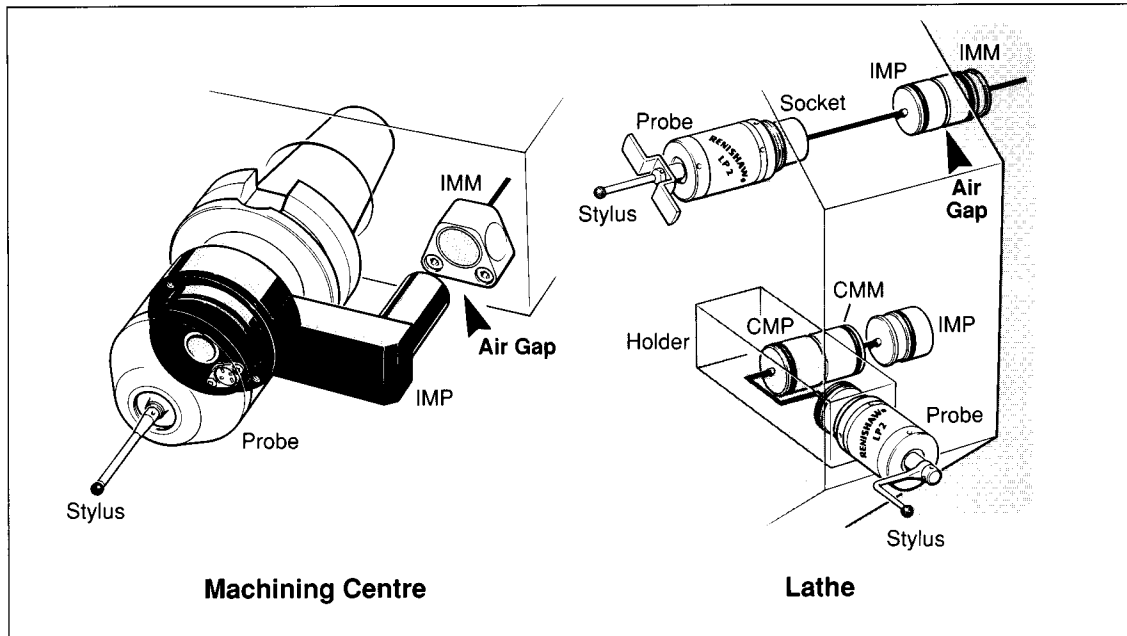


Mark IV Inductive Transmission System

The maintenance free, secure signal transmission system between probe and CNC control.



SYSTEM FEATURES

- Effective reliable design**
- Small modules for ease of installation**
- Maintenance free**
No batteries required.
- Interference free**
No cross talk between machines.
- Modular range**
Small number of standard components, allow adaptable configurations.
- Simple programming**
No switch-on / switch-off signal required.
- Low cost**
Simpler than alternative systems.

TERMS

IMP	Inductive Module Probe
IMM	Inductive Module Machine
CMP	Contact Module Probe
CMM	Contact Module Machine

SIGNAL TRANSMISSION

The probe stylus is driven against a workpiece. On contact a probe trigger signal is generated and transmitted via the transmission system to an interface. The interface converts the probe signal into a form understood by the CNC machine control, where the stylus contact position is registered.

Due to installation requirements, it is preferable to fit the transmission system during the machine tool manufacture.

CNC Machining Centre Application

Pairs of inductive modules, one attached to the probe (IMP), and the other to the machine (IMM), transmit signals and power across an air gap. The probe/IMP is stored in the machine tool changer. When required for a probing routine, the probe is transferred to the machine spindle where the IMP is automatically positioned opposite the IMM.

