MIL-STD-1251A
15 Sep 1981

SUPERSEDING
MIL-STD-1251
10 June 1975

MILITARY STANDARD

SCREWS AND BOLTS PREFERRED FOR DESIGN, LISTING OF

FSC 5305
FSC 5306

DEPARTMENT OF DEFENSE
Washington, DC 20301

Screws and Bolts Preferred for Design, Listing of

MIL-STD-1251A

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Armament Research and Development Command, ATTN: DRDAR-TST-S, Dover, NJ 07801 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FOREWORD

1. The purpose of this bookform standard is to provide a commodity type parts document on screws and bolts to aid military equipment designers and engineers in the selection of preferred screws and bolts.

2. This document consists of an index of preferred standardization documents and a listing of preferred parts within these documents that have been selected with respect to configuration, sizes, lengths, materials, and finishes for screws and bolts.

3. The selection of preferred documents listed in this standard and the selection of part numbers within the preferred documents were made as follows:

a. Selection of Documents

(1) Documents listed or scheduled for listing in the Department of Defense Index of Specifications and Standards (DODISS).

(2) Documents which are active for design.

(3) Documents specifying part numbers (dash numbers) which designate specific sizes, materials and finishes.

b. Selection of Part Numbers

(1) By conducting a thorough search and evaluation of existing DOD procurement information.

(2) By evaluation of preferred parts listed in recent weapon system contracts.

(3) By evaluation of preferred parts lists obtained from industry.

4. To increase the scope and versatility of this screws and bolts standard, periodic revisions will be developed. Results from Standardization studies, MILITARY PARTS CONTROL ADVISORY GROUP (MPCAG) evaluations, evaluation of a new family of screws and bolts and recommendations from interested activities will form the basis for these revisions.

5. The following issued military standards cover other preferred for design standard parts:

MIL-STD-1598	-	Studs, Preferred for Design, Listing of
MIL-STD-1754	-	Fastening Devices, Preferred for Design, Listing of
MIL-STD-1755	-	Keys and Pins, Preferred for Design, Listing of
MIL-STD-1756	-	Rings, Retaining, Preferred for Design, Listing of
MIL-STD-1759	-	Rivets and Rivet Type Fasteners, Preferred for Design, Listing of
MIL-STD-1758	-	Inserts, Screw Thread, Preferred for Design, Listing of
MIL-STD-1762	-	Bearings and Bushings, Plain, Preferred for Design, Listing of
MIL-STD-1764	-	Washers, Preferred for Design, Listing of

CONTENTS

SECTIONS - Continued

SECTIONS - Continued

SECTIONS - Continued

SECTIONS - Continued

SECTIONS - Continued

1. SCOPE

1.1 Scope. This standard provides a listing of preferred screws and bolts encompassing the following characteristics.

a. Configuration

b. Size

c. Materials

d. Protective Coatings and Finishes

1.2 Purpose. The purpose of this standard is as follows:

a. Provide the designer with a listing of preferred screws and bolts to promote their use in design of weapon systems and equipment.

b. Control and minimize the variety of screws and bolts and in military equipment thereby facilitating logistic support of the equipment during its life cycle.

1.3 Application. To minimize the proliferation of screws and bolts, only the preferred part numbers listed herein are authorized for use in new design. All other part numbers, even though shown on current Military Specification Sheets, Military Standards (MS), National Aerospace Standards (NAS), Aeronautical Standards (AS), and Air Force Navy Aeronautical Standards (AN), are not approved for use in new design unless approved by cognizant Government procuring activity.

1.4 Intended use. Implement this standard by including one of the following options in the standard:

a. Require this standard as a supplement to an end use type standard such as MIL-STD-1471 or MIL-STD-1515. When thus required, only the screws and bolts listed in both the end use type and this standard are acceptable. Use of other screws and bolts requires approval of the Government procuring activity.

b. Require this standard as a guide to be used with an end use type standard such as MIL-STD-1471 or MIL-STD-1515. When thus required, the screws and bolts listed in the end use type standard and this standard are acceptable. The designer must assure himself the screws and bolts listed in both the end use type standard and this standard are not adequate for his requirements before using screws and bolts not listed herein. Use of screws and bolts not listed in the end use type standard requires approval of the Government procuring activity.

c. Require this standard and indicate exceptions to it. When thus required, only the screws and bolts listed in this standard and not excluded by the exceptions are acceptable. Use of other screws and bolts requires the approval of the Government procuring activity.

d. Require this standard as a guide. When thus required, the designer must assure himself the screws and bolts listed in this standard are not adequate for the requirement before using other screws and bolts.

2. REFERENCED DOCUMENTS

2.1 Issues of Documents. The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this standard to the extent specified herein.

STANDARDS

FEDERAL

FED-STD-H28 - Screw-Thread Standards for Federal Services

MILITARY

		SECTION
MS3212	- Screw, Machine, Pan Head, Cross-Recessed, Self-Sealing, Integral Silicone O-Ring, Plain and Self-Locking	2012/2108
MS3213	- Screws, Machine, Pan Head, Cross-Recessed, Self-Sealing, Integral Fluorosilicone O-Ring, Plain and Self-Locking	2012/2108
MS3369	- Bolt, Self-Retaining, Positive Locking, CRES, 90KSI FSU, Hexagon Slotted Head, 450°F & 650°F	203
MS9283	- Bolt, Machine-Steel AMS 6322, Black Oxide, Hexagon Head, .190-32 UNJF-3A	708
MS9284	- Bolt, Machine-Steel AMS 6322, Black Oxide, Hexagon Head, .250-28 UNJF-3A	708
MS9285	- Bolt, Machine-Steel AMS 6322, Black Oxide, Hexagon Head, .3125-24 UNJF-3A	708
MS9286	- Bolt, Machine-Steel AMS 6322, Black Oxide, Hexagon Head, .375-24 UNJF-3A	708
MS9292	- Screw, Machine-Steel AMS 6322, Black Oxide, Drilled, 1 Hole, Hexagon Head, .138-40 UNJF-3A	2010
MS9294	- Bolt, Machine-Steel AMS 6322, Black Oxide, Drilled, 1 Hole, Hexagon Head, .190-32 UNJF-3A	706
MS9295	- Bolt, Machine-Steel AMS 6322, Black Oxide, Drilled, 1 Hole, Hexagon Head, .250-28 UNJF-3A	706
MS9296	- Bolt, Machine-Steel AMS 6322, Black Oxide, Drilled, 1 Hole, Hexagon Head, .3125-24 UNJF-3A	706
MS9297	- Bolt, Machine-Steel AMS 6322, Black Oxide, Drilled, 1 Hole, Hexagon Head, .375-24 UNJF-3A	706
MS9397	- Bolt, Tee Head-AMS 6322, Chamfered, .190-32 UNJF-3A, Cadmium Plate	1202

			SECTION
MS9398	-	Bolt, Tee Head-AMS 6322, Chamfered, .250-28 UNJF-3A, Cadmium Plate	1202
MS9399	-	Bolt, Tee Head-AMS 6322, Chamfered, .3125-24 UNJF-3A, Cadmium Plate	1202
MS9400	-	Bolt, Tee Head-AMS 6322, Chamfered, .375-24 UNJF-3A, Cadmium Plate	1202
MS9402	-	Bolt, Tee Head-AMS 6322, Chamfered, .500-20 UNJF-3A, Cadmium Plate	1202
MS9432	-	Bolt, Tee Head-AMS 5735, Chamfered, .190-32 UNJF-3A	1202
MS9433	-	Bolt, Tee Head-AMS 5735, Chamfered, .250-28 UNJF-3A	1202
MS9434	-	Bolt, Tee Head-AMS 5735, Chamfered, .3125-24 UNJF-3A	1202
MS9435	-	Bolt, Tee Head-AMS 5735, Chamfered, .375-24 UNJF-3A	1202
MS9437	-	Bolt, Tee Head-AMS 5735, Chamfered, .500-20 UNJF-3A	1202
MS9440	-	Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, Drilled, .190-32 UNJF-3A	707
MS9441	-	Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, Drilled, .250-28 UNJF-3A	707
MS9442	-	Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, Drilled, .3125-24 UNJF-3A	707
MS9443	-	Bolt, Machine-Steel, AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, Drilled, .375-24 UNJF-3A	707
MS9445	-	Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, Drilled, .500-20 UNJF-3A	707
MS9447	-	Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, Drilled, .625-18 UNJF-3A	707
MS9448	-	Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, Drilled, .750-16 UNJF-3A	707
MS9449	-	Screw, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, .138-40 UNJF-3A	2011
MS9450	-	Screw, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, .164-36 UNJF-3A	2011

		SECTION
MS9451	- Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, .190-32 UNJF-3A ---	708
MS9452	- Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, .250-28 UNJF-3A ---	708
MS9453	- Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, .3125-24 UNJF-3A ----------	708
MS9454	- Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated Hexagon Head, .375-24 UNJF-3A ----------	708
MS9456	- Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, .500-20 UNJF-3A ----------	708
MS9458	- Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, .625-18 UNJF-3A ----------	708
MS9459	- Bolt, Machine-Steel AMS 6304, Diffused Nickel-Cadmium Plated, Hexagon Head, .750-16 UNJF-3A ----------	708
MS9487	- Screw, Machine - Hexagon Head, Full Shank, AMS 5731, .138-40 UNJF-3A ----------	2008
MS9488	- Screw, Machine - Hexagon Head, Full Shank, AMS 5731, .164-30 UNJF-3A ----------	2008
MS9489	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5731, .190-32 UNJF-3A ----------	704
MS9490	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5731, .250-28 UNJF-3A ----------	704
MS9491	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5731, .3125-24 UNJF-3A ----------	704
MS9492	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5731, .375-24 UNJF-3A ----------	704
MS9494	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5731, .500-20 UNJF-3A ----------	704
MS9496	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5731, .625-18 UNJF-3A ----------	704
MS9497	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5731, .750-16 UNJF-3A ----------	704
MS9498	- Screw, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5731, .138-40 UNJF-3A ----------	2007
MS9499	- Screw, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5731, .164-36 UNJF-3A ----------	2007
MS9500	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5731, .190-32 UNJF-3A ----------	702
MS9501	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5731, .250-28 UNJF-3A ----------	702

		SECTION
MS9502	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5731, .3125-24 UNJF-3A ----------	702
MS9503	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5731, .375-24 UNJF-3A ----------	702
MS9505	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5731, .500-20 UNJF-3A ----------	702
MS9507	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5731, .625-18 UNJF-3A ----------	702
MS9508	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5731, .750-16 UNJF-3A ----------	702
MS9516	- Screw, Machine-Steel, AMS 6322, Cadmium Plate, Hexagon Head, .138-40 UNJF-3A ----------	2011
MS9517	- Screw, Machine-Steel, AMS 6322, Cadmium Plate, Hexagon Head, .164-36 UNJF-3A ----------	2011
MS9518	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Hexagon Head, .190-32 UNJF-3A ----------	708
MS9519	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Hexagon Head, .250-28 UNJF-3A ----------	708
MS9520	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Hexagon Head, .3125-24 UNJF-3A ----------	708
MS9521	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Hexagon Head, .375-24 UNJF-3A ----------	708
MS9523	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Hexagon Head, .500-20 UNJF-3A ----------	708
MS9525	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Hexagon Head, .625-18 UNJF-3A ----------	708
MS9526	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Hexagon Head, .750-16 UNJF-3A ----------	708
MS9527	- Screw, Machine-Steel, AMS 6322, Cadmium Plate, Drilled, 1 Hole, Hexagon Head, .138-40 UNJF-3A ----------	2010
MS9528	- Screw, Machine-Steel, AMS 6322, Cadmium Plate, Drilled, 1 Hole, Hexagon Head, .164-36 UNJF-3A ----------	2010
MS9529	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Drilled, 1 Hole, Hexagon Head, .190-32 UNJF-3A ----------	706
MS9530	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Drilled, 1 Hole, Hexagon Head, .250-28 UNJF-3A ----------	706
MS9531	- Bolt, Machine-Steel, AMS 6322, Cadmium Plate, Drilled, 1 Hole, Hexagon Head, .3125-24 UNJF-3A ----------	706

SECTION

SECTION

		SECTION
MS9651	- Bolt, Machine - Hexagon Head, Full Shank, Titanium, AMS 4967, .190-32 UNJF-3A	704
MS9652	- Bolt, Machine - Hexagon Head, Full Shank, Titanium, AMS 4967, .250-28 UNJF-3A	704
MS9653	- Bolt, Machine - Hexagon Head, Full Shank, Titanium, AMS 4967, .3125-24 UNJF-3A	704
MS9654	- Bolt, Machine - Hexagon Head, Full Shank, Titanium, AMS 4967, .375-24 UNJF-3A	704
MS9656	- Bolt, Machine - Hexagon Head, Full Shank, Titanium, AMS 4967, .500-20 UNJF-3A	704
MS9685	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, Steel AMS 6304, Diffused Nickel Cadmium Plate, .190-32 UNJF-3A	706
MS9686	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, Steel AMS 6304, Diffused Nickel Cadmium Plate, .250-28 UNJF-3A	706
MS9687	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, Steel AMS 6304, Diffused Nickel Cadmium Plate, .3125-24 UNJF-3A	706
MS9688	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, Steel AMS 6304, Diffused Nickel Cadmium Plate, .375-24 UNJF-3A	706
MS9690	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, Steel AMS 6304, Diffused Nickel Cadmium Plate, .500-20 UNJF-3A	706
MS9692	- Bolt, Machine - Hexagon Head, Drillled, 1 Hole, PD Shank, Steel AMS 6304, Diffused Nickel Cadmium Plate, .625-18 UNJF-3A	706
MS9693	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, Steel AMS 6304, Diffused Nickel Cadmium Plate, .750-16 UNJF-3A	706
MS9781	- Screw, Machine - Hexagon Head, Full Shank, AMS 5643, .138-40 UNJF-3A	2008
MS9782	- Screw, Machine - Hexagon Head, Full Shank, AMS 5643, .164-36 UNJF-3A	2008
MS9783	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5643, .190-32 UNJF-3A	704
MS9784	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5643, .250-28 UNJF-3A	704
MS9785	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5643, .3125-24 UNJF-3A	704
MS9786	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5643, .375-24 UNJF-3A	704
MS9788	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5643, .500-20 UNJF-3A	704

		SECTION
MS9790	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5643, .625-18 UNJF-3A	704
MS9791	- Bolt, Machine - Hexagon Head, Full Shank, AMS 5643, .750-16 UNJF-3A	704
MS9792	- Screw, Machine - Hexagon Head, Drillled, 1 Hole, Full Shank, AMS 5643, .138-40 UNJF-3A	2007
MS9793	- Screw, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5643, .164-36 UNJF-3A	2007
MS9794	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5643, .190-32 UNJF-3A	702
MS9795	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5643, .250-28 UNJF-3A	702
MS9796	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5643, .3125-24 UNJF-3A	702
MS9797	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5643, .375-24 UNJF-3A	702
MS9799	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5643, .500-20 UNJF-3A	702
MS9801	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5643, .625-18 UNJF-3A	702
MS9802	- Bolt, Machine - Hexagon Head, Drilled, 1 Hole, Full Shank, AMS 5643, .750-16 UNJF-3A	702
MS9803	- Screw, Machine - Hexagon Head, PD Shank, AMS 5643, .138-40 UNJF-3A	2011
MS9804	- Screw, Machine - Hexagon Head, PD Shank, AMS 5643, .164-36 UNJF-3A	2011
MS9805	- Bolt, Machine - Hexagon Head, PD Shank, AMS 5643, .190-32 UNJF-3A	708
MS9806	- Bolt, Machine - Hexagon Head, PD Shank, AMS 5643, .250-28 UNJF-3A	708
MS9807	- Bolt, Machine - Hexagon Head, PD Shank, AMS 5643, .3125-24 UNJF-3A	708
MS9808	- Bolt, Machine - Hexagon Head, PD Shank, AMS 5643, .375-24 UNJF-3A	708
MS9810	- Bolt, Machine - Hexagon Head, PD Shank, AMS 5643, .500-20 UNJF-3A	708
MS9812	- Bolt, Machine - Hexagon Head, PD Shank, AMS 5643, .625-18 UNJF-3A	708
MS9813	- Bolt, Machine - Hexagon Head, PD Shank, AMS 5643, .750-16 UNJF-3A	708
MS9814	- Screw, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, AMS 5643, .138-40 UNJF-3A	2010
MS9815	- Screw, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, AMS 5643, .164-36 UNJF-3A	2010

			SECTION
MS9816	-	Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, AMS 5643, .190-32 UNJF-3A ----------	706
MS9817	-	Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, AMS 5643, .250-28 UNJF-3A ----------	706
MS9818	-	Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, AMS 5643, .3125-24 UNJF-3A ----------	706
MS9819	-	Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, AMS 5643, .375-24 UNJF-3A ----------	706
MS9821	-	Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, AMS 5643, .500-20 UNJF-3A ----------	706
MS9823	-	Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, AMS 5643, .625-18 UNJF-3A ----------	706
MS9824	-	Bolt, Machine - Hexagon Head, Drilled, 1 Hole, PD Shank, AMS 5643, .750-16 UNJF-3A ----------	706
MS9957	-	Bolt, Machine - Hexagon Head, Drilled, 6 Hole, PD Shank, Steel AMS 6322, Cadmium Plated, .190-32 UNJF-3A ----------	707
MS9958	-	Bolt, Machine, Hexagon Head, Drilled, 6 Hole, PD Shank, Steel AMS 6322, Cadmium Plated, .250-28 UNJF-3A ----------	707
MS9959	-	Bolt, Machine, Hexagon Head, Drilled, 6 Hole, PD Shank, Steel AMS 6322, Cadmium Plated, .3125-24 UNJF-3A ----------	707
MS9960	-	Bolt, Machine, Hexagon Head, Drilled, 6 Hole, PD Shank, Steel AMS 6322, Cadmium Plated, .375-24 UNJF-3A ----------	707
MS9962	-	Bolt, Machine, Hexagon Head, Drilled, 6 Hole, PD Shank, Steel AMS 6322, Cadmium Plated, .500-20 UNJF-3A ----------	707
MS9964	-	Bolt, Machine, Hexagon Head, Drilled, 6 Hole, PD Shank, Steel AMS 6322, Cadmium Plated, .625-18 UNJF-3A ----------	707
MS9965	-	Bolt, Machine, Hexagon Head, Drilled, 6 Hole, PD Shank, Steel AMS 6322, Cadmium Plated, .750-16 UNJF-3A ----------	707
MS16992	-	Bolt, (Screw), Lag, Hex Head, Gimlet Point -----	601
MS18153	-	Screw, Cap, Hexagon Head (Finished Hexagon Bolt), Head Drilled for Locking Wire, Alloy Steel, Grade 8 Cadmium Plated, UNF-2A, Plain and Self-Locking ----------	801/1401
MS18154	-	Screw, Cap, Hexagon Head (Finished Hexagon Bolt), Head Drilled for Locking Wire, Alloy Steel, Grade 8, Cadmium Plated, UNC-2A, Plain and Self-Locking ----------	801/1401

		SECTION
MS18211	Screw, Machine - 80° and 100°, Flat Countersunk Head, Slotted, Plastic, (Nylon)	2002/2004
MS18212	Screw, Machine - Pan Head, Slotted, Plastic (Nylon), UNC-2A	2013
MS20004 thru MS20024	Bolts, Internal Wrenching, 160 ksi Ftu and 96 ksi Fsu	501
MS20033 thru MS20046	Bolt, Machine, Hexagon Head, 1200°F	705
MS20073	Bolt, Machine, Aircraft, Drilled Head, Fine Thread	705
MS20074	Bolt, Machine, Aircraft, Drilled Head, Coarse Thread	705
MS21090	Screw, Self-Locking, 250°F, Steel 55 ksi Ftu, Pan Head, Cross Recessed	2109
MS21091	Bolt, Self-Locking, 250°F, Steel, 75 ksi Fsu, 125 ksi Ftu, 100° Flush Head, Cross Recessed	2106
MS21092	Bolt, Self-Locking, 250°F, CRES, 48 ksi Fsu, 80 ksi Ftu, 100° Flush Head Cross Recessed	2106
MS21093	Screw, Self-Locking, 250°F, Steel, 55 ksi Ftu, 100° Flat Head, Cross Recessed	2105
MS21094	Bolt, Self-Locking, 250°F, Steel, 75 ksi Fsu, 125 ksi Ftu, Hex Head	803
MS21095	Bolt, Self-Locking, 250°F, CRES, 48 ksi Fsu, 80 ksi Ftu, Hex Head	803/2107
MS21096	Bolt, Self-Locking, 250°F, Steel 75 ksi Fsu, 125 ksi Ftu, Pan Head, Cross Recessed	2110
MS21097	Bolt, Self-Locking, 250°F, CRES, 48 ksi Fsu, 80 ksi Ftu, Pan Head, Cross Recessed	2110
MS21125	Bolt, Self-Retaining, Positive Locking, CRES, 90 ksi Fsu, Pan Head, 450°F & 650°F	203
MS21130	Bolt, Self-Retaining, Positive Locking, CRES, 90 ksi Fsu, 100° Flush Head, 450°F & 650°F	203
MS21134	Bolt, Tension, Steel 180 ksi Ftu, 450°F., External Wrenching, Spline Drive, Flanged Head	904
MS21296	Bolt, Tension, Steel, 260 ksi Ftu, 450°F., External Wrenching, Spline Drive, Flanged Head	904
MS21297	Bolt, Tension, Steel, 220 ksi Ftu, 450°F., External Wrenching, Spline Drive, Flanged Head	904
MS21316	Thumbscrew (Shouldered), Flat Point, Carbon Steel, Cadmium Plated, UNC-2A	2701
MS21318	Screw, Drive, Round Head, Type U, Steel, Carbon, Cadmium Plated	1701

		SECTION
MS24625	- Screw, Tapping-Thread Cutting, Type BF or BT, Pan Head, Cross Recessed, Carbon Steel ----------	2303
MS24627	- Screw, Tapping-Thread Cutting, Types D, F, G, or T, Flat 82° Countersunk Head, Cross Recessed, Carbon Steel ----------	2301
MS24628	- Screw, Tapping-Thread Cutting, Types D, F, G, or T, Flat 82° Countersunk Head, Cross Recessed, Corrosion-Resisting Steel ----------	2301
MS24629	- Screw, Tapping-Thread Cutting, Types D, F, G, or T Pan Head, Cross Recessed, Steel, Carbon Cadmium Plated ----------	2303
MS24630	- Screw, Tapping-Thread Cutting, Types D, F, G, or T Pan Head, Cross Recessed, Corrosion Resisting Steel ----------	2303
MS24667	- Screw, Cap-Socket Head, Flat Countersunk, 82°, Alloy Steel, UNC-3A ----------	2003/2103
MS24671	- Screw, Cap, Socket-Head - Flat Countersunk, 82° Corrosion-Resisting Steel, UNC-3A ----------	2003
MS24693	- Screw, Machine, Flat Countersunk Head, 100°, Cross Recessed, UNC-2A and UNF-2A (IN./MM) ------	2005
MS24694	- Screw, Machine, Flat Countersunk Head, 100°, Structural, Cross Recessed, UNC-3A and UNF-3A --	2006
MS27039	- Screw, Machine - Pan Head, Structural, Cross Recessed ----------	2014
MS27576	- Bolt, Self-Retaining, Impedance Type, 95 ksi Fsu, Hex Head, 450°F ----------	202
MS27577	- Bolt, Self-Retaining, Impedance Type, 95 ksi Fsu, 100° Flush Head, 450°F ----------	202
MS35190	- Screw, Machine - 82° Flat Countersunk Head, Cross-Recessed, Carbon Steel, Cadmium Plated, UNC-2A ----------	2003/2103
MS35191	- Screw, Machine - 82° Flat Countersunk Head, Cross-Recessed, Carbon Steel, Cadmium Plated, UNF-2A ----------	2003/2103
MS35198	- Screw, Machine - Flat Countersunk Head, 82°, Cross-Recessed, Brass, Black Chemical Finish, UNC-2A ----------	2003
MS35199	- Screw, Machine - Flat Countersunk Head, 82°, Cross-Recessed, Brass, Black Chemical Finish, UNF-2A ----------	2003
MS35202	- Screw, Machine - Flat Countersunk Head, 82°, Cross Recessed, Aluminum Alloy, Anodic Coated, UNC-2A ----------	2003
MS35203	- Screw, Machine - Flat Countersunk Head, 82°, Cross-Recessed, Aluminum Alloy, Anodic Coated, UNF-2A ----------	2003

		SECTION
MS35206	- Screw, Machine - Pan Head, Cross-Recessed, Carbon Steel, Cadmium Plated, UNC-2A (IN./MM) ---	2013
MS35207	- Screw, Machine, Pan Head, Cross-Recessed, Carbon Steel, Cadmium Plated, UNF-2A (IN./MM) ---	2013
MS35214	- Screw, Machine - Pan Head, Cross-Recessed, Brass, UNC-2A ----------	2013
MS35215	- Screw, Machine - Pan Head, Cross-Recessed, Brass, UNF-2A ----------	2013
MS35218	- Screw, Machine - Pan Head, Cross-Recessed, Aluminum Alloy, UNC-2A ----------	2013
MS35219	- Screw, Machine - Pan Head, Cross-Recessed, Aluminum Alloy, UNF 2A ----------	2013
MS35265	- Screw, Machine - Drilled Fillister Head, Slotted, Carbon Steel, UNC-2A ----------	2001
MS35266	- Screw, Machine - Drilled Fillister Head, Slotted, Carbon Steel, UNF-2A ----------	2001
MS35273	- Screw, Machine - Drilled Fillister Head, Slotted, Brass, Black Chemical Finish, UNC-2A ----------	2001
MS35274	- Screw, Machine - Drilled Fillister Head, Slotted, Brass, Black Chemical Finish, UNF-2A ----------	2001
MS35275	- Screw, Machine - Drilled Fillister Head, Slotted, Corrosion Resisting Steel, Passivated, UNC-2A ---	2001
MS35276	- Screw, Machine - Drilled Fillister Head, Slotted, Corrosion Resisting Steel, Passivated, UNF-2A ---	2001
MS35277	- Screw, Machine - Drilled Fillister Head, Slotted, Aluminum Alloy, UNC-2A ----------	2001
MS35278	- Screw, Machine - Drilled Fillister Head, Slotted, Aluminum Alloy, UNF-2A ----------	2001
MS35307	- Screw, Cap, Hexagon Head (Finished Hexagon Bolt), Steel, Corrosion Resisting, Passivated, UNC-2A --	1403
MS35308	- Screw, Cap, Hexagon Head (Finished Hexagon Bolt), Steel, Corrosion Resisting, Passivated, UNF-2A --	1403
MS35309	- Screw, Cap, Hexagon Head - Naval Brass, Plain Finish, UNC-2A ----------	1403
MS35310	- Screw, Cap, Hexagon Head - Naval Brass, Plain Finish, UNF-2A ----------	1403
MS35355	- Bolt, Machine, Square Head, Steel, Cadmium or Zinc Plated, UNC-2A ----------	709
MS35492	- Screw, Wood, Flat Head, Cross-Recessed, Steel and Brass ----------	2501
MS35494	- Screw, Wood, Flat Head, Slotted, Steel and Brass ----------	2501
MS35646	- Screw, Eye - Steel or Brass ----------	1801
MS35751	- Bolt, Square Neck, Round Head, (Carriage), Steel, Cadmium or Zinc Plated, UNC-2A ----------	1101

		SECTION
MS51870	- Screw, Tapping-High Performance, Thread Rolling, Types SF, SW and TT, Flat Countersunk Head, Cross-Recessed	2301
MS51871	- Screw, Tapping-High Performance, Zone Hardened Structural Thread Rolling, Hexagon Washer Head	2402
MS51937	- Bolt, Eye - Shoulder	302
MS51957	- Screw, Machine - Pan Head, Cross-Recessed, Corrosion Resisting Steel, UNC-2A	2013
MS51958	- Screw, Machine - Pan Head, Cross-Recessed, Corrosion Resisting Steel, UNF-2A	2013
MS51959	- Screw, Machine - Flat Countersunk Head, 82°, Cross-Recessed, Corrosion Resisting Steel, UNC-2A	2003
MS51960	- Screw, Machine-Flat Countersunk Head, 82°, Cross-Recessed, Corrosion Resisting Steel, UNF-2A	2003
MS51963	- Setscrew - Hexagon Socket, Cup Point, Alloy Steel, Cadmium Plated, UNC-3A, Plain and Self-Locking	2602
MS51964	- Setscrew - Hexagon Socket, Cup Point, Alloy Steel, Cadmium Plated, UNF-3A, Plain and Self-Locking	2602
MS51965	- Setscrew - Hexagon Socket, Flat Point, Alloy Steel, Cadmium Plated, UNC-3A, Plain and Self-Locking	2603
MS51966	- Setscrew - Hexagon Socket, Flat Point, Alloy Steel, Cadmium Plated, UNF-3A, Plain and Self-Locking	2603
MS51973	- Setscrew - Hexagon Socket, Cone Point, Alloy Steel, Cadmium Plated, UNC-3A, Plain and Self-Locking	2601
MS51974	- Setscrew - Hexagon Socket, Cone Point, Alloy Steel, Cadmium Plated, UNF-3A, Plain and Self-Locking	2601
MS51975	- Screw, Shoulder-Socket Head, Hexagon, Alloy Steel, Cadmium Plated, UNC-3A	1504
MS51977	- Setscrew - Hexagon Socket, Half-Dog Point, Alloy Steel, Cadmium Plated, UNC-3A	2604
MS51981	- Setscrew - Hexagon Socket, Oval Point, Alloy Steel, Cadmium Plated, UNC-3A	2605
MS90727	- Screw, Cap, Hexagon Head, (Finished Hexagon Bolt), Alloy Steel, Grade 8, Cadmium Plated, UNF-2A, Plain and Self-Locking	802/1403

		SECTION
MS90728	- Screw, Cap, Hexagon Head (Finished Hexagon Bolt), Alloy Steel, Grade 8, Cadmium Plated, UNC-2A Plain and Self-Locking ----------	802/1403

AIR FORCE - NAVY AERONAUTICAL

AN3 thru AN20	- Bolt, Machine, Aircraft ----------	705
AN21 thru AN37	- Bolt, Clevis ----------	101
AN42 thru AN49	- Bolt, Eye ----------	301
AN173 thru AN186	- Bolt, Machine, Close Tolerance, Aircraft ------	201

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this standard to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal apply.

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC. (AIA)

NATIONAL AEROSPACE STANDARDS

		SECTION
NAS28	- Bolt - Tee Head ----------	1201
NAS144 thru NAS158	- Bolt - Internal Wrenching Steel, 1/4-28 thru 1-1/8-12 ----------	501
NAS172	- Bolt - Internal Wrenching, Steel, 1.2500-12 --	501
NAS176	- Bolt - Internal Wrenching, Steel, 1.5000-12 --	501
NAS333 thru NAS340	- Bolt - 100°, Close Tolerance, High Strength --	1603
NAS428	- Bolt - Machine-Crowned Hexagon Head, Adjusting ----------	701
NAS501	- Bolt - Stabilized-Non-Magnetic Corr Res Steel ----------	705
NAS514	- Screw - Machine, 100°, Flat Head, Full Threaded, Alloy Steel ----------	2005
NAS517	- Screw - 100° Close Tolerance Flat Head 160,000 PSI ----------	2006
NAS560	- Screw - Machine, Non-Magnetic High Temperature, Structural, 100° Flush Head ----------	2006
NAS563 thru NAS572	- Bolt - Full Threaded, 160 ksi Steel, Drilled Head ----------	701

			SECTION
NAS1216	-	Bolt, Flat Pan Head, "Hi-Torque" Recess, Full Thread	2012
NAS1219	-	Bolt, 100° Flush, Tension Head, "Hi-Torque" Recess, Full Thread	2004
NAS1221	-	Bolt, 100° Flush Tension Head, "Hi-Torque" Recess, Long Thread	2006/2106
NAS1223 thru NAS1235	-	Bolt, Shear-Hexagon Head, Self-Locking	201/902
NAS1261 thru NAS1265	-	Bolt, Hex Head, Close Tolerance, Short Thread, Titanium Alloy	201
NAS1266 thru NAS1270	-	Bolt, Hex Head, Close Tolerance, Titanium Alloy	201
NAS1297	-	Bolt, Shoulder, Hexagon Head	1001/2203
NAS1298	-	Screw, Brazier Head, Shoulder	2201
NAS1299	-	Screw 100° Flat Head, Shoulder	2202
NAS1303 thru NAS1320	-	Bolt, Shear-Hexagon Head	901
NAS1351	-	Screw, Cap, Socket Head-Undrilled and Drilled, Plain and Self-Locking, Alloy Steel and Corrosion Resisting Steel, UNRF-3A	1502/2101
NAS1352	-	Screw, Cap, Socket Head-Undrilled and Drilled, Plain and Self-Locking, Alloy Steel and Corrosion Resisting Steel, UNRC-3A	1502/2101
NAS1402 thru NAS1406	-	Screw, Machine, Aircraft, Pan Head, Phillips Recess 160,000 PSI Tensile	2014
NAS1578	-	Bolt, Flat, Pan Head	1605
NAS1580	-	Bolt, 100° Flush Tension Head	1603
NAS1581	-	Bolt, 100° Flush Shear Head	1603
NAS1588	-	Bolt, Shear, Hex Head, 1200°F.	901
NAS1620 thru NAS1628	-	Screw, Machine-Flat 100° Head, Short Thread, Torq-Set	2006
NAS1630 thru NAS1634	-	Screw, Machine-Pan Head, Short Thread, Torq-Set	2014
NAS1635	-	Screw, Machine-Pan Head, Cross Recessed, Full Thread	2013/2109
NAS1790	-	Bolt, 100° Flush Head, Hi-Torque Recess, 160,000 PSI UTS	1604
NAS1801	-	Screw, Hex Head, Phillips Recess, Full Thread, Alloy Steel, 160,000 PSI Tensile	2009
NAS1802	-	Screw, Hex Head, Phillips Recess, Full Thread, A-286 CRES, 160,000 PSI Tensile	2009
NAS1953 thru NAS1970	-	Bolt, Shear, Hexagon Head, 180 ksi	901
NAS1972 thru NAS1980	-	Bolt, Flat 100° Head, Torq-Set and Hi-Torque, 180 ksi	1603

			SECTION
NAS1982 thru NAS1990	-	Bolt, Brazier Head, Torq-Set and Hi-Torque 180 ksi	1601
NAS1992 thru NAS2000	-	Bolt, Flat, 100° Reduced Head, Torq-Set and Hi-Torque, 180 ksi Shear	1603
NAS2803 thru NAS2810	-	Bolt, 100° Head, "Torq-Set", Close Tolerance, 180,000 PSI	1603
NAS3103 thru NAS3110	-	Bolt, U	1301
NAS3203 thru NAS3210	-	Bolt, Hook	401
NAS3303 thru NAS3305	-	Bolt, U, Strap Type	1301
NAS6203 thru NAS6220	-	Bolt, Hex Head, Close Tolerance, Alloy Steel, Short Thread, Self-Locking & Non-Locking	903
NAS6303 thru NAS6320	-	Bolt, Hex Head, Close Tolerance, A-286, Short Thread, Self-Locking & Non-Locking	903
NAS6403 thru NAS6420	-	Bolt, Hex Head, Close Tolerance, 6AL-4V Titanium, Alloy, Short Thread, Self-Locking & Non-Locking	903
NAS6604 thru NAS6620	-	Bolt, Hex Head, Close Tolerance, Alloy Steel, Long Thread, Self-Locking & Non-Locking	903
NAS6704 thru NAS6720	-	Bolt, Hex Head, Close Tolerance, A286 CRES, Long Threads, Self-Locking & Non-Locking	903
NAS6803 thru NAS6820	-	Bolt, Hex Head, Close Tolerance, 6AL-4V Titanium Alloy, Long Thread, Self-Locking & Non-Locking	903

(Application for copies should be addressed to the Aerospace Industries Association of America, Inc., 1725 DeSales Street, Washington, DC 20036.)

(Technical society and technical association specifications and standards are generally available for reference from libaries. They are also distributed among technical groups and using Federal agencies).

3. DEFINITIONS

3.1 Adopted Industry Standards. Any Industry Specification or Standard which is listed in this Standard/The Department of Defense Index of Specifications and Standards. (DODISS).

3.2 Commodity Type Document. A document which lists preferred parts within a Federal Supply Classification class or Item Name. This document is to be used for selecting preferred parts for a new design when the document is invoked as a contractual requirement in conjunction with a parts control requirement.

3.3 End Use Type Document. A document that lists preferred documents and establishes parts requirements which are contractually binding for the design and construction/manufacture of a weapon system or an established equipment category such as MIL-STD-1515.

3.4 Military Parts Control Advisory Group (MPCAG). A Department of Defense organization which provides advice to the Military Departments and military contractors on the selection of parts in assigned commodity classes, and collects data on nonstandard parts for developing or updating military specifications and standards.

3.5 Approved Item Names. Approved item names used in this standard are defined in the following paragraphs corresponding to the section numbers:

(100) BOLT, CLEVIS. An externally threaded fastener whose threaded and unthreaded portions are of one nominal diameter and are separated by a narrow circumferential groove. The head has a recess for holding or driving.

(200) BOLT, CLOSE TOLERANCE. An externally threaded fastener whose unthreaded portion is of a specified grip length and is machined to a tolerance of .001 inch or less. Items over 1.000 inch in diameter shall have a tolerance of .0015 inch or less. The nominal major diameter of the threads shall be at least .001 inch below the minimum shank diameter, but not below the minimum major diameter for applicable class of fit, as shown in FED-STD-H28. The head is designed for external wrenching. The minimum tensile strength shall be less than 160,000 pounds per square inch.

(300) BOLT, EYE. An externally threaded device whose threaded portion is of one nominal diameter, without a head, but with the unthreaded end either bent more than 225 degrees or cast, forged, or punched to resemble an eye.

(400) BOLT, HOOK. An externally threaded device whose threaded portion is of one nominal diameter, without a head but with the unthreaded end bent not over 225 degrees.

(500) BOLT, INTERNAL WRENCHING. An externally threaded fastener whose threaded portion is of one nominal diameter. The head is beveled (conical) in shape and has an internal socket for internal wrenching.

(600) BOLT, LAG. An externally threaded fastener having a square or hexagon head and with a continuous thread (wood screw type or fetter drive type) extending from a gimlet or cone point for a distance of slightly more than one-half the length of the bolt.

(700) BOLT, MACHINE. An externally threaded fastener whose threaded and unthreaded portions are each of one nominal diameter, .190 inch or larger. The length of the unthreaded portion (of hexagon head fasteners) is controlled and is machined to a tolerance greater than that specified for BOLT, CLOSE TOLERANCE. The head is designed for external wrenching only. If head also contains recess, slot or socket, use SCREW, MACHINE.

(800) BOLT, SELF-LOCKING. A BOLT, MACHINE or SCREW, CAP, HEXAGON HEAD with the added characteristic of a locking feature incorporated in the design of the head or in the threads.

(900) BOLT, SHEAR. A BOLT, CLOSE TOLERANCE except that item is fabricated from material having a minimum tensile strength of 160,000 pounds per square inch or greater.

(1000) BOLT, SHOULDER. A BOLT, MACHINE or SCREW, CAP HEXAGON HEAD that has a round unthreaded neck or shank, all or part of which is of greater diameter than the threaded portion.

(1100) BOLT, SQUARE NECK. A headed externally threaded fastener whose threaded portion if of one nominal diameter, with a square neck directly beneath the head.

(1200) BOLT, TEE HEAD. An externally threaded fastener whose threaded portion is of one nominal diameter and with a head specifically designed to fit in a slot and hold against turning.

(1300) BOLT, U. An externally threaded fastener bent approximately 180 degrees in the shape of the letter U and with both ends threaded.

(1400) SCREW, CAP, HEXAGON HEAD. A BOLT, MACHINE, HEXAGON HEAD except that the length of the unthreaded portion is not controlled.

(1500) SCREW, CAP, SOCKET HEAD. An externally threaded fastener whose threaded portion is of one nominal diameter. The head is cylindrical in shape and has an internal socket or multiple spline for use with an inserted driver. Excludes items with bevel (conical) heads.

(1600) SCREW, CLOSE TOLERANCE. A BOLT, CLOSE TOLERANCE except that the head has an internal socket, recess, or slot and the minimum tensile strength may be any value.

(1700) SCREW, DRIVE. A hardened cylindrical fastener with multiple spiral flutes on its shank. It also has an end smaller in diameter than the outside diameter of the spiral flutes, which acts as a pilot when driven into a drilled hole.

(1800) SCREW, EYE. A fastening device with one end formed in the shape of an eye and the other end threaded with a lag or wood screw type of thread.

(1900) SCREW, INSTRUMENT. A SCREW, MACHINE except that the thread diameter is less than .060 inch.

(2000) SCREW, MACHINE. An externally threaded fastener whose threaded portion is of one nominal diameter. The unthreaded portion has a tolerance greater than that specified for BOLT, CLOSE TOLERANCE. For thread sizes .060 thru .164 inch, any head may be used except SCREW, CAP, SOCKET HEAD or BOLT, INTERNAL WRENCHING. For thread sizes .190 and larger, any recess, slot or socket (except SCREW, CAP, SOCKET HEAD, or BOLT, INTERNAL WRENCHING) head may be used.

(2100) SCREW, SELF-LOCKING. A SCREW, MACHINE or SCREW, CAP, SOCKET HEAD with the added characteristic of a locking feature incorporated in the design of the head or in the threads.

(2200) SCREW, SHOULDER. A SCREW, MACHINE except that it has a round unthreaded neck or shank, all or part of which is of greater diameter than the threaded portion.

(2300) SCREW, TAPPING, THREAD CUTTING. A hardened externally threaded fastener whose thread extends from a tapered end to the bearing surface of the head and is interrupted by flutes or slots to permit cutting its own mating thread.

(2400) SCREW, TAPPING THREAD FORMING. A hardened externally threaded fastener whose thread usually extends from a gimlet or dog type point to the bearing surface of the head and designed to form its own mating thread.

(2500) SCREW, WOOD. A unhardened externally threaded fastener whose continuous thread extends from a gimlet point for a distance of approximately two-thirds of the length of the screw and which is designed to be driven with an inserted driver.

(2600) SETSCREW. An externally threaded device whose threaded portion is one of nominal diameter with or without a head and having a cup, cone or other type of machined point designed to prevent or restrict relative movement of parts and designed to be driven with either a wrench or inserted driver.

(2700) THUMBSCREW. An externally threaded fastener whose threaded portion is of one nominal diameter. It may have an unthreaded portion with a diameter less than, equal to, or greater than the diameter of the threaded portion. It has either a vertically flattened, circular knurled, or wing type head, all of which are designed for rotation by the thumb and fingers. For items having wrenching facilities such as socket recess, multiple spline, or slot heads, use SCREW (as modified) or BOLT (as modified).

3.6 Modifiers. Modifiers added to the approved item names used in this standard are as follows:

a. FULL SHANK. The diameter of the unthreaded portion is nominally the same as the major diameter of the thread.

b. PD SHANK. The diameter of the unthreaded portion is nominally the same as the pitch diameter of the thread.

c. FULL THREAD. Fastener is threaded as close to the head as practicable for all lengths.

d. LONG THREAD. Minimum thread length is twice the diameter plus .25 inch or greater, but not fully threaded for all lengths.

e. SHORT THREAD. Minimum thread length is less than twice the diameter plus .25 inch.

f. NON-LOCKING. As used in this standard is interchangeable with plain.

3.7 Overlapping definitions. Due to the overlapping definitions for screws and bolts, table I may be used as a guide when searching for a particular item.

TABLE I. Essential differences between overlapping approved item names for screws and bolts.

Head styles	Shank dia tolerance	Tensile strength (ksi) min	Thread dia nom	Grip length of hexagon head fasteners	Approved item name	Section number
Recess, slot, or socket	.001 or <	AV	All		Screw, Close Tolerance	1600
External wrenching (only)	.001 or <	< 160	All		Bolt, Close Tolerance	201
External wrenching (only)	.001 or <	160 or >	All		Bolt, Shear	900
External wrenching (only)	> .001	AV	.190 or >	Controlled	Bolt, Machine 1/, 2/	700
Any head	> .001	AV	< .060		Screw Instrument	1900
Any head	> .001	AV	.060 thru .164		Screw, Machine 3/, 4/	2000
Recess, slot, or socket (except those listed below)	> .001	AV	.190 or >		Screw, Machine 3/, 4/	2000
Hexagon	> .001	AV	.190 or >	Not Controlled	Screw, Cap, Hexagon Head 1/, 2/	1400
Cylindrical containing a socket	> .001	AV	All		Screw, Cap, Socket Head 3/	150
Conical containing a socket	> .001	AV	All		Bolt, Internal Wrenching	500

For notes 1/, 2/, 3/, 4/ and Symbols, see page 26

1/ If part contains locking feature, use "Bolt, Self-Locking" (Section 800).
2/ If part contains shoulder, use "Bolt, Shoulder" (Section 1000).
3/ If part contains locking feature, use "Screw; Self-Locking" (Section 2100).
4/ If part contains shoulder, use "Screw, Shoulder" (Section 2200).

Symbols:

$\geqslant$	Greater than
$\leqslant$	Less than
AV	Any value

4. GENERAL STATEMENTS

4.1 Selection procedure.

4.1.1 Document selection. The applicable section shall be selected after reviewing the definitions in 3.5 thru 3.7 and the table of contents.

4.1.2 Part number selection (preliminary). A preliminary selection of the applicable part number shall be made after reviewing the nominal parameters (sizes, materials, shear and tensile strength) listed in the sections.

4.1.3 Part number selection (final). A final selection of the applicable part number shall be made after reviewing the detailed requirements specified in the referenced documents for suitability in the particular military equipment being designed (considering the application and environmental conditions).

5. DETAILED REQUIREMENTS

5.1 The detailed requirements for preferred screws and bolts are contained in the applicable screws and bolts document and associated procurement specification. If there is disagreement between the nominal parameters listed in this standard and the parameters specified in the applicable screws and bolts document or associated procurement specification, the parameters specified in the applicable screws and bolts document or associated procurement specification shall prevail.

6. NOTES

6.1 Dimensions. Dimensions shown in the sections contained herein are in inches.

6.2 Unified standard screw threads used in this standard are listed in table II.

TABLE II. Unified standard screw threads.

