customer manual

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The AMPACT tool is a precision-designed, powder-actuated tool. This manual contains important information on the use and care of the AMPACT tool and the application of taps and stirrups. For additional information on selection of AMPACT taps and stirrups, refer to 408-1931; for information on AMPACT Hot-Stick application and maintenance, refer to customer manual 409-2197. The AMPACT tool is designed for years of satisfactory service *if used and maintained as instructed in this manual*. Read these instructions carefully before operating the tool.

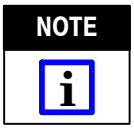
When reading this manual, pay particular attention to DANGER, CAUTION, and NOTE statements



Denotes an imminent hazard which may result in moderate or severe injury.



Denotes a condition which may result in product or equipment damage.



Highlights special or important information.

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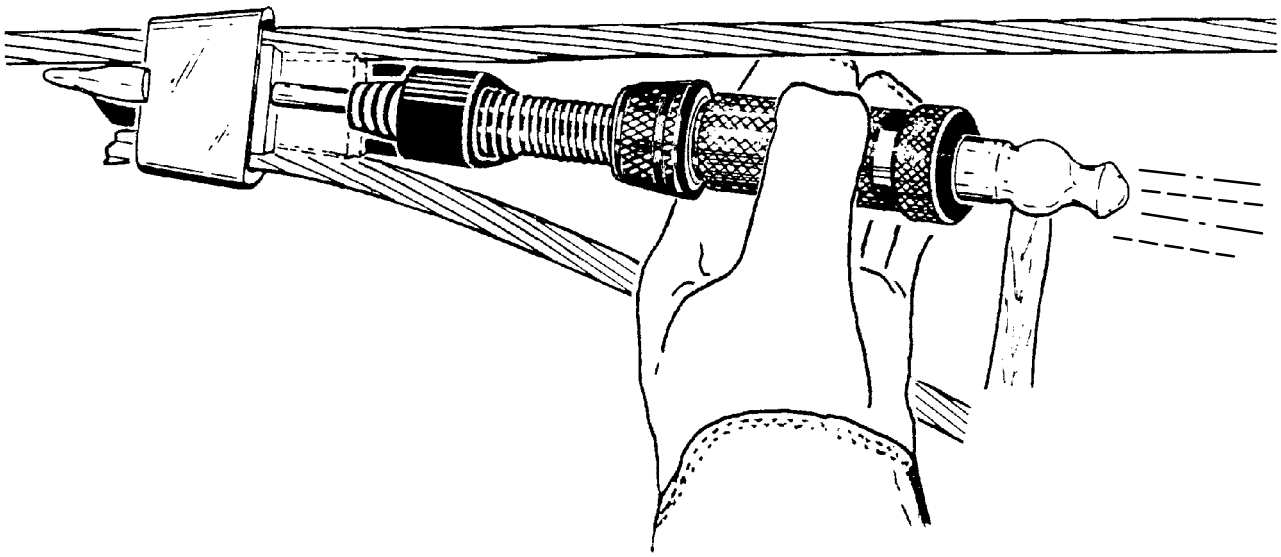
"TE Connectivity makes no warranty, express, implied (including but not limited to warranties of merchantability and fitness for intended purpose) extending beyond the description set forth in this product instruction sheet. TE shall not be responsible for any property damage, or other similar type of loss due to breach of the above referenced warranty or negligence on the part of TE or otherwise resulting from the misuse or mishandling of the product by the user. The parties specifically agree that Buyer's sole and exclusive remedy due to breach of the above referenced warranty or negligence on the part of TE shall be limited to replacement of the product on a one to one basis."

UL LISTED

POWDER ACTUATED TOOL



- ☐ *This Customer Manual covers the use, service, and maintenance for the AMPACT tool version that has four color-coded grooves around the coupling front and a smooth stripe on the center of the coupling nut. This version of the AMPACT tool is depicted in Figure 5.*
- ☐ *AMPACT tools with only three color-coded grooves around the coupling front and a continuous band of knurling on the coupling nut require additional inspections and testing to detect a broken "Fail Safe."* ***NEVER fire an AMPACT tool with a broken "Fail Safe." Return tools with a broken "Fail Safe" to the appropriate TE Connectivity location designated in Section 10, Tool Return or Replacement.***
- ☐ *After TE has completed its retrofit program at your company location by providing the four color-coded grooved version of the AMPACT tool, any AMPACT tools with the three color-coded grooves which were not retrofitted during the scheduled retrofit program must be returned to TE for replacement. Refer to Section 10, Tool Return or Replacement, for addresses.*
- ☐ *If using AMPACT tools with three color-coded grooves around the coupling front, you must consult Product Warning 408-9907. For copies of this document, call the Energy Division Customer Service Center at 1-800-327-6996.*



SECTION I.
GENERAL DESCRIPTION

1. AMPACT TAP AND STIRRUP CONNECTORS

1.1. AMPACT Taps

The AMPACT tap (see Figure 1) consists of two parts: a heat treated spring “C” member and a wedge with grooves on the tapered sides. Inhibitor is placed in the wedge grooves and “C” members at the factory.

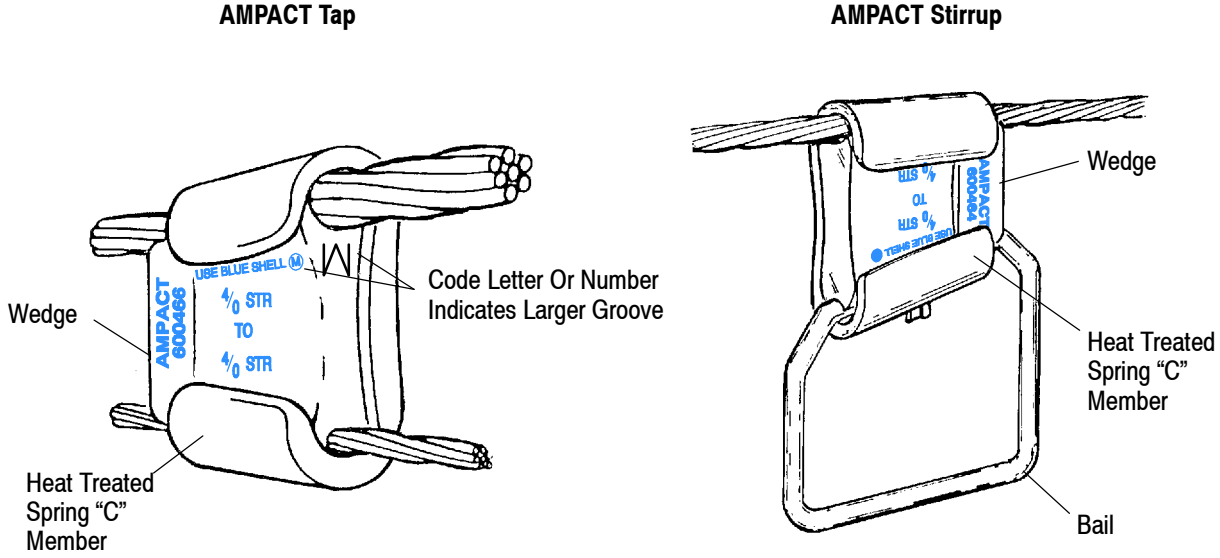


Figure 1

1.2. AMPACT Stirrups

The AMPACT stirrup (see Figure 1) consists of three parts: a heat treated spring “C” member with a bail made of tin-plated copper wire permanently attached to its side, and a wedge with grooves on the tapered sides. Inhibitor is placed in the wedge grooves and “C” members at the factory.

The spring “C” member exerts continuous pressure on the conductors when the wedge is driven in and locked between them. The assembly can be driven apart without damaging the conductors.

Select the correct AMPACT tap or stirrup for the type and size conductor being used by referring to the AMPACT tap and stirrup selection data in 408-1931.

NOTE

Dimensions are in millimeters [with inches in brackets].

1.3. How to Use a Tap or Stirrup

AMPACT tap and stirrup connectors are suitable for connecting solid or stranded conductors: aluminum to aluminum, aluminum to copper, and copper to copper.

NOTE

Copper-to-copper connections using aluminum connectors are not recommended for highly corrosive environments. Use copper AMPACT taps for copper-to-copper connections in highly corrosive environments.

2. AMPACT TOOLS, SHELLS, AND ACCESSORIES

2.1. AMPACT Tool in Two Sizes

AMPACT tools are actuated by firing a special powder-loaded shell within the tool — in order to reduce the time and effort required to tap a power line. The compact tools are manufactured in high-grade steel to precise tolerances and are available in two sizes: large-head and small-head tools. The same interchangeable power unit (No. 69612) is used in both tools. Refer to Figure 2.

Small Tool No. 69437

This 2.5 kg [5 1/2-lb] AMPACT tool includes the small head and interchangeable power unit and is used for the following specific applications:

- To install red-coded standard taps and stirrups, use auxiliary platform and red shell.
- To install white-coded taps and stirrups, use white shell (no platform).
- To install blue-coded taps and stirrups, use blue shell (no platform).

Large Tool No. 69611

This 3.6 kg [8-lb] AMPACT tool includes the large head and interchangeable power unit and is used **only** to install yellow-coded taps and stirrups with yellow shells.

NOTE

AMPACT Cleaning Tool 314199-1 is included with large and small tools. Refer to Figure 49 and instruction sheet 408-9494.

2.2. Auxiliary Platform

The red auxiliary platform, shown installed in the small tool in Figure 2, is used for one application only: installing red-coded **standard** taps and stirrups with a red shell. The auxiliary platform is included with Small Tool 69437.

NOTE

Be sure to remove the auxiliary platform when installing blue or white taps and stirrups.

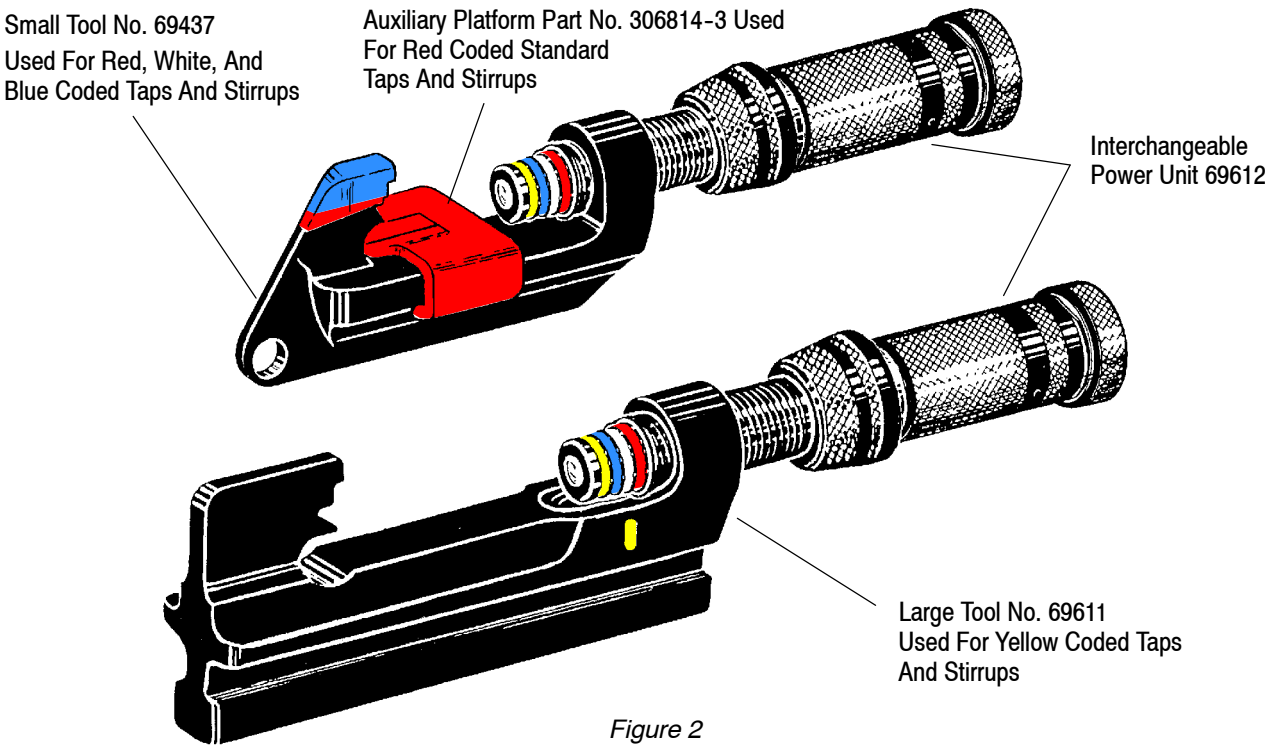


Figure 2

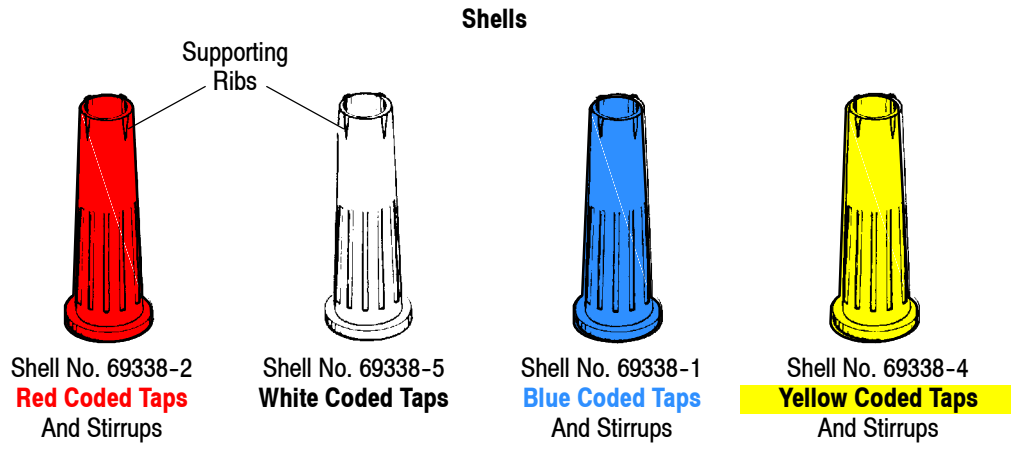


Figure 3

2.3. Color-Coded Shells

AMPACT shells are color coded (red, white, blue, and yellow) for specific applications with AMPACT tools. See Figure 3. The cartridges are molded of weatherproof polyethylene and packed with propellant and primer. Color codes indicate the strength of the powder charge and correspond to the color code of tap sizes with which they are used (for installation).

2.4. Take-Off Clips for Tap Removal

Four types of take-off clips, shown in Figure 4, are used with AMPACT tools to remove terminated taps and stirrups from conductors. Three types are used with the small tool, and one clip is used with the large tool. ONLY RED AND BLUE SHELLS ARE USED FOR TAP/STIRRUP REMOVAL. Take-off clips are ordered separately.

CAUTION

In small tools, USE THE RED SHELL ONLY for removing red, white, or blue coded taps and stirrups.

In large tools, USE THE BLUE SHELL ONLY for removing yellow coded taps and stirrups.

Never use the yellow shell to remove a tap. The yellow shell is too powerful for tap removal.

