

**TQ 403**
EA 403

Proximity Transducer Type TQ 403

CHARACTERISTICS

- Non-contacting measurement
- Eddy current principle
- Conforms to API 670 recommendations
- Certified to CENELEC standards
- 5 m and 10 m systems
- Pressure proof 1 bar (tip: 10 bar)

FEATURES

- **Measuring range:**
12 mm
- **Temperature range:**
-40°C to +180°C
- **Sensitivity:**
1.33 mV/ μm
- **Frequency response:**
DC to 20 kHz

DESCRIPTION

These transducers are used for the contactless measurement of the relative displacement of moving machine elements. They are particularly adapted for measuring the relative vibration and axial position of rotating machine shafts such as those found in steam turbines, gas turbines, hydraulic turbines, alternators, turbo-compressors, pumps, etc.

The TQ 403 non-contacting transducer and the matching IQS 453 signal conditioner combine to form a calibrated proximity system in which each component is interchangeable. The system outputs a voltage proportional to the distance between the transducer tip and the target (e.g. machine shaft).

The active part of the proximity probe is a coil of wire that is moulded inside the tip of the transducer, which is made of Torlon (Polyamide-imide). The transducer body is made



of stainless steel. The target material must, in all cases, be metallic.

The transducer body is available with metric or English thread. The transducer has an integral coaxial cable, terminated with an AMP-type connector. Various cable lengths (integral and extension) may be ordered.

Due to the characteristics of the coaxial cable, an "electrical trimming" of the nominal length of the integral and extension cables is necessary to optimize the system performance and the transducer interchangeability.

The TQ 403 proximity transducer can be matched with the EA 403 extension cable. Optional junction boxes and housings offer mechanical protection of the integral and extension cable connectors.

GENERAL

Transducer input requirements:
High-frequency power source via matching conditioner type IQS 453

OPERATION
(at 23°C ±5% in target material VCL 140, 1.7225)

Sensitivity:
1.33 mV/μm (34 mV/mil)

Linear measuring range:
1.2 - 13.2 mm

Linearity:
See system performance curves

Frequency response:
DC to 20 kHz (-3dB)

Interchangeability of elements:
≤5%

ENVIRONMENTAL

Temperature ranges

Transducer:
-40°C to +180°C with drift < 5%
-180°C to +220°C with drift > 5%

Cable:
-100°C to +200°C

Connector:
-65°C to +85°C

Heat shrinkable sleeve (Polyolefin):
-55°C to +135°C

Protection class:
IP 68 according to IEC 529 and DIN 40050

Explosive atmosphere:
CENELEC certificate LCIE SYST 93.C6081X EEx ib IIC T6

Probe construction:
Wire coil Ø 18 mm, Torlon tip, encapsulated in MAZ (1.4305) stainless steel body with high-temperature epoxy glue

Integral cable:
FEP covered 70 Ω coaxial cable, Ø 3.6 mm
Option: BOA stainless steel armour sheathing and heat shrinkable insulating sleeve

Connector:
Miniature coaxial male connector type AMP 1-330 723-0

Accessories :

- EA 403 Extension cable
- JB 118 Junction box
- SG 102 Cable feedthrough
- IQS 453 Signal conditioner

Ordering information for TQ 403 proximity probe :

- Designation : TQ 403 proximity probe
- Ordering number : **111-403-000-01 / X1 / X2 / X3 / X4 / X5**

X1	Environment
01	Standard (1)
02	Explosive (2)

X2	Body thread
13	M20 x 1.5 x 36.5 mm
14	M20 x 1.5 x 86.5 mm (1)

X3	Integral cable
03	1 m length (1)
04	5 m
05	10 m
12	1 m + BOA
13	5 m + BOA
14	10 m + BOA
23	1 m + BOA + Sleeve (4)
24	5 m + BOA + Sleeve (4)
25	10 m + BOA + Sleeve (4)

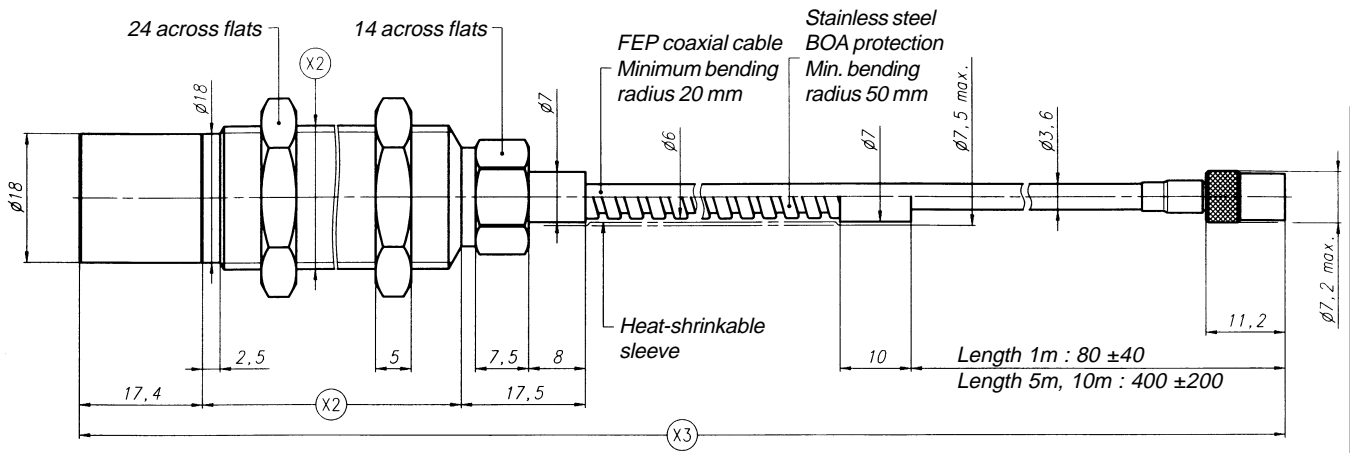
X4	Movable BOA
01	None
02	1 m length
03	2 m
04	3 m
05	4 m
06	5 m
07	6 m
08	7 m
09	8 m
10	9 m

