

# TYPE F40 TRANSDUCER



Fig. F40-1 - Type F40 transducer.

**FUNCTION:** A general-purpose, omnidirectional, reversible transducer used both as a projector and a receiver. Primarily used as a projector source.

**DESIGN:** The sensitive element is a 10-cm-diam piezoelectric, lead zirconate-titanate, hollow sphere with a wall 6.35 mm thick. A 1.9-cm-diam access hole permits soldering a lead to the inside silver electrode before the opening is covered with a glass-to-metal seal. The entire sphere is encapsulated in polyurethane; type DSS-2 cable enters the access hole through a short length of stainless steel tube that is molded in place. The transducer can be supplied with a 30-m cable or a 1-m cable with a waterproof connector. The wiring diagram is shown in Fig. F40-2.

**FREQUENCY RANGE:** 1 to 20 kHz

**FFVS:** -189 dB re 1 V/ $\mu$ Pa

**TVR:** 128.5 dB re 1  $\mu$ Pa at 5 kHz

**MAXIMUM DEPTH:** 6.9 MPa (690 m)

**TEMPERATURE RANGE:** 0 to 35°C

**MAXIMUM DRIVING SIGNAL:** 400 V rms

**NOMINAL CAPACITANCE:** 47000 pF with 30-m cable

**DC RESISTANCE:** <1000 M $\Omega$

**ELECTRICAL IMPEDANCE:** See Fig. 40-F40-4

**DIRECTIVITY:** Omnidirectional within  $\pm 0.5$  dB in the horizontal (XY) and vertical (XZ) planes to 25 kHz. The horizontal plane is that passing through the center of the spherical element perpendicular to the axis of symmetry of the transducer.

**WEIGHT:** 4 kg (8.8 lbs)

**SHIPPING WEIGHT:** 9 kg (19.8 lbs)

**NORMAL CABLE LENGTH:** 30 m

**CABLE CODE:** Two conductor with a shield which can be used balanced and unbalanced

**INSTRUCTIONS FOR THE USER:**

See Appendix D for preparation steps  
Mount transducer rigidly in a fixture attached by screws in the  
tapped 10-32 holes in the cable gland tube  
See Fig. F40-6 for acoustic center of transducer.

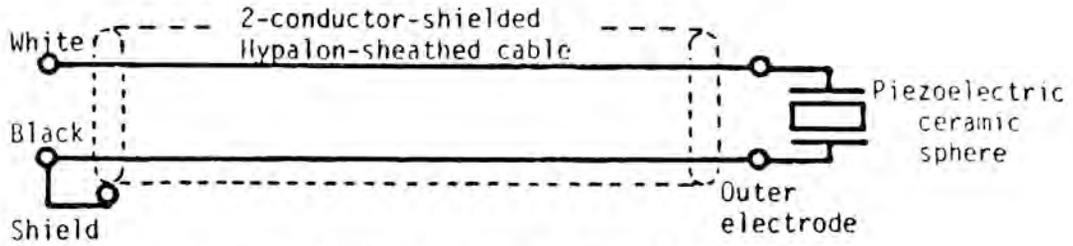


Fig. F40-2 - Wiring diagram for Type F40 transducer.

