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Indian Standard

SPECIFICATION FOR FLEXIBLE SHAFTS USED IN CONCRETE VIBRATORS

Transmission Devices Sectional Committee, EDC 44; Panel for Flexible Shafts, EDC 44 : P2 [Ref: Doc: EDC 44 (1167)]

1. Scope — Terminology, dimensions and general requirements of flexible shafts for concrete vibrators.

2. Terminology

2.1 *Inner Shaft* — The bare working element without end fittings.

2.2 *Inner Shaft End Fitting* — Parts for fastening to the ends of the inner shaft by means of which the flexible shaft assembly is connected to the driving and driven element.

2.3 *Inner Shaft Assembly* — The inner shaft with end fittings attached or one with integrally formed squares.

2.4 *Outer Casing* — A flexible covering in the form of a tube, which acts as a run way or guide for the inner shaft, protects it from dirt and injury and assist in retaining lubrication.

2.5 *Outer Casing End Fittings* — Parts used for fastening to the ends of the outer casings by means of which the outer casing is connected or coupled to the body of the driving and driven members.

2.6 *Outer Casing Assembly* — Outer casing with end fittings attached.

2.7 *Flexible Shaft Assembly* — A combination of inner shaft assembly and coordinated outer casing assembly (see Fig. 1).

2.8 *Lay of the Shaft* — The pitch direction of the outer layer of the inner shaft. Depending upon the direction of lay, shafts may be specified as left-lay or right-lay.

2.9 *Direction of Rotation* — The direction which tightens up the outer layer of the inner shaft.

3. Types — The flexible shafts ror concrete vibrators shall be of two types, namely, Type A and Type B, depending upon the form of end fittings used for the assembly (*see also* **4.3**).

4. Dimensions

4.1 *Diameter* — The diameters of the flexible inner shafts shall be 10, 12, 12·7 and 15 millimetres. The size 12·7 millimetres shall be second choice.

4.2 *Length* — The lengths of the flexible shafts shall be 4 000 mm, 5 000 mm and 6 000 mm.

4.3 *End Fittings Dimensions*

For Type A — *See* Fig. 2 to 5.

For Type B — *See* Fig. 6 to 8.

5. Designation — A flexible shaft for concrete vibrator of Type A having left-lay (*L*) of the outer layer of shaft, with inner shaft of 12 mm diameter and 4 000 mm length shall be designated as:

Flexible Shaft A — L12 × 4 000 IS : 6276

6. Material

a) *Inner Shaft* — Spring steel conforming to IS : 4454-1967 ' Specification for steel wire for cold formed springs '.

b) *Outer Casing* — Rubber with the inner liner of steel having a minimum tensile strength of 1 200 MN/m² (120 kgf/mm² approx) with rolled rounded edges.

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7. General Requirements

7.1 The outer casing of the flexible shaft shall be capable of holding the needle securely without stretching under normal conditions of use in construction work, without damage to the inner shaft. Adequate insulated covering shall be provided for the outer casing.

7.2 Coupling or threading arrangement between the inner shaft and the vibrating needle shall be designed to prevent disengagement of the needle from the shaft during its operation.

8. Tests

8.1 *Visual Inspection* — The shaft shall be inspected for obvious flaws in the shaft, such as kinks, bends and looseness.

8.2 *Roll Test* — A length of about one metre is taken and is laid on the floor in approximately 10-metre diameter curve and rolled back and forth from the centre by foot. The shaft shall roll smoothly throughout its length without offering resistance and shall roll without jerking or flapping about. The extreme ends may flap a little.

8.3 *Locking Diameter Test* — A inner shaft assembly is looped and the junction is held in hand. One end of the inner shaft is pulled so as to reduce the diameter of the loop until the shaft assembly is felt to offer considerable resistance. The diameter of the loop is then measured and the diameters shall not be more than 20 times the inner diameter. The loop shall be as nearly circular as possible and there shall not be any obvious difference in the radius of curvature at two adjacent points.

9. Marking — All the shafts shall be marked with the designation and manufacturer's name or trade-mark.

9.1 *ISI Certification Marking* — Details available from the Indian Standards Institution.