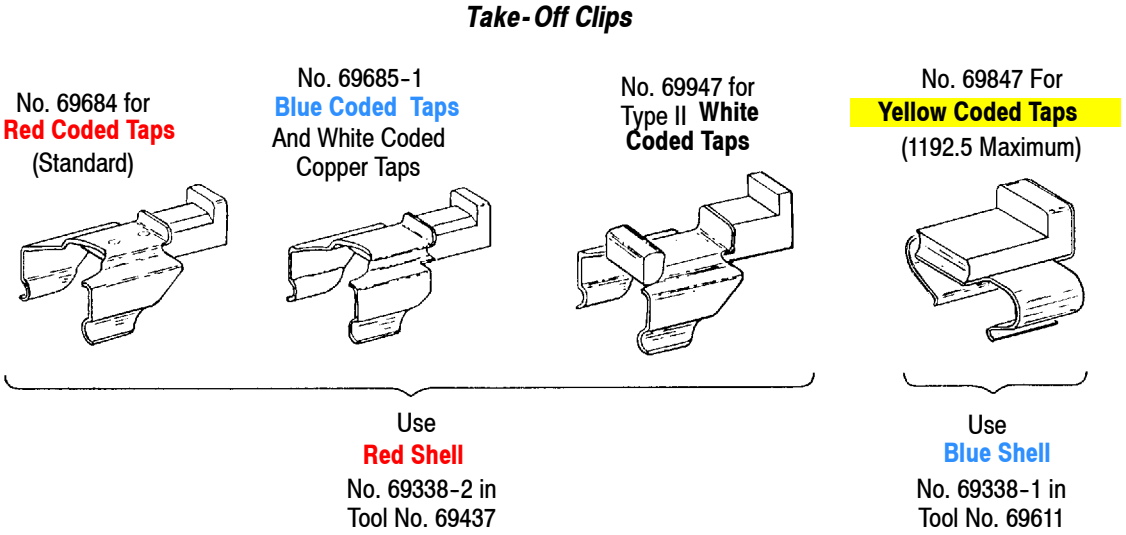


Figure 4

3. TOOL OPERATION

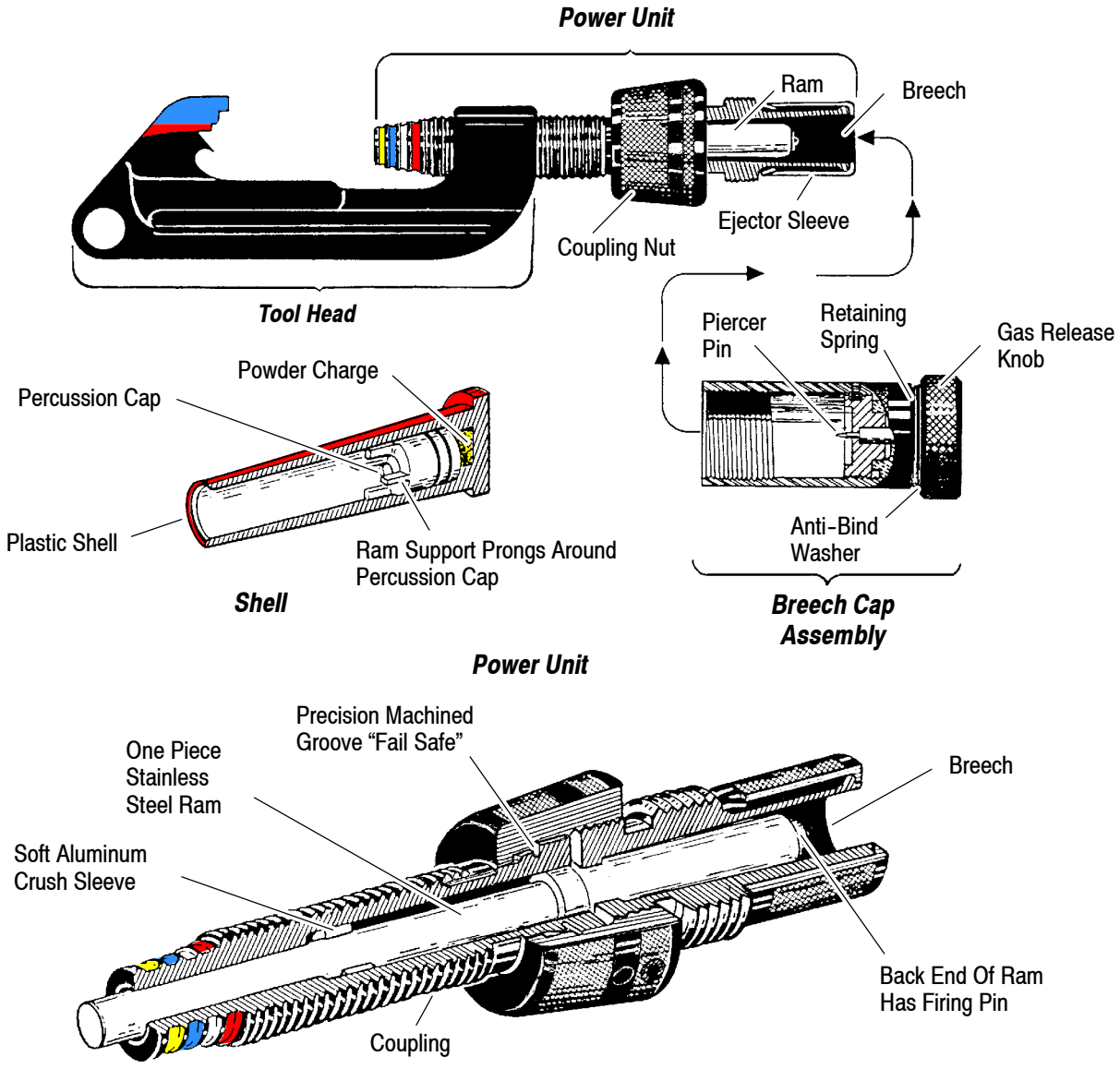
Each operator of the tool must read the manual carefully and understand how the tool and shell components work, before using the tool. This section describes the tool and shell components and how they function.

3.1. Tool and Shell Components

The main parts and features of the AMPACT tool (tool head, power unit, and breech cap assembly) and shell are shown in Figure 5.

DANGER

The information provided in this manual is ONLY for tools with FOUR color coded grooves around the coupling front and a smooth finished stripe on center of the coupling nut as illustrated. If using tools with three color coded grooves, you must consult Product Warning 408-9907. For copies of this document, call the Energy Division Customer Service Center at 1-800-327-6996.



NOTE

Disassembly of the power unit is NOT permitted, other than maintenance procedures described in this manual.

Figure 5

3.2. Tool Functional Description

NOTE

This section is not operating instructions; for detailed operating instructions, see Section 5.

Figure 6 shows ram-shell interaction in step-by-step detail as the tool is loaded and fired.

Detail A: After the shell is loaded and the breech cap is tightened, the ram is held safely away from its firing position by plastic ram support prongs in front of the percussion cap.

Detail B: As the gas release knob is tightened, the piercer pin punctures a hole through the end of the shell but keeps the hole sealed during firing. This hole provides an escape for the gas when the gas release knob is loosened after firing. When the power unit is turned tight against the wedge, the ram is pushed back against the shell's ram support prongs. The prongs are crushed, allowing the ram firing pin to approach the shell percussion cap.

Detail C: The sharp strike of a hammer on the gas release knob causes an impact on the percussion cap against the ram firing pin which ignites the charge. Expanding gases force the gas check and ram forward, driving the wedge into the "C" member.

Detail D: After firing, the gas release knob is turned counterclockwise, retracting the piercer pin and allowing the gas to escape.

CAUTION

Never release the gas from the tool by retracting the entire breech assembly or power unit; residue will build up in the chamber and damage the tool.

Once the pressure on the ram is relieved, the tool may be removed from the tap.

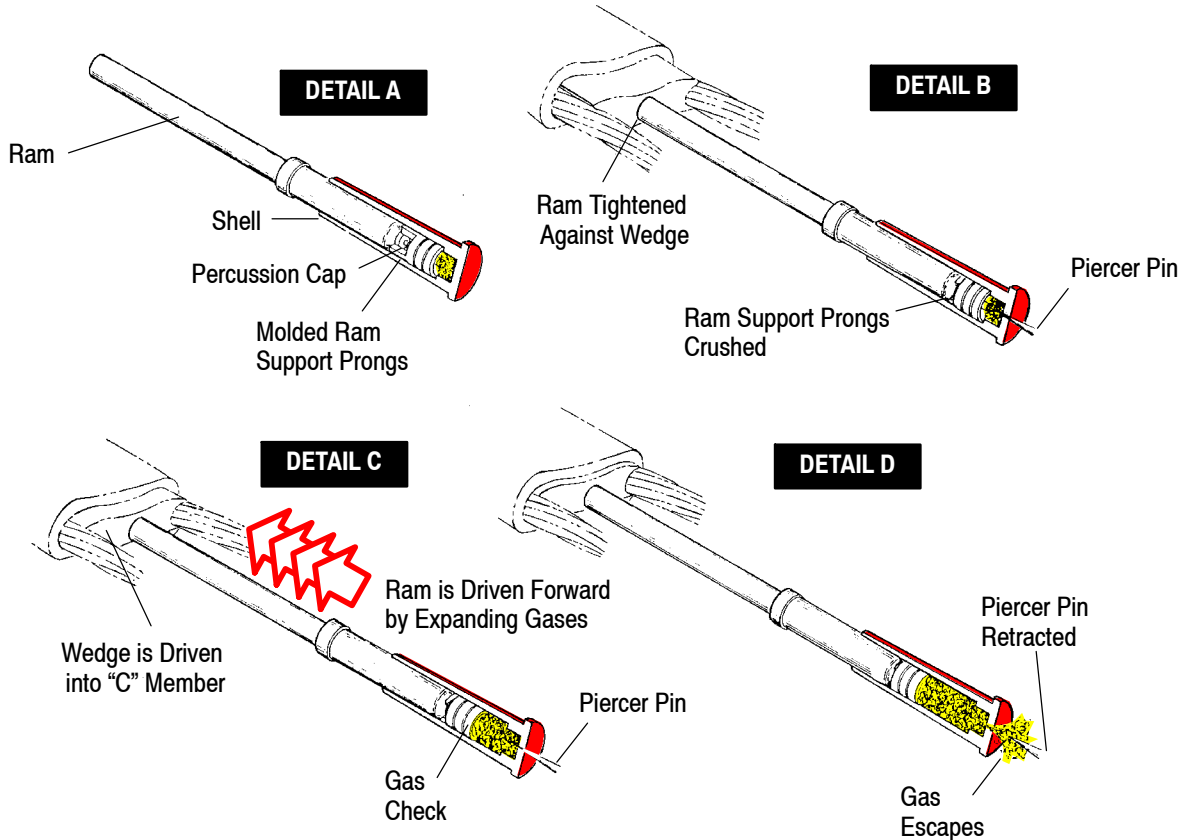


Figure 6

CAUTION

When yellow shells are used, a 20-second wait is required after firing, before releasing the gas. This wait allows the gas to cool and prevents a buildup of foreign material in the breech cap assembly. If gas pressure does not release when gas release knob is loosened, re-tighten and again strike the knob sharply with a hammer. Loosen gas release knob.

3.3. Two Important Features: "Fail Safe" and Soft Aluminum Crush Sleeve

A. The "Fail Safe"

The power unit has incorporated into its design a "Fail Safe" which will deliberately fail before any other part of the AMPACT Tool. The "Fail Safe" is designed to make the AMPACT Tool inoperable when it is broken by allowing the coupling nut to turn so that the power unit cannot be screwed onto or within the tool head. Refer to Figure 5 for illustration of the "Fail Safe."

DANGER

The information provided in this manual is ONLY for tools with FOUR color coded grooves around the coupling front and a smooth finished stripe on center of the coupling nut as illustrated in Figure NO TAG, below. If using tools with three color coded grooves, you must consult Product Warning 408-9907. For copies of this document, call the Energy Division Customer Service Center at 1-800-327-6996.

DANGER

To avoid personal injury, NEVER fire an AMPACT tool with a broken "Fail Safe." Return it to TE immediately for replacement. See addresses in Section 10.

An AMPACT tool should never be operated with a broken "Fail Safe." A broken "Fail Safe" can be detected by (1) a simple push-and-turn AND pull-and-turn test to check if the coupling nut can be turned more than 4° (about 3.2 mm [.125 in.]), and (2) two simple visual inspections. The tests and inspections are depicted and explained in Section 7. Any AMPACT tool with a broken "Fail Safe" should be returned immediately to TE. Refer to Section 10, Tool Return or Replacement, for addresses.

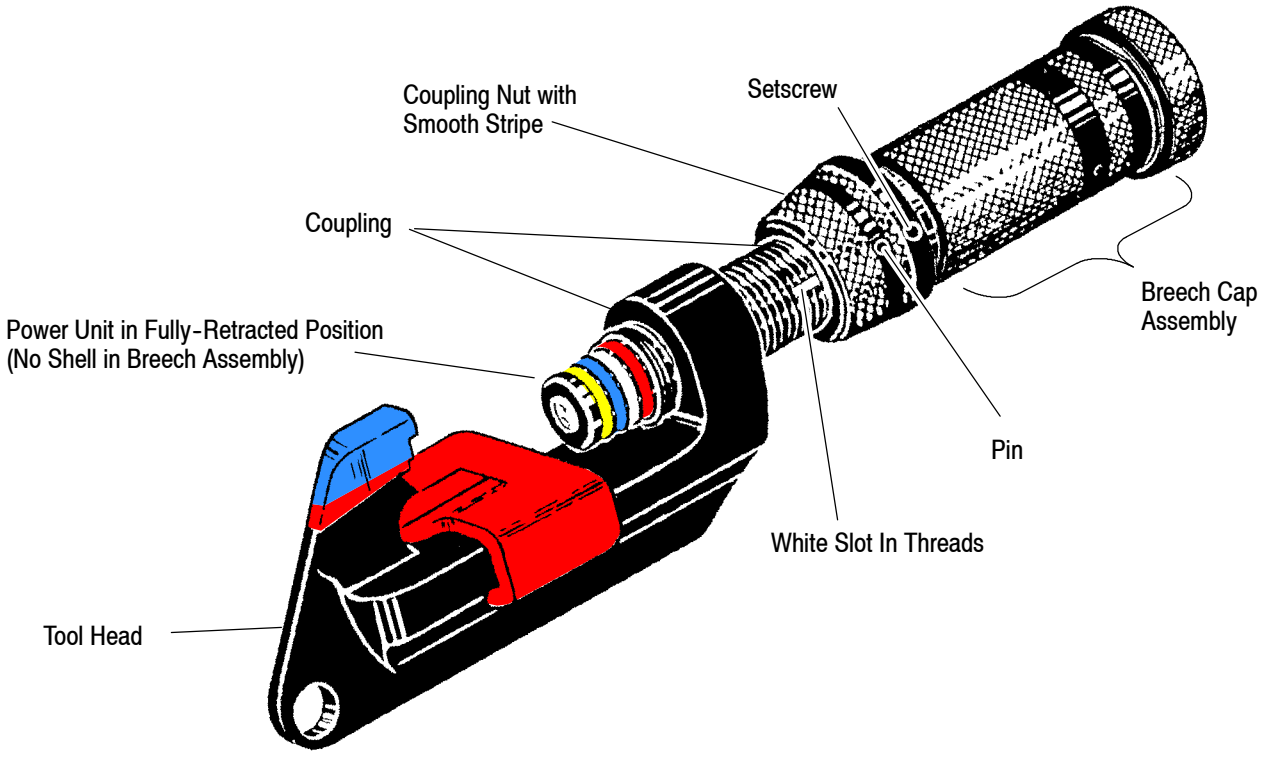


Figure 7

B. The Soft Aluminum Crush Sleeve

CAUTION

DO NOT DROP A LOADED TOOL. The momentum induced on the ram by the dropped tool will cause the ram to strike the percussion cap and fire the tool. If the tool is fired without a connector in it, the soft aluminum crush sleeve surrounding the ram will be crushed, jamming the ram, and rendering the tool inoperative. See Figure 8 .

