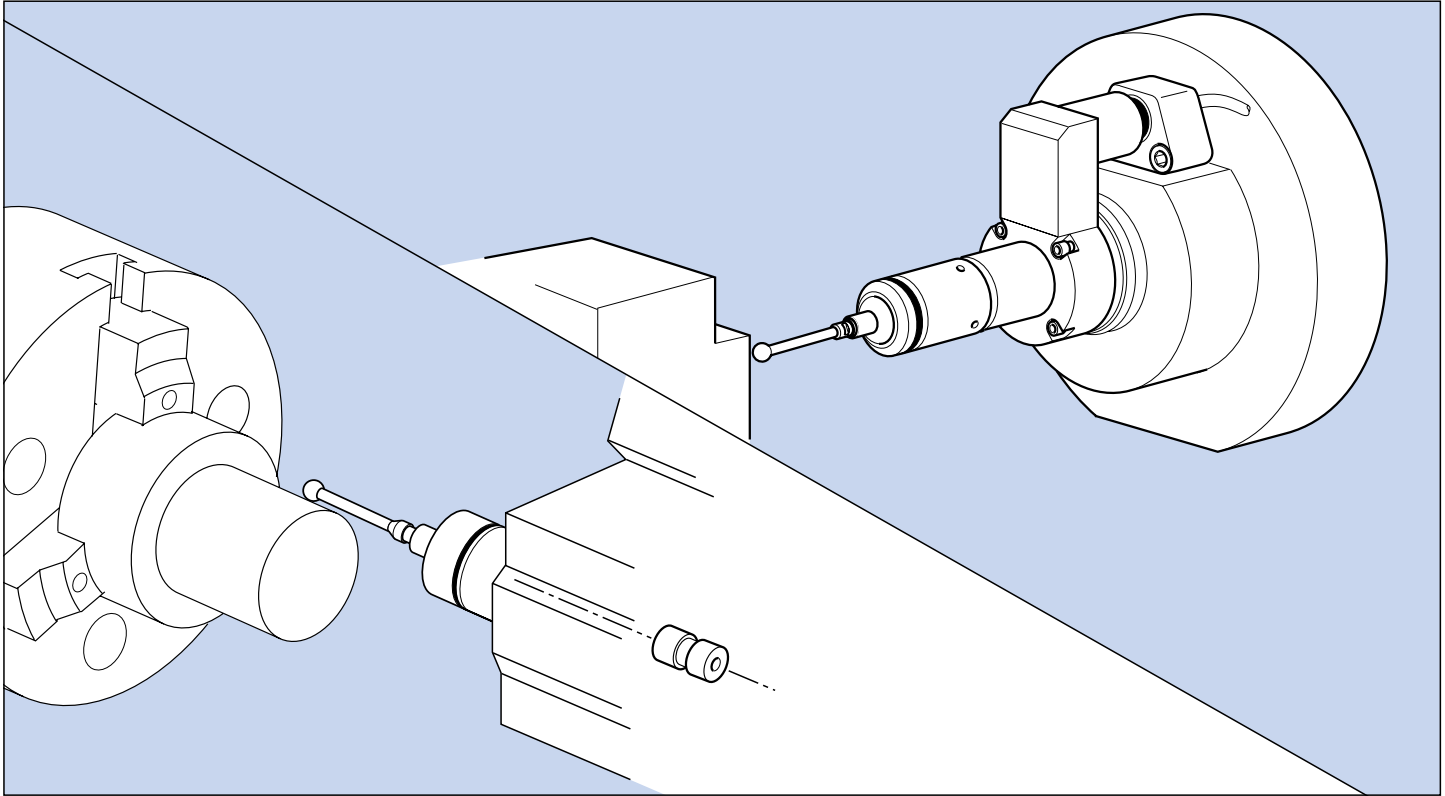


HIGH FREQUENCY TWIN AIR GAP TRANSMISSION SYSTEM



The high frequency twin air gap transmission system allows the transmission of the signal from the touch probe to the interface through one or two air gaps.

High reliability

The system is particularly suitable for high aggressive machine environments like machine tools working areas.

Twin air gap availability

It allows a fast replacement of the touch probe tool block on the turret.

Large range of models for single components

The single components of the system (transmitters, receivers, and repeater) are foreseen in a large range of dimensions and shapes to completely meet specific needs in machine tool applications.

No wear

No mechanical contact between the system components during the use occurs.

High protection against coolant

The IP 67 (IEC Standards) assures the high reliability of the system with every type of different coolant.

