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COMMERCIAL ITEM DESCRIPTION

TOOLS FOR INSERTING AND EXTRACTING HELICAL COIL WIRE SCREW THREAD INSERTS

The General Services Administration has authorized the use of this commercial item description for all Federal Agencies.

1. SCOPE

1.1 Scope. This commercial item description (CID) covers taps, thread plug gages, inserting tools, expanding tools, offset and staking tools, break-off tools, extracting tools and thread repair kits.

1.2 Intended use. These tools are used for inserting and extracting helical coil wire screw thread inserts.

2. CLASSIFICATION

2.1 Classification. The tools shall conform to the following types, classes and styles:
Type I - Tap, thread cutting

- Class 1 - Finishing, plug style
- Class 2 - Roughing, plug style
- Class 3 - Finishing, bottoming style
- Class 4 - Spark plug

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Natick Research, Development and Engineering Center, Natick, MA 01760-5018 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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Type II - Gage, plug, thread

Type III - Inserting tool, screw thread inserts

Class 1 - Prewinder tools

Style A - 1/2 (.500) and smaller unified coarse and fine threads and metric spark plug threads.

Style B - 9/16 (.5625) through 1-1/2 (1.500) unified fine threads.

Class 2 - Mandrel tools

Style A - 2 (.086) and 3 (.099) unified coarse threads

Style B - 9/16 (.5625) through 1-1/2 (1.500) unified coarse threads

Class 3 - Expander tools (14-1.25 and 18-1.5mm spark plug threads only)

Class 4 - Offset tools (14-1.25 and 18-1.5mm spark plug threads only for use with Class 5)

Class 5 - Staking tools (14-1.25 and 18-1.5mm spark plug threads only)

Type IV - Tang break-off tools

Class 1 - Style A - 1/4 (.250) and smaller, unified coarse and fine threads

Style B - 5/16 (.3125) through 1/2 (.500) unified coarse and fine threads

Class 2 - 1/2 (.500) and smaller Unified Coarse and Fine Threads, plain punch

Type V - Extracting tools

Type VI - Thread repair kit

Type VII - Multiple kit, tool box

3. SALIENT CHARACTERISTICS

3.1 Materials. Materials shall be of a quality best suited for the purpose intended and shall be hardened as appropriate.

3.2 Finishes. The finish on all tools shall be in accordance with the manufacturer's standard practice. The tools shall not have burrs, rust, rough edges or slivers or any defects which may impair serviceability or durability.

3.3 Surface Protection. The tools shall be corrosion resistant.

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3.4 Workmanship. The workmanship of the tools shall be of the high quality prevailing among manufacturers and shall be free from imperfections that affect their appearance, serviceability or durability.

3.5 Performance. The tools shall be capable of performing their intended function without deformation of contact surfaces, bending, twisting, or any other deformation, either permanent or temporary, while in use.

3.6 Marking. Each tool shall be marked with the nominal thread screw size or range of sizes as applicable and the manufacturer's identification. Other marking shall be as specified herein.

3.6.1 Instruction sheet. Each tool shall have an instruction sheet or tag attached unless furnished as a part of a kit in which case the kit shall contain the instruction sheet. The instruction sheet or tag shall contain complete instructions for operating the tool and shall also show the identification of the tool manufacturer and the manufacturer's part number.

3.7 Type I, taps, thread cutting. Sizes of the Type I, Class 1, 2, and 3 taps for helical coil wire screw thread inserts shall be as specified in table I and table II. All taps shall be marked either "screw thread insert" or "STI" in addition to the tap size and threads per inch or pitch in millimeters. Thread sizes shall be for class 3B thread fit (table I) unless class 2B (table II) is specified (see 7.1).

3.7.1 Class 1, finishing, plug style taps. Refer to tables I and II for sizes and National Stock Numbers (NSN).

3.7.2 Class 2, roughing, plug style taps. When specified (see 7.1) roughing taps for 1/2 (.500) or larger screw thread inserts shall be furnished. The dimensions of the major diameter of the roughing taps shall be smaller than the major diameter of the finishing taps by approximately 1/3 of the thread pitch. The pitch diameter maximum shall be smaller than the minimum tapped hole pitch diameter by approximately 1/3 of the thread pitch. The tolerance on both diameters shall be .002 inch. Refer to table I and table II for sizes and NSN's..

3.7.3 Class 3, finishing, bottom style taps. Refer to table I and table II for sizes and NSNs.

3.7.4 Class 4, spark plug taps. Class 4 taps shall be furnished with or without pilots and reamers as specified (see 7.1). When piloted taps are furnished, a hole having a diameter of 1/4 inch shall be drilled through the driving square. Refer to table III for sizes.

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TABLE I. Taps, for screw thread inserts (STI), Class 3B