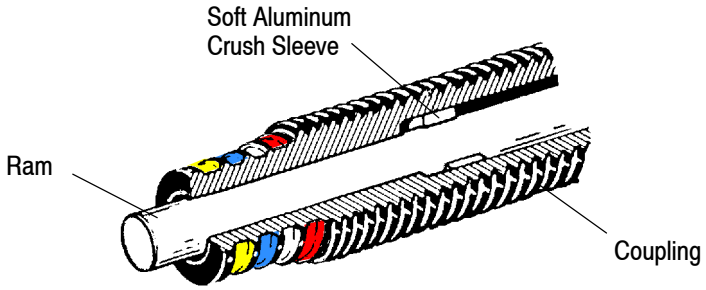


Figure 8

NOTE

The soft aluminum crush sleeve absorbs the force which is normally exerted on the tap. This eliminates the danger of additional damage to the tool. Jammed tools must be returned to the factory for servicing.

4. PRECAUTIONARY PROCEDURES

DANGER

To avoid personal injury, carefully observe the following safety precautions. They are the result of years of experience with the AMPACT tool in the field.

These precautionary procedures will become natural and automatic by constant use. Refer to Figure 9 and also refer to Figures 36 through 43 for proper testing and inspection of the “Fail Safe.”

1. NEVER load a tool until you are ready to install or remove a connector. *If tap installation is NOT completed after tool is loaded,* remove and dispose of shell. DO NOT RE-USE SHELLS THAT HAVE BEEN LOADED AND THEN REMOVED FROM TOOL.

2. Always keep power unit fully retracted (see Figure 9, Detail C) while transporting tool or until ready to install or remove a connector. If the tool is accidentally dropped and fired with power unit ram fully retracted, the soft aluminum crush sleeve will absorb the force of ram travel and prevent additional damage to the tool. See Paragraph 7.2.

3. Test and inspect “Fail Safe” on a daily basis, as described in Paragraph 7.3, to ensure that “Fail Safe” is not broken.

4. Always insert shell vertically (open end facing up; see Figure 9, Detail B). Replace and tighten breech cap and gas release knob **before** mounting the tool on tap or stirrup.

5. Never strike the end of a shell while it is in the breech without the breech cap assembly properly installed and the tool clamped on a connector.

6. Never fire the tool while other people are standing directly in the line of action. Although wedge movement is “contained” by the tool when it is fired, high velocity wedge movement may throw off excess inhibitor.

7. Always use a hammer to fire the tool. Never use a wrench or pliers. See Figure 9, Detail E.

8. Protect the tool from damage. Tools with nicks, cracks, damaged threads, or burns from cross-phasing must not be used and must be returned to the factory. See Paragraph 7.5 and Figure 43.

9. Never allow hands to come in contact with tap or stirrup when firing the tool. Hold the knurled breech cap assembly to steady the tool when firing. See Figure 9, Detail E.



After firing, NEVER attempt to remove breech cap assembly until the gas release knob is loosened (turned counterclockwise) to allow the release of gas pressure.



If the release of gas pressure is not evident (such as sulfur-like odor or hissing sound), refer to instruction in Paragraph 5.7.

10. Never abuse or experiment with AMPACT tools or shells.

11. Clean and lubricate the power unit regularly as described in Section III, TOOL INSPECTION AND MAINTENANCE.

12. Always wear certified safety glasses• and gloves when firing the tool. Eyeglasses are NOT safety glasses.

•ANSI Z87.1 eye protection (CAN/CSA Z94.3)

SAFETY GUIDELINES - DEFINITIONS

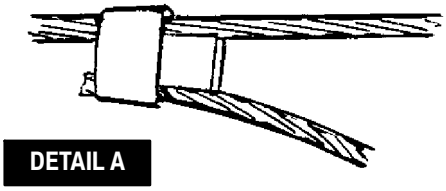
It is important for you to read and understand this manual.
The information it contains relates to protecting YOUR SAFETY and PREVENTING PROBLEMS. The symbols below are used to help you recognize this information.

DANGER: Indicates an immediate hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates potentially hazardous situation which, if not avoided, may result in property damage.



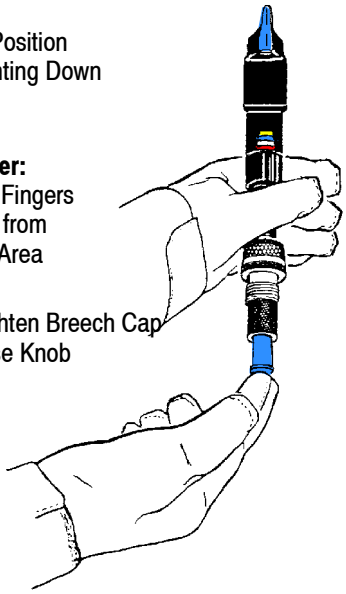
DETAIL A

Assemble Tap or
Stirrup on Line

Hold Tool In Vertical Position
With Breech End Pointing Down

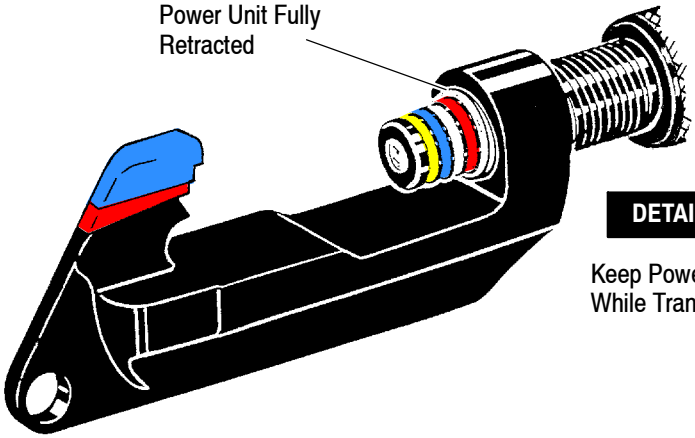
DETAIL B

Danger:
Keep Fingers
Away from
Ram Area



Insert Shell, Tighten Breech Cap
and Gas Release Knob

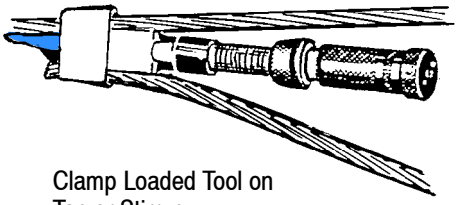
Power Unit Fully
Retracted



DETAIL C

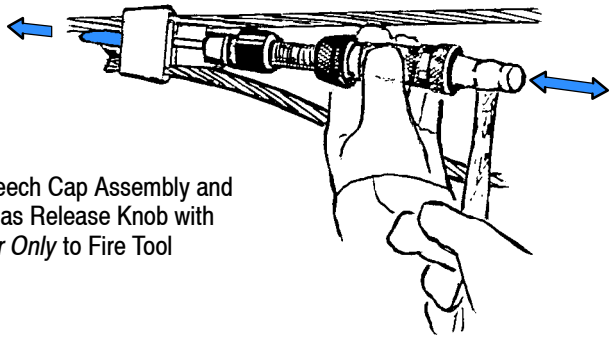
Keep Power Unit Fully Retracted
While Transporting Tool

DETAIL D



Clamp Loaded Tool on
Tap or Stirrup

DETAIL E



Hold Breech Cap Assembly and
Strike Gas Release Knob with
Hammer Only to Fire Tool

Figure 9

"SECTION II.
TAP OR STIRRUP INSTALLATION/REMOVAL

5. TAP OR STIRRUP INSTALLATION

5.1. Wire Preparation

Thoroughly clean conductors with a wire brush.

NOTE

Insulated conductors must be stripped before installing taps and stirrups. Thicker insulations require a longer strip length. Avoid removing more insulation than required to position the tool on tap or stirrup. Select the proper strip length from the table in Figure 10.

TAP COLOR CODE	TAP SIZE	TAP TYPE	WIRE SIZE (AWG)	STRIP LENGTH (mm [Inch])
Red	Small (Standard)	Aluminum or Copper	14 through 1/0	82.6 [3.25]
White	Small (Type II)	Aluminum	8 through 1/0	101.6 [4.0]
	Medium	Copper	1/0 through 250.0	101.6 [4.0]
Blue	Medium	Aluminum	4/0	101.6 [4.0]
		Aluminum	266.8	108.0 [4.25]
		Aluminum	350.0	108.0 [4.25]
		Copper	1/0 through 500.0	108.0 [4.25]
Yellow	Large	Aluminum	336.4	152.4 [6.0]
			477.0	152.4 [6.0]
			556.5	152.4 [6.0]
			795.0	165.1 [6.5]
			1033.5	165.1 [6.5]
			1192.5	165.1 [6.5]

Figure 10

5.2. Applying Tap or Stirrup to Thru Wire

1. Observe sizes and types of wires used in your application. Refer to 408–1931 for tap and stirrup selection.

2. Hook "C" member on thru wire with open side of "C" facing away from operator. Typical arrangements of AMPACT taps are shown in Figure 11. The arrangement used depends on the working space, direction of tap wire, and type of wire being used.

DANGER

TO AVOID PERSONAL INJURY, WEAR PROTECTIVE GLOVES IN ACCORDANCE WITH COMPANY WORK PRACTICES WHENEVER YOU ARE WORKING WITH ENERGIZED LINES. Hold tap wire in "C" member, then hook the "C" member over the thru wire. The operator's hands are not in series with the circuit by using this method. See Figure12 .

3. Observe the code letter or number on label or on back of wedge groove. Identify and align the large groove with the large wire. With both wires in the "C" member, push wedge between them finger tight. Wedge should go into "C" member about half its length. See Figure13.

NOTE

Learn to recognize a properly inserted wedge and use it as a gage to identify the correct wire combinations before installing the tool. See Figure 14.

4. Strike wedge once or twice with hammer to secure it temporarily as shown in Figure 15. The tap or stirrup is now self supporting.