SYSTEM CONFIGURATION AND OPERATION

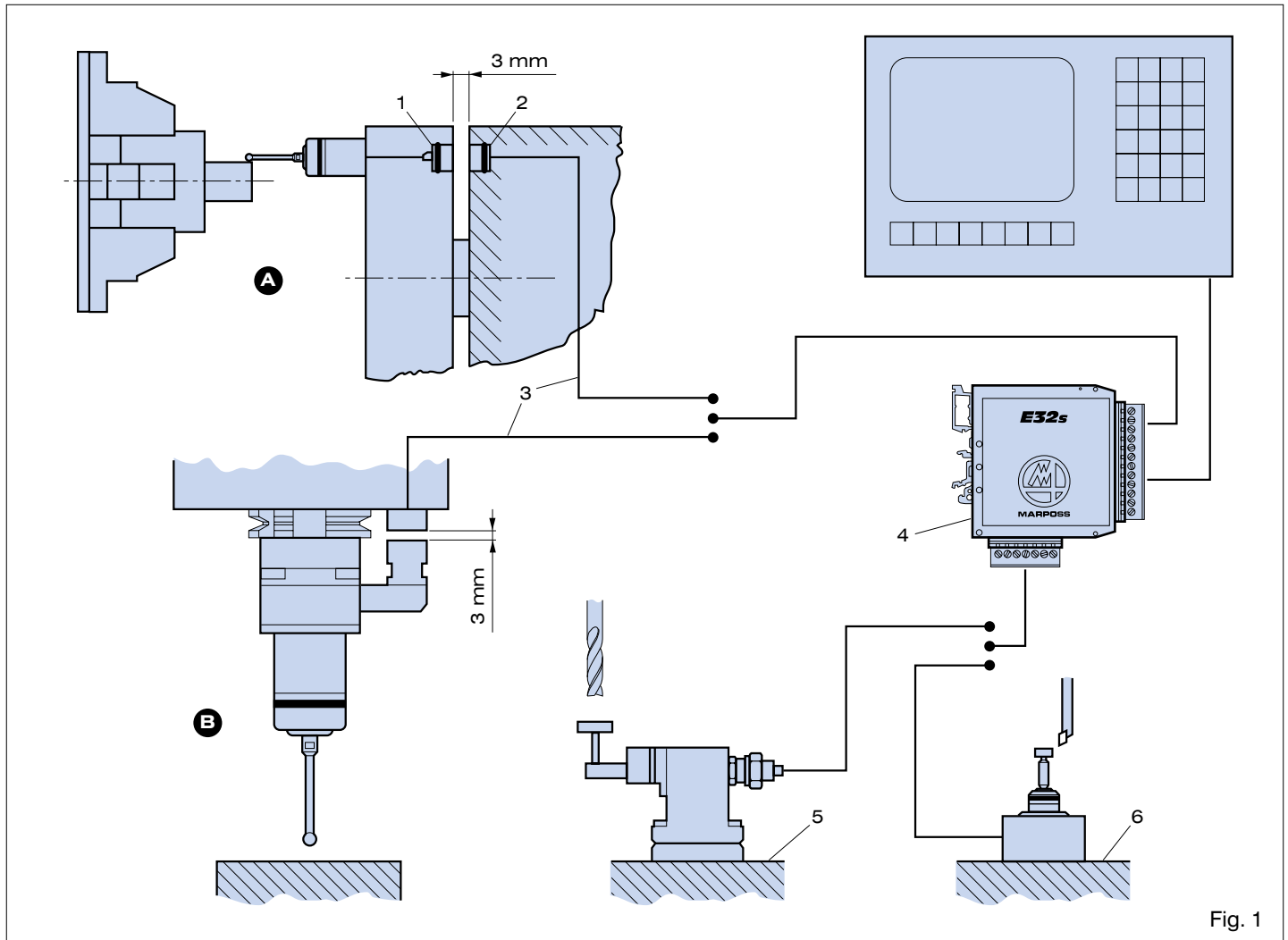


Fig. 1

The high frequency transmission system transmits the signals from the probe to the interface through the air gap, then to the CNC of the machine tool.

The system consists of a couple of components: the transmitter (1) and the receiver (2).

The typical applications of this system are on machining centers and on lathes.

In machining centers applications (B) the transmitter integrated in the probe holder is fastened to the shank and the receiver is screwed near the spindle.

In lathe applications (A) the transmitter is a cylindrical module inserted in the turret and the receiver is fixed on the turret support. Should it be necessary to frequently replace the probe in the turret with a work tool, as in turning center applications a *Twin Air Gap* H.F. transmission system is available. For this purpose, it is later described in this catalogue.

The receiver is equipped with a cable (3) 8 m (26.2 ft) long for the connection to the interface unit (4).

In order to meet the specific needs in machine tools, various models of receivers are available. They have different dimensions and fastening methods.

In machining center applications, where the receiver must be located near the spindle, different wiring and protection devices on the connection cable to the power supply are available. The probe holder with the integrated transmitter is available in a wide range of dimensions.

The transmitter does not need a battery because the H.F. system is auto-supplied. All the system components are completely watertight, in order to operate even in the harshest working conditions.

The distance between receiver (2) and E32S interface (4) can be up to 50 m (164 ft).

E32S interface (4) also allows a cable connection with a second Touch probe for the tool setting on machining center (6) or lathe (7).

The maximum misalignment between the two modules can be up to 2 mm (0.078 inches).