X5	Total length (3)
01	5 m (1)
02	10 m

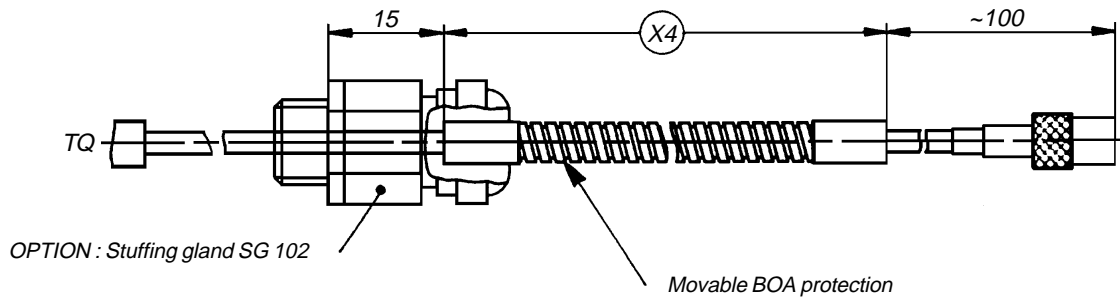
Notes :

- 1) Standard, available from stock. For special requests, replace the option code XX with 99 and specify the exact requirements.
- 2) The Exi version is marked blue.
- 3) Length of 1 m integral plus extension cable to IQS.
- 4) The BOA armoured cable protection is not leaktight. The heat shrinkable sleeve is splashproof only.

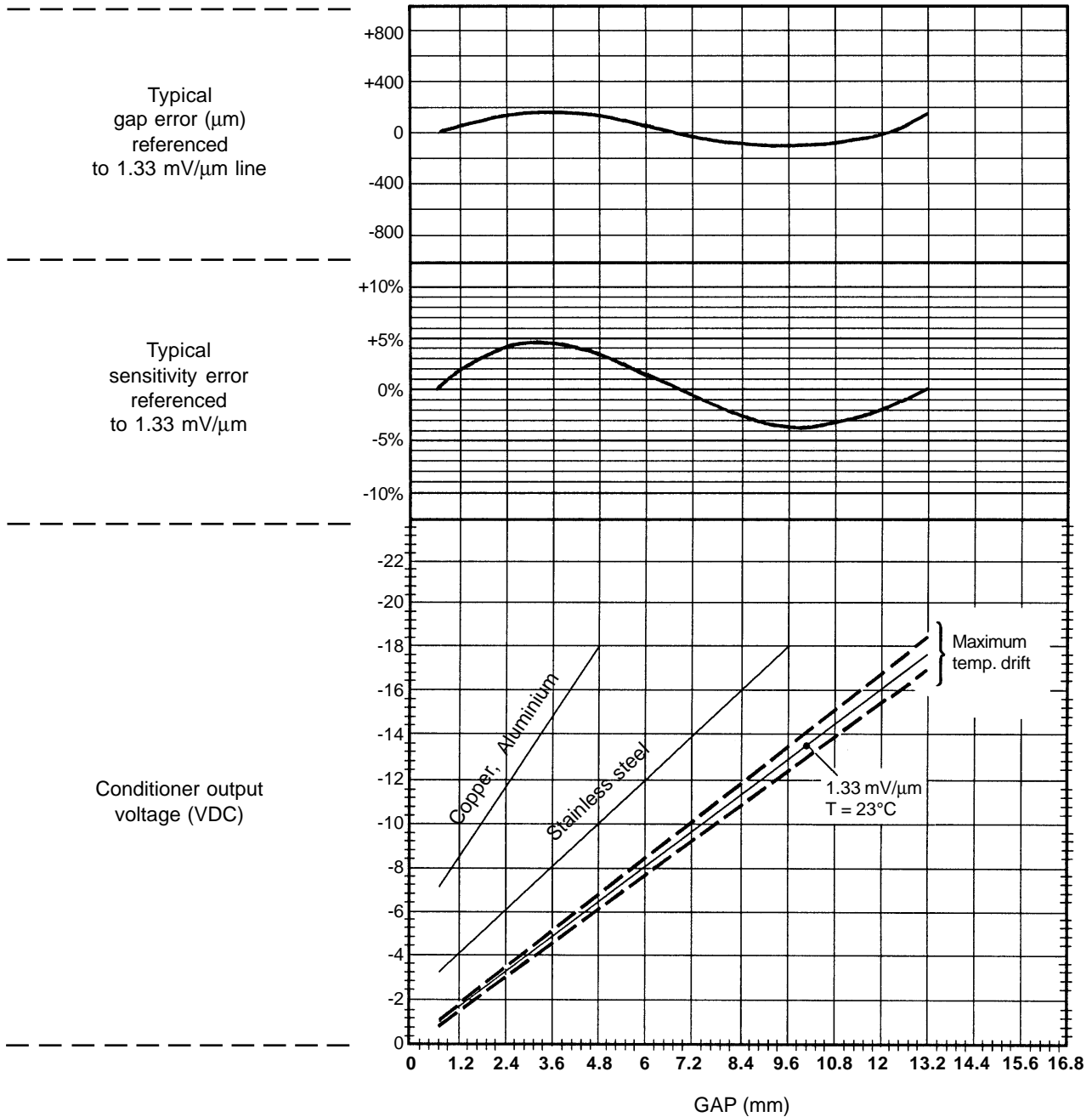
TQ 403 :



