

Submitted for recognition as an American National Standard

(R) MARINE PROPELLER-SHAFT COUPLINGS

1. **Scope**—This SAE Standard covers propeller shaft couplings for use with propeller shafts up to 3 inches outside diameter.

1.1 **Purpose**—To provide design guidance that results in dimensional interchangeability of marine propeller-shaft couplings within the scope of this standard.

2. **References**

2.1 **Applicable Publications**

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

SAE J755 JUN80—Marine Propeller-Shaft Ends and Hubs

3. **General**—Includes couplings with an internal pilot diameter (Type I) with tapered or straight bores, and external pilot diameter (Type II) couplings with straight bores.

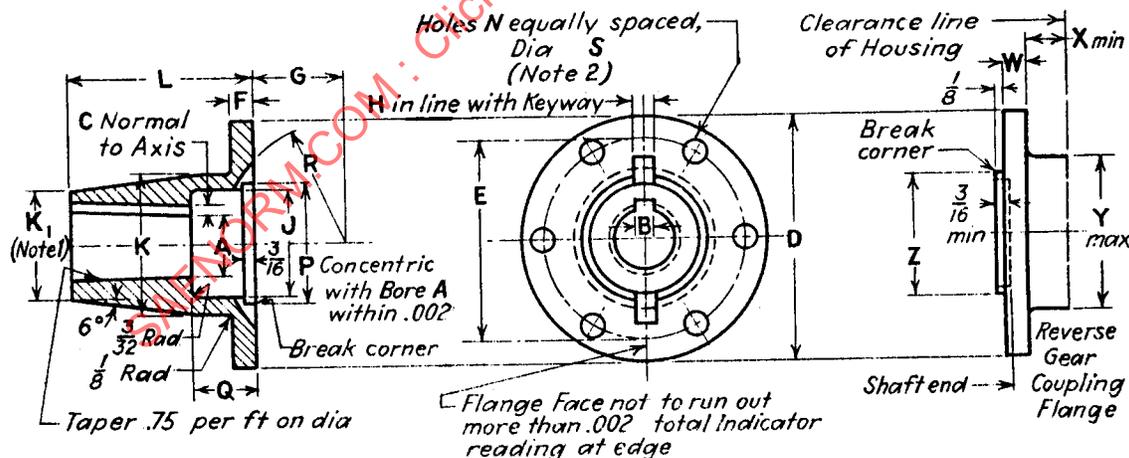


FIGURE 1—TYPE I PROPELLER-SHAFT COUPLING, INTERNAL PILOT, TAPER BORE, SAE FLANGE NOS. 1, 2, 3, AND 4

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SAE J756 Revised AUG87

NOTE 1—Hub outside taper is optional.

NOTE 2—No. 1 flange coupling bolt is to be 3/8—24 X 1-1/4 with plain nut and lockwasher.

No. 2 flange coupling bolt is to be 7/16—20 X 1-1/2 with plain nut and lockwasher.

No. 3 flange coupling bolt is to be 1/2—20 X 1-3/4 with plain nut and lockwasher.

No. 4 flange coupling bolt is to be 5/8—18 X 2 with plain nut and lockwasher.

NOTE 3—Table 4 for taper bore dimensions A, B, and C.

NOTE 4—All dimensions are in inches unless otherwise stated (1 in = 25.4 mm; 1 ft = 304.8 mm).

**TABLE 1A—PROPELLER-SHAFT COUPLINGS, TYPE I,
INTERNAL PILOT—TAPER BORE⁽¹⁾**

SAE Flange No.	Shaft Dia Max	D	E	F	G	H	J	K	K ₁	L	N
2	1-1/2	4-3/4	3-7/8	15/32	1-3/4	5/16	2-1/4	2-3/4	2.252	3-5/8	6
3	2	5-3/4	4-3/4	9/16	3-3/16	3/8	2-3/4	3-1/2	2.844	4-5/8	6
4	3	7-1/4	6	5/8	3	3/8	3-1/2	4-1/2	4.500	6-1/2	6

