**Data sheet**
H-2000-2262-02-D

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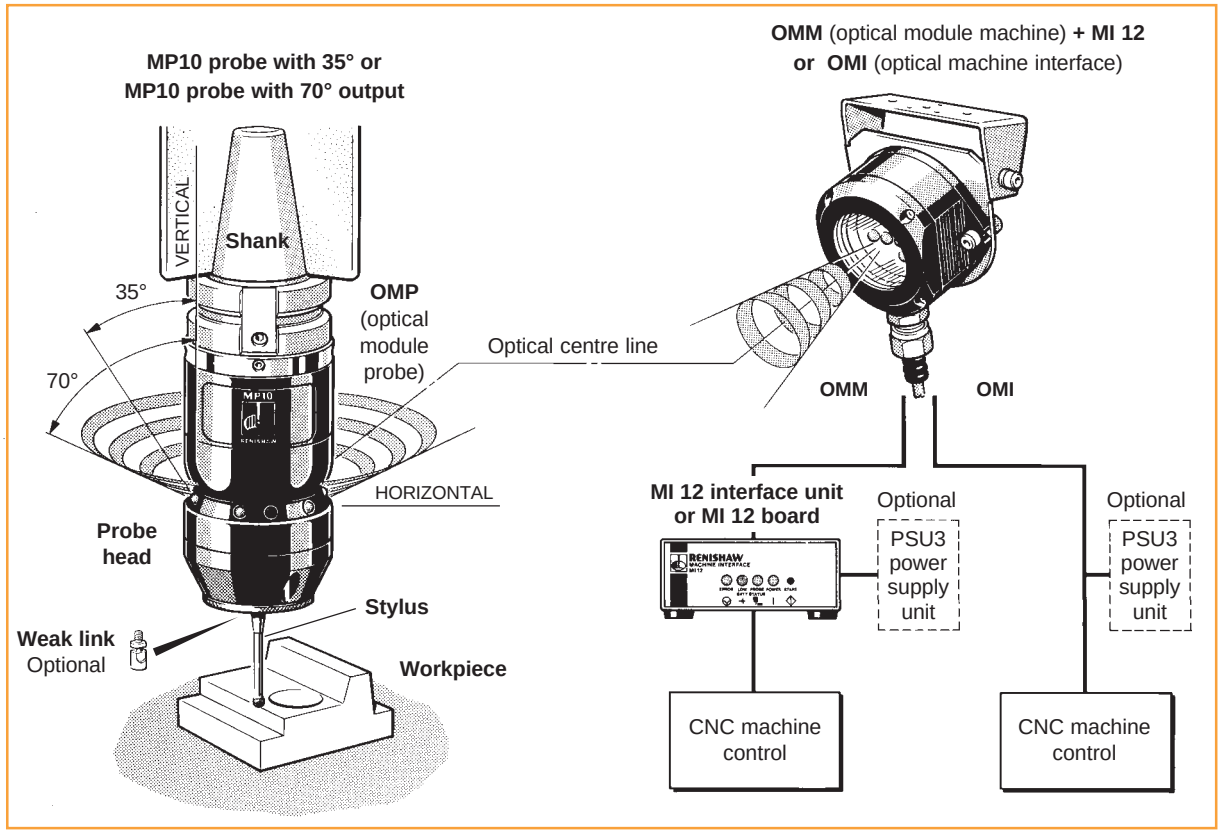
# MP10 probe system




## System components

**MP10 probe**
The MP10 probe is used for workpiece set-up and inspection on CNC machining centres.

**OMM** (optical module machine)
Transmits CNC messages to the probe and receives data signals for transmission to the MI 12 interface.

**MI 12 interface unit**
Processes signals between the OMM and the CNC machine control.

**OMI** (optical machine interface)
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 probe routines**
The MP10 is suitable for use with Renishaw single and double touch probing cycles.

## System features

**Signal transmission**
The MP10 is available with either 35° or 70° output and features wide beam transmission - up to 130°.
Full 360° signal transmission and up to 6 m (19.6 ft) range.
Infrared optical filters reduce interference to data transmission.

**Battery life**
A battery life of 140 hours continuous use or the equivalent of 98 days at 5% usage is achievable.

**Probe repeatability**
Repeatability, 1.0 µm (40 µin) is certified at 480 mm/min (1.57 ft/min).

**Probe switch-on**
Probe switch-on is selectable between M code and auto start.

**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.*

# Performance envelope - probes with 35° or 70° output

The MP10 has a full 360° transmission envelope over the ranges shown below.