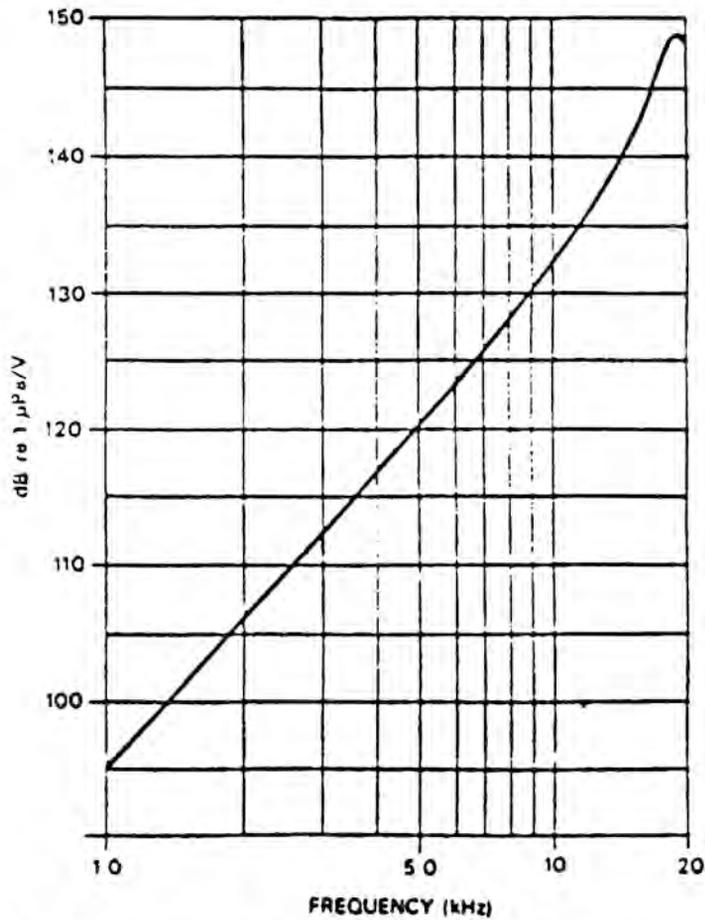


Fig. F40-3 - Typical TVR of Type F40 transducer, unbalanced, black lead and shield grounded, 30-m cable.

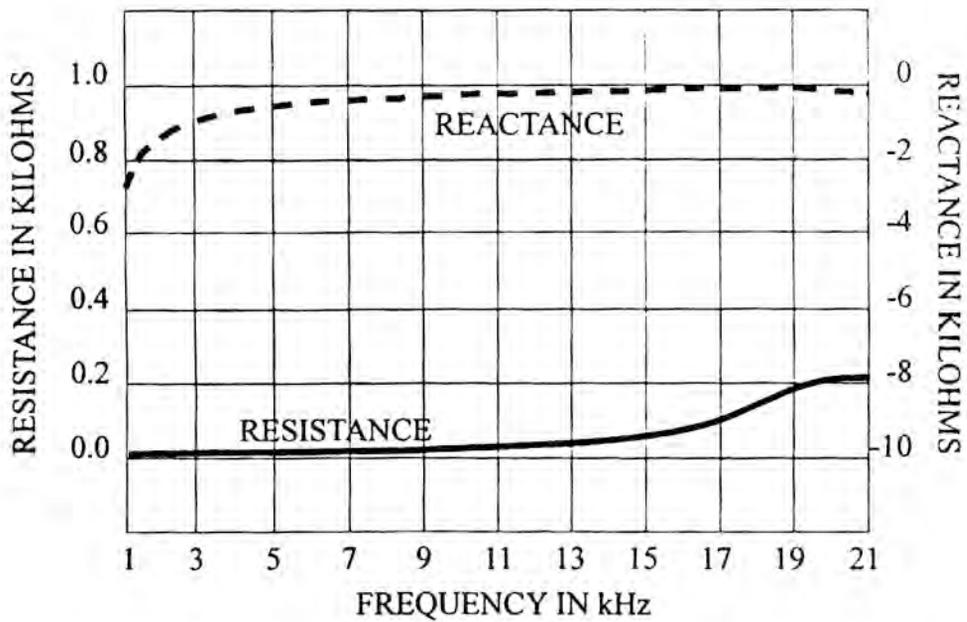
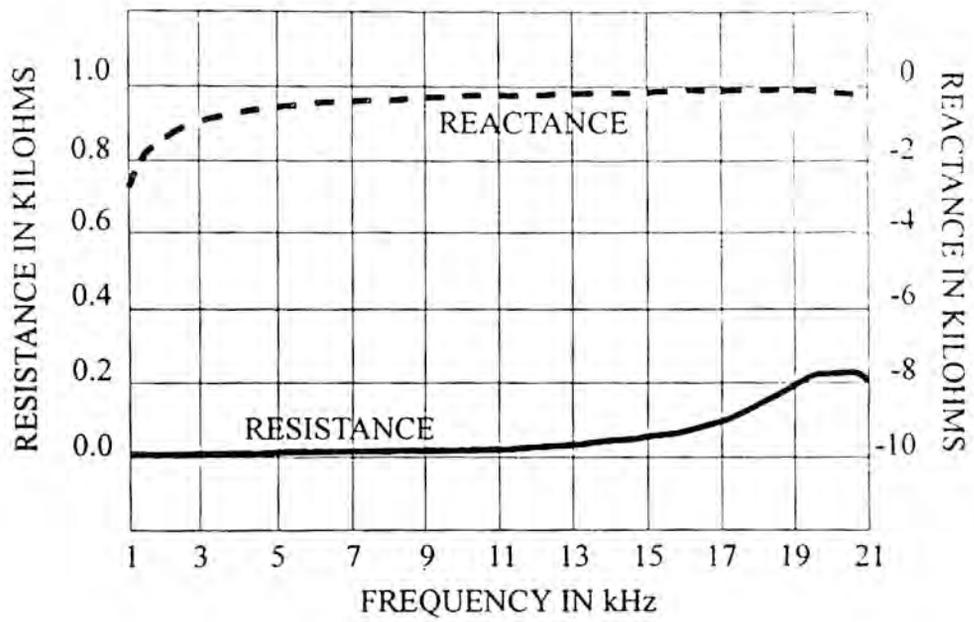


