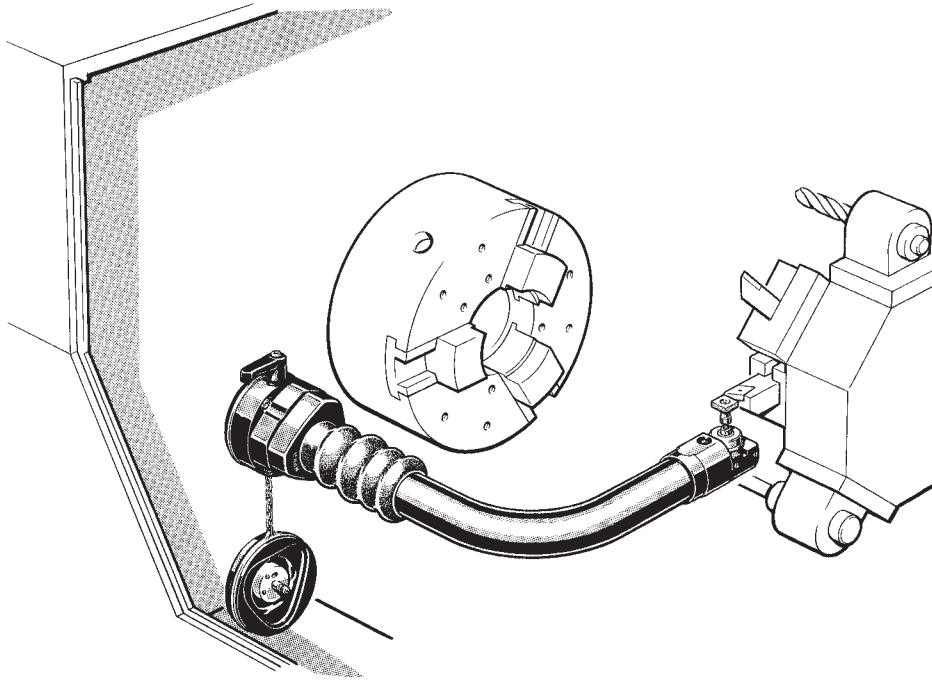


HPRA high precision removable arm



The HPRA is fitted with the three-axis RP3 probe.

The patented base assembly design ensures highly repeatable stylus positioning each time the HPRA is loaded onto the machine.

A quick-release lever allows the HPRA to be removed from the machine's working envelope during metal cutting operations, and stored on a stand assembly which may be conveniently located on top of the machine. A bi-colour LED indicates the probe's status and also informs the operator that the system is ready for use.



CAUTION: HPRA is designed specifically for use with the TS12 Interface. Do not use the HPRA with any other interface.

★ Contact the Styli and Custom Products Division for information on other arms options.

System components

• Base with cover

The base assembly is a permanent fixture on the machine and provides the repeatable location for the arm and probe assembly. The cover provides protection for the location mechanism during machining operations. The cable between the base and the interface (TS12) is terminated with connectors, enabling machine wiring and mechanical fitting to take place separately if required. Additional output signals are provided to indicate 'system ready for probing' and 'system ready for machining'.

• Stand assembly

A separate stand assembly is provided for safe storage of the HPRA when it is not in use.