CNC Lathe Application

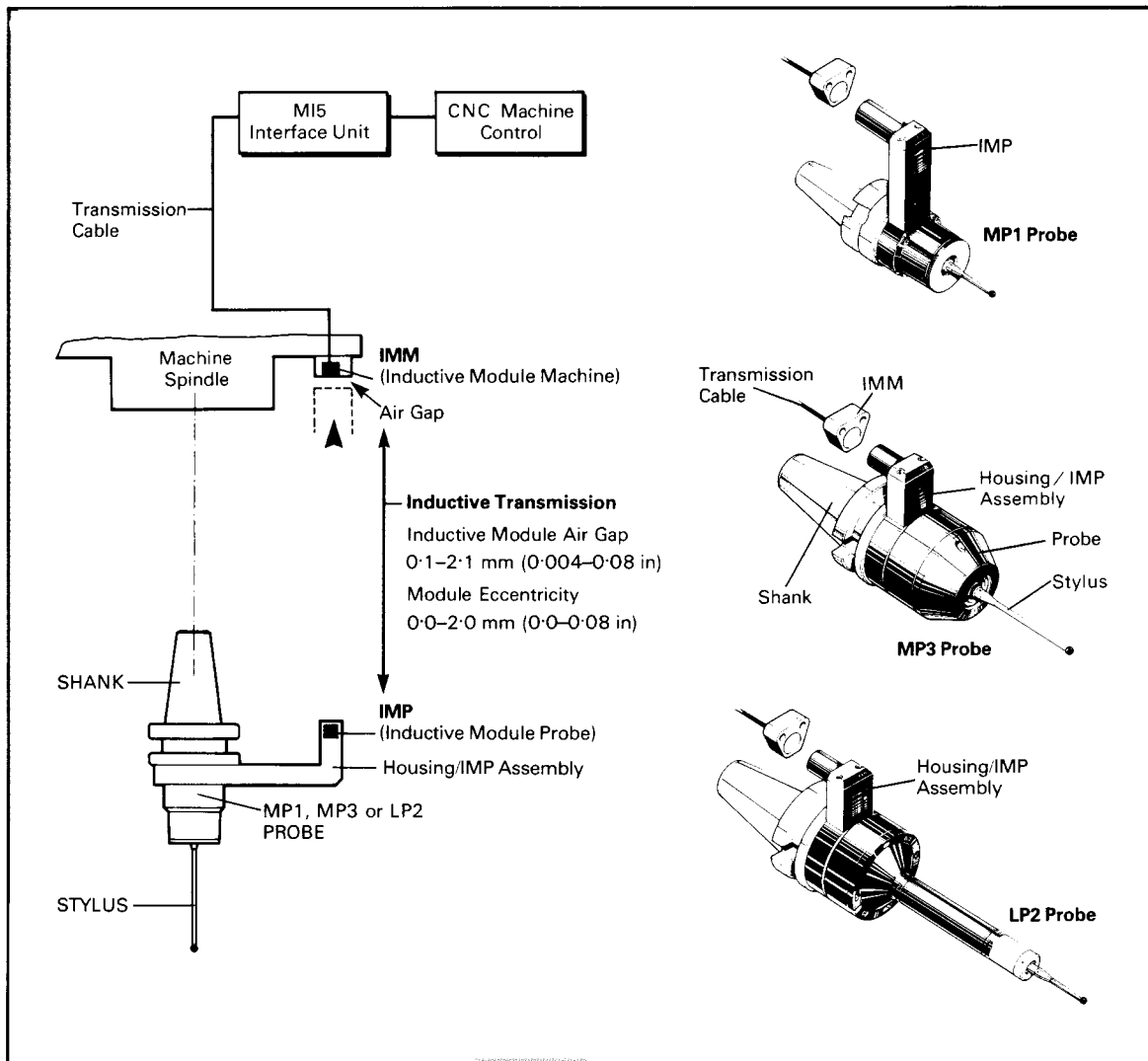
The probe is mounted in a socket or holder occupying a turret position. When the turret is indexed to the probing position, power and probe signals are transmitted across the air gap between the inductive module (IMM) located in the lathe body and the turret mounted module (IMP).