The probe system should be positioned such that the optimum range can be achieved over the full travel of the machine axis.

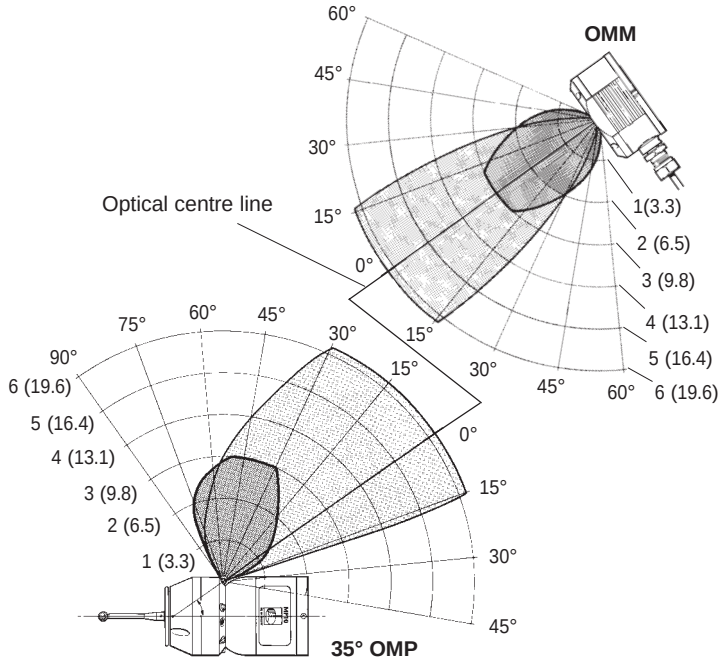
The OMP and OMM/OMI may deviate from the optical centre line, provided opposing light cones always overlap with transmitters and receivers mutually in each others field of view (eye to eye).

Natural reflective surfaces within the machine may increase the signal transmission range.

Coolant residue accumulating on the OMP LED's and OMM/OMI window, will have a detrimental effect on transmission performance.

Wipe clean as often as is necessary to maintain unrestricted transmission.