• Arm with probe

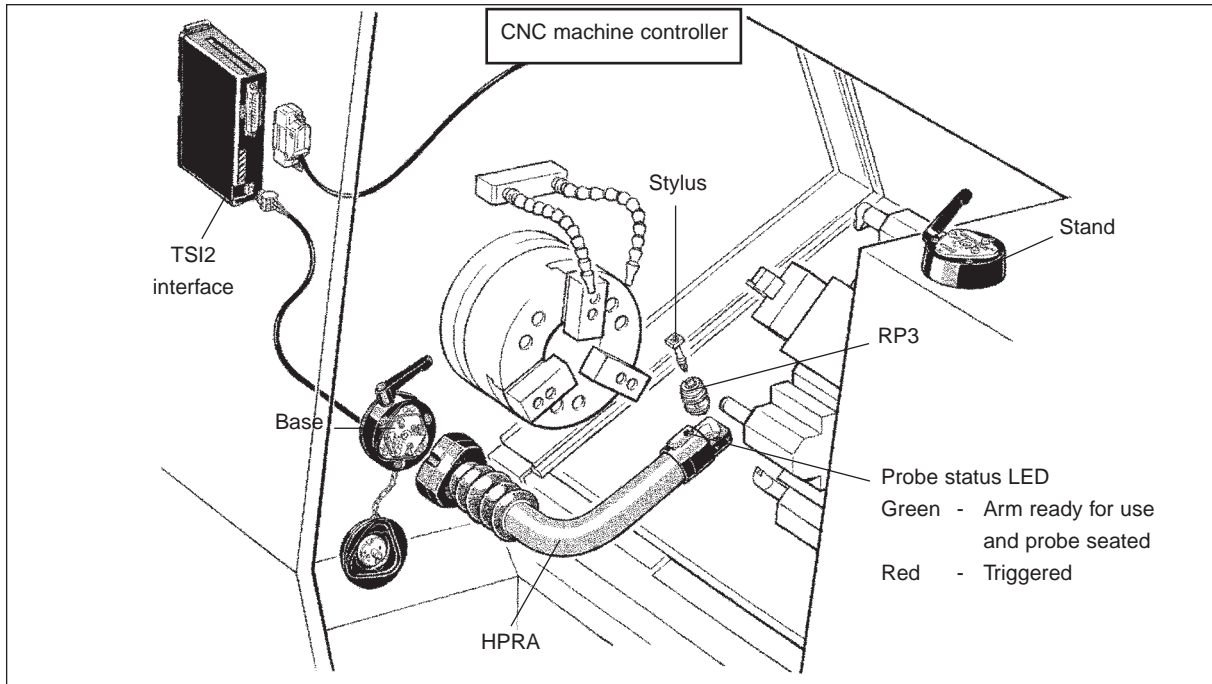
The arm is available with a 90° bend in a range of sizes to suit most machine tools.

Renishaw has recommended arm configurations for all standard chuck sizes. Where these are not suitable, arms can be configured by Renishaw to suit a particular requirement. *

• TS12 interface

The interface processes signals between the probe and machine's control and allows simple integration. The unit is DIN rail-mounted and features an 'Easy fit' location mechanism. There are two connectors for simple connection to the base (3-way) and machine's control (25-way 'D' type).

HPRA system kit



Benefits

- Complete system from Renishaw.
- Tool setting times up to 90 % faster.
- Recommended OEM arm configurations for all standard chuck sizes.
- Positional repeatability typically $5 \mu\text{m}$ (0.0002 in) 2σ
- Renishaw's rugged design ensures fault-free operation in the harshest of machine tool environments.
- LED indicator to show probe status and arm READY FOR USE.
- Dedicated three-axis probe provides solution for 'Y' axis machines.
- Stylus "break stem" protects the probe if stylus overtravel limits are exceeded.
- Stylus configurations to suit 16 mm, 20 mm, 25 mm, 32 mm, 40 mm and 50 mm tooling.
- Modular system allows fitting to a wide range of machines.
- Simple retro-fit to existing machines.



For Y axis application a cranked stylus is recommended. Contact the Styli and Custom Products Division for further information.

System specification

Application CNC lathe tool setting

Sense directions **Probe** $\pm X, \pm Y, +Z$
Machine $\pm X, \pm Z, +Y$

Typical positional repeatability **6 in - 15 in Chuck arms** $5 \mu\text{m } 2 \sigma$
(at gauging speed of 36 mm/min) **18 in - 24 in Chuck arms** $8 \mu\text{m } 2 \sigma$

Environmental protection IPX8

Operating temperature $5 \text{ }^\circ\text{C}$ to $60 \text{ }^\circ\text{C}$ ($41 \text{ }^\circ\text{F}$ to $140 \text{ }^\circ\text{F}$)

Storage temperature $-10 \text{ }^\circ\text{C}$ to $70 \text{ }^\circ\text{C}$ ($14 \text{ }^\circ\text{F}$ to $158 \text{ }^\circ\text{F}$)