The IMP is wired to a probe socket or a pair of contact modules (CMM and CMP) located in the lathe turret.

RENISHAW

DATA SHEET

Machining Centre Installation



Machining Centre and Lathe Installations

IMP and IMM Modules

Modules are always installed in pairs and must be installed within the specified separation and eccentricity limits given in the diagram above.

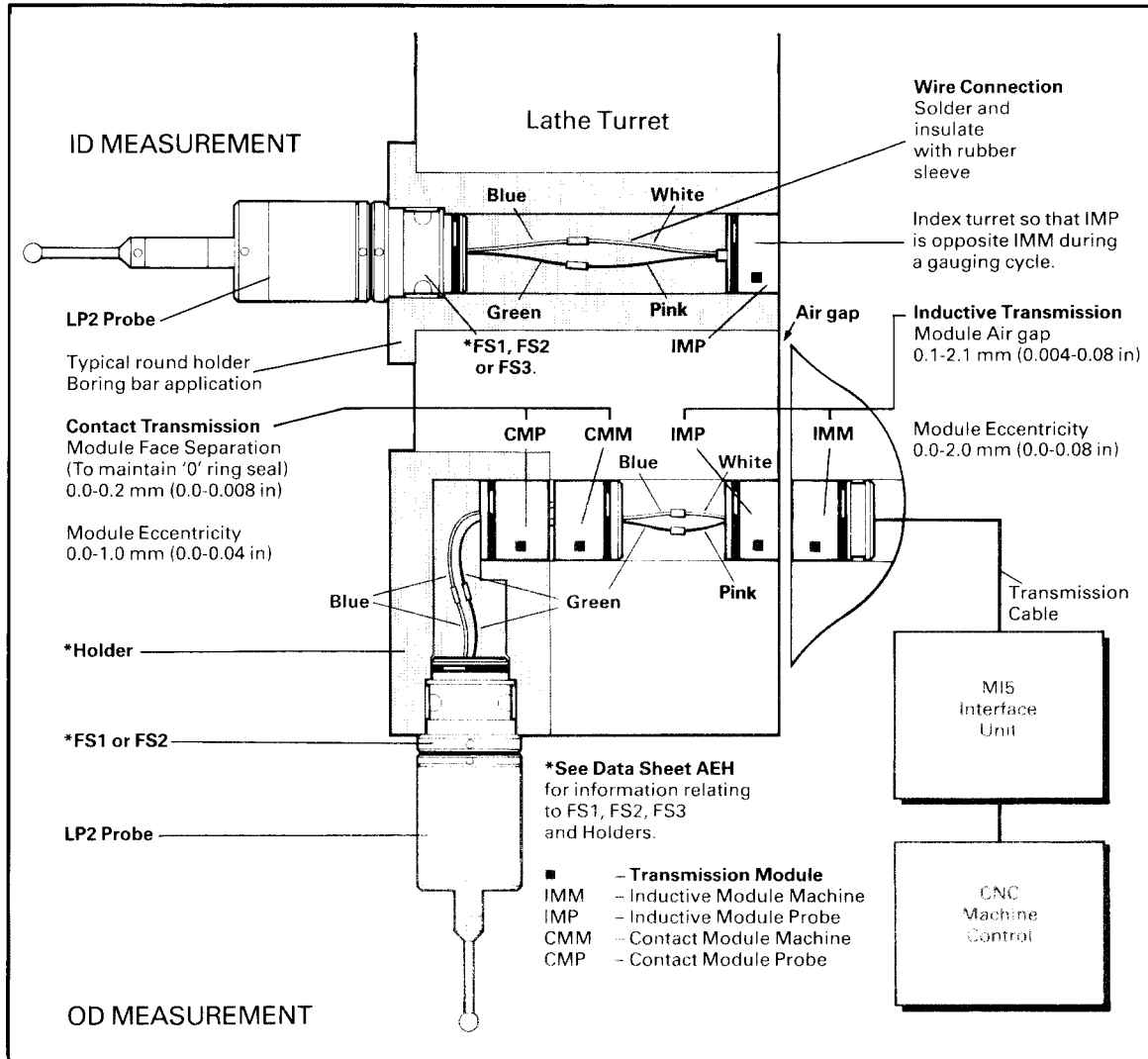
Power Supply

Power for the probe is taken from an MI 5 interface unit which is linked to the CNC machine +24V supply. Alternatively a Renishaw PSU3 power supply unit is used when power is not available from the machine. The transmission cable carries both power and probe signals.

System Operating Temperature

Inductive transmission modules are specified for operation within a working temperature range of 5 to 55°C (41° to 131°F).

Lathe Installation



Probe System

The fully protected LP2 probe with contact/inductive signal transmission is the best probe system for working in a coolant and hot chip lathe environment.

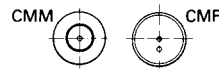
Apart from routine cleaning and occasionally checking cables for damage, the system is maintenance free, as no batteries are required.

Transmission Modules

Transmission modules pass power and signals across breaks and gaps in the transmission path. They are always installed in pairs, and must locate within the separation and eccentricity limits given above.

Contact Modules – CMP/CMM

Contact modules incorporate spring pin contacts, and are used where a semi-permanent transmission link is required, e.g. between tool holder and turret and may be installed with the CMP contact pins in any orientation.