1. For intermediate size, see Basic Data in SAE Standard, Marine Propeller-Shaft Ends and Hubs—SAE J756.

**TABLE 1B—PROPELLER-SHAFT COUPLINGS, TYPE I,
INTERNAL PILOT—TAPER BORE⁽¹⁾**

SAE Flange No.	Shaft Dia Max	P (Pilot)		Q	R	S	W	X	Y	Z (Pilot)	
		Max	Min							Max	Min
1	1-1/8	2.002	2.000	1	2	25/64	3/8	5/8	2-1/4	2.000	1.998
2	1-1/2	2.502	2.500	1-1/4	2-1/2	29/64	15/32	11/16	2-3/4	2.500	2.498
3	2	3.002	3.000	1-1/2	4	33/64	9/16	3/4	3-1/2	3.000	2.998
4	3	3.752	3.750	2	4	41/64	5/8	15/16	4-1/2	3.750	3.748

1. For intermediate size, see Basic Data in SAE Standard, Marine Propeller-Shaft Ends and Hubs—SAE J756.

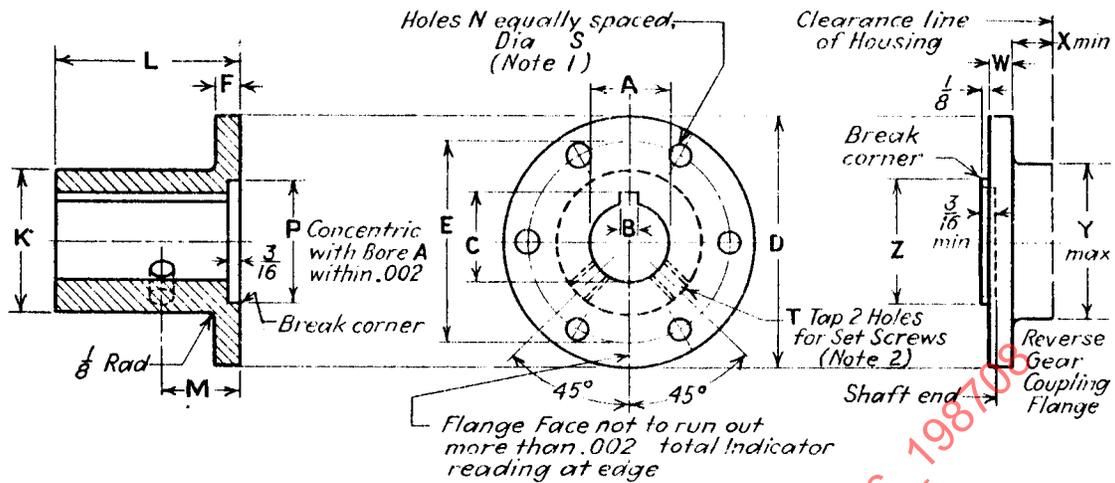


FIGURE 2—TYPE I PROPELLER-SHAFT COUPLING, INTERNAL PILOT, STRAIGHT BORE, SAE FLANGE NO. 1S 2S, 3S, AND 4S

NOTE 1—No. 1S flange coupling bolt is to be 3/8--24 X 1-1/4 with plain nut and lockwasher.

No. 2S flange coupling bolt is to be 7/16--20 X 1-1/2 with plain nut and lockwasher.

No. 3S flange coupling bolt is to be 1/2--20 X 1-3/4 with plain nut and lockwasher.

No. 4S flange coupling bolt is to be 5/8--18 X 2 with plain nut and lockwasher.

NOTE 2—Either cone or dog point setscrews with spotting of shaft is recommended.

NOTE 3—Table 5 for straight bore dimensions A, B, and C.

NOTE 4—All dimensions are in inches unless otherwise stated (1 in = 25.4 mm).