RP3 probe data

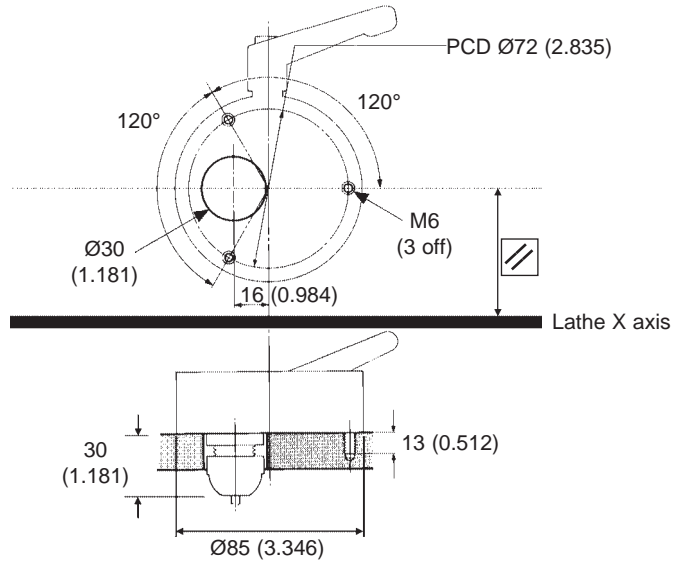
RP3 stylus trigger force **Machine XZ** 3.5 N / 350 gf (12.3 ozf) max. in high force direction.
Machine XZ 1.5 N / 150 gf (5.3 ozf) max. in low force direction.
Machine Y 12 N / 1200 gf (42.3 ozf) max.

RP3 stylus overtravel **Machine X** 9°
Machine Z 9°
Machine Y 2 mm (0.08 in)

Base assembly

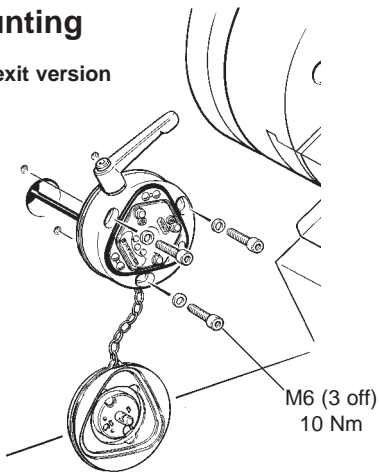
Dimensions in mm (in)

Drilling details

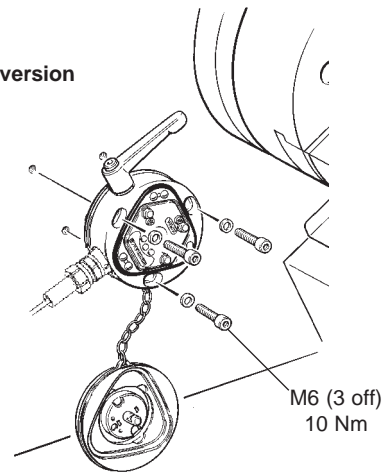


Mounting

Rear exit version



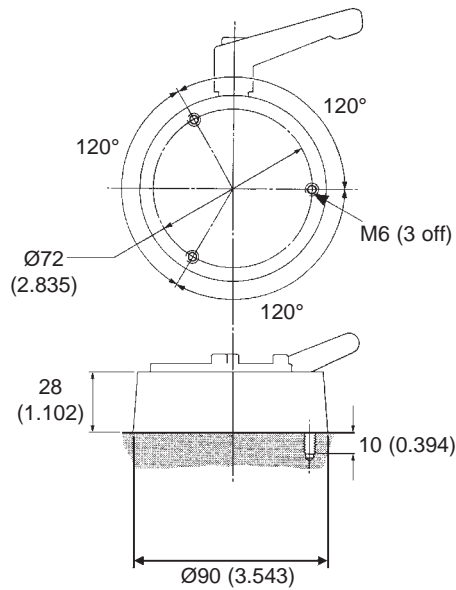
Side exit version



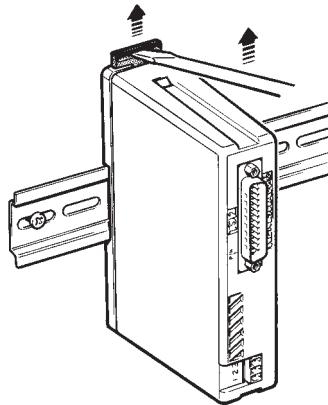
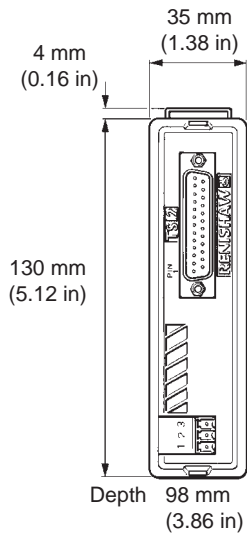
Stand assembly

Dimensions in mm (in)