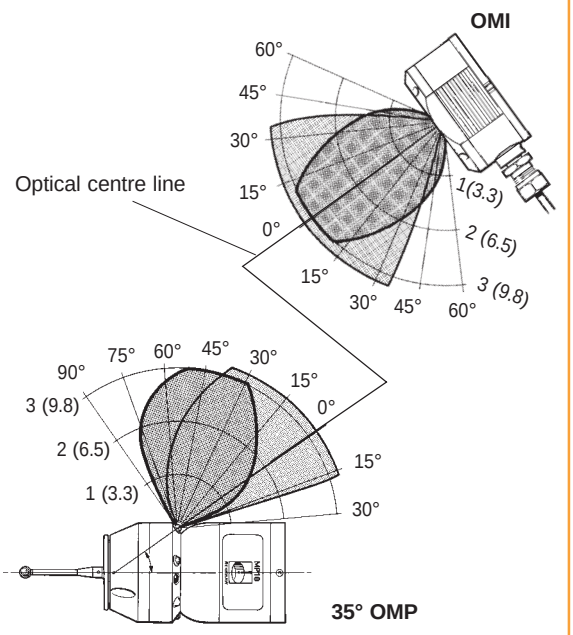
## MP10 35° output probe with OMM




**Switch-on/off range**
The OMP must be within 3 m (9.8 ft) of the OMM.

**Operating range**
The OMP must be within 6 m (19.6 ft) of the OMM.

## MP10 35° output probe with OMI




**Range** metres (feet)

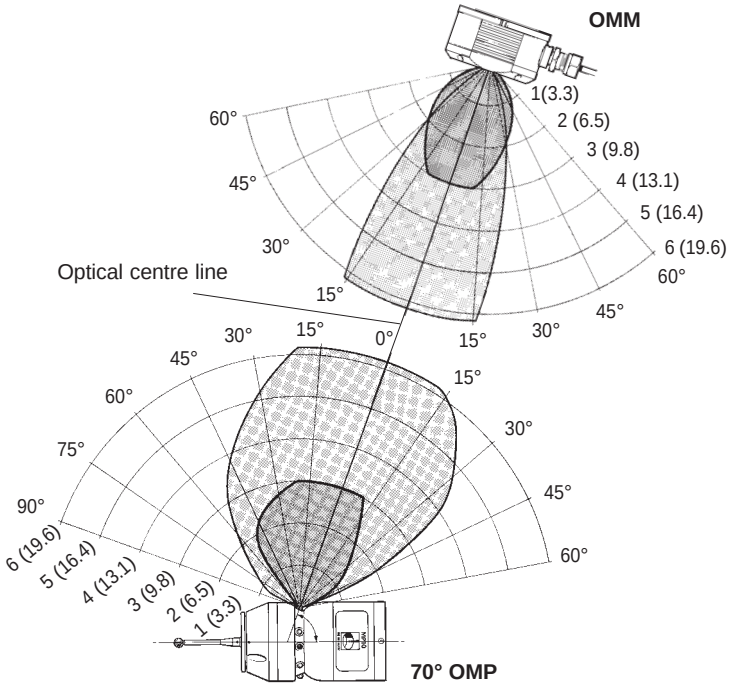
SWITCH ON/OFF

OPERATING

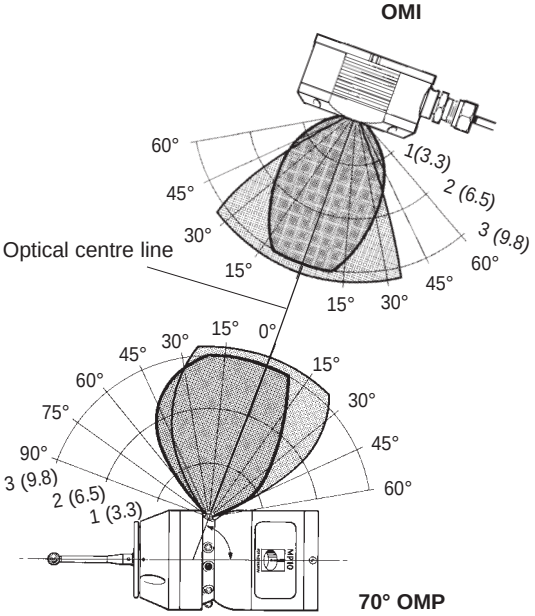
**Switch-on/off range**
The OMP must be within 3 m (9.8 ft) of the OMI.

**Operating range**
The OMP must be within 3 m (9.8 ft) of the OMI.

## MP10 70° output probe with OMM




## MP10 70° output probe with OMI



# System operation

**Prior to probe operation it is imperative to ensure 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 battery powered MP10 has two modes of operation.

1. **Stand-by mode**
   To conserve battery life the probe is held in the stand-by mode, until the CNC control sends a start signal via the OMM or OMI, to the OMP receiving diodes (Rx).
   The start signal switches the probe to the operating mode.
2. **Operating mode**
   During the operating mode, probe signals are transmitted through 360° from the OMP transmitting LED's (Tx), to the OMM or OMI for onward transmission to the CNC control.

**PROBE SWITCH-ON**

The probe is switched-on by one of the following options.

1. **Manual start**
   (system with OMM + MI 12 only)
   Initiated by pressing the MI 12 manual start button.
2. **Machine start** (factory set to this option)
   (system with OMM + MI 12 or system with OMI)
   Initiated by an M code generated by the program.
3. **Auto start**
   (system with OMM + MI 12 or system with OMI)
   Initiated by auto start signal sent every second.

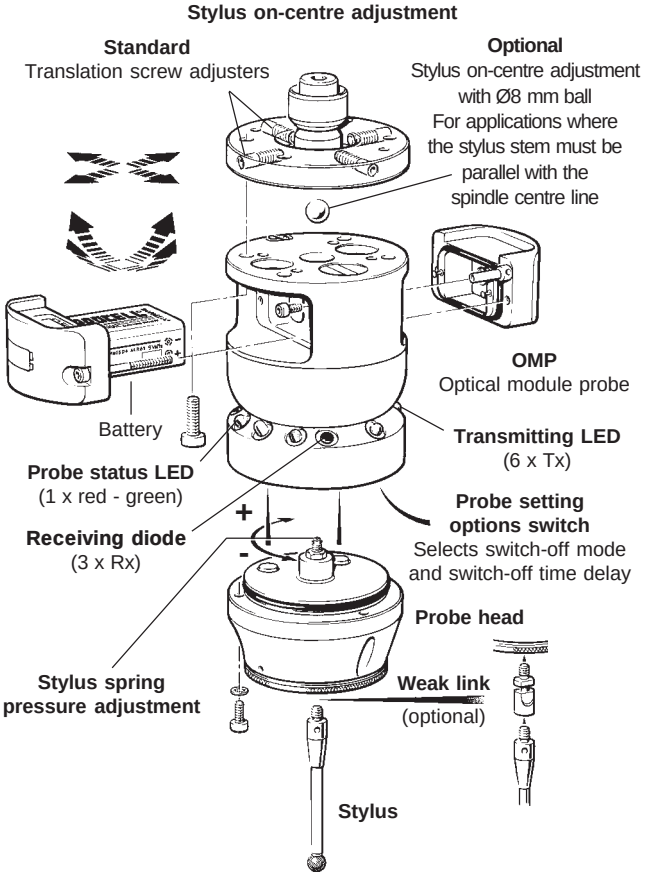
**PROBE SWITCH-OFF**

The probe is switched-off by one of the following options.

