WOOD BORING BITS

DESCRIPTION AND USE

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1. GENERAL

1.01 This practice covers the description, use, inspection, precautions, and maintenance of Bell System Standard wood boring bits used in telephone construction and installation.

1.02 This section is reissued to update the information and to include the description and use of the B and C power bits. Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The standard wood boring bits for telephone use are auger bits, construction bits, insulator pin bits, expansive bits, and power bits.

1.04 The bit size is shown by a number impressed in the shank and indicates the bit diameter in sixteenths of an inch.

2. DESCRIPTION

AUGER BIT

2.01 The auger bit (Fig. 1) consists of a solid center twist provided with a head containing a single cutter, a single spur, and a lead screw. The threads are 14 per inch on the three smaller sizes and 12 per inch on the remaining sizes.

2.02 These bits are intended for general use in boring all kinds of wood where the depth of holes does not exceed 4 inches for the smaller sizes of bits or 5 inches for the larger sizes of bits.

2.03 There are 11 sizes of auger bits, ranging in size from 1/4 inch to 7/8 inch in increments of 1/16 inch, and a 1-inch and a 1-1/4 inch size.

2.04 The size, length, and designating number of each auger bit are listed in Table A.

CONSTRUCTION BIT

2.05 The construction bit consists of either a solid center twist, similar to the auger bit, or a hollow center twist (Fig. 2) provided with a head containing a single cutter, a single spur, and a lead screw having 12 threads per inch.

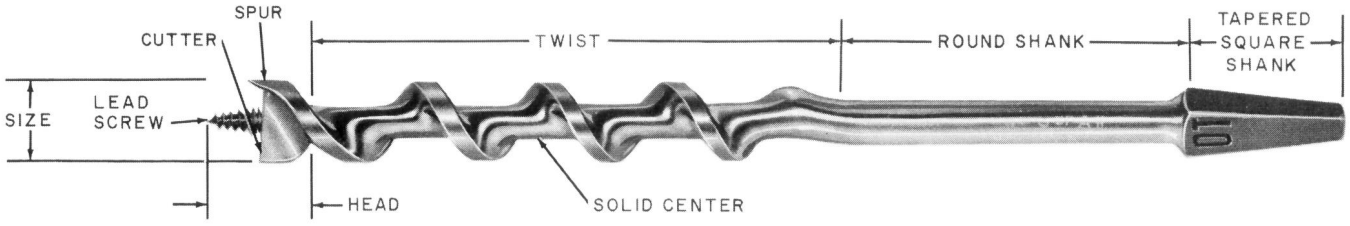

Fig. 1 — Auger Bit

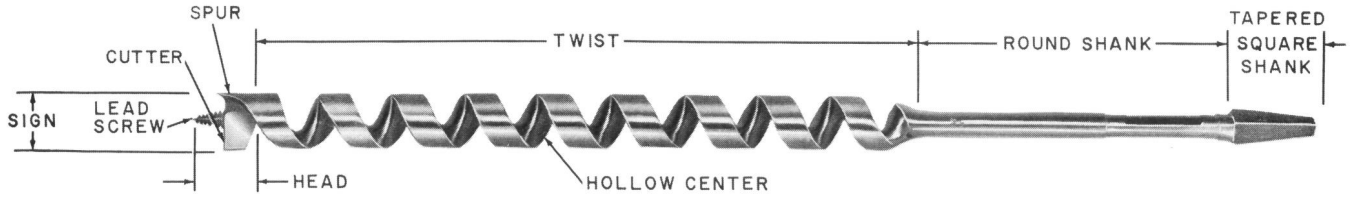

Fig. 2 — Construction Bit With Hollow Center Twist

TABLE A — SIZE, LENGTH, AND DESIGNATING NUMBER OF AUGER BITS

BIT SIZE (INCHES)	OVERALL LENGTH (INCHES)	DESIGNATING NUMBER (SEE NOTE)
1/4	7-1/2	4
5/16	7-5/8	5
3/8	7-3/4	6
7/16	7-7/8	7
1/2	8	8
9/16	8-1/8	9
5/8	8-1/4	10
11/16	8-3/8	11
3/4	8-1/2	12
13/16	8-5/8	13
7/8	8-3/4	14
1	9	16
1-1/4	9-1/4	20

Note: Designating number indicates the diameter of a bit in sixteenths of an inch.