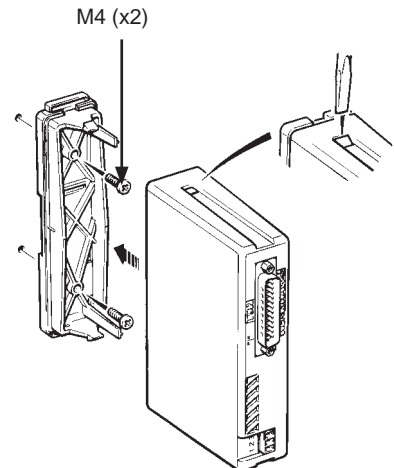
Drilling details



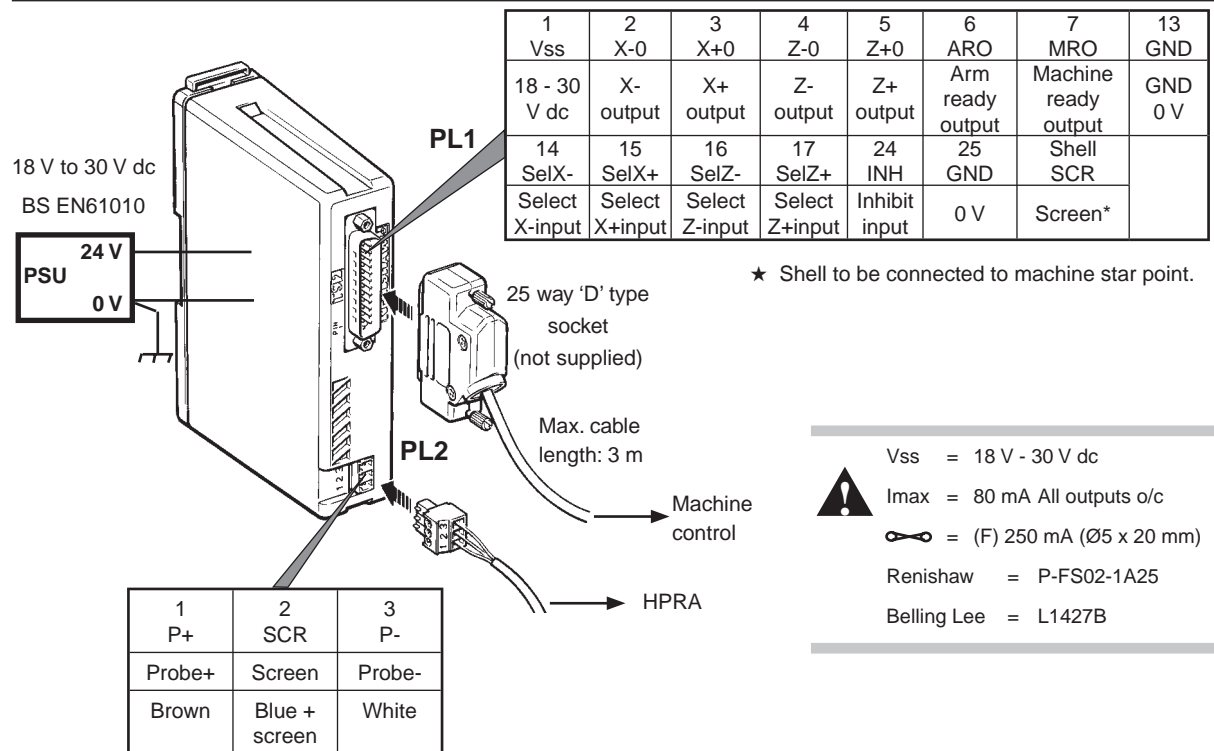
TSI2 interface



Standard DIN rail mounting



Alternative mounting



INPUTS:- All internally pulled down (2K4) ACTIVE HIGH inputs

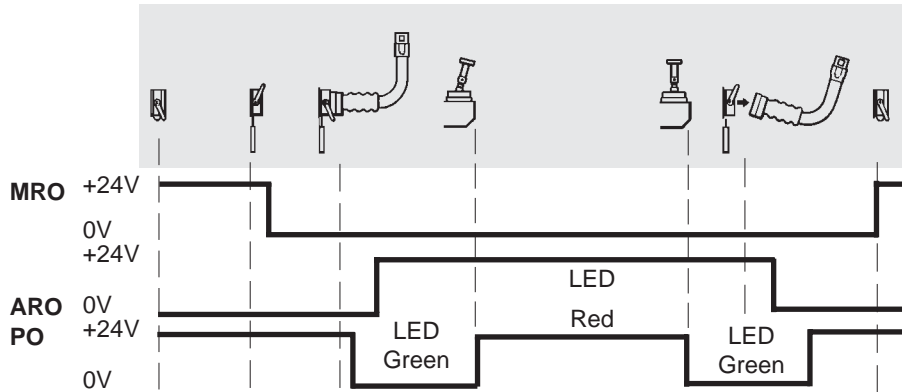
Probe signal outputs

(PL1-2) X-O }
 (PL1-3) X+O } OCT ACTIVE HIGH outputs Vss - 3.8 V @ max. source 120 mA (one probe signal output only)
 (PL1-4) Z-O }
 (PL1-5) Z+O }
 Vss - 2.4 V @ 20 mA