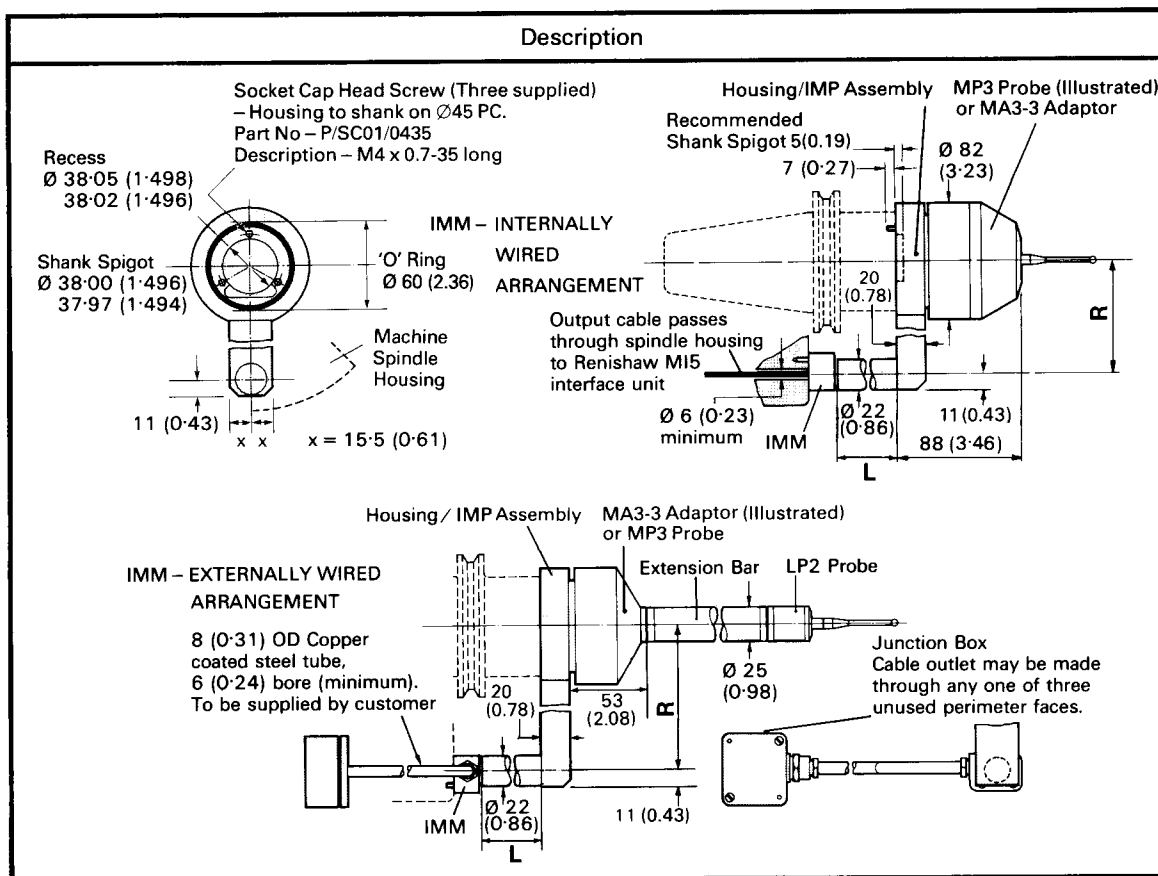


Inductive Modules – IMP/IMM

Inductive modules are separated by the air gap between the turret and machine frame. Module orientation is unrestricted.

Parts List – Housing/IMP Assembly for Machining Centre Installations using MP3 Probe (or LP2 Probe with MA3-3 Adaptor)

ALWAYS give the Part No. when ordering equipment.



HOUSING/IMP ASSEMBLY complete with three screws – housing to shank.

Part No.												
When ordering Housing/IMP Assembly add prefix A/2003/_____ to each Part No. Example – Dimension R is 55 and dimension L is 10. Then Part No. will be A/2003/7603.												
Dimension R	Dimension L											
	5 (0.19)	10 (0.39)	15 (0.59)	20 (0.78)	25 (0.98)	30 (1.18)	35 (1.37)	40 (1.57)	45 (1.77)	50 (1.96)	55 (2.16)	60 (2.36)
55 (2.16)	7602	7603	7604	7605	7606	7607	7608	7609	7610	7611	7612	7613
60 (2.36)	7621	7622	7623	7624	7625	7626	7627	7628	7629	7630	7631	7632
65 (2.55)	7640	7641	7642	7643	7644	7645	7646	7647	7648	7649	7650	7651