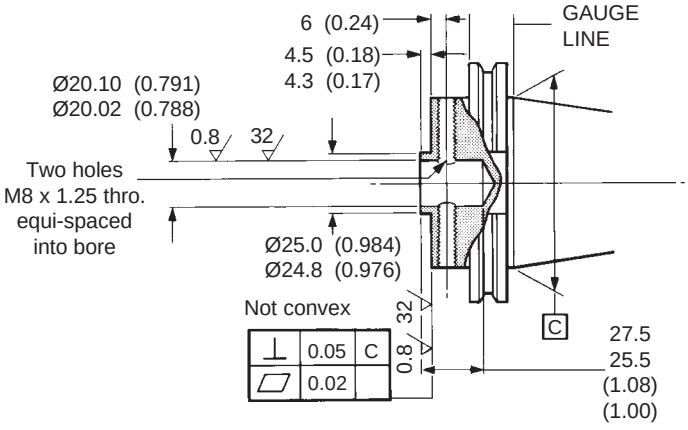
1. **Optical-on / timer-out** (factory set to this option)
   A timer automatically returns the probe to stand-by if the probe has not been used for 33 seconds or 134 seconds (factory set to 134 seconds).
2. **Optical-on / optical-off**
   A second start signal is generated by a software M code, which switches the probe off after 5 seconds or 9 seconds (factory set to 9 seconds).

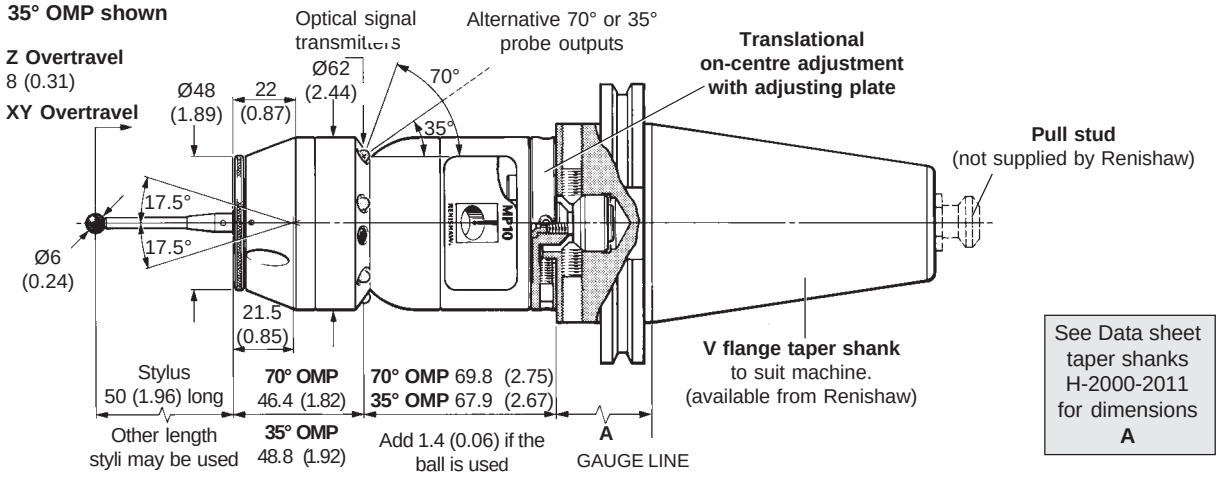
| **PROBE STATUS LED**<br>The probe status LED gives a visual indication of the probe state (triggered or seated). It also indicates when the battery has become unuseable. | |
|---|---|
| **LED colour** | **Probe status** |
| **Flashing green** | Stylus seated |
| **Flashing red** | Stylus deflected |
| **Constant red** | Battery dead |
| Battery dead - At this stage probe status is forced open and the probe cycle will stop. | |

