

ASME B18.6.3-2010
[Revision and Consolidation of ASME
B18.6.3-2003 (R2008) and B18.6.4-2009]

Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series)

AN AMERICAN NATIONAL STANDARD



**The American Society of
Mechanical Engineers**

ASME B18.6.3-2010
[Revision and Consolidation of ASME
B18.6.3-2003 (R2008) and B18.6.4-2009]

Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series)

AN AMERICAN NATIONAL STANDARD



**The American Society of
Mechanical Engineers**

Three Park Avenue • New York, NY • 10016 USA

Date of Issuance: June 30, 2011

This Standard will be revised when the Society approves the issuance of a new edition. There will be no addenda issued to this edition.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Standard. Periodically certain actions of the ASME B18.6.4 Committee may be published as Cases. Cases and interpretations are published on the ASME Web site under the Committee Pages at <http://cstools.asme.org> as they are issued.

ASME is the registered trademark of The American Society of Mechanical Engineers.

This code or standard was developed under procedures accredited as meeting the criteria for American National Standards. The Standards Committee that approved the code or standard was balanced to assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment that provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

ASME does not “approve,” “rate,” or “endorse” any item, construction, proprietary device, or activity.

ASME does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this document, and does not undertake to insure anyone utilizing a standard against liability for infringement of any applicable letters patent, nor assumes any such liability. Users of a code or standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

Participation by federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of this code or standard.

ASME accepts responsibility for only those interpretations of this document issued in accordance with the established ASME procedures and policies, which precludes the issuance of interpretations by individuals.

No part of this document may be reproduced in any form,
in an electronic retrieval system or otherwise,
without the prior written permission of the publisher.

The American Society of Mechanical Engineers
Three Park Avenue, New York, NY 10016-5990

Copyright © 2011 by
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
All rights reserved
Printed in U.S.A.

CONTENTS

| | |
|----------------------------------------------------------------------------------------------------------|----------|
| Foreword | v |
| Committee Roster | vii |
| Correspondence With the B18 Committee | viii |
| 1 Introductory Notes | 1 |
| 2 General Data for Machine Screw and Tapping Screw Heads | 1 |
| 3 General Data for Machine Screws | 3 |
| 4 General Data for Tapping Screws | 4 |
| 5 General Data for Metallic Drive Screws | 9 |
| Figures | |
| 1 Types A, AB, B, BF, BP, and BT | 6 |
| 2 Types C, D, G, T, and TRS | 6 |
| 3 Type F | 6 |
| 4 Typical Torsional Strength Test Fixture | 9 |
| Tables | |
| 1 Dimensions of Slotted Flat Countersunk Head Screws | 11 |
| 2 Recess Dimensions for Flat Countersunk Head Screws | 13 |
| 3 Dimensions of Slotted 100-deg Flat Countersunk Head Screws (Machine Screws Only) | 15 |
| 4 Recess Dimensions for 100-deg Flat Countersunk Head Screws (Machine Screws Only) | 16 |
| 5 Dimensions of Slotted Close Tolerance 100-deg Flat Countersunk Head Screws (Machine Screws Only) | 17 |
| 6 Recess Dimensions for Close Tolerance 100-deg Flat Countersunk Head Screws (Machine Screws Only) | 18 |
| 7 Dimensions of Slotted Oval Countersunk Head Screws | 19 |
| 8 Recess Dimensions for Slotted Oval Countersunk Head Screws | 21 |
| 9 Dimensions of Slotted Undercut 82-deg Flat Countersunk Head Screws | 23 |
| 10 Recess Dimensions for Undercut 82-deg Flat Countersunk Head Screws | 24 |
| 11 Dimensions of Slotted Undercut Oval Countersunk Head Screws | 25 |
| 12 Recess Dimensions for Undercut Oval 82-deg Countersunk Head Screws | 27 |
| 13 Dimensions of Flat Countersunk Trim Head Screws | 28 |
| 14 Recess Dimensions for Flat Countersunk Trim Head Screws | 29 |
| 15 Dimensions of Oval 82-deg Countersunk Trim Head Screws | 30 |
| 16 Recess Dimensions for Oval 82-deg Countersunk Trim Head Screws | 33 |
| 17 Head Dimensions for Slotted Pan Head Screws | 34 |
| 18 Dimensions of Type I Cross Recessed Pan Head Screws | 35 |
| 19 Recess Dimensions for Pan Head Screws (Types IA, III, and VI) | 36 |
| 20 Recess Dimensions for Combination Slotted-Pan Head Screws | 37 |
| 21 Dimensions of Slotted Fillister Head Screws | 39 |
| 22 Recess Dimensions for Fillister Head Screws | 40 |
| 23 Dimensions of Slotted Drilled Fillister Head Screws (Machine Screws Only) | 42 |
| 24 Dimensions of Slotted Truss Head Screws | 43 |
| 25 Recess Dimensions for Truss Head Screws | 44 |
| 26 Dimensions of Combination Slotted Truss Head Screws | 46 |
| 27 Dimensions of Slotted Binding Head Screws (Machine Screws Only) | 48 |
| 28 Recess Dimensions for Binding Head Screws (Machine Screws Only) | 49 |