2.06 There are 11 sizes of construction bits ranging in size from 1/4 inch to 1-1/4 inches. The available lengths of 12 inches and 18 inches are suitable for boring holes to depths of approximately 8 inches and 12 inches, respectively. These bits are intended for boring holes through poles, log anchors, building beams, etc.

2.07 Construction bits are tempered their entire length to prevent bending when a side pressure is applied. The twists are ground and polished to the required dimensions to permit the chips to travel out through the spiral groove without turning and wedging between the outer edges of the bit and the side of the hole. The cutter of the bit is diametrically opposite the spur to facilitate sharpening.

2.08 The size, length, and designating number of each construction bit are listed in Table B.

INSULATOR PIN BIT

2.09 The insulator pin bit (Fig. 3) consists of a solid center twist provided with a head containing a single cutter, a single spur, and lead screw having 12 threads per inch. The length of the bit has been limited to 6-7/8 inches to permit operating the brace between crossarms having standard spacing.

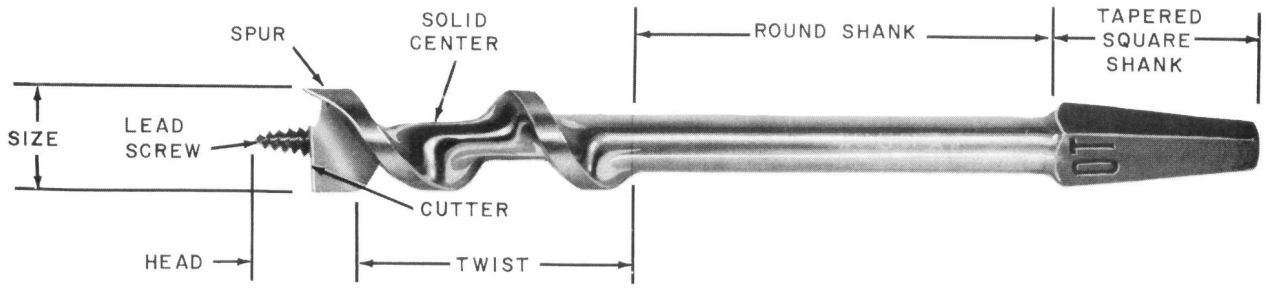

Fig. 3 — Insulator Pin Bit

TABLE B — SIZE, LENGTH, TYPE OF CENTER, AND DESIGNATING NUMBER OF CONSTRUCTION BITS

BIT SIZE (INCHES)	OVERALL LENGTH (INCHES)	TYPE OF CENTER	DESIGNATING NUMBER (SEE NOTE)
1/4	12	SOLID	4
	18	SOLID	4
3/8	12	SOLID & HOLLOW	6
	18	SOLID & HOLLOW	6
7/16	12	SOLID	7
1/2	12	SOLID & HOLLOW	8
	18	SOLID & HOLLOW	8
9/16	18	SOLID	9
5/8	18	SOLID & HOLLOW	10
11/16	12	SOLID & HOLLOW	11
	18	SOLID & HOLLOW	11
3/4	12	SOLID	12
	18	SOLID & HOLLOW	12
13/16	12	SOLID & HOLLOW	13
	18	SOLID & HOLLOW	13
1-1/16	18	SOLID	17
1-1/4	18	SOLID	20

Note: Designating number indicates the diameter of a bit in sixteenths of an inch.

2.10 These bits are available in two sizes as indicated in Table C which gives the size, and designating number for each bit.

TABLE C — SIZE AND DESIGNATING NUMBER OF INSULATOR PIN BITS

BIT SIZE (INCHES)	DESIGNATING NUMBER (SEE NOTE)
11/16	11
1-1/4	20

Note: Designating number indicates the diameter of a bit in sixteenths of an inch.

EXPANSIVE BITS

2.11 The expansive bit (Fig. 4) consists of a tapered square shank and round shank terminating in a slotted head having a lead screw, the threads of which are 18 per inch, and provided with an adjustable cutter which is securely clamped to the slotted head by means of a screw.

