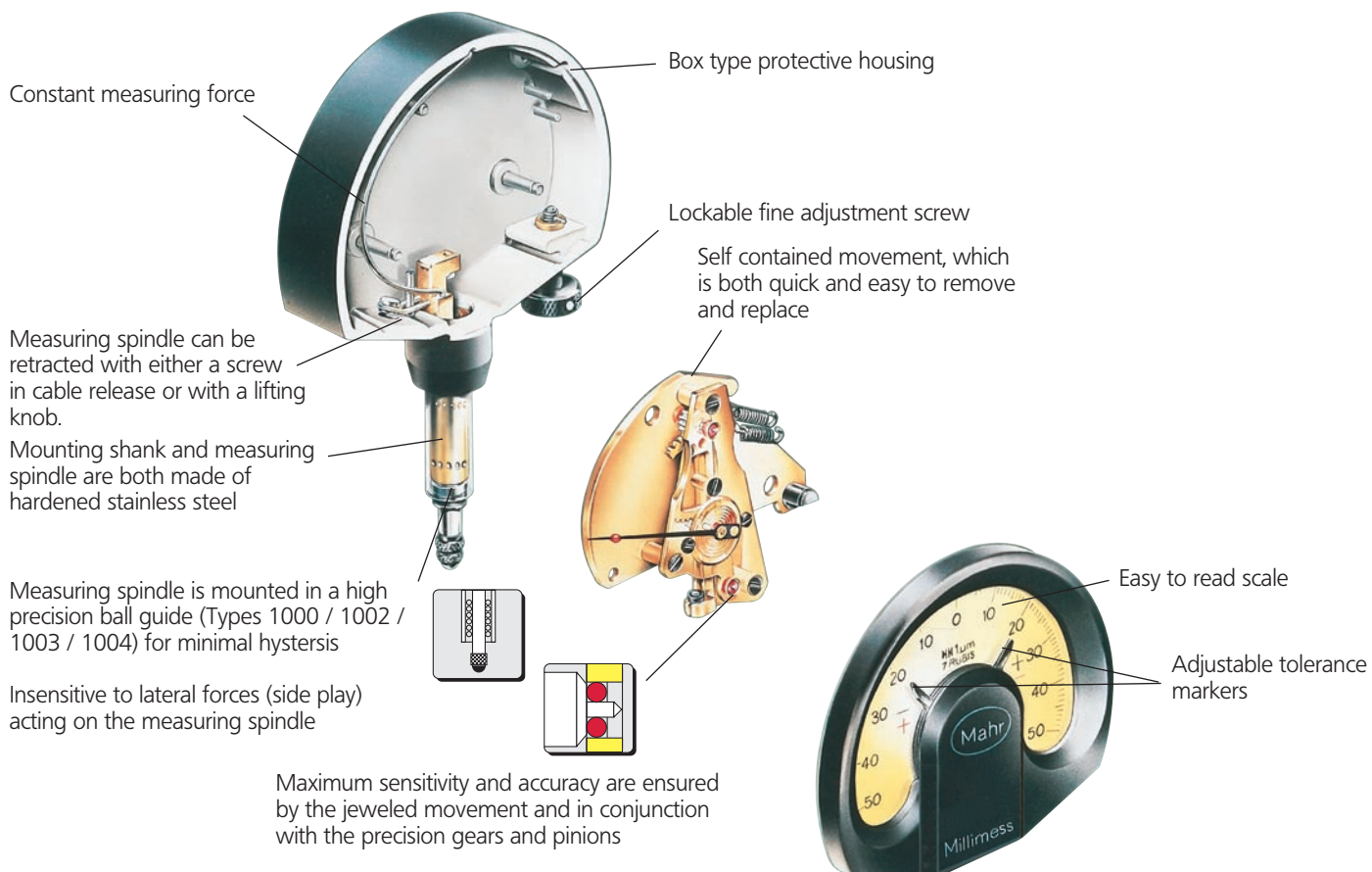


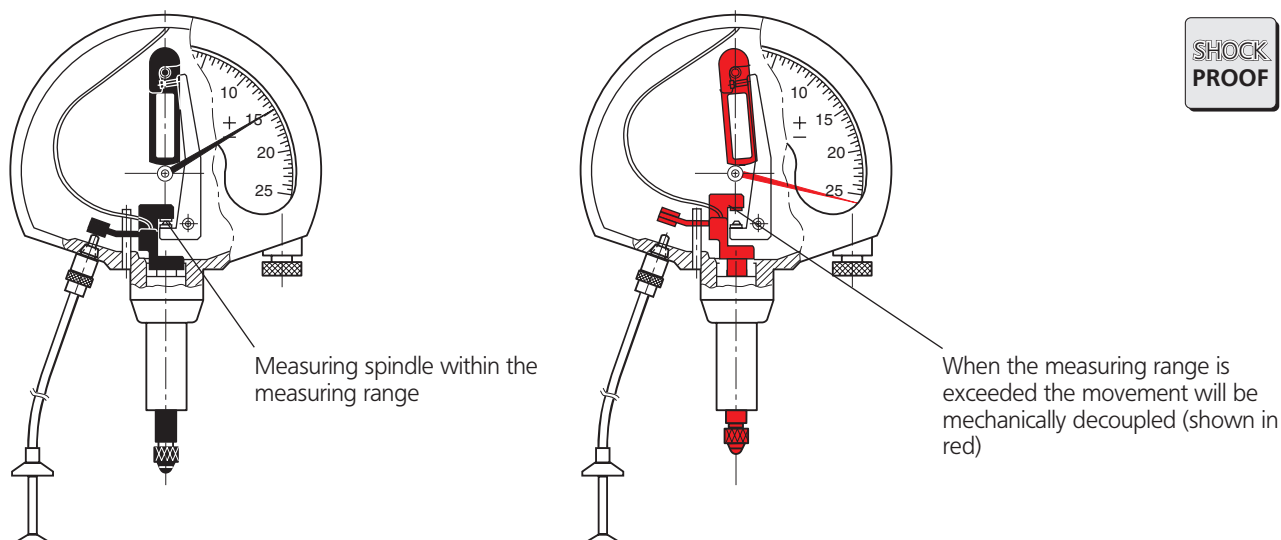
Millmess. Dial Comparators

Overview

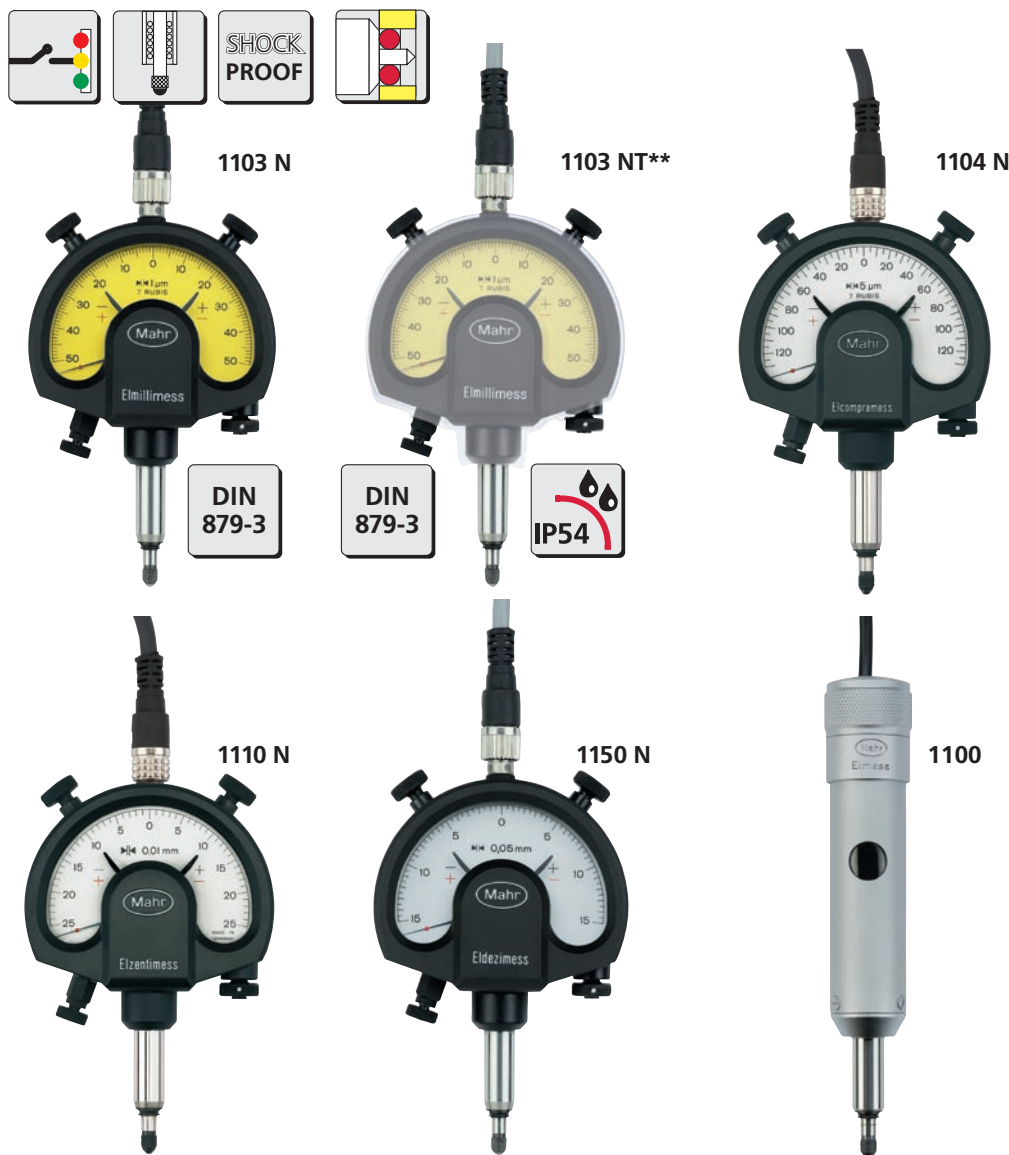
Design Features



Shockproof Mechanism



Mechanical Dial Comparators and Electrical Comparator with limit contacts



Features

- Can be applied for example as tolerance control or as a precision contactor in automatic control systems
- Design features are identical with Mechanical Dial Comparators, but with