

STANDARD

SAE J242a

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METRIC THREAD FUEL INJECTION TUBING CONNECTIONS—SAE J242a

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METRIC THREAD FUEL INJECTION TUBING CONNECTIONS—SAE J242a

SAE Standard

Report of Engine Committee approved April 1971 and last revised March 1976.

GENERAL SPECIFICATIONS

Scope—This standard covers complete general and dimensional specifications for most commonly used metric thread high pressure fuel injection line fittings and the related components with which they are assembled.

The basic type of fuel injection tubing connection is the swaged-tapered seat type identified as Type 2 (to correspond to the similar design in SAE J521) and is specified in Fig. 1 and Table 1. This type is available in two designs, Style A and Style B, the latter having a collar and nut designed to provide support of the tubing beyond the end of the nut. These connections consist of an upset tapered male seat formed on the end of the high pressure tubing itself (Fig. 1D), which is compressed against the mating seat in the pump discharge or nozzle inlet fitting (Fig. 1C) by means of the collar (Figs. 1E or 1G) and the nut (Figs. 1F or 1H). (See assembled connections, Figs. 1A and 1B.) Upsetting the seat on the end of tubing requires special tools and experienced personnel, and after swaging the inside diameter of the upset portion of tube must be reamed to its original size.

The following general specifications supplement the dimensional data contained in Table 1 with respect to all unspecified detail.

Size Designations—Fitting sizes are designated by the corresponding nominal outside diameter of the tubing with which they are used.

Dimensions and Tolerances—Tabulated dimensions shall apply to the finished parts, plated or otherwise processed, as specified by the purchasers.

The maximum and minimum across flat dimensions shall be within the commercial tolerance of bar stock from which the fittings are produced. The minimum across corners dimensions of hexagons shall be 1.092 times the nominal width across flats, but shall not result in a side flat width less than 0.43 times the nominal width across flats. Where so illustrated and not otherwise specified, hexagon corners shall be chamfered 15–20 deg to a diameter equal to the nominal width across flats, with a tolerance of -0.016 in (0.4 mm); or where design permits, corners may be chamfered to the diameter of the abutting surface providing the length of chamfer does not exceed that produced by the 20 deg chamfer previously described.

Fitting seats shall be concentric with straight thread pitch diameters within 0.010 in (0.25 mm) full indicator reading (FIR).

Tolerance on all dimensions not otherwise limited are indicated by footnotes on Table 1.

Contour—Details of contour shall be optional with manufacturer, provided the tabulated dimensions are maintained and serviceability of the fittings is not impaired.

Straight Threads¹—ISO Metric Threads with tolerance class designation 6g for external threads and 6H for internal threads (specified in Table 1) shall apply to plain finish (unplated) fittings. For externally threaded parts with additive finish, the maximum diameter may come up to h or zero allowance. For internally threaded parts with additive finish, the final diameter will be as specified. These tolerances hold for both pitch and crest diameters and are for normal "N" thread engagement.

Thread Eccentricity Tolerances—The various thread elements of the external and internal threads on tube fittings shall be concentric within limitations coinciding with those specified (for Class 2A external and Class 2B, modified, internal threads) under General Specifications in SAE J512.

Material—Unless otherwise specified, fittings and collars shall be made from carbon steel.

Finish—Unless otherwise specified, carbon steel fittings shall be furnished cadmium or zinc plated to a thickness of 0.0002 in. minimum. These parts must meet the requirements of 32 h salt spray test in accordance with ASTM B 117, Method of Salt Spray (Fog) Testing.

Workmanship—Workmanship shall conform to the best commercial practice to produce high quality fittings. Fittings shall be free from all hanging burrs, loose scale, and slivers which might become dislodged in usage and all other defects which might affect their serviceability. All sealing surfaces must be smooth, except that annular tool marks up to 100 μ in maximum shall be permissible.

¹ Refer to ANSI B1.13, Metric Screw Threads.

METRIC THREAD FUEL INJECTION TUBING CONNECTIONS

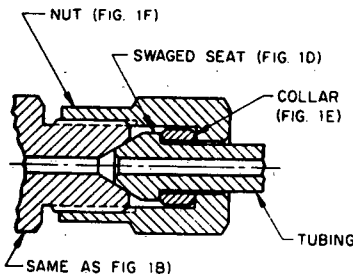


FIG. 1A - ASSEMBLED TYPE 2, STYLE A SWAGED TAPERED SEAT CONNECTION

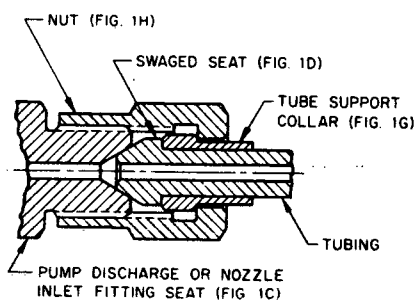


FIG. 1B - ASSEMBLED TYPE 2, STYLE B SWAGED TAPERED SEAT CONNECTION

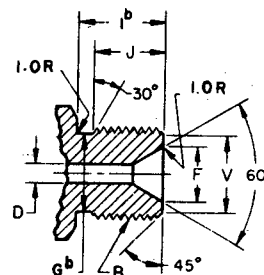


FIG. 1C - FITTING SEAT

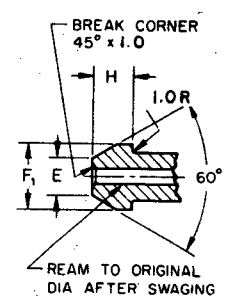


FIG. 1D - SWAGED SEAT FOR TYPE 2, STYLES A AND B

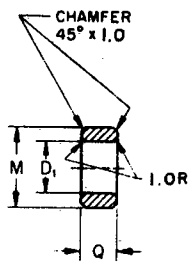


FIG. 1E - COLLAR FOR TYPE 2, STYLE A

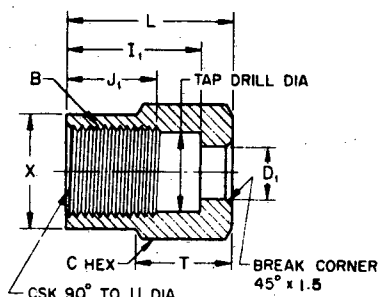


FIG. 1F - NUT FOR TYPE 2, STYLE A

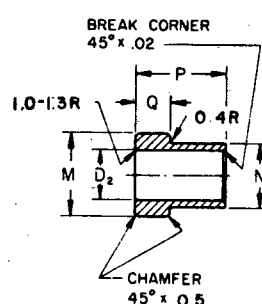


FIG. 1G - TUBE SUPPORT COLLAR FOR TYPE 2, STYLE B

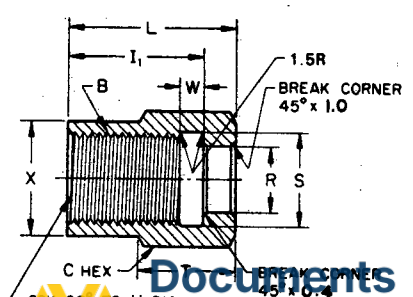


FIG. 1H - NUT FOR TYPE 2, STYLE B