Arm ready (ARO) / Machine ready (MRO) outputs

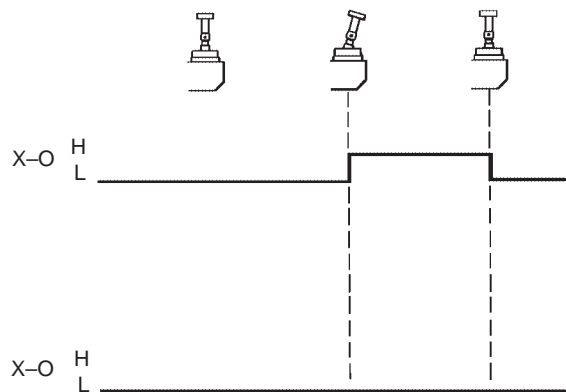
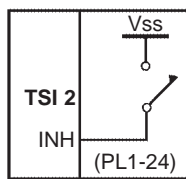
(PL1-6) ARO }
 (PL1-7) MRO } OCT ACTIVE HIGH outputs Vss - 2.4 V @ max. source 20 mA

TSI2 output timing diagram

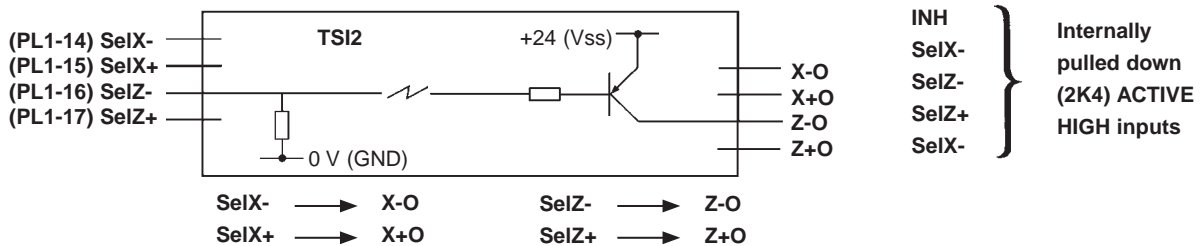
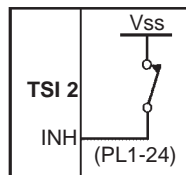


Inputs

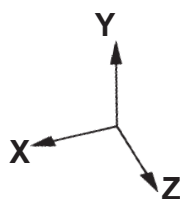
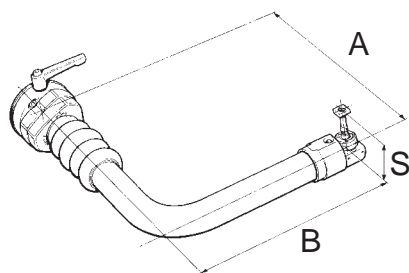
INH INHIBIT INPUT



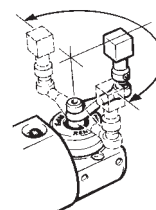
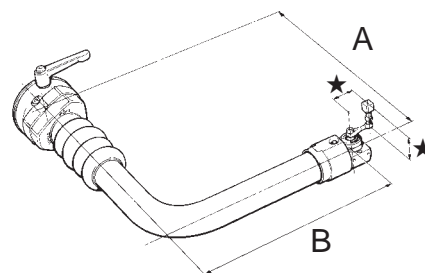
NOTE: The probe status LED will still function when inhibit is active.



