Data sheet
H-2000-2261-07-B

RENISHAW
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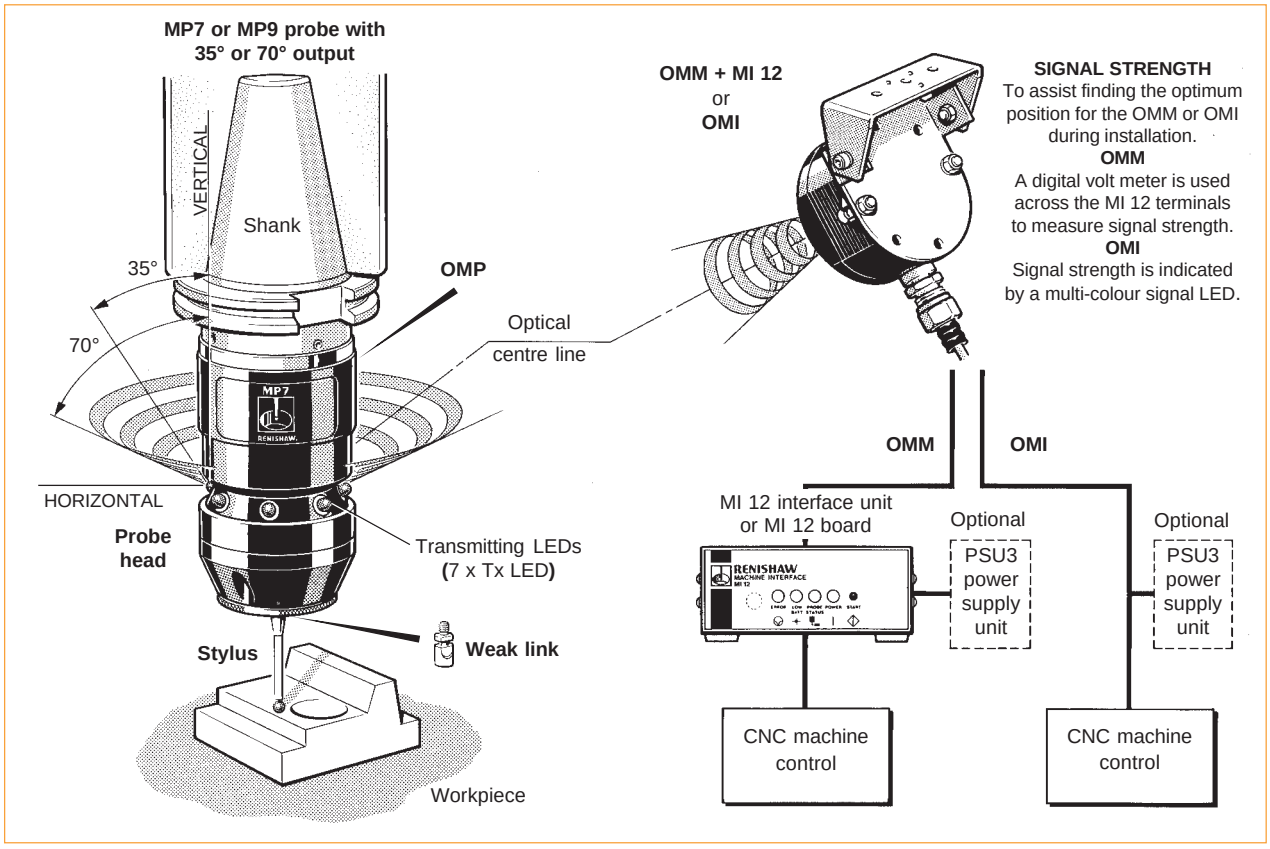
MP7 and MP9 probes



SYSTEM COMPONENTS

MP7 and MP9 probes
MP7 and MP9 probes are used for workpiece set-up and inspection on CNC machining centres.

OMM + MI 12 interface
Signals pass from the CNC control to the OMP via the MI 12 and OMM and return along the same route. The MI 12 interface converts probe signals into the correct format for the CNC machine control input.