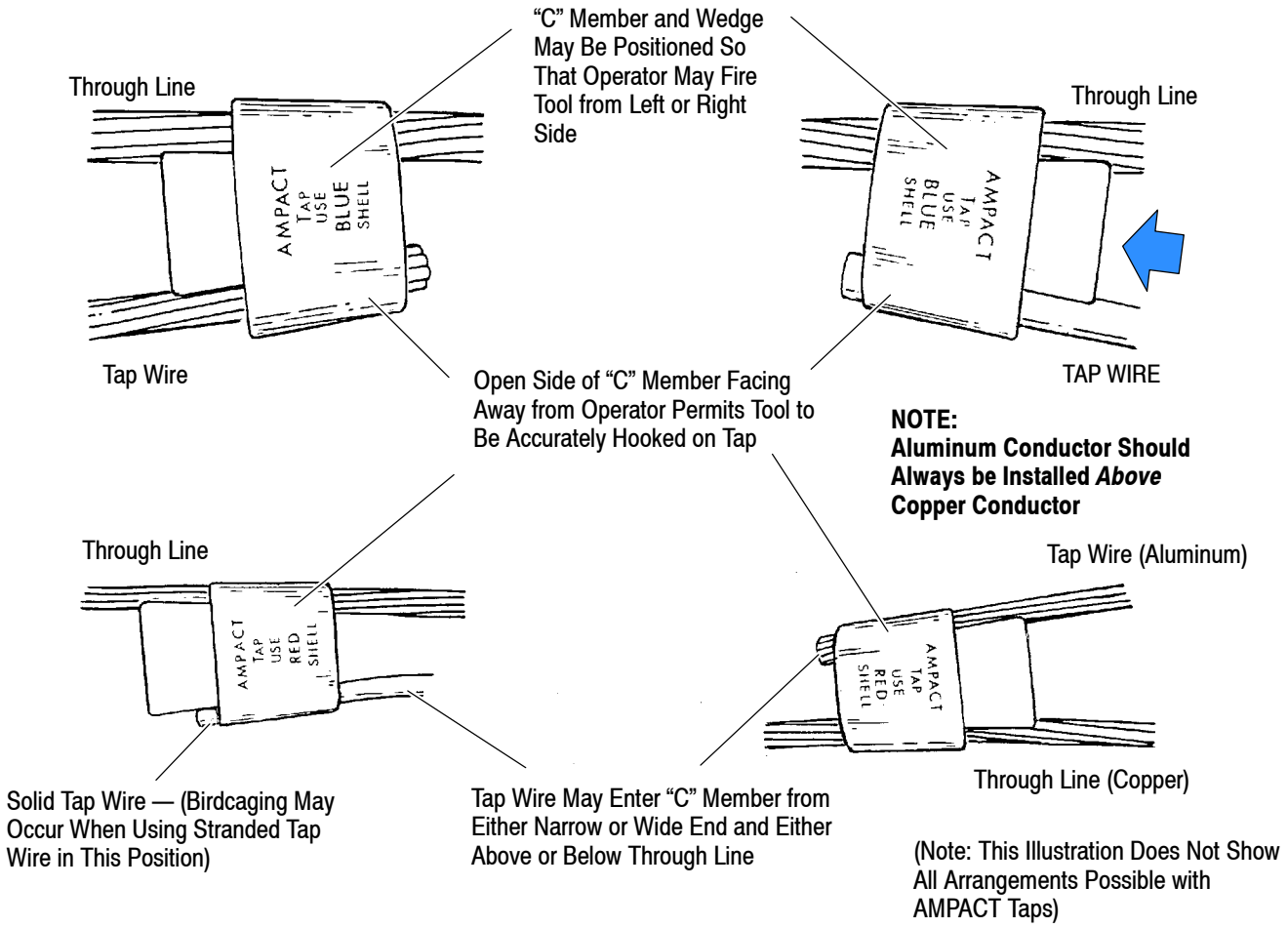


Figure 11

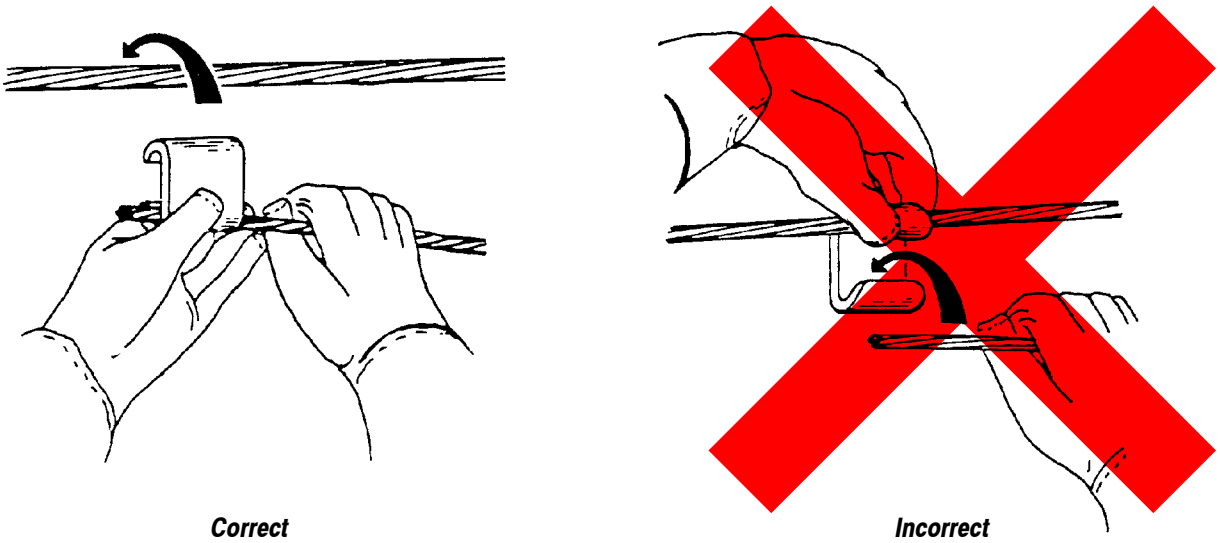


Figure 12

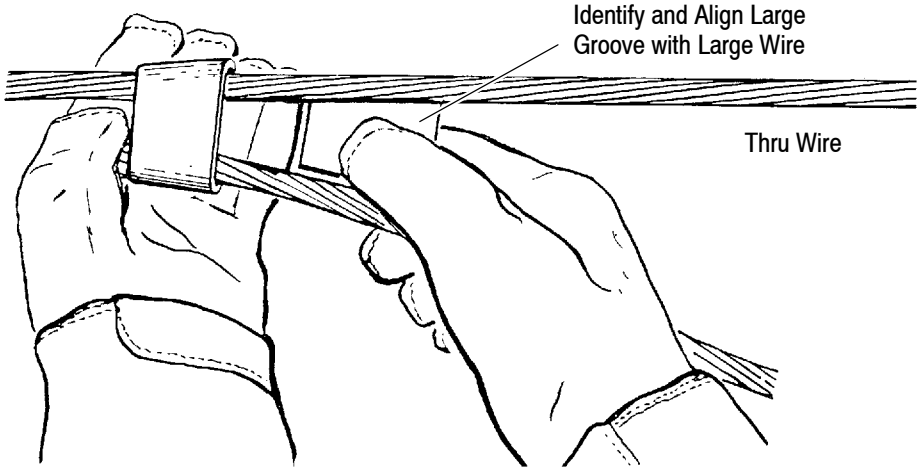


Figure 13

Properly Inserted Wedge

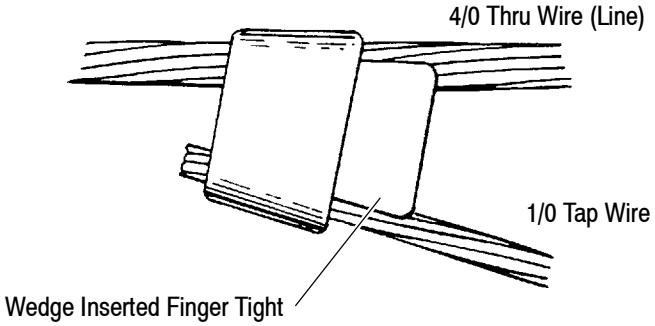


Figure 14

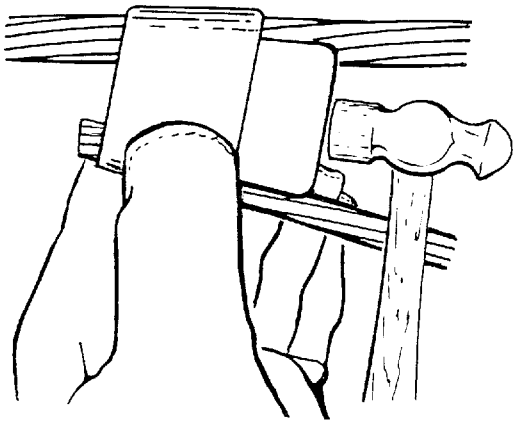


Figure 15

5.3. Tool Selection

Select the correct combination of tool, tap or stirrup, and shell from the table in Figure 16. Note that all shells have the same base part number; *dash numbers indicate specific shell colors*. The correct combination is *essential*.

TOOL PART NO.	TAP OR STIRRUP COLOR CODE (Type)	SHELL COLOR/PART NO.
Small Tool 69437 ***with*** Red Platform No. 306814-3	Red Standard (Aluminum or Copper)	Red / No. 69338-2
Small Tool 69437 ***without*** Red Platform	White Type II (Aluminum)	White / No. 69338-5
	White (Copper)	White / No. 69338-5
	Blue (Aluminum or Copper)	Blue / No. 69338-1
Large Tool 69611	Yellow (Aluminum)	Yellow / No. 69338-4

Figure 16

5.4. Preparing the Tool for Tap or Stirrup Installation

After selecting the correct tool, make sure that the tool breech and breech cap assembly are clean and in good working order. See Section 8, WEEKLY SERVICING. Also see Section 7, DAILY SERVICING, for testing and inspection of "Fail Safe." Then proceed as follows:



To avoid personal injury, never prepare an AMPACT tool for tap installation in any sequence except as described in the following procedure.

1. *For red standard tap and stirrup applications only*, install red platform on small tool 69437. Hook platform over side of head and slide platform forward until it butts against front of tool as shown in Figure 17. Tighten thumbscrew.
2. Turn gas release knob counterclockwise as far as possible.
3. Unscrew and remove breech cap assembly from power unit.
4. Select proper color-coded shell from the table in Figure 16.
5. Check inside shell casing, tool breech, and breech cap assembly and remove foreign particles, if necessary.

Platform Installation On Small Tool 69437 (For Use With Red Standard Taps and Stirrups Only)

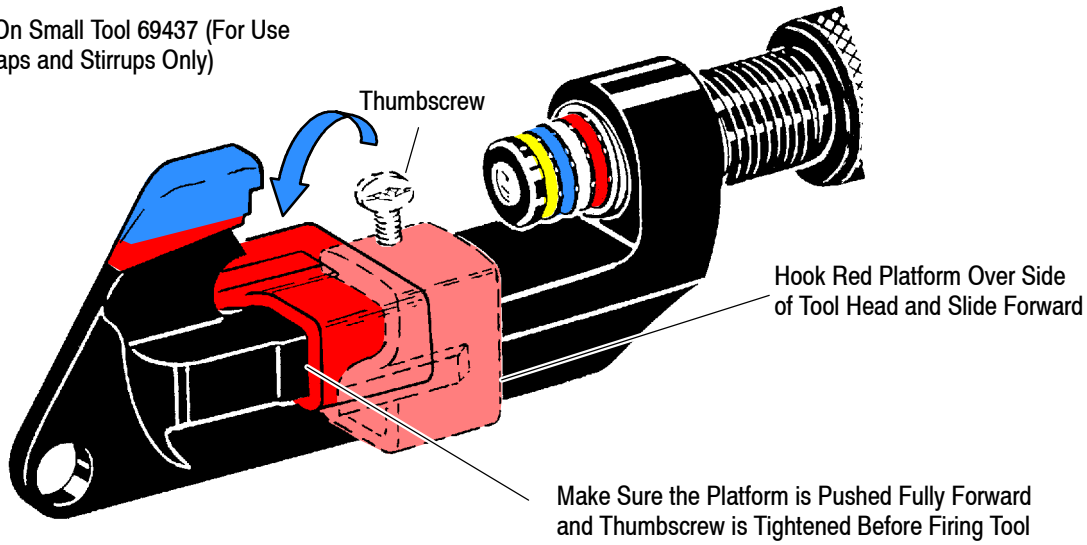


Figure 17

6. Hold tool in a vertical position, and allow ram to fully retract. The ram will retract from its own weight, in a tool in good working order.

7. Insert shell into tool breech **while holding tool in vertical position with ram fully retracted**. See Figure 18. Note that the supporting ribs on the shell will retain the ram in its retracted position. KEEP FINGERS AWAY FROM THE RAM AREA.



TO AVOID PERSONAL INJURY, NEVER ATTEMPT TO FORCE SHELL INTO TOOL BREECH BY STRIKING THE END OF THE SHELL. ***SHELL WILL FIRE***

8. Install and tighten breech cap; then tighten gas release knob.



The ram should be in, and remain in, the retracted position; if NOT, remove shell and repeat Steps 3 through 8.

9. Mount the tool to the connector, as instructed in Paragraph 5.5.

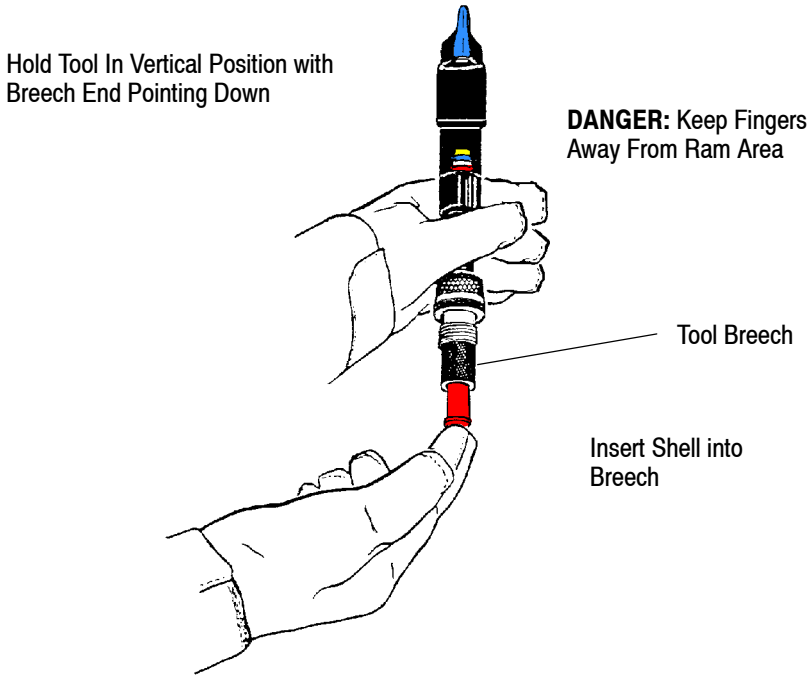


Figure 18

5.5. Mounting the Tool for Tap or Stirrup Installation

DANGER

To avoid personal injury, never mount an AMPACT tool for tap installation that has not been prepared according to the sequence described in 5.4, Preparing the Tool for Tap or Stirrup Installation, above.

1. Turn coupling nut counterclockwise to retract the power unit, thereby providing ample room for hooking the tool over the tap or stirrup.

2. Hook head of tool over the small end of tapered “C” member with the open side of the “C” member facing the tool platform. See Figure 19.

NOTE

Carefully observe the following conditions to ensure that “C” member is positioned in the correct notch in tool head.

- RED coded standard tap or stirrup must be positioned in lower red notch as shown in Figure 20.
- WHITE coded Type II tap or stirrup must be positioned by hooking upper blue notch and lower red notch over end of “C” member as shown in Figure 21.
- BLUE and WHITE coded taps or stirrups must be positioned in outermost blue notch as shown in Figure 21.
- YELLOW coded taps or stirrups must be positioned under notch in large tool head as shown in Figure 22.

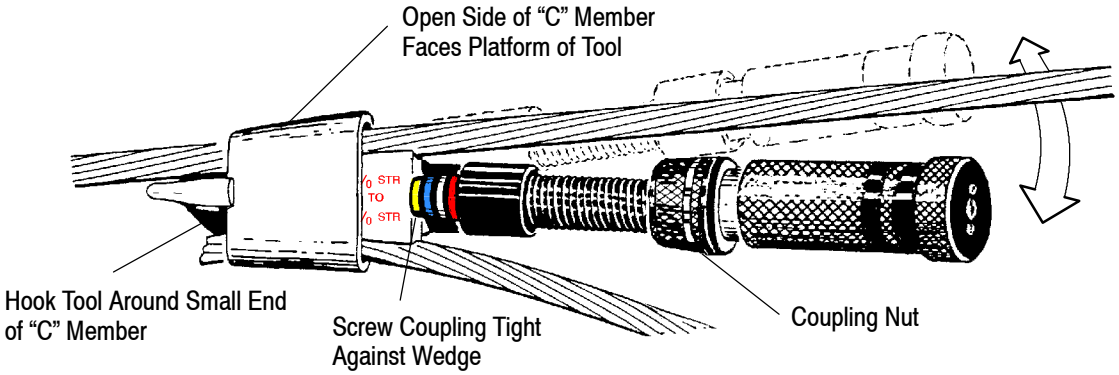


Figure 19

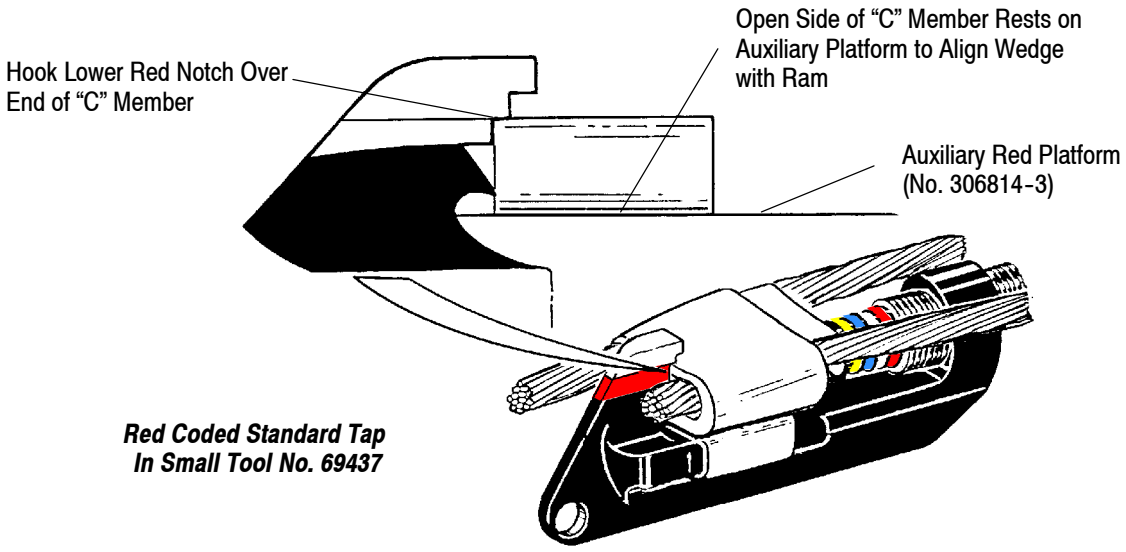


Figure 20

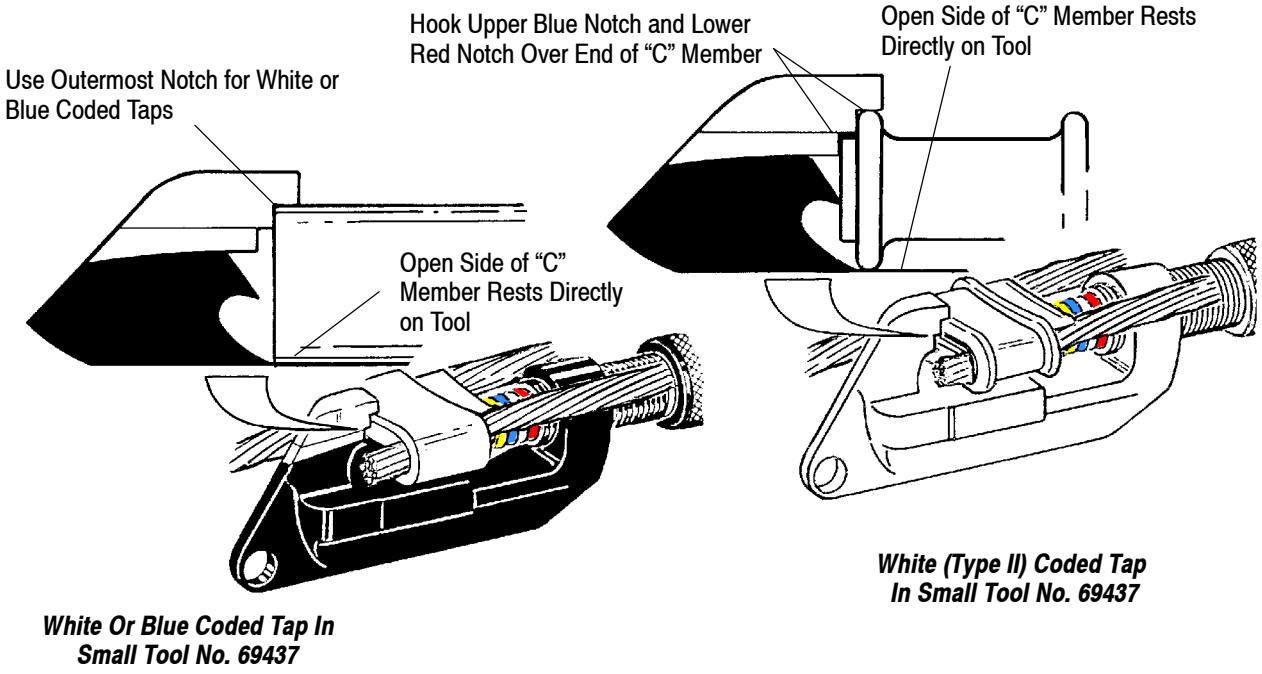


Figure 21

It is important that the tool is positioned properly to assure accurate lancing of the wedge and a good reliable connection.