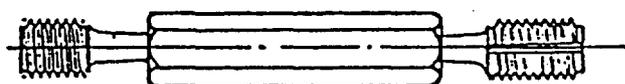
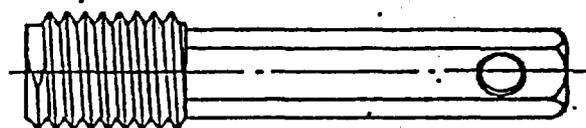
| TAPS | NSN | NSN | NSN |
|---------------------|------------------------------|-----------------------------|-----------------------------------|
| Nominal Thread Size | Class 1 Finishing Plug Style | Class 2 Roughing Plug Style | Class 3 Finishing Bottoming Style |
| UNC - 3B | | | |
| 2 (.086) - 56 | 5136-01-038-2908 | | 5136-01-037-7032 |
| 3 (.099) - 48 | | | |
| 4 (.112) - 40 | 5136-00-825-7136 | | 5136-01-108-6915 |
| 5 (.125) - 40 | 5136-01-037-7607 | | 5136-01-037-7034 |
| 6 (.138) - 32 | 5136-01-046-8862 | | 5136-00-779-4469 |
| 8 (.164) - 32 | 5136-00-825-7133 | | 5136-01-323-8194 |
| 10 (.190) - 24 | 5136-00-825-7132 | | 5136-00-862-7873 |
| 12 (.216) - 24 | 5136-01-040-7749 | | |
| 1/4 (.250) - 20 | 5136-00-825-7126 | | 5136-00-972-0406 |
| 5/16 (.3125) - 18 | 5136-00-825-7111 | | 5136-01-144-7855 |
| 3/8 (.375) - 16 | 5136-00-825-7088 | | |
| 7/16 (.4375) - 14 | 5136-00-825-7092 | | |
| 1/2 (.500) - 13 | 5136-00-876-8910 | | |
| 9/16 (.5625) - 12 | 5136-00-987-9140 | | |
| 5/8 (.625) - 11 | 5136-00-884-3909 | | 5136-01-241-9386 |
| 3/4 (.750) - 10 | 5136-01-364-0509 | 5136-00-987-9084 | |
| 7/8 (.875) - 9 | 5136-01-038-2904 | 5136-00-987-9085 | |
| 1 (1.000) - 8 | 5136-00-987-9143 | 5136-00-987-9086 | |
| 1-1/8 (1.125) - 7 | | | |
| 1-1/4 (1.250) - 7 | | | |
| 1-3/8 (1.375) - 6 | | | |
| 1-1/2 (1.500) - 6 | | | |
| UNF - 3B | | | |
| 3 (.099) - 56 | | | 5136-01-038-0955 |
| 4 (.112) - 48 | | | |
| 6 (.138) - 40 | 5136-01-038-2912 | | 5136-01-037-7035 |
| 8 (.164) - 36 | 5136-01-037-7039 | | 5136-01-037-7038 |
| 10 (.190) - 32 | 5136-00-825-7130 | | 5136-00-972-0405 |
| 1/4 (.250) - 28 | 5136-01-038-2907 | | 5136-00-555-1606 |
| 5/16 (.3125) - 24 | 5136-00-825-7108 | | 5136-00-555-1608 |
| 3/8 (.375) - 24 | 5136-00-825-7090 | | 5136-00-972-0407 |
| 7/16 (.4375) - 20 | 5136-00-825-7093 | | 5136-00-972-0399 |
| 1/2 (.500) - 20 | 5136-00-825-7096 | | 5136-00-972-0400 |
| 9/16 (.5625) - 18 | 5136-00-825-7101 | 5136-00-370-4054 | |
| 5/8 (.625) - 18 | 5136-00-825-7102 | | 5136-00-828-8832 |
| 3/4 (.750) - 16 | 5136-00-370-4066 | | 5136-01-415-9458 |
| 7/8 (.875) - 14 | 5136-00-370-4076 | | |
| 1 (1.000) - 14 | 5136-00-972-0403 | | 5136-00-203-7075 |
| 1 (1.000) - 12 | 5136-00-979-8973 | | |
| 1-1/8 (1.125) - 12 | 5136-00-884-3914 | | |
| 1-1/4 (1.250) - 12 | 5136-00-987-9141 | 5136-00-987-9091 | |
| 1-3/8 (1.375) - 12 | 5136-00-974-2789 | | |
| 1-1/2 (1.500) - 12 | 5136-00-974-2792 | | |

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TABLE III. Taps, spark plug, for screw thread inserts (STI)

| Nominal Thread Size |
|---------------------|
| 14 - 1.25mm |
| 18 - 1.55mm |

3.8 Type II, gages, thread plug. Type II thread plug gages for taped threads for screw thread inserts shall be ground and lapped and be of the thread sizes specified in table V for either the class 2B or 3B thread fit. The gages shall be "GO" or "HI" and class 2B or 3B as specified (see 7.1). The gages shall be similar to figures 1a or 1b as applicable, and shall fit the handle specified in table V. In addition to size and thread series, each gage shall be marked either "Screw Thread Insert" or "STI".

FIGURE 1a. Thread plug gage Type IIFIGURE 1b. Thread plug gage Type II

3.8.1 Gage handles. The gage handles shall conform to Commercial Standard B for the handle number specified in table IV and table V.

TABLE IV. Thread gage handles

| Gage Handle Number |
|--------------------|
| 00 |
| 0 |
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 5 1/2 |

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TABLE V. Class 2B and 3B gages

| Nominal Thread Size | Handle No. | "GO" NIB/"HI" NIB Thread plug gage | |
|---------------------|------------|---------------------------------------|------------------|
| | | NSN | |
| | | UNC - 2B | UNC - 3B |
| 2 (.086) - 56 | 00 | | 5220-01-058-2495 |
| 3 (.099) - 48 | 00 | | |
| 4 (.112) - 40 | 00 | 5220-00-566-4064 | 5220-00-566-4051 |
| 5 (.125) - 40 | 0 | | |
| 6 (.138) - 32 | 0 | 5220-00-566-4063 | 5220-00-566-4050 |
| 8 (.164) - 32 | 0 | 5220-00-566-4062 | 5220-00-566-4049 |
| 10 (.190) - 24 | 0 | 5220-00-566-4061 | 5220-00-566-4048 |
| 12 (.216) - 24 | 1 | | |
| 1/4 (.250) - 20 | 1 | 5220-00-566-4059 | 5220-00-566-4046 |
| 5/16(.3125)- 18 | 2 | 5220-00-566-4057 | 5220-00-568-0195 |
| 3/8 (.375) - 16 | 2 | 5220-00-566-4055 | 5220-00-566-4043 |
| 7/16(.4375)- 14 | 3 | 5220-00-566-4053 | 5220-00-566-4041 |
| 1/2 (.500) - 13 | 3 | | 5220-00-973-1198 |
| 9/16(.5625)-12 | 3 | | |
| 5/8 (.625) - 11 | 3 | | 5220-00-058-2496 |
| 3/4 (.750) - 10 | 4 | | 5220-00-973-1197 |
| 7/8 (.875) - 9 | 4 | | |
| 1 (1.000) - 8 | 5 | | 5220-00-912-9624 |
| 1-1/8 (1.125)- 7 | 5 | | |
| 1-1/4 (1.250)- 7 | 5 | | |
| 1-3.8(1.375) - 6 | 5 | | |
| 1-1/2(1.500) - 6 | 5-1/2 | | |
| | | UNF - 2B | UNF - 3B |
| 3 (.099) - 56 | 00 | | |
| 4 (.112) - 48 | 00 | | |
| 6 (.138) - 40 | 0 | | |
| 8 (.164) - 36 | 0 | | 5220-02-058-4451 |
| 10 (.190) - 32 | 0 | 5220-00-566-4060 | 5220-00-566-4047 |
| 1/4 (.250) - 28 | 1 | 5220-00-566-4058 | 5220-00-566-4045 |
| 5/16(.3125)- 24 | 1 | 5220-00-566-4056 | 5220-00-566-4044 |
| 3/8 (.375) - 24 | 2 | 5220-00-566-4054 | 5220-00-566-4042 |
| 7/16(.4375)- 20 | 2 | 5220-00-566-4052 | 5220-00-566-4040 |
| 1/2 (.500) - 20 | 3 | 5220-00-604-3305 | 5220-00-604-3304 |
| 9/16(.5625)-18 | 3 | | 5220-00-972-0460 |
| 5/8 (.625) - 18 | 3 | 5220-00-802-2414 | 5220-00-972-0458 |
| 3/4 (.750) - 16 | 3 | | 5220-00-973-1199 |
| 7/8 (.875) - 14 | 4 | | 5220-00-564-7914 |
| 1 (1.000) - 14 | 4 | | 5220-00-972-0459 |
| 1 (1.000) - 12 | 4 | | |
| 1-1/8 (1.125)-12 | 5 | | |
| 1-1/4 (1.250)- 12 | 5 | | |
| 1-3.8(1.375) - 12 | 5 | | |
| 1-1/2(1.500) - 12 | 5-1/2 | | 5220-00-546-7913 |