Nominal size (inches) - (threads per inch)	Series designation	Nominal size (inches) - (threads per inch)	Series designation
.060-80 or No. 0-80	UNF	.4375-14 or 7/16-14	UNC
		.4375-20 or 7/16-20	UNF
.086-56 or No. 2-56	UNC		
.086-64 or No. 2-64	UNF	.500-13 or 1/2-13	UNC
		.500-20 or 1/2-20	UNF
.112-40 or No. 4-40	UNC		
.112-48 or No. 4-48	UNF	.625-11 or 5/8-11	UNC
		.625-18 or 5/8-18	UNF
.138-32 or No. 6-32	UNC		
.138-40 or No. 6-40	UNF	.750-10 or 3/4-10	UNC
		.750-16 or 3/4-16	UNF
.164-32 or No. 8-32	UNC		
.164-36 or No. 8-36	UNF	.875-9 or 7/8-9	UNC
		.875-14 or 7/8-14	UNF
.190-24 or No. 10-24	UNC		
.190-32 or No. 10-32	UNF	1.000-9	UNC
		1.000-12	UNF
.250-20 or 1/4-20	UNC		
.250-28 or 1/4-28	UNF	1.250-7	UNC
		1.250-12	UNF
.3125-18 or 5/16-18	UNC		
.3125-24 or 5/16-24	UNF	1.500-6	UNC
		1.500-12	UNF
.375-16 or 3/8-16	UNC		
.375-24 or 3/8-24	UNF		

6.3 Unified miniature screw threads used in this standard are listed in table III.

TABLE III. Unified miniature screw threads (UNM).

Thread size (mm)	Threads per inch	Basic major diameter (inches)
.30 UNM	318	.0118
.40 UNM	254	.0157
.50 UNM	203	.0197
.60 UNM	169	.0236
.80 UNM	127	.0315
1.00 UNM	102	.0394
1.20 UNM	102	.0472

6.4 Decimal equivalents rounded to three decimal places used in this standard to specify dimensions.

TABLE IV. Decimal equivalents (except for thread sizes).

1/64---.016	17/64---.266
1/32----------.031	9/32----------.281
3/64---.047	19/64---.297
1/16----------.062	5/16----------.312
5/64---.078	21/64---.328
3/32----------.094	11/32----------.344
7/64---.109	23/64---.359
1/8----------.125	3/8----------.375
9/64---.141	25/64---.391
5/32----------.156	13/32----------.406
11/64---.172	27/64---.422
3/16----------.188	7/16----------.438
13/64---.203	29/64---.453
7/32----------.219	15/32----------.469
15/64---.234	31/64---.484
1/4----------.250	1/2----------.500

TABLE IV. Decimal equivalents (except for thread sizes). (Cont'd)

33/64---.516	49/64---.766
17/32----------.531	25/32----------.781
35/64---.547	51/64---.797
9/16----------.562	13/16----------.812
37/64---.578	53/64---.828
19/32----------.594	27/32----------.844
39/64---.609	55/64---.859
5/8----------.625	7/8----------.875
41/64---.641	57/64---.891
21/32----------.656	29/32----------.906
43/64---.672	59/64---.922
11/16----------.688	15/16----------.938
45/64---.703	61/64---.953
23/32----------.719	31/32----------.969
47/64---.734	63/64---.984
3/4----------.750	

6.5 Code letters. Generally code letters used in this standard to indicate material are placed as prefix of dash number (in place of first dash), and all other codes are placed as suffix of dash numbers.

6.5.1 When multiple code letters are used as suffix, they are arranged in alphabetical order.

6.6 Tensile strength. Tensile strength as used in this standard is ultimate tensile strength. Figure 1 may be used to determine approximate tensile strength when tensile loads are listed for various threaded fastener sizes.

6.7 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue, due to the extensiveness of the changes.

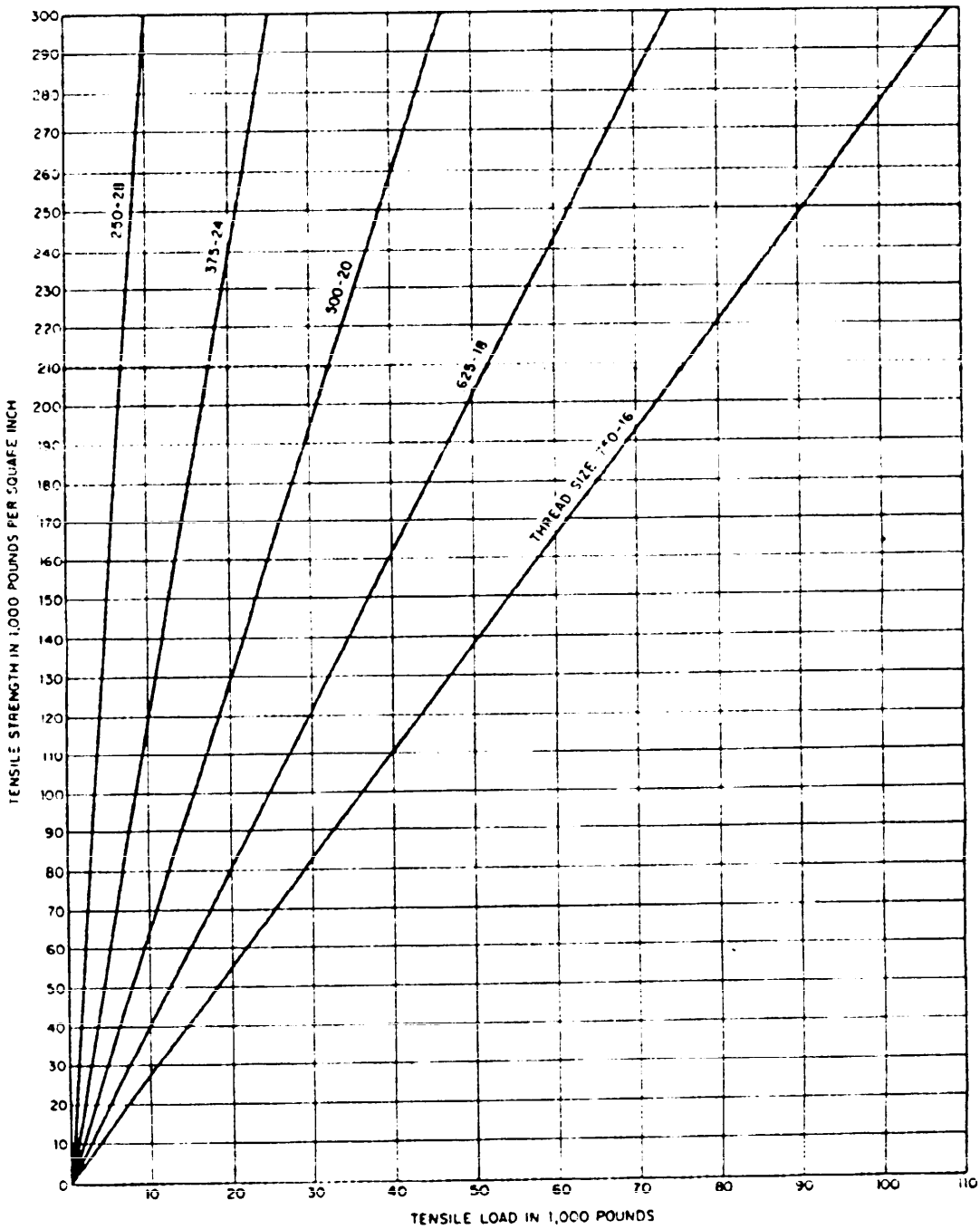


Figure 1. Tensile strength vs. Tensile Load for various threaded fastener sizes

Custodians:
Army - AR
Navy - OS

Review activities:
Army - AT, AV, ER, EA
DLA - IS

User activities:
Army - ME
Navy - MC, SH

Preparing activity:
Army - AR

Agent:
DLA - IS
(Project 53GP-0089)

SECTION 101
BOLTS, CLEVIS
APPLICABLE DOCUMENTS: AN21-37

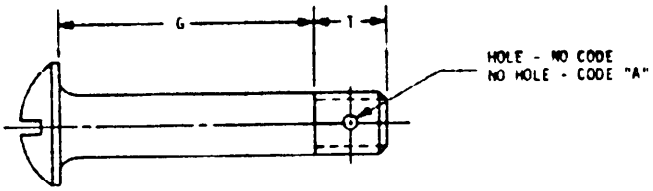


TABLE I. Material.

Material	Protective finish	Shear strength (psi) min
Non-CRES	Cadmium plate	75,000 1/

1/ Bolt, Clevis is to be used as Bolt, Shear.

TABLE II. Dash numbers.

Thread designation (UNF-3A) . . .	.138-40	.164-36	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20	.625-18	.750-16	.875-14	1.000-12
T ref	.281	.281	.344	.344	.359	.359	.422	.422	.500	.562	.641	.703
Basic part no.	AN21	AN22	AN23	AN24	AN25	AN26	AN27	AN28	AN30	AN32	AN34	AN37
Grip dash no.	G											
-5	.062	.062										
-6	.125	.125										
-7	.188	.188										
-8	.250	.250	.188	.188	--	--						
-9	.312	.312	.250	.250	.250	.250						
-10	.375	.375	.312	.312	.312	.312						
-11	.438	.438	.375	.375	.375	.375	--	--				
-12	.500	.500	.438	.438	.438	.438	.375	.375				
-13	--	--	--	--	--	--	--	.438				
-14	.625	.625	.562	.562	.562	.562	.500	.500	.438	--	--	
-16	.750	.750	.688	.688	.688	.688	.625	.625	.562	.500	--	
-18	.875	.875	.812	.812	.812	.812	.750	.750	.688	.625	.562	
-20	1.000	1.000	.938	.938	.938	.938	.875	.875	.812	.750	.688	.625
-22	--	--	--	--	--	--	--	1.000	.938	.875	.812	.750
-24	1.250	1.250	1.188	1.188	1.188	1.188	1.125	--	--	--	--	--
-26	--	--	--	--	--	--	--	1.250	1.188	1.125	1.062	1.000
-28	1.500	1.500	1.438	1.438	1.438	1.438	1.375	--	--	--	--	--
-30	--	--	--	--	--	--	--	1.500	1.438	1.375	1.312	1.250
-32	1.750	1.750	1.688	1.688	1.688	1.688	1.625	--	--	--	--	--
-34	--	--	--	--	--	--	--	1.750	1.688	1.625	1.562	1.500
-36	--	--	1.938	1.938	1.938	1.938	1.875	--	--	--	--	--
-38			--	--	--	--	--	2.000	1.938	1.875	1.812	1.750
-40			2.188	2.188	2.188	2.188	2.125	--	--	--	--	--
-42			--	--	--	--	--	2.250	2.188	2.125	2.062	2.000
-44			2.438	2.438	2.438	2.438	2.375	--	--	--	--	--
-46			--	--	--	--	--	2.500	2.438	2.375	2.312	2.250
-48			2.688	2.688	2.688	2.688	2.625	--	--	--	--	--
-50			--	--	--	--	--	2.750	2.688	2.625	2.562	2.500
-52			2.938	2.938	2.938	2.938	2.875	--	--	--	--	--
-54			--	--	--	--	--	3.000	2.938	2.875	2.812	2.750
-56			3.188	3.188	3.188	3.188	3.125	--	--	--	--	--
-58			--	--	--	--	--	3.250	3.188	3.125	3.062	3.000
-60			3.438	3.438	3.438	3.438	3.375	--	--	--	--	--
-62			--	--	--			3.500	3.438	3.375	3.312	3.250
-64			3.688	3.688	3.688	3.688	3.625	--	--	--	--	--
-66			--	--	--	--	--	3.750	3.688	3.625	3.562	3.500
-68				3.938			3.875	--	--	--	--	--
-70				--			--	4.000	3.938	3.875	3.812	3.750
-72				4.188			4.125	--	--	--	--	--
-74				--			--	4.250	4.188	4.125	4.062	4.000
-76				4.438			4.375	--	--	--	--	--
-78				--			--	4.500	4.438	4.375	4.312	4.250
-80				4.688			4.625	--		--	--	--
-82				--			--	4.750		4.625	4.562	4.500
-84				4.938			4.875	--		--	--	--
-86							--	5.000		4.875	4.812	4.750
-88							5.125	--		--	--	--
-90							--	5.250		5.125	5.062	5.000
-92							5.375			--	--	--
-94							--			5.375	5.312	5.250
-98							--			--	5.562	5.500
-102											5.812	5.750
-106											6.062	6.000
-110											--	6.250

SECTION 201
BOLTS, CLOSE TOLERANCE
APPLICABLE DOCUMENTS: AN173-186, NAS653-658, 673-678
NAS1223-1235, 1261-1265, 1266-1270

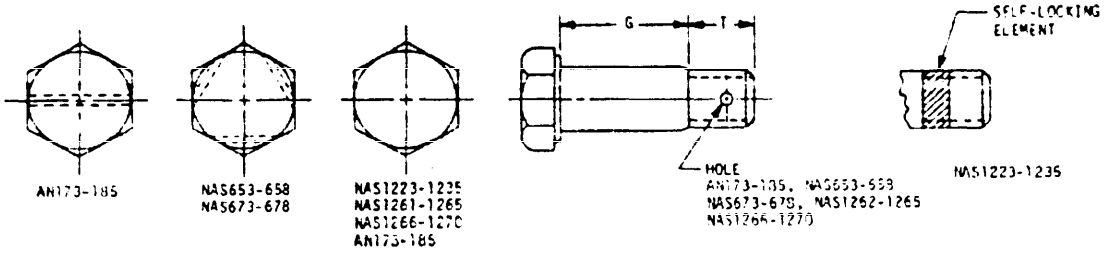


TABLE I. Materials and basic part numbers.

Material			Titanium	CRES 1/	Non-CRES
Protective finish			None	None	Cd. plate
Tensile strength (ksi) min.			140,000	140,000	125,000
Thread size	Thread designation	T ref	Basic part number		
.190-32 (-3A)	UNJF	.276 .338	NAS653V NAS673V	-- NAS1223C	
	UNF	.406			AN173
.250-28 (-3A)	UNJF	.316 .425	NAS654V NAS674V	-- NAS1224C	
	UNF	.469			AN174
.3125-24 (-3A)	UNJF	.375 .469	NAS655V NAS675V	-- NAS1225C	
	UNF	.531			AN175
.375-24 (-3A)	UNJF	.391 .578	NAS656V NAS676V	-- NAS1226C	
	UNF	.641			AN176
.4375-20 (-3A)	UNJF	.453 .594	NAS657V NAS677V	-- NAS1227C	
	UNF	.656			AN177
.500-20 (-3A)	UNJF	.453 .735	NAS658V NAS678V	-- NAS1228C	
	UNF	.781			AN178
.625-18 (-3A)	UNF UNJF	.543 .902	NAS1262 NAS1267	-- NAS1230C	
	UNF	.953			AN130
.750-16 (-3A)	UNF UNJF	.572 1.041	NAS1263 NAS1268	-- NAS1231C	
	UNF	1.094			AN132
.875-14 (-3A)	UNF UNJF	.652 1.184	NAS1264 NAS1269	-- NAS1232C	
	UNF	1.250			AN184
1.00-12 (-3A)	UNF UNJF	.770 1.309	NAS1265 NAS1270	-- NAS1233C	
	UNF	1.375			AN185
1.250-12 (-3A)	UNJF	1.646		NAS1235C	

1/ For alloy steel bolts listed on NAS1223-1235 see section 902.

TABLE II. Code letters.

Option	Code	Applicable documents
Undrilled head and shank	A	AN173-186
Drilled head	H	NAS653, 658, NAS673, 678
	H,A	AN173-186
Drilled shank	--	AN173-186
	D	NAS653-658, NAS673-678 NAS1262-1265, 1267-1270
Drilled head and shank	H	AN173-186
Button type locking element	N	NAS1223-1235

TABLE III. Grip dash numbers (Titanium and CRES).

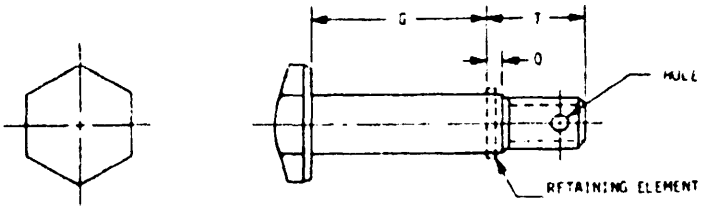
Document number	NAS673-678	NAS653-658 NAS1223-1235 NAS1262-1265 NAS1267-1270	
Thread size	Grip dash number 1/		
	Range	Range	Increments
All	1 thru 8 10 thru 16 20 thru 72	1 thru 8 10 thru 16 20 thru 96	One Two Four

1/ Grip dash number equals "G" dimension times 16

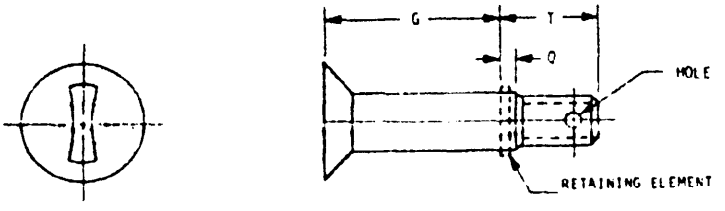
TABLE IV. Grip dash numbers (Non-CRES).

Thread designation (UNJ-3A)	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20	.625-18	.750-16	.875-14	1.000-12
Basic part no.	AN173	AN174	AN175	AN176	AN177	AN178	AN179	AN180	AN181	AN185
Grip dash no.	G									
-3	.062	.062	--	--	--					
-4	.125	.062	.062	--	--					
-5	.250	.188	.188	.062	.062					
-6	.375	.312	.312	.188	.188	.062	--	--		
-7	.500	.438	.438	.312	.312	.188	.062	--		
-10	.625	.562	.562	.438	.438	.312	.188	.062		
-11	.750	.688	.688	.562	.562	.438	.312	.188	.062	--
-12	.875	.812	.812	.688	.688	.562	.438	.312	.188	.125
-13	1.000	.938	.938	.812	.812	.688	.562	.438	.312	.250
-14	--	--	--	--	--	--	.688	.562	.438	.375
-15	1.250	1.188	1.188	1.062	1.062	.938	.812	.688	.562	.500
-16	--	--	--	--	--	--	.938	.812	.688	.625
-17	1.500	1.438	1.438	1.312	1.312	1.188	--	--	--	--
-20	--	--	--	--	--	--	1.188	1.062	.938	.875
-21	1.750	1.688	1.688	1.562	1.562	1.438	--	--	--	--
-22							1.438	1.312	1.188	1.125
-23	2.000	1.938	1.938	1.812	1.812	1.688	--	--	--	--
-24	--	--	--	--	--	--	1.688	1.562	1.438	1.375
-25	2.250	2.188	2.188	2.062	2.062	1.938	--	--	--	--
-26	--	--	--	--	--	--	1.938	1.812	1.688	1.625
-27	2.500	2.438	2.438	2.312	2.312	2.188	--	--	--	--
-30							2.188	2.062	1.938	1.875
-31	2.750	2.688	2.688	2.562	2.562	2.438	--	--	--	--
-32	--	--	--	--	--	--	2.438	2.312	2.188	2.125
-33	3.000	2.938	2.938	2.812	2.812	2.688	--	--	--	--
-34	--	--	--	--	--	--	2.688	2.562	2.438	2.375
-35	3.250	3.188	3.188	3.062	3.062	2.938	--	--	--	--
-36	--	--	--	--	--	--	2.938	2.812	2.688	2.625
-37	3.500	3.438	3.438	3.312	3.312	3.188	--	--	--	--
-40	--	--	--	--	--	--	3.188	3.062	2.938	2.875
-41	3.750	3.688	3.688	3.562	3.562	3.438	--	--	--	--
-42	--	--	--	--	--	--	3.438	3.312	3.188	3.125
-43	4.000	3.938	3.938	3.812	3.812	3.688	--	--	--	--
-44	--	--	--	--	--	--	3.688	3.562	3.438	3.375
-45	4.250	4.188	4.188	4.062	4.062	3.938	--	--	--	--
-46	--	--	--	--	--	--	3.938	3.812	3.688	3.625
-47	4.500	4.438	4.438	4.312	4.312	4.188	--	--	--	--
-50	--	--	--	--	--	--	4.188	4.062	3.938	3.875
-51	4.750	4.688	4.688	4.562	4.562	4.438	--	--	--	--
-52	--	--	--	--	--	--	4.438	4.312	4.188	4.125
-53	5.000	4.938	4.938	4.812	4.812	4.688	--	--	--	--
-54	--	--	--	--	--	--	4.688	4.562	4.438	4.375
-55	5.250	5.188	5.188	5.062	5.062	4.938	--	--	--	--
-56	--	--	--	--	--	--	4.938	4.812	4.688	4.625
-57	5.500	5.438	5.438	5.312	5.312	5.188	--	--	--	--
-60	--	--	--	--	--	--	5.188	5.062	4.938	4.875
-61	5.750	5.688	5.688	5.562	5.562	5.438	--	--	--	--
-62	--	--	--	--	--	--	5.438	5.312	5.188	5.125
-63	6.000	5.938	5.938	5.812	5.812	5.688	--	--	--	--
-64	--	--	--	--	--	--	5.688	5.562	5.438	5.375
-65	6.250	6.188	6.188	6.062	6.062	5.938	--	--	--	--
-66	--	--	--	--	--	--	5.938	5.812	5.688	5.625
-67	6.500	6.438	6.438	6.312	6.312	6.188	--	--	--	--
-70	--	--	--	--	--	--	6.188	6.062	5.938	5.875
-71	6.750	6.688	6.688	6.562	6.562	6.438	--	--	--	--
-72	--	--	--	--	--	--	6.438	6.312	6.188	6.125
-73	7.000	6.938	6.938	6.812	6.812	6.688	--	--	--	--
-74	--	--	--	--	--	--	6.688	6.562	6.438	6.375
-75	7.250	7.188	7.188	7.062	7.062	6.938	--	--	--	--
-76	--	--	--	--	--	--	6.938	6.812	6.688	6.625
-77	7.500	7.438	7.438	7.312	7.312	7.188	--	--	--	--
-80	--	--	--	--	--	--	7.188	7.062	6.938	6.875
-81	--	--	7.688	--	--	7.438	--	--	--	--
-82			--							7.125
-83			--		7.688					--
-85			8.062		7.938					--
-87			--		8.188					--

SECTION 202
BOLT, CLOSE TOLERANCE, SELF RETAINING, IMPEDANCE TYPE
APPLICABLE DOCUMENT: MS27576, MS27577



MS27576



MS27577

TABLE I. Materials.

Material	Code	Protective finish	Tensile strength (psi) min
Alloy steel	-	Cadmium plate	140,000
CRES	C	Passivate	140,000

TABLE II. MS27576 dash numbers.

Thread designation (UNJF-3A)	Q	T ref	First dash number	Grip dash number 1/
.190-32	.120	.382	-3	-03 thru -124
.250-28	.120	.428	-4	-03 thru -124
.3125-24	.151	.488	-5	-04 thru -124
.375-24	.166	.549	-6	-04 thru -124
.4375-20	.197	.593	-7	-06 thru -124
.500-20	.229	.656	-8	-06 thru -124
.625-18	.287	.859	-10	-07 thru -124
.750-16	.320	1.023	-12	-08 thru -124
.875-14	.352	1.130	-14	-08 thru -124
1.000-12	.383	1.242	-16	-08 thru -124

1/ Grip dash number equals "G" dimension times 16
Increments of one (-03 thru -08), two (-10 thru -16) and four (-20 thru -124).

TABLE III. MS27577 dash numbers.

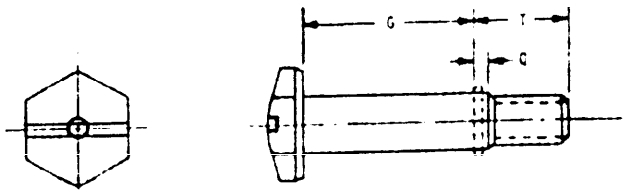
Thread designation (UNJF-3A)	Q	T ref	First dash number	Grip dash number 1/
.190-32	.120	.382	-3	-03 thru -124
.250-28	.120	.428	-4	-03 thru -124
.3125-24	.151	.488	-5	-04 thru -124
.375-24	.166	.549	-6	-04 thru -124
.4375-20	.197	.593	-7	-06 thru -124
.500-20	.229	.656	-8	-06 thru -124

1/ Grip dash number equals "G" dimension times 16
Increments of one (-03 thru -08), two (-10 thru -16) and four (-20 thru -124).

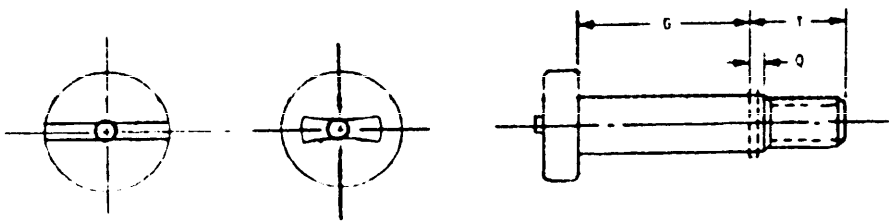
SECTION 203

BOLTS, CLOSE TOLERANCE, SELF-RETAINING, POSITIVE LOCKING

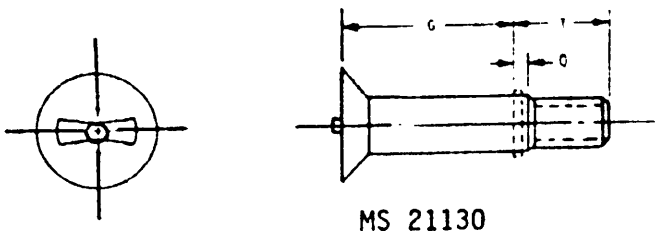
APPLICABLE DOCUMENTS: MS 3369, MS 21125, MS 21130



MS 3369



MS 21125



MS 21130

TABLE I. Materials

Material	Protective finish	Tensile strength (PSI) min
CRES	Passivate	140,000

TABLE II. MS 3369 dash numbers

Thread designation (UNJF-3A)	Q	T ref	First dash number	Grip dash number
.1900-32	.094	.382	-3	-03 thru -86
.2500-28	.125	.428	-4	-03 thru -97
.3125-24	.156	.488	-5	-04 thru -87
.3750-24	.171	.549	-6	-04 thru -86
.4375-20	.202	.593	-7	-06 thru -86
.5000-20	.234	.656	-8	-06 thru -86
.6250-18	.305	.927	-10	-20 thru -40
.7500-16	.343	1.013	-12	-24 thru -48

TABLE III. MS 21125 & MS 21130 dash numbers

Thread designation (UNJF-3A)	Q	T ref	First dash number	Grip dash number
.1900-32	.094	.382	-3	-03 thru -86
.2500-28	.125	.428	-4	-03 thru -86
.3125-24	.156	.488	-5	-04 thru -86
.3750-24	.171	.549	-6	-04 thru -86
.4375-20	.202	.593	-7	-06 thru -86
.5000-18	.234	.656	-8	-06 thru -86

SECTION 301
BOLTS, EYE, FLAT
APPLICABLE ELEMENTS - AN42-48

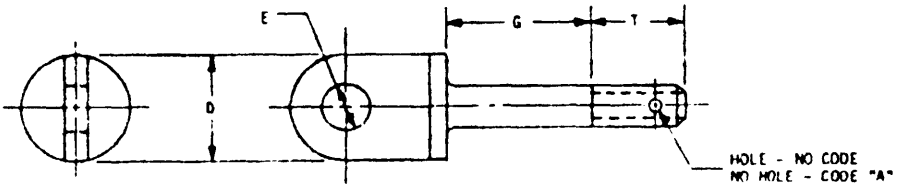


TABLE I. Materials.

Material	Code	Protective finish	Tensile strength (psi) min
Non-CRES	-	Cadmium plate	125,000
CRES	C	Passivate	

TABLE II. Dash numbers.

Thread designation (UNF-3A) . . .	.190-32	.250-28	.3125-24		.375-24	.4375-20	.500-20
T min	.406	.469	.531		.641	.656	.781
E min	.190	.190	.250	.313	.375	.375	.438
D nom	.438	.500	.625	.688	.750	.875	1.000
Basic part no . .	AN42B	AN43B	AN44	AN45	AN46	AN47	AN48
Grip dash no.	G						
-3	.062	--	--	--	--	--	
-4	.125	.062	.062	.062	--	--	
-5	.250	.188	.188	.188	.062	.062	
-6	.375	.312	.312	.312	.188	.188	.062
-7	.500	.438	.438	.438	.312	.312	.188
-10	.625	.562	.562	.562	.438	.438	.312
-11	.750	.688	.688	.688	.562	.562	.438
-12	.875	.812	.812	.812	.688	.688	.562
-13	1.000	.938	.938	.938	.812	.812	.688
-15	1.250	1.188	1.188	1.188	1.062	1.062	.938
-17	1.500	1.438	1.438	1.438	1.312	1.312	1.188
-21	1.750	1.688	1.688	1.688	1.562	1.562	1.438
-23	2.000	1.938	1.938	1.938	1.812	1.812	1.688
-25	2.250	2.188	2.188	2.188	2.062	2.062	1.938
-27	2.500	2.438	2.438	2.438	2.312	2.312	2.188
-31	2.750	2.688	2.688	2.688	2.562	2.562	2.438
-33	3.000	2.938	2.938	2.938	2.812	2.812	2.688
-35	3.250	3.188	3.188	3.188	3.062	3.062	2.938
-37	3.500	3.438	3.438	3.438	3.312	3.312	3.188
-41	3.750	3.688	3.688	3.688	3.562	3.562	3.438
-43	4.000	3.938	3.938	3.938	3.812	3.812	3.688
-45	4.250	4.188	4.188	4.188	4.062	4.062	3.938
-47	4.500	4.438	4.438	4.438	4.312	4.312	4.188
-51	4.750	4.688	4.688	4.688	4.562	4.562	4.438
-53	5.000	4.938	4.938	4.938	4.812	4.812	4.688
-55	5.250	5.188	5.188	5.188	5.062	5.062	4.938
-57	5.500	5.438	5.438	5.438	5.312	5.312	5.188
-61	5.750	5.688	5.688	5.688	5.562	5.562	5.438
-63	6.000	5.938	5.938	5.938	5.812	5.812	5.688
-65	6.250	6.188	6.188	6.188	6.062	6.062	5.938
-67	6.500	6.438	6.438	6.438	6.312	6.312	6.188
-71	6.750	6.688	6.688	6.688	6.562	6.562	6.438
-73	7.000	6.938	6.938	6.938	6.812	6.812	6.688
-75	7.250	7.188	7.188	7.188	7.062	7.062	6.938
-77	7.500	7.438	7.438	7.438	7.312	7.312	7.188
-85	--	--	--	--	8.062	--	--

SECTION 302
BOLTS, EYE, ROUND
APPLICABLE DOCUMENT: MS51937

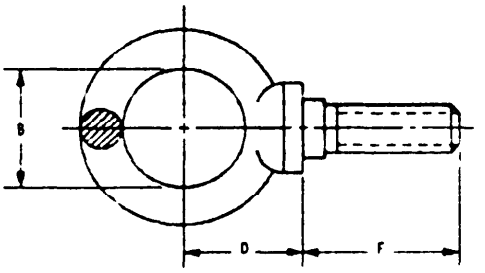


TABLE I. Material and part numbers.

Material				Carbon steel
Protective finish				Uncoated
Thread designation (UNC-2A)	B min	D min	F min	MS51937+ dash no.
.250-20	.69	.69	1.00	-1
.3125-18	.81	.88	1.12	-2
.375-16	.94	1.06	1.25	-3
.4375-14	1.00	1.19	1.38	-4
.500-13	1.12	1.31	1.50	-5
.625-11	1.31	1.59	1.75	-7
.750-10	1.44	1.72	2.00	-8
.875-9	1.56	2.03	2.25	-9
1.000-8	1.69	2.22	2.50	-10
1.250-7	2.12	2.84	3.00	-12
1.500-6	2.44	3.19	3.50	-13
1.750-5	2.75	3.88	3.75	-14
2.000-4.5	3.06	4.25	4.00	-15

SECTION 401
BOLTS, HOOK
APPLICABLE DOCUMENTS. NAS3203-3210

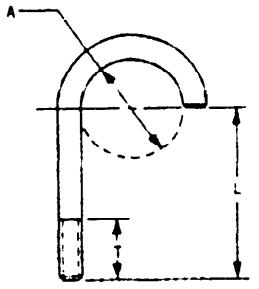


TABLE I. Materials.

Material	Code	Protective finish	Tensile strength (psi) min
Low carbon steel	-	Cadmium plate	55,000
CRES	C	Passivate	

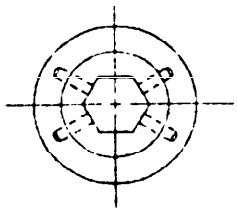
TABLE II. Dash numbers.

Thread designation (UNF-2A)	.190-32	.250-28	.3125-24	.375-24	.500-20	.625-18
T min	.500	.625	.750	.750	1.250	1.250
basic part no.	NAS3203	NAS3204	NAS3205	NAS3206	NAS3208	NAS3210
First dash no. 1/	Second dash no. range 2/					
-4	-6 thru -24		--			
-5	-8 thru -24		--			
-6	-8 thru -24		-10 thru -32			
-7	-8 thru -24		-10 thru -32		--	
-8	-8 thru -24		-10 thru -32		-14 thru -40	
-10	-10 thru -28		-12 thru -36		-16 thru -40	
-12	-10 thru -32		-12 thru -40		-16 thru -44	
-14	-12 thru -32		-14 thru -40		-18 thru -44	
-16	-12 thru -32		-14 thru -40		-18 thru -48	
-18	-14 thru -32		-16 thru -40		-20 thru -48	
-20	-14 thru -32		-16 thru -40		-20 thru -48	
-22	-16 thru -32		-18 thru -40		-22 thru -48	
-24	-16 thru -32		-18 thru -40		-22 thru -48	
-28	--		-20 thru -40		-24 thru -48	
-32	--		-22 thru -40		-28 thru -48	
-36					-28 thru -48	
-40					-32 thru -48	
-44					-32 thru -48	
-48					-36 thru -48	

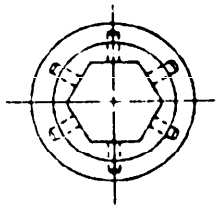
1/ First dash no. equals "A" dimension times 8.

2/ Second dash no. equals "L" dimension times 8.
Increments of two (-6 thru -24) and four (-28 thru -48).

SECTION 501
BOLTS, INTERNAL WRENCHING
APPLICABLE DOCUMENTS: MS20004-20024, NAS144-156, [illegible]



TWO HOLES
MS20004, 20024
CODE "H"



THREE HOLES
NAS144-156, 172, 176
CODE "DH"

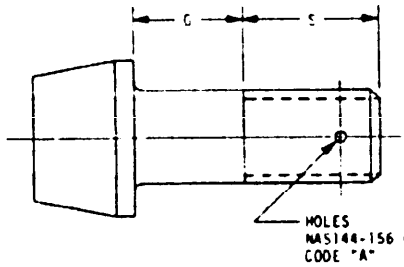


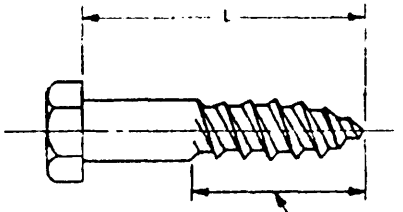
TABLE I. Material and document numbers.

Material		Steel	
Protective finish		Cadmium plate	
Tensile strength (psi) min		160,000	
Thread designation		UNF-3A	UNJF-3A
Thread size	S ref	Basic part no.	
.250-28	.500	MS20004	NAS144
.3125-24	.562	MS20005	NAS145
.375-24	.688	MS20006	NAS146
.4375-20	.812	MS20007	NAS147
.500-20	.812	MS20008	NAS148
.625-18	.938	MS20010	NAS150
.750-16	1.062	MS20012	NAS152
.875-14	1.188	MS20014	NAS154
1.000-14	1.312	--	NAS156
1.000-12	1.312	MS20017	
1.250-12	1.625	MS20020	
1.500-12	1.875	MS20024	

TABLE II. Grip dash numbers.

Document no.	MS20004-20024 1/	NAS144-156 1/	NAS172 2/	NAS176 3/
Thread size	Grip dash no. range 4/			
.250-28	-4 thru -96	-9 thru -128		
.3125-24	-6 thru -96	-10 thru -128		
.375-24	-6 thru -96	-12 thru -128		
.4375-20	-8 thru -96	-14 thru -128		
.500-20	-8 thru -96	-14 thru -128		
.625-18	-10 thru -112	-16 thru -128		
.750-16	-12 thru -112	-18 thru -128		
.875-14	-14 thru -112	-20 thru -128		
1.000-14	-16 thru -112	-22 thru -128		
1.000-12	-16 thru -112		--	--
1.250-12	-20 thru -128		-28 thru -128	--
1.500-12	-24 thru -128		--	-32 thru -128

1/ Grip dash number equals "G" dimension times 16
2/ Grip dash number equals "G" dimension times 16 plus 26.
3/ Grip dash number equals "G" dimension times 16 plus 32.
4/ Increments of two (-4 thru -16) and four (-20 thru -128).



MINIMUM THREAD LENGTH EQUALS ½ OF THE LENGTH PLUS 0.50 INCH OR 6 INCHES, WHICHEVER IS SHORTER. BOLTS TOO SHORT TO AFFECT THIS FORMULA ARE THREADED AS CLOSE TO THE HEAD AS PRACTICABLE

TABLE I. Material and part numbers.

Material	Steel						
Protective finish	Zinc coated						
Thread designation	.250-10	.3125-9	.375-7	.4375-7	.500-6	.625-5	.750-4.5
L	MS16992 + dash number						
1.000	-501	-520	--	--			
1.250	-502	-521	-540	--			
1.500	-503	-522	-541	-560			
1.750	-504	-523	-542	-561	-580	--	--
2.000	-505	-524	-543	-562	-581	-600	--
2.500	-506	-525	-544	-563	-582	-601	-620
3.000	-507	-526	-545	-564	-583	-602	-621
3.500	-508	-527	-546	-565	-584	-603	-622
4.000	-509	-528	-547	-566	-585	-604	-623
4.500	-510	-529	-548	-567	-586	-605	-624
5.000	-511	-530	-549	-568	-587	-606	-625
5.500	-512	-531	-550	-569	-588	-607	-626
6.000	-513	-532	-551	-570	-589	-608	-627
7.000	--	-533	-552	-571	-590	-609	-628
8.000	--	--	-553	-572	-591	-610	-629
9.000				-573	-592	-611	-630
10.000				--	-593	-612	-631
11.000				--	--	-613	-632
12.000							-633
14.000							--

TABLE II. Material and part numbers.

Material	CRES				
Protective finish	Passivate				
Thread designation	.250-10	.375-7	.500-6	.625-5	.750-4.5
L	MS16992 + dash number				
1.000	-688	--	--		
1.250	--	--	--		
1.500	-689	-697	-708		
1.750	--	--	--	--	--
2.000	-690	-698	-709	-720	--
2.500	-691	-699	-710	-721	-733
3.000	-692	-700	-711	-722	-734
3.500	-693	-701	-712	-723	-735
4.000	-694	-702	-713	-724	-736
4.500	-695	-703	-714	-725	-737
5.000	-696	-704	-715	-726	-738
5.500	--	--	--	--	--
6.000		-705	-716	-727	-739
7.000		-706	-717	-728	-740
8.000		-707	-718	-729	-741
9.000			-719	-730	-742
10.000			--	-731	-743
11.000			--	-732	-744
12.000					-745
14.000					-746

TABLE III. Material and part numbers.

Material	Copper-silicon alloy				
Protective finish	--				
Thread designation	.250-10	.375-7	.500-6	.625-5	.750-4.5
L	MS16992 + dash number				
1.000	-634	--	--		
1.250	--	--	--		
1.500	-635	-641	-651		
1.750	--	--	--	--	--
2.000	-636	-642	-652	--	--
2.500	-637	-643	-653	-663	-675
3.000	-638	-644	-654	-664	-676
3.500	-639	-645	-655	-665	-677
4.000	-640	-646	-656	-666	-678
4.500		-647	-657	-667	-679
5.000		-648	658	-668	-680
5.500		--	--	--	--
6.000		-649	-659	-669	-681
7.000		-650	-660	-670	-682
8.000		--	-661	-671	-683
9.000			-662	-672	-684
10.000			--	-673	-685
11.000			--	-674	-686
12.000					-687
14.000					--

SECTION 701
BOLTS, MACHINE, HEXAGON HEAD
APPLICABLE DOCUMENTS: NAS428, 563-572

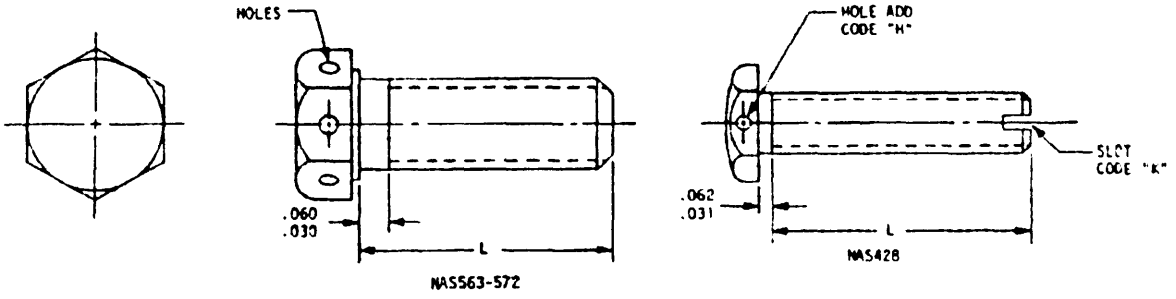


TABLE I. Materials.

Material	Code	Protective finish	Tensile strength (psi) min	Applicable documents
Alloy steel.	-	Cadmium plate	160,000	NAS563-572
			-	NAS428
CRES	C	Passivate	160,000	NAS563-572

TABLE II. NAS428 dash numbers.

Thread (UNF-3A)	.190-32	.250-28	.3125-24	.375-24
First dash no.	-3	-4	-5	-6
L	Second dash number			
.500	-4	-4	--	
.625	-5	-5	--	
.750	-6	-6	-6	
.875	-7	-7	-7	--
1.000	-10	-10	-10	--
1.250	-12	-12	-12	-12
1.500	-14	-14	-14	-14
1.750	-16	-16	-16	-16
2.000	-20	-20	-20	-20
2.250	-22	-22	-22	-22
2.500	-24	-24	-24	-24
2.750	-26	-26	-26	-26
3.000	-30	-30	-30	-30
3.250	--	-32	-32	-32
3.500	--	-34	-34	-34
3.750		-36	-36	-36
4.000		-40	-40	-40
4.250		-42	-42	-42
4.500		-44	-44	-44
4.750		-46	-46	-46
5.000		--	--	-50
5.500				-52
6.000				-60

TABLE III. NAS 563-572 dash numbers.

Thread designation (UNJF-3A) . . .	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20	.625-18	.750-16
Basic part no. . . .	NAS563	NAS564	NAS565	NAS566	NAS567	NAS568	NAS570	NAS572
L	Length dash number							
.344	-11	--						
.406	-13	--						
.469	-15	-15						
.594	-19	-19	--	--	--			
.719	-23	-23	-23	-23	--			
.844	-27	-27	-27	-27	-27			
.969	-31	-31	-31	-31	-31	--		
1.219	-39	-39	-39	-39	-39	-39		
1.469	-47	-47	-47	-47	-47	-47		
1.719	-55	-55	-55	-55	-55	-55	-55	--
1.969	-63	-63	-63	-63	-63	-63	-63	-63
2.219	-71	-71	-71	-71	-71	-71	-71	-71
2.469	-79	-79	-79	-79	-79	-79	-79	-79
2.719	-87	-87	-87	-87	-87	-87	-87	-87
2.969	-95	-95	-95	-95	-95	-95	-95	-95
3.219	-103	-103	-103	-103	-103	-103	-103	-103

SECTION 702
BOLTS, MACHINE, HEXAGON HEAD, FULL SHANK, LONG THREAD, DRILLED HEAD, ONE HOLE
APPLICABLE DOCUMENTS: MS9500, 9501, 9502, 9503, 9505, 9507, 9508,
MS9642, 9643, 9644, 9645, 9647, 9794, 9795, 9796, 9797, 9799, 9801, 9802

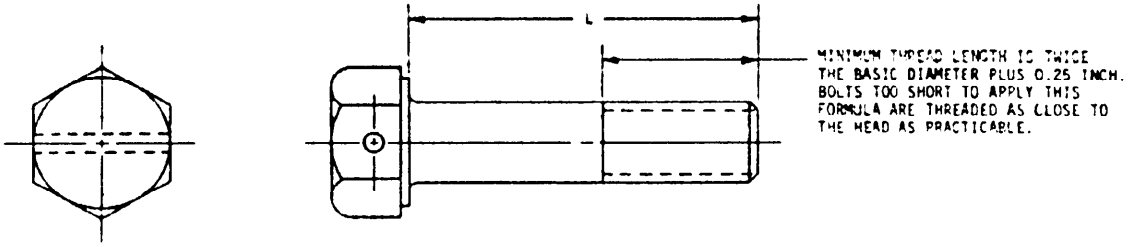


TABLE I. Material and part numbers.