TWIN AIR GAP TRANSMISSION SYSTEM

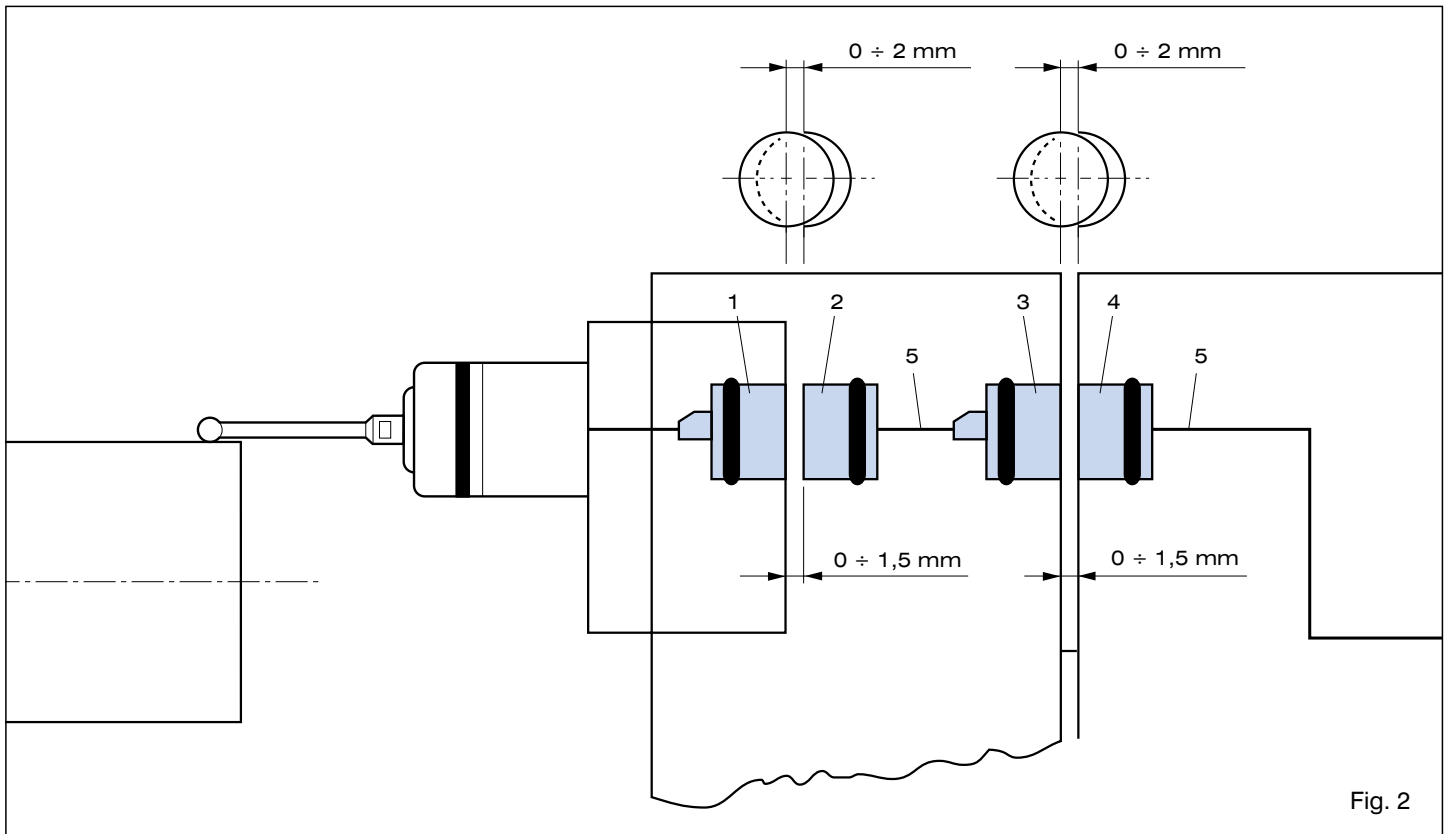


Fig. 2

The H.F. transmission system allows the transmission of the signal through two different air gaps. The system, in the twin air gap configuration, consists of two modules.

The first module is composed of a transmitter (1), commonly inserted in the removable probe holder, and a receiver (2) located into the turret.

This sectioning of the electrical connection allows a rapid replacement of the turret probe with a work tool and vice versa.

The second module is composed of the repeater (3), placed into the turret and a second receiver (4), that has to be located into the turret holder. The receivers are equipped with a cable (5) 8 m (26.24 ft) long, the second receiver is connected to the E32S interface unit.

The transmitter and the repeater have respectively two and five screw terminals for connection to the cable.

LATHE APPLICATIONS

In the single air gap applications the receiver is placed in the turret support and connected to the H.F. power supply unit.

In the twin air gap applications, two receivers will be used, the first placed in the turret and connected to the repeater module, the second placed in the turret support and connected to the E32S interface unit. Different receivers shapes are foreseen in the twin air gap applications.