the addition of adjustable limit contacts; made from high-grade precious metal
- Limit contacts are particularly well protected against vibration and mechanical overload

Technical Data

Metric		Measuring range	Readings	Over-travel	Measuring force	Order no. Standard*	Order no. Waterproof**
1103 N	Elmillimess	$\pm 50 \mu\text{m}$	$1 \mu\text{m}$	2.8 mm	2 N	4345100	4345105
1104 N	Elcompramess	$\pm 0.13 \text{ mm}$	$5 \mu\text{m}$	2.5 mm	2 N	4344100	4344105
1110 N	Elzenthimess	$\pm 0.25 \text{ mm}$	0.01 mm	2.3 mm	2 N	4343100	4343105
1150 N	Eldezimess	$\pm 1.5 \text{ mm}$	0.05 mm	0.3 mm	1.5 N	4342100	4342105
Inch							
1103 NZ	Elmillimess	$\pm .0020''$	$.00005''$	$.11''$	2 N	4345910	4345915
1104 NZ	Elcompramess	$\pm .0050''$	$.0001''$	$.10''$	2 N	4344910	4344915
1110 NZ	Elzenthimess	$\pm .0100''$	$.0005''$	$.10''$	2 N	4343910	4343915
		Measuring range		Overtravel	Measuring force	Order no.	
1100	Elmess	$\pm 0.4 \text{ mm}$		2 mm	1.5 N	4340000	