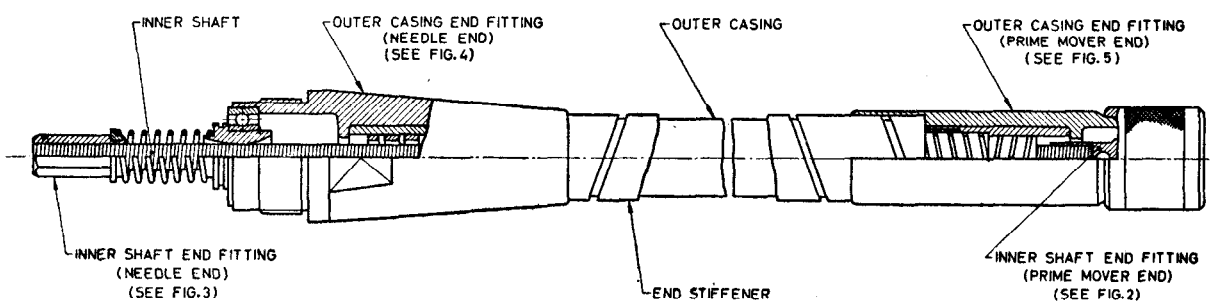
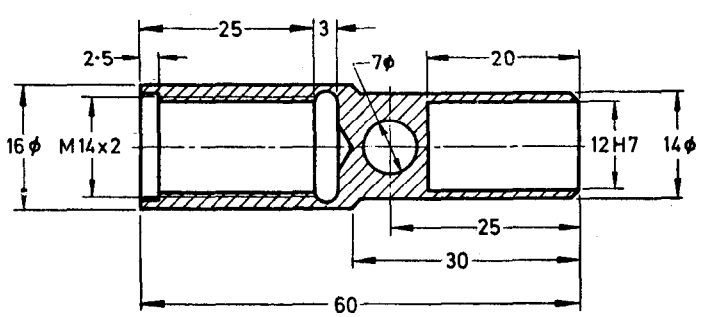
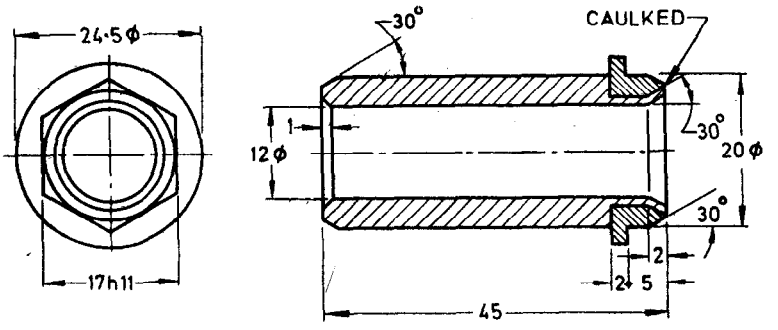


FIG. 1 ASSEMBLY OF FLEXIBLE SHAFT FOR CONCRETE VIBRATORS, TYPE A



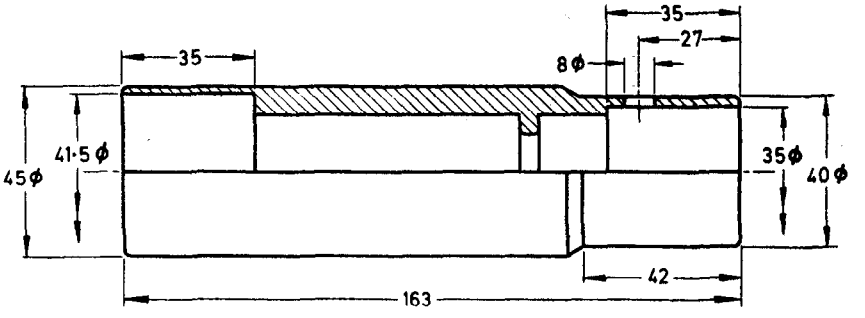
All dimensions in millimetres.