OMM transmission and reception ranges are factory set to 100%. If OMM signals interfere with probes on other machines, then the optical range can be reduced.

OMI
An alternative to the OMM + MI 12 interface, combining the functions of both OMM and MI 12 in one unit.

PSU3 power supply unit for MI 12 or OMI
Used when 24 V supply is not available from the machine.

Software for probing routines
Renishaw single and double touch probing cycles are availble for use with Renishaw probe systems.

SYSTEM FEATURES

Signal transmission and probe power supply
MP7 and MP9 probes are available with their optical axes at 35° or 70° to the machine spindle centre line.

Power for the probe is supplied by a long life 9 V battery contained within the OMP (optical module probe).

Probe switch-on/off

Probe	Switch-on	Switch-off
MP7	Spin-on	Spin-off
MP9	Spin-on	Timer-off

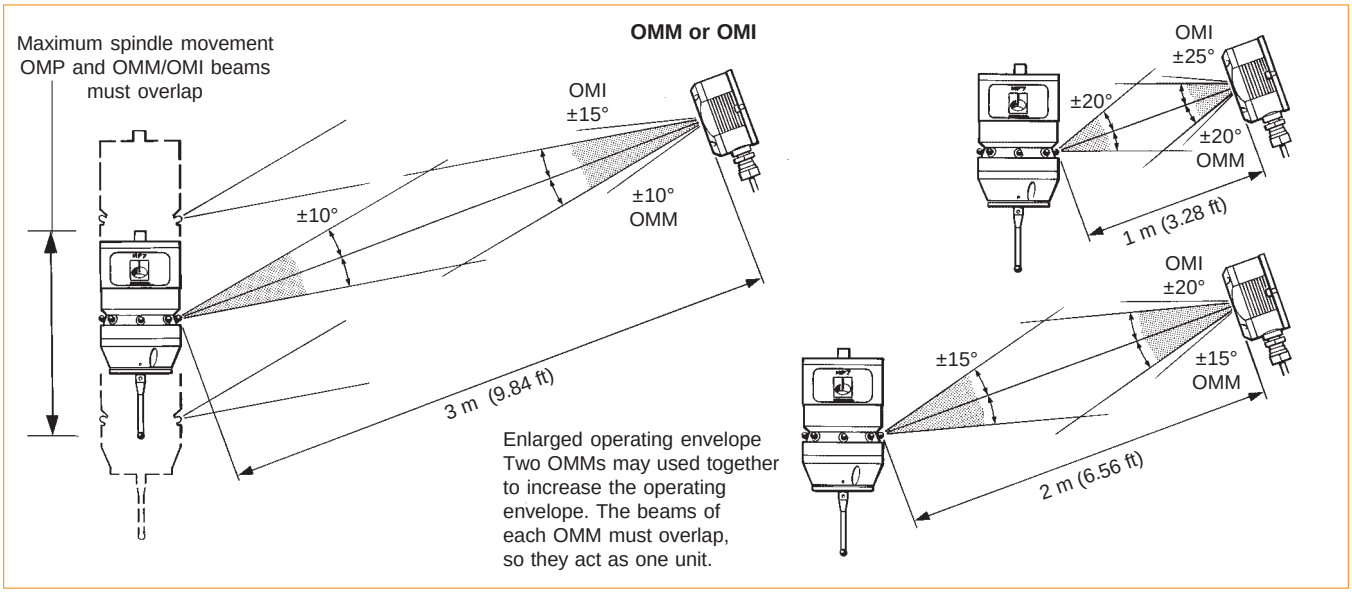
To suit different operating requirements the MP7 and MP9 each have a unique switch-off procedure. The operating envelopes are identical for each type.

Probe, OMM and OMI sealing
Sealed to IP68 and designed for the machine tool environment.

Break protection
A stylus weak link is included in each kit, to protect the probe in the event of excessive stylus overtravel.

Each system component is fully described on its own separate Data sheet - please see Parts list on back page.