Material		Corrosion and heat resistant steel		Titanium
		AMS5731	AMS5643	
Protective finish		Passivate		--
Hardness-Rockwell		--	C32-38	C36-42
Thread designation (UNJF-3A)	L	Part number		
.190-32	.375	MS9500+ dash no. -04		
	.438	-05		
	.500	-06		
	.625	-08	--	--
	.750	-10	--	--
	.875	-12	-12	-12
	1.000	-14	-14	-14
	1.250	-18	-18	-18
	1.500	-22	-22	-22
	1.750	-26	-26	-26
	2.000	-28	-30	-30
	2.250	-30	-32	-32
	2.500	-32	-34	-34
	2.750	-34	-36	-36
	3.000	-36	-38	-38
	3.250	-38	-40	-40
	3.500	-40	-42	-42
	3.750	-42	-44	-44
.250-28	.375	MS9501+ dash no. -04		
	.438	-05		
	.500	-06		
	.625	-08		
	.750	-10		
	.875	-12		
	1.000	-14	-14	-14
	1.250	-18	-18	-18
	1.500	-22	-22	-22
	1.750	-26	-26	-26
	2.000	-28	-30	-30
	2.250	-30	-32	-32
	2.500	-32	-34	-34
	2.750	-34	-36	-36
	3.000	-36	-38	-38
	3.250	-38	-40	-40
	3.500	-40	-42	-42
	3.750	-42	-44	-44
	4.000	-44	-46	-46
	4.250	-46	-48	-48
	4.500	-48	-50	-50
	4.750	-50	-52	-52
	5.000	-52	-54	-54
	5.250	-54	-56	-56
	5.500	-56	-58	-58
	5.750	-58	-60	-60
	6.000	-60	-62	-62

MS9794+ dash no. (AMS5643)
MS9642+ dash no. (Titanium)
MS9795+ dash no. (AMS5643)
MS9643+ dash no. (Titanium)

TABLE I. Material and part numbers. - Cont'd

Material		Corrosion and heat resistant steel		Titanium
		AMS5731	AMS5643	
Protective finish		Passivate		--
Hardness-Rockwell		--	C32-38	C36-42
Thread designation (UNJF-3A)	L	Part number		
.3125-24	.500	-04		
	.625	-06		
	.750	-08		
	.875	-10	--	--
	1.000	-12	--	--
	1.250	-16	-16	-16
	1.500	-20	-20	-20
	1.750	-24	-24	-24
	2.000	-26	-26	-28
	2.250	-28	-30	-30
	2.500	-30	-32	-32
	2.750	-32	-34	-34
	3.000	-34	-36	-36
	3.250	-36	-38	-38
	3.500	-38	-40	-40
	3.750	-40	-42	-42
	4.000	-42	-44	-44
	4.250	-44	-46	-46
	4.500	-46	-48	-48
	4.750	-48	-50	-50
	5.000	-50	-52	-52
	5.250	-52	-54	-54
	5.500	-54	-56	-56
	5.750	-56	-58	-58
	6.000	-58	-60	-60
MS9502+ dash no.			MS7796+ dash no.	MS16644+ dash no.
.375-24	.625	-04		
	.750	-06		
	.875	-08		
	1.000	-10	--	--
	1.250	-14	-14	-14
	1.500	-18	-18	-18
	1.750	-22	-22	-22
	2.000	-24	-26	-26
	2.250	-26	-28	-28
	2.500	-28	-30	-30
	2.750	-30	-32	-32
	3.000	-32	-34	-34
	3.250	-34	-36	-36
	3.500	-36	-38	-38
	3.750	-38	-40	-40
	4.000	-40	-42	-42
	4.250	-42	-44	-44
	4.500	-44	-46	-46
	4.750	-46	-48	-48
	5.000	-48	-50	-50
	5.250	-50	-52	-52
	5.500	-52	-54	-54
	5.750	-54	-56	-56
	6.000	-56	-58	-58
MS9503+ dash no.			MS9797+ dash no.	MS9645+ dash no.
.500-20	.875	-05		
	1.000	-07		
	1.250	-11		
	1.500	-15	-15	-15
	1.750	-19	-19	-19
	2.000	-21	-23	-23
	2.250	-23	-25	-25
	2.500	-25	-27	-27
	2.750	-27	-29	-29
	3.000	-29	-31	-31
	3.250	-31	-33	-33
	3.500	-33	-35	-35
	3.750	-35	-37	-37
	4.000	-37	-39	-39
	4.250	-39	-41	-41
	4.500	-41	-43	-43
	4.750	-43	-45	-45
	5.000	-45	-47	-47
	5.250	-47	-49	-49
	5.500	-49	-51	-51
	5.750	-51	-53	-53
	6.000	-53	-55	-55
MS9505+ dash no.			MS9799+ dash no.	MS9647+ dash no.

Material		[illegible]	
		AMS5731	AMS5643
Protective finish		Passivate	
Hardness-Rockwell		--	C32-38
Thread designation (UNJF-3A)	L	Part number	
.625-18	1.000	-04	
	1.250	-08	
	1.500	-12	
	1.750	-16	-16
	2.000	-19	-20
	2.250	-21	-22
	2.500	-23	-24
	2.750	-25	-26
	3.000	-27	-28
	3.250	-29	-30
	3.500	-31	-32
	3.750	-33	-34
	4.000	-35	-36
	4.250	-37	-38
	4.500	-39	-40
	4.750	-41	-42
	5.000	-43	-44
	5.250	-45	-46
	5.500	-47	-48
	5.750	-49	-50
	6.000	-51	-52
MS9567+ dash no.			MS9801+ dash no.
.750-16	1.250	-06	
	1.500	-10	
	1.750	-14	
	2.000	-18	-18
	2.250	-20	-20
	2.500	-22	-22
	2.750	-24	-24
	3.000	-26	-26
	3.250	-28	-28
	3.500	-30	-30
	3.750	-32	-32
	4.000	-34	-34
	4.250	-36	-36
	4.500	-38	-38
	4.750	-40	-40
	5.000	-42	-42
	5.250	-44	-44
	5.500	-46	-46
	5.750	-48	-48
	6.000	-50	-50
MS9538+ dash no.			MS9802+ dash no.

SECTION 703
BOLTS, MACHINE, HEXAGON HEAD, FULL SHANK, LONG THREAD, DRILLED HEAD, THREE HOLES
APPLICABLE DOCUMENTS: MS9583, 9584, 9585, 9586, 9588, 9590, 9591

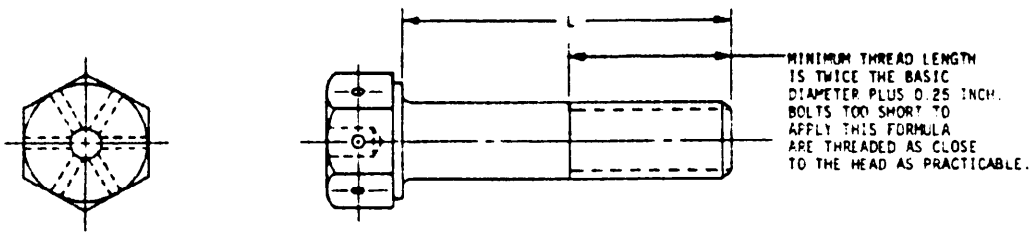


TABLE I. Material and part numbers.

Material	Corrosion and heat resistant steel						
Thread designation (UNJF-3A)	.190-32	.250-28	.3125-24	.375-24	.500-20	.625-18	.750-16
L	MS9583 +dash no.	MS9584 +dash no.	MS9585 +dash no.	MS9586 +dash no.	MS9588 +dash no.	MS9590 +dash no.	MS9591 +dash no.
.375	-04	-04	--				
.438	-05	-05	--				
.500	-06	-06	-04				
.625	-08	-08	-06	-04	--		
.750	-10	-10	-08	-06	--		
.875	-12	-12	-10	-08	-05		
1.000	-14	-14	-12	-10	-07	-04	--
1.250	-18	-18	-16	-14	-11	-08	-06
1.500	-22	-22	-20	-18	-15	-12	-10
1.750	-26	-26	-24	-22	-19	-16	-14
2.000	-28	-28	-26	-24	-21	-19	-18
2.250	-30	-30	-28	-26	-23	-21	-20
2.500	-32	-32	-30	-28	-25	-23	-22
2.750	-34	-34	-32	-30	-27	-25	-24
3.000	-36	-36	-34	-32	-29	-27	-26
3.250	-38	-38	-36	-34	-31	-29	-28
3.500	-40	-40	-38	-36	-33	-31	-30
3.750	-42	-42	-40	-38	-35	-33	-32
4.000		-44	-42	-40	-37	-35	-34
4.250		-46	-44	-42	-39	-37	-36
4.500		-48	-46	-44	-41	-39	-38
4.750		-50	-48	-46	-43	-41	-40
5.000		-52	-50	-48	-45	-43	-42
5.250		-54	-52	-50	-47	-45	-44
5.500		-56	-54	-52	-49	-47	-46
5.750		-58	-56	-54	-51	-49	-48
6.000		-60	-58	-56	-53	-51	-50

SECTION 704
BOLTS, MACHINE, HEXAGON HEAD, FULL SHANK, LONG THREAD, UNDRILLED
APPLICABLE DOCUMENTS: MS9489, 9490, 9491, 9492, 9494, 9496, 9497, MS9651, 9652, 9653, 9654, 9656, 9783, 9784, 9785, 9786, 9788, 9790, 9791

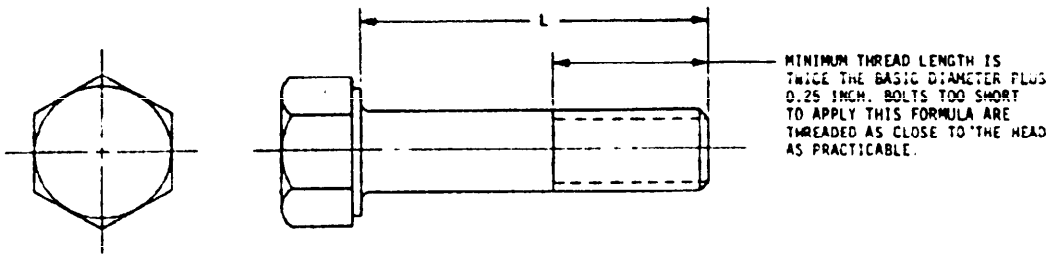


TABLE I. Materials and part numbers.

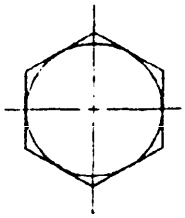
Material		CRES				Titanium	
		AMS5731		AMS5643			
Protective finish		Passivate				--	
Hardness - Rockwell		--		C32-38		C36-42	
Thread designation (UNJF-3A)	L	Part number					
.190-32	.375	MS9489 dash no.	-04	MS9783 dash no.		MS9651 dash no.	
	.438		-05				
	.500		-06				
	.625		-08		--		--
	.750		-10		--		--
	.875		-12		-12		-12
	1.000		-14		-14		-14
	1.250		-18		-18		-18
	1.500		-22		-22		-22
	1.750		-26		-26		-26
	2.000		-28		-30		-30
	2.250		-30		-32		-32
	2.500		-32		-34		-34
	2.750		-34		-36		-36
	3.000		-36		-38		-38
	3.250		-38		-40		-40
	3.500		-40		-42		-42
	3.750		-42		-44		-44
.250-28	.375	MS9490 dash no.	-04	MS9784 dash no.		MS9652 dash no.	
	.438		-05				
	.500		-06				
	.625		-08				
	.750		-10				
	.875		-12				
	1.000		-14		-14		-14
	1.250		-18		-18		-18
	1.500		-22		-22		-22
	1.750		-26		-26		-26
	2.000		-28		-30		-30
	2.250		-30		-32		-32
	2.500		-32		-34		-34
	2.750		-34		-36		-36
	3.000		-36		-38		-38
	3.250		-38		-40		-40
	3.500		-40		-42		-42
	3.750		-42		-44		-44
	4.000		-44		-46		-46
	4.250		-46		-48		-48
	4.500		-48		-50		-50
	4.750		-50		-52		-52
	5.000		-52		-54		-54
	5.250		-54		-56		-56
	5.500		-56		-58		-58
	5.750		-58		-60		-60
	6.000		-60		-62		-62

TABLE I. Materials and part numbers. - Continued

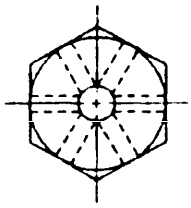
Material	CRES		Titanium
	AMS5731	AMS5643	
Protective finish	Passivate		--
Hardness - Rockwell	--	C32-38	C36-42
Thread designation (UNJF-3A)	L	Part number	
.3125-24	.500	-04	
	.625	-06	
	.750	-08	
	.875	-10	--
	1.000	-12	--
	1.250	-16	-16
	1.500	-20	-20
	1.750	-24	-24
	2.000	-26	-28
	2.250	-28	-30
	2.500	-30	-32
	2.750	-32	-34
	3.000	-34	-36
	3.250	-36	-38
	3.500	-38	-40
	3.750	-40	-42
	4.000	-42	-44
	4.250	-44	-46
	4.500	-46	-48
	4.750	-48	-50
	5.000	-50	-52
	5.250	-52	-54
	5.500	-54	-56
	5.750	-56	-58
	6.000	-58	-60
.375-24	.625	-04	
	.750	-06	
	.875	-08	
	1.000	-10	--
	1.250	-14	-14
	1.500	-18	-18
	1.750	-22	-22
	2.000	-24	-26
	2.250	-26	-28
	2.500	-28	-30
	2.750	-30	-32
	3.000	-32	-34
	3.250	-34	-36
	3.500	-36	-38
	3.750	-38	-40
	4.000	-40	-42
	4.250	-42	-44
	4.500	-44	-46
	4.750	-46	-48
	5.000	-48	-50
	5.250	-50	-52
	5.500	-52	-54
	5.750	-54	-56
	6.000	-56	-58
.500-20	.875	-05	
	1.000	-07	
	1.250	-11	
	1.500	-15	-15
	1.750	-19	-19
	2.000	-21	-23
	2.250	-23	-25
	2.500	-25	-27
	2.750	-27	-29
	3.000	-29	-31
	3.250	-31	-33
	3.500	-33	-35
	3.750	-35	-37
	4.000	-37	-39
	4.250	-39	-41
	4.500	-41	-43
	4.750	-43	-45
	5.000	-45	-47
	5.250	-47	-49
	5.500	-49	-51
	5.750	-51	-53
	6.000	-53	-55

Material	CRES	
	AMS5731	AMS5643
Protective finish	Passivate	
Hardness - Rockwell	--	C32-38
Thread designation (UNJF-3A)	L	Part number
.625-18	1.000	-04
	1.250	-08
	1.500	-12
	1.750	-16
	2.000	-19
	2.250	-21
	2.500	-23
	2.750	-25
	3.000	-27
	3.250	-29
	3.500	-31
	3.750	-33
	4.000	-35
	4.250	-37
	4.500	-39
	4.750	-41
	5.000	-43
	5.250	-45
	5.500	-47
	5.750	-49
	6.000	-51
.750-16	1.250	-06
	1.500	-10
	1.750	-14
	2.000	-18
	2.250	-20
	2.500	-22
	2.750	-24
	3.000	-26
	3.250	-28
	3.500	-30
	3.750	-32
	4.000	-34
	4.250	-36
	4.500	-38
	4.750	-40
	5.000	-42
	5.250	-44
	5.500	-46
	5.750	-48
	6.000	-50

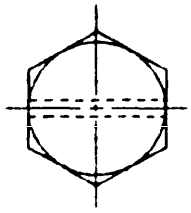
SECTION 705
BOLTS, MACHINE, HEXAGON HEAD, FULL SHANK, SHORT THREAD
APPLICABLE DOCUMENTS: MS20033-20046, 20073, 20074, AN3-20, NAS501, 1003-1020



MS20033-20046



THREE HOLES
MS20073, 20074



ONE HOLE
AN3-20 NAS501
NAS1003-1020

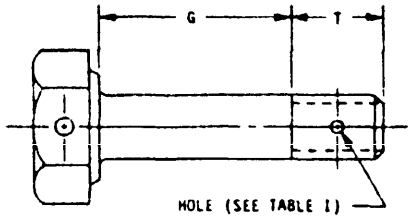


TABLE I. Materials.

Material	Code	Protective finish	Tensile strength (psi) min	Applicable documents
Non-CRES	-	Cadmium plate	125,000	AN3-20
Corrosion and heat resistant steel	-	Passivate	140,000	MS20033-20046
CRES	-	Passivate	90,000	NAS501
			140,000	NAS1003-1020
	C		--	AN3-20
Steel	-	Cadmium plate	125,000	MS20073 MS20074
Aluminum alloy	DD	Anodize	62,000	AN3-20

TABLE II. Drilling codes.

Hole option	Code	Applicable documents
Undrilled	A	AN3-20, NAS501 NAS1003-1020
Undrilled head and shank	--	MS20032-20046
Drilled head only	H,A	AN3-20, NAS501
	H	NAS1003-1020
Drilled shank only	--	NAS1003-1020
Drilled head and shank	H	AN3-20

TABLE III. Dash numbers.

Thread designation (UNJF-3A)	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20	.625-18	.750-16	.875-14	1.000-12
T ref.	.422	.516	.562	.672	.688	.828	1.000	1.125	1.281	1.406
Basic part no.	MS20033	MS20034	MS20035	MS20036	MS20037	MS20038	MS20040	MS20042	MS20044	MS20045
G	Dash number									
.125	-1									
.250	-2									
.375	-3									
.500	-4									
.625	-5									
.750	-6									
.875	-7									
1.000	-10									
1.250	-12									
1.500	-14									
1.750	-16									
2.000	-20									
2.250	-22									
2.500	-24									
2.750	-26									
3.000	-30									
3.250	-32									
3.500	-34									
3.750	-36									
4.000	-40									
4.250	-42									
4.500	-44									
4.750	-46									
5.000	-50									

TABLE IV. MS20073, 20074 dash numbers.

Thread size. . .	.190	.250	.3125	.375	.4375	.500	.625	.750
Threads per inch (UNF-3A) MS20073	32	28	24	24	20	20	18	16
Threads per inch (UNC-3A) MS20074	24	20	18	16	14	13	11	10
T min.	.500	.500	.515	.640	.703	.765	.968	1.030
First dash no. .	-03	-04	-05	-06	-07	-08	-10	-12
G	Second dash number							
.062		-04		-05	-06			
.125		-05		-06	--			
.188		--		--	-07			
.250		-06		-07	--	-10		
.312		--		--	-10	--		
.375		-07		-10	--	-11		
.438		--		--	-11	--	--	
.500		-10		-11	--	-12	--	
.562		--		--	-12	--	-14	
.625		-11		-12	--	-13	--	--
.688		--		--	-13	--	-15	--
.750		-12		-13	--	-14	--	-16
.812		--		--	-14	--	-16	--
.875		-13		-14	--	-15	--	--
1.000		-14		--	--	-16	--	-20
1.062		--		--	-16	--	-20	--
1.125		--		-16	--	-20	--	--
1.250		-16		--	--	--	--	-22
1.312		--		--	-20	--	-22	--
1.375		--		-20	--	--	--	--
1.500		-20		--	--	-22	--	-24
1.562		--		--	-22	--	-24	--
1.625		--		-22	--	--	--	--
1.750		-22		--	--	-24	--	-26
1.812		--		--	-24	--	-26	--
1.875		--		-24	--	--	--	--
2.000		-24		--	--	-26	--	-30
2.062		--		--	-26	--	-30	--
2.125		--		-26	--	--	--	--
2.250		-26		--	--	-30	--	-32
2.312		--		--	-30	--	-32	--
2.375		--		-30	--	--	--	--
2.500		-30		--	--	-32	--	-34
2.562		--		--	-32	--	-34	--
2.625		--		-32	--	--	--	--
2.750		-32		--	--	-34	--	-36
2.812		--		--	-34	--	-36	--
2.875		--		-34	--	--	--	--
3.000		-34		--	--	-36	--	-40
3.062		--		--	-36	--	-40	--
3.125		--		-36	--	--	--	--
3.250		-36		--	--	-40	--	-42
3.312		--		--	-40	--	-42	--
3.375		--		-40	--	--	--	--
3.500		-40		--	--	-42	--	-44
3.562		--		--	-42	--	-44	--
3.625		--		-42	--	--	--	--
3.750		-42		--	--	-44	--	-46
3.812		--		--	-44	--	-46	--
3.875		--		-44	--	--	--	--
4.000		-44		--	--	-46	--	-50
4.062		--		--	-46	--	-50	--
4.125		--		-46	--	--	--	--
4.250		-46		--	--	-50	--	-52
4.312		--		--	-50	--	-52	--
4.375		--		-50	--	--	--	--
4.500		-50		--	--	-52	--	-54
4.562		--		--	-52	--	-54	--
4.625		--		-52	--	--	--	--
4.750		-52		--	--	-54	--	-56
4.812		--		--	-54	--	-56	--
4.875		--		-54	--	--	--	--
5.000		-54		--	--	-56	--	-60
5.062		--		--	-56	--	-60	--
5.125		--		-56	--	--	--	--
5.250		-56		--	--	-60	--	--
5.312		--		--	-60			
5.375		--		-60	--			
5.500		-60		--	--			

TABLE V. AN3-20, NAS501 dash numbers.

Thread designation (UNF-3A)	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20	.625-18	.750-16	.875-14	1.250-12
T ref	.406	.469	.531	.641	.656	.791	.953	1.094	1.250	1.688
First dash no.	AN3 or NAS501-3	AN4 or NAS501-4	AN5 or NAS501-5	AN6 or NAS501-6	AN7 or NAS501-7	AN8 or NAS501-8	AN10 or NAS501-10	AN12 or NAS501-12	AN14 or NAS501-14	AN20 or NAS501-20
6	Second dash number									
.062	-3	-4	-4	-5	-5	-6	-7	-10	-11	--
.125	-4	--	--	--	--	--	--	--	--	-15
.188	--	-5	-5	-6	-6	-7	-10	-11	-12	--
.250	-5	--	--	--	--	--	--	--	--	-16
.312	--	-6	-6	-7	-7	-10	-11	-12	-13	--
.375	-6	--	--	--	--	--	--	--	--	--
.438	--	-7	-7	-10	-10	-11	-12	-13	-14	--
.500	-7	--	--	--	--	--	--	--	--	-20
.562	--	-10	-10	-11	-11	-12	-13	-14	-15	--
.625	-10	--	--	--	--	--	--	--	--	--
.688	--	-11	-11	-12	-12	-13	-14	-16	-16	--
.750	-11	--	--	--	--	--	--	--	--	-22
.812	--	-12	-12	-13	-13	--	-15	-16	--	--
.875	-12	--	--	--	--	--	--	--	--	--
.938	--	-13	-13	--	--	-15	-16	--	-20	--
1.000	-13	--	--	--	--	--	--	--	--	-24
1.062	--	--	--	-15	-15	--	--	-20	--	--
1.188	--	-15	-15	--	--	-17	-20	--	-22	--
1.250	-15	--	--	--	--	--	--	--	--	-28
1.312	--	--	--	-17	-17	--	--	-22	--	--
1.438	--	-17	-17	--	--	-21	-22	--	-24	--
1.500	-17	--	--	--	--	--	--	--	--	-30
1.562	--	--	--	-21	-21	--	--	-24	--	--
1.688	--	-21	-21	--	--	-23	-24	--	-26	--
1.750	-21	--	--	--	--	--	--	--	--	-32
1.812	--	--	--	-23	-23	--	--	-26	--	--
1.938	--	-23	-23	--	--	-25	-26	--	-30	--
2.000	-23	--	--	--	--	--	--	--	--	-34
2.062	--	--	--	-25	-25	--	--	-30	--	--
2.188	--	-25	-25	--	--	-27	-30	--	-32	--
2.250	-25	--	--	--	--	--	--	--	--	-36
2.312	--	--	--	-27	-27	--	--	-32	--	--
2.438	--	-27	-27	--	--	-31	-32	--	-34	--
2.500	-27	--	--	--	--	--	--	--	--	-40
2.562	--	--	--	-31	-31	--	--	-34	--	--
2.688	--	-31	-31	--	--	-33	-34	--	-36	--
2.750	-31	--	--	--	--	--	--	--	--	-42
2.812	--	--	--	-33	-33	--	--	-36	--	--
2.938	--	-33	-33	--	--	-35	-36	--	-40	--
3.000	-33	--	--	--	--	--	--	--	--	-44
3.062	--	--	--	-35	-35	--	--	-40	--	--
3.188	--	-35	-35	--	--	-37	-40	--	-42	--
3.250	-35	--	--	--	--	--	--	--	--	-46
3.312	--	--	--	-37	-37	--	--	-42	--	--
3.438	--	-37	-37	--	--	-41	-42	--	-44	--
3.500	-37	--	--	--	--	--	--	--	--	-50
3.562	--	--	--	-41	-41	--	--	-44	--	--
3.688	--	-41	-41	--	--	-43	-43	--	-46	--

TABLE V. AN3-20, NAS501 dash numbers - Continued

Thread designation (UNF-3A). . . .	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20	.625-18	.750-16	.875-14	1.250-12
T ref	.406	.469	.531	.641	.656	.781	.953	1.094	1.250	1.688
First dash no. .	AN3 or NAS501-3	AN4 or NAS501-4	AN5 or NAS501-5	AN6 or NAS501-6	AN7 or NAS501-7	AN8 or NAS501-8	AN10 or NAS501-10	AN 12 or NAS501-12	AN14 or NAS501 14	AN20 or NAS501-20
G	Second dash number									
3.750	-41	--	--	--	--	--	--	--	--	-52
3.812	--	--	--	-43	-43	--	--	-46	--	--
3.938	--	-43	-43	--	--	-45	-46	--	-50	--
4.000	-43	--	--	--	--	--	--	--	--	-54
4.062	--	--	--	-45	-45	--	--	-50	--	--
4.188	--	-45	-45	--	--	-47	-50	--	-52	--
4.250	-45	--	--	--	--	--	--	--	--	-56
4.312	--	--	--	-47	-47	--	--	-52	--	--
4.438	--	-47	-47	--	--	-51	-52	--	-54	--
4.500	-47	--	--	--	--	--	--	--	--	-60
4.562	--	--	--	-51	-51	--	--	-54	--	--
4.688	--	-51	-51	--	--	-53	-54	--	-56	--
4.750	-51	--	--	--	--	--	--	--	--	-62
4.812	--	--	--	-53	-53	--	--	-58	--	--
4.938	--	-53	-53	--	--	-55	-58	--	-60	--
5.000	-53	--	--	--	--	--	--	--	--	-64
5.062	--	--	--	-55	-55	--	--	-60	--	--
5.188	--	-55	-55	--	--	-57	-60	--	-62	--
5.250	-55	--	--	--	--	--	--	--	--	-66
5.312	--	--	--	-57	-57	--	--	-62	--	--
5.438	--	-57	-57	--	--	-61	-62	--	-64	--
5.500	-57	--	--	--	--	--	--	--	--	-70
5.562	--	--	--	-61	-61	--	--	-64	--	--
5.688	--	-61	-61	--	--	-63	-64	--	-66	--
5.750	-61	--	--	--	--	--	--	--	--	-72
5.812	--	--	--	-63	-63	--	--	-66	--	--
5.938	--	-63	-63	--	--	-65	-66	--	-70	--
6.000	-63	--	--	--	--	--	--	--	--	-74
6.062	--	--	--	-65	-65	--	--	-70	--	--
6.188	--	-65	-65	--	--	-67	-70	--	-72	--
6.250	-65	--	--	--	--	--	--	--	--	-76
6.312	--	--	--	-67	-67	--	--	-72	--	--
6.438	--	-67	-67	--	--	-71	-72	--	-74	--
6.500	-67	--	--	--	--	--	--	--	--	-80
6.562	--	--	--	-71	-71	--	--	-74	--	--
6.688	--	-71	-71	--	--	-73	-74	--	-76	--
6.750	-71	--	--	--	--	--	--	--	--	
6.812	--	--	--	-73	-73	--	--	-76	--	
6.938	--	-73	-73	--	--	-75	-76	--	-80	
7.000	-73	--	--	--	--	--	--	--		
7.062	--	--	--	-75	-75	--	--	-80		
7.188	--	-75	-75	--	--	-77	-80	--		
7.250	-75	--	--	--	--	--				
7.312	--	--	--	-77	-77	--				
7.438	--	-77	-77	--	--	-81				
7.500	-77	--	--	--	--	--				
7.688	--	--	-81	--	--	-83				
7.938	--	--	--	--	--	-85				
8.062	--	--	--	-85	--	--				
8.188	--	--	--	--	--	-87				

TABLE VI. NAS1003-1020 dash numbers.

Thread designation (UNF-3A).	T ref	Basic part number	Grip dash number 1/	
			Range	Increments
.190-32	.481	NAS1003		
.250-28	.544	NAS1004		
.3125-24	.632	NAS1005		
.375-24	.663	NAS1006		
.4375-20	.745	NAS1007	-1 thru -8	One
.500-20	.842	NAS1008		
			-10 thru -16	Two
.625-18	1.042	NAS1010		
.750-16	1.189	NAS1012	-20 thru -96	Four
.875-14	1.356	NAS1014		
1.000-14	1.481	NAS1016		
1.250-12	1.846	NAS1020		

1/ Grip dash number equals "G" dimension times 16

SECTION 706
BOLTS, MACHINE, HEXAGON HEAD, PD SHANK, LONG THREAD, DRILLED HEAD, ONE HOLE
APPLICABLE DOCUMENTS: MS9294, 9295, 9296, 9297, 9529, 9530, 9531, 9532, 9534, 9536, 9537, 9624
MS9625, 9626, 9627, 9629, 9685, 9686, 9687, 9688, 9690, 9692, 9693, 9816, 9817, 9818, 9819, 9821, 9823, 9824

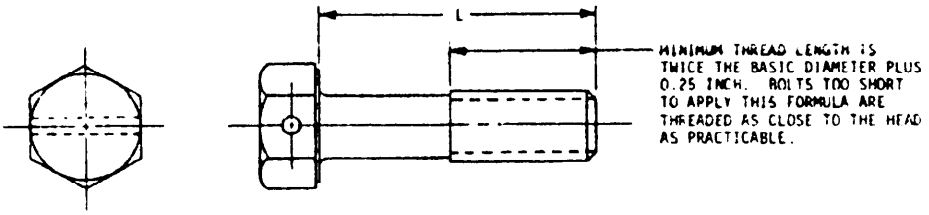


TABLE I. Material and part numbers.

Material		CRES	Steel			Titanium
		AMS-5643	AMS-6304	AMS-6322		AMS-4967
Protective finish		--	Diffused nickel cadmium plate	Black oxide	Cadmium plate	--
Hardness - Rockwell		C32-38	C42-46	C26-32		C36-42
Thread designation (UNJF-3A)	L	Part number				
.190-32	.312	MS9816 + dash no. -03	MS9685 + dash no. -03	MS9294 + dash no. --	MS9529 + dash no. --	MS9624 + dash no. -03
	.375	-04	-04	-04	-04	-04
	.438	-05	-05	-05	-05	-05
	.500	-06	-06	-06	-06	-06
	.625	-08	-08	-08	-08	-08
	.750	-10	-10	-10	-10	-10
	.875	-12	-12	-12	-12	-12
	1.000	-14	-14	-14	-14	-14
	1.250	-18	-18	-18	-18	-18
	1.500	-22	-22	-22	-22	-22
	1.750	-26	-26	-26	-26	-26
	2.000	-30	-30	-28	-28	-30
	2.250	-32	-32	-30	-30	-32
	2.500	-34	-34	-32	-32	-34
	2.750	-36	-36	-34	-34	-36
	3.000	-38	-38	-36	-36	-38
	3.250	-40	-40	-38	-38	-40
	3.500	-42	-42	-40	-40	-42
	3.750	-44	-44	-42	-42	-44
.250-28	.375	MS9817 + dash no. -04	MS9686 + dash no. -04	MS9295 + dash no. -04	MS9530 + dash no. -04	MS9625 + dash no. -04
	.438	-05	-05	-05	-05	-05
	.500	-06	-06	-06	-06	-06
	.625	-08	-08	-08	-08	-08
	.750	-10	-10	-10	-10	-10
	.875	-12	-12	-12	-12	-12
	1.000	-14	-14	-14	-14	-14
	1.250	-18	-18	-18	-18	-18
	1.500	-22	-22	-22	-22	-22
	1.750	-26	-26	-26	-26	-26
	2.000	-30	-30	-28	-28	-30
	2.250	-32	-32	-30	-30	-32
	2.500	-34	-34	-32	-32	-34
	2.750	-36	-36	-34	-34	-36
	3.000	-38	-38	-36	-36	-38
	3.250	-40	-40	-38	-38	-40
	3.500	-42	-42	-40	-40	-42
	3.750	-44	-44	-42	-42	-44
	4.000	-46	-46	-44	-44	-46
	4.250	-48	-48	-46	-46	-48
	4.500	-50	-50	-48	-48	-50
	4.750	-52	-52	-50	-50	-52
	5.000	-54	-54	-52	-52	-54
	5.250	-56	-56	-54	-54	-56
	5.500	-58	-58	-56	-56	-58
	5.750	-60	-60	-58	-58	-60
	6.000	-62	-62	-60	-60	-62

TABLE I. Material and part numbers - Continued

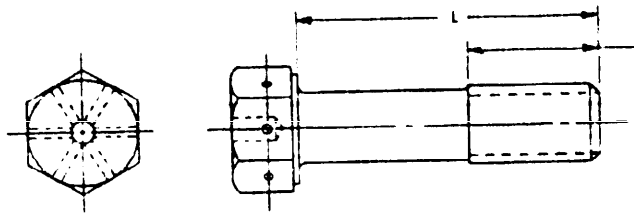
Material		CRES	Steel			Titanium
		AMS-5643	AMS-6304	AMS-6322		AMS-4967
Protective finish		--	Diffused nickel cadmium plate	Black oxide	Cadmium plate	--
Hardness - Rockwell		C32-38	C42-46	C26-32		C36-42
Thread designation (UNJF-3A)	L	Part number				
.3125-24	.500	MS9818 + dash no. -04	MS9687 + dash no. -04	MS9296 + dash no. -04	MS9531 + dash no. -04	MS9626 + dash no. -04
	.625	-06	-06	-06	-06	-06
	.750	-08	-08	-08	-08	-08
	.875	-10	-10	-10	-10	-10
	1.000	-12	-12	-12	-12	-12
	1.250	-16	-16	-16	-16	-16
	1.500	-20	-20	-20	-20	-20
	1.750	-24	-24	-24	-24	-24
	2.000	-28	-28	-26	-26	-28
	2.250	-30	-30	-28	-28	-30
	2.500	-32	-32	-30	-30	-32
	2.750	-34	-34	-32	-32	-34
	3.000	-36	-36	-34	-34	-36
	3.250	-38	-38	-36	-36	-38
	3.500	-40	-40	-38	-38	-40
	3.750	-42	-42	-40	-40	-42
	4.000	-44	-44	-42	-42	-44
	4.250	-46	-46	-44	-44	-46
	4.500	-48	-48	-46	-46	-48
	4.750	-50	-50	-48	-48	-50
	5.000	-52	-52	-50	-50	-52
	5.250	-54	-54	-52	-52	-54
	5.500	-56	-56	-54	-54	-56
	5.750	-58	-58	-56	-56	-58
	6.000	-60	-60	-58	-58	-60
.375-24	.625	MS9819 + dash no. -04	MS9688 + dash no. -04	MS9297 + dash no. -04	MS9532 + dash no. -04	MS9627 + dash no. -04
	.750	-06	-06	-06	-06	-06
	.875	-08	-08	-08	-08	-08
	1.000	-10	-10	-10	-10	-10
	1.250	-14	-14	-14	-14	-14
	1.500	-18	-18	-18	-18	-18
	1.750	-22	-22	-22	-22	-22
	2.000	-26	-26	-24	-24	-26
	2.250	-28	-28	-26	-26	-28
	2.500	-30	-30	-28	-28	-30
	2.750	-32	-32	-30	-30	-32
	3.000	-34	-34	-32	-32	-34
	3.250	-36	-36	-34	-34	-36
	3.500	-38	-38	-36	-36	-38
	3.750	-40	-40	-38	-38	-40
	4.000	-42	-42	-40	-40	-42
	4.250	-44	-44	-42	-42	-44
	4.500	-46	-46	-44	-44	-46
	4.750	-48	-48	-46	-46	-48
	5.000	-50	-50	-48	-48	-50
	5.250	-52	-52	-50	-50	-52
	5.500	-54	-54	-52	-52	-54
	5.750	-56	-56	-54	-54	-56
	6.000	-58	-58	-56	-56	-58
.500-20	.750	MS9821 + dash no. -03	MS9690 + dash no. -03		MS9534 + dash no. ---	MS9629 + dash no. -03
	.875	-05	-05		-05	-05
	1.000	-07	-07		-07	-07
	1.250	-11	-11		-11	-11
	1.500	-15	-15		-15	-15
	1.750	-19	-19		-19	-19
	2.000	-23	-23		-21	-23
	2.250	-25	-25		-23	-23
	2.500	-27	-27		-25	-27

TABLE I. Material and part numbers. - Continued.

Material	CRES	[illegible]			Titanium
	AMS-5643	AMS-6304	AMS 6322		AMS-4967
Protective finish	--	Diffused nickel cadmium plate	Black oxide	Cadmium plate	--
Hardness - Rockwell C	C32-38	C42-46	C26-32		C36-42

Thread designation (UNJF-3A)	L	Part number				
.500-20	2.750	MS9821 + dash no. -29	MS9690 + dash no. -29		-27	-29
	3.000	-31	-31		-29	-31
	3.250	-33	-33		-31	-33
	3.500	-35	-35		-33	-35
	3.750	-37	-37		-35	-37
	4.000	-39	-39		-37	-39
	4.250	-41	-41		-39	-41
	4.500	-43	-43		-41	-43
	4.750	-45	-45		-43	-45
	5.000	-47	-47		-45	-47
	5.250	-49	-49		-47	-49
	5.500	-51	-51		-49	-51
	5.750	-53	-53		-51	-53
	6.000	-55	-55		-53	-55
.625-18	1.000	MS9823 + dash no. -04	MS9692 + dash no. -04		-04	
	1.250	-08	-08		-08	
	1.500	-12	-12		-12	
	1.750	-16	-16		-16	
	2.000	-20	-20		-19	
	2.250	-22	-22		-21	
	2.500	-24	-24		-23	
	2.750	-26	-26		-25	
	3.000	-28	-28		-27	
	3.250	-30	-30		-29	
	3.500	-32	-32		-31	
	3.750	-34	-34		-33	
	4.000	-36	-36		-35	
	4.250	-38	-38		-37	
	4.500	-40	-40		-39	
	4.750	-42	-42		-41	
	5.000	-44	-44		-42	
	5.250	-46	-46		-45	
	5.500	-48	-48		-47	
	5.750	-50	-50		-49	
	6.000	-52	-52		-51	
.750-16	1.250	MS9824 + dash no. -06	MS9693 + dash no. -06		-06	
	1.500	-10	-10		-10	
	1.750	-14	-14		-14	
	2.000	-18	-18		-18	
	2.250	-20	-20		-20	
	2.500	-22	-22		-22	
	2.750	-24	-24		-24	
	3.000	-26	-26		-26	
	3.250	-28	-28		-28	
	3.500	-30	-30		-30	
	3.750	-32	-32		-32	
	4.000	-34	-34		-34	
	4.250	-36	-36		-36	
	4.500	-38	-38		-38	
	4.750	-40	-40		-40	
	5.000	-42	-42		-42	
	5.250	-44	-44		-44	
	5.500	-46	-46		-46	
	5.750	-48	-48		-48	
	6.000	-50	-50		-50	

SECTION 707
BOLTS, MACHINE, HEXAGON HEAD, PD SHANK, LONG THREAD, DRILLED HEAD, THREE HOLES
APPLICABLE DOCUMENTS: MS9440, 9441, 9442, 9443, 9445, 9447, 9448, 9957, 9958, 9959, 9960, 9962, 9964, 9965



MINIMUM THREAD LENGTH IS TWICE THE BASIC DIAMETER PLUS 0.25 INCH. BOLTS TOO SHORT TO APPLY THIS FORMULA ARE THREADED AS CLOSE TO THE HEAD AS PRACTICABLE.

TABLE I. Materials and part numbers.

Material	Steel	
	AMS-6304	AMS-6322
Protective finish	Diffused nickel cadmium plate	Cadmium plate
Hardness - Rockwell	C42-46	C26-32

Thread designation (UNJF-3A)	L	Part number	
.190-32	.312	---	-03
	.375	-04	-04
	.438	-05	-05
	.500	-06	-06
	.625	-08	-08
	.750	-10	-10
	.875	-12	-12
	1.000	-14	-14
	1.250	-18	-18
	1.500	-22	-22
	1.750	-26	-26
	2.000	-28	-28
	2.250	-30	-32
	2.500	-32	-34
	2.750	-34	-36
	3.000	-36	-38
	3.250	-38	-40
	3.500	-40	-42
	3.750	-42	-44
		MS9440 + dash no.	MS9957 + dash no.
.250-28	.375	-04	-04
	.438	-05	-05
	.500	-06	-06
	.625	-08	-08
	.750	-10	-10
	.875	-12	-12
	1.000	-14	-14
	1.250	-18	-18
	1.500	-22	-22
	1.750	-26	-26
	2.000	-28	-30
	2.250	-30	-32
	2.500	-32	-34
	2.750	-34	-36
	3.000	-36	-38
	3.250	-38	-40
	3.500	-40	-42
	3.750	-42	-44
	4.000	-44	-46
	4.250	-46	-48
	4.500	-48	-50
	4.750	-50	-52
	5.000	-52	-54
	5.250	-54	-56
	5.500	-56	-58
	5.750	-58	-60
	6.000	-60	-62
		MS9441 + dash no.	MS9958 + dash no.

Material	Steel	
	AMS-6304	AMS-6322
Protective finish	Diffused nickel cadmium plate	Cadmium plate
Hardness - Rockwell	C42-46	C26-32

Thread designation (UNJF-3A)	L	Part number	
.3125-24	.500	-04	-04
	.625	-06	-06
	.750	-08	-08
	.875	-10	-10
	1.000	-12	-12
	1.250	-16	-16
	1.500	-20	-20
	1.750	-24	-24
	2.000	-26	-28
	2.250	-28	-30
	2.500	-30	-32
	2.750	-32	-34
	3.000	-34	-36
	3.250	-36	-38
	3.500	-38	-40
	3.750	-40	-42
	4.000	-42	-44
	4.250	-44	-46
	4.500	-46	-48
	4.750	-48	-50
	5.000	-50	-52
	5.250	-52	-54
	5.500	-54	-56
	5.750	-56	-58
	6.000	-58	-60
		MS9442 + dash no.	MS9959 + dash no.
.375-24	.625	-04	-04
	.750	-06	-06
	.875	-08	-08
	1.000	-10	-10
	1.250	-14	-14
	1.500	-18	-18
	1.750	-22	-22
	2.000	-24	-26
	2.250	-26	-28
	2.500	-28	-30
	2.750	-30	-32
	3.000	-32	-34
	3.250	-34	-36
	3.500	-36	-38
	3.750	-38	-40
	4.000	-40	-42
	4.250	-42	-44
	4.500	-44	-44
	4.750	-46	-48
	5.000	-48	-50
	5.250	-50	-52
	5.500	-52	-54
	5.750	-54	-56
	6.000	-56	-58
		MS9443 + dash no.	MS9960 + dash no.

TABLE I. Materials and part numbers. - Continued

Material		Steel	
		AMS-6304	AMS-6322
Protective finish		Diffused nickel cadmium plate	Cadmium plate
Hardness - Rockwell		C42-46	C26-32
Thread designation (UNJF-3A)	L	Part number	
.500-20	.750	--	-03
	.875	-05	-05
	1.000	-07	-07
	1.250	-11	-11
	1.500	-15	-15
	1.750	-19	-19
	2.000	-21	-23
	2.250	-23	-25
	2.500	-25	-27
	2.750	-27	-29
	3.000	-29	-31
	3.250	-31	-33
	3.500	-33	-35
	3.750	-35	-37
	4.000	-37	-39
	4.250	-39	-41
	4.500	-41	-43
	4.750	-43	-45
	5.000	-45	-47
	5.250	-47	-49
	5.500	-49	-51
	5.750	-51	-53
	6.000	-53	-55
.625-18	1.000	-04	-04
	1.250	-08	-08
	1.500	-12	-12
	1.750	-16	-16
	2.000	-19	-20
	2.250	-21	-22
	2.500	-23	-24
	2.750	-25	-26
	3.000	-27	-28
	3.250	-29	-30
	3.500	-31	-32
	3.750	-33	-34
	4.000	-35	-36
	4.250	-37	-38
	4.500	-39	-40
	4.750	-41	-42
	5.000	-43	-44
	5.250	-45	-46
	5.500	-47	-48
	5.750	-49	-50
	6.000	-51	-52

MS9445 + dash no. / MS9962 + dash no. / MS9447 + dash no. / MS9964 + dash no.

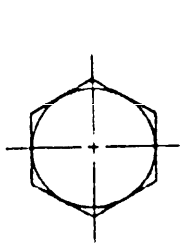
Material		Steel	
		AMS-6304	AMS-6322
Protective finish		Diffused nickel cadmium plate	Cadmium plate
Hardness - Rockwell		C42-46	C26-32
Thread designation (UNJF-3A)	L	Part number	
.750-16	1.250	-06	-06
	1.500	-10	-10
	1.750	-14	-14
	2.000	-18	-18
	2.250	-20	-20
	2.500	-22	-22
	2.750	-24	-24
	3.000	-26	-26
	3.250	-28	-28
	3.500	-30	-30
	3.750	-32	-32
	4.000	-34	-34
	4.250	-36	-36
	4.500	-38	-38
	4.750	-40	-40
	5.000	-42	-42
	5.250	-44	-44
	5.500	-46	-46
	5.750	-48	-48
	6.000	-50	-50

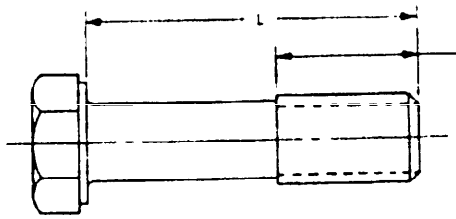
MS9449 + dash no. / MS9965 + dash no.

SECTION 708

BOLTS, MACHINE, HEXAGON HEAD, RD SHANK, LONG THREAD, UNDRILLED

APPLICABLE DOCUMENTS: MS9283, 9284, 9285, 9286, 9451, 9452, 9453, 9454, 9456, 9458, 9459, 9518, 9519, 9520, 9521, MS9522, 9525, 9526, 9633, 9634, 9635, 9636, 9638, 9805, 9806, 9807, 9808, 9810, 9812, 9813.





MINIMUM THREAD LENGTH IS TWICE THE BASIC DIAMETER PLUS 0.25 INCH. BOLTS TOO SHORT TO APPLY THIS FORMULA ARE THREADED AS CLOSE TO THE HEAD AS PRACTICABLE.

TABLE I. Material and part numbers.