**TABLE 2A—PROPELLER-SHAFT COUPLINGS, TYPE I,
INTERNAL PILOT—STRAIGHT BORE ⁽¹⁾**

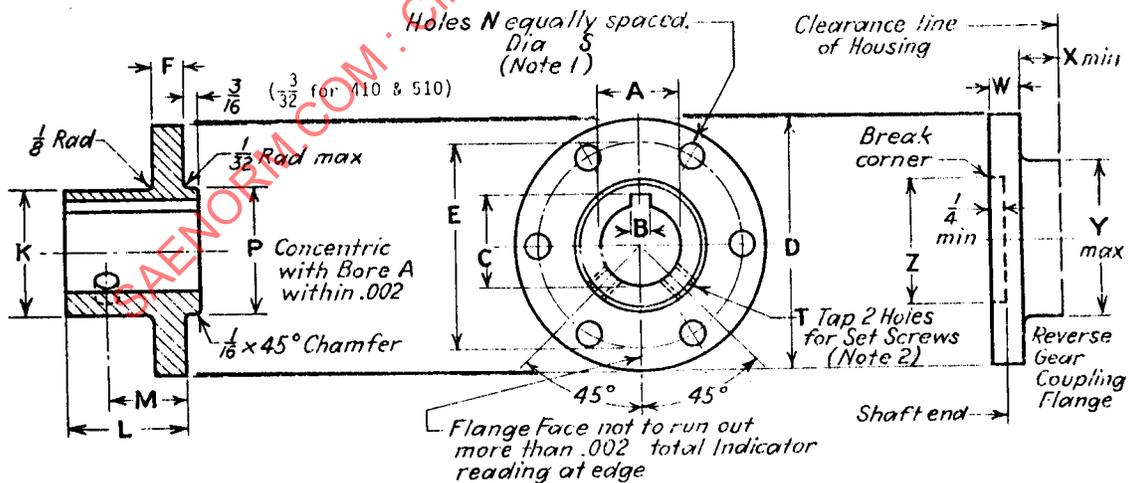
SAE Flange No.	Shaft Dia Max	D	E	F	K	L	M	N	S
1S	1-1/8	4	3-1/4	3/8	2-1/4	2-7/8	1-1/4	4	25/64
2S	1-1/2	4-3/4	3-7/8	15/32	2-3/4	3-5/8	1-5/8	6	29/64
3S	2	5-3/4	4-3/4	9/16	3-1/2	4-5/8	1-7/8	6	33/64
4S	3	7-1/4	6	5/8	4-1/2	6-1/2	2-5/8	6	41/64

1. For intermediate size, see Basic Data in SAE Standard, Marine Propeller-Shaft Ends and Hubs—SAE J755.

**TABLE 2B—PROPELLER-SHAFT COUPLINGS, TYPE I,
INTERNAL PILOT—STRAIGHT BORE ⁽¹⁾**

SAE Flange No.	Shaft Dia Max	p (Pilot) Max	P (Pilot) Min	T	W	X	Y	Z (Pilot) Max	Z (Pilot) Min
1S	1-1/8	2.002	2.000	3/8 - 16	3/8	5/8	2-1/4	2.000	1.998
2S	1-1/2	2.502	2.500	7/16 - 14	15/32	11/16	2-3/4	2.500	2.498
3S	2	3.002	3.000	1/2 - 13	9/16	3/4	3-1/2	3.000	2.998
4S	3	3.752	3.750	5/8 - 11	5/8	15/16	4-1/2	3.750	3.748

1. For intermediate size, see Basic Data in SAE Standard, Marine Propeller-Shaft Ends and Hubs—SAE J755.



**FIGURE 3—TYPE II PROPELLER-SHAFT COUPLING, EXTERNAL PILOT, STRAIGHT BORE,
SAE FLANGE NO. 400, 410, 500, 510, 600, AND 725**

NOTE 1—No. 400 flange coupling bolt is to be 3/8--24 X 1-1/2 with plain nut and lockwasher.

No. 500 flange coupling bolt is to be 7/16--20 X 1-5/8 with plain nut and lockwasher.