# Probe features




## Shank manufacturing details




See Data sheet taper shanks H-2000-2011 for dimensions **A**

**dimensions mm (in)**

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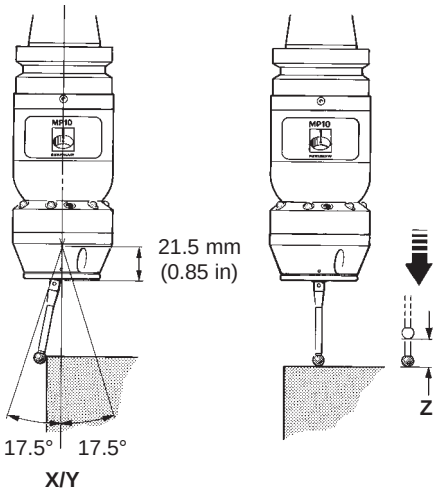
# MP10 probe specification

**Stylus overtravel limits**

| Stylus length 50 mm (1.96 in) | |
|---|---|
| **X/Y** | **Z** |
| 21.5 mm (0.84 in) | 8 mm (0.31 in) |
| **Stylus length 100 mm (3.93 in)** | |
| **X/Y** | **Z** |
| 36.5 mm (1.44 in) | 8 mm (0.31 in) |




| | |
|---|---|
| **Primary application** | Inspection probe for machining centres |
| **Sense directions** | 5 way |
| **Trigger force** using 50 mm (1.97 in) stylus low force direction | **X Y** 0.75 N / 75 gf (2.64 ozf)<br>**Z** 4.2 N / 420 gf (14.83 ozf) |
| **Trigger force** using 50 mm (1.97 in) stylus high force direction | **X Y** 1.4 N /140 gf (4.92 ozf)<br>**Z** 4.2 N / 420 gf (14.83 ozf) |
| **Overtravel** | **X Y** 17.5°<br>**Z** 8 mm (0.31 in) |
| **Sealing** | IPX8 (BS 5490, IEC 529)<br>1 atmosphere |
| **Repeatability,** maximum 2σ value in any direction | 1.0 µm<br>0.0000 4in |

Repeatability specification of 1.0 µm (0.00004 in) 2σ for a test velocity of 480 mm/min (1.57 ft/min).

**Battery life expectancy**

| Alkaline battery type | STAND-BY LIFE | 5% USAGE - 72 min/day | | CONTINUOUS USE | |
|---|---|---|---|---|---|
| | | OPTICAL ON OPTICAL OFF | OPTICAL ON TIMER OFF | OPTICAL ON OPTICAL OFF | OPTICAL ON TIMER OFF |
| Duracell MN 1604 or equivalent | Minimum | Minimum | Minimum | Minimum | Minimum |
| | 365 days | 98 days | 80 days | 140 hrs | 110 hrs |

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

| Type | Part No. | Description |
|---|---|---|
| MP10 kit | A-2033-1101 | MP10 35° probe + battery, stylus, OMM, mounting bracket, MI 12 interface unit and tool kit. |
| MP10 kit | A-2033-1102 | MP10 70° probe + battery, stylus, OMM, mounting bracket, MI 12 interface unit and tool kit. |
| MP10 kit | A-2115-0024 | MP10 35° probe + battery, stylus, OMI, mounting bracket and tool kit. |
| MP10 kit | A-2115-0025 | MP10 70° probe + battery, stylus, OMI, mounting bracket and tool kit. |
| MP10 | A-2033-1099 | MP10 35° probe + battery, weak link stem, centre ball and tool kit - factory set to time out. |
| MP10 | A-2033-1100 | MP10 70° probe + battery, weak link stem, centre ball and tool kit - factory set to time out. |
| MP10 | A-2033-1115 | MP10 35° probe + battery, weak link stem, centre ball and tool kit - factory set to optical off. |
| MP10 | A-2033-1116 | MP10 70° probe + battery, weak link stem, centre ball and tool kit - factory set to optical off. |
| Stylus | A-5000-3709 | PS3-1C stylus Ø6 ball x 50mm 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. |
| Spanner | P-TL09-0003 | Spanner for weak link stem. |
| Battery | P-BT03-0001 | PP3 9 V alkaline battery. |
| Styli | — | See Brochure **H-1000-3200** Styli and accessories. |
| Shank | — | See Data Sheet **H-2000-2011** Taper shanks. |
| OMM | — | See Data Sheet **H-2000-2275** Optical module machine. |
| MI 12 | — | See Data Sheet **H-2000-2195** MI 12 interface unit. |
| OMI | — | See Data Sheet **H-2000-2285** Optical machine interface (alternative to OMM + MI 12). |
| PSU3 | — | 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 website at www.renishaw.com**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