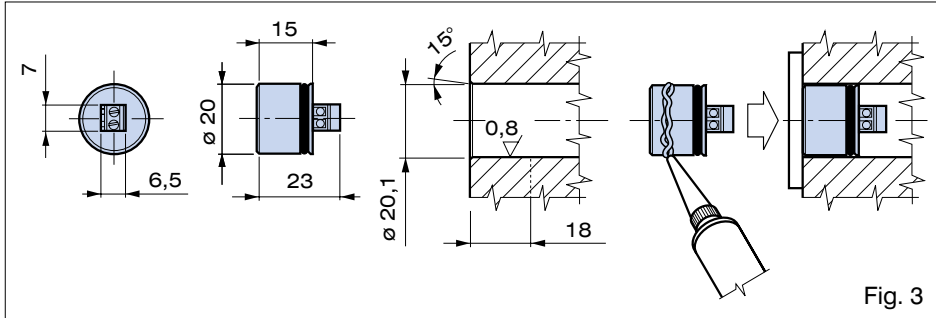


Fig. 3

Cylindrical transmitter L=15 mm (0.59")

The module is installed in the turret within a bore. It is glued with thermosetting epoxy resin applied to its external surface (fig. 3).

Code: 2024303000

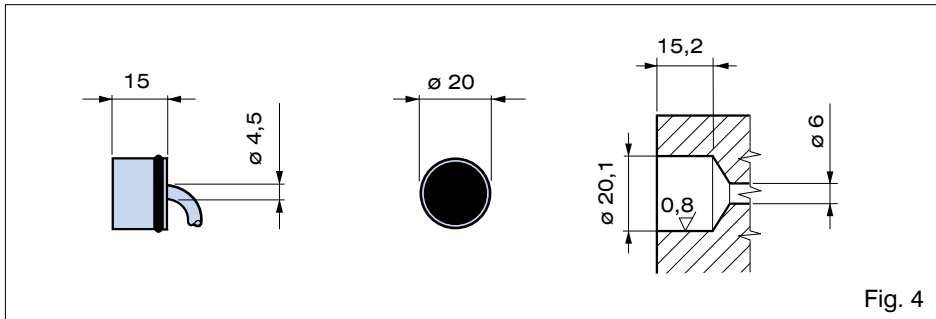


Fig. 4

Cylindrical receiver L=15 mm (0.59")

The receiver is installed in the turret or in the turret support within a bore (fig.4). It is fastened with the same method like that described for the cylindrical transmitter, L=15 mm.

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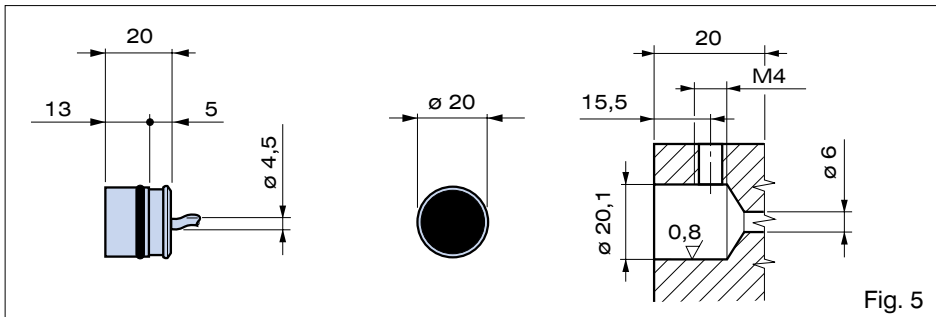


Fig. 5

Cylindrical receiver L=20 mm (0.79")

The receiver is installed in the turret or in the turret support within a bore, and fastened by means of M4 grub screw (fig. 5).

Code: 2024303020

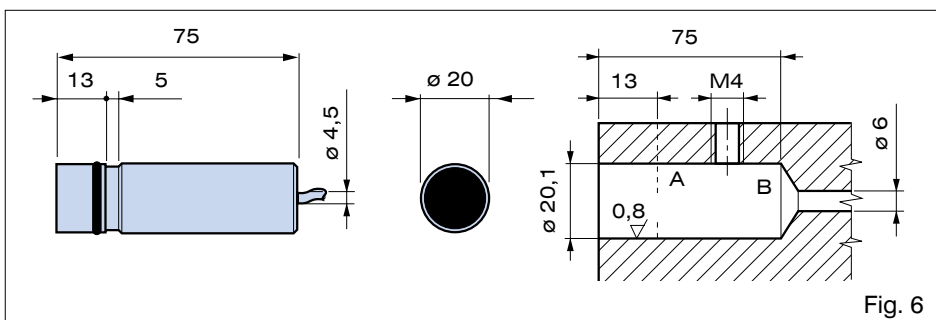


Fig. 6

Cylindrical receiver L=75 mm (2.95")

The receiver is installed in the turret or in the turret support within a bore, and fastened by means of M4 grub screw in the clamping zone between A and B (fig. 6).

