



Standard Reference Chart for Pictorial Cortical Bone Screw Classification¹

This standard is issued under the fixed designation F 544; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense. Consult the DoD Index of Specifications and Standards for the specific year of issue which has been adopted by the Department of Defense.

1. Scope

1.1 The chart in Fig. 1 and the appendix cover only cortical bone screws. The chart gives screw dimensions and depicts driver tips and tap and clearance drills for cortical bone screws.

1.2 This standard is intended as a guide for the purchase, selection, and application of cortical bone screws.

1.3 It should be understood that no attempt is made herein to depict custom-made screws or screws used for other applications.

2. Referenced Documents

2.1 ASTM Standards:

F 116 Specification for Medical Screwdriver Bits²

F 543 Specification for Cortical Bone Screws²

2.2 ISC Standard:

ISO/D 15 9714-7 Bone Screw

3. Dimensions

3.1 Where applicable, screws and driver bits shall conform

¹ This reference chart is under the jurisdiction of ASTM Committee F-4 on Medical and Surgical Materials and Devices, and is the direct responsibility of Subcommittee F04.21 on Osteosynthesis.

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² Annual Book of ASTM Standards, Vol 13.01.

³ Available from American National Standards Institute, 1430 Broadway, New York, NY 10018.

to the current editions of the following specifications: F 116 and F 543.

3.2 Screws and drivers shown in Fig. 1 and not specified by Specifications F 116 and F 543 shall conform to those nominal dimensions specified in Appendix X1, Fig. X1.1.

4. Bone Screw Data

4.1 Table 1 is a size list of bone screws commonly used with bone plates. It gives their nominal major thread diameters in inches and millimetres. A specific screw may be of the cortex or cancellous type, depending upon actual use and manufacturer recommendations. It may be a tapping or nontapping screw.

4.2 For further information on screws and recommended drills, see Appendix X1 of this standard.

TABLE 1 Bone Screw Data

Size	Major Thread Diameter	
	in.	mm
<i>Medical:</i>		
4M	0.111	2.8
6M	0.137	3.5
6.5M	0.144	3.7
7M	0.154	3.9
8M	0.163	4.1
<i>Metric:</i>		
2.7 mm	0.106	2.7
3.5(a) mm	0.138	3.5
3.5 mm	0.138	3.5
4.5 mm	0.177	4.5

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STANDARD HEAD TYPES		STANDARD CONFIGURATION	STANDARD DRIVERS	STANDARD THREADS	TAPPING POINTS	NON-TAPPING POINTS	SCREW POINT END VIEW	STANDARD TAP DRILL	STANDARD CLEARANCE DRILL
MEDICAL SCREWS									
CRUCIATE									
SINGLE SLOT									
SLOTTED PHILLIPS									
METRIC SCREWS									
SPHERICAL HEAD HEX METRIC									
DEEP HEX METRIC									
MODIFIED PHILLIPS									
MODIFIED OVAL HEAD PHILLIPS									

2. FOR FURTHER INFORMATION ON SCREWS AND RECOMMENDED DRILLS, SEE APPENDIX 1 TO THIS CHART.



PICTORIAL CORTICAL BONE SCREW CLASSIFICATION CHART
COMMITTEE F 4 ON SURGICAL IMPLANTS
AMERICAN SOCIETY FOR TESTING AND MATERIALS

NOTE 1—The purpose of this chart is to present a pictorial view of those bone screws commonly used with bone plates, no attempt is made here to picture custom-made screws or screws for special applications.

NOTE 2—Screws may be manufactured from different metals. It is strongly recommended that screws used with bone plating appliances be of the same material as the bone plate. Dissimilar metals should never be mixed.

NOTE 3—Reference should be made to the most recent edition of the following ASTM material standard specifications for surgical implants:

- F 55 Stainless Steel Bar and Wire for Surgical Implants
- F 67 Unalloyed Titanium for Surgical Implants
- F 75 Cast Cobalt-Chromium-Molybdenum Alloy for Surgical Implants
- F 90 Wrought Cobalt-Chromium-Tungsten-Nickel Alloy for Surgical Implants
- F 136 Wrought Titanium 6A1-4V ELI Alloy for Use in Clinical Evaluation as a Surgical Implant Material
- F 138 Stainless Steel Bar and Wires for Surgical Implants (Special Quality)

NOTE 4—ASTM recommended practice for finish of surgical implants:

- F 86 Practice for Surface Preparation and Marking of Metallic Surgical Implants

NOTE 5—ASTM standard specifications for bone screws and drivers:

- F 116 Medical Screwdriver Bits
- F 543 Cortical Bone Screws

NOTE 6—Screw length: 4M, 6M, 6.5M, 7M, and 8M screws are measured by effective length. Metric screws are measured by overall length.

FIG. 1 Pictorial Cortical Bone Screw Chart

APPENDIX

(Nonmandatory Information)

X1. SUPPLEMENTAL INFORMATION

X1.1 This appendix contains supplemental information for the pictorial bone screw classification chart shown in Fig. 1. This appendix contains definitions and bone screw data and drill data for bone screws. For information concerning specific screws, drivers, drills, and recommended taps, see the respective manufacturer's catalog.

X1.2 Definitions:

X1.2.1 *screw thread*—a helical groove on a cylindrical or a conical surface. The projecting helical ridge thus formed is called a (screw) thread.

X1.2.2 *major diameter*—the largest diameter of the screw thread measured over the thread crests. Also known as thread