70 (2.75)	7659	7660	7661	7662	7663	7664	7665	7666	7667	7668	7669	7670
75 (2.95)	7678	7679	7680	7681	7682	7683	7684	7685	7686	7687	7688	7689
80 (3.15)	7697	7698	7699	7700	7701	7702	7703	7704	7705	7706	7707	7708
85 (3.34)	7716	7717	7718	7719	7720	7721	7722	7723	7724	7725	7726	7727
90 (3.54)	7735	7736	7737	7738	7739	7740	7741	7742	7743	7744	7745	7746
95 (3.74)	7754	7755	7756	7757	7758	7759	7760	7761	7762	7763	7764	7765
100 (3.93)	7773	7774	7775	7776	7777	7778	7779	7780	7781	7782	7783	7784
105 (4.13)	7792	7793	7794	7795	7796	7797	7798	7799	7800	7801	7802	7803
110 (4.33)	7811	7812	7813	7814	7815	7816	7817	7818	7819	7820	7821	7822
115 (4.52)	7830	7831	7832	7833	7834	7835	7836	7837	7838	7839	7840	7841

dimensions in mm (inches)

Parts List – IMM for Machining Centre and Lathe Installations


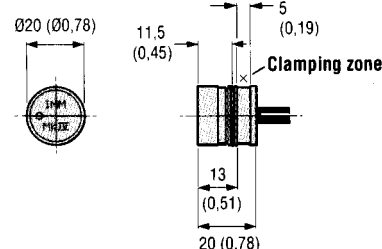

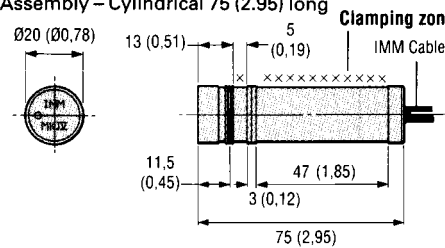
ALWAYS give the Part No. when ordering equipment.