Code: 2024303030

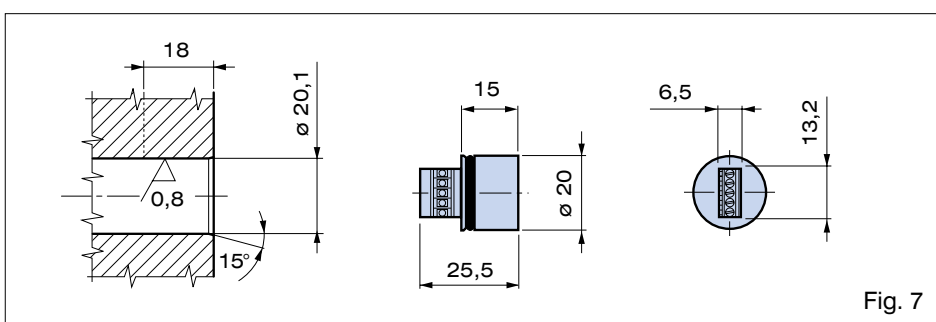
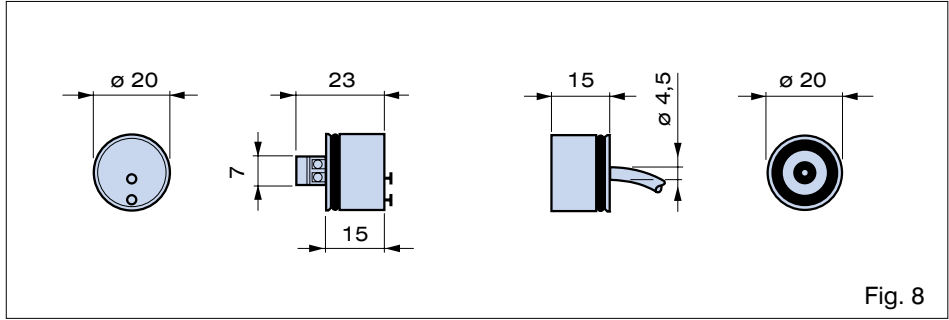


Fig. 7

Repeater module

The repeater module (fig.7) is used only in case of twin air gap sectioning. It is installed in the turret within an expressly-made bore and glued with thermosetting epoxy resin applied to its external surface (the same method like the one described for the cylindrical transmitter, L=15 mm).

Code: 2024303050

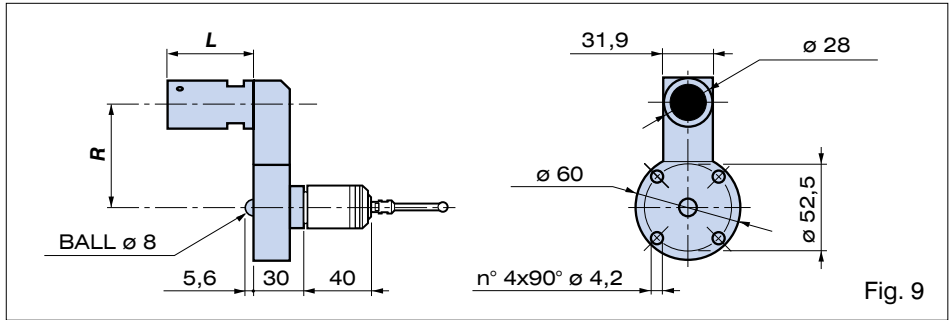


Modules for electrical sectioning

The modules for electrical sectioning are a low cost alternative to the second air gap sectioning (fig. 8). The electrical contact is performed by two recoiling pins. The modules are fastened with the same method like the one described for the repeater unit.

Code: 201810080
201810090

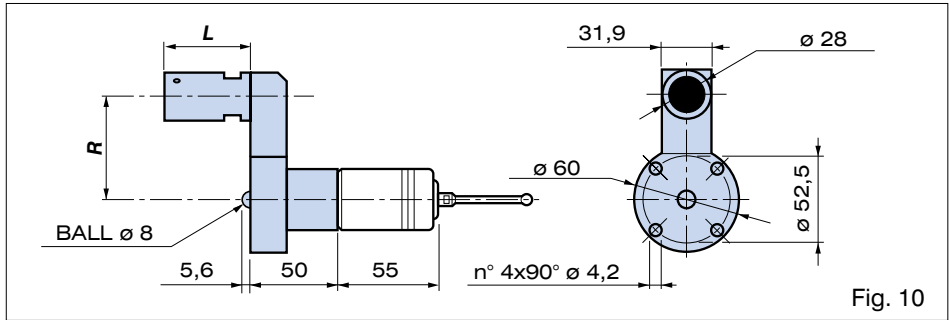
MACHINING CENTER APPLICATIONS - TRANSMITTERS



H.F. Transmitter and holder for T25 probe

The T25 probe is fastened to the holder by means of the wrench supplied with the equipment. The assembly to the taper shank is achieved by four M4 screws (fig. 9).