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3.8.2 Gages, spark plug thread. Spark plug thread gages shall conform to the sizes specified in table VI.

TABLE VI. Gages, spark plug threads

| Nominal Thread Size | Handle No. | "GO" NIB"/"HI" NIB Thread plug gage |
|---------------------|------------|--|
| | | NSN |
| 14-1.25mm | 3 | 5220-00-545-8631 |
| 18-1.5mm | 3 | 5220-00-545-8632 |

3.9 Type III, inserting tools.

3.9.1 Class 1, prewinder tools.

3.9.1.1 Style A inserting tools for 1/2 (.500) inch and smaller unified coarse and fine series. The Style A prewinder tools shall consist of a mandrel and prewinder. The front end of the prewinder shall have an internal thread to accept the normal size insert for which it is intended. The end of the mandrel shall be capable of engaging the driving tang of the insert for driving the insert into the tapped hole. The mandrel must be retained in the prewinder in a manner to prevent inadvertent disassembly. The handle may be formed as a separate piece as shown in figure 2 or may be an extension of the mandrel and be offset by bending. Class I, Style A, prewinder tools shall have threaded mandrels, be similar to figure 2 and be of the sizes specified in table VII. Tools shall install inserts up to 3 diameters in length.

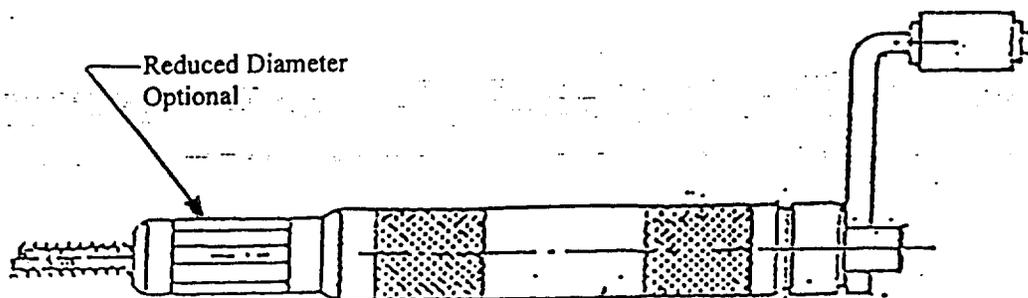


FIGURE 2. Type III, Class 1, Style A, prewinder inserting tool with threaded mandrel for 1/2 (.500) inch and smaller unified coarse, unified fine and spark plug threads

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TABLE VII. Type III, Class I, Style A, threaded mandrel prewinder inserting tools for 1/2 (.500) inch and smaller unified coarse and fine screw thread inserts

| Nominal Thread Size | NSN |
|-----------------------|------------------|
| Unified Coarse Series | |
| 4 (.112) - 40 | 5120-00-816-5703 |
| 5 (.125) - 40 | |
| 6 (.138) - 32 | 5120-00-816-5704 |
| 8 (.164) - 32 | 5120-00-237-4669 |
| 10 (.190) - 24 | 5120-00-816-5706 |
| 12 (.216) - 24 | 5120-01-323-9722 |
| 1/4 (.250) - 20 | 5120-00-816-5707 |
| 5/16 (.3125) - 18 | 5120-00-804-6055 |
| 3/8 (.375) - 16 | 5120-00-797-2402 |
| 7/16 (.4375) - 14 | 5120-00-797-2403 |
| 1/2 (.400) - 13 | 5120-00-861-1170 |
| Unified Fine Series | |
| 3 (.099) - 56 | |
| 4 (.112) - 48 | 5120-01-118-6282 |
| 6 (.138) - 40 | 5120-00-050-9731 |
| 10 (.190) - 32 | 5120-00-797-2404 |
| 1/4 (.250) - 28 | 5120-00-710-7435 |
| 5/16 (.3125) - 24 | 5120-00-797-2405 |
| 3/8 (.375) - 24 | 5120-00-710-7437 |
| 7/16 (.4375) - 20 | 5120-00-797-2407 |
| 1/2 (.500) - 20 | 5120-00-672-8897 |

3.9.1.1.1 Style A inserting tools for sizes 14mm and 18mm spark plug threads. Style A inserting tools for sizes 14mm and 18mm spark plug threads shall be similar to figure 2 or figure 3. A straight or crank style handle shall be furnished. Style A inserting tools for spark plug threads shall be of the sizes and NSNs specified in table VIII. Size 14-1.25mm tools shall install inserts up to .875 long and size 18-1.5mm tools shall install inserts up to .750 long.