Installation - probes with 35° or 70° output



OPERATING RANGE

Minimum	10 mm	(0.39 in)
Maximum	3 m	(9.84 ft)

OPERATING ENVELOPE

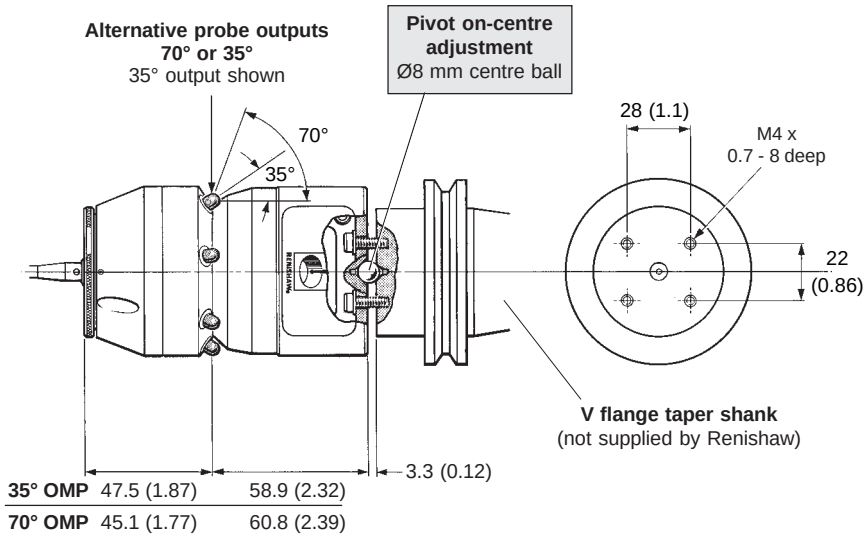
The OMP and OMM/OMI may deviate from the optical centre line, provided opposing light cones always overlap with transmitters and receivers mutually in each others field of view (eye to eye).

Natural reflective surfaces within the machine may increase the signal transmission range. Coolant residue accumulating on the OMP LEDs and OMM/OMI window, will have a detrimental effect on transmission performance.
Wipe clean as often as is necessary to maintain unrestricted transmission.

WARNING

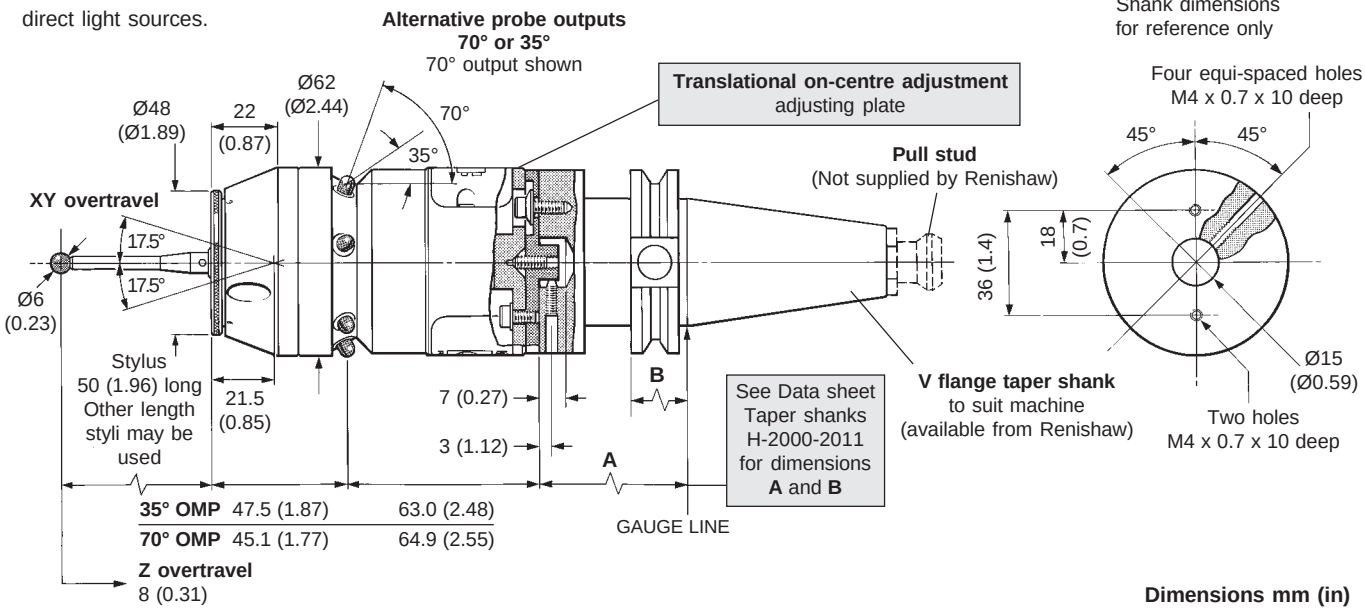
If two systems are operating in close proximity, take care to ensure that signals transmitted from the OMP on one machine, are not received by the OMM or OMI on the other machine, and vice versa. The OMM/OMI may have to be shielded from direct light sources.