Part No.	Description	Part No.	Description
A/2028/7571	IMM Assembly – Rear Exit Cable Preferred type for machining centres	M/2028/7577 M/2028/7576	Spacer 3 (0.12) Thick } Spacer 1 (0.04) Thick } FOR ALL IMM'S
P/SCO1/0420	Fixing Screw M4 x 0.7-20 mm long		Note: Longer fixing screws may be required when spacers are used.
A/2028/7570	IMM Assembly – Using side exit with 11 (0.43) O.D. flexible conduit. 19 A/F Conduit Adaptor (Finger tight + 2½ turns)	A/2028/7569	IMM Assembly – Using side exit with 11 (0.43) O.D. flexible conduit. Finger tight + 2½ turns
P/SCO1/0425	Fixing Screw M4 x 0.7-25 mm long	P/SCO1/0425	Fixing Screw M4 x 0.7-25 mm long
A/2028/7568	IMM Assembly – Using side exit with 8 (0.31) O.D. steel tube conduit. Preferred type for machining centres 13 A/F Compression fitting (Torque 12.4 Nm/ 9.15lbf.ft)	A/2028/7567	IMM Assembly – Using side exit with 8 (0.31) O.D. steel tube conduit. Preferred type for machining centres* (Torque 12.4 Nm/ 9.15lbf.ft)
P/SCO1/0420	Fixing Screw M4 x 0.7-20 mm long USE WITH JUNCTION BOX A/2028/7303	P/SCO1/0420	Fixing Screw M4 x 0.7-20 mm long USE WITH JUNCTION BOX A/2028/7303
A/2028/7303	Junction Box (with four way connector)		
P/SCO1/0410	Fixing Screw M4 x 0.7-10 long		
<p>Note</p> <ol style="list-style-type: none"> All IMM and Junction Box Part No's include two fixing screws. Part No's and descriptions of screws are given for information only. Two M4 x 0.7 fixing screws are supplied with each IMM and Junction Box. Mounting holes to be tapped M4 x 8mm minimum. All modules are housed in stainless steel bodies. The number reproduced on IMM label e.g. 7571 equates to IMM Part No. A/2028/7571. Flexible or rigid conduit must be supplied by customer to ensure protection and sealing of cable. All output cables are Ø4.3 max x 5m (0.17 x 16.4ft) long. Three core screened cable, each core 7 strands, 0.2mm dia, insulated. Recommended colours – Red, Green and Blue. Screen to be connected to OV terminal at MI5 interface unit. Cable extensions are available 5.5, 10.5, 20.5 and 25.5m (18.0, 34.4, 67.2 and 83.6 ft) long. Connection is via 180° in line DIN socket plug. Maximum permitted length 100m (328ft). 			

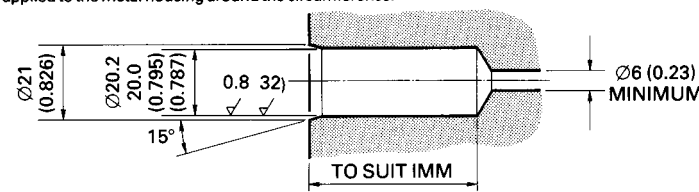
dimensions in mm (inches)

Parts List – IMM for Machining Centre and Lathe Applications

ALWAYS give the Part No. when ordering equipment.