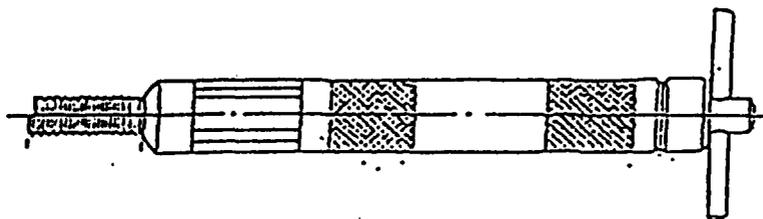


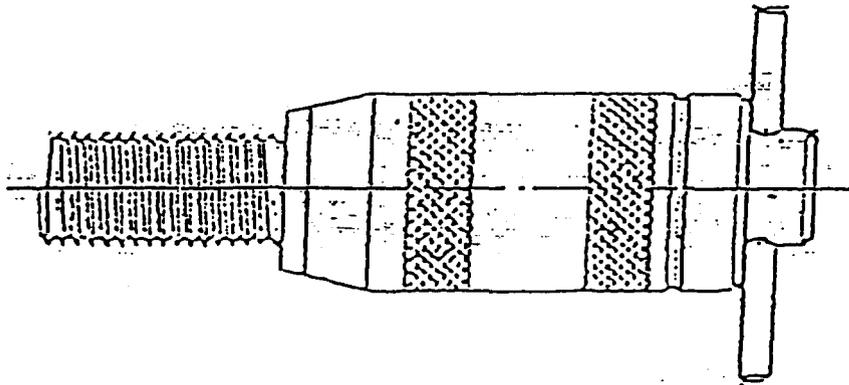
FIGURE 3. Type III, Class I, Style A, prewinder inserting tools, with threaded mandrel for spark plug threads

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TABLE VIII. Type III, Class 1, Style A, prewinder inserting tools for 14mm and 18mm spark plug threads

| Nominal Thread Size | NSN |
|---------------------|------------------|
| 14-1.25mm | 5120-00-244-1710 |
| 18-1.5mm | 5120-00-293-1345 |

3.9.1.2 Style B inserting tools for 9/16 (.5625) through 1-1/2 (1.500) inches unified fine series. The Style B inserting tool shall consist of a prewinder, a depth stop and a removable mandrel. The front end of the prewinder shall have an internal thread to accept the nominal size thread insert for which it is intended. The tools shall be similar to figure 4 and shall be of the sizes specified in table IX. The mandrel shall be threaded externally to accept the size insert for which it is intended. Sizes 9/16 (.5625) through 7/8 (.875) inch shall install inserts up to 3 diameters in length, and sizes 1 (1.000) through 1-1/2 (1.500) inches shall install inserts up to 2 diameters in length.

FIGURE 4. Type III, Class 1, Style B, prewinder inserting tool for 9/16 (.5625) through 1-1/2 (1.500) inches unified fine thread series

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TABLE IX. Type III, Class 1, Style B, prewinder inserting tool for 9/16 (.5625) through 1-1/2 (1.500) inches unified fine thread series

| Nominal Thread Size | NSN |
|---------------------|------------------|
| 9/16 (.5625)-18 | 5120-00-244-1722 |
| 5/8 (.625) -18 | 5120-00-244-1712 |
| 3/4 (.750) -16 | 5120-00-244-1720 |
| 7/8 (.875) -14 | 5120-00-244-1713 |
| 1 (1.000) -14 | 5120-00-204-0881 |
| 1 (1.000) -12 | 5120-00-972-0409 |
| 1-1/8 (1.125) -12 | 5120-00-779-5354 |
| 1-1/4 (1.250) -12 | 5120-00-072-6224 |
| 1-3/8 (1.375) -12 | 5120-00-974-2787 |
| 1-1/2 (1.500) -12 | 5120-00-974-2786 |

3.9.2 Class 2, mandrel tools.

3.9.2.1 Class 2, Style A, inserting tools for #2 (.086) and #3 (.099) unified coarse thread series.

The Class 2, Style A inserting tool consists of a mandrel and a handle. The handle and mandrel shall be joined together with adequate strength to prevent slippage under ordinary service conditions. The mandrel shall be threaded. The tools shall be similar to figure 5 and shall be of the sizes specified in table X. Tools shall install inserts up to 3 diameters in length.

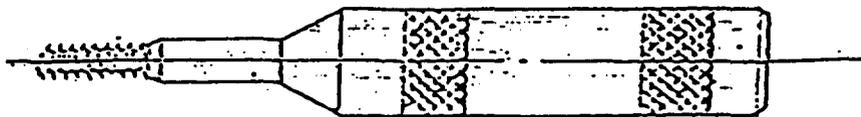


FIGURE 5. Type III, Class 2, Style A, mandrel inserting tool for #2 (.086) and #3 (.099) unified coarse thread series

TABLE X. Type III, Class 2, Style A, mandrel inserting tool for #2 (.086) and #3 (.099) unified coarse thread series

| Nominal Thread Size | NSN |
|---------------------|------------------|
| 2 (.086) - 56 | 5120-00-411-1780 |
| 3 (.099) - 48 | |

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3.9.2.2 Class 2, Style B, inserting tool for 9/16 (.5625) through 1-1/2 (1.500) unified coarse series. The Class 2, Style B inserting tool shall consist of a mandrel and a handle. The mandrel shall have a frictionally retained sliding handle. The mandrel shall be threaded. The tools shall be similar to figure 6 and be of the sizes specified in table XI. Sizes 9/16 (.5625) through 7/8 (.875) inch shall install inserts up to 3 diameters in length, and sizes 1 (1.000) through 1-1/2 (1.500) inches shall install inserts up to 2 diameters in length.