Movable BOA for TQ 403 :



Note :
Dimensions in mm if not otherwise specified



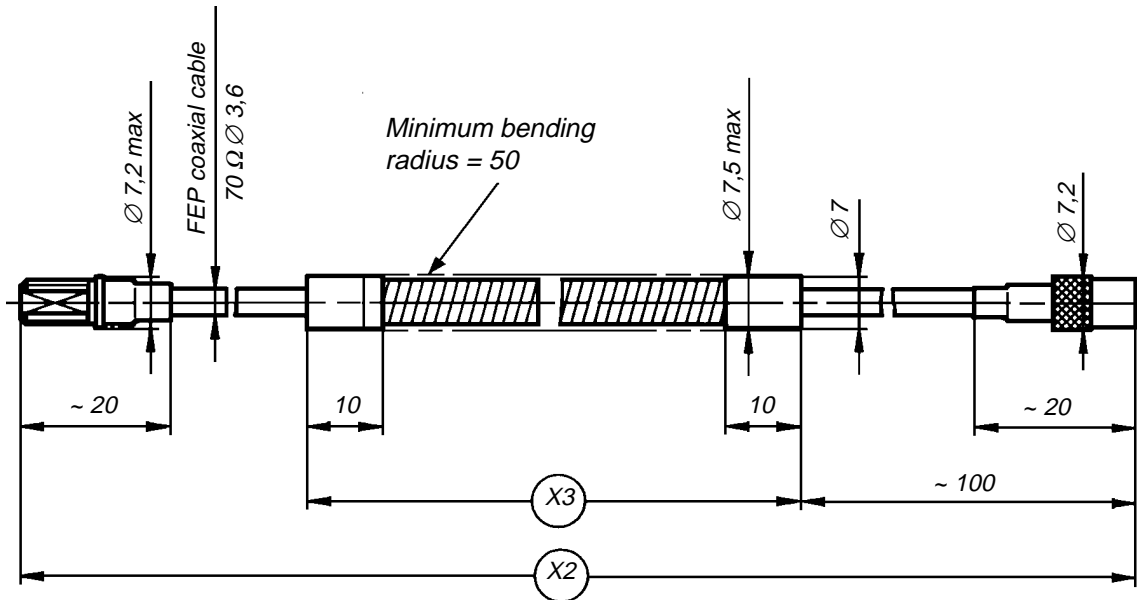
Probe : TQ 403 / 5 m
 Conditioner : IQS 453
 Target : VCL 140 (1.7225)
 Equivalent materials : A 37.11 (1.0065), AFNOR 40 CD4, AISI 4137

Note: In spite of its good dynamic response, the TQ 403 probe is essentially intended for displacement and not vibration measurement.

System calibration

The TQ + IQS system is designed for use with VCL 140 steel as a target. If special calibration is required, please define the alloy precisely or supply a sample of alloy (min. Ø 60 mm / 1 cm thick).

Dimensions : _____



Ordering information : _____

- Designation : EA 403 extension cable
- Ordering number : **913-403-000-01 / X1 / X2 / X3**

X1	Environment
01	Standard (1)
02	Explosive (2)

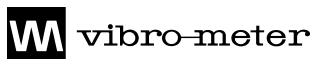
X2	Cable length
03	4 m
05	9 m

X3	BOA protection
01	None
02	3.8 m BOA
04	8.8 m BOA
05	3.8 m BOA + Sleeve
06	8.8 m BOA + Sleeve





Due to the continual development of our products we reserve the right to modify the specifications without forewarning.



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