No. 600 flange coupling bolt is to be 1/2--20 X 1-7/8 with plain nut and lockwasher.

No. 725 flange coupling bolt is to be 5/8--18 X 2-1/4 with plain nut and lockwasher.

No. 410 and 510 flange coupling bolts to be selected based upon "F" and "W" flange thickness actually used. Select "X" and "Y" flange dimensions to clear these fasteners.

NOTE 2—Either cone or dog point setscrews with spotting of shaft is recommended.

NOTE 3—Table 5 for straight bore dimensions A, B, and C.

NOTE 4—All dimensions are in inches unless otherwise stated (1 in = 25.4 mm; 1 ft = 304.8 mm).

**TABLE 3A—PROPELLER-SHAFT COUPLINGS, TYPE II,
EXTERNAL PILOT—STRAIGHT BORE**

SAE Flange No.	Shaft Dia Max	D	E	F	K	L	M	N	S
400	1-1/4	4	3-1/4	1/2	2	1-7/8	1-1/4	4	25/64
410	1-1/2	4	3-1/4	5/16 - 3/8	2-1/4	2-5/32	1-9/32	4	25/64
500	1-3/4	5	4-1/8	9/16	2-3/4	2-5/8	1-5/8	4	29/64
510	2-1/4	5	4-1/4	3/8 - 1/2	3-5/32	2-5/32	1-9/32	4	29/64
600	2-1/4	6	5	5/8	3-1/2	3-3/8	1-7/8	6	33/64
725	3	7-1/4	6	3/4	4-1/2	4-1/2	2-5/8	6	41/64

**TABLE 3B—PROPELLER-SHAFT COUPLINGS, TYPE II,
EXTERNAL PILOT—STRAIGHT BORE**

SAE Flange No.	Shaft Dia Max	P (Pilot) Max	P (Pilot) Min	T	W	X	Y	Z (Pilot) Max	Z (Pilot) Min
400	1-1/4	2.000	1.998	3/8 - 16	1/2	5/8	2	2.002	2.000
410	1-1/2	2.499	2.497	3/8 - 16	5/16 - 3/8	Note 1	Note 1	2.501	2.499
500	1-3/4	2.500	2.498	7/16 - 14	9/16	11/16	2-3/4	2.502	2.500
510	2-1/4	2.499	2.497	3/8 - 16	3/8 - 1/2	Note 1	Note 1	2.501	2.499
600	2-1/4	3.250	3.248	1/2 - 13	5/8	3/4	3-1/2	3.252	3.250
725	3	4.250	4.248	5/8 - 11	3/4	15/16	4-1/2	4.252	4.250

SAE J756 Revised AUG87

TABLE 4—TAPER-BORE DIMENSIONS^{(1) (2)}

SAE Flange No.	Nominal Shaft Dia	Bore at A Min	Bore at A Max	B Min	B Max	C ⁽³⁾ Min	C ⁽³⁾ Max
1	3/4	0.608	0.610	0.1865	0.1875	0.098	0.100
	7/8	0.710	0.712	0.2490	0.2500	0.129	0.131
	1	0.811	0.813	0.2490	0.2500	0.129	0.131
	1-1/8	0.913	0.915	0.2490	0.2500	0.129	0.131
2	1-1/4	1.015	1.017	0.3115	0.3125	0.162	0.165
	1-3/8	1.116	1.118	0.3115	0.3125	0.161	0.164
	1-1/2	1.218	1.220	0.3740	0.3750	0.195	0.198
3	1-3/4	1.421	1.423	0.4365	0.4375	0.226	0.229
	2	1.624	1.626	0.4990	0.5000	0.259	0.262
4	2-1/4	1.827	1.829	0.5610	0.5625	0.291	0.294
	2-1/2	2.030	2.032	0.6235	0.6250	0.322	0.325
	2-3/4	2.233	2.235	0.6235	0.6250	0.322	0.325
	3	2.437	2.439	0.7485	0.7500	0.323	0.326

1. For intermediate size, see Basic Data in SAE Standard, Marine Propeller-Shaft Ends and Hubs—SAE J755.
2. All dimensions are in inches unless otherwise stated (1 in = 25.4 mm).
3. Keyway shall be cut parallel to taper.