Material		CRES	Steel			Titanium
		AMS-5643	AMS-6304	AMS-6322		AMS-4967
Protective finish		--	Diffused nickel cadmium plate	Black oxide	Cadmium plate	--
Hardness - Rockwell		C32-38	C42-46	C26-32		C36-42
Thread designation (UNJF-3A)	L	Part number				
.190-32	.312	MS9805 + dash no. -03	MS9451 + dash no. --	MS9283 + dash no. --	MS9518 + dash no. --	MS9633 + dash no. -03
	.375	-04	-04	-04	-04	-04
	.438	-05	-05	-05	-05	-05
	.500	-06	-06	-06	-06	-06
	.625	-08	-08	-08	-08	-08
	.750	-10	-10	-10	-10	-10
	.875	-12	-12	-12	-12	-12
	1.000	-14	-14	-14	-14	-14
	1.250	-18	-18	-18	-18	-18
	1.500	-22	-22	-22	-22	-22
	1.750	-26	-26	-26	-26	-26
	2.000	-30	-28	-28	-28	-30
	2.250	-32	-30	-30	-30	-32
	2.500	-34	-32	-32	-32	-34
	2.750	-36	-34	-34	-34	-36
	3.000	-38	-36	-36	-36	-38
	3.250	-40	-38	-38	-38	-40
	3.500	-42	-40	40	-40	-42
	3.750	-44	-42	-42	-42	-44
.250-28	.375	MS9806 + dash no. -04	MS9452 + dash no. -04	MS9284 + dash no. -04	MS9519 + dash no. -04	MS9634 + dash no. -04
	.438	-05	-05	-05	-05	-05
	.500	-06	-06	-06	-06	-06
	.625	-08	-08	-08	-08	-08
	.750	-10	-10	-10	-10	-10
	.875	-12	-12	-12	-12	-12
	1.000	-14	-14	-14	-14	-14
	1.250	-18	-18	-18	-18	-18
	1.500	-22	-22	-22	-22	-22
	1.750	-26	-26	-26	-26	-26
	2.000	-30	-28	-28	-28	-30
	2.250	-32	-30	-30	-30	-32
	2.500	-34	-32	-32	-32	-34
	2.750	-36	-34	-34	-34	-36
	3.000	-38	-36	-36	-36	-38
	3.250	-40	-38	-38	-38	-40
	3.500	-42	-40	-40	-40	-42
	3.750	-44	-42	-42	-42	-44
	4.000	-46	-44	-44	-44	-46
	4.250	-48	-46	-46	-46	-48
	4.500	-50	-48	-48	-48	-50
	4.750	-52	-50	-50	-50	-52
	5.000	-54	-52	-52	-52	-54
	5.250	-56	-54	-54	-54	-56
	5.500	-58	-56	-56	-56	-58
	5.750	-60	-58	-58	-58	-60
	6.000	-62	-60	-60	-60	-62

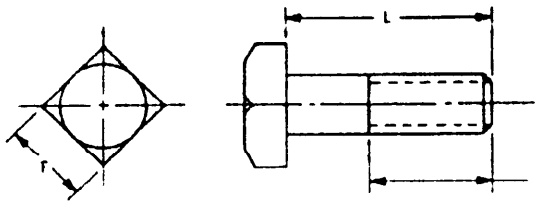
TABLE I. Material and part numbers.- Continued

Material		CRES	Steel			Titanium
		AMS-5643	AMS-6304	AMS-6322		AMS-4967
Protective finish		--	Diffused nickel cadmium plate	Black oxide	Cadmium plate	--
Hardness - Rockwell		C32-38	C42-46	C26-32		C36-42
Thread designation (UNJF-3A)	L	Part number				
.3125-24	.500	MS9107 + dash no. -04	MS9153 + dash no. -04	MS9285 + dash no. -04	MS9520 + dash no. -04	MS9635 + dash no. -04
	.625	-06	-06	-06	-06	-06
	.750	-08	-08	-08	-08	-08
	.875	-10	-10	-10	-10	-10
	1.000	-12	-12	-12	-12	-12
	1.250	-16	-16	-16	-16	-16
	1.500	-20	-20	-20	-20	-20
	1.750	-24	-24	-24	-24	-24
	2.000	-28	-26	-26	-26	-28
	2.250	-30	-28	-28	-28	-30
	2.500	-32	-30	-30	-30	-32
	2.750	-34	-32	-32	-32	-34
	3.000	-36	-34	-34	-34	-36
	3.250	-38	-36	-36	-36	-38
	3.500	-40	-38	-38	-38	-40
	3.750	-42	-40	-40	-40	-42
	4.000	-44	-42	-42	-42	-44
	4.250	-46	-44	-44	-44	-46
	4.500	-48	-46	-46	-46	-48
	4.750	-50	-48	-48	-48	-50
	5.000	-52	-50	-50	-50	-52
	5.250	-54	-52	-52	-52	-54
	5.500	-56	-54	-54	-54	-56
	5.750	-58	-56	-56	-56	-58
	6.000	-60	-58	-58	-58	-60
.375-24	.625	MS9808 + dash no. -04	MS9454 + dash no. -04	MS9286 + dash no. -04	MS9521 + dash no. -04	MS9636 + dash no. -04
	.750	-06	-06	-06	-06	-06
	.875	-08	-08	-08	-08	-08
	1.000	-10	-10	-10	-10	-10
	1.250	-14	-14	-14	-14	-14
	1.500	-18	-18	-18	-18	-18
	1.750	-22	-22	-22	-22	-22
	2.000	-26	-24	-24	-24	-26
	2.250	-28	-26	-26	-26	-28
	2.500	-30	-28	-28	-28	-30
	2.750	-32	-30	-30	-30	-32
	3.000	-34	-32	-32	-32	-34
	3.250	-36	-34	-34	-34	-36
	3.500	-38	-36	-36	-36	-38
	3.750	-40	-38	-38	-38	-40
	4.000	-42	-40	-40	-40	-42
	4.250	-44	-42	-42	-42	-44
	4.500	-46	-44	-44	-44	-46
	4.750	-48	-46	-46	-46	-48
	5.000	-50	-48	-48	-48	-50
	5.250	-52	-50	-50	-50	-52
	5.500	-54	-52	-52	-52	-54
	5.750	-56	-54	-54	-54	-56
	6.000	-58	-56	-56	-56	-58

TABLE I. Material and part numbers. - Continued

Material		CRES AMS-5643	Steel AMS-6304	Steel AMS-6322	Titanium AMS-4967
Protective finish		--	Diffused nickel cadmium plate	Cadmium plate	--
Hardness - Rockwell		C32-38	C42-46	C26-32	C36-42
Thread designation (UNJF-3A)	L	Part number			
.500-20	.750	-03	--	--	-03
	.875	-05	-05	-05	-05
	1.000	-07	-07	-07	-07
	1.250	-11	-11	-11	-11
	1.500	-15	-15	-15	-15
	1.750	-19	-19	-19	-19
	2.000	-23	-21	-21	-23
	2.250	-25	-23	-23	-25
	2.500	-27	-25	-25	-27
	2.750	-29	-27	-27	-29
	3.000	-31	-29	-29	-31
	3.250	-33	-31	-31	-33
	3.500	-35	-33	-33	-35
	3.750	-37	-35	-35	-37
	4.000	-39	-37	-37	-39
	4.250	-41	-39	-39	-41
	4.500	-43	-41	-41	-43
	4.750	-45	-43	-43	-45
	5.000	-47	-45	-45	-47
	5.250	-49	-47	-47	-49
	5.500	-51	-49	-49	-51
	5.750	-53	-51	-51	-53
	6.000	-55	-53	-53	-55
		MS9810 + dash no.	MS9456 + dash no.	MS9523 + dash no.	MS9638 + dash no.
.625-18	1.000	-04	-04	-04	
	1.250	-08	-08	-08	
	1.500	-12	-12	-12	
	1.750	-16	-16	-16	
	2.000	-20	-19	-19	
	2.250	-22	-21	-21	
	2.500	-24	-23	-23	
	2.750	-26	-25	-25	
	3.000	-28	-27	-27	
	3.250	-30	-29	-29	
	3.500	-32	-31	-31	
	3.750	-34	-33	-33	
	4.000	-36	-35	-35	
	4.250	-38	-37	-37	
	4.500	-40	-39	-39	
	4.750	-42	-41	-41	
	5.000	-44	-43	-43	
	5.250	-46	-45	-45	
	5.500	-48	-47	-47	
	5.750	-50	-49	-49	
	6.000	-52	-51	-51	
		MS9812 + dash no.	MS9458 + dash no.	MS9525 + dash no.	
.750-16	1.250	-06	-06	-06	
	1.500	-10	-10	-10	
	1.750	-14	-14	-14	
	2.000	-18	-18	-18	
	2.250	-20	-20	-20	
	2.500	-22	-22	-22	
	2.750	-24	-24	-24	
	3.000	-26	-26	-26	
	3.250	-28	-28	-28	
	3.500	-30	-30	-30	
	3.750	-32	-32	-32	
	4.000	-34	-34	-34	
	4.250	-36	-36	-36	
	4.500	-38	-38	-38	
	4.750	-40	-40	-40	
	5.000	-42	-42	-42	
	5.250	-44	-44	-44	
	5.500	-46	-46	-46	
	5.750	-48	-48	-48	
	6.000	-50	-50	-50	
		MS9813 + dash no.	MS9459 + dash no.	MS9526 + dash no.	

SECTION 700
BOLTS, MACHINE, SQUARE HEAD
APPLICABLE DOCUMENT: MS35355



MINIMUM THREAD LENGTH IS TWICE THE BASIC DIAMETER PLUS 0.25 INCH. BOLTS TOO SHORT TO APPLY THIS FORMULA ARE THREADED AS CLOSE TO THE HEAD AS PRACTICABLE.

TABLE I. Material.

Material	Protective finish	Tensile strength (psi) min.
Carbon steel	Cadmium plate	60,000

TABLE II. Part numbers.

Thread designation (UNC-2A)	.250-20	.3125-18	.375-16	.4375-14	.500-13	.625-11	.750-10	.875-9	1.000-8	1.250-7
F max	.375	.500	.5625	.625	.750	.9375	1.125	1.3125	1.500	1.875
L	MS35355 + dash number									
.75	-1	-32	-63	--	--					
1.00	-2	-33	-64	-94	-124					
1.25	-3	-34	-65	-95	-125					
1.50	-4	-35	-66	-96	-126	-159	-192	-230	-268	
2.00	-5	-36	-67	-97	-127	-160	-193	-231	-269	
2.50	-6	-37	-68	-98	-128	-161	-194	-232	-270	
3.00	-7	-38	-69	-99	-129	-162	-195	-233	-271	-341
3.50	-8	-39	-70	-100	-130	-163	-196	-234	-272	-342
4.00	-9	-40	-71	-101	-131	-164	-197	-235	-273	-343
4.50	-10	-41	-72	-102	-132	-165	-198	-236	-274	-344
5.00	-11	-42	-73	-103	-133	-166	-199	-237	-275	-345
5.50	-12	-43	-74	-104	-134	-167	-200	-238	-276	-346
6.00	-13	-44	-75	-105	-135	-168	-201	-239	-277	-347
6.50	-14	-45	-76	-106	-136	-169	-202	-240	-278	-348
7.00	-15	-46	-77	-107	-137	-170	-203	-241	-279	-349
7.50	-16	-47	-78	-108	-138	-171	-204	-242	-280	-350
8.00	-17	-48	-79	-109	-139	-172	-205	-243	-281	-351
8.50	-18	-49	-80	-110	-140	-173	-206	-244	-282	-352
9.00	-19	-50	-81	-111	-141	-174	-207	-245	-283	-353
9.50	-20	-51	-82	-112	-142	-175	-208	-246	-284	-354
10.00	-21	-52	-83	-113	-143	-176	-209	-247	-285	-355
11.00	-22	-53	-84	-114	-144	-177	-210	-248	-286	-356
12.00	-23	-54	-85	-115	-145	-178	-211	-249	-287	-357
13.00	-24	-55	-86	-116	-146	-179	-212	-250	-288	-358
14.00	-25	-56	-87	-117	-147	-180	-213	-251	-289	-359
15.00	-26	-57	-88	-118	-148	-181	-214	-252	-290	-360
16.00	-27	-58	-89	-119	-149	-182	-215	-253	-291	-361
17.00	-28	-59	-90	-120	-150	-183	-216	-254	-292	-362
18.00	-29	-60	-91	-121	-151	-184	-217	-255	-293	-363
19.00	-30	-61	-92	-122	-152	-185	-218	-256	-294	-364
20.00	-31	-62	-93	-123	-153	-186	-219	-257	-295	-365
21.00	--	--	--	--	-154	-187	-220	-258	-296	-366
22.00	--	--	--	--	-155	-188	-221	-259	-297	-367
23.00					-156	-189	-222	-260	-298	-368
24.00					-157	-190	-223	-261	-299	-369
25.00					-158	-191	-224	-262	-300	-370
26.00							-225	-263	-301	-371
27.00							-226	-264	-302	-372
28.00							-227	-265	-303	-373
29.00							-228	-266	-304	-374
30.00							-229	-267	-305	-375

SECTION 801
BOLTS, SELF-LOCKING, LONG THREAD, DRILLED
APPLICABLE DOCUMENTS: MS18153, 18154

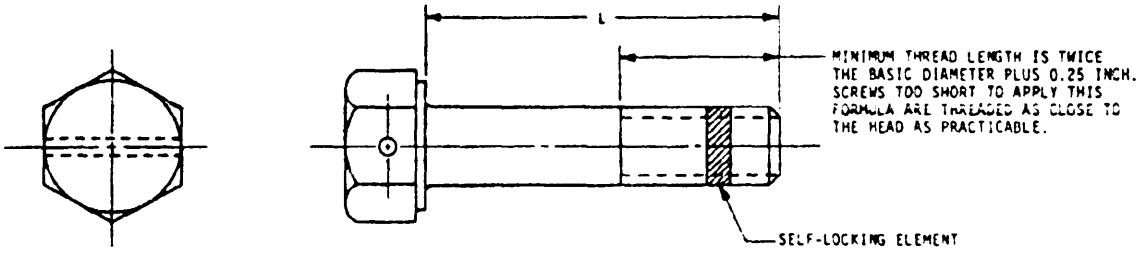


TABLE I. Material.

Material	Protective finish	Tensile strength (psi) min
Alloy steel	Cadmium plate	150,000

TABLE II. MS18153, 18154 part numbers.

Thread size	.250	.3125	.375	.4375	.500	.625	.750	.875	1.000
Threads per inch (UNF-2A) MS18153 . .	28	24	24	20	20	18	16	14	12
Threads per inch (UNC-2A) MS18154 . .	20	18	16	14	13	11	10	9	8
L	Dash number 1/								
.375	-1L	-27L	--						
.438	-2L	-28L	--						
.500	-3L	-29L	-55L						
.625	-5L	-31L	-57L	--	--	--			
.750	-6L	-32L	-58L	-84L	-110L	-133L			
.875	-7L	-33L	-59L	-85L	-111L	-134L			
1.000	-8L	-34L	-60L	-86L	-112L	-135L	-157L	--	--
1.250	-9L	-35L	-61L	-87L	-113L	-136L	-158L	-182L	-206L
1.500	-10L	-36L	-62L	-88L	-114L	-137L	-159L	-183L	-207L
1.750	-11L	-37L	-63L	-89L	-115L	-138L	-160L	-184L	-208L
2.000	-12L	-38L	-64L	-90L	-116L	-139L	-161L	-185L	-209L
2.250	-13L	-39L	-65L	-91L	-117L	-140L	-162L	-186L	-210L
2.500	-14L	-40L	-66L	-92L	-118L	-141L	-163L	-187L	-211L
2.750	-15L	-41L	-67L	-93L	-119L	-142L	-164L	-188L	-212L
3.000	-16L	-42L	-68L	-94L	-120L	-143L	-165L	-189L	-213L
3.250	-17L	-43L	-69L	-95L	-121L	-144L	-166L	-190L	-214L
3.500	-18L	-44L	-70L	-96L	-122L	-145L	-167L	-191L	-215L
3.750	-19L	-45L	-71L	-97L	-123L	-146L	-168L	-192L	-216L
4.000	-20L	-46L	-72L	-98L	-124L	-147L	-169L	-193L	-217L
4.250	-21L	-47L	-73L	-99L	-125L	-148L	-170L	-194L	-218L
4.500	-22L	-48L	-74L	-100L	-126L	-149L	-171L	-195L	-219L
4.750	-23L	-49L	-75L	-101L	-127L	-150L	-172L	-196L	-220L
5.000	-24L	-50L	-76L	-102L	-128L	-151L	-173L	-197L	-221L
5.500	--	--	--	--	-129L	-152L	-174L	-198L	-222L
6.000	--	--	--	--	-130L	-153L	-175L	-199L	-223L

1/ For non-locking fasteners on MS18153, 18154 see section 1401.

SECTION 802
BOLTS, SELF-LOCKING, LONG THREAD, UNDRILLED
APPLICABLE DOCUMENTS: MS90727, 90728

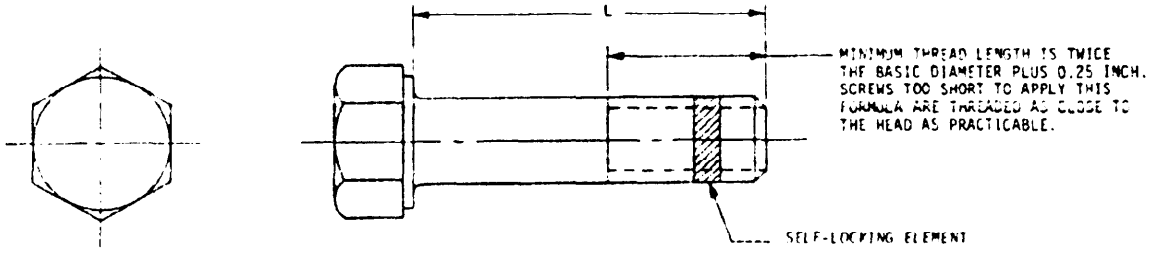


TABLE I. Material.

Material	Protective finish	Tensile strength (psi) min	Applicable documents
Alloy steel	Cadmium plate	150,000	MS90727 1/
		150,000 sizes thru 1.5 140,000 sizes above 1.5	MS90728 1/

1/ For non-locking fasteners see section 1803.

TABLE II. MS90727, 90728 dash numbers.

Thread size	.250	.3125	.375	.500	.625	.750	1.000	1.250	1.500	1.750	2.000	2.250	2.500
Threads per inch (UNF-2A) MS90727	28	24	24	20	18	16	12	12	12				
Threads per inch (UNC-2A) MS90728	20	18	16	13	11	10	8	7	6	5	4.5	4.5	4
L	Dash number												
.375	-1L	-27L	-53L	--									
.438	-2L	-28L	-54L	--									
.500	-3L	-29L	-55L	-104L									
.625	-5L	-31L	-57L	-106L	-155L	--							
.750	-6L	-32L	-58L	-107L	-156L	-179L							
.875	-7L	-33L	-59L	-108L	-157L	-180L							
1.000	-8L	-34L	-60L	-109L	-158L	-181L	-224L	--	--				
1.250	-10L	-36L	-62L	-111L	-160L	-183L	-226L	-265L	--				
1.500	-12L	-38L	-64L	-113L	-162L	-185L	-228L	-267L	-302L				
1.750	-13L	-39L	-65L	-114L	-163L	-186L	-229L	-268L	-303L	-319L	--		
2.000	-14L	-40L	-66L	-115L	-164L	-187L	-230L	-269L	-304L	-320L	--		
2.250	-15L	-41L	-67L	-116L	-165L	-188L	-231L	-270L	-305L	-321L	-335L		
2.500	-16L	-42L	-68L	-117L	-166L	-189L	-232L	-271L	-306L	-322L	-336L	--	--
2.750	-17L	-43L	-69L	-118L	-167L	-190L	-233L	-272L	-307L	-323L	-337L	-349L	-361L
3.000	-18L	-44L	-70L	-119L	-168L	-191L	-234L	-273L	-308L	-324L	-338L	-350L	-362L
3.250	-19L	-45L	-71L	-120L	-169L	-192L	-235L	-274L	-309L	-325L	-339L	-351L	-363L
3.500	-20L	-46L	-72L	-121L	-170L	-193L	-236L	-275L	-310L	-326L	-340L	-352L	-364L
3.750	-21L	-47L	-73L	-122L	-171L	-194L	-237L	-276L	-311L	-327L	-341L	-353L	-365L
4.000	-22L	-48L	-74L	-123L	-172L	-195L	-238L	-277L	-312L	-328L	-342L	-354L	-366L
4.250	-23L	-49L	-75L	-124L	-173L	-196L	-239L	-278L	-313L	-329L	-343L	-355L	-367L
4.500	-24L	-50L	-76L	-125L	-174L	-197L	-240L	-279L	-314L	-330L	-344L	-356L	-368L
4.750	-25L	-51L	-77L	-126L	-175L	-198L	-241L	-280L	-315L	-331L	-345L	-357L	-369L
5.000	-26L	-52L	-78L	-127L	-176L	-199L	-242L	-281L	-316L	-332L	-346L	-358L	-370L
5.500	--	--	--	-128L	-177L	-200L	-243L	-282L	-317L	-333L	-347L	-359L	-371L
6.000	--	--	--	-129L	-178L	-201L	-244L	-283L	-318L	-334L	-348L	-360L	-372L

SECTION 803
BOLTS, SELF-LOCKING, SHORT THREAD
APPLICABLE DOCUMENTS: MS21094, 21095

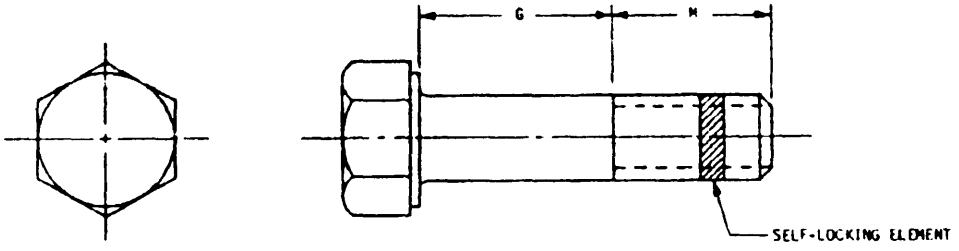


TABLE I. Materials.

Material	Protective finish	Tensile strength (psi) min	Applicable documents
Alloy steel	Cadmium plate	125,000	MS21094
CRES	Passivate	80,000	MS21095

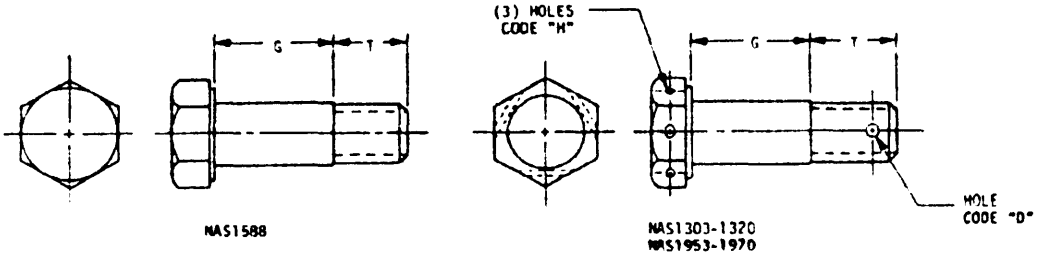
TABLE II. MS21094, 21095 dash numbers.

Thread designation UNF-3A 1/	M ref	First dash number	Second dash number 2/	
		MS21094, 21095	MS21094	MS21095
.190-32	.406	-3	-003 thru -056	-001 thru -056
.250-28	.469	-4	-004 thru -072	-002 thru -072
.3125-24	.531	-5	-006 thru -088	-006 thru -008
.375-24	.641	-6	-006 thru -088	-006 thru -088
.4375-20	.656	-7	-008 thru -100	-008 thru -100
.500-20	.781	-8	-008 thru -100	-008 thru -100
.625-18	.953	-10	-010 thru -112	-010 thru -112
.750-16	.969	-12	-012 thru -112	-012 thru -112
.875-14	1.250	-14	-014 thru -112	-014 thru -112
1.000-12	1.375	-16	-016 thru -112	-016 thru -112
1.250-12	1.687	-20	-020 thru -128	-020 thru -128

1/ For thread sizes .138 and .164 on MS21095 see section 2107.

2/ Dash number equals grip dimension "G" times 16 .
Increments of one (-001 thru -004), two (-006 thru -016), and four (-020 thru -128).

SECTION 901
BOLTS, SHEAR, HEXAGON HEAD
APPLICABLE DOCUMENTS: NAS1303-1320, 1588, 1953-1970



NAS1588

NAS1303-1320
NAS1953-1970

TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Alloy steel	-	Cadmium plate	--	160,000	NAS1303-1320
				180,000	NAS1953-1970
CRES	C	Passivate	--	180,000	NAS1953-1970
		Aluminum coat	P		
Titanium alloy	T	None	--		
		Aluminum coat	P		
Corrosion and heat resistant alloy	-	Passivate	--	185,000	NAS1588

TABLE II. Basic part numbers.

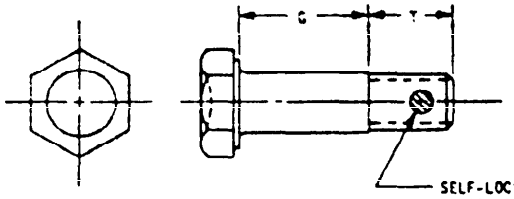
Thread designation (UNJF-3A)	T ref	Basic part number		
.190-32	.333 .363	NAS1303 --	NAS1953 --	-- NAS1588-3
.250-28	.403 .425	-- NAS1304	-- NAS1954	NAS1588-4 --
.3125-24	.469 .501	NAS1305 --	NAS1955 --	-- NAS1588-5
.375-24	.578 .594	NAS1306 --	NAS1956 --	-- NAS1588-6
.4375-20	.594 .675	NAS1307 --	NAS1957 --	-- NAS1588-7
.500-20	.735 .768	NAS1308 --	NAS1958 --	-- NAS1588-8
.625-18	.902 .981	NAS1310 --	NAS1960 --	-- NAS1588-10
.750-16	1.041 1.157	NAS1312 --	NAS1962 --	-- NAS1588-12
.875-14	1.188 1.351	NAS1314 --	NAS1964 --	-- NAS1588-14
1.000-12	1.309 1.519	NAS1316 --	NAS1966 --	-- NAS1588-16
1.250-12	1.646 --	NAS1320 --	NAS1970 --	-- --

TABLE III. Grip dash numbers.

Document no.	NAS1588	NAS1303-1320, NAS1953-1970
Thread designation (UNJF-3A)	Grip dash no. range 1/	Grip dash no. range 1/
.190-32	-4 thru -48	-1 thru -96
.250-28	-4 thru -56	
.3125-24	-4 thru -64	
.375-24	-4 thru -72	
.4375-20	-4 thru -80	
.500-20	-4 thru -80	
.625-18	-6 thru -96	
.750-16	-8 thru -96	
.875-14	-8 thru -96	
1.000-12	-10 thru -96	

1/ Grip dash number equals "G" dimension times 16
Increments of one (-1 thru -8), two (-10 thru -16) and four (-20 thru -96).

SECTION 902
BOLTS, SHEAR, HEXAGON HEAD, SELF-LOCKING
APPLICABLE DOCUMENTS: NAS1223-1235



SELF-LOCKING ELEMENT
BUTTON TYPE
CODE "N"
(FOR AERO-SPACE SEE MIL-BULL-147)

TABLE I. Material.

Material 1/	Protective finish	Tensile strength (psi) min
Alloy steel	Cadmium plate	160,000

1/ For CRES bolts listed on NAS1223-1235 see section 201.

TABLE II. Dash numbers.

Thread designation (UNJF-3A)	T ref	Basic part number	Grip dash number 1/	
			Range	Increments
.190-32	.338	NAS1223		
.250-28	.425	NAS1224		
.3125-24	.469	NAS1225		
.375-24	.578	NAS1226	-1 thru -8	One
.4375-20	.594	NAS1227		
.500-20	.735	NAS1228	-10 thru -16	Two
.625-18	.902	NAS1230	-20 thru -96	Four
.750-16	1.041	NAS1231		
.875-14	1.184	NAS1232		
1.000-12	1.309	NAS1233		
1.250-12	1.646	NAS1235		

1/ Grip dash number equals "G" dimension times 16

SECTION 903
BOLTS, SHEAR, HEXAGON HEAD, SELF-LOCKING AND NON-LOCKING
APPLICABLE DOCUMENTS: NAS6203-6220, 6303-6320, 6403-6420, 6604-6620
NAS6704-6720, 6803-6820

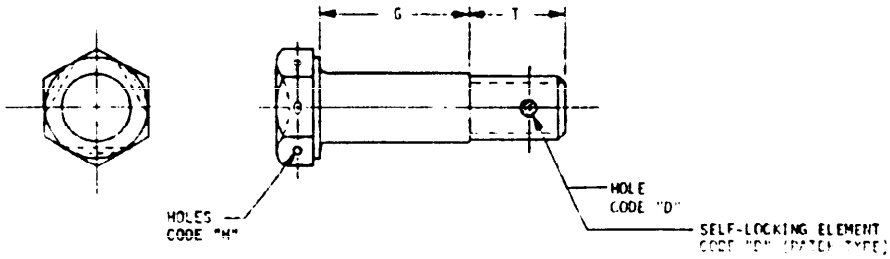


TABLE I. Basic part numbers

Material		Alloy steel	CRES	Titanium
Tensile strength (psi) min		160,000	160,000	160,000
Thread designation (UNJF-3A)	T ref	Basic part number		
.190-32	.323 .345	NAS6203 - -	NAS6303 - -	NAS6403 NAS6803
.250-28	.370 .421	NAS6204 NAS6604	NAS6304 NAS6704	NAS6404 NAS6804
.3125-24	.438 .469	NAS6205 NAS6605	NAS6305 NAS6705	NAS6405 NAS6805
.375-24	.454 .578	NAS6206 NAS6606	NAS6306 NAS6706	NAS6406 NAS6806
.4375-20	.528 .694	NAS6207 NAS6607	NAS6307 NAS6707	NAS6407 NAS6807
.500-20	.528 .735	NAS6208 NAS6608	NAS6308 NAS6708	NAS6408 NAS6808
.625-18	.626 .902	NAS6210 NAS6610	NAS6310 NAS6710	NAS6410 NAS6810
.750-16	.666 1.041	NAS6212 NAS6612	NAS6312 NAS6712	NAS6412 NAS6812
.875-14	.759 1.184	NAS6214 NAS6614	NAS6314 NAS6714	NAS6414 NAS6814
1.000-12	.895 1.309	NAS6216 NAS6616	NAS6316 NAS6716	NAS6416 NAS6816
1.250-12	1.083 1.646	NAS6220 NAS6620	NAS6320 NAS6720	NAS6420 NAS6820

TABLE II. Protective finish.

Protective finish	Code	Applicable documents
Passivate	U	NAS6303-6320, 6704-6720, NAS6403-6420, 6804-6820
Chromium plate (shank only)	C	NAS6203-6220, 6604-6620, NAS6303-6320, 6704-6720
Aluminum coat	A	NAS6303-6320, 6704-6720, NAS6403-6420, 6804-6820
Cadmium plate	--	NAS6203-6220, 6403-6420, NAS6604-6620, 6704-6720, NAS6804-6820

TABLE III. Grip dash numbers.

Document no. . .	NAS6203-6220, NAS6303-6320, NAS6403-6420	NAS6604-6620, NAS6704-6720, NAS6804-6820
Thread size	Grip dash no. range 1/	
All	-1 thru -96	-1 thru -64

1/ Dash number equals grip dimension "G" times 16
Increments of one (-1 thru -8), two (-10 thru -16), and four (-20 thru -96).

SECTION 904
BOLTS, SHEAR, SPLINE DRIVE
APPLICABLE DOCUMENTS: MS21134, 21296, 21297

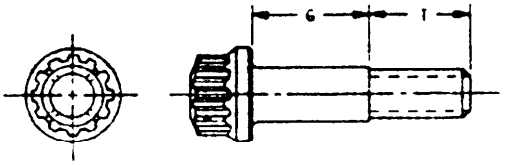


TABLE I. Material and dash numbers.

Material		Alloy steel		
Protective finish		Cadmium plate		
Tensile strength (psi) min.		180,000	220,000	260,000
Document number		MS21134	MS21297	MS21296
Thread designation (UNJF-3A)	T ref	Dash number		
.190-32	.378	-03	--	--
	.408	--	-03	--
	.438	--	--	-03
.250-28	.455	-04	--	--
	.495	--	-04	--
	.520	--	--	-04
.3125-24	.541	-05	--	--
	.589	--	-05	--
	.634	--	--	-05
.375-24	.604	-06	--	--
	.659	--	-06	--
	.719	--	--	-06
.4375-20	.701	-07	--	--
	.763	--	-07	--
	.833	--	--	-07
.500-20	.763	-08	--	--
	.838	--	-08	--
	.913	--	--	-08
.625-18	.910	-10	--	--
	1.005	--	-10	--
	1.095	--	--	-10
.750-16	1.063	-12	--	--
	1.173	--	-12	--
	1.293	--	--	-12
.875-14	1.223	-14	--	--
	1.348	--	-14	--
	1.488	--	--	-14
1.000-12	1.396	-16	--	--
	1.546	--	-16	--
	1.696	--	--	-16
1.250-12	1.646	-20	--	
	1.836	--	-20	
1.500-12	1.896	-24	--	
	2.116	--	-24	

TABLE II. Grip dash numbers.

Document no.	MS21134	MS21297	MS21296
Thread size	Grip dash number range 1/		
.190	003 thru 096	003 thru 096	002 thru 064
.250	003 thru 096	003 thru 096	002 thru 096
.3125	003 thru 096	003 thru 096	002 thru 096
.375	003 thru 096	002 thru 096	002 thru 096
.4375	003 thru 096	003 thru 096	005 thru 096
.500	003 thru 096	003 thru 096	006 thru 096
.625	005 thru 112	003 thru 112	008 thru 112
.750	005 thru 112	003 thru 112	010 thru 112
.875	007 thru 112	003 thru 112	012 thru 112
1.000	007 thru 112	003 thru 112	014 thru 112
1.250	010 thru 128	003 thru 112	--
1.500	010 thru 128	003 thru 112	--

1/ Grip dash number equals "G" dimension times 16
Increments of one (-002 thru -008), two (-010 thru -016), and four (-020 thru -128).

SECTION 1001
BOLTS, SHOULDER
APPLICABLE DOCUMENT: NAS1297

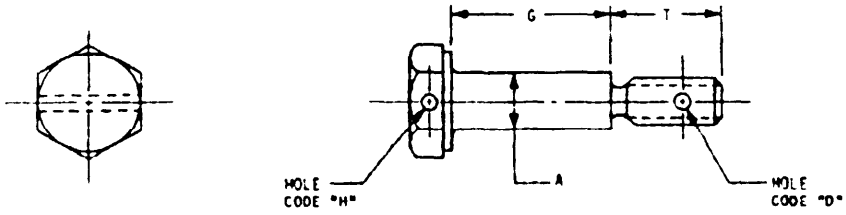


TABLE I. Material.

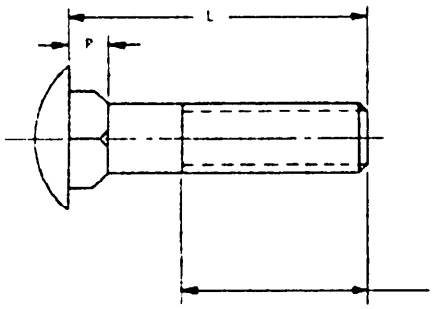
Material	Protective finish	Tensile strength (psi) min
Alloy steel	Cadmium plate	125,000

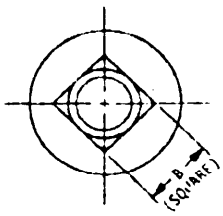
TABLE II. NAS1297 dash numbers. 1/

Thread designation (UNJF-3A)	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20	.625-18
A max	.249	.312	.374	.437	.499	.624	.749
T ref	.362	.453	.498	.607	.629	.770	.941
First dash number	-3	-4	-5	-6	-7	-8	-10
G	Second dash number						
.072	-1	--	--	--	--		
.135	-2	-2	-2	--	--		
.198	-3	-3	-3	-3	-3		
.260	-4	-4	-4	-4	-4	-4	-4
.322	-5	-5	-5	-5	-5	-5	-5
.385	-6	-6	-6	-6	-6	-6	-6
.448	-7	-7	-7	-7	-7	-7	-7
.572	-9	-9	-9	-9	-9	-9	-9
.698	-11	-11	-11	-11	-11	-11	-11
.922		-13	-13	-13	-13	-13	-13
.948		--	-15	-15	-15	-15	-15
1.260		--	--	--	-20	-20	-20
1.510		--	--	--	--	-24	-24

1/ For fasteners .138-32 (UNJF-3A) see section 2203.

SECTION 1101
BOLTS, SQUARE NECK
APPLICABLE DOCUMENT: MS35751





MINIMUM THREAD LENGTH IS TWICE THE NOMINAL SIZE PLUS 0.25 INCH FOR BOLT LENGTHS OF 6.00 INCH AND SHORTER, AND TWICE THE NOMINAL SIZE PLUS 0.50 INCH FOR LONGER LENGTHS. BOLTS TOO SHORT TO APPLY THIS FORMULA ARE THREADED AS CLOSE TO THE NECK AS PRACTICABLE.

TABLE I. Material and part numbers.

Material	Carbon steel						
Protective finish	Cadmium plate or zinc coat						
Tensile strength (psi) min.	60,000						
Thread size	.190	.250	.3125	.375	.500	.625	.750
Threads per inch (UNC-2A)	24	20	18	16	13	11	10
B max	.199	.260	.324	.388	.515	.642	.768
P max	.125	.156	.187	.219	.281	.344	.406
L	MS35751 + dash number						
.75	-1	-15	-40	-68	--		
1.00	-2	-16	-41	-69	-123		
1.25	-3	-17	-42	-70	-124		
1.50	-4	-18	-43	-71	-125	-152	--
1.75	-5	-19	-44	-72	-126	-153	--
2.00	-6	-20	-45	-73	-127	-154	-181
2.25	-7	-21	-46	-74	-128	--	--
2.50	-8	-22	-47	-75	-129	-156	-183
2.75	-9	-23	-48	-76	-130	-157	--
3.00	-10	-24	-49	-77	-131	-158	-185
3.25	-11	-25	-50	-78	-132	-159	--
3.50	-12	-26	-51	-79	-133	-160	-187
3.75	-13	-27	-52	-80	-134	--	--
4.00	-14	-28	-53	-81	-135	-162	-189
4.50	--	-29	-54	-82	-136	-163	-190
5.00		-30	-55	-83	-137	-164	-191
6.00		-32	-57	-85	-139	-166	-193
7.00		-34	-59	-87	-141	-168	-195
8.00		-36	-61	-89	-143	-170	-197
9.00		--	-63	-91	-145	-172	-199
10.00		--	-65	-93	-147	-174	-201
11.00				-94	-148	-175	
12.00				-95	-149	-176	

SECTION 1201
BOLTS, TEE HEAD
APPLICABLE DOCUMENT: NAS28

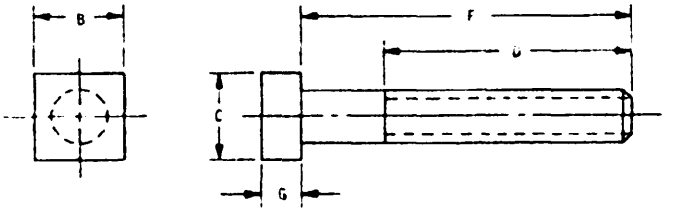


TABLE I. Material and part numbers.

Material	Steel					
Protective finish	Cadmium plate or zinc coat					
Tensile strength (psi) min	125,000					
Thread designation (UNJF-3A)	B	C	D	F	G	NAS28 + dash no.
.190-32	.31	.25	2.25	3.25	.13	-3
.250-28	.43	.38	2.50	3.50	.16	-4
.3125-24	.56	.44	2.75	3.75	.19	-5
.375-24	.56	.50	3.00	4.00	.22	-6
.4375-20	.75	.68	3.25	4.25	.25	-7
.500-20	.94	.81	3.50	4.50	.28	-8
.625-18	1.00	1.00	4.00	5.00	.34	-10

SECTION 1202
BOLTS, TEE HEAD, CHAMFERED
APPLICABLE DOCUMENTS: MS9397, 9398, 9399, 9400
MS9402, 9432, 9433, 9434, 9435, 9437

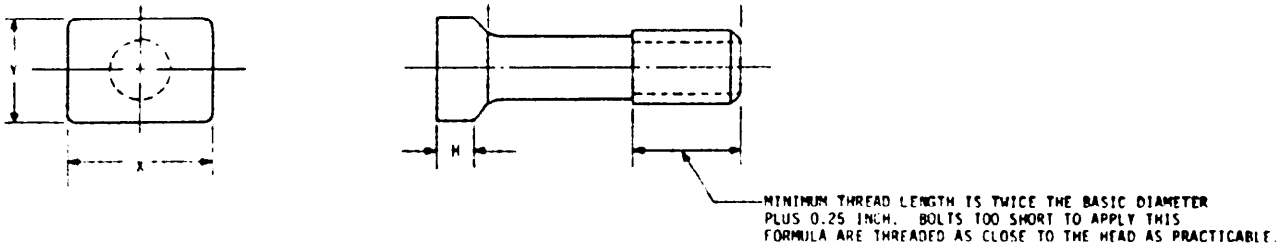
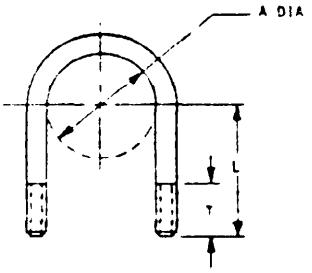


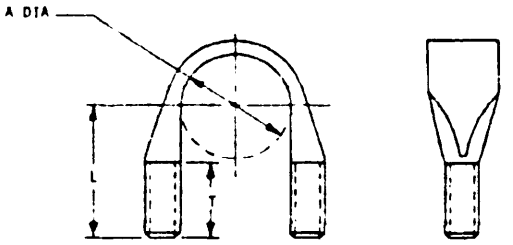
TABLE I. Materials and part numbers.

Material	Steel	CRES	Steel	CRES	Steel	CRES	Steel	CRES	Steel	CRES
Protective finish	Cadmium plate	--	Cadmium plate	--	Cadmium plate	--	Cadmium plate	--	Cadmium plate	--
Thread designation (UNJF-3A)	.190-32		.250-28		.3125-24		.375-24		.500-20	
X max	.440		.500		.570		.660		.860	
Y max	.320		.380		.440		.500		.640	
H nom	.125		.156		.188		.219		.281	
L	MS9397 + dash no.	MS9432 + dash no.	MS9398 + dash no.	MS9433 + dash no.	MS9399 + dash no.	MS9434 + dash no.	MS9400 + dash no.	MS9435 + dash no.	MS9402 + dash no.	MS9437 + dash no.
.375	-04		--		--					
.438	-05		-05		--					
.500	-06		-06		-04					
.625	-08		-08		-06		--		--	
.750	-10		-10		-08		-06		--	
.875	-12		-12		-10		-08		-05	
1.000	-14		-14		-12		-10		-07	
1.250	-18		-18		-16		-14		-11	
1.500	-22		-22		-20		-16		-15	
1.750	-26		-26		-24		-22		-19	
2.000	-28		-28		-26		-24		-21	
2.250	-30		-30		-28		-26		-23	
2.500	-32		-32		-30		-28		-25	
2.750	-34		-34		-32		-30		-27	
3.000	-36		-36		-34		-32		-29	
3.250			-38		-36		-34		-31	
3.500			-40		-38		-36		-33	
3.750			-42		-40		-38		-35	
4.000			-44		-42		-40		-37	
4.250			-46		-44		-42		-39	
4.500			-48		-46		-44		-41	
4.750			-50		-48		-46		-43	
5.000			-52		-50		-48		-45	
5.250			-54		-52		-50		-47	
5.500			-56		-54		-52		-49	
5.750			--		-56		-54		-51	
6.000			--		-58		-56		-53	

SECTION 1301
BOLTS, U
APPLICABLE DOCUMENTS: NAS3103-3110, 3303-3305



NAS3103-3110



NAS3303-3305

TABLE I. Materials.

Material	Code	Protective finish	Tensile strength (psi) min
Carbon steel	-	Cadmium plate	55,000
CRES	C	Passivate	--

TABLE II. NAS3103 - 3110 dash numbers.

Thread designation (UNF-2A)	.190-32	.250-28	.3125-24	.375-24	.500-20	.625-18
T min.	.500	.625	.750		1.250	
Basic part no.	NAS					
	3103	3104	3105	3106	3108	3110
First dash no. 1/	Second dash no. range 2/					
-4	-6 thru -24		--			
-5	-8 thru -24		--			
-6	-8 thru -24		-10 thru -32			
-7	-8 thru -24		-10 thru -32		--	
-8	-8 thru -24		-10 thru -32		-14 thru -40	
-10	-10 thru -28		-12 thru -36		-16 thru -40	
-12	-10 thru -32		-12 thru -40		-16 thru -44	
-14	-12 thru -32		-14 thru -40		-18 thru -44	
-16	-12 thru -32		-14 thru -40		-18 thru -48	
-18	-14 thru -32		-16 thru -40		-20 thru -48	
-20	-14 thru -32		-16 thru -40		-20 thru -48	
-22	-16 thru -32		-18 thru -40		-22 thru -48	
-24	-16 thru -32		-18 thru -40		-22 thru -48	
-28	--		-20 thru -40		-24 thru -48	
-32	--		-22 thru -40		-28 thru -48	
-36					-28 thru -48	
-40					-32 thru -48	
-44					-32 thru -48	
-48					-36 thru -48	

TABLE III. NAS3303 - 3305 dash numbers.

Thread designation (UNF-3A)	.190-32	.250-28	.3125-24
T min	.500		.750
Basic part no.	NAS		
	3303	3304	3305
First dash no. 1/	Second dash no. range 2/		
-4	-6 thru -24		--
-5	-8 thru -24		--
-6	-8 thru -24		-10 thru -32
-7	-8 thru -24		-10 thru -32
-8	-8 thru -24		-10 thru -32
-10	-10 thru -28		-12 thru -36
-12	-10 thru -32		-12 thru -40
-14	-12 thru -32		-14 thru -40
-16	-12 thru -32		-14 thru -40
-18	-14 thru -32		-16 thru -40
-20	-14 thru -32		-16 thru -40
-22	-16 thru -32		-18 thru -40
-24	-16 thru -32		-18 thru -40
-28	--		-20 thru -40
-32	--		-22 thru -40

1/ First dash number equals "A" dimension times 8.

2/ Second dash number equals "L" dimension times 8.
Increments of two (-6 thru -24) and four (-28 thru -40).

SECTION 1401
SCREWS, CAP, HEXAGON HEAD, DRILLED HEAD, ONE HOLE
APPLICABLE DOCUMENTS: MS18153, 18154, 51099, 51100

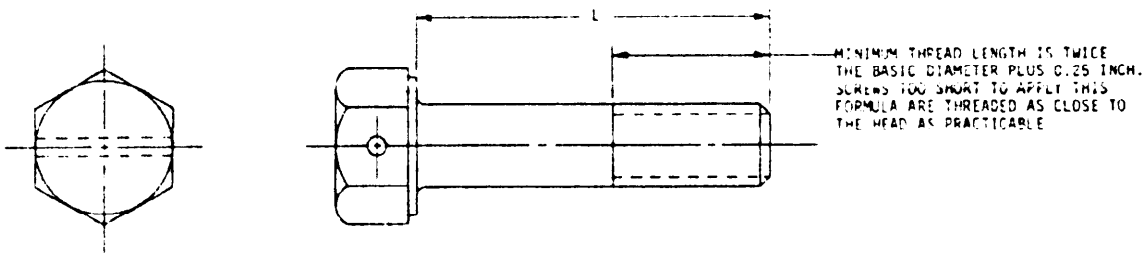


TABLE I. Materials.

Material	Protective finish	Tensile strength (psi) min	Applicable documents
Alloy steel	Cadmium plate	160,000	MS18153, 18154 1/
CRES	Passivate	70,000	MS51099, 51100

1/ For self-locking on fasteners on MS18153, 18154 see section 801.