Fig. F40-4 - Typical equivalent series impedance of Type F40 transducer, unbalanced, black lead and shield grounded, 30-m cable.

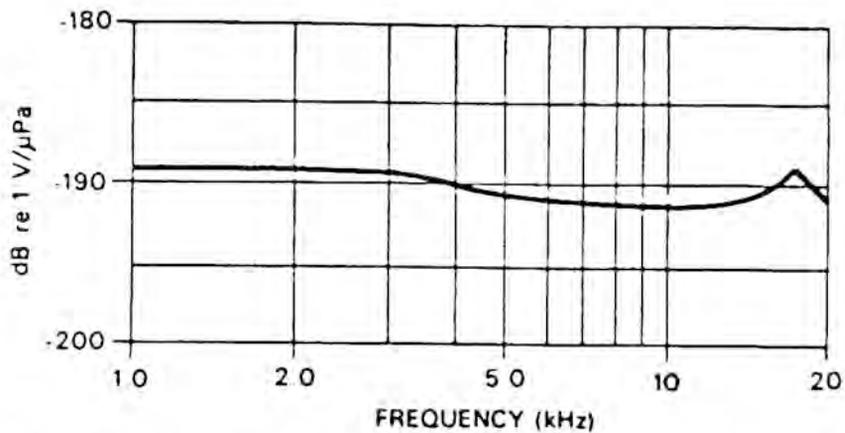
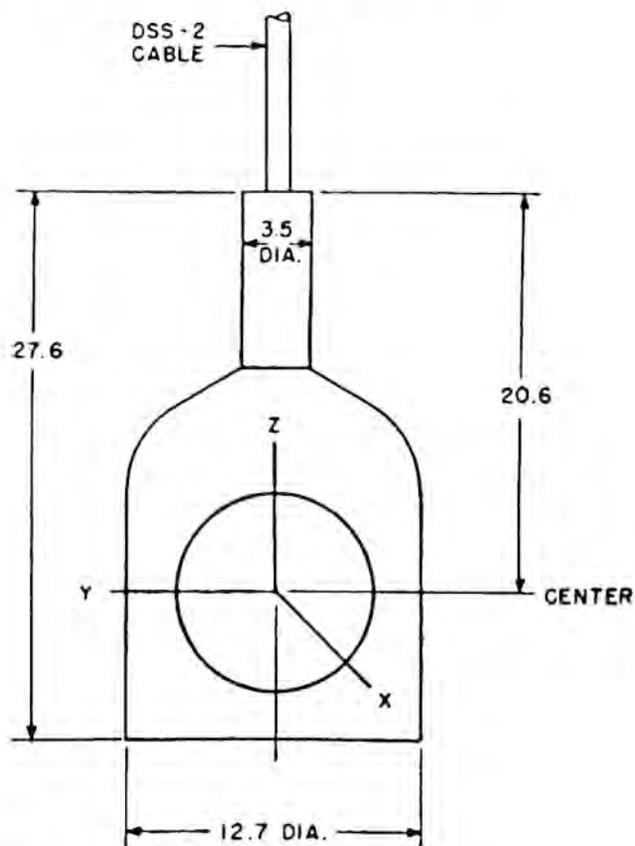


Fig. F40-5 - Typical FFVS of Type F40 transducer, open-circuit voltage at end of 30-m cable, unbalanced, black lead and shield grounded.



**ACTIVE ELEMENT**

- (1) LEAD ZIRCONATE  
TITANATE SPHERE  
10.16 cm O.D.;  
6.35 mm WALL

Fig. F40-6 - Dimensions (in cm) and orientation of Type F40 transducer.