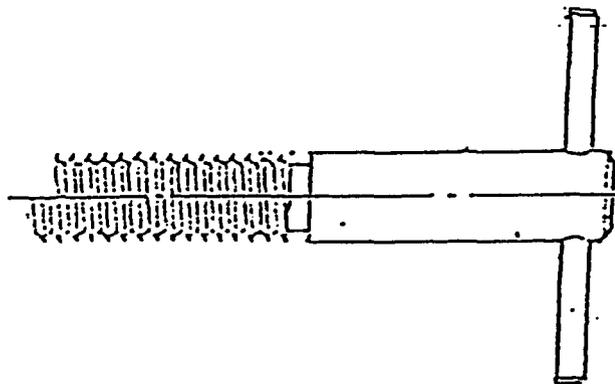


FIGURE 6. Type III, Class 2, Style B, mandrel inserting tool for 9/16 (.5625) inch and larger unified coarse thread series

TABLE XI. Type III, Class 2, Style B, mandrel inserting tool for 9/16 (.5625) inch and larger unified coarse thread series

| Nominal Thread Size | NSN |
|---------------------|------------------|
| 9/16 (.5625) - 12 | 5120-00-555-9497 |
| 5/8 (.625) - 11 | 5120-00-804-6052 |
| 3/4 (.750) - 10 | 5120-00-804-6053 |
| 7/8 (.875) - 9 | 5120-00-979-8975 |
| 1 (1.000) - 8 | 5120-00-804-6054 |
| 1-1/8 (1.125) - 7 | |
| 1-1/4 (1.250) - 7 | 5120-01-032-4050 |
| 1-3/8 (1.275) - 6 | |
| 1-1/2 (1.500) - 6 | |

3.9.3 Expander tools.

3.9.3.1 Expander tools, Type III, Class 3, (spark plug inserts only). The Type III, Class 3, expander tools shall be similar to figure 7 and shall be of the sizes specified in table XII. The expander tools shall consist of a collet, plunger with back-out nuts and a body. The collet shall be threaded externally with the nominal screw thread size and split to allow an expanding action when the plunger is struck.

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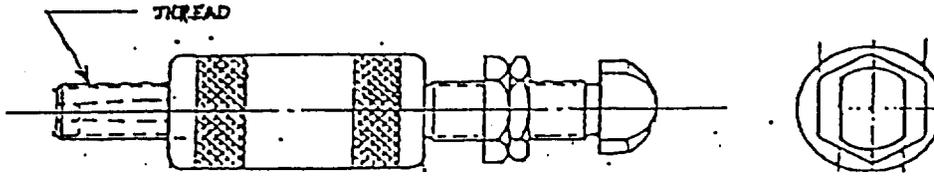


FIGURE 7. Type III, Class 3, expanding tools, plunger type, spark plug inserts

TABLE XII. Type III, Class 3, expanding tools, plunger type, spark plug threads

| Nominal Thread Size | NSN |
|---------------------|------------------|
| 14-1.25mm | |
| 18-1.5mm | 5120-00-544-9176 |

3.9.4 Type III, Class 4, offset tools. The Type III, Class 4 offset tools shall be similar to figure 8 and shall be of the sizes specified in table XIII. Offset tools shall be used with staking tools described in 3.9.5.

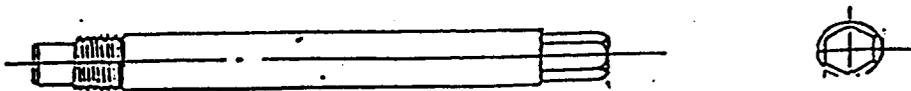


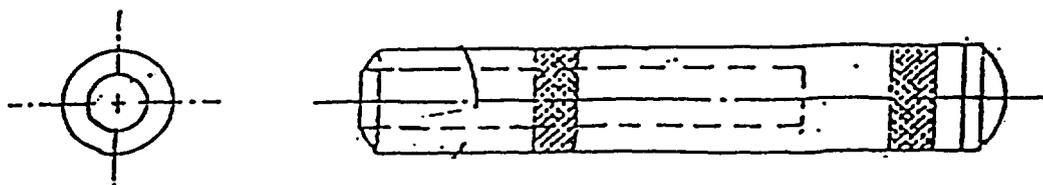
FIGURE 8. Type III, Class 4, offset tools, spark plug threads

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TABLE XIII. Type III, Class 4, offset tools, spark plug threads

| Nominal Thread Size | NSN |
|---------------------|------------------|
| 14-1.25mm | 5120-00-090-4399 |
| 18-1.5mm | 5120-00-349-6174 |

3.9.5 Type III, Class 5, staking tools (spark plug inserts). Type III, Class 5 staking tools shall be similar to figure 9, shall be of the sizes specified in table XIV and shall be furnished when Type III, Class 4 tools are furnished.

FIGURE 9. Type III, Class 5, staking tools, spark plug insertsTABLE XIV. Type III, Class 5, staking tools, spark plug inserts

| Nominal Thread Size | NSN |
|---------------------|------------------|
| 14-1.25mm | 5120-00-090-4399 |
| 18-1.5mm | 5120-00-349-6174 |

3.10 Type IV, tang break-off tools.

3.10.1 Type IV, Class 1, Style A, tang break-off tools. The Class 1, Style A tang break-off tool for sizes 1/4 (.250) inch and smaller shall be of the automatic punch type consisting of a spring actuated punch and appropriate sleeve assembly. The tool shall have a cushioned tip to prevent damage when contacting the surface of the workpiece. The tool shall be similar to figure 10 and shall be of the sizes specified in table XV. The tool shall break tangs off inserts up to 2 diameters in length.