TABLE II. MS18153, 18154, 51099, 51100 dash numbers.

Nominal size	.250	.3125	.375	.4375	.500	.625	.750	.875	1.000
Threads per inch (UNC-2A) MS18154, 51099	20	18	16	14	13	11	10	9	8
Threads per inch (UNF-2A) MS18153, 51100	28	24	24	20	20	18	16	14	12
L	Dash number								
.375	-3	-27	--						
.438	-2	-28	--						
.500	-3	-29	-55						
.625	-5	-31	-57	--	--	--			
.750	-6	-32	-58	-84	-110	-133			
.875	-7	-33	-59	-85	-111	-134			
1.000	-8	-34	-60	-86	-112	-135	-157	--	--
1.250	-9	-35	-61	-87	-113	-136	-158	-182	-206
1.500	-10	-36	-62	-88	-114	-137	-159	-183	-207
1.750	-11	-37	-63	-89	-115	-138	-160	-184	-208
2.000	-12	-38	-64	-90	-116	-139	-161	-185	-209
2.250	-13	-39	-65	-91	-117	-140	-162	-186	-210
2.500	-14	-40	-66	-92	-118	-141	-163	-187	-211
2.750	-15	-41	-67	-93	-119	-142	-164	-188	-212
3.000	-16	-42	-68	-94	-120	-143	-165	-189	-213
3.250	-17	-43	-69	-95	-121	-144	-166	-190	-214
3.500	-18	-44	-70	-96	-122	-145	-167	-191	-215
3.750	-19	-45	-71	-97	-123	-146	-168	-192	-216
4.000	-20	-46	-72	-98	-124	-147	-169	-193	-217
4.250	-21	-47	-73	-99	-125	-148	-170	-194	-218
4.500	-22	-48	-74	-100	-126	-149	-171	-195	-219
4.750	-23	-49	-75	-101	-127	-150	-172	-196	-220
5.000	-24	-50	-76	-102	-128	-151	-173	-197	-221
5.500	--	--	--	--	-129	-152	-174	-198	-222
6.000	--	--	--	--	-130	-153	-175	-199	-223

SECTION 1402
SCREWS, CAP, HEXAGON HEAD, DRILLED SHANK
APPLICABLE DOCUMENTS: MS51105, 51106, 51109, 51110

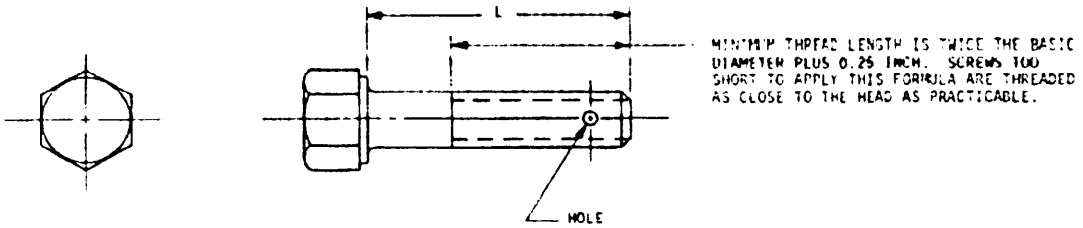


TABLE I. MS51105, 51106, 51109, 51110 part numbers.

Thread size	.250		.3125		.375		.4375	
L	1/ or 2/	3/ or 4/	1/ or 2/	3/ or 4/	1/ or 2/	3/ or 4/	1/ or 2/	3/ or 4/
.375	-301	-1	-327	-27	--	--		
.438	-302	-2	-328	-28	--	--		
.500	-303	-3	-329	-29	-355	-55		
.625	-305	-5	-331	-31	-357	-57	--	--
.750	-306	-6	-332	-32	-358	-58	-384	-84
.875	-307	-7	-333	-33	-359	-59	-385	-85
1.000	-308	-8	-334	-34	-360	-60	-386	-86
1.250	-309	-9	-335	-35	-361	-61	-387	-87
1.500	-310	-10	-336	-36	-362	-62	-388	-88
1.750	-311	-11	-337	-37	-363	-63	-389	-89
2.000	-312	-12	-338	-38	-364	-64	-390	-90
2.250	-313	-13	-339	-39	-365	-65	-391	-91
2.500	-314	-14	-340	-40	-366	-66	-392	-92
2.750	-315	-15	-341	-41	-367	-67	-393	-93
3.000	-316	-16	-342	-42	-368	-68	-394	-94
3.250	-317	-17	-343	-43	-369	-69	-395	-95
3.500	-318	-18	-344	-44	-370	-70	-396	-96
3.750	-319	-19	-345	-45	-371	-71	-397	-97
4.000	-320	-20	-346	-46	-372	-72	-398	-98
4.250	-321	-21	-347	-47	-373	-73	-399	-99
4.500	-322	-22	-348	-48	-374	-74	-400	-100
4.750	-323	-23	-349	-49	-375	-75	-401	-101
5.000	-324	-24	-350	-50	-376	-76	-402	-102
5.500	--	--	--	--	--	--	--	--
6.000	--	--	--	--	--	--	--	--

1/, 2/, 3/ and 4/ see table II.

TABLE I. MS51105, 51106, 51109, 51110 part numbers. - Continued

Thread size	.500		.625		.750		.875		1.000	
L	1/ or 2/	3/ or 4/	1/ or 2/	3/ or 4/	1/ or 2/	3/ or 4/	1/ or 2/	3/ or 4/	1/ or 2/	3/ or 4/
.375										
.438										
.500										
.625	--	--	--	--						
.750	-410	-110	-433	-133						
.875	-411	-111	-434	-134						
1.000	-412	-112	-435	-135	-457	-157	--	--	--	--
1.250	-413	-113	-436	-136	-458	-158	-482	-182	-506	-206
1.500	-414	-114	-437	-137	-459	-159	-483	-183	-507	-207
1.750	-415	-115	-438	-138	-460	-160	-484	-184	-508	-208
2.000	-416	-116	-439	-139	-461	-161	-485	-185	-509	-209
2.250	-417	-117	-440	-140	-462	-162	-486	-186	-510	-210
2.500	-418	-118	-441	-141	-463	-163	-487	-187	-511	-211
2.750	-419	-119	-442	-142	-464	-164	-488	-188	-512	-212
3.000	-420	-120	-443	-143	-465	-165	-489	-189	-513	-213
3.250	-421	-121	-444	-144	-466	-166	-490	-190	-514	-214
3.500	-422	-122	-445	-145	-467	-167	-491	-191	-515	-215
3.750	-423	-123	-446	-146	-468	-168	-492	-192	-516	-216
4.000	-424	-124	-447	-147	-469	-169	-493	-193	-517	-217
4.250	-425	-125	-448	-148	-470	-170	-494	-194	-518	-218
4.500	-426	-126	-449	-149	-471	-171	-495	-195	-519	-219
4.750	-427	-127	-450	-150	-472	-172	-496	-196	-520	-220
5.000	-428	-128	-451	-151	-473	-173	-497	-197	-521	-221
5.500	-429	-129	-452	-152	-474	-174	-498	-198	-522	-222
6.000	-430	-130	-453	-153	-475	-175	-499	-199	-523	-223

TABLE II. Footnotes to table I.

Foot notes	Part numbers	Thread series	Material	Protective finish	Tensile strength (psi) min
1/	MS51105 + dash no.	UNC-2A	Carbon steel	Cadmium plate	120,000
2/	MS51106 + dash no.	UNF-2A			
3/	MS51109 + dash no.	UNC-2A	CRES	Passivate	70,000
4/	MS51110 + dash no.	UNF-2A			

SECTION 1403
SCREWS, CAP, HEXAGON HEAD, UNDRILLED
APPLICABLE DOCUMENTS: MS35307, 35308, 35309, 35310, 90727, 90728

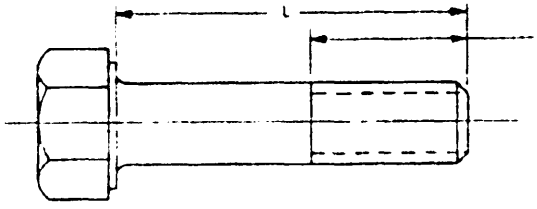


TABLE I. Materials.

Material	Protective finish	Tensile strength (psi) min	Applicable documents
CRES	Passivate	70,000	MS35307, 35308
Naval brass	None	60,000	MS35309, 35310
Alloy steel	Cadmium plate	150,000 thread sizes up to 1.5 120,000 thread sizes over 1.5	1/ MS90727, 90728

1/ For self-locking fasteners on MS90727, 90728 see section 802.

TABLE II. MS35307-35310 dash numbers.

Thread size	.250	.3125	.375	.4375	.500	.625	.750	.875	1.000	1.250
Threads per inch UNC-2A MS35307, MS35309	20	18	16	14 1/	13	11	10	9	8	7
Threads per inch UNF-2A MS35308, MS35310	28	24 2/	24	20 1/	20	18	16	14 2/	12	12
L	Dash numbers									
.375	-301	-327	-353	--	--					
.438 1/	-302	-328	-354	-379	--					
.500	-303	-329	-355	-380	-404					
.625	-305	-331	-357	-382	-406	-455		--		
.750	-306	-332	-358	-383	-407	-456	-479	--		
.875	-307	-333	-359	-384	-408	-457	-480	-502		
1.000	-308	-334	-360	-385	-409	-458	-481	-503	-524	--
1.250	-310	-336	-362	-387	-411	-460	-483	-505	-526	-565
1.500	-312	-338	-364	-389	-413	-462	-485	-507	-528	-567
1.750	-313	-339	-365	-390	-414	-463	-486	-508	-529	-568
2.000	-314	-340	-366	-391	-415	-464	-487	-509	-530	-569
2.250	-315	-341	-367	-392	-416	-465	-488	-510	-531	-570
2.500	-316	-342	-368	-393	-417	-466	-489	-511	-532	-571
2.750	-317	-343	-369	-394	-418	-467	-490	-512	-533	-572
3.000	-318	-344	-370	-395	-419	-468	-491	-513	-534	-573
3.250 1/	-319	-345	-371	-396	-420	-469	-492	-514	-535	-574
3.500	-320	-346	-372	-397	-421	-470	-493	-515	-536	-575
3.750 1/	-321	-347	-373	-398	-422	-471	-494	-516	-537	-576
4.000	-322	-348	-374	-399	-423	-472	-495	-517	-538	-577
4.250 1/	-323	-349	-375	-400	-424	-473	-496	-518	-539	-578
4.500	-324	-350	-376	-401	-425	-474	-497	-519	-540	-579
4.750 1/	-325	-351	-377	-402	-426	-475	-498	-520	-541	-580
5.000	-326	-352	-378	-403	-427	-476	-499	-521	-542	-581
5.500	--	--	--	--	-428	-477	-500	-522	-543	-582
6.000	--	--	--	--	-429	-478	-501	-523	-544	-583

1/ For MS35307, 35308 dash numbers only.
2/ For MS35308 dash numbers only.

TABLE III. MS90727, 90728 dash numbers.

Thread size	.250	.3125	.375	.500	.625	.750	1.000	1.250	1.500	1.750	2.000	2.250	2.500
Threads per inch (UNF-2A) MS90727	28	24	24	20	18	16	12	12	12	--	--	--	--
Threads per inch (UNC-2A) MS90728	20	18	16	13	11	10	8	7	6	5	4.5	4.5	4
L	Dash number												
.375	- 1	-27	-53	--									
.438	- 2	-28	-54	--									
.500	- 3	-29	-55	-104									
.625	- 5	-31	-57	-106	-155	--							
.750	- 6	-32	-58	-107	-156	-179							
.875	- 7	-33	-59	-108	-157	-180							
1.000	- 8	-34	-60	-109	-158	-181	-224	--	--				
1.250	-10	-36	-62	-111	-160	-183	-226	-265	--				
1.500	-12	-38	-64	-113	-162	-185	-228	-267	-302				
1.750	-13	-39	-65	-114	-163	-186	-229	-268	-303	-319	--		
2.000	-14	-40	-66	-115	-164	-187	-230	-269	-304	-320	--		
2.250	-15	-41	-67	-116	-165	-188	-231	-270	-305	-321	-335		
2.500	-16	-42	-68	-117	-166	-189	-232	-271	-306	-322	-336	--	--
2.750	-17	-43	-69	-118	-167	-190	-233	-272	-307	-323	-337	-349	-361
3.000	-18	-44	-70	-119	-168	-191	-234	-273	-308	-324	-338	350	-362
3.250	-19	-45	-71	-120	-169	-192	-235	-274	-309	-325	-339	-351	-363
3.500	-20	-46	-72	-121	-170	-193	-236	-275	-310	-326	-340	-352	-364
3.750	-21	-47	-73	-122	-171	-194	-237	-276	-311	-327	-341	-353	-365
4.000	-22	-48	-74	-123	-172	-195	-238	-277	-312	-328	-342	-354	-366
4.250	-23	-49	-75	-124	-173	-196	-239	-278	-313	-329	-343	-355	-367
4.500	-24	-50	-76	-125	-174	-197	-240	-279	-314	-330	-344	-356	-368
4.750	-25	-51	-77	-126	-175	-198	-241	-280	-315	-331	-345	-357	-369
5.000	-26	-52	-78	-127	-176	-199	-242	-281	-316	-332	-346	-358	-370
5.500	--	--	--	-128	-177	-200	-243	-282	-317	-333	-347	-359	-371
6.000	--	--	--	-129	-178	-201	-244	-283	-318	-334	-348	-360	-372

SECTION 1501
SCREWS, CAP, SOCKET HEAD, DRILLED AND UNDRILLED
APPLICABLE DOCUMENTS: NAS1351, 1352

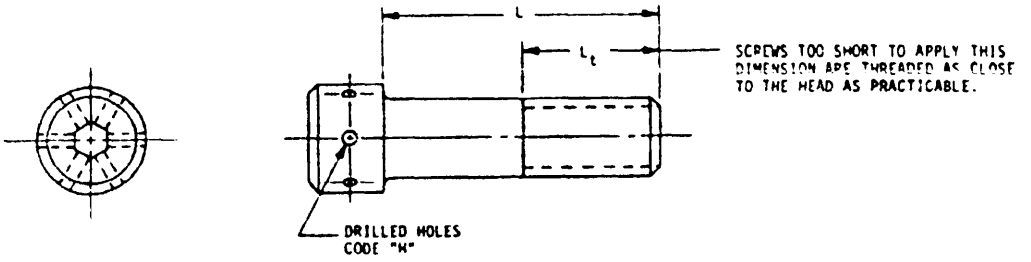


TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min
Alloy steel	--	Cadmium plate	P	160,000
		Black oxide	--	
CRES	C	Cadmium plate	P	60,000
		Passivate	--	
Heat resistant steel	N	Silver plate	S	160,000
		Passivate	--	

TABLE II. NAS1351, 1352 dash numbers. 1/

Thread size. . .	.060	.086	.112	.138	.164	.190	.250	.3125	.375	.4375	.500	.625	.750	.875	1.000	1.250	1.500
Threads per inch NAS1351 (UNRF-3A)	80	64	48	40	36	32	28	24	24	20	20	18	16	14	12	--	--
Threads per inch NAS1352 (UNRC-3A)	--	56	40	32	32	24	20	18	16	14	13	11	10	9	8	7	6
. . . . .	.500	.625	.750	.750	.875	.875	1.000	1.125	1.250	1.375	1.500	1.750	2.000	2.250	NAS1351 2.250	--	--
															NAS1352 2.500	3.125	3.750
First dash no. . .	-00	-02	-04	-06	-08	-3	-4	-5	-6	-7	-8	-10	-12	-14	-16	-20	-24
L	Second dash number																
.125	-2	--	--	--	--												
.188	-3	-3	--	--	--												
.250	-4	-4	-4	-4	-4												
.375	-6	-6	-6	-6	-6	-6	-6	-6	--								
.500	--	-8	-8	-8	-8	-8	-8	-8	-8								
.625	--	--	-10	-10	-10	-10	-10	-10	-10								
.750			-12	-12	-12	-12	-12	-12	-12	-12	-12	--					
.875			--	-14	-14	-14	-14	-14	-14	-14	-14	--					
1.000			--	-16	-16	-16	-16	-16	-16	-16	-16	-16					
1.250					-20	-20	-20	-20	-20	-20	-20	-20	--				
1.500					-24	-24	-24	-24	-24	-24	-24	-24	-24				
1.750					--	-28	-28	-28	-28	-28	-28	-28	-28				
2.000						-32	-32	-32	-32	-32	-32	-32	-32	-32	--		
2.250						--	-36	-36	-36	-36	-36	-36	-36	-36	--		
2.500						--	--	-40	-40	-40	-40	-40	-40	-40	-40		
2.750									-44	-44	-44	-44	-44	-44	-44	--	
3.000									-48	-48	-48	-48	-48	-48	-48	-48	
3.250									--	--	--	--	-52	-52	-52	-52	
3.500													-56	-56	-56	-56	-56
4.000													--	-64	-64	-64	-64
4.500													--	-72	-72	-72	-72
5.000															-80	-80	-80
5.500															--	-88	-88
6.000															--	-96	-96

1/ For self-locking fasteners on NAS1351, 1352 see section 2101.

SECTION 1502
SCREWS, CAP, SOCKET HEAD, UNDRILLED, SHOULDER
APPLICABLE DOCUMENT: MS51975

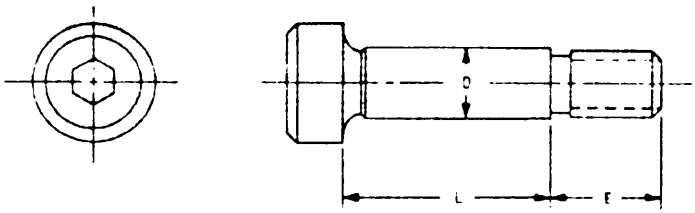


TABLE I. Material.

Material	Protective finish	Tensile strength (psi) min
Alloy steel	Cadmium plate	140,000

TABLE II. Part numbers.

Thread designation (UNC-3A)	.190-24	.250-20	.3125-18	.375-16	.500-13	.625-11
E min	.355	.418	.480	.595	.720	.845
D max	.248	.3105	.373	.498	.623	.743
L	51975 + dash number					
.375	-1	--	--			
.500	-2	-8	-16			
.625	-3	-9	-17			
.750	-4	-10	-18	-28	--	
1.000	-5	-11	-19	-29	--	
1.250	-6	-12	-20	-30	-43	
1.500	-7	-13	-21	-31	-44	-53
1.750	--	-14	-22	-32	-45	-54
2.000	--	-15	-23	-33	-46	-55
2.250			-24	-34	-47	-56
2.500			-25	-35	-48	-57
2.750			-26	-36	-49	-58
3.000			-27	-37	-50	-59
3.750			--	--	-80	--

SECTION 1601
SCREWS, CLOSE TOLERANCE, HEXALOBE HEAD
APPLICABLE DOCUMENTS: NAS1982-1990

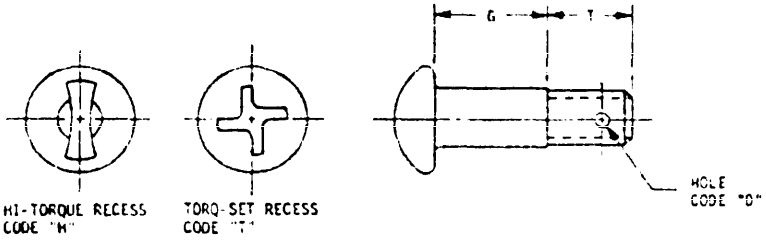


TABLE I. Materials.

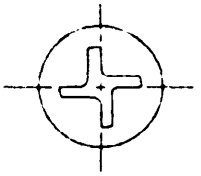
Material	Code	Protective finish	Code	Tensile strength (psi) min
Alloy steel	-	Cadmium plate	--	180,000
Titanium alloy	T	None	--	
		Aluminum coat	P	
CRES	C	Passivate	--	
		Aluminum coat	P	

TABLE II. Dash numbers.

Thread designation (-3A)	T ref	Basic part number	Grip dash number 1/	
			Range	Increments
.164-32 UNJC	.338	NAS1982		
.190-32 UNJF	.338	NAS1983		
.250-28 UNJF	.425	NAS1984	-1 thru -8	One
.3125-24 UNJF	.469	NAS1985		
.375-24 UNJF	.578	NAS1986	-10 thru -16	Two
.4375-20 UNJF	.594	NAS1987	-20 thru -96	Four
.500-20 UNJF	.735	NAS1988		
.625-18 UNJF	.902	NAS1990		

1/ Grip dash number equals "G" dimension times 16

SECTION 1602
SCREWS, CLOSE TOLERANCE, FILLISTER HEAD
APPLICABLE DOCUMENTS NAS1121-1128, 1181-1188



TORQ-SET RECESS

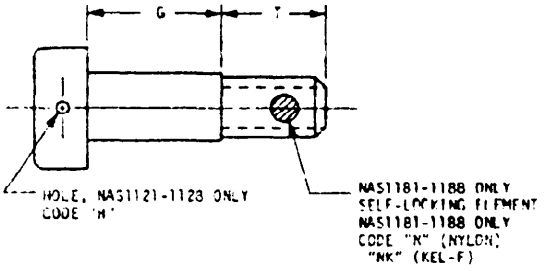


TABLE I. Materials.

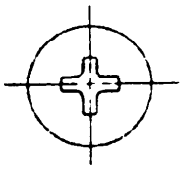
Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Alloy steel	-	Cadmium plate	--	160,000	NAS1121-1128, NAS1181-1188
CRES	E	Passivate	--		
		Cadmium plate	P		
Titanium	V	None	--		NAS1121-1128
		Cadmium plate	P		

TABLE II. Dash numbers.

Thread designation (-3A)	T ref	Basic part no.	Grip dash number 1/	
			Range	Increments
.138-32 UNJC	.276 .338	NAS1121 NAS1181	-1 thru -8 -10 thru -16 -20 thru -96	One Two Four
.164-32 UNJC	.276 .338	NAS1122 NAS1182		
.190-32 UNJF	.276 .338	NAS1123 NAS1183		
.250-28 UNJF	.316 .425	NAS1124 NAS1184		
.3125-24 UNJF	.375 .469	NAS1125 NAS1185		
.375-24 UNJF	.391 .578	NAS1126 NAS1186		
.4375-20 UNJF	.453 .594	NAS1127 NAS1187		
.500-20 UNJF	.453 .735	NAS1128 NAS1188		

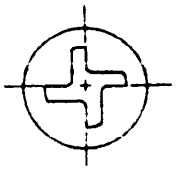
1/ Grip dash number equals "G" dimension times 16

SECTION 1603
SCREWS, CLOSE TOLERANCE, FLAT HEAD
APPLICABLE DOCUMENTS: NAS333-340, 583-590, 1151-1158
NAS1202-1210, 1580, 1581, 1972-1980, 1992-2000, 2303-2810



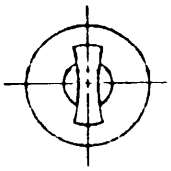
CROSS-RECESS
NAS1202-1210
NO CODE

NAS333-340
CODE "P"



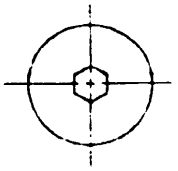
TORQ-SET RECESS
NAS1151-1158, 2303-2810
NO CODE

NAS1580, 1581, 1972-1980
1992-2000
CODE "T"

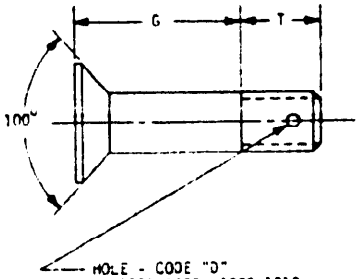


HI-TORQUE RECESS
NAS583-590
NO CODE

NAS1580, 1581, 1972, 1980
1992-2000
CODE "H"



HEXAGON SOCKET
NAS333-340 ONLY
NO CODE



HOLE - CODE "D"
NAS1151-1158, 1202-1210
NAS1972-1980, 1992-2000

HOLE - NO CODE
NAS333-340

NO HOLE - NO CODE
NAS583-590, 1151-1158, 1202-1210
NAS1580, 1581, 1972-1980, 2303-2810

NO HOLE - CODE "A"
NAS333-340

TABLE I. Materials

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Steel	-	Cadmium plate	C	160,000	NAS333-340
Alloy steel	-	Cadmium plate	--	160,000	NAS583-590, 1151-1158, 1202-1210
				180,000	NAS1972-1980, 1992-2000, 2803-2810
	A			160,000	NAS1580, 1581
CRES	E	Passivate Cadmium plate	-- P	160,000	NAS1151-1158
	C	Passivate Cadmium plate	-- P		NAS1580, 1581
		Passivate Aluminum coat	-- P	180,000	NAS1972-1980, 1992-2000
Titanium alloy	V	None	-	160,000	NAS1580, 1581
		None Cadmium plate	P		NAS1151-1158
		None Aluminum coat	- P	180,000	NAS1972-1980
	T	None Aluminum coat	-- P		NAS1992-2000

TABLE II. Dash no. for all documents except NAS999-045.

Thread size (.38)	.138-32	.164-32	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20	.625-18
Thread designation	UNJC	UNJC	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF	*
Basic part number	NAS1151	NAS1152	NAS1153	NAS1154	NAS1155	NAS1156	NAS1157	NAS1158	
T ref.	.276	.276	.276	.316	.375	.391	.453	.453	
Second dash no. range 1/	-1 thru-96	-2 thru-96	-2 thru-96	-2 thru-96	-3 thru-96	-4 thru-96	-4 thru-96	-5 thru-96	
Thread designation		UNJC	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF
Basic part number		NAS1992	NAS1993	NAS1994	NAS1995	NAS1996	NAS1997	NAS1998	NAS2000
T ref		.338	.338	.425	.469	.578	.594	.735	.902
Second dash no. range 1/		-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96
Thread designation		UNJC	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF
Basic part number		NAS1202	NAS1203	NAS1204	NAS1205	NAS1206	NAS1207	NAS1208	NAS1210
T ref		.276	.276	.316	.375	.391	.453	.453	.543
Second dash no. range 1/		-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-4 thru-96	-5 thru-96
Thread designation		UNJC	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF
Basic part number		NAS1972	NAS1973	NAS1974	NAS1975	NAS1976	NAS1977	NAS1978	NAS1980
T ref		.338	.338	.425	.469	.578	.594	.735	.902
Second dash no. range 1/		-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96	-1 thru-96
Thread designation			UNJF	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF
NAS1580 first dash no.			-3	-4	-5	-6	-7	-8	-10
T ref			.363	.403	.501	.594	.675	.768	.981
Second dash no. range 1/			-2 thru-96	-3 thru-96	-4 thru-96	-4 thru-96	-4 thru-96	-4 thru-96	-6 thru-96
Thread designation			UNJF	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF
NAS1581 first dash no.			-3	-4	-5	-6	-7B	-8	-10
T ref			.363	.403	.501	.594	.675	.768	.981
Second dash no. range 1/			-2 thru-96	-3 thru-96	-4 thru-96	-4 thru 96	-4 thru 96	-4 thru 96	-6 thru-96
Thread designation			UNJF	UNJF	UNJF	UNJF	UNJF	UNJF	UNJF
Basic part number			NAS583	NAS584	NAS585	NAS586	NAS587	NAS588	NAS590
T ref			.406	.469	.531	.641	.656	.781	.953
Second dash no. range 1/			-2 thru-96	-3 thru-96	-3 thru-96	-3 thru-96	-5 thru-96	-5 thru-96	-5 thru-96
Thread designation			UNF	UNF	UNF	UNF	UNF	UNF	UNF
Basic part number			NAS2803	NAS2804	NAS2805	NAS2806	NAS2807	NAS2808	NAS2810
T ref			.338	.456	.530	.577	.656	.703	.823
Second dash no. range 1/			-2 thru-96	-3 thru-96	-3 thru-96	-3 thru-96	-5 thru-96	-5 thru-96	-5 thru-96

1/ Second dash number equals "G" dimension times 16
Increments of one (-1 thru -8), two (-10 thru -16), four (-20 thru -96).

TABLE III. NAS333-340 dash numbers

Thread designation (UNF-3A)	.190-32	.250-28	.3125-24	[illegible]	[illegible]	[illegible]	[illegible]
Basic document	NAS333	NAS334	NAS335	NAS336	NAS337	NAS338	NAS340
T	.406	.469	.531	.641	.656	.781	.953
G	Dash number						
.125	-4	--	--	--			
.188	--	-5	-5	-6			
.250	-5	--	--	--			
.312	--	-6	-6	-7	-7	-10	-11
.375	-6	--	--	--	--	--	--
.438	--	-7	-7	-10	-10	-11	-12
.500	-7	--	--	--	--	--	--
.562	--	-10	-10	-11	-11	-12	-13
.688	--	-11	-11	-12	-12	-13	-14
.750	-11	--	--	--	--	--	--
.812	--	-12	-12	-13	-13	-14	-15
.938	--	-13	-13	-14	-14	-15	-16
1.000	-13	--	--	--	--	--	--
1.062	--	-14	-14	-15	-15	-16	-17
1.186	--	-15	-15	-16	-16	-17	-20
1.250	-15	--	--	--	--	--	--
1.438	--	-17	-17	-20	-20	-21	-22
1.500	-17	--	--	--	--	--	--
1.688	--	-21	-21	-22	-22	-23	-24
1.750	-21	--	--	--	--	--	--
1.938	--	-23	-23	-24	-24	-25	-26
2.000	-23	--	--	--	--	--	--
2.188	--	-25	-25	-26	-26	-27	-30
2.250	-25	--	--	--	--	--	--
2.438	--	-27	-27	-30	-30	-31	-32
2.500	-27	--	--	--	--	--	--
2.688	--	-31	-31	-32	-32	-33	-34
2.750	-31	--	--	--	--	--	--
2.938	--	-33	-33	-34	-34	-35	-36
3.000	-33	--	--	--	--	--	--
3.188	--	-35	-35	-36	-36	-37	-40
3.250	-35	--	--	--	--	--	--
3.438	--	-37	-37	-40	-40	-41	-42
3.500	-37	--	--	--	--	--	--
3.688	--	-41	-41	-42	-42	-43	-44
3.750	-41	--	--	--	--	--	--
3.938	--	-43	-43	-44	-44	-45	-46
4.000	-43	--	--	--	--	--	--
4.188	--	-45	-45	-46	-46	-47	-50
4.250	-45	--	--	--	--	--	--
4.438	--	-47	-47	-50	-50	-51	-52
4.500	-47	--	--	--	--	--	--
4.688	--	-51	-51	-52	-52	-53	-54
4.750	-51	--	--	--	--	--	--
4.938	--	-53	-53	-54	-54	-55	-56
5.000	-53	--	--	--	--	--	--
5.188	--	-55	-55	-56	-56	-57	-60
5.250	-55	--	--	--	--	--	--
5.438	--	-57	-57	-60	-60	-61	-62
5.500	-57	--	--	--	--	--	--
5.688	--	-61	-61	-62	-62	-63	-64
5.750	-61	--	--	--	--	--	--
5.938	--	-63	-63	-64	-64	-65	-66
6.000	-63	--	--	--	--	--	--
6.188	--	-65	-65	-66	-66	-67	-70
6.250	-65	--	--	--	--	--	--
6.438	--	-67	-67	-70	-70	-71	-72
6.500	-67	--	--	--	--	--	--
6.688	--	-71	-71	-72	-72	-73	-74
6.750	-71	--	--	--	--	--	--
6.938	--	-73	-73	-74	-74	-75	-76
7.000	-73	--	--	--	--	--	--
7.188	--	-75	-75	-76	-76	-77	-80
7.250	-75	--	--	--	--		
7.438	--	-77	-77	-80	-80		
7.500	-77	--	--	--	--		

SECTION 1604
SCREWS, CLOSE TOLERANCE, FLAT HEAD, SELF-LOCKING
APPLICABLE DOCUMENTS: NAS1161-1168, NAS1790

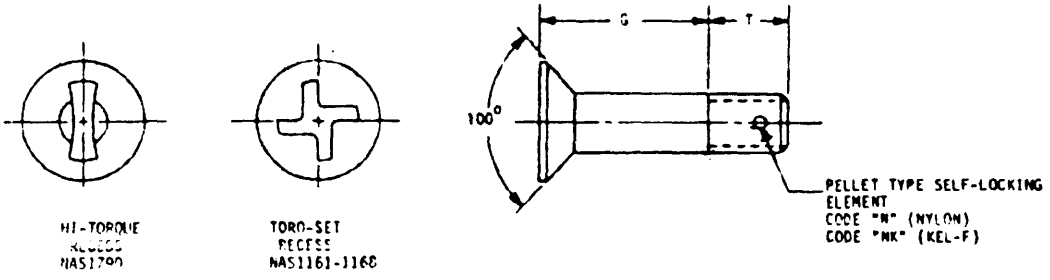


TABLE I. Materials

Material	Code	Protective finish	Code	Tensile strength (psi) min
Alloy steel. . .	-	Cadmium plate	--	160,000
CRES	E	Passivate	--	
		Cadmium plate	P	

TABLE II. NAS1161-1168 dash numbers.

Thread designation (-3A)	T ref	Basic part no.	Grip dash number 1/	
			Range	Increments
.138-32 UNJC	.338	NAS1161		
.164-32 UNJC	.338	NAS1162	-1 thru -8	One
.190-32 UNJF	.338	NAS1163		
			-10 thru -16	Two
.250-28 UNJF	.425	NAS1164		
.3125-24 UNJF	.469	NAS1165	-20 thru -96	Four
.375-24 UNJF	.578	NAS1166		
.4375-20 UNJF	.594	NAS1167		
.500-20 UNJF	.735	NAS1168		

1/ Grip dash number equals "G" dimension times 16

TABLE III. NAS1790 dash numbers.

Thread designation (-3A)	T ref	Dash no.	Grip dash number
.1900-32UNJF	.338	-3	1/
.2500-28UNJF	.425	-4	
.3125-24UNJF	.469	-5	
.3750-24UNJF	.578	-6	
.4375-20UNJF	.694	-7	
.5000-20UNJF	.735	-8	
.5625-18UNJF	.840	-9	
.6250-18UNJF	.902	-10	

1/ Second dash number indicates grip length in .0625 inch increments.

SECTION 1605
SCREWS, CLOSE TOLERANCE, PAN HEAD
APPLICABLE DOCUMENTS: NAS1131-1138, 1141-1148, 1171-1173, 1578

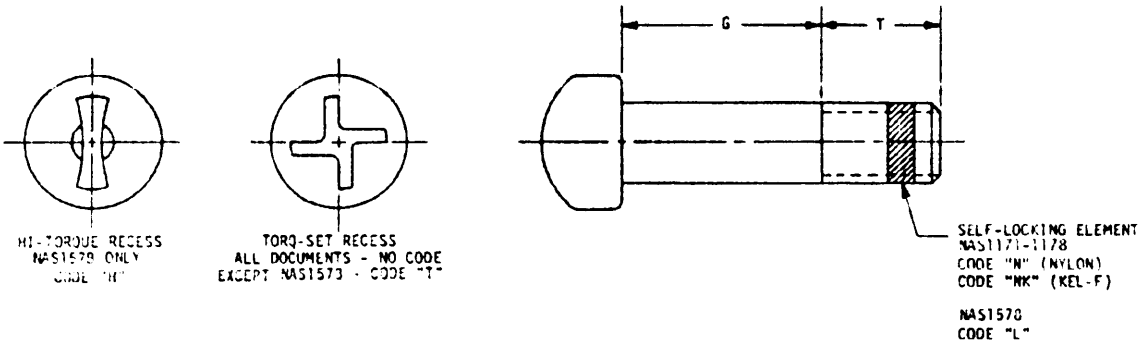


TABLE I. Materials

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Alloy steel	-	Cadmium plate	--	160,000	NAS1131-1138, 1141-1148, 1171-1178
	A				NAS1578
CRES	E	Passivate	--		NAS1131-1138, 1141-1148, 1171-1178
		Cadmium plate	P		
	C	Passivate	--		NAS1578
		Cadmium plate	P		
Titanium alloy	V	None	--		NAS1131-1138, 1141-1148, 1578
		Cadmium plate	P		NAS1131-1138, 1141-1148

TABLE II. NAS1132-1139, 1141-1148, 1171-1178 dash numbers.

Thread designation (-3A)	T ref	Basic Part No.	Grip dash no. 1/	
			Range	Increments
1380-32 UNJC	.276 .338	NAS1137,1141 NAS1171	-1 thru -8 -10 thru -16 -20 thru -96	One Two Four
.1640-32 UNJC	.276 .338	NAS1132,1142 NAS1172		
.1900-32 UNJF	.276 .338	NAS1133,1143 NAS1173		
.2500-28 UNJF	.316 .425	NAS1134,1144 NAS1174		
.3125-24 UNJF	.375 .469	NAS1135,1145 NAS1175		
.3750-24 UNJF	.391 .578	NAS1136,1146 NAS1176		
.4375-20 UNJF	.453 .594	NAS1137,1147 NAS1177		
.5000-20 UNJF	.453 .735	NAS1139,1148 NAS1178		

1/ Grip dash no. equals "G" dimension times 16

TABLE III. NAS1578 dash numbers.

Thread designation (UNJF-3A)	T ref	First dash No.	Grip dash number 1/
			Range
.190-32	.363	-3	-2 thru -96
.250-28	.403	-4	-3 thru -96
.3125-24	.501	-5	-4 thru -96
.375-24	.594	-6	-4 thru -96
.4375-20	.675	-7	-4 thru -96
.500-20	.768	-8	-4 thru -96

1/ Grip dash number equals "G" dimension times 16

Increments of one (-2 thru -8), two (-10 thru -16), and four (-20 thru -96).

SECTION 1801

SCREWS, EYE
APPLICABLE DOCUMENTS: MS35646

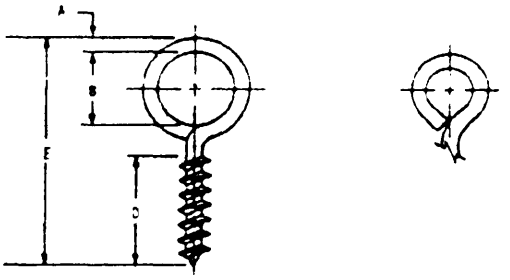


TABLE I. Materials.

Material	Protective finish
Carbon steel	Cadmium plate
Brass	Black chemical

TABLE II. Part numbers.

MS35646+ dash no.		A	B	D	E
Carbon steel	Brass				
Large eye, regular shank					
-501		.362	1.12	1.75	3.88
-503		.306	.81	1.19	2.94
-505		.262	.72	1.06	2.62
-507	-607	.225	.61	.88	2.25
-509	-609	.192	.53	.75	1.94
-511	-611	.162	.47	.62	1.62
-513	-613	.135	.41	.53	1.38
-515	-615	.105	.38	.44	1.19
-517	-617	.080	.34	.31	1.06
Small eye, regular shank					
-534	-634	.225	.30	.88	1.94
-536	-636	.192	.27	.75	1.62
-538	-638	.162	.23	.62	1.38
-540	-640	.135	.22	.53	1.19
-542	-642	.105	.19	.44	.94
-544	-644	.080	.16	.31	.81
-546	-646	.062	.14	.31	.69
Small eye, short shank					
-550	-650	.080	.16	.22	.69
-552	-652	.062	.14	.19	.50

SECTION 1901

SCREWS, INSTRUMENT
APPLICABLE DOCUMENTS: NAS721, 722, 723, 724

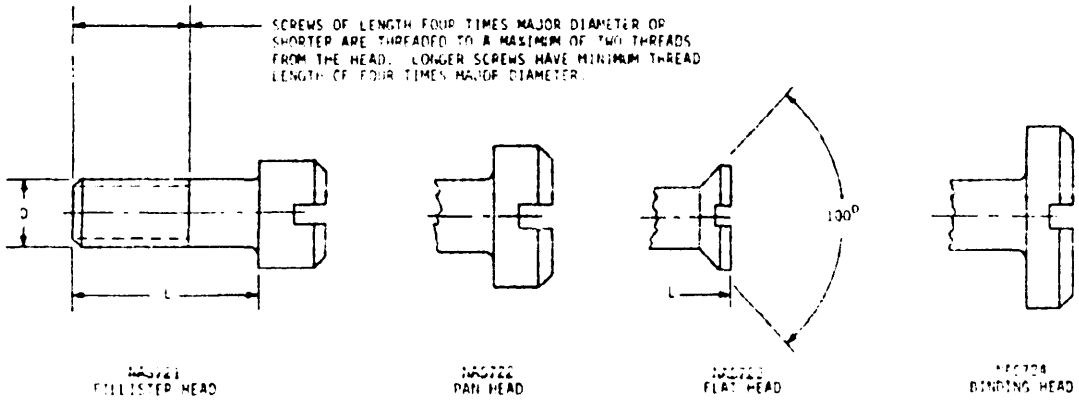


TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min
CRES 303	CE	Passivate	--	--
CRES 416	CX			120,000
CRES 420	CW			240,000
Brass	B	None	P	--
		Black oxide	K	
		Nickel finish	W	
Nickel silver	L	None	P	--

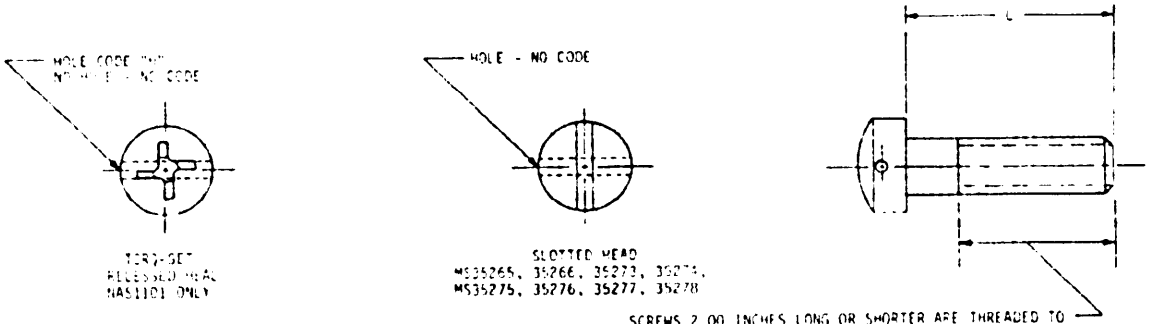
TABLE II. NAS721, 722, 723, 724 dash numbers

Thread designation 3/		.30 UNM	.40 UNM	.50 UNM	.60 UNM	.80 UNM	1.00 UNM	1.20 UNM
Threads per inch		318	254	203	169	127	102	102
D (inches) max		.0018	.0157	.0197	.0236	.0315	.0394	.0472
First dash no.		30	40	50	60	80	100	120
L (inches)		Second dash number						
Max	Min							
.020	.016 1/	-020	--	--				
.025	.021	-025	-025	--				
.032	.027	-032	-032	-032				
.040	.035	-040	-040	-040	-040	--	--	
.050	.044	-050	-050	-050	-050	-050	--	
.060	.054	-060	-060	-060	-060	-060	-060	
.080	.072	-080	-080	-080	-080	-080	-080	-080
.100	.092	-100	-100	-100	-100	-100	-100	-100
.120	.110	-120	-120	-120	-120	-120	-120	-120
.160	.150 2/	-160	-160	-160	-160	-160	-160	-160
.200	.188	--	-200	-200	-200	-200	-200	-200
.250	.238	--	--	-250	-250	-250	-250	-250
.320	.304				-320	-320	-320	-320
.400	.384				--	-400	-400	-400
.500	.480				--	--	-500	-500
.600	.580				--	--	--	-600

1/ Dash numbers above line for NAS721, 722 and 724 only.
2/ Dash numbers below line for NAS723 only.
3/ See Table III of section 6.3

SECTION 2001

SCREWS, MACHINE, FILLISTER HEAD
APPLICABLE DOCUMENTS: MS35265, 35266, 35273
MS35274, 35275, 35276, 35277, 35278, NAS1101



TORX-SET
RECESSED HEAD
NAS1101 ONLY

SLOTTED HEAD
MS35265, 35266, 35273, 35274,
MS35275, 35276, 35277, 35278

SCREWS 2.00 INCHES LONG OR SHORTER ARE THREADED TO A MAXIMUM OF TWO THREADS FROM THE HEAD. LONGER SCREWS HAVE A MINIMUM THREAD LENGTH OF

1.75 INCHES FOR NAS 1101
[illegible]

TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Carbon steel	-	Cadmium plate	--	60,000	MS35265, 35266
	-	Passivate	--	80,000	MS35275, 35276
CRES	F	Cadmium plate Passivate	P --	160,000	NAS1101
Titanium alloy	V	None Cadmium plate	-- P		
Alloy steel	-	Cadmium plate Blackened cd. plate	-- B		
Brass	-	Black chemical	--	57,000	MS35273, 35274
Aluminum alloy	-	Anodize	--	62,000	MS35277, 35278

TABLE II. MS35265, 35266, 35273, 35274, 35277, 35278 dash numbers.

Thread size	.086	.112	.138	.164	.190	.250	.312	.375
Threads per inch (UNC-2A) MS35265, MS35273, 35277	56	40	32	32	24 1/	20 1/	18 1/	16 1/
Threads per inch (UNF-2A) MS35266, MS35274, 35278	64 2/	48 2/	40 2/	36 2/	32	28	24	24
L	Dash numbers							
.125	-1	-11	-24	-39	--			
.187	-2	-12	-25	-40	-58			
.250	-3	-13	-26	-41	-59			
.312	-4	-14	-27	-42	-60	-76	--	
.375	-5	-15	-28	-43	-61	-77	-90	
.437	-6	-16	-29	-44	-62	-78	-91	
.500	-7	-17	-30	-45	-63	-79	-92	-107
.625	-8	-18	-31	-46	-64	-80	-95	-108
.750	-9	-19	-32	-47	-65	-81	-96	-109
.875	-10	-20	-33	-48	-66	-82	-97	-110
1.000	--	-21	-34	-49	-67	-83	-98	-111
1.250	--	-22	-35	-50	-68	-84	-99	112
1.500		-23	-36	-51	-69	-85	-100	-113
1.750		--	-37	-52	-70	-86	-101	-114
2.000		--	-38	-53	-71	-87	-102	115
2.250				-54	-72	-88	-103	-116
2.500				-55	-73	-89	-104	-117
2.750				-56	-74	-90	-105	-118
3.000				-57	-75	-91	-106	119

1/ For MS35265, 35273 only

2/ For MS35266, 35274 only

TABLE III. MS35275, 35276 dash numbers

Thread [illegible]	[illegible]	[illegible]	[illegible]	.164	[illegible]	[illegible]	[illegible]	[illegible]
Threads per inch [illegible] MS35275	56	40	32	32	[illegible]	[illegible]	[illegible]	16
Threads per inch [illegible] MS35276	64	48	40	36	[illegible]	[illegible]	[illegible]	24
L	Dash number							
.125	-201	-211	-224	-239	[illegible]			
.156	-202	-212	-225	-240	-256			
.188	-203	-213	-226	-241	-257			
.312	-204	-214	-227	-242	-258	-275	[illegible]	
.375	-205	-215	-228	-243	-259	-277	-292	
.437	-206	-216	-229	-244	-260	-278	-293	
.500	-207	-217	-230	-245	-261	-279	-294	-307
.625	-208	-218	-231	-246	-262	-280	-295	-308
.750	-209	-219	-232	-247	-263	-281	-296	-309
.875	-210	-220	-233	-248	-264	-282	-297	-310
1.000	--	-221	-234	-249	-265	-283	-298	-311
1.250	--	-222	-235	-250	-266	-284	-299	-312
1.500		-223	-236	-251	-267	-285	-300	-313
1.750		--	-237	-252	-270	-286	-301	-314
2.000		--	-238	-253	-271	-287	-302	-315
2.250				-254	-272	-288	-303	-316
2.500				-255	-273	-289	-304	-317
2.750				-256	-274	-290	-305	-318
3.000				-257	-275	-291	-306	-319
3.500 1/				--	--	-350	--	--

1/ For MS35276 only.