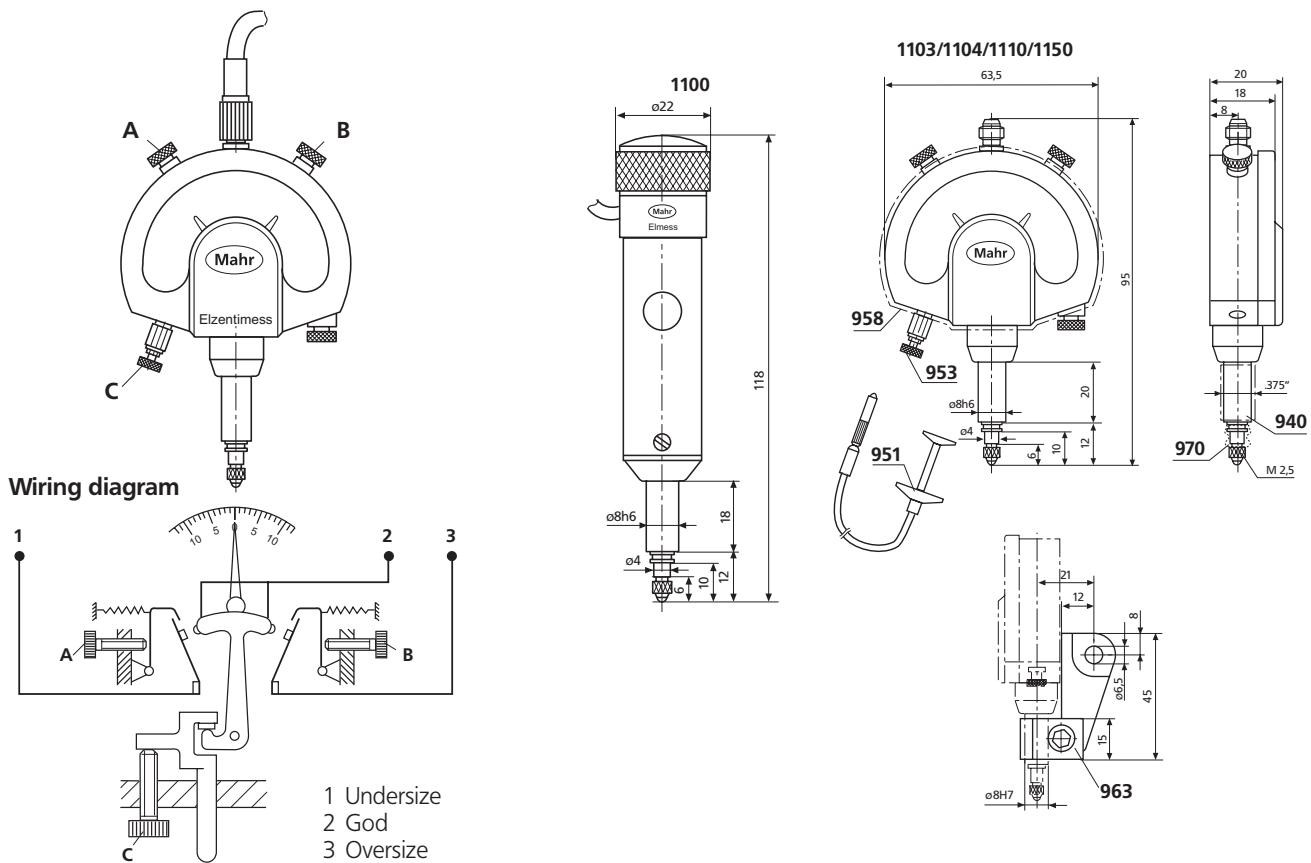
* Incl. Plastic Case, Setting Knob 953, Cable (1.2m); Adapter 940 (for inch instruments only)

** IP54, Incl. Plastic Case, Splash Guard Cover 957, Rubber Bellows (only for 1103/1110); Adapter 940 (for inch instruments only)

Mechanical Dial Comparators and Electrical Comparator with limit contacts

Electrical Specifications

	Contact uncertainty with non-inductive load of 10 mA/24V	max. contact rating	max. contact voltage	max. contact current
1103 N	+/- 0.3 μm	240 mW	24 V	100 mA
1104 N	+/- 0.75 μm			
1110 N	+/- 1.5 μm			
1150 N	+/- 7 μm			
1100	+/- 0.3 μm			