3. Turn the coupling nut clockwise, advancing the coupling until it butts firmly against the end of the wedge.

4. Tool is now mounted and self supporting before and after firing. Before firing, visually inspect the mounted tool for the following conditions (see Figure 23):

- Correct tap and wire size combination.
- Correct match of shell and tap color codes.
- Wedge inserted properly into “C” member.
- The “C” member must be in proper notch of tool head.
- Coupling must be tight against wedge.
- Breech cap and gas release knob must be tight.

If all conditions listed above in step 4 are met, the tool is now ready to fire.

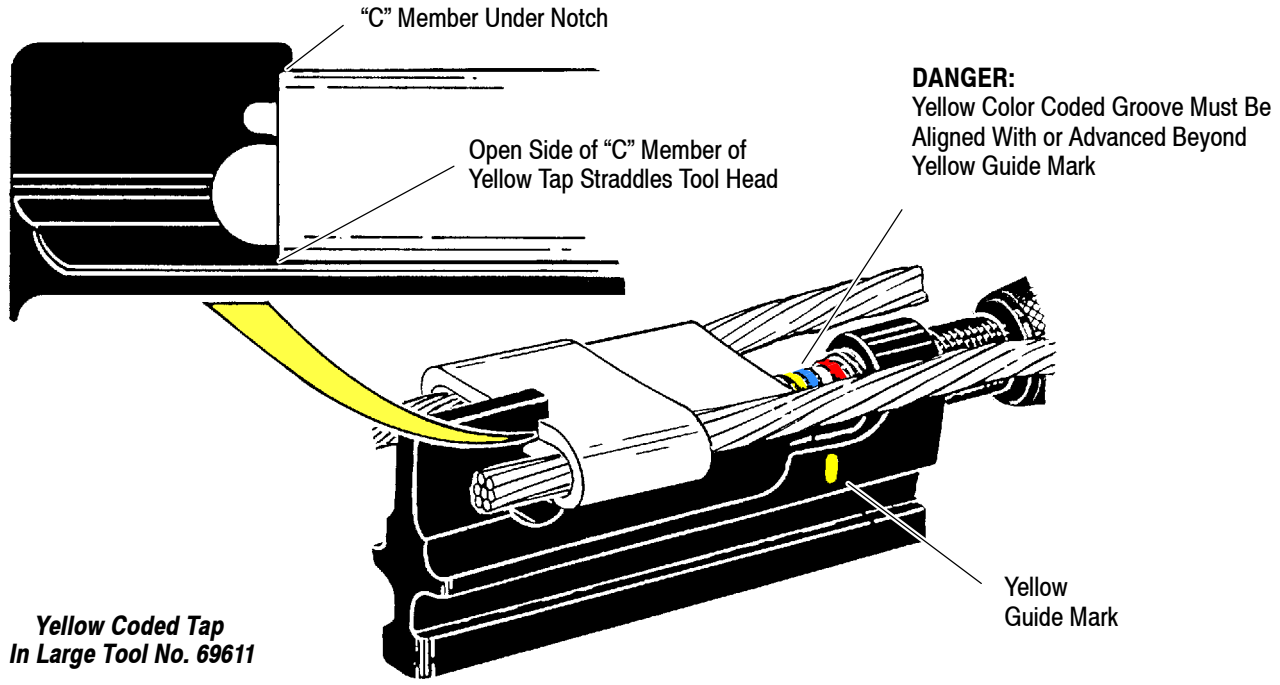


Figure 22

NOTE

When mounting the large tool No. 69611, observe the position of the yellow band on the coupling after it is tightened against the wedge. THE YELLOW BAND MUST BE ALIGNED WITH OR ADVANCED BEYOND THE YELLOW GUIDE MARK ON THE TOOL HEAD BEFORE FIRING. See Figure 22. If the wedge cannot be inserted between the wires far enough to attain proper alignment of the yellow band and guide mark, there is a possibility that the wrong wire, tap, or stirrup combinations are being used. Refer to the troubleshooting table in Figure 25.

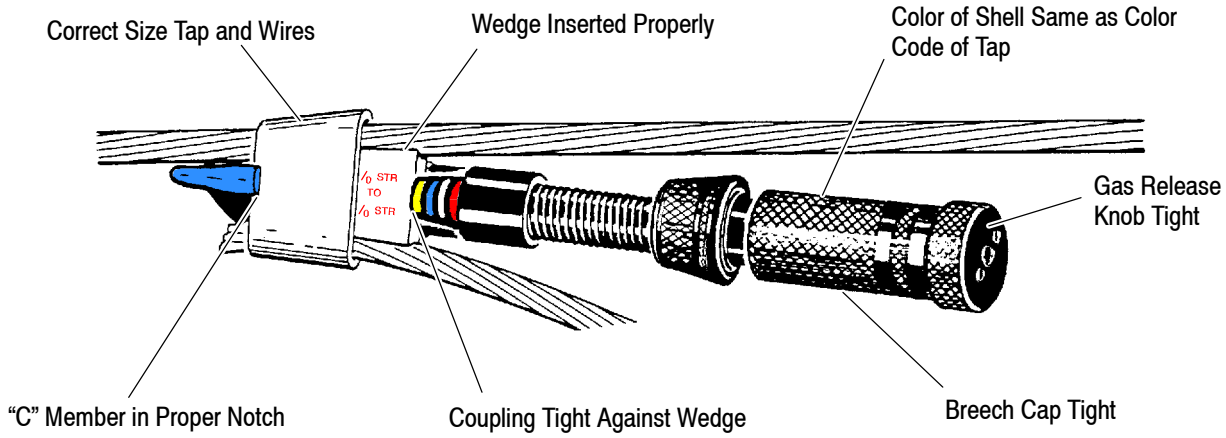


Figure 23

5.6. Firing the Tool

1. Grasp the tool only at the knurled breech cap assembly to steady the tool for firing. See Figure 24.

2. Strike the gas release knob solidly with a hammer of sufficient weight. (Do **not** use pliers or wrench to fire the tool.) If tool does not fire, make sure the coupling, breech assembly, and gas release knob are tight and strike gas release knob sharply again.

DANGER

*If the tool fails to fire, wait two minutes before attempting to remove tool. After two minutes, remove tool from tap, remove and dispose of old shell, and reload with **new** shell exactly as described in 5.4, Preparing the Tool for Tap or Stirrup Installation. If the tool still fails to function, inspect power unit for proper coupling movement. Refer to Paragraph 7.2 and Figure 36.*

CAUTION

*Whenever firing of the tool results in an unusually loud report or "bang,"ensure that the gas release knob was fully and securely tightened. If necessary, firmly and securely tighten the gas release knob, then check the piercer pin length as described in Paragraph 8.1 before using the tool again. If knob **was** tightened, the tool should be taken out of service immediately and returned to TE for repairs.*

NOTE

Striking the gas release knob with a hammer will cause a noise. There is an additional noise generated by the expansion of gases when firing the shell. A typical "hammer strike only" will cause approximately 90 dB (a) short duration noise; the addition of the largest shell (yellow) will cause the noise to be approximately 91 to 99 dB (a) short duration noise.

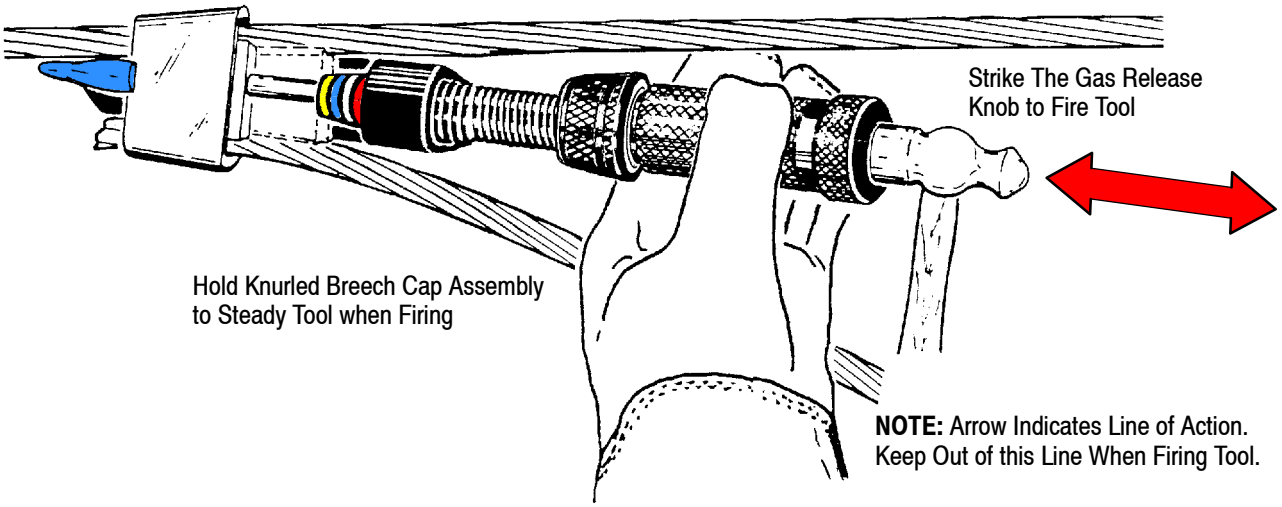
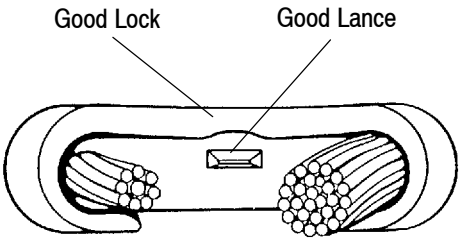
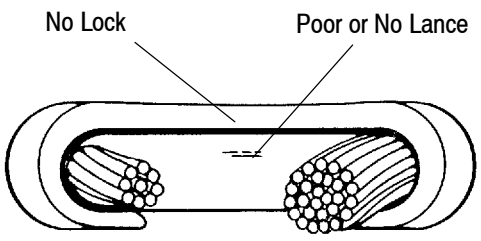


Figure 24



Good (Acceptable) Connection



Poor (Unacceptable) Connection

Troubleshooting Table

Problem	Causes	Corrective Action
Improper lock. (Poor or no lance due to insufficient wedge travel).	Wrong color shell used. Never use red shells to fire blue or yellow coded taps or stirrups. Never use blue shells to fire yellow coded taps or stirrups.	Remove and re-fire tap or stirrup. Refer to paragraph 5.3 and Figure 16 for correct tap or stirrup, shell and tool, color code combination.
	Wrong size tap or stirrup used.	Remove and replace with correct size tap or stirrup. Refer to 408-1931 for tap and stirrup selection.
	Reversed Wedge.	Remove and replace with new tap or stirrup. Code letter or number on label and in wedge groove indicates larger groove. Refer to Paragraph 5.2, Step 3, and NOTE.
Overtravel of wedge or damaged tap or stirrup.	Wrong color shell used. **YELLOW SHELLS ARE TOO POWERFUL** for firing red or blue coded taps or stirrups.	Remove and replace with new tap or stirrup. Refer to paragraph 5.3 and Figure l6 for correct tap or stirrup, shell and tool, color code combination.
	Wrong size tap or stirrup used.	Remove and replace with correct size tap or stirrup. Refer to 408-1931 for tap and stirrup selection.

Figure 25

5.7. Removing Fired Tool from Tap/Stirrup and Inspecting the Connection

1. Turn gas release knob counterclockwise to allow gas release. To assure proper gas release, check piercer pin length regularly and keep tool clean and oiled (Figure 45).

CAUTION

Before removing fired tool from tap, ALWAYS ensure that a gas release occurred. Operator should detect a sulfur-like smell and/or hissing sound. If gas was not released, refer to instructions in DANGER on the next page.

DANGER

To avoid personal injury, NEVER release gas by turning entire breech cap assembly or power unit.

CAUTION

WHEN USING YELLOW SHELL, WAIT TWENTY SECONDS AFTER FIRING BEFORE RELEASING THE GAS RELEASE KNOB. This delay allows the gas to cool and prevents a buildup of foreign material in the breech cap assembly. If gas pressure does not release when gas release knob is loosened, re-tighten and again strike the knob sharply with a hammer. Loosen gas release knob.

2. Turn coupling nut counterclockwise to retract power unit and remove tool from tap or stirrup.

3. Direct breech cap end of tool away from personnel and towards the ground. Remove breech cap assembly and push ejector sleeve to eject spent shell as shown in Figure 26.

4. Inspect connection for proper lock (Good Lance in Figure 25). If there is no lock, wedge was not driven far enough into “C” member. In the event of improper lock or wedge travel, refer to the troubleshooting table in Figure 25 for possible causes and corrective action.

DANGER

STOP

- ☐ *In the event gas does not release, re-tighten the gas release knob and strike sharply with hammer in an attempt to release the gas. If gas still does not release, remaining gas pressure may cause the shell to stick in the breech. KEEP FINGERS OUT OF RAM AREA: RAM MAY EXTEND WITHOUT WARNING IF SHELL CONTAINS GAS PRESSURE. Remove tool from tap by rotating coupling nut counterclockwise. After tool is removed, hold in the vertical position with the tool pointed away from any persons. Grasp tool by coupling nut and remove breech cap assembly. Point the breech in a safe direction, away from personnel and toward the ground. Insert end of screwdriver in clearance between ejector sleeve and threaded portion of breech as shown in Figure 27. Twist the screwdriver to eject the spent shell in a safe direction.*
- ☐ *NEVER look into the opening of an ejected shell. If the shell contains pressurized gas, COMPONENTS COULD BE EXPELLED with considerable force.*
- ☐ *After shell removal, check breech and MAKE SURE that primer or primer cap is NOT lodged in the tool. If primer or primer cap is lodged in the breech, remove. BE SURE to check piercer pin length and clean tool according to instruction in Section 8 before re-using the tool.*
- ☐ *NEVER ATTEMPT TO REMOVE SHELLS WITH PLIERS OR BY PRYING UNDER THE LIP OF THE SHELLS. Personal injury or damage to the tool may result from improper ejection of shell. IF SHELL CANNOT BE EJECTED PROPERLY, contact your TE Field Representative for specific handling instructions.*



Figure 26

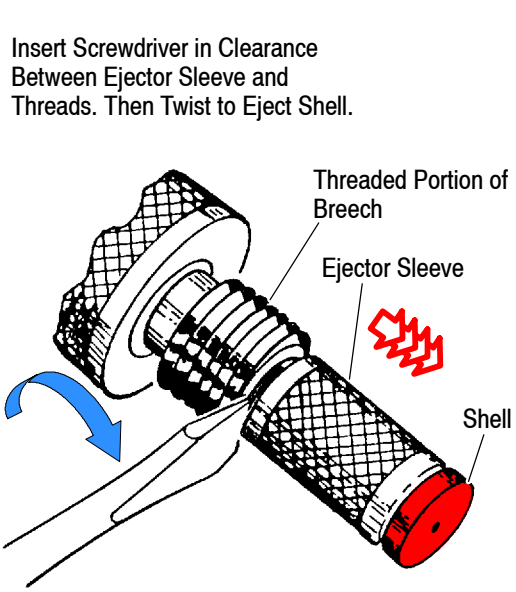


Figure 27

6. TAP OR STIRRUP REMOVAL

6.1. Take-Off Clip Selection

Select the correct take-off clip and shell from the list below in Figure 28.