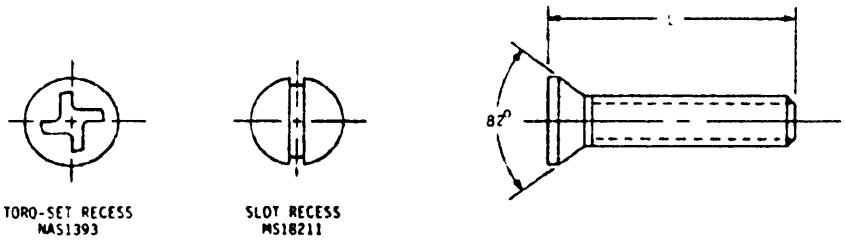
TABLE IV. NAS1101 dash numbers

Thread designation (-3A)	First dash no.	Second dash no. range 1/	Increments
.060-80 UNJF	-00	-3 thru -24	
.086-56 UNJC	-02	-3 thru -24	
.112-40 UNJC	-04	-3 thru -24	
.138-32 UNJC	-06	-3 thru -36	One (-3 thru -8)
.164-32 UNJC	-08	-5 thru -56	Two (-10 thru -16)
.190-32 UNJF	-3	-5 thru -56	Four (-20 thru -96)
.250-28 UNJF	-4	-8 thru -96	
.3125-24 UNJF	-5	-8 thru -96	
.375-24 UNJF	-6	-8 thru -96	

1/ Second dash number equals "L" dimension times 16

SECTION 2002

SCREWS, MACHINE, FLAT HEAD, 82°, FULL THREAD
APPLICABLE DOCUMENTS: MS18211



TORQ-SET RECESS
NAS1393

SLOT RECESS
MS18211

TABLE I. Material

Material	Code	Protective finish	Code	Applicable document
Plastic (nylon)	--	None	--	MS18211 1/

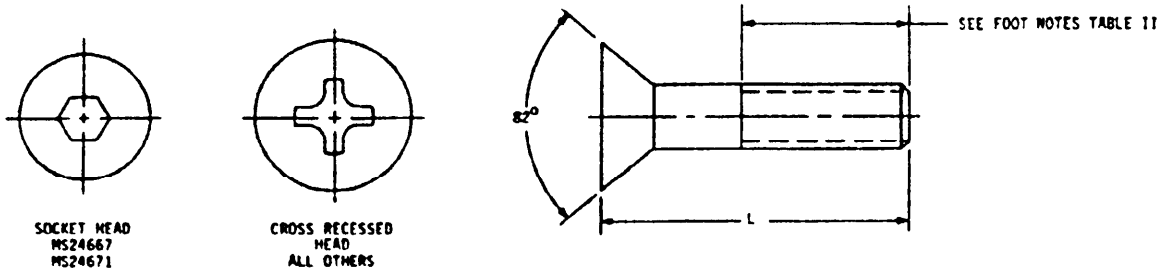
1/ For 100° flat head screws on MS18211 see section 2004.

TABLE II. Part numbers.

Thread designation....	.086-56 UNC-2A	.112-40 UNC-2A	.138-32 UNC-2A	.164-32 UNC-2A	.190-24 UNC-2A	.190-32 UNF-2A	.250-20 UNF-2A	.250-28 UNF-2A
L	MS18211+ dash number							
.125	-1C	--	--	--				
.188	-2C	-17C	-39C	-61C				
.250	-3C	-18C	-40C	-62C				
.312	-4C	-19C	-41C	-63C	-83C	-83F	-109C	-109F
.375	-5C	-20C	-42C	-64C	-84C	-84F	-110C	-110F
.438	-6C	-21C	-43C	-65C	-85C	-85F	-111C	-111F
.500	-7C	-22C	-44C	-66C	-86C	-86F	-112C	-112F
.625	-8C	-23C	-45C	-67C	-87C	-87F	-113C	-113F
.750	--	-24C	-46C	-68C	-88C	-88F	-114C	-114F
.875		-25C	-47C	-69C	-89C	-89F	-115C	-115F
1.000		-26C	-48C	-70C	-90C	-90F	-116C	-116F
1.250		--	--	--	-92C	-92F	-118C	-118F
1.500					-94C	-94F	-120C	-120F
1.750					-95C	-95F	-121C	-121F

SECTION 2003

SCREWS, MACHINE, FLAT HEAD, 82°, LONG THREAD
APPLICABLE DOCUMENTS: MS24667, 24671, 35190, 35191, MS35198, 35199, 35202, 35203, 51959, 51960



SOCKET HEAD
MS24667
MS24671

CROSS RECESSED
HEAD
ALL OTHERS

TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Alloy steel	-	Cadmium plate Zinc plate	-- Z	160,000	MS24667 1/
CRES	-	Passivate	--	80,000	MS24671, 51959, 51960
		Black oxide	B		MS51959, 51960
Carbon steel	-	Cadmium plate	--	60,000	MS35190, 35191 1/
Brass	-	Black chemical	--	57,000	MS35198, 35199
Aluminum alloy	-	Anodize	--	62,000	MS35202, 35203

1/ For self-locking screws on MS24667, 35190, 35191, see section 2103.

TABLE II. Dash numbers.

Thread designation		UNC-3A	UNC-3A	UNC-2A	UNF-2A	UNC-2A	UNF-2A	UNC-2A	UNF-2A	UNC-2A	UNF-2A
Thread size	L	MS24667 1/	MS24671 1/	MS35190 2/	MS35191 2/	MS35198 2/	MS35199 2/	MS35202 2/	MS35203 2/	MS51959 3/	MS51960 2/
.060 -80 UNF	.125				-201		-109		-109		-1
	.188				-202		-110		-110		-2
	.250				-203		-111		-111		-3
	.312				-204		-112		-112		-4
	.375				-205		-113		-113		-5
.086 -56 UNC -64 UNF	.125			-209	-213	-1	-1	-1	-1	-1	-6
	.188			-210	-214	-2	-2	-2	-2	-2	-7
	.250			-211	-215	-3	-3	-3	-3	-3	-8
	.312			-212	-216	-4	-4	-4	-4	-4	-9
	.375			-213	-217	-5	-5	-5	-5	-5	-10
	.438			-214	-218	-6	-6	-6	-6	-6	-11
	.500			-215	-219	-7	-7	-7	-7	-7	-12
	.625			-216	-220	-8	-8	-8	-8	-8	-13
	.750			-217	-221	-9	-9	-9	-9	-9	-14
	.875			-218	--	--	--	--	--	--	--

1/, 2/ and 3/ See footnotes on page 2003.4.

TABLE II. Dash numbers. - Continued

Thread size	L	UNC-3A MS24667 1/	UNC-2A MS24671 1/	UNC-3A MS35190 2/	UNF-2A MS35191 2/	UNC-2A MS35198 2/	UNF-2A MS35199 2/	UNF-2A MS35202 2/	UNF-2A MS35203 2/	UNF-2A MS51959 3/	UNF-2A MS51960 2/
	.125	--	--	-219	-222	-10	-10	-10	-10	-11	-15
	.188	--	--	-220	-223	-11	-11	-11	-11	-12	-16
	.250	-1	-1	-221	-224	-12	-12	-12	-12	-13	-17
	.312	--	--	-222	-225	-13	-13	-13	-13	-14	-18
	.375	-2	-2	-223	-226	-14	-14	-14	-14	-15	-19
	.438	--	--	-224	-227	-15	-15	-15	-15	-16	-20
.112	.500	-3	-3	-225	-228	-16	-16	-16	-16	-17	-21
-40 UNC	.625	-4	-4	-226	-229	-17	-17	-17	-17	-18	-22
-48 UNF	.750	-5	-5	-227	-230	-18	-18	-18	-18	-19	-23
	.875			-228	-231	-19	-19	-19	-19	-20	-24
	1.000			-229	-232	-20	-20	-20	-20	-21	-25
	1.250			-230	--	--	--	--	--	--	--
	1.500			-231	--	--	--	--	--	--	--
	.125	--	--	-232	-233	-21	-21	-21	-21	-24	-26
	.188	--	--	-233	-234	-22	-22	-22	-22	-25	-27
	.250	-7	-7	-234	-235	-23	-23	-23	-23	-26	-28
	.312	--	--	-235	-236	-24	-24	-24	-24	-27	-29
	.375	-8	-8	-236	-237	-25	-25	-25	-25	-28	-30
	.438	--	--	-237	-238	-26	-26	-26	-26	-29	-31
.138	.500	-9	-9	-238	-239	-27	-27	-27	-27	-30	-32
-32 UNC	.625	-10	-10	-239	-240	-28	-28	-28	-28	-31	-33
-40 UNF	.750	-11	-11	-240	-241	-29	-29	-29	-29	-32	-34
	.875			-241	-242	-30	-30	-30	-30	-33	-35
	1.000			-242	-243	-31	-31	-31	-31	-34	-36
	1.250			-243	-244	-32	-32	-32	-32	-35	-37
	1.500			-244	-245	-33	-33	-33	-33	-36	-38
	1.750			-245	-246	-34	-34	-34	-34	-37	-39
	2.000			-246	-247	-35	-35	-35	-35	-38	-40
	.125			-247	-248	-36	-36	-36	-36	-39	-41
	.188			-248	-249	-37	-37	-37	-37	-40	-42
	.250			-249	-250	-38	-38	-38	-38	-41	-43
	.312	--	--	-250	-251	-39	-39	-39	-39	-42	-44
	.375	-13	-13	-251	-252	-40	-40	-40	-40	-43	-45
	.438	--	--	-252	-253	-41	-41	-41	-41	-44	-46
	.500	-14	-14	-253	-254	-42	-42	-42	-42	-45	-47
	.625	-15	-15	-254	-255	-43	-43	-43	-43	-46	-48
.164	.750	-16	-16	-255	-256	-44	-44	-44	-44	-47	-49
-32 UNC											
-36 UNF	.875	--	--	-256	-257	-45	-45	-45	-45	-48	-50
	1.000	-17	-17	-257	-258	-46	-46	-46	-46	-49	-51
	1.250	--	--	-258	-259	-47	-47	-47	-47	-50	-52
	1.500			-259	-260	-48	-48	-48	-48	-51	-53
	1.750			-260	-261	-49	-49	-49	-49	-52	-54
	2.000			-261	-262	-50	-50	-50	-50	-53	-55
	2.250			-262	-263						
	2.500			-263	-264						
	2.750			-264	-265						
	3.000			-265	-266						
	.188			-266	-267	--	--	--	--	--	-60
	.250			-267	-268	-51	-51	-51	-51	-59	-61
	.312			-268	-269	-52	-52	-52	-52	-60	-62
	.375	-19	-19	-269	-270	-53	-53	-53	-53	-61	-63
	.438	--	--	-270	-271	-54	-54	-54	-54	-62	-64
	.500	-20	-20	-271	-272	-55	-55	-55	-55	-63	-65
	.625	-21	-21	-272	-273	-56	-56	-56	-56	-64	-66
	.750	-22	-22	-273	-274	-57	-57	-57	-57	-65	-67
.190	.875	--	--	-274	-275	-58	-58	-58	-58	-66	-68
-24 UNF											
-32 UNF	1.000	-23	-23	-275	-276	-59	-59	-59	-59	-67	-69
	1.250	-24	-24	-276	-277	-60	-60	-60	-60	-68	-70
	1.500	-25	-25	-277	-278	-61	-61	-61	-61	-69	-71
	1.750			-278	-279	-62	-62	-62	-62	-70	-72
	2.000			-279	-280	-63	-63	-63	-63	-71	-73
	2.250			-280	-281	-64	-64	-64	-64	-72	-74
	2.500			-281	-282	-65	-65	-65	-65	-73	-75
	2.750			-282	-283	--	--	--	--	--	--
	3.000			-283	-284	--	--	--	--	--	--

1/, 2/ and 3/ See footnotes on page 2003.4.

TABLE I. Dash numbers. - Cont'd

Thread designation...		UNC-3A	UNC-3A	UNC-2A	UNF-2A	UNC-2A	UNF-2A	UNC-2A	UNF-2A	UNC-2A	UNF-2A
Thread size	L	1/ MS24667	1/ MS24671	2/ MS35190	2/ MS35191	2/ MS35199	2/ MS35200	2/ MS35202	2/ MS35203	3/ MS41969	2/ MS51960
.250 -20 UNC -28 UNF	.250	--	--	--	-285	--	--	--	--	--	-78
	.312	--	--	-284	-286	-66	-66	-66	-66	-76	-79
	.375	-27	-27	-285	-287	-67	-67	-67	-67	-77	-80
	.438	--	--	-286	-288	-68	-68	-68	-68	-78	-81
	.500	-28	-28	-287	-289	-69	-69	-69	-69	-79	-82
	.625	-29	-29	-288	-290	-70	-70	-70	-70	-80	-83
	.750	-30	-30	-289	-291	-71	-71	-71	-71	-81	-84
	.875	--	--	-290	-292	-72	-72	-72	-72	-82	-85
	1.000	-31	-31	-291	-293	-73	-73	-73	-73	-83	-86
	1.250	-32	-32	-292	-294	-74	-74	-74	-74	-84	-87
	1.500	-33	-33	-293	-295	-75	-75	-75	-75	-85	-88
	1.750	-34	--	-294	-296	-76	-76	-76	-76	-86	-89
	2.000	-35		-295	-297	-77	-77	-77	-77	-87	-90
	2.250	--		-296	-298	-78	-78	-78	-78	-88	-91
	2.500	--		-297	-299	-79	-79	-79	-79	-89	-92
	2.750			-298	-300					-90	
	3.000			-299	-301					-91	
.3125 -18 UNC -24 UNF	.375	-37	-37	-300	-302	-80	-80	-80	-80	-92	-95
	.438	--	--	-301	-303	-81	-81	-81	-81	-93	-96
	.500	-38	-38	-302	-304	-82	-82	-82	-82	-94	-97
	.625	-39	-39	-303	-305	-83	-83	-83	-83	-95	-98
	.750	-40	-40	-304	-306	-84	-84	-84	-84	-96	-99
	.875	--	--	-305	-307	-85	-85	-85	-85	-97	-100
	1.000	-41	-41	-306	-308	-86	-86	-86	-86	-98	-101
	1.250	-42	-42	-307	-309	-87	-87	-87	-87	-99	-102
	1.500	-43	-43	-308	-310	-88	-88	-88	-88	-100	-103
	1.750	-44	-44	-309	-311	-89	-89	-89	-89	-101	-104
	2.000	-45	-45	-310	-312	-90	-90	-90	-90	-102	-105
	2.250	-46	-46	-311	-313	-91	-91	-91	-91	-103	-106
	2.500	-47	-47	-312	-314	-92	-92	-92	-92	-104	-107
	2.750	--	--	-313	-315	--	--	--	--	--	--
	3.000	--	--	-314	-316	--	--	--	--	--	--
.375 -16 UNC -24 UNF	.500	-49	-49	-315	-317	-93	-93	-93	-93	-107	-110
	.625	-50	-50	-316	-318	-94	-94	-94	-94	-108	-111
	.750	-51	-51	-317	-319	-95	-95	-95	-95	-109	-112
	.875	--	--	-318	-320	-96	-96	-96	-96	-110	-113
	1.000	-52	-52	-319	-321	-97	-97	-97	-97	-111	-114
	1.250	-53	-53	-320	-322	-98	-98	-98	-98	-112	-115
	1.500	-54	-54	-321	-323	-99	-99	-99	-99	-113	-116
	1.750	-55	-55	-322	-324	-100	-100	-100	-100	-114	-117
	2.000	-56	-56	-323	-325	-101	-101	-101	-101	-115	-118
	2.250	-57	-57	-324	-326	-102	-102	-102	-102	-116	-119
	2.500	-58	-58	-325	-327	-103	-103	-103	-103	-117	-120
	2.750	-59	-59	-326	-328	-104	-104	-104	-104	-118	-121
	3.000	--	-60	-327	-329	-105	-105	-105	-105	-119	-122
.500 -13 UNC -20 UNF	.750	-73	-73	-340	-342						
	.875	--	--	-341	-343						
	1.000	-74	-74	-342	-344						
	1.250	-75	-75	-343	-345						
	1.500	-76	-76	-344	-346						
	1.750	-77	-77	-345	-347						
	2.000	-78	-78	-346	-348						
	2.250	-79	-79	-347	-349						
	2.500	-80	-80	-348	-350						
	2.750	-81	-81	-349	-351						
	3.000	-82	-82	-350	-352						
.625 -11 UNC -18 UNF	1.250	-84	-84								
	1.500	-85	-85								
	1.750	-86	-86								
	2.000	-87	-87								
	2.250	-88	-88								
	2.500	-89	-89								
	2.750	-90	-90								
	3.000	-91	-91								

1/, 2/ and 3/ See footnotes on page 2003.4.

TABLE II. Dash numbers - Continued

Thread designation ...		UNC-3A	UNC-3A	UNC-2A	UNF-2A	UNC-2A	UNF-2A	UNC-2A	UNF-2A	UNC-2A	UNF-2A
Thread size	L	1/ MS24667	1/ MS24671	2/ MS35190	2/ MS35191	2/ MS35192	2/ MS35193	2/ MS35202	2/ MS35203	3/ MS51959	2/ MS51960
	1.250	-93	-93								
	1.500	-94	-94								
	1.750	-95	-95								
.750	2.000	-96	-96								
-10 UNC	2.250	-97	-97								
-16 UN	2.500	-98	-98								
	2.750	-99	-99								
	3.000	-100	-100								

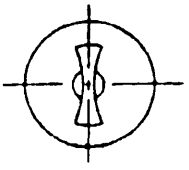
1/ Minimum thread length is twice the basic diameter plus 0.50 inch. Screws too short to apply this formula are threaded as close to the head as practicable.

2/ Screws 2.00 inches long or shorter are threaded to a maximum of two threads from the head. Longer screws have a minimum thread length of 1.50 inches.

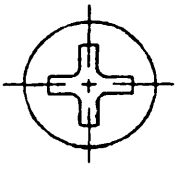
3/ Screws 2.00 inches long or shorter are threaded to a maximum of two threads from the head. Longer screws have a minimum thread length of 1.75 inches.

SECTION 2004

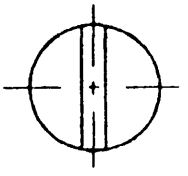
SCREWS, MACHINE, FLAT HEAD, 100°, FULL THREAD
APPLICABLE DOCUMENTS: MS18211, NAS662, 1219



HI-TORQUE
RECESSED HEAD
NAS1219



CROSS RECESSED HEAD
FOR NAS622 SIZES
.086, .090 ONLY CODE "R"



SLOTTED HEAD
MS18211, NAS662

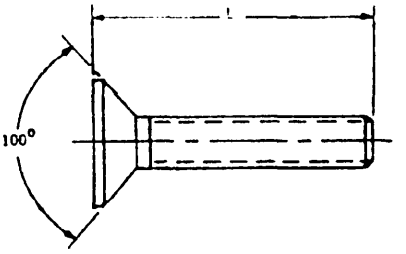


TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Plastic (nylon)	-	None	--	--	MS18211 1/
Carbon steel	-	Cadmium plate	--	55,000	NAS622 2/
Brass	B	Cd. plate (yellow irridescent)	--	--	
CRES	C	Passivate	--	--	
CRES A286	E	Cadmium plate Passivate	P --	160,000	NAS1219
CRES 302	CR	Passivate	--	125,000	
Alloy steel	-	Cadmium plate Blackened cd. plate	T B	160,000	
Titanium	V	None	--	160,000	

1/ For MS18211, 100° flat head screws see section 2002.

2/ For self-locking screws on NAS662 see section 2104.

TABLE II. MS18211 dash numbers.

Thread designation (-2A)	.086-56 UNC	.112-40 UNC	.138-32 UNC	.164-32 UNC	.190-24 UNC	.190-32 UNF	.250-20 UNC	.250-28 UNF
L	Dash number							
1/	-0C	--	--	--				
.188	-10C	-28C	-50C	-72C				
.250	-11C	-29C	-51C	-73C				
.312	-12C	-30C	-52C	-74C	-96C	-96F	-122C	-122F
.375	-13C	-31C	-53C	-75C	-97C	-97F	-123C	-123F
.438	-14C	-32C	-54C	-76C	-98C	-98F	-124C	-124F
.500	-15C	-33C	-55C	-77C	-99C	-99F	-125C	-125F
.625	-16C	-34C	-56C	-78C	-100C	-100F	-126C	-126F
.750	--	-35C	-57C	-79C	-101C	-101F	-127C	-127F
.875		-36C	-58C	-80C	-102C	-102F	-128C	-128F
1.000		-37C	-59C	-81C	-103C	-103F	-129C	-129F
1.250		--	--	--	-105C	-105F	-131C	-131F
1.500					-107C	-107F	-133C	-133F
1.750					-108C	-108F	-134C	-134F

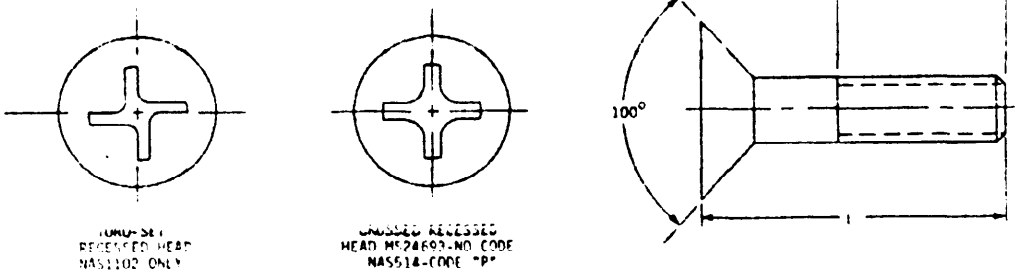
TABLE III. NAS662, 1219 dash numbers

Thread size	Thread designation	First dash no.	Second dash number 1/		
			Range		Increments
			NAS662	NAS1219	
.060-80	UNF -2A	-0	-2 thru -8	--	
.086-56	UNC -2A	-2	-2 thru -20	--	
.112-40	UNJC-3A	-04	--	-3 thru -24	one(-2 thru -8)
.138-32	UNJC-3A	-06		-4 thru -36	two(-10 thru -16)
.164-32	UNJC-3A	-08		-5 thru -56	four(-20 thru -64)
.190-32	UNJF-3A	-3		-5 thru -64	
.250-28	UNJF-3A	-4		-8 thru -64	
.3125-24	UNJF-3A	-5		-8 thru -64	
.375-24	UNJF-3A	-6		-8 thru -64	

1/ Second dash number equals "L" dimension times 16

SCREWS, MACHINE, FLAT HEAD, 100°, LONG THREAD
APPLICABLE DOCUMENT: MS24693, NAS514, 1102

SCREWS 2.00 INCHES LONG OR SHORTER ARE THREADED TO A MINIMUM OF TWO THREADS FROM THE HEAD. LONGER SCREWS HAVE A MINIMUM THREAD LENGTH OF 1.75 INCHES.



TORQ-SET RECESSED HEAD NAS1102 ONLY

CROSSED RECESSED HEAD MS24693-NO CODE NAS514-CODE "P"

TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Carbon steel	S	Cadmium plate	--	60,000	MS24693
Aluminum alloy	A	Anodize	--	62,000	
Brass	B BR NB CB	None Black oxide Nickel plate Cadmium plate	--	55,000	
Cu-Si alloy	U	None	--	60,000	
Ni-Cu alloy	N	None	--	80,000	
CRES	C -	Passivate Black oxide	-- B		
	E	Passivate Blackened cd. coat	-- P	160,000	NAS1102
Titanium	V	None Blackened cd. coat	-- P		
Alloy steel	-	Cadmium plate Blackened cd. coat	-- B		
Low alloy steel	-	Cadmium plate Blackened cd. coat	-- B	125,000	NAS514

TABLE II. MS24693 dash numbers.

Thread designation	UNC-2A						
	.112-40	.138-32	.164-32	.190-24	.250-20	.3125-18	.375-16
L	Dash numbers						
.188	-1	-23	--	--	--		
.250	-2	-24	-46	--	--		
.312	-3	-25	-47	-69	-91		
.375	-4	-26	-48	-70	-92	--	--
.438	-5	-27	-49	-71	-93	--	--
.500	-6	-28	-50	-72	-94	-116	-138
.625	-7	-29	-51	-73	-95	-117	-139
.750	-8	-30	-52	-74	-96	-118	-140
.875	-9	-31	-53	-75	-97	-119	-141
1.00	-10	-32	-54	-76	-98	-120	-142
1.25	-12	-34	-56	-78	-100	-122	-144
1.50	-14	-36	-58	-80	-102	-124	-146
1.75		-38	-60	-82	-104	-126	-148
2.00		-40	-62	-84	-106	-128	-150
2.25		--	--	--	--	--	--
2.50		-42	-64	-86	-108	-130	-152
2.75		--	--	--	--	--	--
3.00		--	-66	-88	-110	-132	-154

TABLE II. MS24693 dash numbers. - Continued

Thread designation	UNF-2A						
	.112-48	.138-40	.164-36	.190-32	.250-28	.3125-24	.375-24
L	Dash numbers						
.188	-201	--	--	--			
.250	-202	-224	-246	-268			
.312	-203	-225	-247	-269			
.375	-204	-226	-248	-270	-292	--	--
.438	-205	-227	-249	-271	-293	--	--
.500	-206	-228	-250	-272	-294	-316	-338
.625	-207	-229	-251	-273	-295	-317	-339
.750	-208	-230	-252	-274	-296	-318	-340
.875	-209	-231	-253	-275	-297	-319	-341
1.00	-210	-232	-254	-276	-298	-320	-342
1.25	-212	-234	-256	-278	-300	-322	-344
1.50	-214	-236	-258	-280	-302	-324	-346
1.75	-216	-238	-260	-282	-304	-326	-348
2.00	--	-240	-262	-284	-306	-328	-350
2.25	--	-241	-263	-285	-307	--	--
2.50		-242	-264	-286	-308	-330	-352
2.75		--	-265	-287	-309	--	--
3.00		--	-266	-288	-310	-332	-354

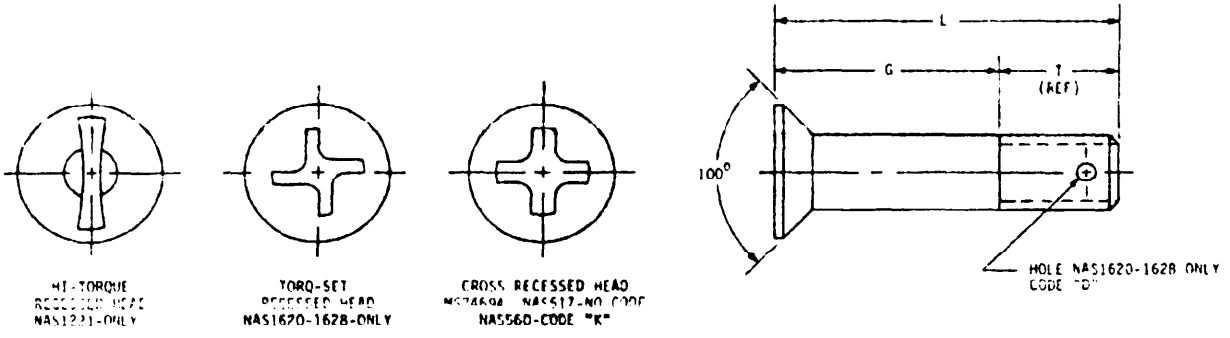
TABLE III. NAS514, 1102 dash numbers.

Basic part no.	NAS514P		NAS1102	
Thread designation (-3A)	First dash no.	Second dash no. range 1/	First dash no.	Second dash no. range 1/
.086-56 UNJC	--	--	-02	-3 thru -24
.112-40 UNJC	-440	-3 thru -24	-04	-3 thru -24
.138-32 UNJC	-632	-3 thru -32	-06	-4 thru -36
.164-32 UNJC	-832	-4 thru -32	-08	-5 thru -56
.190-32 UNJF	-1032	-4 thru -32	-3	-5 thru -56
.250-28 UNJF	-428	-6 thru -32	-4	-8 thru -96
.3125-24 UNJF	-524	-8 thru -32	-5	-8 thru -96
.375-24 UNJF	-624	-8 thru -32	-6	-8 thru -96

1/ Second dash number equals "L" dimension times 16 and four (-20 thru -96). Increments of one (-3 thru -8), two (-10 thru -16),

SECTION 2006

SCREWS, MACHINE, FLAT HEAD, 100°, SHORT THREAD
APPLICABLE DOCUMENTS: MS24694, NAS517, 560, 1221, 1620-1628.



HI-TORQUE
RECESSED HEAD
NAS1221-ONLY

TORQ-SET
RECESSED HEAD
NAS1620-1628-ONLY

CROSS RECESSED HEAD
MS24694, NAS517-NO CODE
NAS560-CODE "K"

TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Aluminum alloy	A	Anodize	--	62,000	MS24694
Alloy steel	S	Cadmium plate	--	125,000	
	--			160,000	NAS517, 1221, 1620-1628
CRES	C	Passivate	--	85,000	MS24694
	E	Cadmium plate	P	160,000	NAS1221, 1620-1628
CRES Low strength	C	Cadmium plate	P	75,000	NAS560
CRES High temp	H			140,000	
CRES High strength	Y			160,000	
Titanium alloy	V	None	--	160,000	NAS1221, 1620-1628
		Cadmium plate	P		NAS 1620-1628

TABLE II. MS24694 dash numbers.

Thread designation (3A)	.164-32 UNC	.190-32 UNF	.250-28 UNF	.3125-24 UNF	.375-24 UNF	.4375-24 UNF	.500-20 UNF
T ref 1/	.438	.469	.531	.562	[illegible]	.719	.844
L	Dash number						
.281	-1	-46	--	--	--		
.344	-2	-47	-92	-137	--		
.406	-3	-48	-93	-138	-181		
.469	-4	-49	-94	-139	-182	-225	-270
.594	-6	-51	-96	-141	-184	-227	-272
.719	-8	-53	-98	-143	-186	-229	-274
.844	-10	-55	-100	-145	-188	-231	-276
.969	-12	-57	-102	-147	-190	-233	-278
1.219	-16	-61	-106	-151	-194	-237	-282
1.469	-20	-65	-110	-155	-198	-241	-286
1.719	-24	-69	-114	-159	-202	-245	-290
1.969	-28	-73	-118	-163	-206	-249	-294
2.219	-32	-77	-122	-167	-210	-253	-298
2.469	--	-81	-126	-171	-214	-257	-302
2.719	--	-85	-130	-175	-218	-261	-306
2.969		-89	-134	-179	-222	-265	-310
3.219		--	--	--	--	--	-314
3.469		--	--	--	--	--	-318
3.969		--	--	--	--	--	-326

1/ Screws too short for this dimension to apply are threaded to within a maximum of two threads from the head.

TABLE III. NAS517, 560, 1221, 1620-1628 dash numbers

Thread size	.112-40	.138-32	.164-32	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20
Thread designation NAS517 first dash no. T ref Second dash no. range 1/				UNJF-3A -3 .406 -0 thru -32	UNJF-3A -4 .468 -0 thru -32	UNJF-3A -5 .531 -0 thru -32	UNJF-3A -6 .625 -1 thru -32	UNJF-3A -7 .719 -1 thru -32	UNJF-3A -8 .750 -2 thru -32
Thread designation NAS560 first dash no. T ref Second dash no. range 1/				UNF-3A -3 .463 K00thruK32	UNF-3A -4 .526 K0 thru K32	UNF-3A -5 .614 K0 thru K32	UNF-3A -6 .645 K1 thru K32	UNF-3A -7 .727 K1 thru K32	UNF-3A -8 .761 K2 thru K32
Thread designation Document number T ref Second dash no. range 2/	UNJC-2A NAS1620 .220 -1 thru -64	UNJC-2A NAS1621 .276 -1 thru -64	UNJC-2A NAS1622 .276 -1 thru -64	UNJF-3A NAS1623 .276 -1 thru -64	UNJF-3A NAS1624 .316 -1 thru -64	UNJF-3A NAS1625 .375 -1 thru -64	UNJF-3A NAS1626 .391 -1 thru -64	UNJF-3A NAS1627 .453 -1 thru -64	UNJF-3A NAS1628 .453 -4 thru -64
Thread designation NAS1221 first dash no. 3/ T ref Second dash no. range 2/	UNJC-3A -04 .233 -1 thru -96	UNJC-3A -06 .276 -2 thru -96	UNJC-3A -08 .339 -2 thru -96	UNJF-3A -3 .339 -2 thru -96	UNJF-3A -4 .426 -3 thru -96	UNJF-3A -5 .470 -3 thru -96	UNJF-3A -6 .579 -4 thru -96		

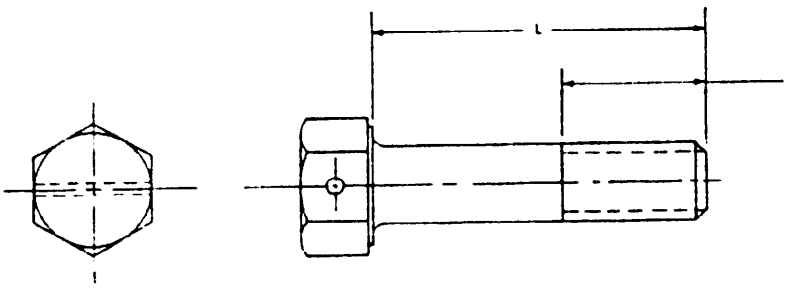
1/ Second dash number equals "G" dimension times 16
Increments of one (-0 thru -8), two (-10 thru -16), and four (-20 thru -32).

2/ Second dash number equals "G" dimension times 16
Increments of one (-1 thru -8), two (-10 thru -16), and four (-20 thru -96).

3/ For self-locking screws on NAS1221 see section 2106.

SECTION 2007

SCREWS, MACHINE, HEXAGON HEAD, FULL SHANK, DRILLED
APPLICABLE DOCUMENTS: MS9498, 9499, 9640, 9641, 9792, 9793



MINIMUM THREAD LENGTH IS TWICE THE BASIC DIAMETER PLUS 0.25 INCH. SCREWS TOO SHORT TO APPLY THIS FORMULA ARE THREADED AS CLOSE TO THE HEAD AS PRACTICABLE.

TABLE I. Materials.

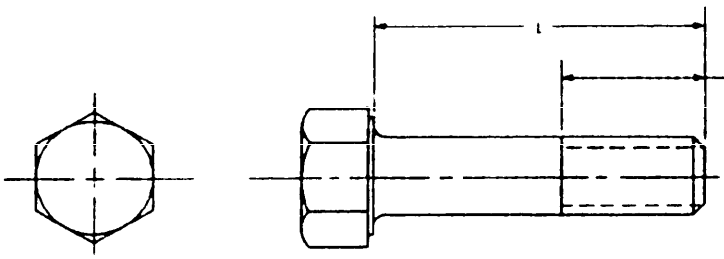
Materials	Hardness-Rockwell	Applicable documents
Corrosion and heat resistant steel	--	MS9498 MS9499
CRES	C32-38	MS9792 MS9793
Titanium	C36-42	MS9640 MS9641

TABLE II. Dash numbers.

Thread size..... (UNJF-3A)	.138-40			.164-36		
Document no. ...	MS9498	MS9640	MS9792	MS9499	MS9641	MS9793
L	Dash number					
.250	-02			--		
.312	-03			-03		
.375	-04			-04		
.438	-05			-05		
.500	-06			-06		
.625	-08			-08		
.750	-10	-10	-10	-10	-10	-10
.875	-12	-12	-12	-12	-12	-12
1.000	-14	-14	-14	-14	-14	-14
1.250	-18	-18	-18	-18	-18	-18
1.500	-22	-22	-22	-22	-22	-22
1.750	-26	-26	-26	-26	-26	-26
2.000	-30	-30	-30	-28	-30	-30

SECTION 2008

SCREWS, MACHINE, HEXAGON HEAD, FULL SHANK, UNDRILLED
APPLICABLE DOCUMENTS: MS9487, 9488, 9649, 9650, 9781, 9782



MINIMUM THREAD LENGTH IS TWICE THE BASIC DIAMETER PLUS 0.25 INCH. SCREWS TOO SHORT TO APPLY THIS FORMULA ARE THREADED AS CLOSE TO THE HEAD AS PRACTICABLE.

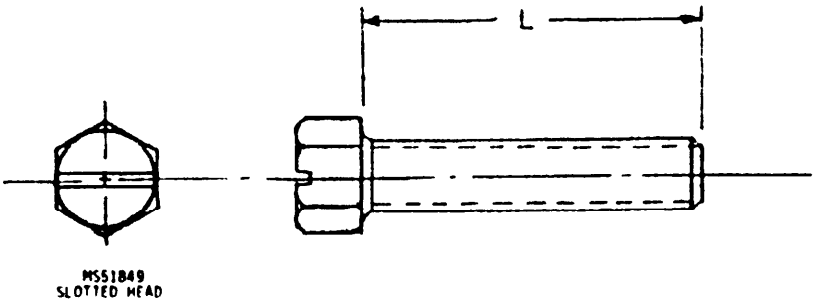
TABLE I. Materials.

Materials	Hardness-Rockwell	Applicable documents
Corrosion and heat resistant steel	--	MS9487 MS9488
CRES	C32-38	MS9781 MS9782
Titanium	C36-42	MS9649 MS9650

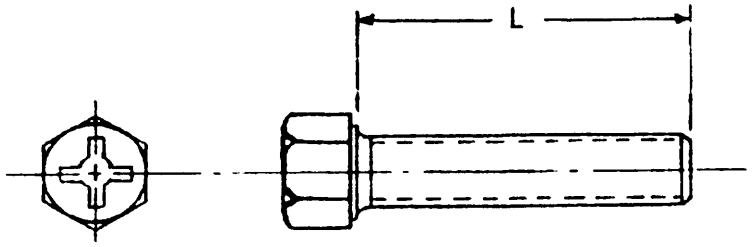
TABLE II. Dash numbers.

Thread size ..... (UNJF-3A)	.138-40			.164-36		
Document no. ...	MS9487	MS9649	MS9781	MS9488	MS9650	MS9782
L	Dash number					
.250	-02			--		
.312	-03			-03		
.375	-04			-04		
.438	-05			-05		
.500	-06			-06		
.625	-08			-08		
.750	-10	-10	-10	-10	-10	-10
.875	-12	-12	-12	-12	-12	-12
1.000	-14	-14	-14	-14	-14	-14
1.250	-18	-18	-18	-18	-18	-18
1.500	-22	-22	-22	-22	-22	-22
1.750	-26	-26	-26	-26	-26	-26
2.000	-30	-30	-30	-28	-30	-30

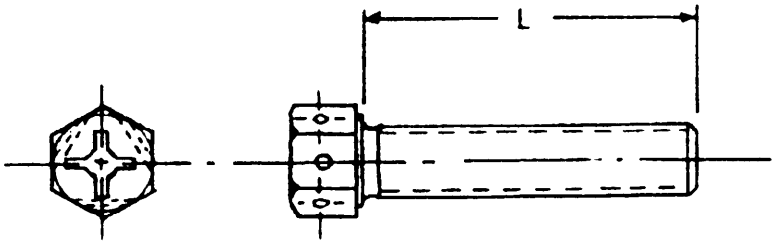
SECTION 2009
SCREW, MACHINE, HEXAGON HEAD, FULL THREAD
APPLICABLE DOCUMENTS: MS51849, NAS 1801, NAS1802



MS51849
SLOTTED HEAD



NAS1096
CROSS RECESSED
HEAD



NAS1802, NAS1802
CROSS RECESSED HEAD

TABLE I. Materials and part numbers.

Material	Carbon steel														Alloy steel		
Protective finish	Cadmium plate														Cadmium plate		
Tensile strength (psi) min	60,000														125,000		
Thread size	.112		.138		.164		.190		.250		.3125		.375		.138	.164	.190
Threads per inch	48	40	40	32	36	32	32	24	28	20	24	18	24	16	32	32	32
Series designation	UNF -2A	UNC -2A	UNF -2A	UNC -2A	UNF -2A	UNC -2A	UNF -2A	UNC -2A	UNF -2A	UNC -2A	UNF -2A	UNC -2A	UNF -2A	UNC -2A	UNC -3A	UNC -3A	UNF -3A
Basic part no.	MS51849														NAS1096		
L	Dash number																
.250	-1	-11	--	--	--	--									--	--	
.312	-2	-12	-22	-32	--	--									-1-5	--	
.375	-3	-13	-23	-33	-43	-53									-1-6	-2-6	
.500	-4	-14	-24	-34	-44	-54	-64	-74	--	--	--	--	--	--	-1-8	-2-8	-3-8
.625	-5	-15	-25	-35	-45	-55	-65	-75	-85	-95	--	--	--	--	-1-10	-2-10	-3-10
.750	-6	-16	-26	-36	-46	-56	-66	-76	-86	-96	-106	-116	-126	-136	-1-12	-2-12	-3-12
.875			-27	-37	-47	-57	-67	-77	-87	-97	-107	-117	-127	-137	-1-14	-2-14	-3-14
1.000			--	--	-48	-58	-68	-78	-88	-98	-108	-118	-128	-138	--	-2-16	-3-16
1.250			--	--	--	--	-69	-79	-89	-99	-109	-119	-129	-139	--	--	-3-20
1.500							-70	-80	-90	-100	-110	-120	-130	-140			-3-24
1.750							--	--	-91	-101	-111	-121	-131	-141			--
2.000							--	--	-92	-102	-112	-122	-132	-142			--

TABLE II. Materials and part numbers.

Material		Alloy steel		CRES	
Protective finish		Cadmium plate		Passivate	
Tensile strength (psi min)		160,000		160,000	
Basic part no.		NAS1801		NAS1802	
Thread size	Thread designation	First dash no.	Second dash no.	First dash no.	Second dash no.
.1120-40	UNJC-3A	04	1/	04	1/
.1380-32	UNJC-3A	06		06	
.1640-32	UNJC-3A	08		08	
.1900-32	UNJF-3A	3		3	
.2500-28	UNJF-3A	4		4	
.3125-24	UNJF-3A	5		5	
.3750-24	UNJF-3A	6		6	

1/ Second dash number of part number indicates the length in .0625 increments.

SECTION 2010

SCREWS, MACHINE, HEXAGON HEAD, PD SHANK, DRILLED HEAD
APPLICABLE DOCUMENTS: MS9292, 9527, 9528, 9622, 9623, 9814, 9815

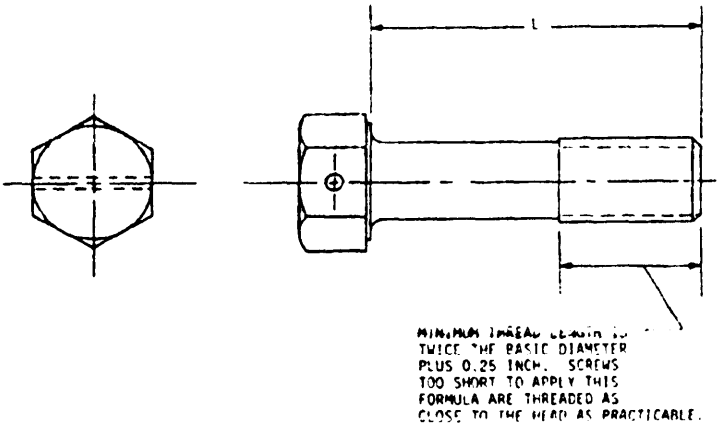


TABLE I. Materials and dash numbers.

Material	Steel			CRES		Titanium	
Protective finish	Cadmium plate		Black oxide	--		--	
Hardness-Rockwell	C26-32			C32-38		C36-42	
Thread designation (UNJF-3A)	.138-40	.164-36	.138-40	.138-40	.164-36	.138-40	.164-36
Document no.	MS9527	MS9528	MS9792	MS9814	MS9815	MS9622	MS9623
L	Dash number						
.250	-02	--	-02	-02	-02	-02	-02
.312	-03	-03	-03	-03	-03	-03	-03
.375	-04	-04	-04	-04	-04	-04	-04
.438	-05	-05	-05	-05	-05	-05	-05
.500	-06	-06	-06	-06	-06	-06	-06
.625	-08	-08	-08	-08	-08	-08	-08
.750	-10	-10	-10	-10	-10	-10	-10
.875	-12	-12	-12	-12	-12	-12	-12
1.000	-14	-14	-14	-14	-14	-14	-14
1.250	-18	-18	-18	-18	-18	-18	-18
1.500	-22	-22	-22	-22	-22	-22	-22
1.750	--	-26	--	-26	-26	-26	-26
2.000	--	-28	--	-30	-30	-30	-30

SECTION 2011

SCREWS, MACHINE, HEXAGON HEAD, PD SHANK, UNDRILLED
APPLICABLE DOCUMENTS: MS9449, 9450, 9516, 9517, 9631, 9803, 9804

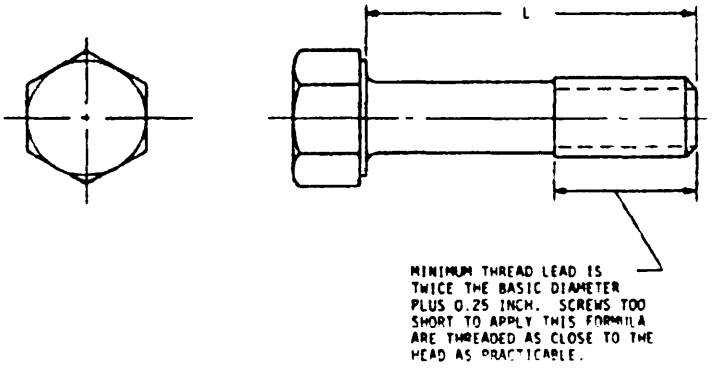
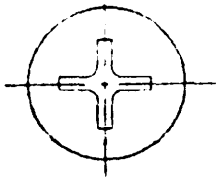


TABLE I. Materials and dash numbers.