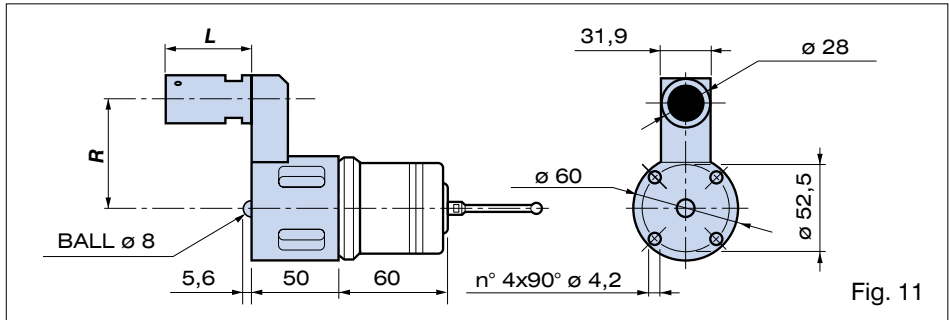
Weight: 580 g (20.46 oz).
Code: 3015335xxx



H.F. transmitter and holder for T36 probe

The T36 probe is fastened to the holder by means of two M4 screws. The assembly to the taper shank is achieved by four M4 screws (fig. 10).

Weight: 730 g (25.75 oz).
Code: 3015340xxx



H.F. transmitter and holder for T60 probe

The T60 probe is fastened to the holder by means of three M4 screws at 120°. The assembly to the taper shank is achieved by four M4 screws (fig. 11).

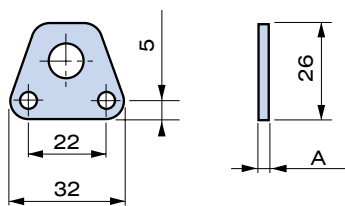
Weight: 830 g (29.28 oz).
Code: 3015345xxx

L \ R	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120
20	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576
25	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596
30	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617
35	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636
40	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656
45	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676
50	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696
55	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716
60	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736
65	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756
70	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776
75	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796
80	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816

The last three digits of the code of each holder are defined by the values of dimensions R and L selected in the table.

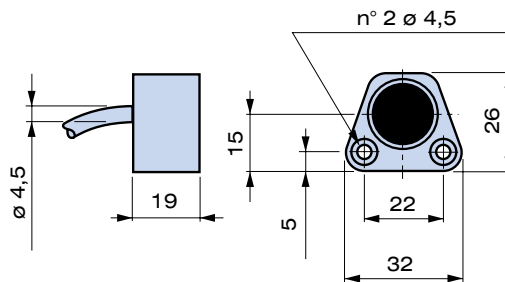
MACHINING CENTER APPLICATIONS - RECEIVERS

Spacers for receivers



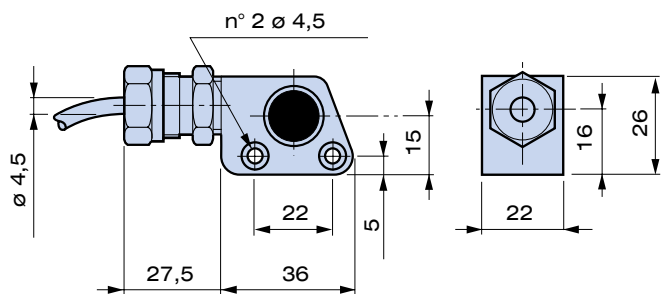
Code: 1018100104
Code: 1018100105

Receiver with rear cable outlet



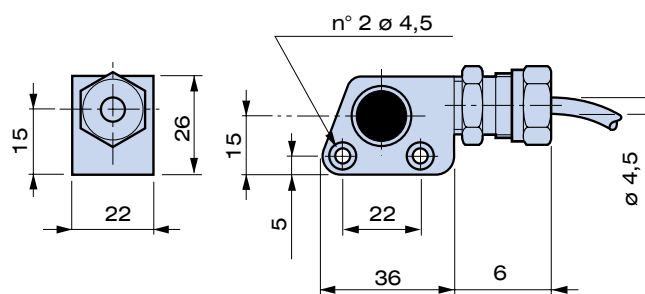
Code: 2024303150

Receiver with lateral cable outlet and flexible protective sheath, Ø 11 (Ø 0.43")



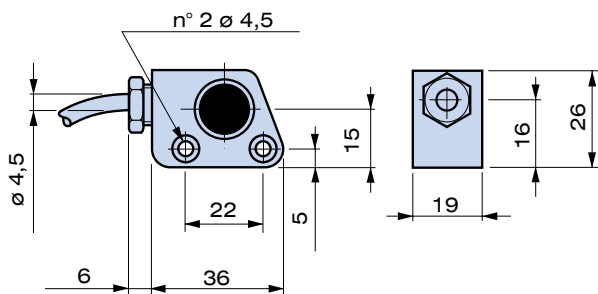
Code: 2024303100

Receiver with lateral cable outlet and flexible protective sheath, Ø 11 (Ø 0.43")