| | | |
|--------------------------------|------------------------------------------------------------------------------------------------|-----|
| 29 | Dimensions of Plain (Unslotted) and Slotted Regular and Large Hex Head Screws | 50 |
| 30 | Recess Dimensions for Indented Regular and Large Hex Head Screws | 52 |
| 31 | Recess Dimensions for Type I Nonindented Regular and Large Hex Head Screws | 53 |
| 32 | Dimensions of Plain and Slotted Hex Washer Head Screws | 54 |
| 33 | Recess Dimensions for Indented Hex Washer Head Screws | 56 |
| 34 | Recess Dimensions for Combination Slotted Type I Indented Hex Washer Head Screws | 57 |
| 35 | Dimensions of Slotted Round Head Screws | 58 |
| 36 | Recess Dimensions for Round Head Screws | 59 |
| 37 | Recess Dimensions for Combination Slotted Round Head Screws | 60 |
| 38 | Dimensions of Slotted Round Washer Head Screws | 62 |
| 39 | Recess Dimensions for Round Washer Head Screws | 63 |
| 40 | Dimensions of Threads and Points for Types AB and ABR Thread-Forming Tapping Screws | 64 |
| 41 | Dimensions of Threads and Points for Types B and BP Thread-Forming Tapping Screws | 65 |
| 42 | Dimensions of Threads and Points for Type A Thread-Forming Tapping Screws | 66 |
| 43 | Dimensions of Threads and Points for Types BF and BT Thread-Cutting Tapping Screws | 67 |
| 44 | Dimensions of Threads and Points for Types D, F, G, and T Thread-Cutting Tapping Screws | 68 |
| 45 | Dimensions of Type TRS Tapping Screws | 70 |
| 46 | Thread Lengths for Types A, AB, B, BF, BP, and BT Tapping Screws | 71 |
| 47 | Thread Lengths for Types C, D, F, G, and T Tapping Screws | 72 |
| 48 | Standard Test-Plate Thickness and Hole Sizes for Drive-Test Inspection of Tapping Screws | 73 |
| 49 | Maximum Drive Torque for Type TRS Tapping Screws | 74 |
| 50 | Torsional Strength Requirements for Tapping Screws | 75 |
| 51 | Dimensions of Round Head Type U Metallic Drive Screws | 76 |
| Mandatory Appendices | | |
| I | Protrusion Gaging of Flat Countersunk Heads | 77 |
| II | Across-Corners Gaging of Hex Heads | 78 |
| III | Gaging of Recessed Heads, Types I, IA, and III | 79 |
| IV | Wobble Gaging of Recessed Heads | 85 |
| V | Dimensions for No. 0000, No. 000, and No. 00 Thread Sizes | 88 |
| VI | Dimensions of Type C Tapping Screws | 90 |
| VII | Type VI Recess Gage Requirements | 92 |
| Nonmandatory Appendices | | |
| A | Dimensions of Header Points for Machine Screws Before Threading | 95 |
| B | Determination of Maximum Effective Design Grip Lengths | 97 |
| C | Formulas for Dimensions | 99 |
| D | Approximate Hole Sizes for Tapping Screws | 108 |
| E | Wrench Openings for Hex Head Screws, and Square and Hex Nuts | 130 |