

# SURFACE VEHICLE STANDARD

**SAE** J744

REV.  
NOV95

Issued 1952-01  
Revised 1995-11

Superseding J744 JUL88

Submitted for recognition as an American National Standard

## (R) HYDRAULIC PUMP AND MOTOR MOUNTING AND DRIVE DIMENSIONS

**1. Scope**—This SAE Standard applies to hydraulic pumps and motors used on off-road self-propelled work machines as described in categories 1 through 5 of SAE J1116 JUN86.

**1.1 Purpose**—To provide a progression of standard mounting flanges and shafts that are dimensionally compatible.

### 2. References

**2.1 Applicable Documents**—The following publications form a part of this specification to the extent specified herein. Unless otherwise specified, the latest issue of SAE publications shall apply.

**2.1.1 SAE PUBLICATIONS**—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J390—Dual Dimensioning

SAE J1116 JUN86—Categories of Off-Road Self-Propelled Work Machines

SAE TSB 003—Rules for SAE Use of SI (Metric) Units

**2.1.2 ANSI PUBLICATIONS**—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ANSI B1.1—Screw Threads

ANSI B92.1-1970—Involute Splines and Inspection

### 3. Units

**3.1** The International System of Units (SI) is used herein in accordance with Reference 7.1.

**3.2** Customary U.S. units are given for information purposes, and these appear in parentheses next to their SI counterpart.

### 4. Identification Code

**4.1** Flange identification codes are found in Table 1.

**4.1.1** The number preceding the dash (—) is an approximation, in millimeters, of the mounting flange pilot diameter.

**4.1.2** The number following the dash (—) states the number of mounting holes in the flange.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.