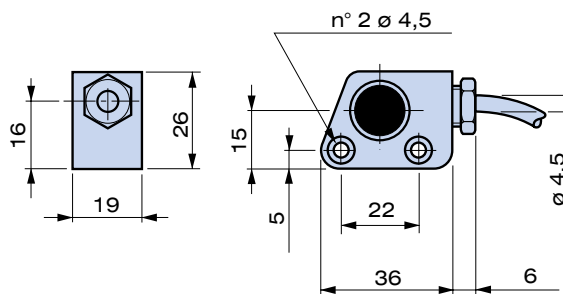
Code: 2024303101

Receiver with lateral cable outlet and rigid protective sheath, Ø 8 (Ø 0.31")



Code: 2024303200

Receiver with lateral cable outlet and rigid protective sheath, Ø 8 (Ø 0.31")



Code: 2024303201

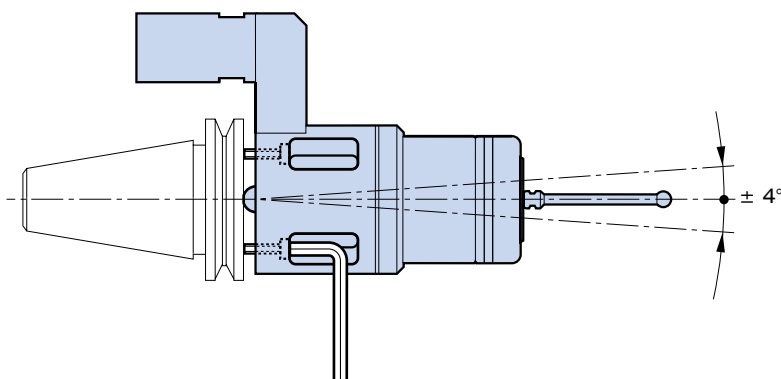


Fig. 12

Alignment of system

The position of the stylus ball center can be aligned with the axis of the spindle by acting on the adjustment system with centering ball (fig. 12). Any slight misalignment is compensated by carrying out the calibration procedure in the machine. The adjustment is made by turning the four screws that fasten the holder to the taper shank until the alignment position is reached.

INTERFACE

E32S Interface

The E 32S interface converts the signal generated by the touch probe into a form which can be used by the machine tool CNC.

On the front panel of the unit are located the terminal boxes for the I/O connections and some LED's to indicate the following:

- 1 - Green LED: lit to indicate "power ON"
- 2 - Green LED: indicates the status of SEL A and SEL B inputs lit when the inputs are selected by the CNC
- 3 - Yellow LED: indicates the status of the touch probe: lit when the probe stylus is deflected; unlit when the probe is seated.

Two independently-operating probes can be connected to the E32S interface simultaneously: they can be selected manually by dip-switch, or automatically with machine logic input.

In order to meet any application needs, the following connections are possible:

- A - One touch probe with H.F. connection and one with hard wired connection.
- B - Two touch probes with H.F. connection.
- C - Two touch probes with hard wired connection.

Power supply

- DC voltage: 24 V DC not stabilize (from 18 to 35 V DC)
- Absorption: 120 mA max.
- Fuse: 250 mA

OUTPUT CHARACTERISTICS

Probe signal

- Solid state relay :
 - ± 50 V peak, ± 40 mA peak
 - External led : 10 mA max
- Response time to "touch":
 - 35 μ s ± 10 μ s with hard wired transmission
 - 47 μ s ± 13 μ s typ. with H.F. transmission single sectioning
 - 60 μ s ± 15 μ s typ. with H.F. transmission double sectioning