2.12 Expansive bits are intended for boring holes through boards when it is desired to cover a wide range of diameter of holes with a minimum number of bits.

2.13 Expansive bits are available in two sizes, a ***Small*** and ***Large*** and each size is furnished with a ***Small*** and ***Large*** adjustable cutter both of which carry scales graduated in 1/32 inch to furnish adjustment to 1/16 inch on the diameter.

2.14 The size, head diameter, overall length, and boring information for the expansive bits are contained in Table D.

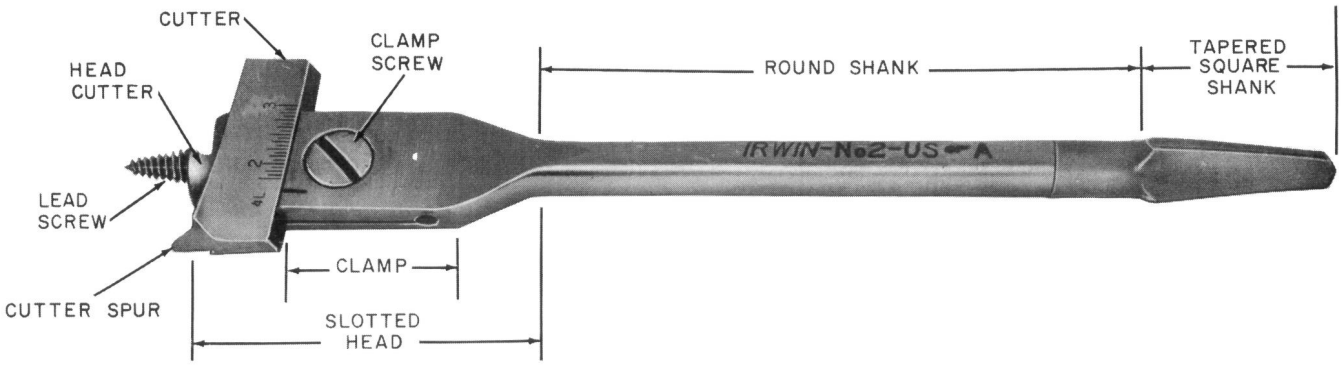

Fig. 4 — Expansive Bit

TABLE D — SIZE, HEAD DIAMETER, OVERALL LENGTH, AND BORING INFORMATION FOR EXPANSIVE BITS

SIZE	HEAD DIAMETER (INCHES)	OVERALL LENGTH (INCHES)	BORING INFORMATION
SMALL	1/2	7-5/8	Bores holes 1/2 inch to 7/8 inch in diameter with small cutter. Bores holes 7/8 inch to 1-1/2 inches in diameter with large cutter.
LARGE	7/8	9-1/4	Bores holes 7/8 inch to 1-3/4 inches in diameter with small cutter. Bores holes 1-3/4 inches to 3 inches in diameter with large cutter.

B AND C POWER BITS

2.15 The B power bit (Fig. 5) consists of a solid center twist provided with a head containing a single spur, a single cutter, and a lead screw, and is provided with a 7/16-inch hexagonal shank to fit the chuck of the B impact wrench, the C electric drill, and the B ratchet brace.

2.16 The C power bit (Fig. 6) consists of a hollow center twist provided with a head containing a single spur, a single cutter, and a lead screw, and is provided with a 7/16-inch