Accessories

	Order no.			Order no.	
Connection Cable (1.2 m), axial		4345695	Splash Guard Cover	958	4373031
Connection Cable (5 m), axial		4345694	Rubber Bellows to seal the open end of the measuring spindle	970	4334786
Adapter Bush for adapting mounting shank 8h6 mm to inch bore .375"	940	4310103	Mounting Lug to mount on mounting shank 8h6 mm	963	4375002
Cable Release to raise the measuring spindle	951	4372000			
Setting Knob for setting the limit contacts without an additional setting standard	953	4372020			
Lifting Knob for lifting the measuring spindle	954	4372030			
			Additional Accessories		Page
			Contact Points	901-913	5-52
			Special Holder	941	5-53
			Sensor Lever	943	5-53

Contact Points and Accessories for Dial Indicators, Dial Comparators and Probes

Standard Contact Points 901

Ball dia. 3 mm

Catalog no.		Order no.
901	with steel ball	4360001
901 H	with carbide ball	4360002
901 R	with ruby ball	4360003

Spherical Contact Points 902

Flat Contact Points 903

902 Steel	902 H Carbide contact face	903 Steel	903 H Carbide tipped
Length mm	Order no.	Order no.	Order no.
4	4360007	—	—
6	4360009	—	—
8	4360010	4360040	4360101
10	4360011	4360041	4360102
12	4360012	4360042	4360103
15	4360013	4360043	4360104
20	4360014	4360044	4360105
25	4360015	4360045	4360106
30	4360016	4360046	4360107
35	4360017	4360047	4360110
40	4360019	4360049	4360108
45	4360026	4360050	4360111
50	4360018	4360048	—
55	4360031	4360079	4360109
65	4360035		
75	4360020		
85	4360036		
95	4360029		

Ball Contact Point 906 H

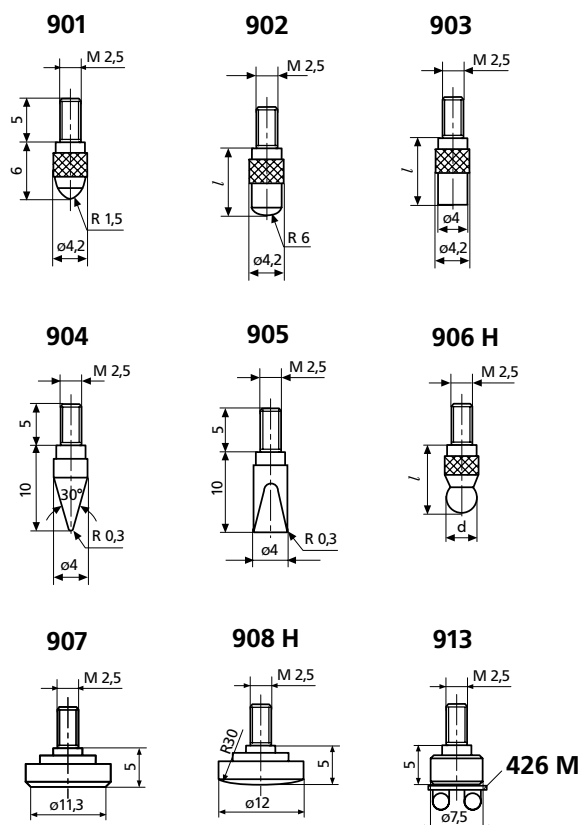
with carbide ball. accuracy ball dia. 0/-6µm

Ball dia. d mm	l mm	Order no.	Ball dia. d mm	l mm	Order no.
1	8.5	4360150	5.5	9	4360161
1.25	8.5	4360151	6	9	4360162
1.5	8.5	4360152	6.35 (1/4")	9	4360163
1.75	8.5	4360153	6.5	10	4360164
2	8.5	4360154	7	10	4360165
2.5	8.5	4360155	7.5	11	4360166
3	8.5	4360156	8	11	4360167
3.5	8.5	4360157	8.5	12	4360168
4	8.5	4360158	9	12	4360169
4.5	8.5	4360159	10	13	4360170
5	9	4360160			