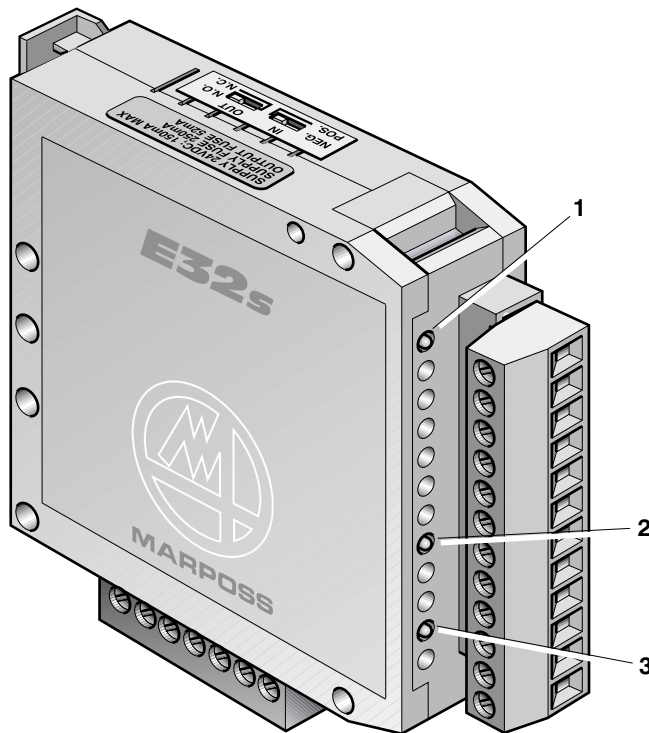


Fig. 13

PROBE 1 STATUS		deflected			
PROBE 1 STATUS		seated			
PROBE 2 STATUS		deflected			
PROBE 2 STATUS		seated			
INPUT	SEL B - SEL A		PIN 8	open	
			PIN 9	closed	
	SEL B - SEL A		PIN 8	open	
			PIN 9	closed	
OUTPUT	PROBE		PIN 11	closed	
			PIN 12	open	
			PIN 11	closed	
			PIN 12	open	
	LED-		PIN 6	closed	
			PIN 7	open	

"IN" SWITCH POS.	PROBE SELECTION INPUTS		ACTIVE PROBE
	SEL A	SEL B	
Pos.	0V	0 V	1
	24V	0 V	2
Neg.	0V	0 V	2
	24V	0 V	1

Selecting the touch probe and programming the inputs

"IN" and "OUT" switches at the top of the interface unit allows to set the unit operating mode.

The probe can be set manually, when using a single probe, by means of the "IN" switch or by CNC using the SEL A and SEL B inputs, in accordance with the table by side.

The "IN" switch allows to set also the polarity the polarity to positive (POS.) or negative (NEG.) of the probe selection inputs SEL A and SEL B.

Programming the output

By means of the switch "OUT" it is possible to set the "probe state" relay output as a normally open (N.O.) or normally closed (N.C.).

The interface is supplied with N.C. programming.

Others

- Protection degree: IP20 according to EN 60529 standard

The E32S interface is designed for the mounting inside the machine cabinet by means of TS35 (DIN EN 50022) guide. A TS35 guide 100 mm (3.94") long is supplied with the unit.

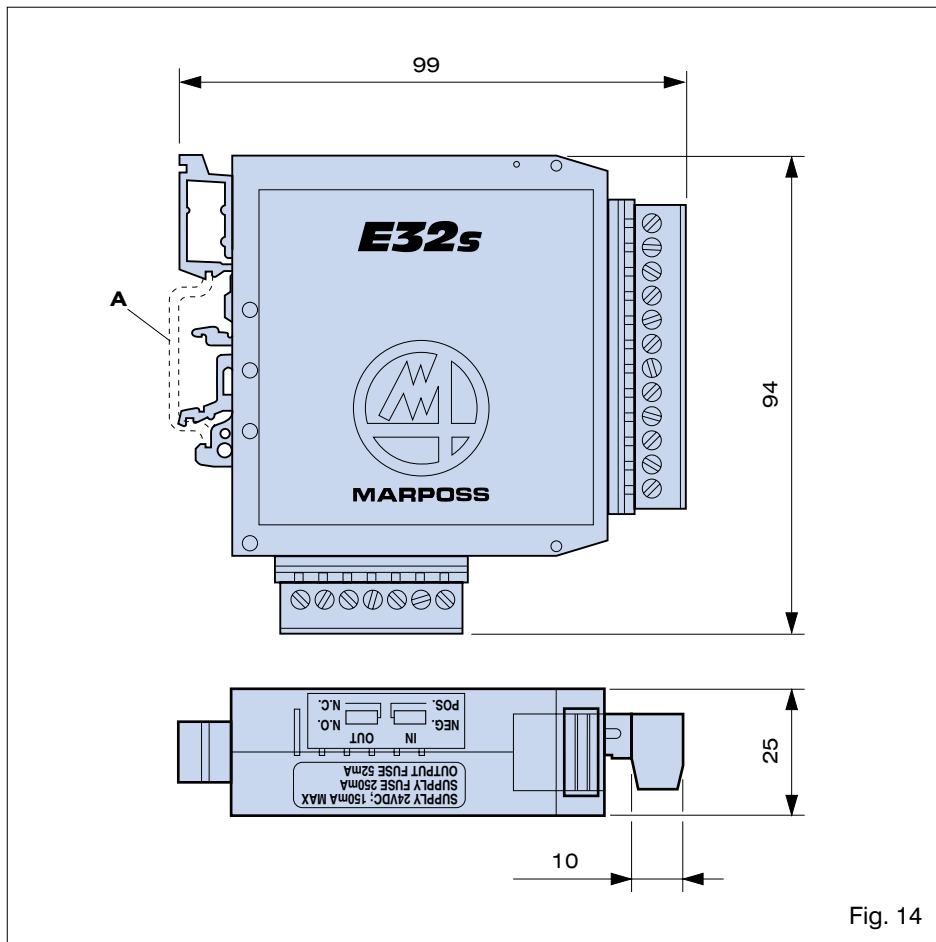


Fig. 14