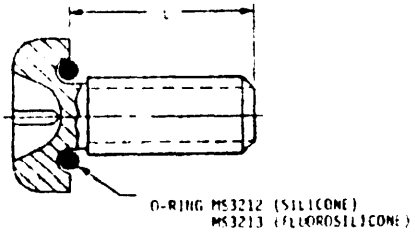
	Steel				CRES		Titanium
Protective finish	Cadmium plate		Diffused nickel - cadmium plate		--		--
Hardness-Rockwell.....	C26-32		C42-46		C32-38		C36-42
Thread designation (UNJF-3A).....	.138-40	.164-36	.138-40	.164-36	.138-40	.164-36	.138-40
Document no.	MS9516	MS9517	MS9449	MS9450	MS9803	MS9804	MS9631
L	Dash number						
.250	-02	--	-02	--	-02	-02	-02
.312	-03	-03	-03	-03	-03	-03	-03
.375	-04	-04	-04	-04	-04	-04	-04
.438	-05	-05	-05	-05	-05	-05	-05
.500	-06	-06	-06	-06	-06	-06	-06
.625	-08	-08	-08	-08	-08	-08	-08
.750	-10	-10	-10	-10	-10	-10	-10
.875	-12	-12	-12	-12	-12	-12	-12
1.000	-14	-14	-14	-14	-14	-14	-14
1.250	-18	-18	-18	-18	-18	-18	-18
1.500	-22	-22	-22	-22	-22	-22	-22
1.750	--	-26	--	-26	-26	-26	-26
2.000	--	-28	--	-28	-30	-30	-30

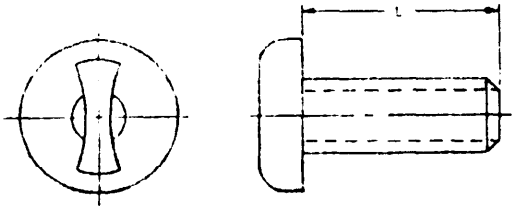
SECTION 2012

SCREWS, MACHINE, SELF-SEALING, PAN HEAD, FULL THREAD
APPLICABLE DOCUMENTS: MS3212, 3213, NAS1216



CROSS RECESSED HEAD





MULTI-TORQUE RECESSED
HEAD NAS1216
(SELF-SEALING OPTIONAL)

TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Alloy steel	-	Cadmium plate	P	160,000	NAS1216
		Blackened cad. plate	B		
CRES A286	E	Passivate	--	160,000	NAS1216
		Cadmium plate	P		
CRES 300	CR	Passivate	--	125,000	
CRES	-	Passivate	--	75,000	MS3212, 3213
Titanium	V	None	--	160,000	NAS1216

TABLE II. MS3212, 3213 dash numbers.

Thread designation (-2A)	.112-40 UNC	.138-32 UNC	.164-32 UNC	.190-32 UNF	.190-24 UNC	.250-20 UNC
L	Dash number					
.250	-1	-11	-21	--	--	--
.312	-2	-12	-22	--	--	--
.375	-3	-13	-23	-31	-39	-47
.438	-4	-14	-24	-32	-40	-48
.500	-5	-15	-25	-33	-41	-49
.625	-7	-17	-27	-35	-43	-51
.750	-8	-18	-28	-36	-44	-52
.875	-9	-19	-29	-37	-45	-53
1.000	-10	-20	-30	-38	-46	-54
1.250	--	--	--	--	--	-56

1/ For self-locking screws on MS3212,3213, see section 2108.

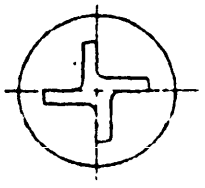
TABLE III. NAS1216 dash numbers.

Thread designation (-3A)	First dash no.	Second dash number 1/	
		Range	Increment
.112-40UNJC	-04	-2 thru -24	One (-2 thru -8)
.138-32UNJC	-06	-3 thru -36	
.164-32UNJC	-08	-5 thru -56	Two (-10 thru -16)
.190-32UNJF	-3	-5 thru -56	
.250-28UNJF	-4	-8 thru -64	
.3125-24UNJF	-5	-8 thru -64	Three (-20 thru -64)
.375-24UNJF	-6	-8 thru -64	

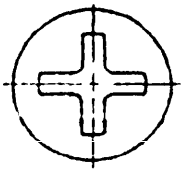
1/ Second dash number equals "L" dimension times 16

SECTION 2013

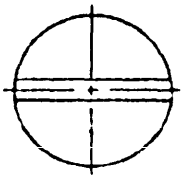
SCREWS, MACHINE, PAN HEAD, LONG THREAD
APPLICABLE DOCUMENTS: MS18212, 35206, 35207, 35214, MS35215, 35218, 35219, 51957, 51958, NAS600-606, 1100, 1635



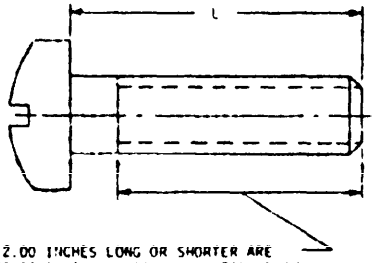
TORQ-SET RECESSED HEAD NAS1100 ONLY



CROSS-RECESSED HEAD MS35206, 35207 MS35214, 35215 MS35218, 35219 MS51957, 51958 NAS600 CDE NAS1635



SLOTTED HEAD MS18212 ONLY



SCREWS 2.00 INCHES LONG OR SHORTER ARE THREADED TO A MAXIMUM OF TWO THREADS FROM THE HEAD. LONGER SCREWS HAVE A MINIMUM COMPLETE THREAD LENGTH OF: 1.75 INCHES FOR MS18212, 35206, 35207, 51957, 51958, NAS600-606, 1100, 1635 AND 1.5 INCHES FOR MS35214 35215, 35218, 35219

TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Plastic (nylon)		None	--	--	MS18212
Carbon steel		Cadmium plate	--	60,000	MS35206, 35207
Brass		Black chemical	--	55,000	MS35214, 35215
Aluminum alloy		Anodize	--	62,000	MS35218, 35219
Alloy steel		Cadmium plate Blackened cd. plate	-- B	160,000	NAS600-606, 1100
CRES		Passivate Black oxide	-- B	80,000	MS51957, 51958
		Passivate Black oxide	-- F		NAS1635 1/
	E	Passivate Cadmium plate	-- P	160,000	NAS1100
Titanium alloy	V	None Cadmium plate	-- P		

1/ For self-locking screws on NAS1635 see section 2109.

TABLE II. Dash numbers.

Thread size	NAS 600-606			NAS 1100			NAS 1635		
	Basic part no.	Thread designation (-3A)	Second dash no. range 1/	First dash no.	Thread designation (-3A)	Second dash no. range 1/	First dash no.	Thread designation (-3A)	Second dash no. range 1/
.060-80	--	--	-3 thru -24	-00	UNJF	-3 thru -24	-00	UNF	-2 thru -6
.086-56	--	--	-3 thru -24	-02	UNJC	-3 thru -24	-02	UNC	-2 thru -12
.112-40	600	UNC	-3 thru -24	-04	UNJC	-3 thru -24	-04	UNC	-3 thru -24
.138-32	601	UNC	-3 thru -36	-06	UNJC	-3 thru -36	-06	UNC	-3 thru -36
.164-32	602	UNF	-5 thru -56	-08	UNJF	-5 thru -56	-08	UNF	-5 thru -48
.190-32	603	UNF	-5 thru -56	-3	UNJF	-5 thru -56	-3	UNF	-5 thru -56
.250-28	604	UNF	-8 thru -96	-4	UNJF	-8 thru -96	-4	UNF	-8 thru -64
.3125-24	605	UNF	-8 thru -96	-5	UNJF	-8 thru -96	-5	UNF	-8 thru -64
.375-24	606	UNF	-8 thru -96	-6	UNJF	-8 thru -96	-6	UNF	-8 thru -64

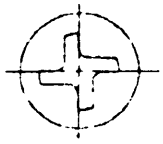
1/ Second dash number equals "L" dimension times 16
Increments of one (-2 thru -8), two (-10 thru -16), and four (-20 thru -96)

[illegible]	MS 33218	MS 33219	MS 33234	MS 33235	MS 33236	MS 33237	MS 33238	MS 33239	MS 33240
Thread designation (-2A)	UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF	UNC
Thread size Threads per inch	[illegible]	Dash number							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	.138	-2	-2	-2	-2	-202	-202	-2	-2	-2
	.250	-3	-3	-3	-3	-203	-203	-3	-3	-3
-0M6										
	.312	-4	-4	-4	-4	-204	-204	-4	-4	-4
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
-56 UNC	.438	-6	-6	-6	-6	-206	-206	-6	-6	-6
-64 UNF										
	.500	-7	-7	-7	-7	-207	-207	-7	-7	-7
	.625	-8	-8	-8	-8	-208	-208	-8	-8	-8
	.750	-9	-9	-9	-9	-209	-209	-9	-9	-9
	.875	--	--	--	--	-210	-210	-10	--	--
	.125	-10	-10	-10	-10	-211	-211	-11	-11	-11
	.180	-11	-11	-11	-11	-212	-212	-12	-12	-12
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
-44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	.375	-14	-14	-14	-14	-215	-215	-15	-15	-15
	.438	-15	-15	-15	-15	-216	-216	-16	-16	-16
-48 UNC										
	.500	-16	-16	-16	-16	-217	-217	-17	-17	-17
-40 UNF	.625	-17	-17	-17	-17	-218	-218	-18	-18	-18
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	.875	-19	-19	-19	-19	-220	-220	-20	-20	--
	1.000	-20	-20	-20	-20	-221	-221	-21	-21	-21
	1.250	--	--	--	--	-222	-222	--	--	-22
	1.500	--	--	--	--	-223	-223	-23	--	-23
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	.186	-22	-22	-22	-22	-225	-225	-25	-25	-25
	.250	-23	-23	-23	-23	-226	-226	-26	-26	-26
	.312	-24	-24	-24	-24	-227	-227	-27	-27	-27
	.375	-25	-25	-25	-25	-228	-228	-28	-28	-28
-28	.438	-26	-26	-26	-26	-229	-229	-29	-29	-29
	.500	-27	-27	-27	-27	-230	-230	-30	-30	-30
-32 UNF	.625	-28	-28	-28	-28	-231	-231	-31	-31	-31
-36 UN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	.875	-30	-30	-30	-30	-233	-233	-33	-33	-33
	1.000	-31	-31	-31	-31	-234	-234	-34	-34	-34
	1.250	-32	-32	-32	-32	-235	-235	-35	-35	-35
	1.500	-33	-33	-33	-33	-236	-236	-36	-36	-36
	1.750	-34	-34	-34	-34	-237	-237	-37	-37	-37
	2.000	-35	-35	-35	-35	-238	-238	-38	-38	-38
	.125	-36	-36	-36	-36	-239	-239	-39	-39	-39
	.188	-37	-37	-37	-37	-240	-240	-40	-40	
	.250	-38	-38	-38	-38	-241	-241	-41	-41	-41
	.312	-39	-39	-39	-39	-242	-242	-42	-42	-42
	.375	-40	-40	-40	-40	-243	-243	-43	-43	-43
	.438	-41	-41	-41	-41	-244	-244	-44	-44	-44
.164	.500	-42	-42	-42	-42	-245	-245	-45	-45	-45
	.625	-43	-43	-43	-43	-246	-246	-46	-46	-46
	.750	-44	-44	-44	-44	-247	-247	-47	-47	-47
-32 UNC										
	.875	-45	-45	-45	45	-248	-248	-48	-48	
-36 UNF	1.000	-46	-46	-46	-46	-249	-249	-49	-49	-49
	1.250	-47	-47	-47	-47	-250	-250	-50	50	-50
	1.500	-48	-48	-48	-48	-251	-251	-51	-51	-51
	1.750	-49	-49	-49	-49	-252	-252	-52	-52	-52
	2.000	-50	-50	-53	-53	-253	-253	-53	-53	-53
	[illegible]					-254	-254	-54		54
	[illegible]					-255	-255	-55		--
	[illegible]					-256	-256	-56		--
	[illegible]					-257	-257	-57		--

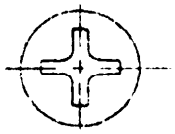
TABLE III. Dash numbers - Continued

Document no.		MS35218	MS35219	MS35214	MS35215	MS35206	MS35207	MS51957	MS51958	MS18212
Thread designation (-2A)		UNC	UNF	UNC	UNF	UNC	UNF	UNC	UNF	UNC
Thread size Threads per inch	L	Dash number								
	.125	--	--	--	--	--	--	--	--	--
	.188	--	--	--	--	-258	-258	--	--	--
	.250	-51	-51	-51	-51	-259	-259	-59	-59	-59
	.312	-52	-52	-52	-52	-260	-260	-60	-60	-60
.190	.375	-53	-53	-53	-53	-261	-261	-61	-61	-61
	.438	-54	-54	-54	-54	-262	-262	-62	-62	-62
	.500	-55	-55	-55	-55	-263	-263	-63	-63	-63
	.625	-56	-56	-56	-56	-264	-264	-64	-64	-64
	.750	-57	-57	-57	-57	-265	-265	-65	-65	-65
-24UNC	.875	-58	-58	-58	-58	-266	-266	-66	-66	-66
	1.000	-59	-59	-59	-59	-267	-267	-67	-67	-67
-32UNF	1.250	-60	-60	-60	-60	-268	-268	-68	-68	-68
	1.500	-61	-61	-61	-61	-269	-269	-69	-69	-69
	1.750	-62	-62	-62	-62	-270	-270	-70	-70	-70
	2.000	-63	-63	-63	-63	-271	-271	-71	-71	-71
	2.250	-64	-64	-64	-64	-272	-272	-72	-72	-72
	2.500	-65	-65	-65	-65	-273	-273	-73	-73	-73
	2.750	--	--	--	--	-274	-274	--	--	--
	3.000	--	--	--	--	-275	-275	--	--	--
	.312	-66	-66	-66	-66	-276	-276	-76	-76	-76
	.375	-67	-67	-67	-67	-277	-277	-77	-77	-77
	.438	-68	-68	-68	-68	-278	-278	-78	-78	--
.250	.500	-69	-69	-69	-69	-279	-279	-79	-79	-79
	.625	-70	-70	-70	-70	-280	-280	-80	-80	-80
	.750	-71	-71	-71	-71	-281	-281	-81	-81	-81
-20UNC	.875	-72	-72	-72	-72	-282	-282	-82	-82	--
	1.000	-73	-73	-73	-73	-283	-283	-83	-83	-83
-28UNF	1.250	-74	-74	-74	-74	-284	-284	-84	-84	-84
	1.500	-75	-75	-75	-75	-285	-285	-85	-85	-85
	1.750	-76	-76	-76	-76	-286	-286	-86	-86	-86
	2.000	-77	-77	-77	-77	-287	-287	-87	-87	-87
	2.250	-78	-78	-78	-78	-288	-288	-88	-88	-88
	2.500	-79	-79	-79	-79	-289	-289	-89	-89	-89
	2.750	--	--	--	--	-290	-290	--	--	--
	3.000	--	--	--	--	-291	-291	--	--	--
	.375	-80	-80	-80	-80	-292	-292	-92	-92	
	.438	-81	-81	-81	-81	-293	-293	-93	-93	
	.500	-82	-82	-82	-82	-294	-294	-94	-94	
.3125	.625	-83	-83	-83	-83	-295	-295	-95	-95	
	.750	-84	-84	-84	-84	-296	-296	-96	-96	
	.875	-85	-85	-85	-85	-297	-297	-97	-97	
-18UNC	1.000	-86	-86	-86	-86	-298	-298	-98	-98	
	1.250	-87	-87	-87	-87	-299	-299	-99	-99	
-24UNF	1.500	-88	-88	-88	-88	-300	-300	-100	-100	
	1.750	-89	-89	-89	-89	-301	-301	-101	-101	
	2.000	-90	-90	-90	-90	-302	-302	-102	-102	
	2.250	-91	-91	-91	-91	-303	-303	-103	-103	
	2.500	-92	-92	-92	-92	-304	-304	-104	-104	
	2.750	--	--	--	--	-305	-305	--	--	
	3.000	--	--	--	--	-306	-306	--	--	
	.375	--	--	--	--	--	--	--	--	-92
	.500	-93	-93	-93	-93	-307	-307	-107	-107	-93
	.625	-94	-94	-94	-94	-308	-308	-108	-108	-94
.375	.750	-95	-95	-95	-95	-309	-309	-109	-109	-95
	.875	-96	-96	-96	-96	-310	-310	-110	-110	--
	1.000	-97	-97	-97	-97	-311	-311	-111	-111	-96
	1.250	-98	-98	-98	-98	-312	-312	-112	-112	-97
-16UNC	1.500	-99	-99	-99	-99	-313	-313	-113	-113	-98
-24UNF	1.750	-100	-100	-100	-100	-314	-314	-114	-114	-99
	2.000	-101	-101	-101	-101	-315	-315	-115	-115	-100
	2.250	-102	-102	-102	-102	-316	-316	-116	-116	--
	2.500	-103	-103	-103	-103	-317	-317	-117	-117	-101
	2.750	-104	-104	-104	-104	-318	-318	-118	-118	--
	3.000	-105	-105	-105	-105	-319	-319	-119	-119	-102

SCREWS, MACHINE, PAN HEAD, SMALL [illegible]
APPLICABLE DOCUMENTS: MS27039, NAS620, 1402-1406, 1630-1634



[illegible] RECESSED HEAD
NAS1630-1634



CROSS RECESSED HEAD
MS27039, NAS620, NAS1402-1406

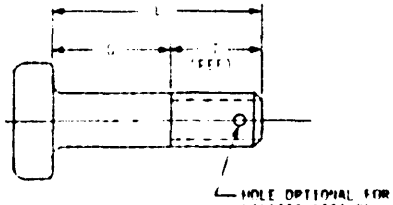


TABLE I. Materials

Material	Code	Finish	Code	Tensile strength (psi) min	Applicable documents
Alloy steel	-	Cadmium plate	--	160,000	NAS620, 1402-1406, 1630-1634
				125,000	MS27039
[illegible]	E	Passivate	--	160,000	NAS1630-1634
		Cadmium plate	S		
Corrosion and heat resistant steel	C	Passivate	--	125,000	MS27039
Titanium alloy	V	None	--	160,000	NAS1630-1634
		Cadmium plate	P		
Aluminum alloy	2D	Anodize	-	62,000	MS27039
Manganese bronze	BP	Cadmium plate	--	65,000	
	E	None			

TABLE II. MS27039 dash numbers

Thread designation (-3A)	.164-32 UNC	.190-32 UNF	.2500-20 UNF	.3125-24 UNF	.375-24 UNF	.4375-20 UNF	.500-20 UNF
T ref 1/	.438	.469	.531	.578	.688	.703	.828
First dash no.	-0.8	-1-	-4-	-5-	-6	-7-	-8-
Second dash no.	L						
04	.281	.281	.281	--	--	--	--
05	.344	.344	.344	.359	.406	--	--
06	.406	.406	.406	.422	.469	.453	.453
07	.469	.469	.469	.484	.531	.516	.516
08	.531	.531	.531	.547	.594	.578	.578
09	.594	.594	.594	.609	.656	.641	.641
10	.656	.656	.656	.672	.719	.703	.703
12	.781	.781	.781	.797	.844	.828	.828
14	.906	.906	.906	.922	.969	.953	.953
16	1.031	1.031	1.031	1.047	1.094	1.078	1.078
18	1.156	1.156	1.156	1.172	1.219	1.203	1.203
20	1.281	1.281	1.281	1.297	1.344	1.328	1.328
24	1.531	1.531	1.531	1.547	1.594	1.578	1.578
28	1.781	1.781	1.781	1.797	1.844	1.828	1.828
32	2.031	2.031	2.031	2.047	2.094	2.078	2.078
36	2.281	2.281	2.281	2.297	2.344	2.328	2.328
40	--	2.531	2.531	2.547	2.594	2.578	2.578
44	--	2.781	2.781	2.797	2.844	2.828	2.828
48	--	3.031	3.031	3.047	3.094	3.078	3.078

1/ Screws too short to apply this dimension are threaded to within a maximum of two threads from the head.

TABLE [illegible]. NAS623, 1402 - 1406, 1630 - [illegible] nut plates

Thread size	.112-40	.138-32	.164-32	.190-32	.250-28	.3125-24	.375-24
Thread designation.......			UNJC-3A	UNJF-3A	UNJF-3A	UNJF-3A	UNJF-3A
NAS623 first dash no. . . .			-2	-3	-4	-5	-6
T ref.			.276	.276	.316	.375	.391
Second dash no. range 1/. .			-1 thru -96	-1 thru -96	-1 thru -96	-1 thru -96	-1 thru -96
Thread designation.......			UNC-2A	UNF-3A	UNF-3A	UNF-3A	UNF-3A
Document no.			NAS1402	NAS1403	NAS1404	NAS1405	NAS1406
T ref....................			.338	.338	.425	.465	.578
Second dash no. range 1/. .			-1 thru -96	-1 thru -96	-1 thru -96	-1 thru -96	-1 thru -96
Thread designation.......	UNC-2A	UNC-2A	UNC-2A	UNJF-3A	UNJF-3A		
Document no.	NAS1630	NAS1631	NAS1632	NAS1633	NAS1634		
T ref.	.220	.276	.276	.276	.316		
Second dash no. range 1/. .	-1 thru -64	-1 thru -64	-1 thru -64	-1 thru -64	-1 thru -64		

1/ Second dash number equals "G" dimension times 16
Increments of one (-1 thru -8), two (-10 thru -16), and
four (-20 thru -96).

SECTION 2 (1)

SCREWS, SELF-LOCKING, CAP, SOCKET HEAD

APPLICABLE DOCUMENTS: NAS1351, 1352

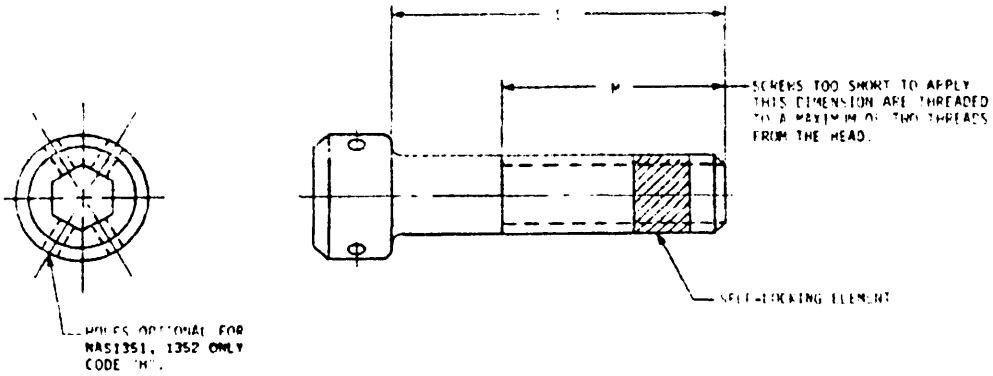


TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Alloy steel	-	Cadmium plate	P	170,000	NAS1351, 1352
		Black oxide	--		
CRES	C	Passivate	--	80,000	NAS1351, 1352
		Cadmium plate	P		
Heat resistant steel	N	Silver plate	S	160,000	
		Passivate	--		

TABLE II. NAS1351, 1352 dash numbers. 1/

Thread size	.060	.086	112	138	.164	.190	.250	.3125	.375	.4375	.500	625	.750	.875	1.000	1 250	1.500
Threads per inch ... NAS1351 (UNRF-3A)	80	64	48	40	36	32	28	24	24	20	20	18	16	14	12	--	--
Threads per inch ... NAS1352 (UNRC-3A)	--	56	40	32	32	24	20	18	16	14	13	11	10	9	8	7	6
M	.500	.625	750	.750	.875	.875	1.000	1.125	1.250	1.375	1.500	1.750	2.000	2.250	NAS1351 2.250 / NAS1352 2.500	3.125	3.750
First dash no	-00	-02	-04	-06	-08	-3	-4	-5	-6	-7	-8	-10	-12	-14	-16	-20	-24
L	Second dash number																
.125	-2LN	--	--	--	--												
.188	-3LN	-3LN	--	--	--												
.250	-4LN	-4LN	-4LN	-4LN	-4LN												
.375	-6LN	-6LN	-6LN	-6LN	-6LN	-6 N	-6LN	-6LN	--								
.500	--	-8LN	-8LN	-8LN	-8LN	-8 N	-8LN	-8LN	-8LN								
.625	--	--	-10LN	-10LN	-10LN	-10LN	-10LN	-10LN	-10LN								
.750			-12LN	-12LN	-12LN	-12LN	-12LN	-12LN	-12LN	-12LN	-12LN	--					
.875			--	-14LN	-14LN	-14LN	-14LN	-14LN	-14LN	-14LN	-14LN	--					
1.000			--	-16LN	-16LN	-16LN	-16LN	-16LN	-16LN	-16LN	-16LN	-16LN					
1.250					-20LN	-20LN	-20LN	-20LN	-20LN	-20LN	-20LN	-20LN	--				
1.500					-24LN	-24LN	-24LN	-24LN	-24LN	-24LN	-24LN	-24LN	-24LN				
1.750					--	-28LN	-28LN	-28LN	-28LN	-28LN	-28LN	-28LN	-28LN				
2.000						-32LN	-32LN	-32LN	-32LN	-32LN	-32LN	-32LN	-32LN	-32LN	--		
2.250						--	-36LN	-36LN	-36LN	-36LN	-36LN	-36LN	-36LN	-36LN	--		
2.500						--	--	-40LN	-40LN	-40LN	-40LN	-40LN	-40LN	-40LN	-40LN		
2.750									-44LN	-44LN	-44LN	-44LN	-44LN	-44LN	-44LN	--	
3.000									-48LN	-48LN	-48LN	-48LN	-48LN	-48LN	-48LN	-48LN	
3.250									--	--	--	--	-52LN	-52LN	-52LN	-52LN	
3.500													-56LN	-56LN	-56LN	-56LN	-56LN
3.000													--	-64LN	-64LN	-64LN	-64LN
3.500													--	-72LN	-72LN	-72LN	-72LN
4.000															-80LN	-80LN	-80LN
4.500															--	-88LN	-88LN
5.000																-96LN	-96LN

1/ For non-locking screws on NAS1351, 1352, see section 1502.

SECTION 2102

SCREWS, SELF-LOCKING, FILLISTER HEAD
APPLICABLE DOCUMENT: NAS1191

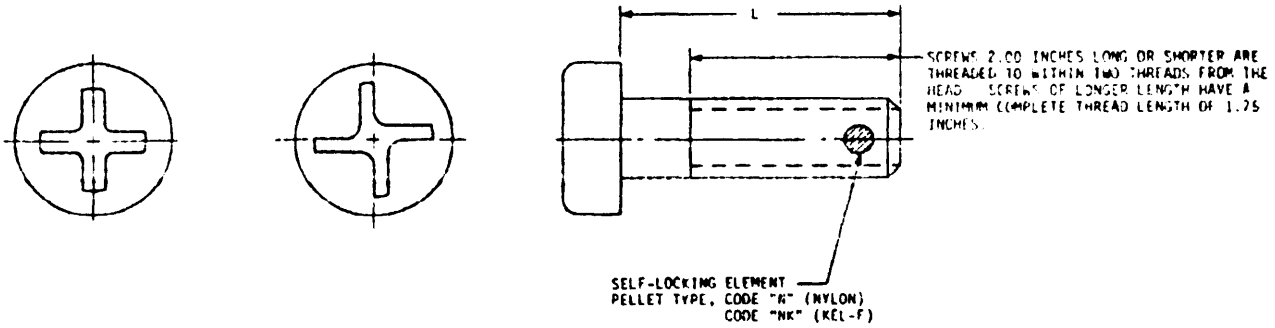


TABLE I. Materials.

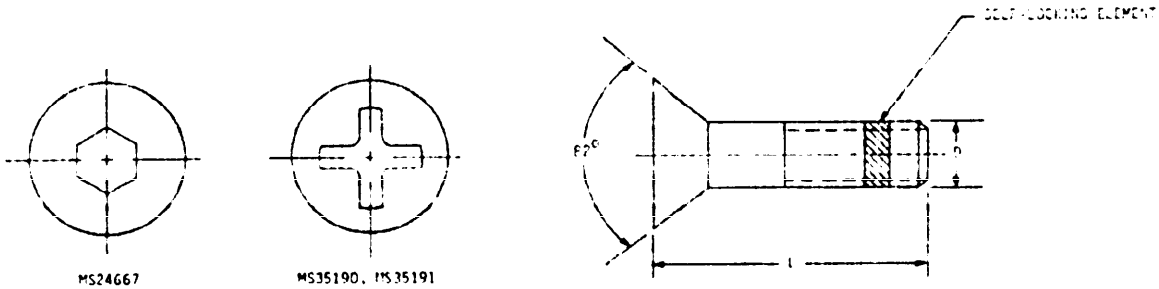
Material	Code	Protective finish	Code	Tensile strength (psi) min
Alloy steel	-	Cadmium plate	--	160,000
CRES	E	Passivate Cadmium plate	-- M	

TABLE II. NAS1191 dash numbers.

Thread designation (-3A)	Dia. dash no.	Length dash number 1/	
		Range	Increments
.086-56UNJC .112-40UNJC .138-32UNJC	-02 -04 -06	-3 thru -8	One
.164-32UNJC .190-32UNJF .250-28UNJF	-08 -3 -4	-10 thru -16	Two
.3125-24UNJF .375-24UNJF	-5 -6	-20 thru -96	Four

1/ Length dash number equals "L" dimension times 16

SCREWS, SELF-LOCKING, FLAT HEAD, 82°
APPLICABLE DOCUMENTS: MS24667, 35190, 35191



MS24667 MS35190, MS35191

TABLE I. Materials.

Material	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Carbon steel	Cadmium plate	--	60,000	MS35190, MS35191 1/
Alloy steel	Zinc plate	Z	160,000	MS24667 1/

1/ For non-locking screws see section 2003.

TABLE II. MS24667 part numbers.

Thread designation (UNC-3A)	.112-40	.138-32	.164-32	190-24	.250-20	.3125-18	.375-16	.500-13	.625-11	.750-10
L	MS24667 + dash number									
.250	-1L	-7L	--	--	--	--	--			
.375	-2L	-8L	-13L	-19L	-27L	-37L	--			
.500	-3L	-9L	-14L	-20L	-28L	-38L	-49L			
.625	-4L	-10L	-15L	-21L	-29L	-39L	-50L	--		
.750	-5L	-11L	-16L	-22L	-30L	-40L	-51L	-73L		
1.000 1/	--	--	-17L	-23L	-31L	-41L	-52L	-74L		
1.250				-24L	-32L	-42L	-53L	-75L	-84L	-93L
1.500				-25L	-33L	-43L	-54L	-76L	-85L	-94L
1.750				--	-34L	-44L	-55L	-77L	-86L	-95L
2.000					-35L	-45L	-56L	-78L	-87L	-96L
2.250					--	-46L	-57L	-79L	-88L	-97L
2.500					--	-47L	-58L	-80L	-89L	-98L
2.750							-59L	-81L	-90L	-99L
3.000							--	-82L	-91L	-100L

1/ Screws above heavy line are threaded to a maximum two threads from the head.
Screws below heavy line are threaded to a minimum thread length of twice the basic diameter plus 0.50 inch.

TABLE IV. MS35191 part numbers.

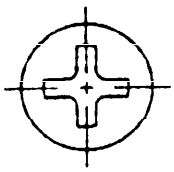
Thread designation (UNF-2A) ...	.060-80	.086-64	.112-48	.138-40	.164-36	.190-32	.250-28	.3125-24	.375-24	.500-20
L 1/	MS35191 + dash number									
.125 2/	-201L	-213L	-222L	-233L	-248L	--	--			
.188	-202L	-214L	-223L	-234L	-249L	-267L	--			
.250	-203L	-215L	-224L	-235L	-250L	-268L	-285L			
.312	-204L	-216L	-225L	-236L	-251L	-269L	-286L			
.375	-205L	-217L	-226L	-237L	-252L	-270L	-287L	-302L		
.438	--	-218L	-227L	-238L	-253L	-271L	-288L	-303L		
.500		-219L	-228L	-239L	-254L	-272L	-289L	-304L	-317L	--
.625		-220L	-229L	-240L	-255L	-273L	-290L	-305L	-318L	--
.750		-221L	-230L	-241L	-256L	-274L	-291L	-306L	-319L	-342L
.875			-231L	-242L	-257L	-275L	-292L	-307L	-320L	-343L
1.000			-232L	-243L	-258L	-276L	-293L	-308L	-321L	-344L
1.250			--	-244L	-259L	-277L	-294L	-309L	-322L	-345L
1.500				-245L	-260L	-278L	-295L	-310L	-323L	-346L
1.750				-246L	-261L	-279L	-296L	-311L	-324L	-347L
2.000				-247L	-262L	-280L	-297L	-312L	-325L	-348L
2.250					-263L	-281L	-298L	-313L	-326L	-349L
2.500					-264L	-282L	-299L	-314L	-327L	-350L
2.750					-265L	-283L	-300L	-315L	-328L	-351L
3.000					-266L	-284L	-301L	-316L	-329L	-352L

1/ Screws 2.00 inches long or shorter are threaded to a maximum of two threads from the head. Longer screws have a minimum thread length of 1.50 inches.

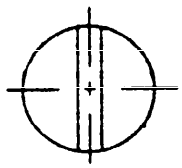
2/ Screws above heavy line have undercut heads.

SECTION 2104

SCREWS, SELF-LOCKING, FLAT HEAD, 100°, FULL THREAD
APPLICABLE DOCUMENT: NAS662



CROSS RECESS
OPTIONAL FOR THREAD
SIZE .086 ONLY
CODE "R"



SLOT RECESS

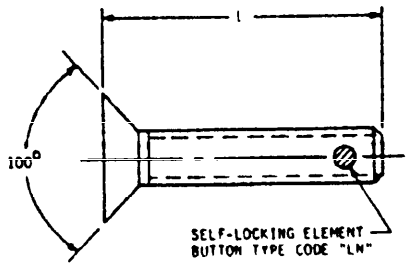


TABLE I. Materials.

Material	Code	Protective finish
Carbon steel	-	Cadmium plate
CRES	C	Passivate
Brass	B	Cadmium plate

TABLE II. NAS662 dash numbers.

Thread designation (-2A)	.060-80 UNF	.086-56 UNC
First dash no. ...	-0	-2
L	Second dash number	
.125	-2	-2
.188	-3	-3
.250	-4	-4
.312	-5	-5
.375	-6	-6
.438	-7	-7
.500	-8	-8
.625	--	-10
.750	--	-12
.875		-14
1.000		-16
1.250		-20

1/ For non-locking screws on NAS662 see section 2004.

SECTION 2105

SCREWS, SELF-LOCKING, FLAT HEAD, 100°, LONG THREAD
APPLICABLE DOCUMENT: MS21093, NAS1189

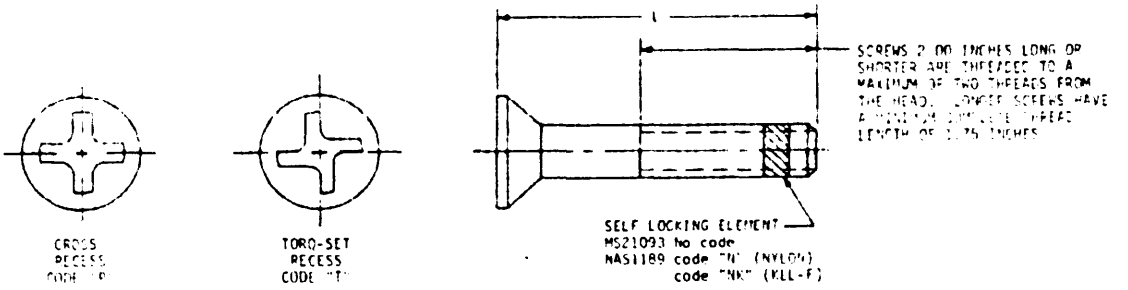


TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Carbon steel	-	Cadmium plate	--	55,000	MS21093
Alloy steel	-	Cadmium plate	--	160,000	NAS1189
CRES	F	Cadmium plate Passivate	H --		

TABLE II. MS21093 dash numbers.

Thread designation	.086-56 UNC	.112-40 UNC	.138-32 UNC	.164-32 UNC	.190-32 UNF	.250-28 UNF	.3125-24 UNF	.375-24 UNF
First dash no.	-02	-04	-06	-08	-10	-12	-14	-16
L	Second dash number							
.188	-01	--	--	--				
.250	-02	-09	-18	--				
.312	-03	-10	-19	-31				
.375	-04	-11	-20	-32	-43	--		
.438	-05	-12	-21	-33	-44	--		
.500	-06	-13	-22	-34	-45	-55		
.625	-07	-14	-23	-35	-46	-57	-67	-77
.750	-08	-15	-24	-36	-47	-58	-68	-78
.875	--	-16	-25	-37	-48	-59	-69	-79
1.000		-17	-26	-38	-49	-60	-70	-80
1.250		--	-27	-39	-50	-61	-71	-81
1.500		--	-28	-40	-51	-62	-72	-82
1.750			-29	-41	-52	-63	-73	-83
2.000			-30	-42	-53	-64	-74	-84
2.250			--	--	-54	-65	-75	-85
2.500					-55	-66	-76	-86
2.750					--	--	--	-87
3.000					--	--	--	-88

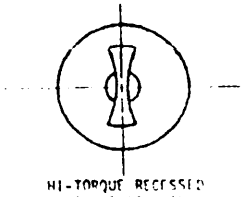
TABLE III. NAS1189 dash numbers.

Thread designation (-3A)	First dash no.	Second dash number 1/	
		Range	Increments
086-56 UNJC	-02	-3 thru -24	One (-3 thru -8)
.112-40 UNJC	-04	-3 thru -24	
.133-32 UNJC	-06	-4 thru 36	
.164-32 UNJC	-08	-5 thru -56	Two (-10 thru -32)
.190-32 UNJF	-3	-5 thru -56	
.250-28 UNJF	-4	-8 thru -96	
.3125-24 UNJF	-5	-8 thru -96	Four (-34 thru -96)
.375-24 UNJF	-6	-8 thru -96	

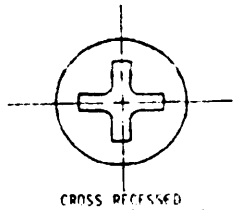
1/ Second dash number equals "L" dimension times 16

SECTION 2106

SCREWS, SELF-LOCKING, FLAT HEAD,
100° SHORT THREAD
APPLICABLE DOCUMENTS: MS21091, 21092, NAS1221



HI-TORQUE RECESSED
HEAD NAS1221 ONLY



CROSS RECESSED
HEAD MS21091, 21092

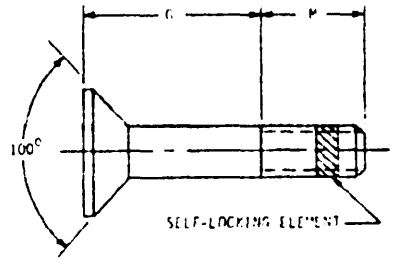


TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Alloy steel		Cadmium plate	--	125,000 160,000	MS21091 NAS1221
CRES		Passivate	--	80,000	MS21091
			--		
	E	Cadmium plate	P	160,000	NAS1221
Titanium	V	None	--		

TABLE II. Dash numbers.

Thread size	.112-40	.138-32	.164-32	.190-32	.250-28	.3125-24	.375-24	.4375-20	.500-20
Thread designation (-3A) .. MS21091, 21092 first dash no. M ref ..... Second dash no. range 1/ .	UNC -04 .250 002 thru 029	UNC -06 .312 002 thru 040	UNC -08 .437 002 thru 040	UNF -3 .469 002 thru 048	UNF -4 .506 004 thru 048	UNF -5 .531 006 thru 048	UNF -6 .641 006 thru 048	UNF -7 .656 008 thru 048	UNF -8 .781 008 thru 064
Thread designation (-3A) .. NAS 1221 3/ first dash no.. M ref ..... Second dash no. range 2/ ..	UNJC -04 .232 -1L thru -96L	UNJC -06 .276 -2L thru -96L	UNJC -08 .338 -2L thru -96L	UNJF -3 .338 -2L thru -96L	UNJF -4 .425 -3L thru -96L	UNJF -5 469 -3L thru -96L	UNJF -6 .578 -4L thru -96L		

1/ Second dash number equals grip dimension times 16 (020 thru 064). Increments of one (002 thru 004), two (006 thru 016) and four

2/ Second dash number equals grip dimension times 16 four (-20L thru -96L). Increments of one (-1L thru -8L), two (-10L thru -16L) and

3/ For non-locking screws on NAS 1221 see section 2006.

SECTION 2107

SCREW, SELF-LOCKING, HEXAGON HEAD
APPLICABLE DOCUMENT: MS21095

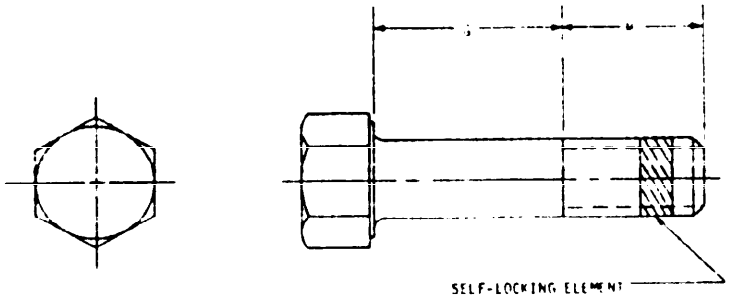


TABLE I. Material and dash numbers.

Material	CRES	
Protective finish	Passivate	
Tensile strength (psi) min	80,000	
Thread designation (UNF-3A)	.138-32	.164-32
M ref	.312	.437
MS21095 1/ First dash no.	-1	-2
	Second dash no.	
.062	-001	
.125	-002	
.188	-003	
.250	-004	
.375	-006	
.500	-008	
.625	-010	
.750	-012	
.875	-014	
1.000	-016	
1.250	-020	
1.500	-024	
1.750	-028	
2.000	-032	
2.250	-036	
2.500	-040	

1/ For screw sizes above .164 on MS21095 see section 804.

SECTION 2108

SCREWS, SELF-LOCKING, PAN HEAD, FULL THREAD
APPLICABLE DOCUMENTS: MS3212, 3213

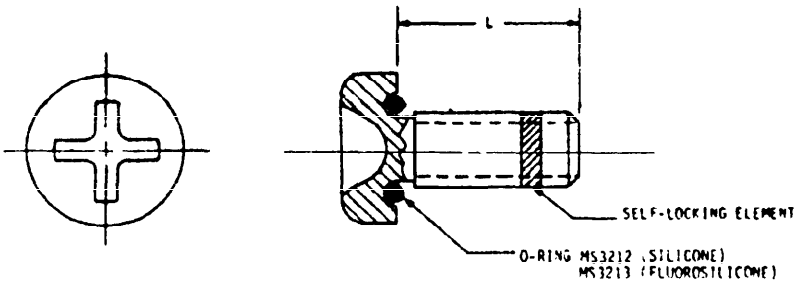


TABLE I. Material.

Material	Protective finish	Tensile strength (PSI) min
CRES	Passivate	75,000

TABLE II. Part numbers.

Thread designation (-2A)	.112-40 UNC	.138-32 UNC	.164-32 UNC	.190-32 UNF	.190-24 UNC	.250-20 UNC
L	MS3212, 3213 + dash number					
.250	-1L	-11L	-21L	--	--	--
.312	-2L	-12L	-22L	--	--	--
.375	-3L	-13L	-23L	-31L	-39L	-47L
.438	-4L	-14L	-24L	-32L	-40L	-48L
.500	-5L	-15L	-25L	-33L	-41L	-49L
.625	-7L	-17L	-27L	-35L	-43L	-51L
.750	-8L	-18L	-28L	-36L	-44L	-52L
.875	-9L	-19L	-29L	-37L	-45L	-53L
1.000	-10L	-20L	-30L	-38L	-46L	-54L
1.250	--	--	--	--	--	-56L

1/ For non-locking screws on MS3212, 3213 see section 2012.

SECTION 2171
SCREWS, SELF-LOCKING, PAN HEAD, [illegible] THREAD
APPLICABLE DOCUMENTS: MS21090, NAS1190, 1635

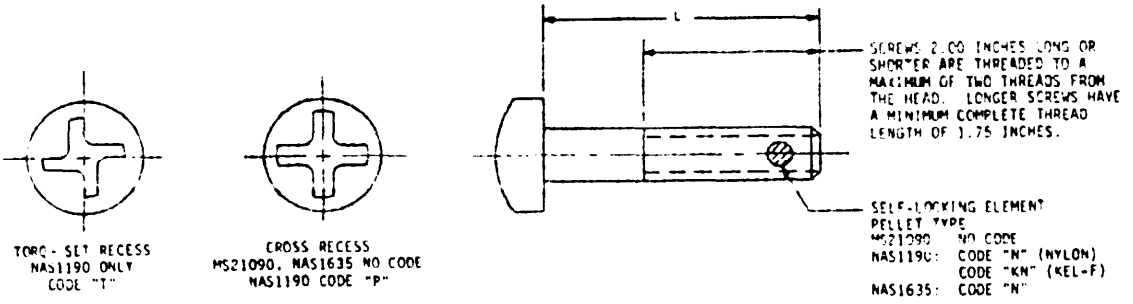


TABLE I. Materials.

Material	Code	Protective finish	Code	Tensile strength (psi) min	Applicable documents
Alloy steel	-	Cadmium plate	--	160,000	NAS1190
Carbon steel	-	Cadmium plate	--	55,000	MS21090
CRES	E	Passivate Cadmium plate	-- H	160,000	NAS1190
	-	Passivate Black oxide	-- P		NAS1635 1/

1/ For non-locking screws on NAS1635 see section 2013.

TABLE II MS21090 dash numbers.

Thread designation..	.086-56 UNC	.112-40 UNC	.138-32 UNC	.164-32 UNC	.190-32 UNF	.250-28 UNF	.3125-24 UNF	.375-24 UNF
First dash no.	-02	-04	-06	-08	-3	-4	-5	-6
L	Second dash number							
.188	-01	-09	-19	-33	--	--		
.250	-02	-10	-20	-34	-47	--		
.312	-03	-11	-21	-35	-48	-62		
.375	-04	-12	-22	-36	-49	-63	-76	--
.438	-05	-13	-23	-37	-50	-64	-77	--
.500	-06	-14	-24	-38	-51	-65	-78	-89
.625	-07	-15	-25	-39	-52	-66	-79	-90
.750	-08	-16	-26	-40	-53	-67	-80	-91
.875	--	-17	-27	-41	-54	-68	-81	-92
1.000		-18	-28	-42	-55	-69	-82	-93
1.250		--	-29	-43	-56	-70	-83	-94
1.500		--	-30	-44	-57	-71	-84	-95
1.750			-31	-45	-58	-72	-85	-96
2.000			-32	-46	-59	-73	-86	-97
2.250			--	--	-60	-74	-87	-98
2.500					-61	-75	-88	-99
2.750					--	--	--	-100
3.000					--	--	--	-101

TABLE III. NAS1193 dash numbers.