SAE J744 Revised NOV95

4.2 Shaft identification codes are found in Tables 2, 3, and 4 and Figures 2 and 3.

4.2.1 The number preceding the dash (—) is an approximation, in millimeters, of the shaft major diameter.

4.2.2 The number following the dash (—) is arbitrarily assigned as follows:

Straight Shaft without Thread—1

Straight Shaft with Thread—2

Tapered Shaft with Thread—3

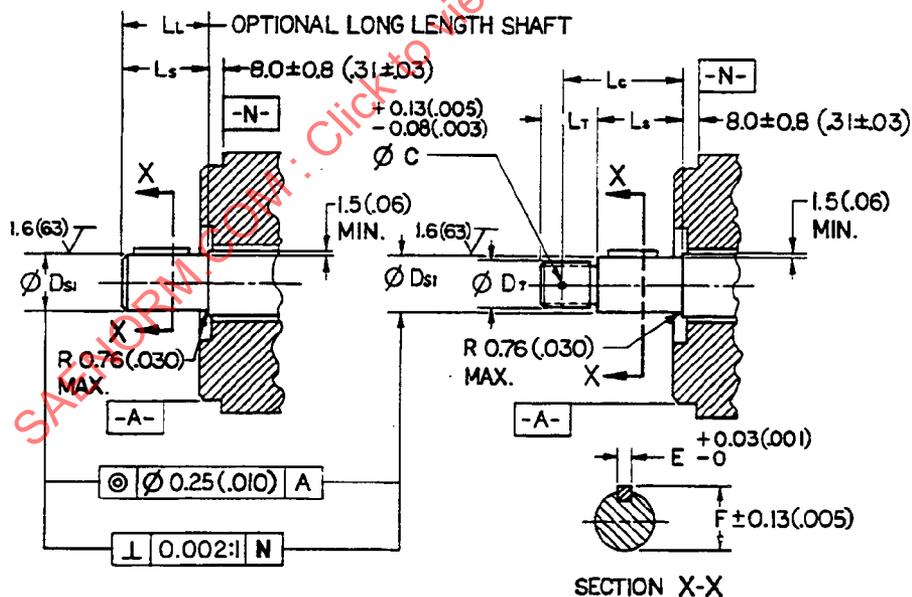
30 degrees Involute Spline—4

SAENORM.COM : Click to view the full PDF of J744 - 199511

TABLE 2—DIMENSIONS OF STRAIGHT SHAFTS—WITHOUT AND WITH THREAD

| Identifi-<br>cation<br>Code | Straight<br>Shaft<br>D <sub>S1</sub><br>Max | Straight<br>Shaft<br>D <sub>S1</sub><br>Min | Straight<br>Shaft<br>L <sub>S</sub> | Straight<br>Shaft<br>F<br>Noted | No<br>Thread<br>—1<br>E<br>Noted | No<br>Thread<br>—1<br>L <sub>L</sub><br>Optional | With<br>Thread<br>—2<br>D <sub>T</sub><br>ANSI B1.1 | With<br>Thread<br>—2<br>C<br>Noted | With<br>Thread<br>—2<br>L <sub>C</sub> | With<br>Thread<br>—2<br>L <sub>T</sub> |
|-----------------------------|---|---|-------------------------------------|---------------------------------|----------------------------------|--|---|------------------------------------|--|--|
| 13— <sup>1</sup>            | 12.70                                       | 12.67                                       | 19                                  | 14.07                           | 3.18                             | —  | 3/8—24  | 2.4                                | 29                                     | 14.25                                  |
| (A—A)                       | (0.500)                                     | (0.499)                                     | (0.750)                             | (0.554)                         | (0.125)                          | —  | UNF 2A  | (0.094)                            | (1.125)                                | (0.562)                                |
| 16— <sup>1</sup>            | 15.88                                       | 15.85                                       | 24                                  | 17.60                           | 3.97                             | 51   | 1/2—20  | 3.2                                | 34                                     | 18.25                                  |
| (A)                         | (0.625)                                     | (0.624)                                     | (0.938)                             | (0.693)                         | (0.1563)                         | (2.00)   | UNF 2A  | (0.125)                            | (1.344)                                | (0.719)                                |
| 19— <sup>1</sup>            | 19.05                                       | 19.02                                       | 24                                  | 21.10                           | 4.78                             | 51   | 1/2—20  | 3.2                                | 34                                     | 18.25                                  |
| (B)                         | (0.750)                                     | (0.749)                                     | (0.938)                             | (0.831)                         | (0.188)                          | (2.00)   | UNF 2A  | (0.125)                            | (1.344)                                | (0.719)                                |
| 22— <sup>1</sup>            | 22.22                                       | 22.20                                       | 33                                  | 24.90                           | 6.35                             | 63   | 5/8—18  | 4.0                                | 48                                     | 23.00                                  |
| (B)                         | (0.875)                                     | (0.874)                                     | (1.312)                             | (0.982)                         | (0.250)                          | (2.50)   | UNF 2A  | (0.156)                            | (1.875)                                | (0.906)                                |
| 25— <sup>1</sup>            | 25.40                                       | 25.35                                       | 38                                  | 28.10                           | 6.35                             | 70   | 3/4—16  | 4.0                                | 52                                     | 27.00                                  |
| (B—B)                       | (1.000)                                     | (0.998)                                     | (1.500)                             | (1.106)                         | (0.250)                          | (2.75)   | UNF 2A  | (0.156)                            | (2.062)                                | (1.062)                                |
| 32— <sup>1</sup>            | 31.75                                       | 31.70                                       | 48                                  | 35.20                           | 7.94                             | 76   | 1—12  | 4.0                                | 67                                     | 31.00                                  |
| (C)                         | (1.250)                                     | (1.248)                                     | (1.875)                             | (1.386)                         | (0.3125)                         | (3.00)   | UNF 2A  | (0.156)                            | (2.625)                                | (1.219)                                |
| 38— <sup>1</sup>            | 38.10                                       | 38.05                                       | 54                                  | 42.27                           | 9.52                             | 83   | 1-1/8—12  | 4.0                                | 73                                     | 34.90                                  |
| (C—C)                       | (1.500)                                     | (1.498)                                     | (2.125)                             | (1.664)                         | (0.375)                          | (3.25)   | UNF 2A  | (0.156)                            | (2.875)                                | (1.375)                                |
| 44— <sup>1</sup>            | 44.45                                       | 44.40                                       | 67                                  | 49.30                           | 11.11                            | 92   | 1-1/4—12  | 4.0                                | 89                                     | 39.70                                  |
| (D & E)                     | (1.750)                                     | (1.748)                                     | (2.625)                             | (1.941)                         | (0.4375)                         | (3.62)   | UNF 2A  | (0.156)                            | (3.500)                                | (1.562)                                |

<sup>1</sup> —1 without thread, —2 with thread



Unspecified tolerances:  
 mm diam. - 1 place  $\pm 0.5$ ; 2 place  $\pm 0.25$   
 inch dim. - 2 place  $\pm 0.02$ ; 3 place  $\pm 0.010$   
 micrometer (micro inch)

Dimensions in mm (in)