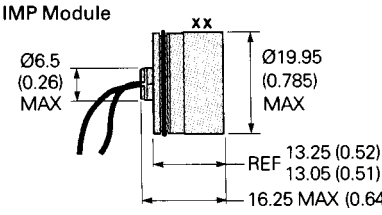
Type	Part No.	Description	
IMM 	A/2028/7572	IMM Assembly – Cylindrical 20(0.78) long 	IMM CABLE Ø4.3 max x 5m (0.17 x 16.4ft) long. Three core screened cable, each core 7 strands, 0.2mm dia, insulated, Colours – Red, Green and Blue. Screen to be connected to OV terminal at MI5 interface unit. Cable extensions are available 5.5, 10.5, 20.5 and 25m (18.0, 34.4, 67.2 and 83.6ft) long. Connection is via 180° in line DIN socket plug. Maximum permitted length 100m (328ft).
IMM 	A/2028/7573	IMM Assembly – Cylindrical 75 (2.95) long 	

Installation

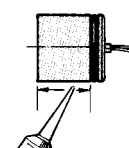
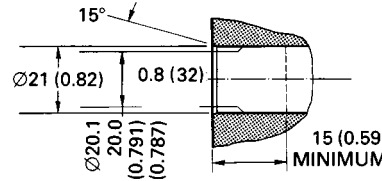
IMPORTANT The plastic front face should not be subjected to direct pressure on installation. Pressure may be applied to the metal housing around the circumference.		CLAMPING The IMM is retained by a grub screw, typically M4. Drill and tap the housing to line up with the clamping zone. Maximum torque on M4 grub screw to be 0.5 Nm (0.37lbf.ft).
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Parts List – IMP for Lathe Installations

ALWAYS give the Part No. when ordering equipment.

Type	Part No.	Description	
IMP 	A/2028/7574	IMP Module 	IMP WIRE Two separate wires, coloured pink and white, each single core, insulated. O.D. 1.0 (0.04). Length 2000 (78). Maximum torque on M4 grub screw to be 0.25 Nm (0.18lbf.ft).

Installation

IMPORTANT The plastic front face should not be subjected to direct pressure on installation. Pressure may be applied to the metal housing around the circumference.	<ol style="list-style-type: none"> THE USE OF SEMI-PERMANENT ADHESIVE IS RECOMMENDED FOR INSTALLING THE UNIT. EXAMPLE: SILICON RTV DOW CORNING Q3-3744. HOLD WITH FLAT PLATE UNTIL ADHESIVE CURES. 	
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dimensions in mm (inches)

Parts List – CMP and CMM, for Lathe Installations

ALWAYS give the Part No. when ordering equipment.

Ø20 CMP and CMM

Type	Part No.	Description	
CMP	A/2028/6074	CMP Module	
CMM	A/2028/6608	CMM Module	
		CMP/CMM Wire Two separate wires, coloured blue and green, each stranded core, 7 strands of 0.2mm. PVC insulated. O.D. 1.2 (0.05). Combined O.D. 2.4 (0.10). Length 1200 (47).	

Installation

Installation for CMP and CMM
Do not use retaining screws

- APPLY ADHESIVE TO MODULE AS SHOWN. USE PERMANENT ANAEROBIC RETAINER e.g. LOCTITE 601
- ENSURE OUTER HOUSING OF CMP AND CMM IS FLUSH WITH SURFACE A.

Ø20 CMP and CMM

dimensions in mm (inches)

Associated Data Sheets

Type	Part No. and Description
Styli	See Brochure H-1000-3200 Renishaw Styli Guide
MP1 Probe	See Data Sheet H-2000-2020 MP1 Probe.
MP3 Probe	See Data Sheet H-2000-2040 MP3 Probe.
LP2 Probe	See Data Sheet H-2000-2011 LP2 and LP2H Probes.
Shanks	See Data Sheet H-2000-2011 Taper Shanks for Machine Tool Probes.
Holders	See Data Sheet H-2000-2120 Adaptors, Extensions and Holders for Probes (AEH).
MI 5 - Interface	See Data Sheet H-2000-2180 MI 5 Interface Unit.
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.

Renishaw reserves the right to change specifications without notice.

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