MP7-9 with centre ball - optional



35° OMP	47.5 (1.87)	58.9 (2.32)
70° OMP	45.1 (1.77)	60.8 (2.39)

MP7-9 with adjusting plate assembly



35° OMP	47.5 (1.87)	63.0 (2.48)
70° OMP	45.1 (1.77)	64.9 (2.55)

Dimensions mm (in)

System operation

CAUTION

It is imperative that the program selected to 'drive' the probe has been verified. Incorrect programming could result in damage to the machine, workpiece and probe system.

The probe is programmed for use as any other tool in the system. Prior to a probing cycle, the probe is transferred from the tool magazine to the machine spindle for a workpiece set-up or inspection routine.

Modes of operation

Stand-by mode - The probe OMP uses a small current while passively waiting for switch on.

Operating mode - Activated by switch on. Probe signals are only transmitted during the operating mode.

MP7 probe

Switch on

The probe is mounted in the machine spindle and spun for a minimum of 1 second, and a maximum of 4 seconds, at 500 rev/min ±10%. A centrifugal switch switches the probe to operating mode.

Switch off

To switch off after use spin the probe for a minimum of 1 second, and maximum of 4 seconds, at 500 rev/min ±10%.

MP9 probe

Switch on

The probe is mounted in the machine spindle and spun for a minimum of 1 second, and a maximum of 4 seconds, at 500 rev/min ±10%. A centrifugal switch switches the probe to operating mode.