Thread designation (-3A)	First dash no	Second dash number 1/	
		Range	Increments
.0.6-56 UNJC	-02	-3 thru -12	
.112-40 UNJC	-04	-3 thru -24	One (-3 thru -12)
.138-32 UNJC	-06	-3 thru -36	
.164-32 UNJC	-08	-4 thru -48	Two (-10 thru -16)
.190-32 UNJF	-3	-5 thru -56	
.250-24 UNJF	-4	-5 thru -64	
.3125-24 UNJF	-5	-8 thru -64	Four (-20 thru -64)
.375-24 UNJF	-6	-8 thru -64	

1/ Second dash number equals "L" dimension times 16

TABLE IV. NAS1635 dash numbers.

Thread designation (-2A)	First dash no.	Second dash number 1/	
		Range	Increments
.060-80 UNF	-00	-2 thru -6	
.086-56 UNC	-02	-2 thru -12	
.112-40 UNC	-04	-3 thru -24	
.138-32 UNC	-06	-3 thru -36	One (-2 thru -8)
.164-32 UNC	-08	-4 thru -48	Two (-10 thru -16)
.190-32 UNF	-3	-5 thru -56	Four (-20 thru -64)
.250-28 UNF	-4	-5 thru -64	
.3125-24 UNF	-5	-8 thru -64	
.375-24 UNF	-6	-8 thru -64	

1/ Second dash number equals "L" dimension times 16

SECTION 2110

SCREWS, SELF-LOCKING, PAN HEAD, SHORT THREAD
APPLICABLE DOCUMENTS: MS21096, MS21097

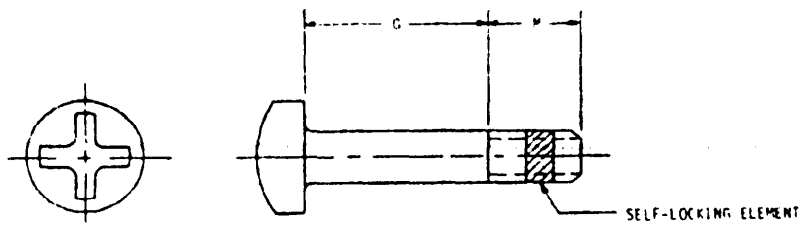


TABLE I. Materials.

Material	Protective finish	Tensile strength (psi) min	Applicable documents
Alloy steel	Cadmium plate	125,000	MS21096
CRES	Passivate	80,000	MS21097

TABLE II. MS21096, 21097 dash numbers.

Thread designation (-3A)	M min	First dash no.	Second dash number 1/	
			Range	Increments
.112-40UNC	.250	-04	001 thru 026	
.138-32UNC	.312	-06	001 thru 040	
.164-32UNC	.437	-08	001 thru 040	
.190-32UNF	.469	-3	003 thru 048	One (001 thru 004)
.250-28UNF	.506	-4	004 thru 048	Two (006 thru 016)
.3125-24UNF	.531	-5	006 thru 048	Four (020 thru 064)
.375-24UNF	.641	-6	006 thru 048	
.4375-20UNF	.656	-7	008 thru 048	
.500-20UNF	.781	-8	008 thru 064	

1/ Grip dash number equals "G" dimension times 16

SECTION 2201

SCREW, SHOULDER, BRAZIER HEAD
APPLICABLE DOCUMENT: NAS1298

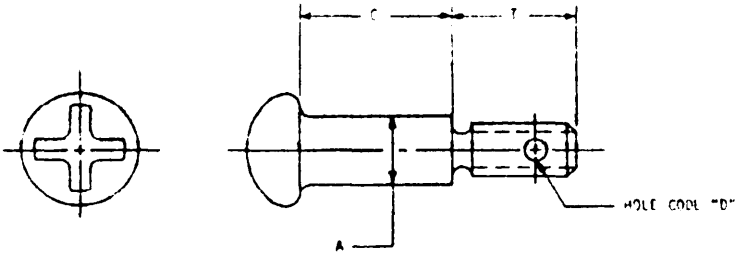


TABLE I. Material.

Material	Protective finish	Tensile strength (psi) min
Alloy steel	Cadmium plate	125,000

TABLE II. NAS1298 dash numbers.

Thread designation (-3A)	.138-32 UNJC	.190-32 UNJF	.250-28 UNJF	.3125-24 UNJF	.375-24 UNJF	.4375-20 UNJF
A max	.189	.249	.312	.374	.437	.499
T ref	.362	.362	.453	.498	.607	.629
First dash no.	-06	-3	-4	-5	-6	-7
Grip	Second dash number					
.072	-1	-1	--	--	--	--
.135	-2	-2	-2	-2	--	--
.198	-3	-3	-3	-3	-3	-3
.260	-4	-4	-4	-4	-4	-4
.322	-5	-5	-5	-5	-5	-5
.385	-6	-6	-6	-6	-6	-6
.448	-7	-7	-7	-7	-7	-7
.572	--	-9	-9	-9	-9	-9
.698	--	-11	-11	-11	-11	-11
.822			-13	-13	-13	-13
.948			--	-15	-15	-15
1.260			--	--	--	-20

SECTION 2202

SCREWS, SHOULDER, FLAT HEAD
APPLICABLE DOCUMENT: NAS1299

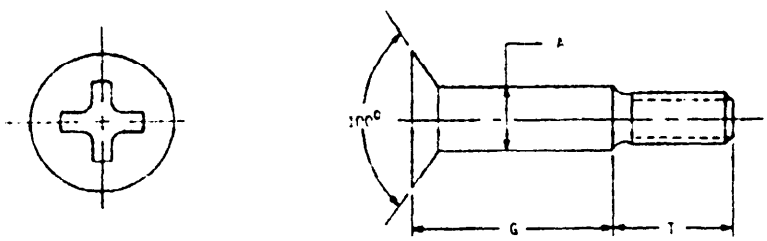


TABLE I. Material.

Material	Protective finish	Tensile strength (psi) min
Alloy steel	Cadmium plate	125,000

TABLE II. NAS1299 dash numbers.

Thread designation..	.138-32 UNJC-3A	.190-32 UNJF-3A	.250-28 UNJF-3A	.3125-28 UNJF-3A	.375-24 UNJF-3A	.4375-20 UNJF-3A
A max.....	.189	.249	.312	.374	.437	.499
T ref.....	.362	.362	.453	.498	.607	.629
First dash no.	-06	-3	-4	-5	-6	-7
G	Second dash number					
.072	-1					
.135	-2					
.198	-3					
.260	-4					
.322	-5					
.385	-6					
.448	-7					
.572	-9					
.698	-11					
.822	-13					
.948	-15					
1.260	-20					

SECTION 2203

SCREW, SHOULDER, WASHER HEAD
APPLICABLE DOCUMENT: NAS1297

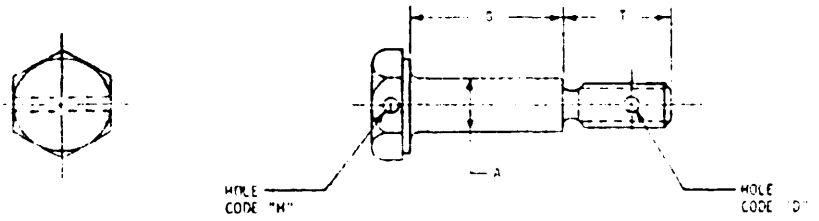


TABLE I. Material.

Material	Protective finish	Tensile strength (psi) min
Alloy steel	Cadmium plate	170,000

TABLE II. NAS1297 dash numbers 1/

Thread designation (UNJC-3A)	.138-32
A nom.....	.189
T ref	.362
First dash no.	-06
G	Second dash number
.072	-1
.135	-2
.198	-3
.260	-4
.322	-5
.385	-6
.447	-7

1/ For sizes above .138-32, see section 1001.

SECTION 2301

SCREWS, TAPPING, THREAD CUTTING, FLAT HEAD
APPLICABLE DOCUMENTS: MS24627, 24628, 51870

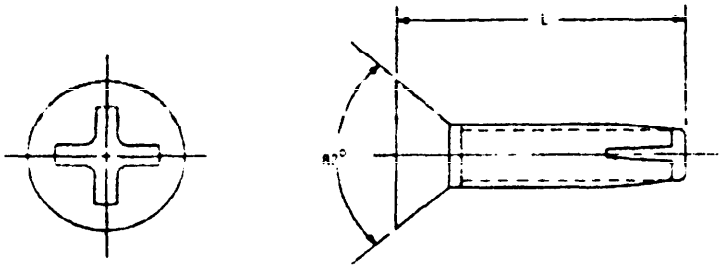


TABLE I. Materials.

Material	Code	Protective finish	Applicable documents
Carbon steel	--	Cadmium plate	MS24627,24628,51870
CRES	C	Passivate	MS51870

TABLE II. MS24627, 24628,51870 part numbers.

Thread size	.086	.112	.138	.164	.190	.250	.138		.190		.260	
Threads per inch.	56	40	32	32	24	20	32		24		20	
L	MS24627,24628 + dash number						MS51870 + dash number					
.250	-1	-10	-20	-30	--		-1	-C1	--	--		
.312	-2	-11	-21	-31	-45		--	--	--	--		
.375	-3	-12	-22	-32	-46		-2	-C2	-12	-C12		
.438	--	-13	-23	--	--	--	--	--	--	--	--	--
.500	-5	-14	-24	-34	-48	-62	-3	-C3	-13	-C13	-23	-C23
.625	--	-15	-25	-35	-49	-63	-4	-C4	-14	-C14	-24	-C24
.750		-16	-26	-36	-50	-64	-5	-C5	-15	-C15	-25	-C25
.875		--	-27	-37	-51	-65	--	--	-16	-C16	-26	-C26
1.000		--	-28	-38	-52	-66	--	--	-17	-C17	-27	-C27
1.250				-39	-53	-67					-28	-C28
1.500				-40	-54	-68					-29	-C29
1.750				-41	-55	-69					-30	-C30
2.000				--	-56	-70					-31	-C31

SECTION 2302

SCREWS, TAPPING, THREAD CUTTING, HEXAGON HEAD
APPLICABLE DOCUMENT: MS51869

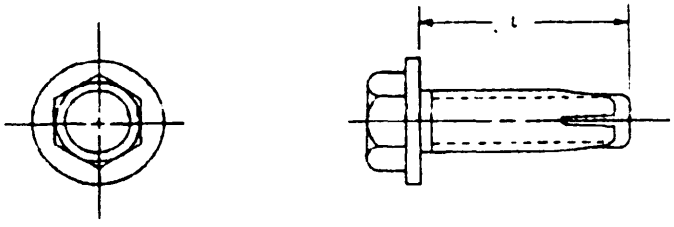


TABLE I. Materials.

Material	Code	Protective finish
Carbon steel	--	Cadmium plate
CRES	C	Passivate

TABLE II. Part numbers.

Thread size	.138		.190		.250	
Threads per inch..	32		24		20	
L	MS51869 + dash number					
.250	-1	-C1	--	--	--	--
.375	-2	-C2	-12	-C12	--	--
.500	-3	-C3	-13	-C13	-23	-C23
.625	-4	-C4	-14	-C14	-24	-C24
.750	-5	-C5	-15	-C15	-25	-C25
.875	--	--	-16	-C16	-26	-C26
1.000			-17	-C17	-27	-C27
1.250			--	--	-28	-C28
1.500			--	--	-29	-C29
1.750					-30	-C30
2.000					-31	-C31

SECTION 2303

SCREWS, TAPPING, THREAD CUTTING, PAN HEAD
APPLICABLE DOCUMENTS: MS24625, 24629, 24630, 51863

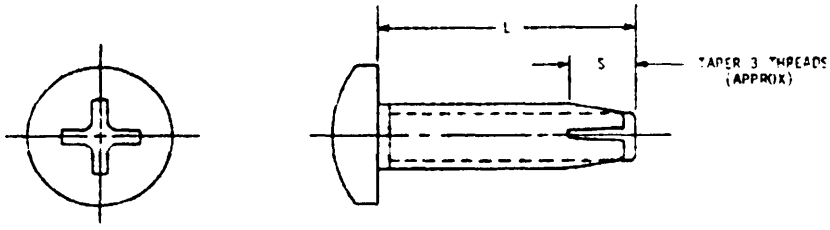


TABLE I. Materials.

Material	Protective finish		Applicable documents
		Code	
Carbon steel	Cadmium plate	--	MS24625,24629,51863
CRES	Passivate	--	MS24630
		C	MS51863

TABLE II. MS24626 part numbers.

Thread size	.086	.112	.138	.164	.190	.250
Threads per inch	32	24	20	18	16	14
L	Dash number					
.188	-1	--	--	--		
.250	-2	-9	-17	--		
.312	-3	-10	-18	-28		
.375	-4	-11	-19	-29	-42	-55
.500	-5	-12	-20	-30	-43	-56
.625	-6	-13	-21	-31	-44	-57
.750		-14	-22	-32	-45	-58
.875		--	-23	-33	-46	-59
1.000		--	-24	-34	-47	-60
1.250			-25	-35	-48	-61
1.500			-26	-36	-49	-62
1.750			--	-37	-50	-63
2.000				-38	-51	-64
2.250				-39	-52	-65
2.500				-40	-53	-66

TABLE III. MS24629, 24630 dash numbers.

Thread size	.086	.112	.138	.164	.190		.250	
Threads per inch ..	56	40	32	32	24	32	20	28
L	Dash number							
.125	-1	--	--	--				
.188	-2	-9	-20	--				
.250	-3	-10	-21	-33				
.312	-4	-11	-22	-34	-44	-64	--	--
.325	-5	-12	-23	-35	-45	-65	-56	--
.500	-6	-13	-24	-36	-46	-66	-57	-73
.625	-7	-14	-25	-37	-47	-67	-58	-74
.750	--	-15	-26	-38	-48	-68	-59	-75
.875	--	-16	-27	-39	-49	-69	-60	-76
1.000		-17	-28	-40	-50	-70	-61	-77
1.250		--	--	-41	-51	-71	-62	-78
1.500		--	-30	--	-52	-72	-63	-79

TABLE IV. MS51863 dash numbers.

Thread size	.086	.112	.138	.164	.190	.250
Threads per inch ..	56	40	32	32	24	20
L	Dash number					
.250	-1	-11	-21	--	--	--
.375	-2	-12	-22	-32	-42	--
.500	-3	-13	-23	-33	-43	-53
.625	-4	-14	-24	-34	-44	-54
.750		-15	-25	-35	-45	-55
.875		-16	-26	-36	-46	-56
1.000			-27	-37	-47	-57
1.250			--	-38	-48	-58
1.500			--	-39	-49	-59
1.750					-50	-60
2.000					--	-61
2.250					--	-62

SECTION [illegible]

SCREWS, TAPPING, THREAD FORMING, FLAT HEAD
APPLICABLE [illegible]

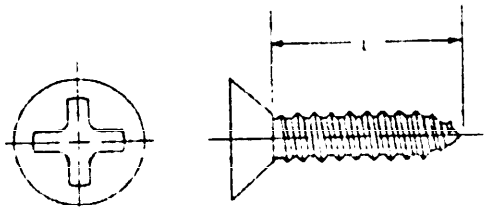
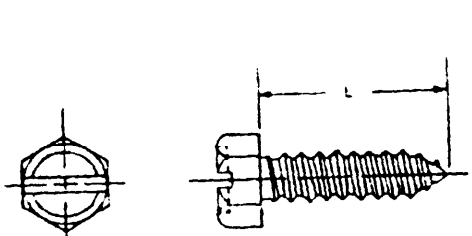


TABLE I. Material and part numbers.

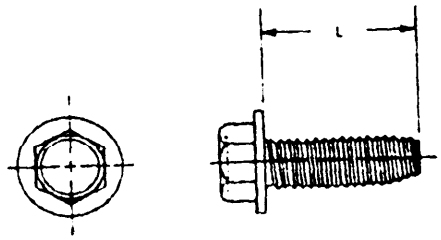
Material	Carbon steel					CRES				
Protective finish	Cadmium plate					Passivate				
Thread size	#10	1/4	1/4	1/4	1/4	#10	1/4	1/4	1/4	1/4
Threads per inch	24	20	18	16	14	24	20	18	16	14
L	MS51862+ dash number									
.250	-1	--	--	--		-10	--	--	--	
.312	--	-12	--	--		--	-120	--	--	
.375	-3	-13	-23	-33		-30	-130	-230	-330	
.500	-4	-14	-24	-34	-54	-40	-140	-240	-340	-540
.625	-5	-15	-25	-35	-55	-50	-150	-250	-350	-550
.750	-6	-16	-26	-36	-56	-60	-160	-260	-360	-560
.875		-17	-27	-37	-57		-170	-270	-370	-570
1.000		-18	-28	-38	-58		-180	-280	-380	-580
1.250		--	-29	-39	-59		--	-290	-390	-590
1.500			-30	-40	-60			-300	-400	-600
1.750			--	-41	-61			--	-410	-610
2.000			--	-42	-62			--	-420	-620
2.250					-63					-630
2.500					-64					-640

SECTION 2402

SCREWS, TAPPING, THREAD FORMING, HEXAGON HEAD
APPLICABLE DOCUMENTS: MS51850, 51871



MS51850



MS51871

TABLE I. Materials.

Materials	Protective finish	Tensile strength (psi) min	Applicable documents
Carbon steel	Cadmium plate	--	MS51850
CRES	Passivate	--	
Alloy steel	Cadmium plate	150,000	MS51871

TABLE II. MS51850 dash numbers.

Material	Carbon steel						CRES					
Thread size	.112	.138	.164	.190	.250	.312	.112	.138	.164	.190	.250	.312
Threads per inch	24	20	18	16	14	12	24	20	18	16	14	12
L	dash number											
.250	-1	--	--				-11	--	--			
.312	-2	-22	--				-12	-32	--			
.375	-3	-23	-43				-13	-33	-53			
.500	-4	-24	-44	-64	--	--	-14	-34	-54	-74	--	--
.625	-5	-25	-45	-65	-85	--	-15	-35	-55	-75	-95	--
.750	-6	-26	-46	66	-86	-106	-16	-36	-56	-76	-96	-116
.875		-27	-47	-67	-87	-107		-37	-57	-77	-97	-117
1.000			-48	-68	-88	-108		--	-58	-78	-98	-118
1.250		--	--	-69	-89	-109		--	--	-79	-99	-119
1.500				-70	-90	-110				-80	-100	-120
1.750				--	-91	-111				--	-101	-121
2.000				--	-92	-112				--	-102	-122

TABLE III. MS51871 dash numbers.

Material	Alloy steel		
Thread size	.250	.375	.500
Threads per inch	20	16	13
L	Dash number		
.500	-1	--	--
.625	-2	-12	--
.750	-3	-13	-23
.875	-4	-14	-24
1.000	-5	-15	-25
1.250	-6	-16	-26
1.500	-7	-17	-27
1.750	--	--	-28
2.000	--	--	-29
2.250	--	--	-30

SECTION 2403

SCREWS, TAPPING, THREAD FORMING, PAN HEAD
APPLICABLE DOCUMENTS: MS51861

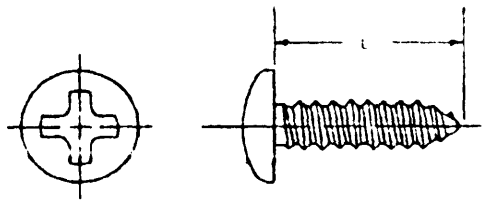


TABLE I. Materials and part numbers.

Material	Carbon steel						CRES					
Protective finish	Cadmium plate						Passivate					
Thread size	.086	.112	.138	.164	.190	.250	.086	.112	.138	.164	.190	.250
Threads per inch	32	24	20	18	16	14	32	24	20	18	16	14
L	MS51861+ dash number											
.188	-1	--	--				-1C	--	--	--		
.250	-2	-12	-22				-2C	-12C	-22C	--		
.312	-3	--	--				-3C	-13C	-23C	-33C		
.375	-4	-14	-24	-34	-44	--	-4C	-14C	-24C	-34C	-44C	--
.500	--	-15	-25	-35	-45	-65	--	-15C	-25C	-35C	-45C	-65C
.625	--	-16	-26	-36	-46	-66	--	-16C	-26C	-36C	-46C	-66C
.750		-17	-27	-37	-47	-67		-17C	-27C	-37C	-47C	-67C
.875		--	-28	-38	-48	-68		--	-28C	-38C	-48C	-68C
1.000		--	-29	-39	-49	-69		--	-29C	-39C	-49C	-69C
1.250				-40	-50	-70				-40C	-50C	-70C
1.500				-41	-51	-71				-41C	-51C	-71C
1.750				--	-52	-72				--	-52C	-72C
2.000					-53	-73					-53C	-73C
2.250					--	-74					--	-74C
2.500					--	-75					--	-75C

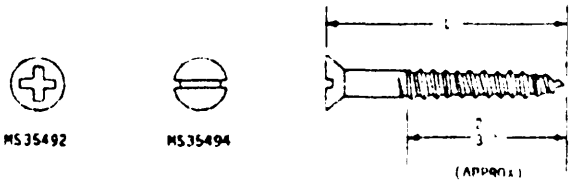


TABLE I. Materials and part numbers.

Material		Carbon steel		Brass	
Protective finish		Cadmium plate or zinc coat		Plain	
Thread size	L	MS35494 + dash no.	MS35495 + dash no.	MS35494 + dash no.	MS35495 + dash no.
.086-56	.25	-1	-901	-201	-301
	.38	-2	-902	-202	-302
	.50	-3	-903	-203	-303
	.62	-4	-904	-204	-304
	.75	-5	-905	-205	-305
.112-32	.25	-8	-8	-208	-208
	.38	-9	-9	-209	-209
	.50	-10	-10	-210	-210
	.62	-11	-11	-211	-211
	.75	-12	-12	-212	-212
	.88	-13	-13	-213	-213
	1.00	-14	-14	-214	-214
	1.25	-15	-15	--	--
	1.50	-16	-16	--	--
.138-18	.38	-31	-27	-227	-227
	.50	-32	-28	-228	-228
	.62	-33	-29	-229	-229
	.75	-34	-30	-230	-230
	.88	-35	-31	-231	-231
	1.00	-36	-32	-232	-232
	1.25	-37	-33	-236	-233
	1.50	-38	-34	-237	-234
	1.75	-39	-35	--	--
	2.00	-40	-36		
	2.25	-41	-37		
	2.50	-42	-38		
.164-15	.38	--	-49	--	--
	.50	-56	-50	-253	-249
	.62	-57	-51	-254	-250
	.75	-58	-52	-255	-251
	.88	-59	-53	-256	-252
	1.00	-60	-54	-257	-253
	1.25	-61	-55	-258	-254
	1.50	-62	-56	-259	-255
	1.75	-63	-57	-260	-256
	2.00	-64	-58	-261	-257
	2.25	-65	-59	--	--
	2.50	-66	-60	--	--
	2.75	-67	-61		
	3.00	-68	-910		
.190-13	.50	--	-74	--	--
	.62	--	-75	-275	-271
	.75	-83	-76	-276	-272
	.88	-84	-77	-277	-273
	1.00	-85	-78	-278	-274
	1.25	-86	-79	-279	-275
	1.50	-87	-80	-280	-276
	1.75	-88	-81	-281	-277
	2.00	-89	-82	-282	-278
	2.25	-90	-83	-283	-279
	2.50	-91	-84	-284	-280
	2.75	-92	-85	--	--
	3.00	-93	-86		
	3.50	-94	-87		

SECTION 2601

SETSCREWS, CONE POINT
APPLICABLE DOCUMENTS: MS51038, 51973, 51974

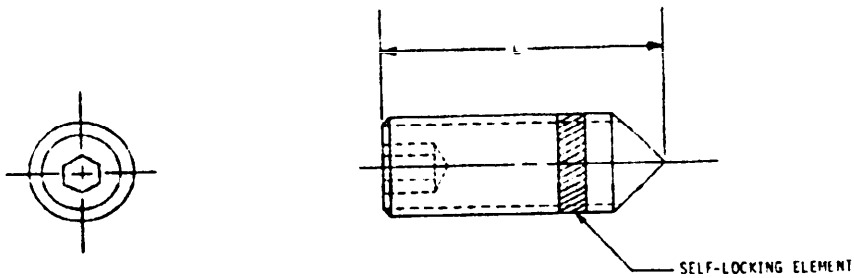


TABLE I. MS51973, 51974 part numbers.

Material	Alloy steel																
Protective finish	Cadmium plate																
Thread size	.086	.112		.138		.164		.190		.250		.3125		.375		.500	
Threads per inch (-3A)	56 UNC	40 UNC		32 UNC		32 UNC		24 UNC	32 UNF	20 UNC	28 UNF	18 UNC	24 UNF	16 UNC	24 UNF	13 UNC	20 UNF
L	1/	1/	2/	1/	2/	1/	2/	1/	3/	1/	3/	1/	3/	1/	3/	1/	3/
.125	-1	-8	-101	-17	-111	--	--	--	--	--	--						
.188	-2	-9	-102	-18	-112	-28	-132	--	-102	--	--						
.250	--	-10	-103	-19	-113	-29	-133	-39	-103	-50	-113						
.312		-11	-104	-20	-114	-30	-134	-40	-104	-51	-114	-62	-126	--	--	--	--
.375		--	-105	-21	-115	-31	-135	-41	-105	-52	-115	-63	-127	-73	-137	--	--
.500		--	-107	-22	-117	-32	-137	-42	-107	-53	-117	-64	-128	-74	-138	-83	-148
.625			-109		-119	-33	-139	-43	-109	-54	-119	-65	-129	-75	-139	-84	-149
.750			--		-120	--	-140	-44	-110	-55	-120	-66	-130	-76	-140	-85	-150
.875			--		-121	--	-141	--	--	--	-121	--	-131	--	-141	--	-151
1.000							-142		-111	-56	-122	-67	-132	-77	-142	-86	-152
1.250							--		--	--	-123	--	-133	--	-143	--	-153
1.500							--		--	--	-124	--	-134	--	-144	--	-154
1.750													-135		-145		-155
2.000													-136		-146		-156
2.500													--		--		-157
3.000													--		--		-158

1/ MS51973 + dash number, non-locking screws.
2/ MS51973 + dash number, self-locking screws.
3/ MS51974 + dash number, self-locking screws.

TABLE II. MS51038 dash numbers, self-locking.

Material	CRES							
Protective finish	Passivate							
Thread size	.112	.138	.164	.190	.250	.3125	.375	.500
Threads per inch (-3A)	40 UNC	32 UNC	32 UNC	32 UNF	28 UNF	24 UNF	24 UNF	20 UNF
L	Dash number							
.125	-101	-110	--	--	--	--		
.188	-102	-111	-122	-134	-144	--		
.250	-103	-112	-123	-135	-145	-157		
.312	-104	-113	-124	-136	-146	-158	--	--
.375	-105	-114	-125	-137	-147	-159	-169	-179
.500	-107	-116	-127	-139	-149	-160	-170	-180
.625	-109	-118	-129	-141	-151	-161	-171	-181
.750	--	-119	-130	-142	-152	-162	-172	-182
.875	--	-120	-131	--	-153	-163	-173	-183
1.000			-132	-143	-154	-164	-174	-184
1.250			--	--	-155	-165	-175	-185
1.500			--	--	-156	-166	-176	-186
1.750						-167	-177	-187
2.000						-168	-178	-188
2.500						--	--	-189
3.000						--	--	-190

SECTION 2602

SETSCREWS, CUP POINT
APPLICABLE DOCUMENTS: MS51021, 51023, 51963, 51964

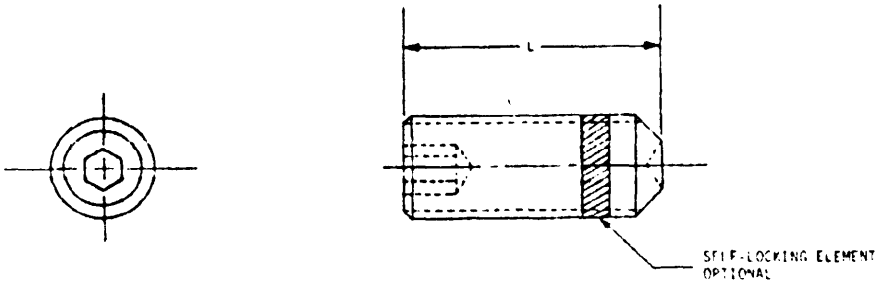


TABLE I. Materials.

Materials	Protective finish	Hardness-Rockwell	Applicable documents
CRES	Passivate	--	MS51021, 51023
Alloy Steel	Cadmium plate	C45-53	MS51963, 51964

TABLE II. MS51021, 51023 part numbers.

Thread size	.060	.086		.112			.138			.164			.190			.250		
Threads per inch (3-A)	80 UNF	56 UNC	64 UNF	48 UNF	40 UNC		40 UNF	32 UNC		36 UNF	32 UNC		24 UNC	32 UNF		20 UNC	28 UNF	
L	1/	2/	1/	1/	2/	4/	1/	2/	4/	1/	2/	4/	2/	1/	3/	2/	1/	3/
.125	-1	-1	-9	-18	-9	--	-27	-21	-111	--	--	-131	--	--	--	--	--	--
.188	-2	-2	-10	-19	-10	-102	-28	-22	-112	--	-31	-132	-42	-48	-102	-55	-60	-112
.250	-3	-3	-11	-20	-11	-103	-29	-23	-113	-38	-32	-133	-43	-49	-103	-56	-61	-113
.312			-12	-21	-12	-104	-30	-24	-114	-39	-33	-134	-44	-50	-104	-57	-62	-114
.375			--	--	-13	-105	-31	-25	-115	-40	-34	-135	-45	-51	-105	-58	-63	-115
.438			--	--	-14	-106	--	--	-116	--	--	-136	--	--	-106	--	--	-116
.500					-15	-107	-32		-117	-41	-36	-137	-47	-52	-107	-60	-64	-117
.625					--	-109	--		-119	-42	--	-139	-49	-53	-109	-61	-65	-119
.750					--	--	--		-120	--	--	-140	-51	-54	-110	-62	-66	-120
.875									-121			-141			--	--		-121
1.000									--			-142			-111	-63		-122
1.250									--			--			--	--		-123
1.500																		-124
1.750																		--
2.000																		--
2.500																		
3.000																		

1/ MS51023 + dash number, non-locking screws.
2/ MS51021 + dash number, non-locking screws.
3/ MS51023 + dash number, self-locking screws.
4/ MS51021 + dash number, self-locking screws.

TABLE II. MS51021, 51023 part numbers - Continued

Thread size	.375			.375			.500		
Threads per inch (-3A)	16 UNC	24 UNF		16 UNC	24 UNF		13 UNC	20 UNF	
L	2/	1/	3/	2/	1/	3/	2/	1/	3/
.125	--		--						
.188	--		--						
.250	-68		-125						
.312	-69	-73	-126	-80	--	--	--	--	--
.375	-70	-74	-127	-81	-84	-137	-91	-93	-147
.438	--	--	--	--	--	--	--	--	--
.500	-72	-75	-128	-83	-85	-138	-93	-94	-148
.625	-73	-76	-129	-84	--	-139	-94	--	-149
.750	-74	--	-130	-85	--	-140	-95	--	-150
.875	--		-131	--		-141	--		-151
1.000	-75		-132	-86		-142	-96		-152
1.250	--		-133	--		-143	--		-153
1.500			-134			-144			-154
1.750			-135			-145			-155
2.000			-136			-146			-156
2.500									-157
3.000									-158

1/ MS51023 + dash number, non-locking screws.
2/ MS51021 + dash number, non-locking screws.
3/ MS51023 + dash number, self-locking screws.
4/ MS51021 + dash number, self-locking screws.

TABLE III. MS51963, 51964 part numbers.

Thread size	060	086	.112			.138			164			.190			.250		
Threads per inch (-3A)	80 UNF	56 UNC	48 UNF	40 UNC		40 UNF	32 UNC		36 UNF	32 UNC		24 UNC	32 UNF		20 UNC	28 UNF	
L	1/	2/	1/	2/	4/	1/	2/	4/	1/	2/	4/	2/	1/	3/	2/	1/	3/
.125	-1	-1	-17	-9	-210	-27	-20	-220	-37	-33	-240	--	--	--	--	--	--
.188	-2	-2	-18	-10	-211	-28	-21	-221	-38	-34	-241	-46	-48	-121	-62	-63	-131
.250	-3	-3	-19	-11	-212	-29	-22	-222	-39	-35	-242	-47	-49	-122	-63	-64	-132
.312			-20	-12	-213	-30	-23	-223	-40	-36	-243	-48	-50	-123	-64	-65	-133
.375			-21	-13	-214	-31	-24	-224	-41	-37	-244	-49	-51	-124	-65	-66	-134
.438			--	-14	-215	--	-25	-225	--	-38	-245	-50	--	--	-66	--	--
.500				-15	-216		-26	-226	-43	-39	-246	-51	-53	-126	-67	-68	-136
.625				-16	-218		-27	-228	--	-40	-248	-52	-54	-128	-68	-69	-138
.750				--	--		-28	-229	--	-41	-249	-53	-55	-129	-69	-70	-139
.875							-29	-230		-42	-250	-54	--	--	-70	--	-140
1.000							-30	--		-43	-251	-55	-56	-130	-71	-71	-141
1.250							--	--		--	--	-56	-57	--	-72	-72	-142
1.500															-73		-143
1.750															-74		--
2.000															-75		--
2.500																	
3.000																	

1/ MS51964 + dash number, non-locking screws.
2/ MS51963 + dash number, non-locking screws.
3/ MS51964 + dash number, self-locking screws.
4/ MS51963 + dash number, self-locking screws.

TABLE I. MS 51963, 51964 part numbers - Continued

Thread size	.3125			.375			.4375	.500			.625	.750	.875	1.000
Threads per inch (-3A)	18 UNC	24 UNF		16 UNC	24 UNF		14 UNC	13 UNC	20 UNF		11 UNC	10 UNC	9 UNC	8 UNC
L	2/	1/	3/	2/	1/	3/	2/	2/	1/	3/	2/	2/	2/	2/
.125	--	--	--	--	--									
.188	--	--	--	--	--									
.250	-81	-78	-144	-99	-92									
.312	-82	-79	-145	-100	-93	--	--	--		--				
.375	-83	-80	-146	-101	-94	-156	-118	-135		-166				
.438	-84	--	--	-102	--	--	-119	-136		--				
.500	-85	-82	-147	-103	-96	-157	-120	-137	-107	-167	-153	--		
.625	-86	-83	-148	-104	-97	-158	-121	-138	-108	-168	-154	-170		
.750	-87	-84	-149	-105	-98	-159	-122	-139	-109	-169	-155	-170		
.875	-88	--	-150	-106	--	-160	-123	-140	--	-170	-156	-171	-184	--
1.000	-89	-85	-151	-107	-99	-161	-124	-141	-110	-171	-157	-172	-185	-197
1.250	-90	-86	-152	-108	-100	-162	-125	-142	--	-172	-158	-173	-186	-198
1.500	-91		-153	-109	-101	-163	-126	-143		-173	-159	-174	-187	-199
1.750	-92		-154	-110	--	-164	-127	-144		-174	-160	-175	-188	-200
2.000	-93		-155	-111	--	-165	-128	-145		-175	-161	-176	-189	-201
2.500				-112			-129	-146		-176	-162	-177	-190	-202
3.000				--			--	-147		-177	-163	-178	-191	-203

1/ MS51964 + dash number, non-locking screws.
2/ MS51963 + dash number, non-locking screws.
3/ MS51968 + dash number, self-locking screws.
4/ MS51963 + dash number, self-locking screws.

SECTION 2603

SETSCREWS, FLAT POINT
APPLICABLE DOCUMENTS: MS51029, 51031, 51965, 51966

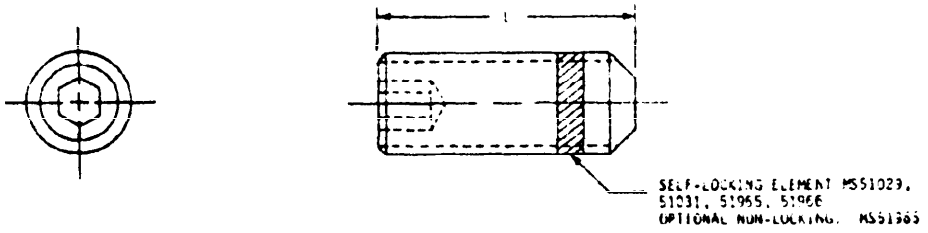


TABLE I. Materials.

Material	Protective finish	Hardness-Rockwell	Applicable document
Alloy steel	Cadmium plate	C45-53	MS51965, 51966
CRES	Passivate	--	MS51029, 51031

TABLE II. MS51029, 51031 part numbers (self-locking).

Thread size	.112	.138	.164	.190	.250	.3125	.375	.500
Threads per inch (-3A)	40 UNC	32 UNC	32 UNC	32 UNF	28 UNF	24 UNF	24 UNF	20 UNF
L	1/	1/	1/	2/	2/	2/	2/	2/
.125	-101	-111	--	--	--	--		
.188	-102	-112	-132	-102	-112	--		
.250	-103	-113	-133	-103	-113	-125		
.312	-104	-114	-134	-104	-114	-126	--	--
.375	-105	-115	-135	-105	-115	-127	-137	-147
.500	-107	-117	-137	-107	-117	-128	-138	-148
.625	-109	-119	-139	-109	-119	-129	-139	-149
.750	--	-120	-140	-110	-120	-130	-140	-150
.875	--	-121	-141	--	-121	-131	-141	-151
1.000			-142	-111	-122	-132	-142	-152
1.250			--	--	-123	-133	-143	-153
1.500			--	--	-124	-134	-144	-154
1.750						-135	-145	-155
2.000						-136	-146	-156
2.500						--	--	-157
3.000						--	--	-158

1/ MS51029 + dash number.
2/ MS51031 + dash number.

TABLE III. MS51965, 51966 part numbers.

Thread size	.086	.112		.138		.164		.190		.250		.3125		.375		.500	
Threads per inch (-3A)	56 UNC	40 UNC		32 UNC		32 UNC		24 UNC	32 UNF	20 UNC	28 UNF	18 UNC	24 UNF	16 UNC	24 UNF	13 UNC	20 UNF
L	1/	1/	2/	1/	2/	1/	2/	1/	3/	1/	3/	1/	3/	1/	3/	1/	3/
.125	-1	-8	-101	-17	-111	-27	-131	--	--	--	--	--	--	--			
.188	-2	-9	-102	-18	-112	-28	-132	-39	-111	-51	--	--	--	--			
.250	--	-10	-103	-19	-113	-29	-133	-40	-112	-52	-122	-64	-134	-76			
.312		-11	-104	-20	-114	-30	-134	-41	-113	-53	-123	-65	-135	-77	--	--	--
.375		--	-105	-21	-115	-31	-135	-42	-114	-54	-124	-66	-136	-78	-146	-88	-156
.500		--	-107	--	-117	-32	-137	-43	-116	-55	-126	-67	-137	-79	-147	-89	-157
.625			-109		-119	-33	-139	-44	-118	-56	-128	-68	-138	-80	-149	-90	-158
.750			--		-120	--	-140	-45	-119	-57	-129	-69	-139	-81	-149	-91	-159
.875			--		-121	--	-141	--	--	--	130	--	-140	--	-150	--	-160
1.000							-142		-120	-58	-131	-70	-141	-82	-151	-92	-161
1.250							--		--	--	-132	--	-142	--	-152	--	-162
1.500							--		--	--	-133	--	-143	--	-153	--	-163
[illegible]													144		-154		-164
2.000													-145		-155		-165
2.500													--		--		-166
3.000													--				-167

1/ MS51965 + dash number, non-locking.
2/ MS51965 + dash number, self-locking.
3/ MS51966 + dash number, self locking.

SECTION 2604

"SETSCREWS, HALF-DOG POINT"
APPLICABLE DOCUMENT: MS51977

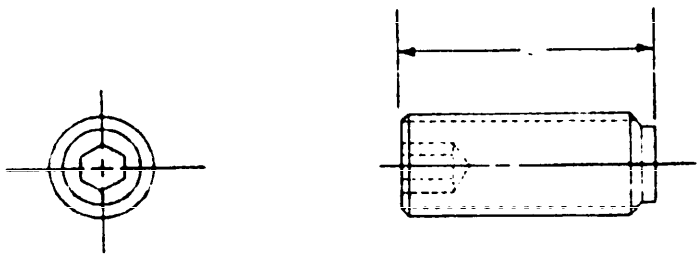


TABLE I. Material and part numbers

Material	Alloy steel									
Protective finish	Cadmium plate									
Hardness-Rockwell	C45-53									
Thread designation (UNC-3A)	.086-56	.112-40	.138-32	.164-32	.190-24	.250-20	.3125-18	.375-16	.500-13	.625-11
L	MS51977 + dash number									
.125	-1	-9	-18	--	--	--	--			
.188	-2	-10	-19	-29	-39	--	--			
.250	-3	-11	-20	-30	-40	-49	-61			
.312		-12	-21	-31	-41	-50	-62	--	--	--
.375		--	-22	-32	-42	-51	-63	-73	--	--
.500		--	-23	-33	-43	-52	-64	-74	-84	-94
.625						-53	-65	-75	-85	-95
.750						-54	-66	-76	-86	-96
1.000						-55	-67	-77	-87	-97
1.250						--	--	-78	-88	-98

SECTION 2805

SETSCREWS, OVAL POINT
APPLICABLE DOCUMENT: MS51081

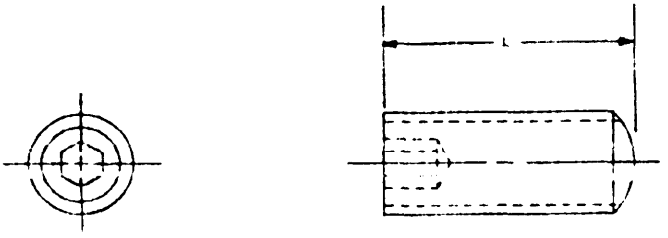


TABLE I. Material and part numbers.

Material	Alloy steel								
Protective finish..	Cadmium plate								
Hardness-Rockwell..	C45-53								
Thread designation (UNF-3A)	.086-56	.112-40	.138-32	.164-32	.190-24	.250-20	.3125-18	.375-16	.500-13
L	MS51081 + dash number								
.125	-1	-8	-16	--	--	--	--		
.188	-2	-9	-17	-26	-36	--	--		
.250	--	-10	-18	-27	-37	-46	-58		
.312			-19	-28	-38	-47	-59	--	--
.375			-20	-29	-39	-48	-60	-70	--
.500			--	-30	-40	-49	-61	-71	-80
.625						-50	-62	-72	-81
.750						-51	-63	-73	-82
1.000						-52	-64	-74	-83

SECTION 2
THREADED
APPLICABLE DOCUMENT MS21316

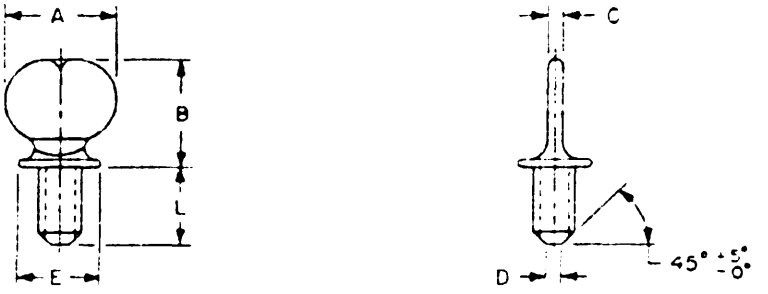


TABLE I. Materials.

Material	Protective finish	Tensile strength (psi) min
Carbon steel	Cadmium plate	48,000

TABLE II. MS21316 dash numbers.

NOMINAL SIZE		.138	.164	.190	.250	.3125	.375
THREADS PER INCH (UNC-2A)		32	32	24	20	18	16
A HEAD WIDTH	MAX	.31	.36	.42	.55	.70	.83
	MIN	.29	.34	.40	.52	.67	.80
B HEAD HEIGHT	MAX	.33	.38	.48	.64	.78	.95
	MIN	.31	.36	.46	.61	.75	.92
C HEAD THICKNESS	MAX	.05	.06	.06	.07	.09	.11
	MIN	.04	.05	.05	.05	.07	.09
D DIAMETER OF FLAT	MAX	.07	.09	.10	.13	.17	.21
	MIN	.06	.08	.09	.12	.16	.19
E SHOULDER DIAMETER	MAX	.25	.31	.35	.47	.59	.76
	MIN	.23	.29	.32	.44	.56	.71
L LENGTH	TOLERANCE	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.
.25	±.03	1					
.38				22			
.50		3	13	23	33	43	
.62				24	34		
.75		5	15	25	35	45	56
1.00				26	36	46	57
1.50	±.06			27	37	47	58
2.00				28	38	48	59
2.50	±.09				39	49	60
3.00						50	61

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS. This form is provided to solicit beneficial comments which may improve this document and enhance its use. DoD contractors, government activities, manufacturers, vendors, or other prospective users of the document are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity. A response will be provided to the submitter, when name and address is provided, within 30 days indicating that the 1426 was received and when any appropriate action on it will be completed.
NOTE: This form shall not be used to submit requests for waivers, deviations or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

DOCUMENT IDENTIFIER *(Number)* AND TITLE

MIL-STD-1251A Screws And Bolts Preferred For Design, Listing Of

NAME OF ORGANIZATION AND ADDRESS OF SUBMITTER

☐ VENDOR ☐ USER ☐ MANUFACTURER

1. ☐ HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE? ☐ IS ANY PART OF IT TOO RIGID, RESTRICTIVE, LOOSE OR AMBIGUOUS? PLEASE EXPLAIN BELOW.

A. GIVE PARAGRAPH NUMBER AND WORDING

B. RECOMMENDED WORDING CHANGE

C. REASON FOR RECOMMENDED CHANGE(S)

2. REMARKS

SUBMITTED BY *(Printed or typed name and address — Optional)*

TELEPHONE NO.

DATE

DD FORM 1 OCT 76 1426

EDITION OF 1 JAN 72 WILL BE USED UNTIL EXHAUSTED.

FOLD

DEPARTMENT OF THE ARMY

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 12062 WASHINGTON D. C.

POSTAGE WILL BE PAID BY THE DEPARTMENT OF THE ARMY

Commander
US Army Armament Research and
Development Command
ATTN: DRDAR-TST-S
Dover, NJ 07801

FOLD