FIGURE 2—DIMENSIONS OF STRAIGHT SHAFTS—WITHOUT AND WITH THREAD

TABLE 3—DIMENSIONS OF TAPER SHAFT ENDS WITH THREAD—3

| Identification Code | D <sub>S3</sub>  | D <sub>T</sub><br>ANSI B1.1 | C<br>Noted     | E               |                  |                  | Z                 |                 |                 |
|---------------------|------------------|-----------------------------|----------------|-----------------|------------------|------------------|-------------------|-----------------|-----------------|
|                     |                  |                             |                | L <sub>CT</sub> | L <sub>ST</sub>  | L <sub>T</sub>   | Noted             | Max             | Min             |
| 13—3<br>(A—A)       | 12.70<br>(0.500) | 5/16—32<br>UNF 2A           | 2.0<br>(0.078) | 25<br>(0.984)   | 17.48<br>(0.688) | 12.70<br>(0.500) | 3.18<br>(0.125)   | 1.63<br>(0.064) | 1.37<br>(0.054) |
| 16—3<br>(A)         | 15.88<br>(0.625) | 1/2—20<br>UNF 2A            | 3.2<br>(0.125) | 28<br>(1.094)   | 17.48<br>(0.688) | 18.26<br>(0.719) | 3.97<br>(0.1563)  | 2.13<br>(0.084) | 1.88<br>(0.074) |
| 19—3<br>(B)         | 19.05<br>(0.750) | 1/2—20<br>UNF 2A            | 3.2<br>(0.125) | 34<br>(1.344)   | 23.83<br>(0.938) | 18.26<br>(0.719) | 4.78<br>(0.188)   | 2.54<br>(0.100) | 2.29<br>(0.090) |
| 22—3<br>(B)         | 22.22<br>(0.875) | 5/8—18<br>UNF 2A            | 4.0<br>(0.156) | 43<br>(1.688)   | 28.58<br>(1.125) | 23.01<br>(0.906) | 6.35<br>(0.250)   | 3.33<br>(0.131) | 3.07<br>(0.121) |
| 25—3<br>(B—B)       | 25.40<br>(1.00)  | 3/4—16<br>UNF 2A            | 4.0<br>(0.156) | 49<br>(1.938)   | 34.92<br>(1.375) | 26.97<br>(1.062) | 6.35<br>(0.250)   | 3.33<br>(0.131) | 3.07<br>(0.121) |
| 32—3<br>(C)         | 31.75<br>(1.25)  | 1—12<br>UNF 2A              | 4.0<br>(0.156) | 49<br>(1.938)   | 34.92<br>(1.375) | 30.96<br>(1.219) | 7.34<br>(0.3125)  | 4.11<br>(0.162) | 3.86<br>(0.152) |
| 38—3<br>(C—C)       | 38.10<br>(1.50)  | 1-1/8—12<br>UNF 2A          | 4.0<br>(0.156) | 62<br>(2.438)   | 47.62<br>(1.875) | 34.92<br>(1.375) | 9.52<br>(0.375)   | 4.93<br>(0.194) | 4.67<br>(0.184) |
| 44—3<br>(D & E)     | 44.45<br>(1.75)  | 1-1/4—12<br>UNF 2A          | 4.0<br>(0.156) | 71<br>(2.812)   | 53.98<br>(2.125) | 39.67<br>(1.562) | 11.11<br>(0.4375) | 5.72<br>(0.225) | 5.46<br>(0.215) |
| 50—3<br>(F)         | 50.80<br>(2.00)  | 1-1/4—12<br>UNF 2A          | 4.0<br>(0.156) | 90<br>(3.562)   | 73.02<br>(2.875) | 39.67<br>(1.562) | 12.70<br>(0.500)  | 6.50<br>(0.256) | 6.25<br>(0.246) |

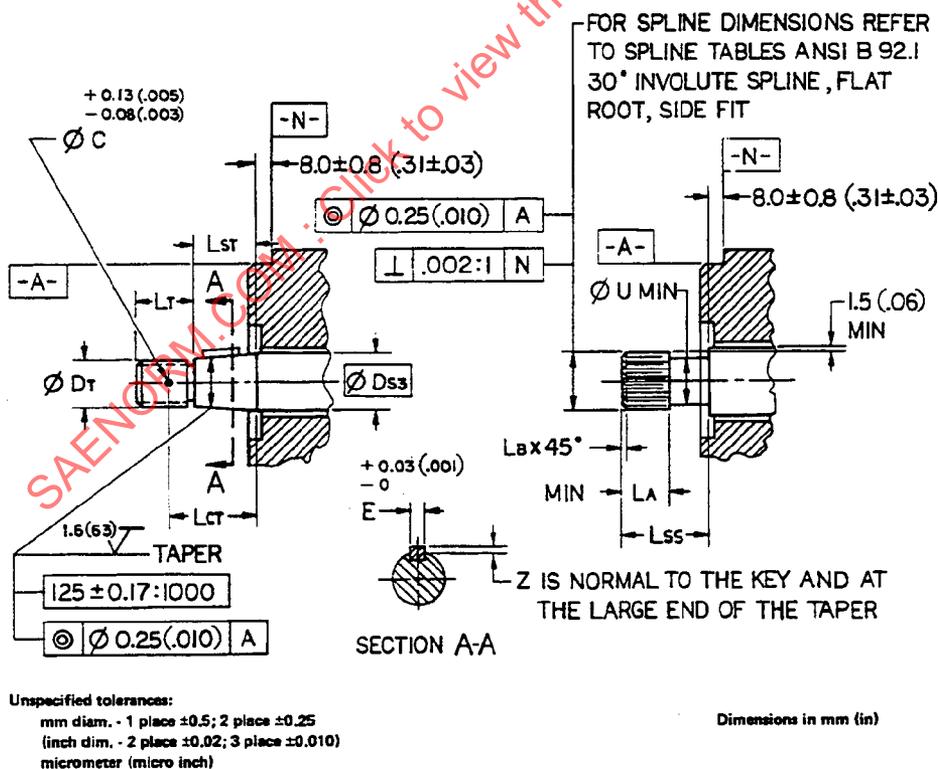


FIGURE 3—DIMENSIONS OF TAPER SHAFT ENDS WITH THREAD—3