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TABLE 5—STRAIGHT-BORE DIMENSIONS (1) (2)

SAE Flange Numbers Type I	SAE Flange Numbers Type II	Nominal Shaft Dia	A Min	A Max	B ⁽³⁾ Min	B ⁽³⁾ Max	C Min	C Min
1S	400, 410 & 510	3/4	0.749	0.750	0.1885	0.1905	0.8378	0.8428
1S	400, 410 & 510	7/8	0.874	0.875	0.2510	0.2530	0.9878	0.9928
1S	400, 410 & 510	1	0.999	1.000	0.2510	0.2530	1.1151	1.1201
1S	400, 410 & 510	1-1/8	1.124	1.125	0.2510	0.2530	1.2419	1.2469
2S	400, 410 & 510	1-1/4	1.249	1.250	0.3135	0.3155	1.3924	1.3974
2S	410, 500 & 510	1-3/8	1.374	1.375	0.3135	0.3155	1.5192	1.5242
2S	410, 500 & 510	1-1/2	1.499	1.500	0.3760	0.3780	1.6697	1.6747
	500 & 510	1-5/8	1.624	1.625	0.4385	0.4405	1.8197	1.8247
3S	500 & 510	1-3/4	1.749	1.750	0.4385	0.4405	1.9470	1.9520
	510 & 600	1-7/8	1.874	1.875	0.5010	0.5030	2.0970	2.1020
3S	510 & 600	2	1.999	2.000	0.5010	0.5030	2.2243	2.2293
4S	510 & 600	2-1/4	2.249	2.250	0.5635	0.5655	2.5015	2.5065
4S	725	2-1/2	2.499	2.500	0.6260	0.6280	2.7789	2.7839
4S	725	2-3/4	2.749	2.750	0.6260	0.6280	3.0335	3.0385
4S	725	3	2.999	3.000	0.7510	0.7530	3.3334	3.3384

1. For intermediate size, see Basic Data in SAE Standard, Marine Propeller-Shaft Ends and Hubs--SAE J755.
2. All dimensions are in inches unless otherwise stated (1 in = 25.4 mm).
3. Based on Woodruff-key tolerances.

4. Notes

- 4.1 **Marginal Indicia**—The change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

PREPARED BY THE SAE PROPELLER SHAFT COUPLINGS SUBCOMMITTEE
OF THE SAE MARINE TECHNICAL COMMITTEE

SAE J756 Revised AUG87

Rationale—SAE J756 Type II PROPELLER SHAFT COUPLINGS Flange Nos. 400 and 500 are not extensively used in the marine industry. Major manufacturers of marine gears specify flanges close to SAE Flange Nos. 400 and 500 dimensions, but there are differences. To recognize flange dimensions that are used by major marine gear manufacturers, SAE Flange Nos. 410 and 510 were originated by a working panel of representatives from the marine gear industry and these flange tabulations do represent the dimensions of flanges as produced by major marine gear manufacturers.

Summarizing, the purpose of this change to SAE J756 is to maintain SAE Flange Nos. 400 and 500 that do have limited use in the marine industry. The main purpose is to add SAE Flange Nos. 410 and 510 that tabulate dimensions of two Type II flanges that are widely used today in the marine industry and to increase this wide use and thus interchangeability by including these flanges in the SAE J756 standard.

Relationship of SAE Standard to ISO Standard—Not applicable.

Application—This SAE Standard covers propeller shaft couplings for use with propeller shafts up to 3 inches outside diameter.

Reference Section

SAE J755 JUN80—Marine Propeller-Shaft Ends and Hubs

Developed by the SAE Propeller Shaft Couplings Subcommittee

Sponsored by the SAE Marine Technical Committee

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