Machine X - Z axis application (standard)



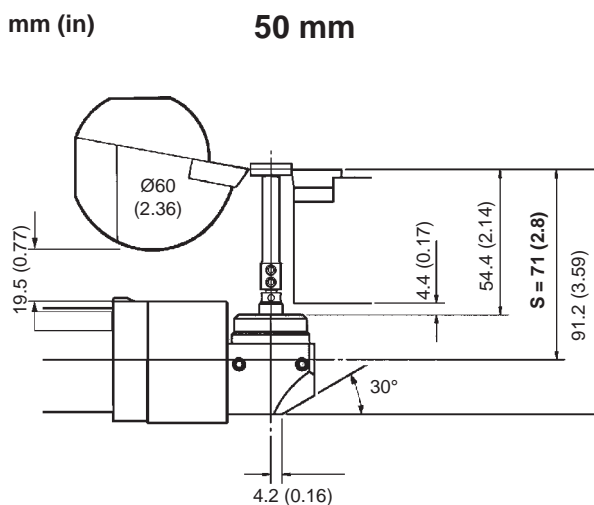
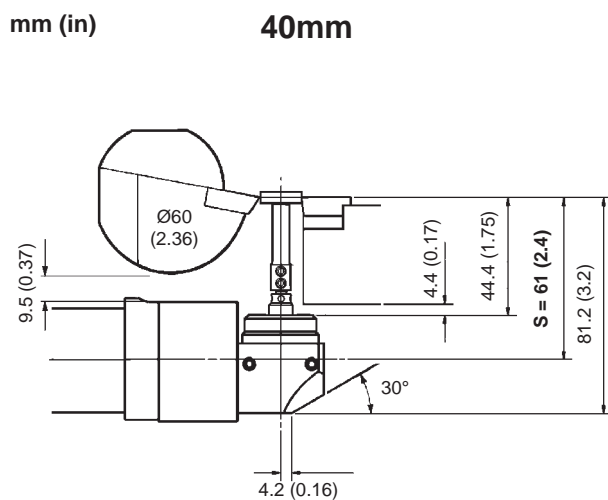
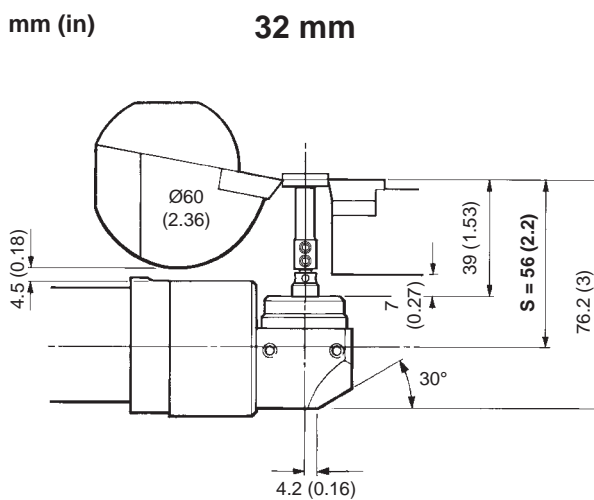
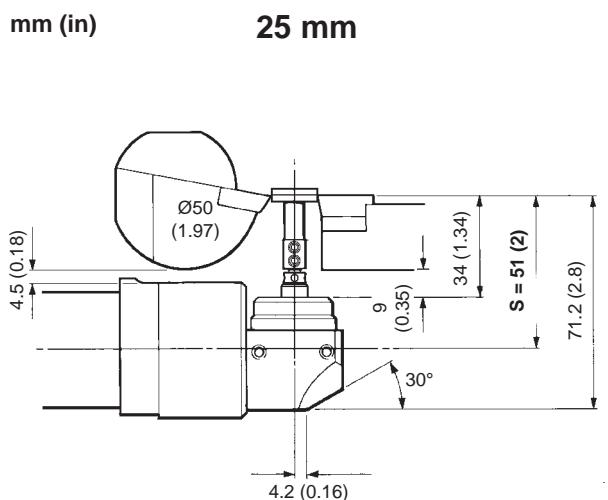
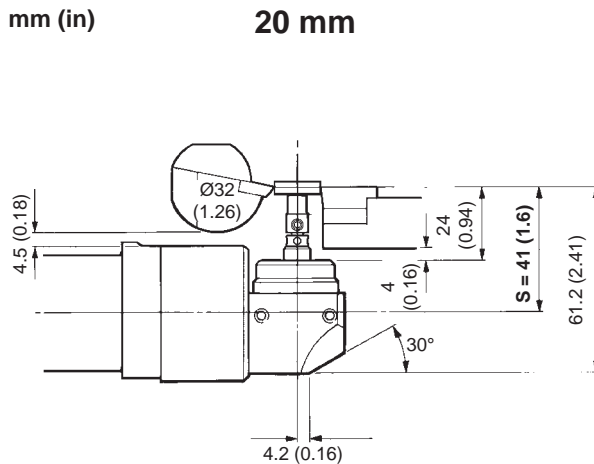
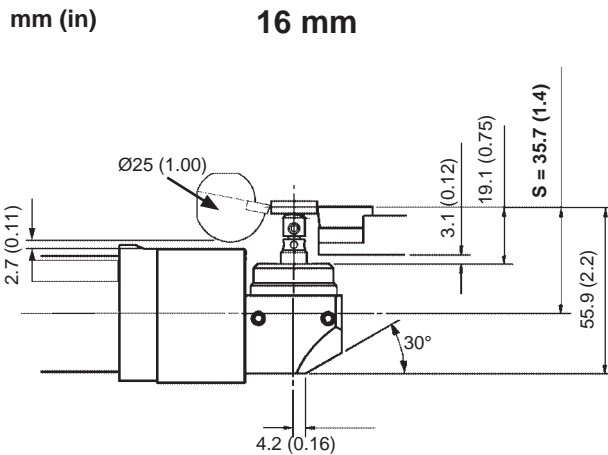
Machine Y axis application (non-standard)