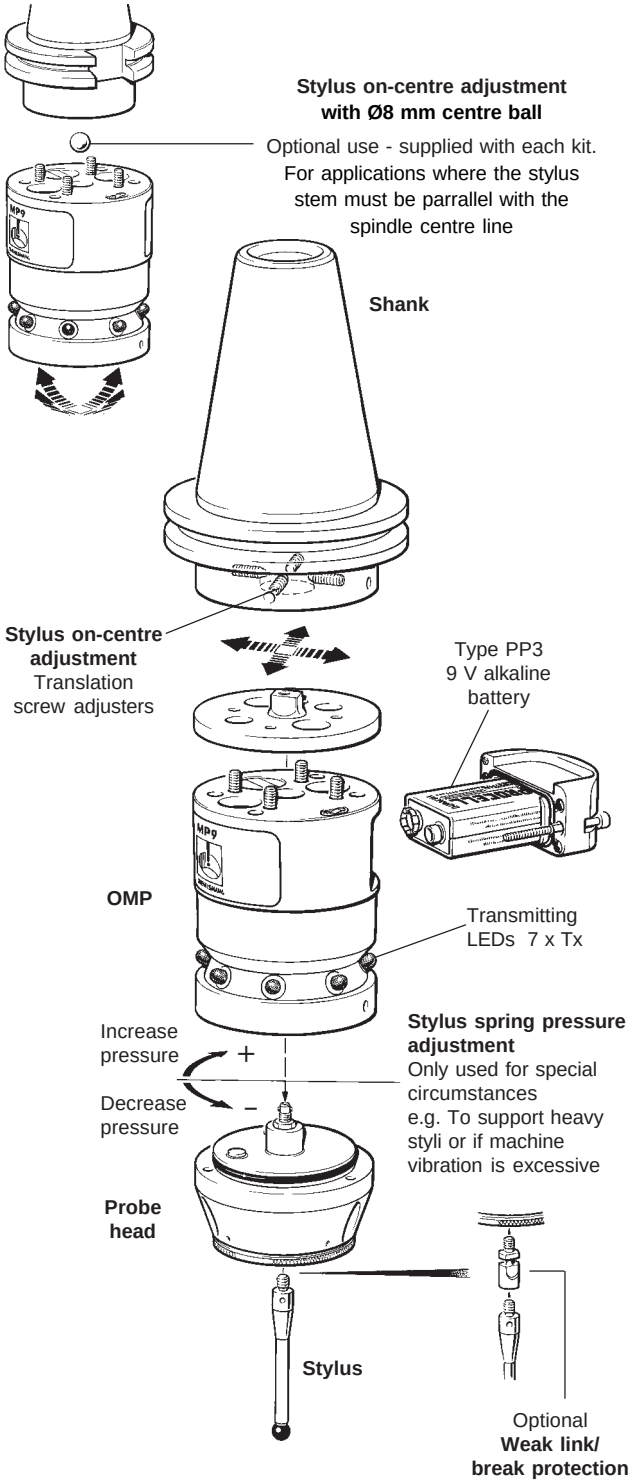
Switch off

A probe timer automatically switches power off 3 min ±1 min after switch on. Each probe trigger during this active 3 min time segment will reset the probe on for a further 3 min.

MP7 and MP9 time delays

Following probe switch on, a minimum of 7 seconds must elapse before switch off. A further minimum of 7 seconds must elapse before the probe can be switched on again.

Probe features



Battery life and low battery indication

Battery life depends on the operating time. When the system is in the operating mode, the MI 12 interface or OMI low battery LED will warn users when the end of battery life is approaching. The machine control may also be programmed to flag up a low battery alarm. After the low battery LED illuminates the probe may be used for a maximum 8 hours at 5% use, after which time the battery voltage drops below the threshold where performance can be guaranteed.

BATTERY LIFE EXPECTANCY	STAND-BY LIFE		5% USE - 72 min/day				CONTINUOUS LIFE	
			MP7		MP9		MP7 and MP9	
Battery Type	Minimum	Typical	Minimum	Typical	Minimum	Typical	Minimum	Typical
Alkaline ™ Duracell MN 1604 or equivalent	458 days	764 days	42 days	70 days	33 days	50 days	53 hrs	92 hrs

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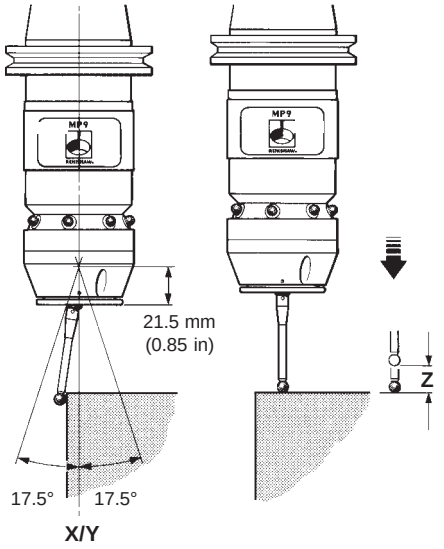
Specification



REPEATABILITY

Max 2 sigma (2σ) value

Repeatability of 1.0 µm (40 µin) is valid for test velocity of 480 mm/min (1.57 ft/min) at stylus tip, using stylus 50 mm (1.97 in) long.

STYLUS TRIGGER FORCE

Set at factory using stylus 50 mm (1.97 in) long.