FIG. 2 DIMENSIONS FOR INNER SHAFT END FITTING (PRIME MOVER END) FOR TYPE A FLEXIBLE SHAFT ASSEMBLY



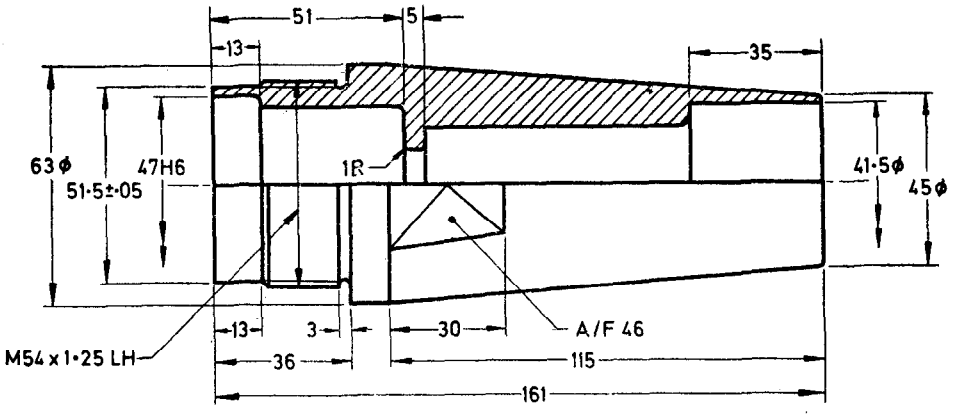
All dimensions in millimetres.

FIG. 3 DIMENSIONS FOR INNER SHAFT END FITTING (NEEDLE END) FOR TYPE A FLEXIBLE SHAFT ASSEMBLY



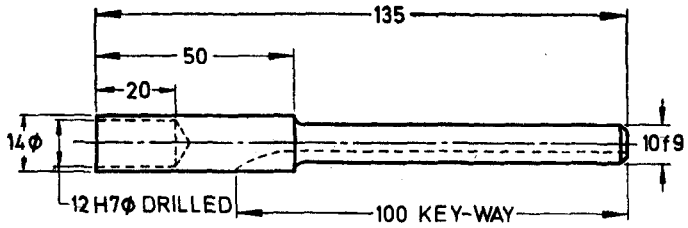
All dimensions in millimetres.

FIG. 4 DIMENSIONS FOR OUTER CASING END FITTING (PRIME MOVER END) FOR TYPE A FLEXIBLE SHAFT ASSEMBLY



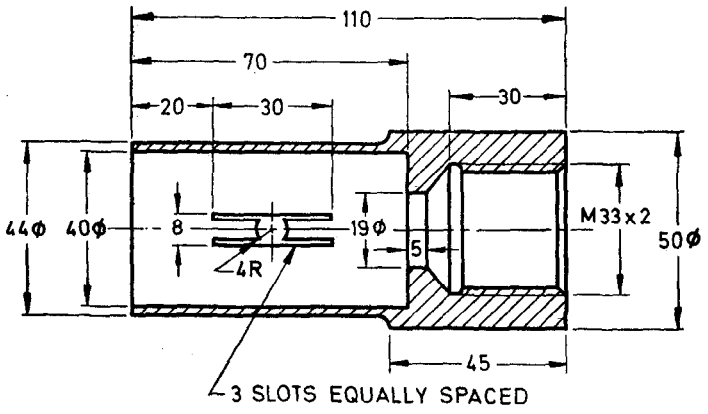
All dimensions in millimetres.

FIG. 5 DIMENSIONS FOR OUTER CASING END FITTING (NEEDLE END) FOR TYPE A FLEXIBLE SHAFT ASSEMBLY



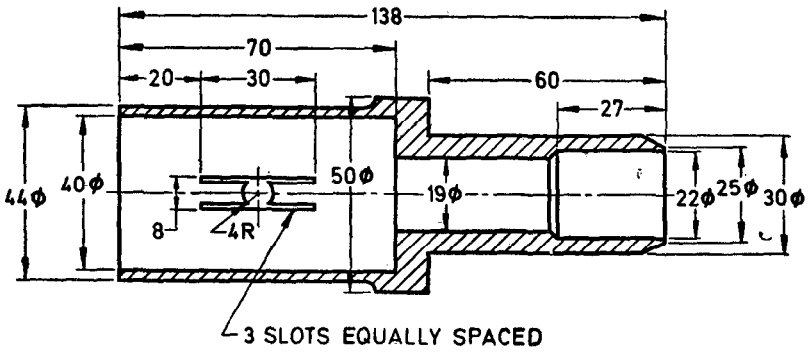
All dimensions in millimetres.

FIG. 6 DIMENSIONS FOR INNER SHAFT END FITTING (PRIME MOVER END AND NEEDLE END) FOR TYPE B FLEXIBLE SHAFT ASSEMBLY



All dimensions in millimetres.

FIG. 7 DIMENSIONS FOR CASING END FITTING (PRIME MOVER END) FOR TYPE B FLEXIBLE SHAFT ASSEMBLY



All dimensions in millimetres.

FIG. 8 DIMENSIONS FOR CASING END FITTING (NEEDLE END) FOR TYPE B FLEXIBLE SHAFT ASSEMBLY

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