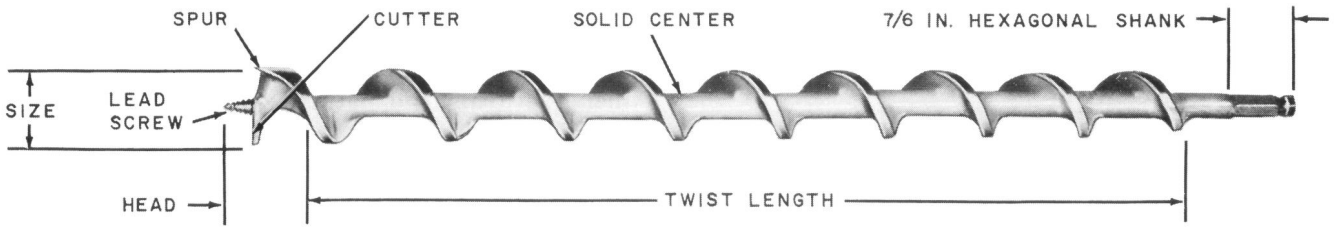

Fig. 5 — B Power Bit

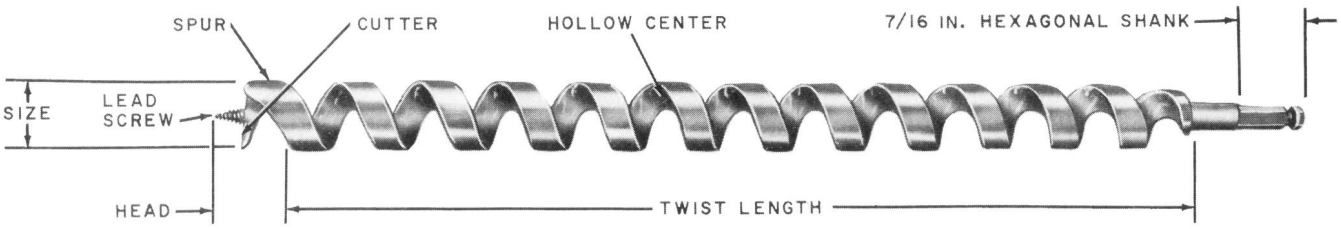

Fig. 6 — C Power Bit

hexagonal chuck to fit the chuck of the B impact wrench, the C electric drill, and the B ratchet brace.

2.17 The size and dimensions of the B and C power bits are listed in Table E.

TABLE E — SIZE AND DIMENSIONS OF THE B AND C POWER BITS

SIZE (INCHES)	OVERALL LENGTH (INCHES)	APPROX. TWIST LENGTH (INCHES)
7/16	12 18	9-1/2 15-1/2
8/16	12	9-1/2
11/16	12 18	9-1/2 15-1/2
13/16	12 18	9-1/2 15-1/2
17/16	18	15-1/2
20/16	18	15-1/2

3. USE

3.01 Bits that are in good condition will give the best service. If a bit requires pushing on the brace head to cut the wood, the indications are that the bit needs repair.

3.02 The appearance of the chip is an indication of the condition of the cutting edge and the outlining spur. A clean cut chip means a sharp cutter. A mangled or shredded chip usually means a dull cutter.

3.03 A bit which does not feed itself properly may be in need of screw point repairs.

3.04 A bent bit will turn hard and ultimately bind preventing further entrance into the hole.

3.05 If chips pile up in the hole, the clearance may be too great or the bit may be covered with gummy material or rust. Difficulty of this nature may be experienced when boring cedar poles, especially those containing either pipe rot or checks. These conditions are similar to striking another hole, which permits the chips to drop and turn in the spiral groove. As a result, some of the chips tend to wedge between the outer edges of the bit and the side of the hole causing the chips beyond this point to pile up and clog the opening of the twist. There is no remedy for this situation. It will be necessary for personnel working on cedar poles to clear the holes as required during the boring operation.

3.06 When boring a deep hole, sight along the bit after it has been started to determine whether it will terminate at the desired location.

3.07 Before boring through siding or clapboard, panels, thin boards, etc, particularly if the hole is to be located near the end of the board, drill a lead hole with the diameter slightly less than the diameter of the lead screw. This will reduce the possibility of splitting the wood.

3.08 Always place the bit in the chuck of the brace so two opposite corners of the tapered square shank are centered in the V-groove of the corresponding chuck jaws.

3.09 When placing a bit in a brace, align it properly so it will not have a tendency to swing off center.

3.10 Never strike the brace with a hammer to start boring with a bit.

3.11 In general, a hole can be bored completely through the wood without cleaning the hole. After the bit has passed completely through the hole, clear the hole by hitting the head of the brace with the palm of the hand until the bit passes through for three or more inches.

3.12 If a bit turns hard making it necessary to clear the hole before completing the boring operation, back the bit out until the point of the lead screw is loose and then pull on the head of the brace while turning the brace clockwise until most of the chips have been worked out of the hole.