X and Y trigger forces vary around the stylus seating.

X and Y direction - lowest force	0.75 N / 75 gf (2.64 ozf)
X and Y direction - highest force	1.4 N / 140 gf (4.92 ozf)
Z direction force	4.2 N / 420 gf (14.83 ozf)

Stylus overtravel limits			
Stylus length	**X**	**Y**	**Z**
50 mm (1.96 in)	21.5 mm (0.84 in)	21.5 mm (0.84 in)	8 mm (0.31in)
100 mm (3.93 in)	36.5 mm (1.43 in)	36.5 mm (1.43 in)	8mm (0.31in)

Parts List - Please quote the Part no. when ordering equipment

Type	Part No.	Description
MP7 system kit	A-2033-6410	MP7 35° probe + battery, stylus Ø6 x 50 mm, OMM, mounting bracket, MI 12 interface & tool kit.
MP7 system kit	A-2033-6411	MP7 70° probe + battery, stylus Ø6 x 50 mm, OMM, mounting bracket, MI 12 interface & tool kit.
MP7 system kit	A-2115-0020	MP7 35° probe + battery, stylus Ø6 x 50 mm, OMI, mounting bracket and tool kit.
MP7 system kit	A-2115-0021	MP7 70° probe + battery, stylus Ø6 x 50 mm, OMI, mounting bracket and tool kit.
MP7 probe	A-2033-0700	MP7 35° probe + battery, adjusting plate and tool kit.
MP7 probe	A-2033-0701	MP7 70° probe + battery, adjusting plate and tool kit.
MP7 probe	A-2033-0984	MP7 35° probe + battery, Ø8 centre ball and tool kit.
MP7 probe	A-2033-0985	MP7 70° probe + battery, Ø8 centre ball and tool kit.
MP9 system kit	A-2034-6001	MP9 35° probe + battery, stylus Ø6 x 50 mm, OMM, mounting bracket, MI 12 interface and tool kit.
MP9 system kit	A-2034-6002	MP9 70° probe + battery, stylus Ø6 x 50 mm, OMM, mounting bracket, MI 12 interface and tool kit.
MP9 system kit	A-2115-0022	MP9 35° probe + battery, stylus Ø6 x 50 mm, OMI, mounting bracket and tool kit.
MP9 system kit	A-2115-0023	MP9 70° probe + battery, stylus Ø6 x 50 mm, OMI, mounting bracket and tool kit.
MP9 probe	A-2034-0035	MP9 35° probe + battery, adjusting plate and tool kit.
MP9 probe	A-2034-0036	MP9 70° probe + battery, adjusting plate and tool kit.
MP9 probe	A-2033-0045	MP9 35° probe + battery, Ø8 centre ball and tool kit.
MP9 probe	A-2033-0046	MP9 70° probe + battery, Ø8 centre ball and tool kit.
Stylus	A-5000-3709	PS3-1C stylus Ø6 ball x 50 mm long with ceramic shaft.
Weak link kit	A-2085-0068	Kit comprising: two stylus weak link stems, spanner and instruction sheet.
Weak link stem	M-2085-0069	Stylus weak link stem for use with steel shaft styli.
Spanner	P-TL09-0003	Spanner for weak link stem.
Battery	P-BT03-0001	PP3 9 V alkaline battery.
Styli - standard M4	—	See Brochure **H-1000-3200** Styli and accessories.
Shank	—	See Data sheet **H-2000-2011** Taper shanks.
OMM	—	See Data sheet **H-2000-2275** OMM
MI 12 interface unit	—	See Data sheet **H-2000-2195** MI 12 interface unit.
OMI	—	See Data sheet **H-2000-2285** OMI (alternative to OMM + MI 12).
PSU3 power supply	—	See Data sheet **H-2000-2200** PSU3 power supply unit (optional).
Software	—	See Data sheet **H-2000-2289** Probe software for machine tools.

For worldwide contact details, please visit our main website at www.renishaw.com/contact

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