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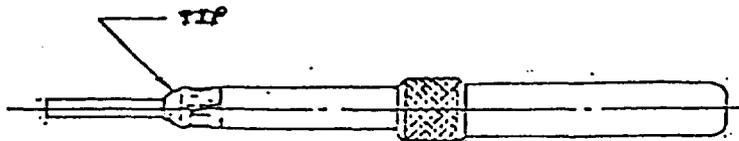


FIGURE 10. Type IV, Class 1, Style A, tang break-off tool for 1/4 (.250) and smaller unified coarse and fine thread sizes

TABLE XV. Type IV, Class 1, Style A, tang break-off tools for 1/4 (.250) and smaller unified coarse and fine thread sizes

| Nominal Thread Size | NSN |
|-------------------------|------------------|
| 2 (.086) and 3 (.099) | 5120-00-410-9156 |
| 4 (.112) and 5 (.125) | 5120-00-793-1073 |
| 6 (.133) | 5120-00-793-1074 |
| 8 (.164) | 5120-00-776-9519 |
| 10 (.190) and 12 (.216) | 5120-00-793-1076 |
| 1/4 (.250) | 5120-00-793-1077 |

3.10.2 Type IV, Class 1, Style B, tang break-off tool. The Class 1, Style B, tang break-off tool for sizes 5/16 (.3125) through 1/2 (.500) inch shall be of the automatic punch type consisting of a spring actuated punch and appropriate sleeve assembly. The tool shall have a cushioned tip to prevent damage when contacting the surface of the work place. The tool shall be similar to figure 11 and shall be of the sizes specified in table XVI. The tool shall break tangs off inserts up to 2 diameters in length.

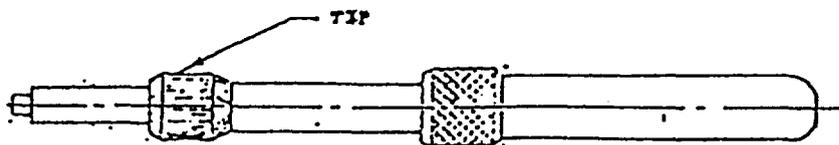


FIGURE 11. Type IV, Class 1, Style B, tang break-off tool for unified coarse and fine thread sizes 5/16 (.3125) through 1/2 (.500)

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TABLE XVI. Type IV, Class 1, Style B, tang break-off tool for unified coarse and fine thread sizes 5/16 (.3125) through 1/2 (.500)

| Nominal Thread Sizes | NSN |
|-----------------------|------------------|
| Unified Coarse Series | |
| 5/16 (.3125) - 18 | 5120-00-073-3298 |
| 3/8 (.375) - 16 | 5120-00-370-4026 |
| 7/16 (.4375) - 14 | 5120-00-370-4027 |
| 1/2 (.500) - 13 | 5120-00-370-4028 |
| Unified Fine Series | |
| 5/16 (.3125) - 24 | 5120-00-116-9596 |
| 3/8 (.375) - 24 | 5120-00-370-4032 |
| 7/16 (.4375) - 20 | 5120-00-370-4033 |
| 1/2 (.500) - 20 | 5120-00-793-1086 |

3.10.3 Type IV, Class 2, tang break-off tool. The type IV, Class 2 tang break-off tool shall consist of a solid one piece punch. The tool shall be similar to figure 12, and shall be of the sizes specified in Table XVII. Tools shall break tangs off inserts up to 3 diameter in length.

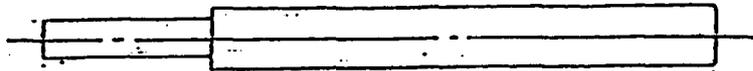


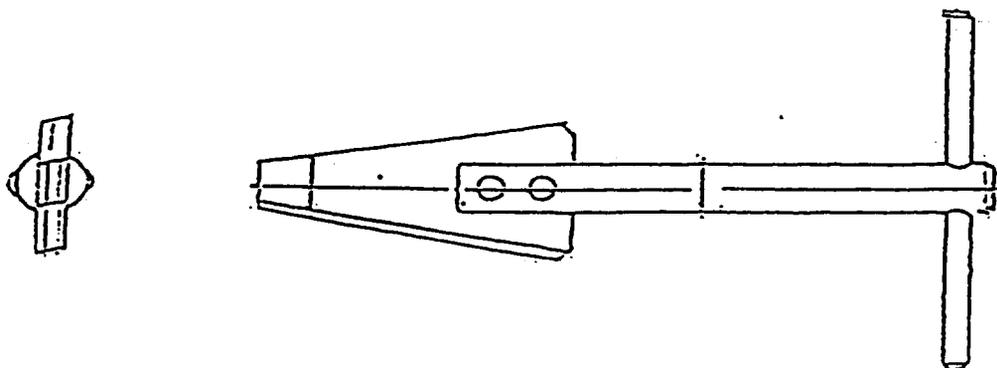
FIGURE 12. Type IV, Class 2, tang, break-off tool for unified coarse and fine thread sizes 1/2 (.500) and smaller

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TABLE XVII. Type IV, Class 2, tang break-off tool for unified coarse and fine thread sizes 1/2 (.500) and smaller

| Nominal Thread Size | NSN |
|---------------------|------------------|
| 2 (.086) | |
| 3 (.099) | |
| 4 (.112) | 5120-00-935-4540 |
| 5 (.125) | 5120-00-935-4540 |
| 6 (.138) | 5120-00-935-4541 |
| 8 (.164) | 5120-00-937-9729 |
| 10 (.190) | 5120-00-937-9730 |
| 12 (.216) | 5120-00-937-9730 |
| 1/4 (.250) | 5120-00-937-9731 |
| 5/16 (.3125) | 5120-00-937-9732 |
| 3/8 (.375) | 5120-00-937-9733 |
| 7/16 (.4375) | 5120-00-937-9734 |
| 1/2 (.500) | 5120-00-544-9174 |

3.11 Type V, extracting tool. The Type V extracting tool shall consist of a round shaft, tapered blade and a handle. The shaft shall securely hold the tapered blade in a slot in one end and a handle in the opposite end. The tapered blade shall have a relief angle on each tapered side to establish an edge capable of indenting and extracting the screw thread insert. The handle shall be of sufficient strength to prevent bending under ordinary service conditions. The extracting tool shall be similar to figure 13 and be of the sizes specified in table XVIII.