Use take-off clip No. 69684 and red shell for removal of small red coded taps. Narrow end of wedge fits under lower red notch of tool and pusher block butts against "C" member as shown in Figure 31.

Use take-off clip No. 69685-1 and red shell for removal of blue coded taps and white coded copper taps. Narrow end of wedge fits under outermost blue notch of tool and pusher block butts against "C" member as shown in Figure 32.

Use take-off clip No. 69947 and red shell for removal of white coded Type II taps. Narrow end of wedge fits under lower red notch of tool and lower step of pusher block butts against "C" member as shown in Figure 33.

Use take-off clip No. 69847 and blue shell for removal of large yellow coded taps. Narrow end of wedge fits under notch of tool and curved portion of pusher block butts against "C" member as shown in Figure 34.

NOTE

When removing a yellow coded tap or stirrup, observe the position of the yellow band on coupling when it is tightened against the take-off clip. The yellow band must be aligned with or advanced beyond the yellow guide mark on head before firing the tool. See Figure 22.

CAUTION

Use only red shells to remove red, white and blue coded taps. Use only blue shells to remove yellow coded taps. NEVER USE YELLOW SHELLS TO REMOVE A TAP. Yellow shells are too powerful for tap removal.

Figure 28

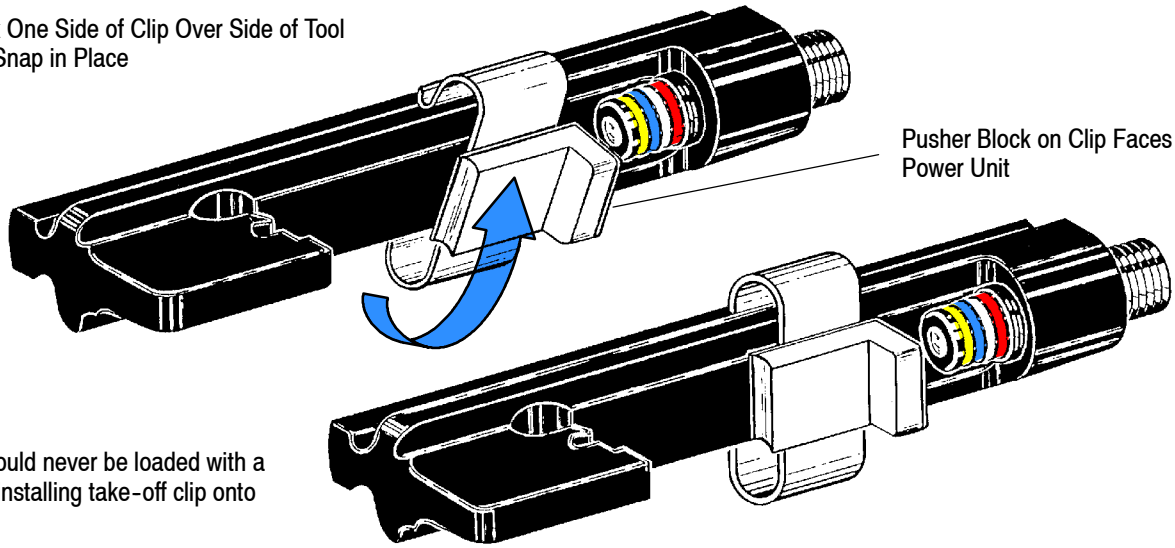
6.2. Take-Off Clip Installation onto Tool

1. Retract power unit enough to allow clip to be snapped on tool and to provide sufficient room for tap to be positioned in tool.

DANGER

To avoid personal injury, the tool should NEVER be loaded with the shell when installing the take-off clip onto the tool.

2. Hook one side of take-off clip over side of tool and snap in place as shown in Figure 29.



DANGER:
The tool should never be loaded with a shell when installing take-off clip onto tool.

Figure 29

6.3. Preparing the Tool for Tap or Stirrup Removal

DANGER

To avoid personal injury, never prepare AMPACT tool for tap removal in any sequence except as described in the following procedure.

1. Turn gas release knob counterclockwise as far as possible.
2. Unscrew and remove breech cap assembly from power unit.
3. Check inside shell casing, tool breech, and breech cap assembly and remove foreign particles, if necessary.
4. Hold tool in a vertical position, and allow ram to fully retract. The ram will retract from its own weight, in a tool in good working order.

5. Insert shell into tool breech **while holding tool in vertical position with ram fully retracted**. See Figure 30. Note that the supporting ribs on the shell will retain the ram in its retracted position. KEEP FINGERS AWAY FROM THE RAM AREA.

DANGER

TO AVOID PERSONAL INJURY, NEVER ATTEMPT TO FORCE SHELL INTO TOOL BREECH BY STRIKING THE END OF THE SHELL.
SHELL WILL FIRE.

6. Install and tighten breech cap; then firmly tighten gas release knob.

DANGER

The ram should be in, and remain in, the retracted position; if NOT, remove shell and repeat Steps 1 through 6.

7. Mount the tool to the connector as instructed below in Paragraph 6.4.

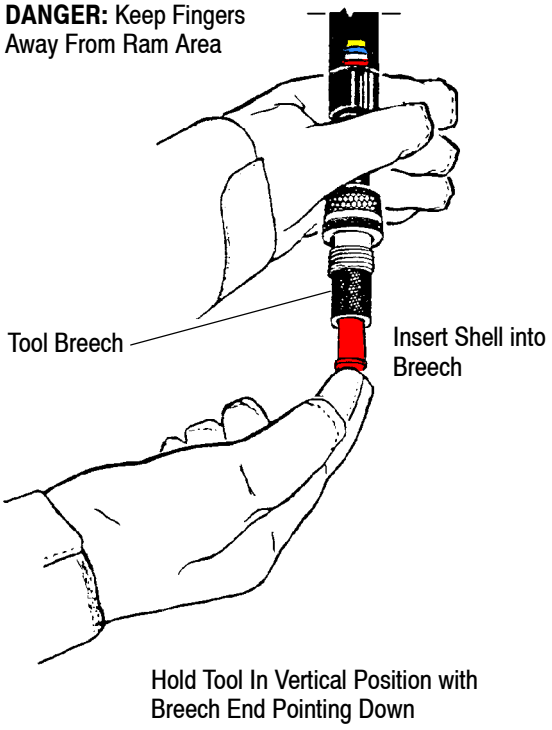


Figure 30

6.4. Mounting the Tool for Tap or Stirrup Removal

DANGER

To avoid personal injury, never mount an AMPACT tool for tap removal that has not been prepared according to the sequence described in 6.3, Preparing the Tool for Tap or Stirrup Removal.

1. Hook AMPACT tool over tap assembly with OPEN SIDE OF "C" MEMBER FACING AWAY FROM TOOL PLATFORM, as illustrated in Figures 31 through 34.

2. Tighten coupling firmly against pusher block of take-off clip. Tool is now mounted and self supporting, before and after firing. Before firing, visually inspect the mounted tool, ensuring that:

- Tool is loaded with proper shell.
- Breech cap and gas release knob are securely tightened.
- Coupling is tight against pusher block.
- Wedge must be in the proper notch of the tool head, and take-off clip must be in proper position. Refer to Figures 31 through 34.

CAUTION

If the wedge is not in the proper notch of the tool head, the tool ram will be damaged and/or the take-off clip will break.

If the all the preceding conditions are met, the tool is ready to fire.