3.13 Do not pull a bit from a completed hole. Back it out by turning it in the same direction as when boring.

3.14 Bits, particularly expansive bits, have a tendency to break out the wood around the bottom of the hole when completing boring operations. This difficulty can be overcome by firmly backing up the location of the hole with a small block of wood until the bit has completely passed through the hole being bored. This practice should be followed wherever practical.

3.15 If a nail or other piece of metal is encountered while boring, immediately back the bit out to clear the metal and then clean as described above. If the size of the hole permits, remove the obstruction with a cold chisel and then proceed with the boring.

4. INSPECTION

4.01 All bits shall be inspected regularly to determine that they are in good condition and do not have any injury or defects sufficient to impair their usefulness.

4.02 Bits should be examined to determine their condition based on the following points:

A. Auger, Construction, Insulator Pin Bits, and Power Bits

1. Broken screw point or threads badly marred.
2. Dull spur or edge badly nicked or bent.
3. Spur lower than cutting edge.
4. Dull or badly nicked cutting edge.
5. Twist of bit bent.
6. Round shank of bit bent.
7. Tapered square shank marred.

B. Expansive Bits

1. Broken screw point or threads badly marred.
2. Dull or bent spur or edge badly nicked.
3. Spur lower than cutting edge of head.
4. Dull cutter spur or edge badly nicked.
5. Top of cutter spur lower than cutting edge of cutter.
6. Dull or badly nicked cutting edge of head.
7. Dull or badly nicked cutting edge of cutters.
8. Round shank of bit bent.
9. Tapered square shank marred.
10. Threads of clamp screw stripped and slotted head badly marred.

5. CARE AND MAINTENANCE

5.01 Moisture from the hand or sap from green timber may occasionally cause rust spots. This can be prevented by wiping the bit with an oily rag. Fine abrasive paper may be used to polish the bad spots on the round shank, tapered square shank, or the twist, but not the head.

5.02 Bits should not be kept loose in a tool box. This will result in damage to the point, the spur, and the cutting edge. Bits, when not in use, should be kept in tool rolls, racks, or pockets of trucks and tool chests provided for the purpose of protection.

5.03 The function of the spur, which touches the wood immediately after the screw, is to score the outer edge of the chip in advance of the cutter. Therefore, make sure the foremost edge of the spur extends beyond the cutting edge.

5.04 Because of the close relationship of the parts of the boring head to each other, and their small size, it is not possible to file much metal from the head of the bit without reducing its boring quality. Therefore, examine the bit carefully before filing.

5.05 To resharpen a spur, rest the bit on a wood support with the screw pointing up. See Fig. 7. Place an auger bit file on the inside of the spur and sharpen the cutting edge by pressing lightly while keeping the file at an angle that will limit the amount of metal removed. Except for touching up, never file a spur on the outside because this will destroy the clearance and cause the bit to bind or stick.

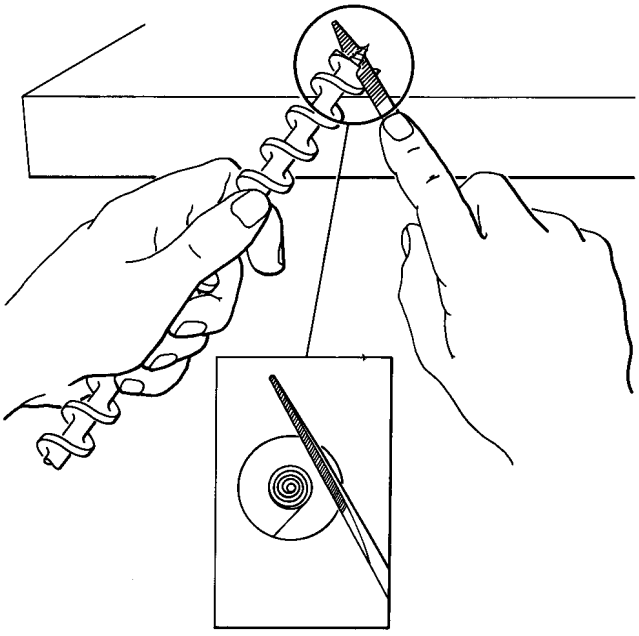

Fig. 7 — Sharpening the Spur

5.06 To resharpen a cutter, rest the bit on a board with the screw down so the cutting edge is parallel with the edge of the board. See Fig. 8. Sharpen the cutting edge, using light strokes, to a straight line keeping the bevel as near as practical the same as it was when new.