FIGURE 13. Type V, extracting tool for unified coarse and fine and spark plug thread series

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TABLE XVIII. Type V, extracting tools

| Nominal Thread Size Range | NSN |
|--|------------------|
| 2 (.086) | 5120-00-138-6803 |
| 3 (.099) thru 8 (.164) | 5120-00-245-9539 |
| 10 (.190) thru 3/8 (.375) | 5120-00-723-6833 |
| 7/16 (.4375) thru 1 (1.000) and 14-1.25 & 18-1.5mm Spark Plug | 5120-00-251-1527 |
| 1-1/8 (1.125) thru 1-1/2 (1.500) | 5120-00-804-6059 |

3.12 Type VI, thread repair kit. Thread repair kits when specified (see 7.1) shall consist of one inserting tool, one tang break-off tool (for kits of nominal thread size 1/2 (.500) inch and smaller) and one extracting tool. The kit shall also contain taps and inserts in quantities specified in table XIX. All taps, inserts and tools shall be the correct screw thread size and series for the nominal size of the kit.

3.12.1 Kit tool box. Each kit shall be contained in a modular tool box. The tool box shall be of the minimum size to hold the specific tools and inserts specified in the contract or purchase order (see 7.1). The tool box shall be furnished with a means to secure each tool in its location within the box.

3.12.2 Insert packaging. Inserts, 1 (1.000) inch and smaller are to be packaged in reclosable tube or vial-type containers. The size and type of inserts and the manufacturers identification shall be clearly marked by a label. Inserts 1-1/8 (1.125) inches and larger shall be packaged in bags.

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TABLE XIX. Kit compositions

| Nominal Thread Size | | | | | | Number of packets per kit Insert type and length | | | |
|---------------------|------------------|------------------|------------------|-----------------------------|------------------------------|---|------------------|-----------------|------------------|
| UNC Series | NSN | UNF Series | NSN | Quantity of taps per kit | Inset Quantity per packet | 1-1/2 Dia. | | 2 Dia. | |
| | | | | | | Free Running | Screw Locking | Free Running | Screw Locking |
| 2(.086) - 56 | 5180-01-049-8598 | | | 2 | 15 | 1 | 1 | 1 | 1 |
| 3(.099) - 48 | 5180-01-088-3842 | 3(.099) - 56 | | 2 | 15 | 1 | 1 | 1 | 1 |
| 4(.112) - 40 | 5180-00-054-7506 | 4(.112) - 48 | | 2 | 15 | 1 | 1 | 1 | 1 |
| 5(.125) - 40 | 5180-00-054-7524 | | | 2 | 15 | 1 | 1 | 1 | 1 |
| 6(.138) - 32 | 5180-00-054-7507 | 6(.138) - 40 | 5180-00-054-7525 | 2 | 10 | 1 | 1 | 1 | 1 |
| 8(.164) - 32 | 5180-00-935-0730 | 8(.164) - 36 | | 2 | 10 | 1 | 1 | 1 | 1 |
| 10(.190) - 24 | 5180-00-935-0731 | 10(.190) - 32 | 5180-00-935-0735 | 2 | 10 | 1 | 1 | 1 | 1 |
| 12(.216) - 24 | 5180-00-054-7526 | | | 2 | 10 | 1 | 1 | 1 | 1 |
| 1/4(.250) - 20 | 5180-00-935-0732 | 1/4(.250) - 28 | 5180-00-935-0736 | 2 | 10 | 1 | 1 | 1 | 1 |
| 5/16(.3125) - 18 | 5180-00-935-0733 | 5/16(.3125) - 24 | 5180-00-935-0737 | 1 | 8 | 1 | 1 | 1 | 1 |
| 3/8(.375) - 16 | 5180-00-935-0734 | 3/8(.375) - 24 | 5180-00-935-0738 | 1 | 8 | 1 | 1 | 1 | 1 |
| 7/16(.4375) - 14 | 5180-00-054-7503 | 7/16(.4375) - 20 | 5180-00-935-0739 | 1 | 6 | 1 | 1 | 1 | 1 |
| 1/2(.500) - 13 | 5180-00-051-5024 | 1/2(.500) - 20 | 5180-00-054-7505 | 1 | 6 | 1 | 1 | 1 | 1 |
| 9/16(.5625) - 12 | 5180-00-059-4829 | 9/16(.5625) - 18 | 5180-00-054-7516 | 1 | 5 | 1 | 1 | 1 | 1 |
| 5/8(.625) - 11 | 5180-00-054-7514 | 5/8(.625) - 18 | 5180-00-054-7512 | 1 | 5 | 1 | 1 | 1 | 1 |
| 3/4(.750) - 10 | 5180-00-051-5025 | 3/4(.750) - 16 | 5180-00-054-7513 | 1 | 4 | 1 | 1 | 1 | 1 |
| 7/8(.875) - 9 | 5180-00-054-7515 | 7/8(.875) - 14 | 5180-00-054-7519 | 1 | 4 | 1 | 1 | 1 | 1 |
| 1(1.000) - 8 | 5180-00-051-5026 | 1(1.000) - 14 | 5180-00-054-7521 | 1 | 4 | 1 | 1 | 1 | 1 |
| | | 1(1.000) - 12 | 5180-00-054-7520 | 1 | 4 | 1 | 1 | 1 | 1 |

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TABLE XIX. Kit compositions.(Contd)

| Nominal Thread Size | | | | Quantity of taps per kit | Inset Quantity per packet | Number of packets per kit | | | |
|---------------------|------------------|-------------------|------------------|--------------------------|---------------------------|---------------------------|---------------|--------------|---------------|
| UNC Series | NSN | UNF Series | NSN | | | Free Running | Screw Locking | Free Running | Screw Locking |
| 1-1/8(1.125) - 7 | 5180-00-054-7527 | 1-1/8(1.125) - 12 | 5180-00-054-7522 | 1 | 3 | 1 | | | |
| 1-1/4(1.250) - 7 | 5180-00-054-7528 | 1-1/4(1.250) - 12 | 5180-00-054-7523 | 1 | 3 | 1 | | | |
| 1-3/8(1.375) - 6 | 5180-00-051-5027 | 1-3/8(1.375) - 12 | 5180-00-051-5028 | 1 | 3 | 1 | | | |
| 1-1/2(1.500) - 6 | 5180-00-051-5030 | 1-1/2(1.500) - 12 | 5180-00-054-7529 | 1 | 3 | 1 | | | |

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3.12.3 Index list and instruction sheet. An index and instruction sheet shall be inserted in each kit container. The index list shall give a complete listing of the container contents. The information shall include nomenclature, National Stock Number (where applicable), manufacturer's part number, quantity of each item in the kit, and manufacturer's identification. The index and instruction sheet shall be enclosed in a greaseproof, waterproof bag or shall be treated so as to be resistant to water, oil, and fading.

