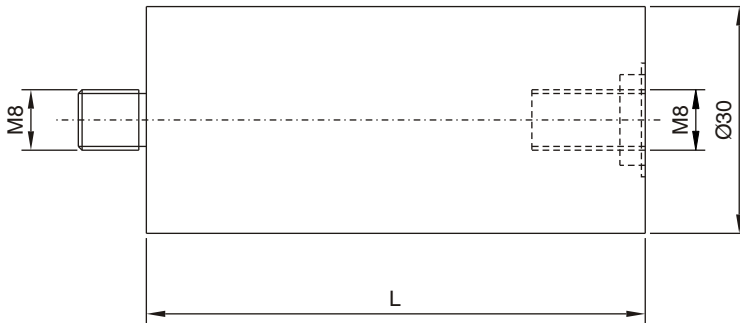
Order No.	Material	L mm
70 NVRA	Steel	70
100 NVRA	Steel	100
200 NVRA	Steel	200



For use with **Reference spheres (Type A, B, D, E, F).**

Extensions

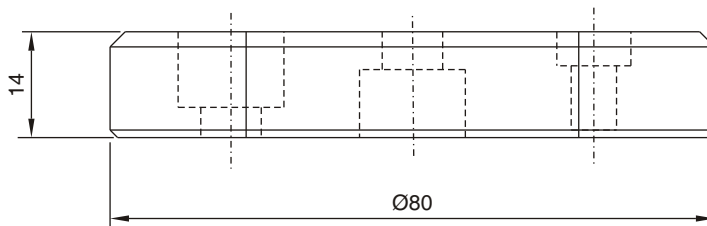
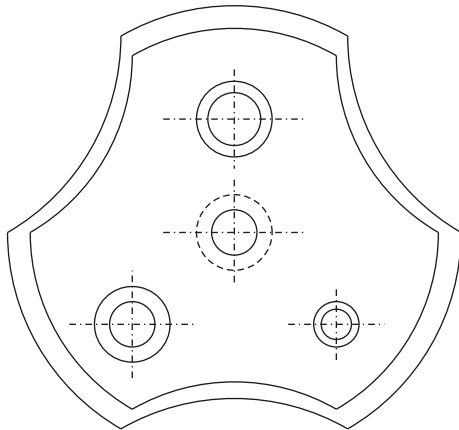
Order No.	Material	L mm
50 NVRC	Aluminium	50.0
100 NVRC	Aluminium	100.0



For use with **Reference spheres (Type C).**

Base plate with 3-point stand

Order No.	Material
80 NGRA	Aluminium

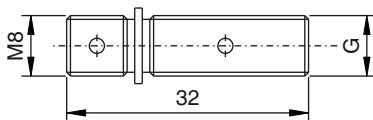


For use with **Reference spheres (Type A, B).**

Delivered with fixing screws(1X M6, 1X M8, 1X M10).

Fixing bolts

Order No.	Thread G
60-6 NBB	M6
60-8 NBB	M8
60-10 NBB	M10
60-1-4 NBB	1/4-20 UNC
60-3-8 NBB	3/8-16 UNC



For use with **Reference spheres (Type B, C).**
Other thread sizes are available. Please contact us for details.

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