The stylus can be in any orientation

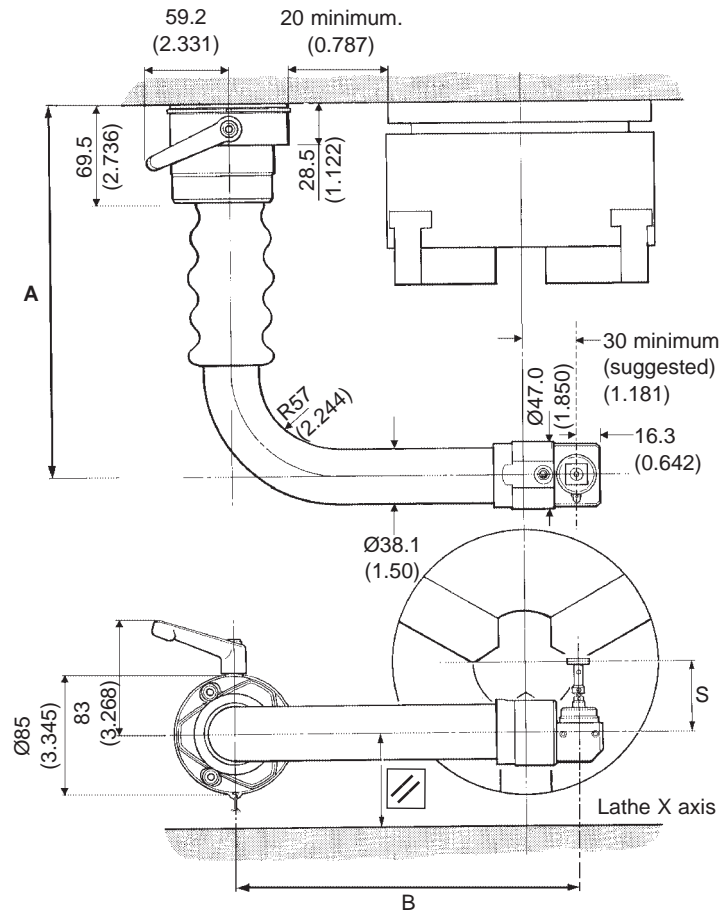
★ Please contact the Styli and Custom Products Division for further information regarding Y axis machine applications.

Stylus dimensions by tool size



Dimensions mm (in)

Chuck size	Tooling size	'A'	'B'	'S'
6 in	16 mm			36 (1.42)
	20 mm	250	211	41 (1.61)
	25 mm	(9.84)	(8.31)	51 (2.01)
	32 mm			56 (2.20)
8 in	16 mm			36 (1.42)
	20 mm	280	241	41 (1.61)
	25 mm	(11.02)	(9.49)	51 (2.01)
	32 mm			56 (2.20)
10 in	16 mm			36 (1.42)
	20 mm	325	290	41 (1.61)
	25 mm	(12.79)	(11.42)	51 (2.01)
	32 mm			56 (2.20)
	40 mm			61 (2.40)
12 in	16 mm			36 (1.42)
	20 mm	355	290	41 (1.61)
	25 mm	(13.98)	(11.42)	51 (2.01)
	32 mm			56 (2.20)
	40 mm			61 (2.40)
	50 mm			71 (2.80)
15 in	20 mm	455	335	41 (1.61)
	25 mm	(17.91)	(13.19)	51 (2.01)
	32 mm			56 (2.20)
	40 mm			61 (2.40)
	50 mm			71 (2.80)
18 in	25 mm	510	375	51 (2.01)
	32 mm	(20.08)	(14.76)	56 (2.20)
	40 mm			61 (2.40)
	50 mm			71 (2.80)
24 in	25 mm	580	450	51 (2.01)
	32 mm	(22.83)	(17.72)	56 (2.20)
	40 mm			61 (2.40)
	50 mm			71 (2.80)