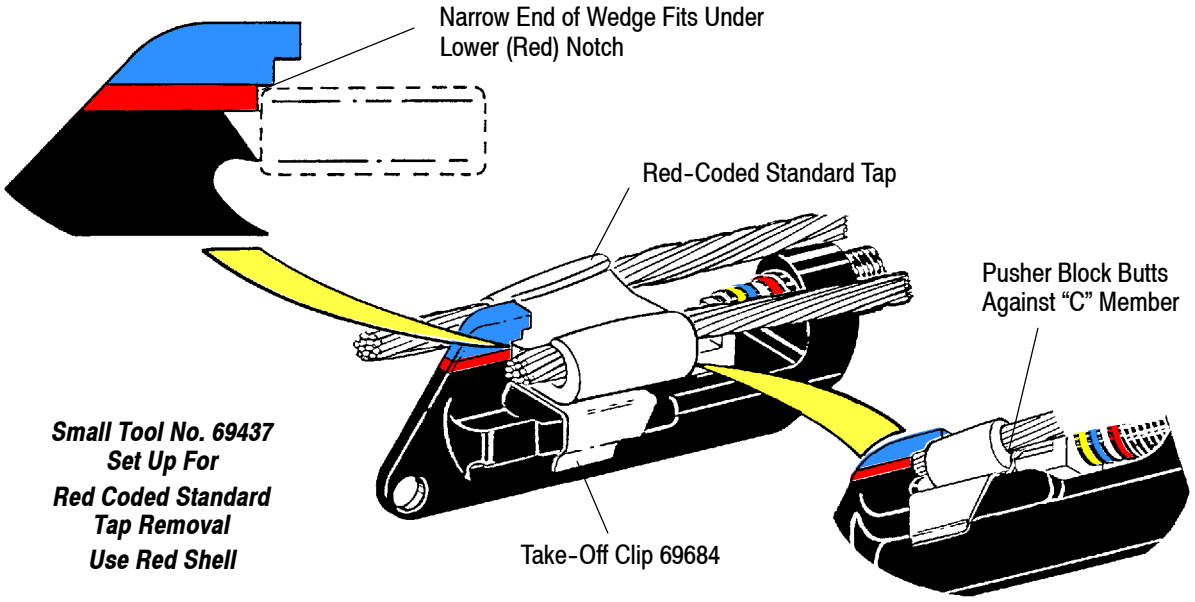


Figure 31

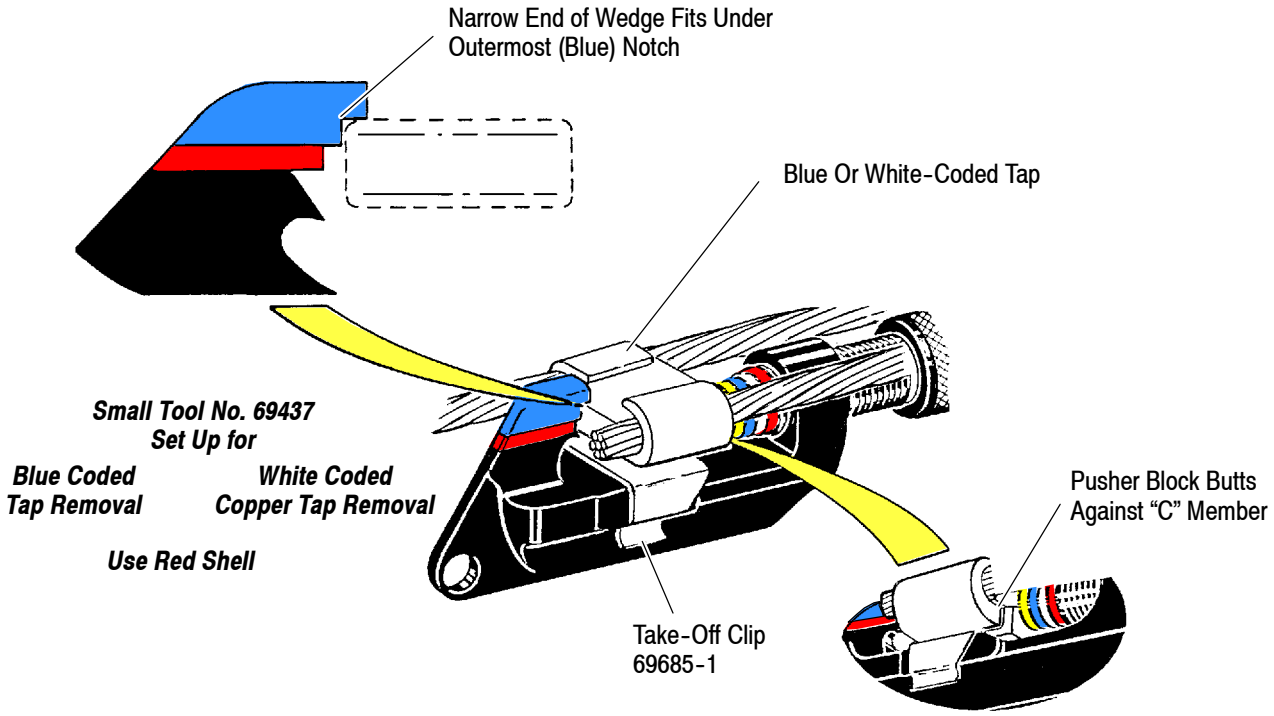


Figure 32

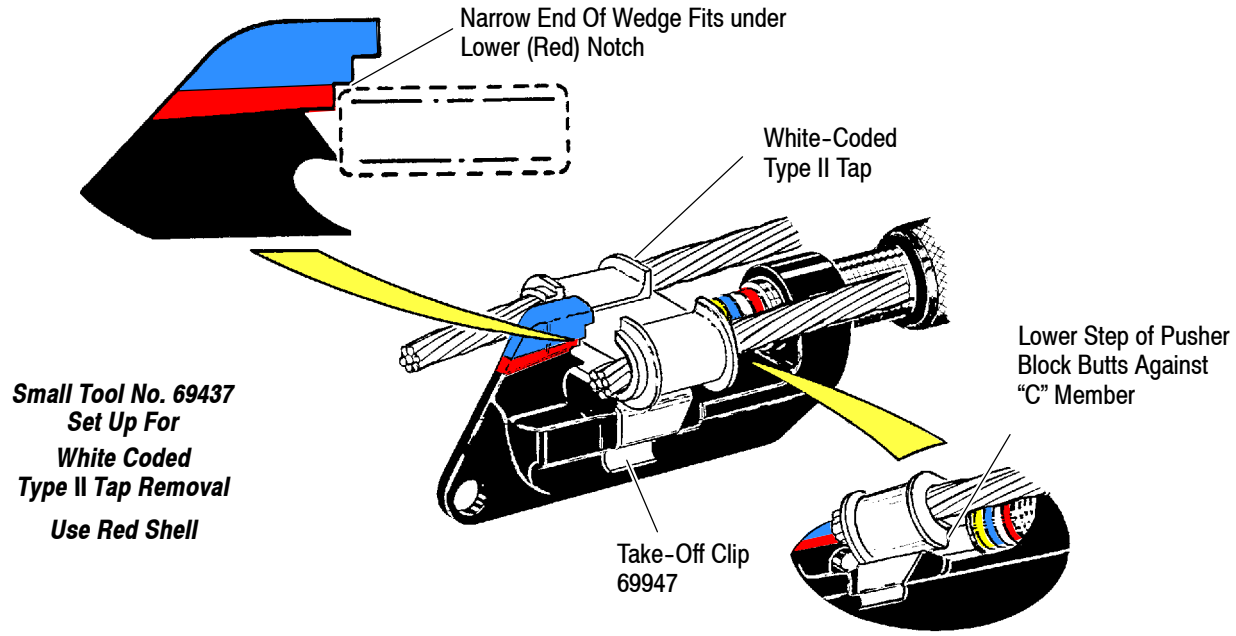


Figure 33

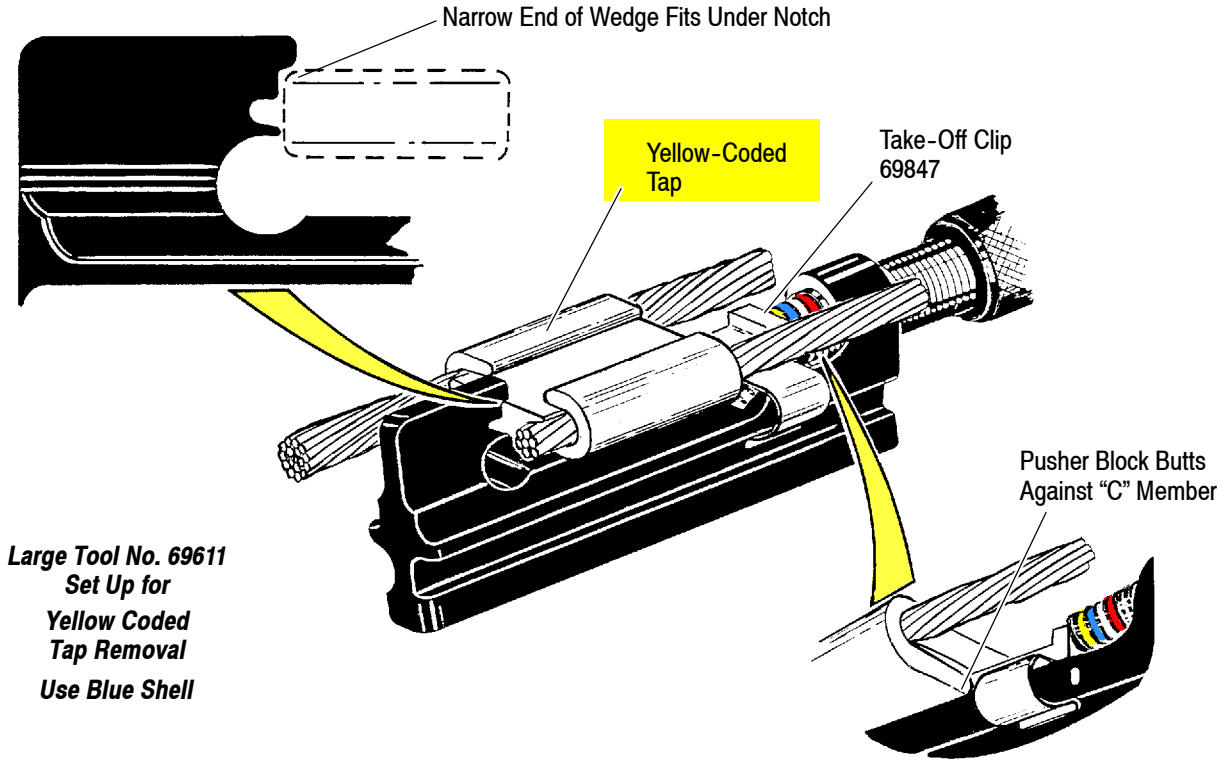


Figure 34

Firing The Tool For Tap Removal

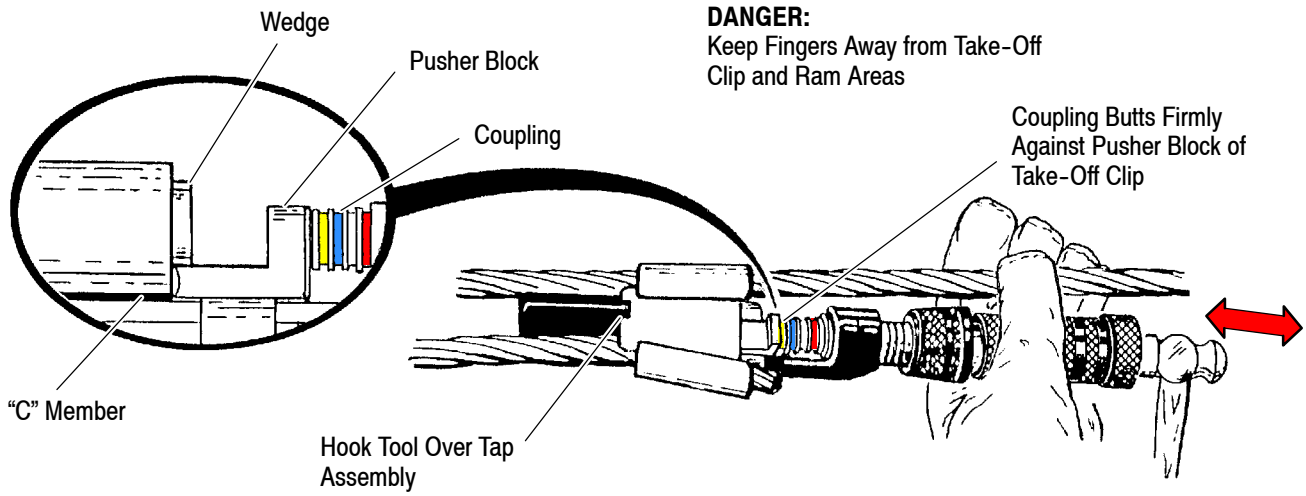


Figure 35

6.5. Firing the Tool

1. Grasp the tool only at the knurled breech cap assembly to steady the tool for firing. See Figure 35.
2. Strike the gas release knob solidly with a hammer.

DANGER

Keep hands away from take-off clip during tap or stirrup removal. TAKE-OFF CLIP MOVES WHEN TOOL IS FIRED AND MAY CUT OPERATOR'S HAND OR GLOVE. Always grasp tool at knurled breech cap assembly.

DANGER

*If the tool fails to fire, wait two minutes before attempting to remove tool. After two minutes, remove tool from tap, remove and dispose of old shell, and reload with **new** shell exactly as described in 6.3, Preparing the Tool for Tap or Stirrup Removal. If the tool still fails to function, inspect power unit for proper coupling movement. Refer to Paragraph 7.2 and Figure 36.*

CAUTION

Whenever firing of the tool results in an unusually loud report or "bang,"ensure that the gas release knob was fully and securely tightened. If necessary, firmly and securely tighten the gas release knob, then check the piercer pin length as described in Paragraph 8.1 before using the tool again. If the gas release knob was tightened and the piercer pin length is correct and the tool continues to issue an unusually loud report when fired, the tool should be taken out of service immediately and the returned to TE for repairs.

6.6. Removing the Tool After Firing

Follow the steps in Paragraph 5.7, omitting Step 4.

SECTION III.
TOOL INSPECTION AND MAINTENANCE

7. DAILY SERVICING

DANGER

*To avoid personal injury, ensure that the AMPACT tool is **not loaded** before performing **any** maintenance or inspection procedure.*

7.1. Tool Preparation for Daily Servicing

Before performing daily servicing, unscrew the power unit in the tool head so that the red, white, blue, and yellow lines on the coupling remain visible, with the red marking flush against the tool head. This position is known as the fully- retracted position. Refer to Figure 37. Do NOT remove the power unit from the tool head.

7.2. Power Unit Coupling Movement

The strike of a hammer on the gas release knob forces the breech cap assembly and coupling nut to move forward 1.59 mm [.06 inch], causing the shell's percussion cap to hit the ram firing pin.

To check this movement:

1. Hold coupling steady in one hand and move breech cap assembly back and forth with other hand as shown in Figure 36. There should be approximately 1.59 mm [.06 inch] of movement.

2. If the movement is less than 1.59 mm [.06 inch], return power unit for repair. Contact your TE Field Representative for specific shipping instructions.

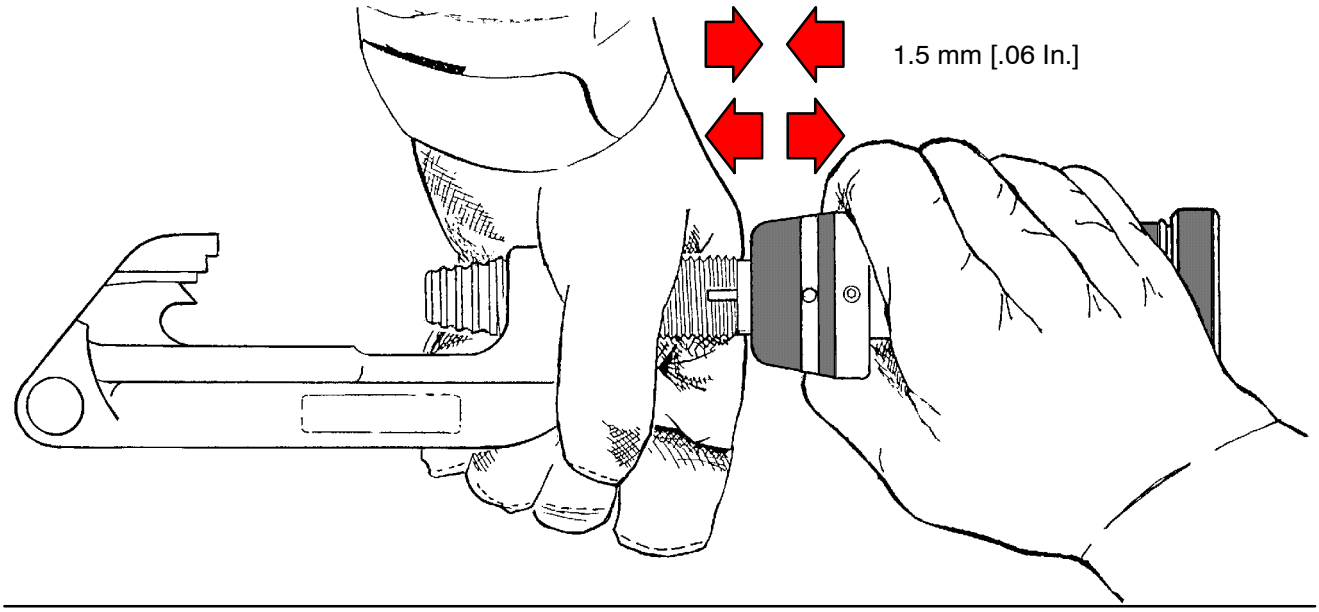


Figure 36

NOTE

Do not try to remove coupling nut or attempt any kind of adjustment.

7.3. Testing and Inspection of "Fail Safe"



The information provided in this manual is ONLY for tools with FOUR color coded grooves around the coupling front and a smooth finished stripe on center of the coupling nut as illustrated. If using tools with three color coded grooves, you must consult AMPACT Product Warning 408-9907 (for copies of this document, call the Energy Division Customer Service Center at 1-800-327-6996; or TE Canada Ltd., Energy Division at 1-888-987-8926).



To avoid personal injury, NEVER fire an AMPACT tool with a broken "Fail Safe." Return it to TE immediately for replacement. See addresses in Section 10.

An AMPACT tool should never be operated with a broken "Fail Safe." A broken "Fail Safe" can be detected by a simple push-and-turn and pull-and-turn test to check whether the coupling nut can be turned more than 4° (about 3.2 mm [.125 in.]), and two simple visual inspections.

It is essential to perform the "Fail Safe" testing and inspection procedure described in Paragraph 7.3 on a daily basis.