Contact Rollers 909

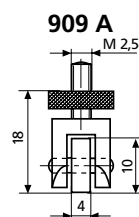
Concentricity error 3 µm

	Order no.
Cylindrical Roller	909 A 4360220
Radiused Roller, R = 5 mm	909 B 4360221



Special Contact Points

	Order no.
Conical Contact Points, Steel	904 4360130
Carbide tipped	904 H 4360131
Wedge Shaped Contact Points, Steel	905 4360140
Carbide tipped	905 H 4360141
Flat Contact Points, Steel, A = 1 cm²	907 4360200
Carbide tipped, dia. 7 mm	907 H 4360201
Spherical Contact Points, Steel	908 4360210
Carbide tipped	908 H 4360211
Flat Contact Point, for mounting Pin Gage Holder 426 M for measuring threads using three-wire method	913 4360400



Contact Points and Accessories for Dial Indicators, Dial Comparators and Probes

Measuring Attachment 910 H

	Order no.
with parallel adjustable carbide blades	910 H 4360230

Pin Contact Point 911

dia. 1 mm, flat

Length l mm	Order no.	Length l mm	Order no.
15	4360280	35	4360284
20	4360281	40	4360285
25	4360282	50	4360286
30	4360283		

Pin Contact Point 911 H

	Order no.
Carbide tipped, dia 1 mm, flat	911 H1 4360240
Carbide tipped, dia 1.5 mm, flat	911 H2 4360241

Measuring Spindle Extensions 912

Length l mm	Order no.	Length l mm	Order no.
10	4360250	35	4360254
15	4360251	50	4360255
20	4360252	75	4360256
25	4360253	100	4360257

Special Holder 941

For all types of measuring equipment
For placing a dial indicator at a certain distance or angle
Travel of the measuring spindle 3 mm
Contact Point 901 (interchangeable)

Straight Holder 941 G

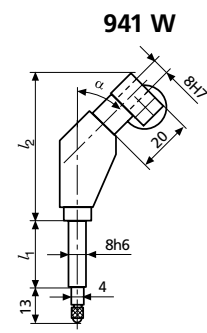
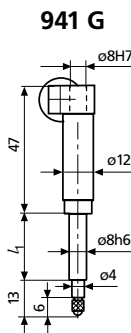
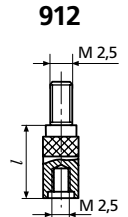
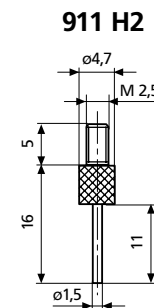
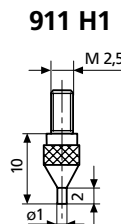
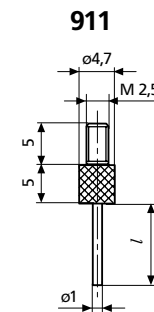
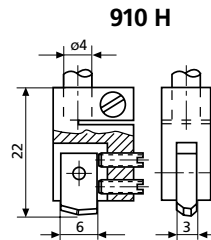
Mounting shank length l_1 mm	Order no.
25	4365000
50	4365001
75	4365002

Angular Holder 941 W

Order no.	l_2 mm	Order no.	l_2 mm	Order no.	l_2 mm
Angle $\alpha=45^\circ$		Angle $\alpha=60^\circ$		Angle $\alpha=90^\circ$	
4365010	53.7	4365020	49.3	4365030	34.5
4365011		4365021		4365031	
4365012		4365022		4365032	

Sensor Level 943

Order no.
For testing concentricity in bore holes as well as difficult to reach outside diameters To be inserted in a measuring stand with a lifting device Contact Point 901 interchangeable Travel ± 1 mm
4367000



Transmission error with the 941 W
max. 1%;
for travel 3 mm = 0.03 mm