3.13 Type VII. Multiple kit tool box. When specified (see 7.1), a tool box shall be furnished for holding an assortment of kits. The tool box shall contain the proper quantity and style of dividers to contain and separate the individual thread repair kits.

3.13.1 Index list. An index list shall be affixed to the inside of the lid of the tool box such that it can be read with the lid open. The index shall give a complete listing of all kits contained therein including nomenclature, National Stock Number (where applicable) manufacturer's part number, and manufacturer's identification. The index shall be protected by a plastic covering from grease, oil, and fading.

3.14 Metric products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they fall within the tolerances specified using conversion tables contained in the latest revision of IEEE/ASTM SI 10 and all other requirements of this CID are met. If a product is manufactured to metric dimensions and made to the contracting officer to determine if the product is acceptable. The contracting officer has the option of accepting or rejecting the product.

4. REGULATORY REQUIREMENTS

4.1 Contractor-recovered materials. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

5. QUALITY ASSURANCE PROVISIONS

5.1 Product conformance. The products provided shall meet the salient characteristics of this commercial item description, shall conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial market or the same product that has successfully been delivered to the Government on a previous contract or purchase order. The Government reserves the right to require proof of such compliance prior to first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

5.2 Market acceptability (MA). The following market acceptability criteria is necessary to document the quality of the product to be provided under this CID:

a. The company producing the item must have been producing a product meeting the requirements of this CID for at least 2 years.

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b. The company must have sold 200 items meeting this CID in the commercial or Government marketplace over the past 2 years.

5.3 Tests.

5.3.1 Finish. Tools shall be visually examined for evidence of burrs, rust, rough edges, slivers and for any defects that may impair serviceability or durability.

5.3.2 Performance. A specimen tool of each type ordered (see 7.1) other than taps and gages, shall be used to perform its installation and/or extraction function. The threaded test hole shall be gaged and shall conform to a class 2B or a class 3B fit, as applicable. Tools shall not bind nor deform. After the insert is installed, the GO thread plug gage may not enter freely because the insert may not have been fully seated in the tapped hole; however, the insert should become seated after a bolt or screw is installed and tightened.

5.3.3 Marking. Tools shall be visually examined for required marking and instruction sheets (see 3.6). Tool kits shall be visually examined for index lists and instruction sheets (see 3.12.3 and 3.13.1).

6. PACKAGING

6.1 Packaging. Preservation, packing, and marking requirements shall be as specified in the contract or purchase order (see 7.1).

7. NOTES

7.1 Ordering data. Purchasers should select tools desired and include the following information in the procurement documents (if applicable):

- a. Title, number, and date of this CID.
- b. Type, class, style, and size of tools required (see 2.1 tables I through XIX and 7.2).
- c. Nominal screw thread size of tools required (see table I through XIX).
- d. When roughing taps are to be furnished for 1/2 (.500) inch or larger screw thread inserts (see 3.7.2).
- e. Specify when Class 4 taps shall be furnished with a pilot and reamer (see 3.7.4).
- f. Whether class 3B or class 2B tap thread size is required (see 3.7).
- g. Whether "GO" or "HI" gages are required (see 3.8).
- h. Whether class 3B or class 2B gaging is required (see 3.8).
- i. When thread repair kits are required (see 3.12 and 3.12.1).
- j. Specify when a tool box for multiple size insert kits shall be furnished (see 3.13).
- k. Specify kit composition when kits for individual sizes are required (see 3.13).
- l. Packaging requirements (see 6.1).

7.2 Offset tools and staking tools, Type III, Classes 4 and 5. Offset and staking tools, while separate tools, are used in conjunction with each other. Therefore, Type III, Classes 4 and 5 tools should be specified as a single unit.

7.3 Sources for non-government association documents.

U.S. DEPARTMENT OF COMMERCE

Commercial Standard CS-8-Gage Blanks

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402).

"IEEE/ASTM STANDARD

SI 10 - Standard for Use of the International System of Units (SI):

The Modern Metric System

(Application for copies of the IEEE/ASTM standard should be addressed to the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, NY 10017, or the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428)."

7.4 Sources of supply. Manufacturers whose products are known to meet the requirements of some or all of the tools in this CID are listed below; however, competition is not limited to these companies.

Helicoil, Fastening Systems Division
Emhart Fastening Teknologies
510 River Road
Shelton, CT 06484

Recoil Inc.
1051 Third Avenue SW
Carmel, IN 46032

Durston Manufacturing
1395 East Palomares Avenue
LaVerne, CA 91750

W. S. Spotswood & Sons
5415 East Backlick Road
Springfield, VA 22151-3966

7.5 National Stock number (NSN). National Stock Numbers assigned to the tools described in this CID are listed in the tables herein, as appropriate. The lists may not be indicative of all possible NSNs associated with the document.

MILITARY INTERESTS:

Custodians

Army - GL
Navy - SH
Air Force 99

Review Activities

Navy - AS, CG, MC
Air Force - 84

CIVIL AGENCY COORDINATING ACTIVITY:

GSA-FSS

PREPARING ACTIVITY:

Army - GL

(Project 5120-0078)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
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3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of 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.

I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER
A-A-59158

2. DOCUMENT DATE (YYMMDD)
98-01-30

3. DOCUMENT TITLE : TOOLS FOR INSERTING AND EXTRACTING HELICAL COIL WIRE SCREW THREAD INSERTS

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)
(1) Commercial
(2) AUTOVON
(If applicable)

e. DATE SUBMITTED
(YYMMDD)

a. NAME

U.S. Army Natick RD&E Center

b. TELEPHONE (Include Area Code)

(1) Commercial
508-233-5175

(2) AUTOVON
256-5175

c. ADDRESS (Include Zip Code)

Commander, U.S. Army Natick RD&E Center
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