5.07 To restraighten the bit, if it is slightly bent, roll the bit on a flat surface until the bend is located. Place the bit on a flat, solid wood surface and tap it on the high side with light blows of a hammer or a smooth faced wooden mallet until the bit is straight. See Fig. 9.

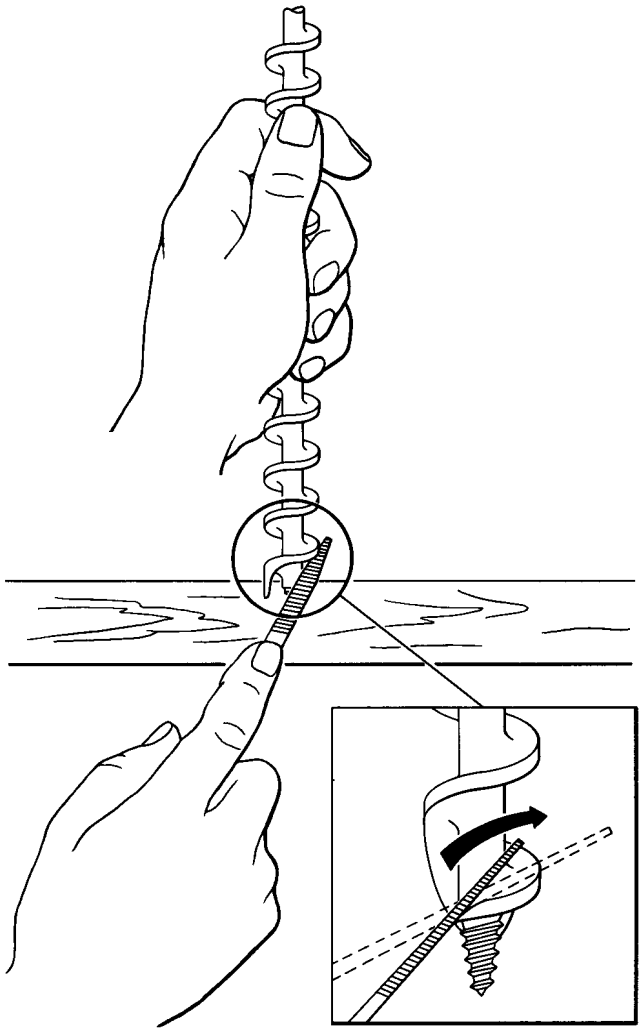

Fig. 8 — Sharpening the Cutter

6. PRECAUTIONS

6.01 Bits shall be raised aloft on a pole by means of a canvas bucket or handline. Bits shall ***not*** be assembled in a brace to be raised aloft in a canvas bucket.

6.02 Before boring holes, make certain there is no obstruction (gas, water, or soil pipe) in the path of the bit and that it will not come in contact with wires or fixtures. Remember that walls or other locations may conceal wires or pipes.

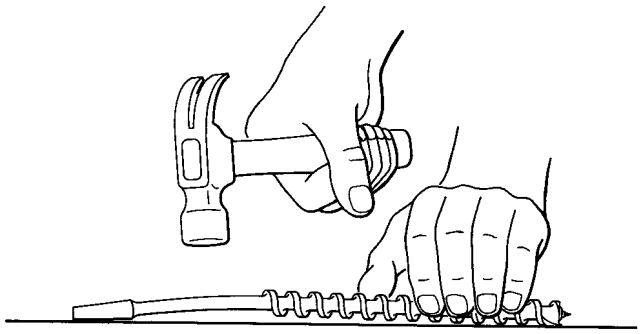

Fig. 9 — Straightening Bit With Hammer

6.03 When stationed on the opposite side of a partition, pole, etc, observe where the bit is coming through and assume a position so there is no likelihood of being injured if the bit is suddenly projected through the partition, pole, etc.

6.04 When carrying a bit, always direct the point away from the body and hand.

6.05 Place bits on shelves with points toward the back of the shelf.

6.06 When finished with bits, place them in the receptacle provided for the purpose of protection.

6.07 Never transport bits loose in tool boxes or compartments except tools being returned for replacement or junking.