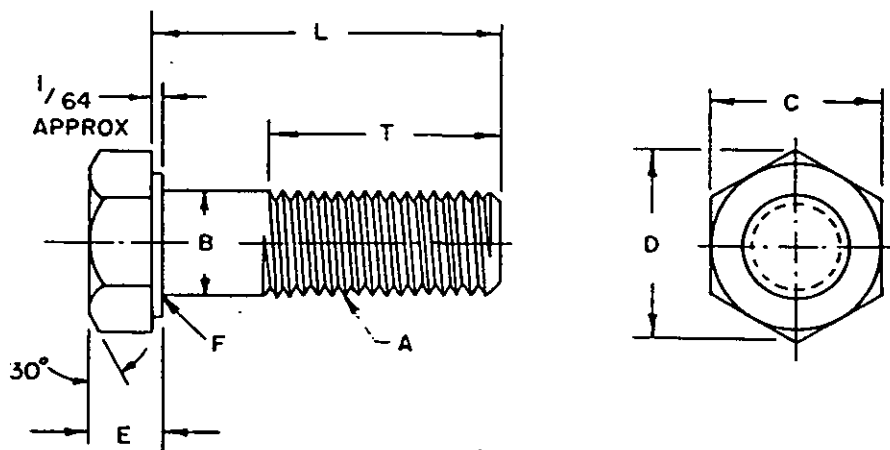


This standard has been approved by the Naval Ship Engineering Center, Department of the Navy, and is mandatory for use by that activity. All other military activities are required to employ this standard where suitable.

FED. SUP. CLASS
5306



(Project 5306-N010Sh) (A) For changes see sheets 1 through 5

| | | | |
|------------------------------------------|--------------------|------------------------------------------------------------------------------------|---------------------|
| CUSTODIANS | OTHER INT. | MILITARY STANDARD | MS 16205 (SHIPS) |
| Ships | A - N - AF - | BOLTS, MACHINE, REGULAR SEMI-FINISHED HEXAGON HEAD, COPPER-SILICON ALLOY (SILI- | |
| Procurement Specification ① MIL-B-857 | | CON BRONZE), UNC-2A, NON-MAGNETIC | SHEET 1 OF 5 |

DD FORM 672
1 OCT 52

APPROVED 8 MAY 1957 REVISED (A) 19 AUGUST 1966

This standard has been approved by the Naval Ship Engineering Center, Department of the Navy, and is mandatory for use by that activity. All other military activities are required to employ this standard where suitable.

| CUSTODIANS | | OTHER INT. | | MILITARY STANDARD | | MS16205 | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|--|----------------------------------------------------------------------------------------------------------------------------|--|--------------|--|
| Ships | | A - N - AF - | | BOLTS, MACHINE, REGULAR SEMI-FINISHED HEXAGON HEAD, COPPER-SILICON ALLOY (SILICON BRONZE), UNC-2A, NON-MAGNETIC | | (SHIPS) | |
| PROCUREMENT SPECIFICATION | | | | SUPERSEDES: | | SHEET 2 OF 5 | |
| MIL-B-857 | | | | | | | |
| Nominal size A Threads per inch B Body diameter C Width across flats D Width across corners E Head height F Radius | | | | Tolerance Size 1/4 - 3/8 Size 7/16 - 1/2 Size 5/8 - 1-1/4 | | | |
| Max. Min. Max. Min. Max. Min. Max. Min. | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 1/4 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 | | | |
| 5/16 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4 4-1/4 4-1/2 4-3/4 5 5-1/2 6-1/2 7-1/2 8 10 11 12 13 14 15 16 18 20 | | | | MS part No. 1 2 3 4 5 6 7 8 9 10 11 12 | | | |

This standard has been approved by the Naval Ship Engineering Center, Department of the Navy, and is mandatory for use by that activity. All other military activities are required to employ this standard where suitable.

| CUSTODIANS | | OTHER INT. | | MILITARY STANDARD | | | | MS16205 | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Ships | | AF | | BOLTS, MACHINE, REGULAR SEMI-FINISHED HEXAGON HEAD. | | | | (SHIPS) | |
| PROCUREMENT SPECIFICATION | | | | COPPER-SILICON ALLOY (SILICON BRONZE), UNC-2A, NON-MAGNETIC | | | | SHEET 3 OF 5 | |
| SUPERSEDES: | | | | | | | | | |
| Nominal size A Threads per inch B Body diameter C Width across flats D Width across corners E Head height F Radius | | | | Tolerance Size 1/4 - 3/8 Size 7/16 - 1/2 Size 5/8 - 1-1/4 | | | | MS part No. FIN MS part No. FIN | |
| 1/4 3/8 1/2 5/8 3/4 7/8 1-1/4 1-1/2 1-3/4 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4-1/4 4-1/2 4-3/4 6-1/2 6-1/2 7-1/2 8 9 10 11 12 13 14 15 16 18 20 | | | | 1/2 5/8 3/4 1-1/4 1-1/2 1-3/4 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4-1/4 4-1/2 4-3/4 6-1/2 6-1/2 7-1/2 8 9 10 11 12 13 14 15 16 18 20 | | | | 7/8 1-1/4 1-1/2 1-3/4 2-1/4 2-1/2 2-3/4 3-1/4 3-1/2 3-3/4 4-1/4 4-1/2 4-3/4 6-1/2 6-1/2 7-1/2 8 9 10 11 12 13 14 15 16 18 20 | |

FED. SHIP CLASS
5306

APPROVED 8 MAY 1957 REVISED A For changes see sheets 1 through 5

 80 FORM 672-1
 1 OCT 52
 MIL-B-857

DO FORM 672-1
1 OCT 52

This standard has been approved by the Naval Ship Engineering Center, Department of the Navy, and is mandatory for use by that activity. All other military activities are required to employ this standard where suitable.

FED. SUP. CLASS
5306

- (A) Material: Copper silicon alloy (silicon bronze) shall be in accordance with copper alloy 651 of QQ-C-591.
 Protective coating: None.
 Threads: UNC-2A shall be in accordance with Handbook H-28.
 Thread length: Minimum thread length shall be twice the nominal size (diameter) plus 1/4 inch for bolt lengths 6 inches and less, and twice the nominal size plus 1/2 inch for bolt lengths over 6 inches. Bolts too short for minimum thread length shall be threaded as close to the head as practicable.
 Minimum breaking strength: The minimum breaking strength, in tension, of the bolts shall be as follows:

Sizes to 1/2 inclusive - 80,000 p. s. i.
 Sizes 5/8 to 7/8 inclusive - 70,000 p. s. i.
 Sizes 1 to 1-1/2 inclusive - 50,000 p. s. i.

- (A) Minimum elongation - 10 percent in 2 inches.

Dimensions: All dimensions are in inches, unless otherwise specified.

Notes:

1. In case of conflict with any document referenced herein, this standard shall govern.
2. Referenced documents shall be the issue in effect on date of invitation for bids.

APPROVED 8 MAY 1957 REVISED (A) For changes see sheets 1 through 5

| | | | | |
|--------------------------------------------|----------------------------------|------------------------------------------------------------------------------------|--|---------------------|
| CUSTODIANS Ships | OTHER INT. A - N - AF - | MILITARY STANDARD | | MS 16205 (SHIPS) |
| | | BOLTS, MACHINE, REGULAR SEMI-FINISHED HEXAGON HEAD, COPPER-SILICON ALLOY (SILI- | | |
| Procurement Specification (A) MIL-B-857 | | CON BRONZE), UNC-2A, NON-MAGNETIC | | SHEET 5 OF 5 |