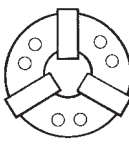


HPRA kit selection list *

* HPRA is available with rear (RE) or side exit (SE) bases

		HPRA complete kit part number and critical dimension matrix													
		16 mm		20 mm		25 mm		32 mm		40 mm		50 mm		'A' mm (in)	'B' mm (in)
		RE	SE	RE	SE	RE	SE	RE	SE	RE	SE	RE	SE		
	6 in	0736	0784	0661	0781	0662	0782	0663	0783					250 (9.84)	211 (8.31)
	8 in	0739	0790	0664	0787	0665	0788	0666	0789					280 (11.02)	241 (9.49)
	10 in	0742	0796	0667	0793	0668	0794	0669	0795	0743	0797			325 (12.79)	290 (11.42)
	12 in	0745	0802	0670	0799	0671	0800	0672	0801	0746	0803	0747	0804	355 (13.98)	290 (11.42)
	15 in			0673	0805	0674	0806	0675	0807	0749	0809	0750	0810	455 (17.91)	355 (13.19)
	18 in					0841	0857	0842	0858	0843	0859	0844	0860	510 (20.08)	375 (14.76)
	24 in					0845	0861	0846	0862	0847	0863	0848	0864	580 (22.83)	450 (17.72)
'S' mm (in)		36 (1.42)		41 (1.61)		51 (2.01)		56 (2.20)		61 (2.40)		71 (2.80)			

HPRA kit part no. = A-2176-XXXX (XXXX from above)

HPRA spare arm / probe / stylus / part number matrix							
							
		16 mm	20 mm	25 mm	32 mm	40 mm	50 mm
	6 in	0826	0676	0677	0678		
	8 in	0829	0679	0680	0681		
	10 in	0832	0682	0683	0684	0833	
	12 in		0685	0686	0687	0836	0837
	15 in		0688	0689	0690	0839	0870
	18 in			0899	0850	0851	0852
	24 in			0853	0854	0853	0856

Part number = A-2176-XXXX (XXXX from above)

Type	Part no.	Description
Rear exit base assembly	A-2176-0025	85 mm diameter rear exit base assembly
Side exit base assembly	A-2176-0187	85 mm diameter side exit base assembly
Stand assembly	A-2176-0019	85 mm diameter stand for storing HPRA
Base/TSI2 kit	A-2176-0696	Rear exit base assembly, TSI2 kit
TSI2 interface	A-2176-0010	TSI2 tool setting arm interface
Fuse	P-FS01-1A25	250 mA quick-blow fuse for TSI2
RP3 probe kit	A-2197-0049	RP3 probe assembly, user's guide, packaging
RP3 OEM kit	A-2197-0007	RP3 probe assembly, user's guide, OEM PCB, packaging
RP3 front cover kit	A-2197-0006	Front cover, eyelid, eyelid spring, packaging
Stylus break stem	M-2197-0150	Stylus break stem for 25 mm to 50 mm tooling styli

Type	Part no.	Description
Micro break stem	M-2197-0156	Stylus break stem for 16 mm to 20 mm tooling styli
Tool kit	A-2176-0636	Standard HP arm tool kit
Tool kit	A-2176-0639	Micro HP arm tool kit
Fixing kit	A-2176-0028	HPRA base fixing kit
Stylus kit	A-2197-0157	Stylus kit for 16 mm tooling
Stylus kit	A-2197-0158	Stylus kit for 20 mm tooling
Stylus kit	A-2197-0159	Stylus kit for 25 mm tooling
Stylus kit	A-2197-0160	Stylus kit for 32 mm tooling
Stylus kit	A-2197-0161	Stylus kit for 40 mm tooling
Stylus kit	A-2197-0162	Stylus kit for 50 mm tooling

Associated publications

RP3 Data sheet
H-2000-2014

RP3 User's guide
H-2000-5187

HPRA User's guide
H-2000-5124

Machine tool styli brochure
H-1000-3200

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



H-2000-2029-06-A