A. Initial Visual Inspection (Figures 37 and 38)

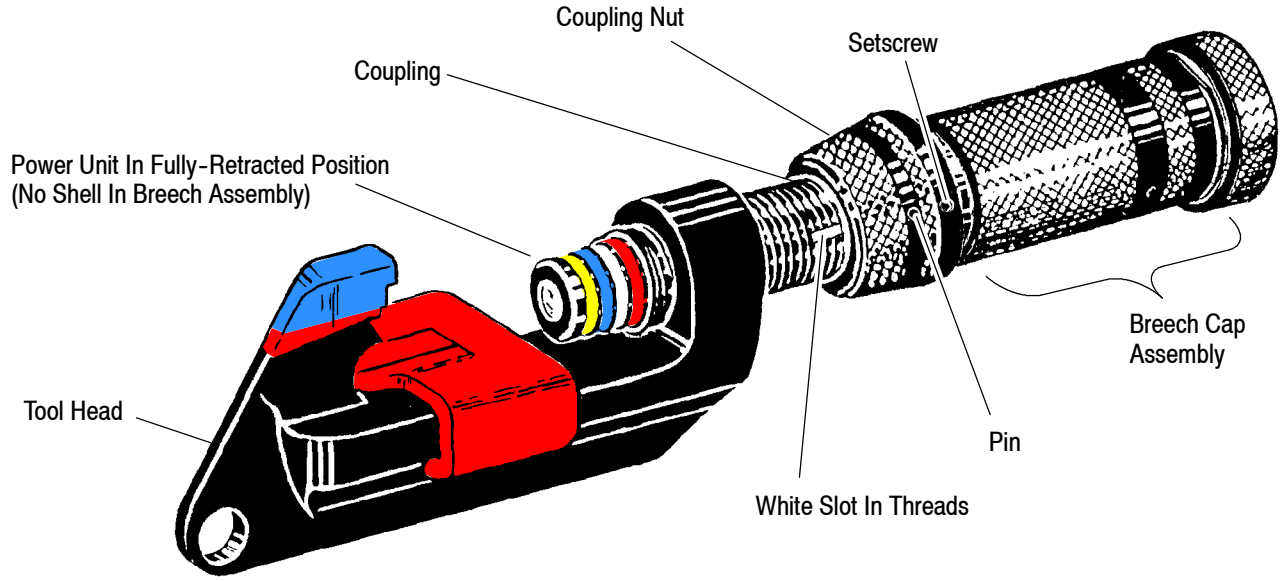


Figure 37

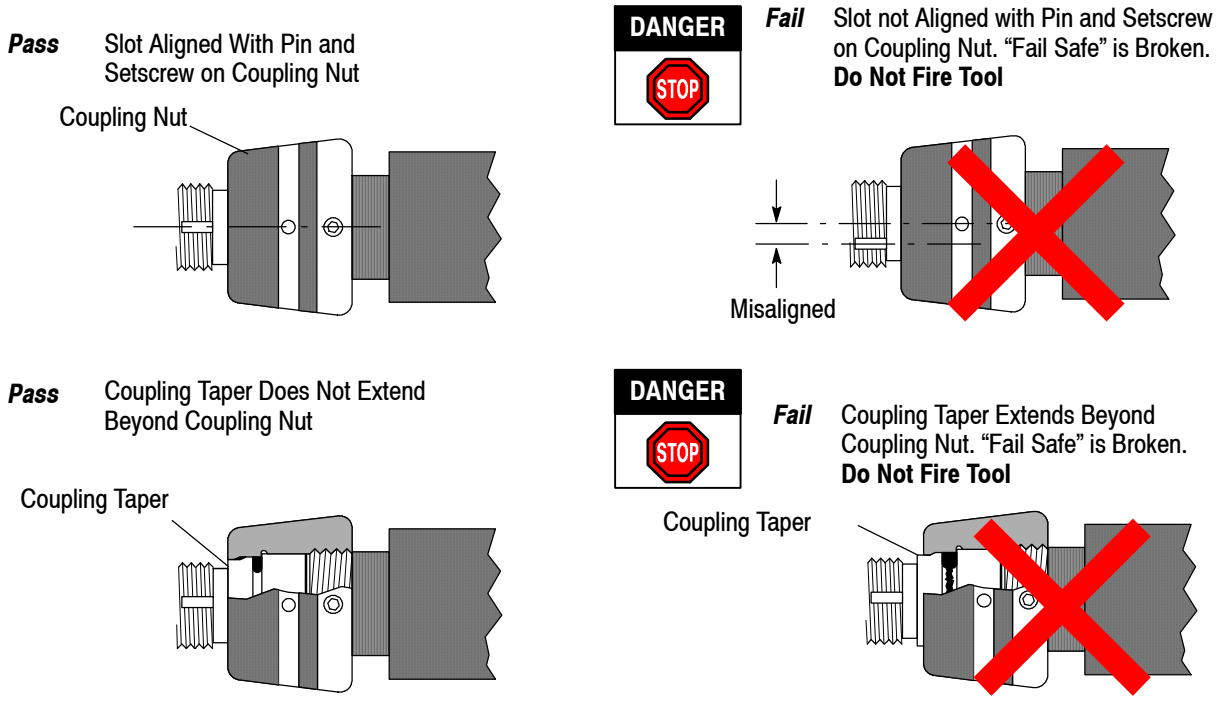
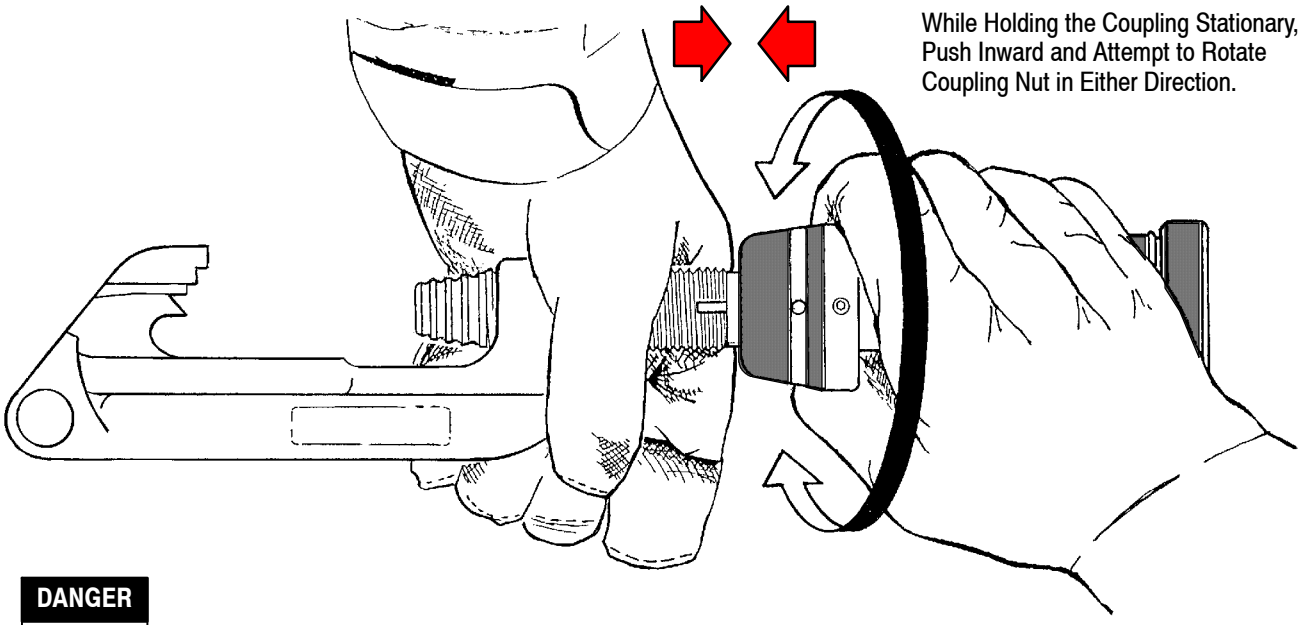


Figure 38

B. Push-and-Turn Inspection (Figure 39)

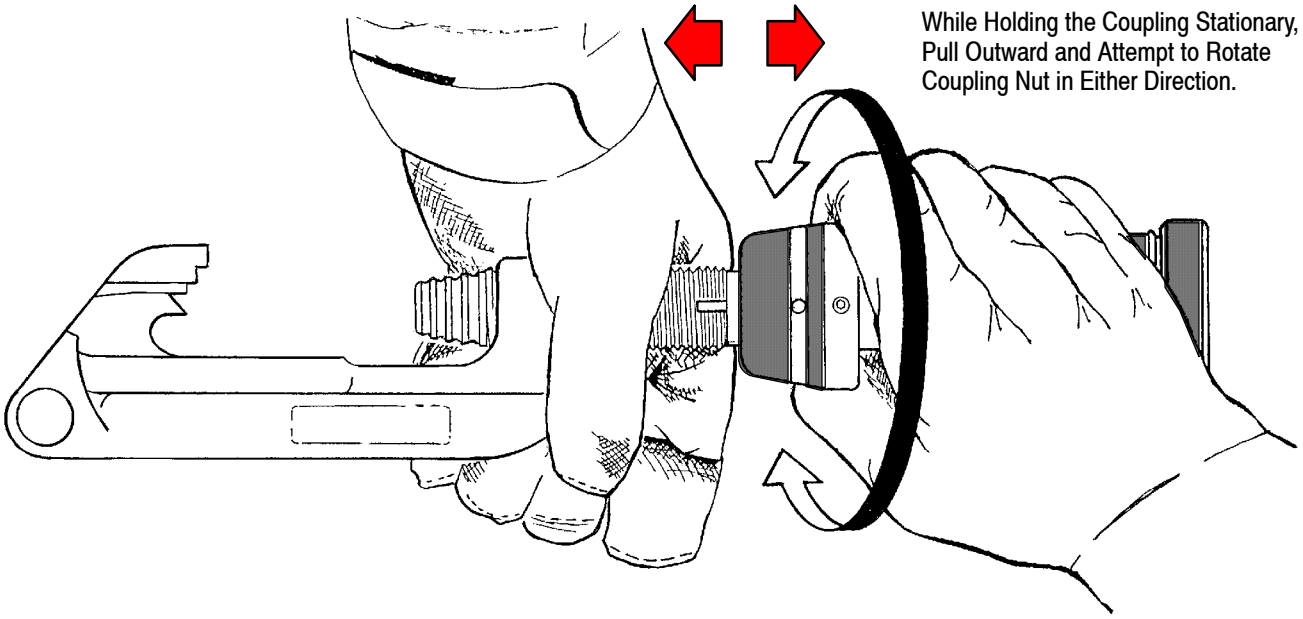


DANGER STOP

If coupling nut turns more than 4° (about 3.2 mm [1/8 inch]), the "Fail Safe" is broken. DO NOT FIRE THE TOOL.

Figure 39

C. Pull-and-Turn Inspection (Figure 40)



DANGER STOP

If coupling nut turns more than 4° (about 3.2 mm [1/8 inch]), the "Fail Safe" is broken. DO NOT FIRE THE TOOL.

Figure 40

D. Final Visual Inspection — Coupling Taper (Figure 41)

NOTE

This inspection is used to check if the part of the coupling called the "coupling taper" extends past the coupling nut.

1. Refer to Figure 41 and locate the surface of the front of the coupling nut and the coupling facing the tool head. Also locate the "coupling taper," which is the part of the coupling that should be covered by the coupling nut. The coupling taper is smooth and the same diameter as the threads on the coupling.

2. Compare the surfaces of the coupling taper and the coupling nut. If ANY portion of the coupling taper extends beyond the face of the coupling nut (refer to Figure 41), DO NOT USE THE AMPACT TOOL – RETURN THE POWER UNIT IMMEDIATELY TO TE FOR REPLACEMENT.



Pass Coupling Taper Does not Extend Beyond Coupling Nut

DANGER

Fail Coupling Taper Extends Beyond Coupling Nut. "Fail Safe" is Broken. **Do Not Fire Tool.**

Figure 41

DANGER

*To avoid personal injury, **do not fire the tool** if you are unsure whether your AMPACT tool passes these inspections. Return the power unit immediately to TE for evaluation and/or replacement.*

7.4. Cleaning and Lubrication

Hoppe's No. 9 Solvent and Browning Gun Oil, or equivalent solvent and lubricant, is recommended for the following procedures:

- Use solvent to remove dirt and grit from all threaded areas, coupling, breech, and gas release knob.
- Coat and lubricate threads, ram, and inside of breech (Figure 42).
- Clean outside of tool with solvent, before storing.

Clean With Solvent and Lubricate with Oil

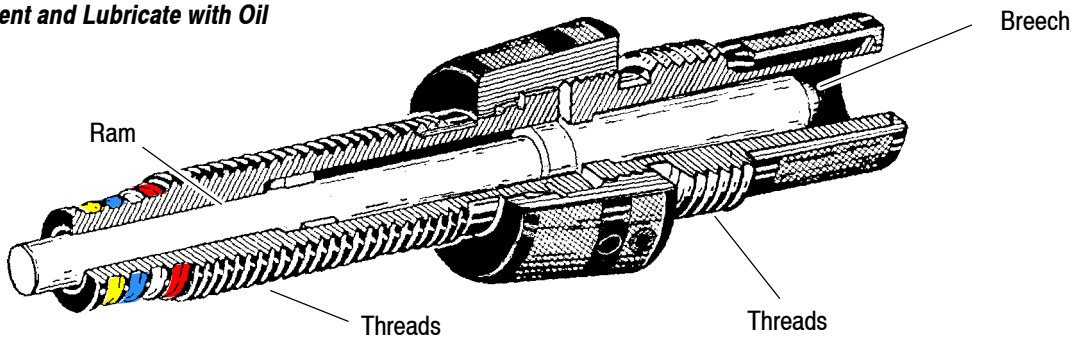


Figure 42

7.5. Inspection of Stress Areas and Threads

Perform a daily visual inspection of the tool for damage in the following areas (refer to Figures 43 and 45):

A. Notched and lance area of head

B. Radius at threaded end of tool

C. Tip of lance

D. All threaded areas of power unit

E. The piercer pin on face of gas release knob. (Inspect daily using gage as shown in Detail B, Figure 45.) If piercer pin passes through slot in gage, replace breech cap assembly. See Figure NO TAG for replacement parts.

DANGER

To avoid personal injury, do not use tools that display deep nicks, stress cracks, or burns from cross phasing. The entire tool should be checked daily for burn marks from contact with energized conductors. Return damaged tools to the factory or local TE distribution warehouse for replacement or repair.

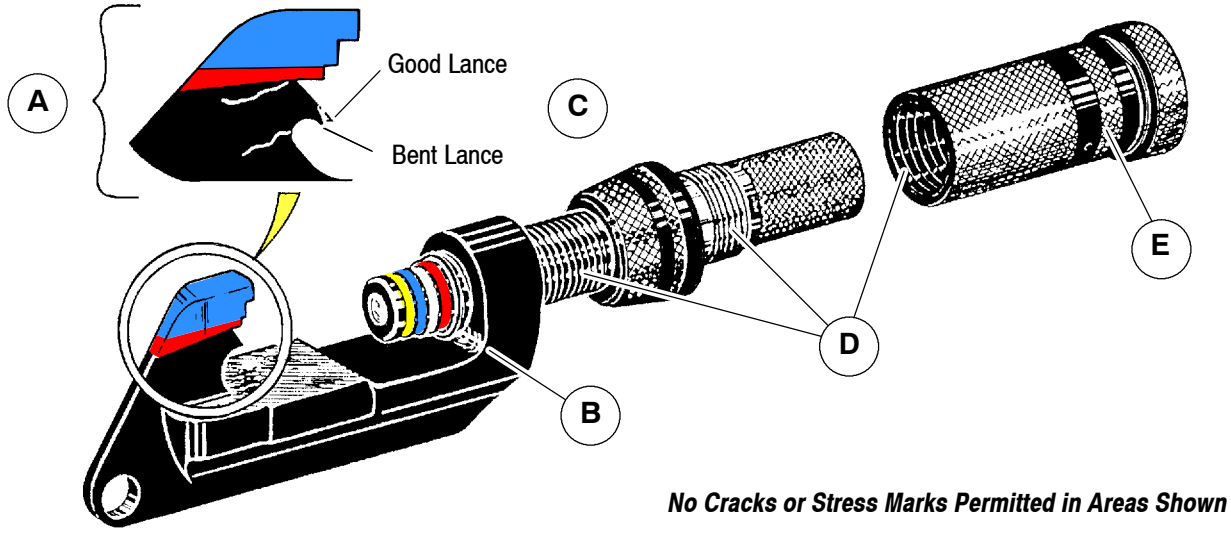


Figure 43

8. WEEKLY SERVICING

DANGER

To avoid personal injury, ensure that the AMPACT tool is not loaded before performing any maintenance or inspection procedure.

Use Hoppe's No. 9 Solvent and Browning Gun Oil (or equivalents), and Cleaning Tool 314199–1.

Carbon and plastic deposits caused by "blow by" may on occasion collect inside the breech cap assembly. If deposits build up, the gas release knob will not seat against the breech cap sleeve and the piercer pin will not penetrate the shell. See Figure 44. This may prevent gas release after firing, leaving a spent shell with excessive gas pressure in the breech.

8.1. Cleaning and Lubricating Gas Release Knob with Cleaning Tool 314199-1

1. Unscrew the breech cap assembly from the power unit.

2. Pry one end of retaining spring (see Figure 47) out of slot with screwdriver or corner of cleaning tool. Remove the spring and unscrew gas release knob.

3. Dislodge compressed deposits in gas release knob by positioning cleaning tool against counter–bore and piercer pin as shown in Figure 45, Detail A. Be sure to clean ***shoulder*** of piercer pin with proper section of cleaning tool. Rotate tool until all surfaces are clean.

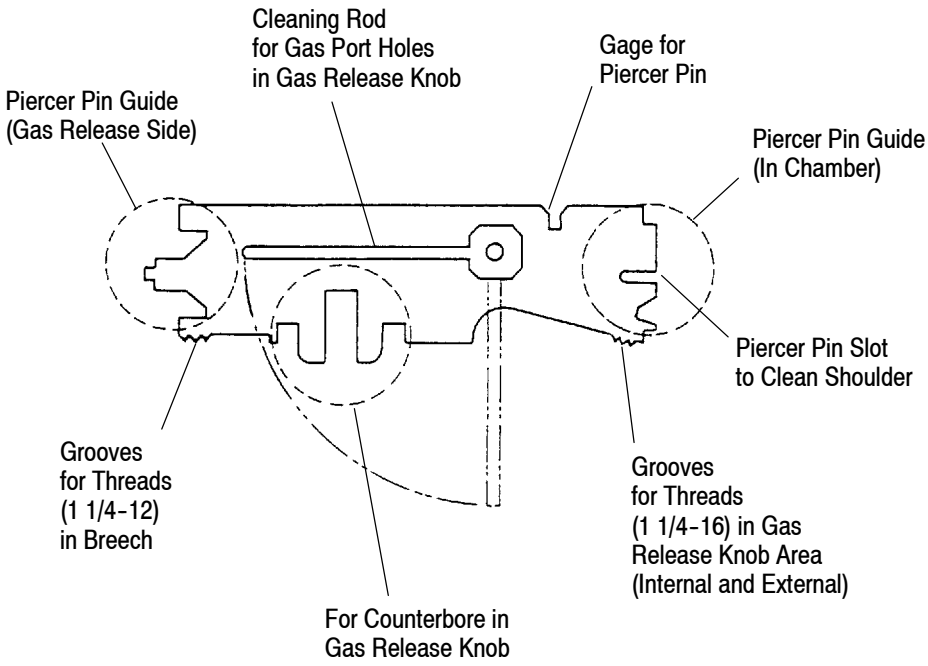
4. Clean exterior threads ($1\frac{1}{4}$ – 16) on gas release knob as shown in Figure 45, Detail A. Make sure that tool grooves are aligned with threads in the knob.

5. Unfold cleaning rod and clean carbon deposits from holes in gas release knob by rotating rod several times in each hole. See Figure 45, Detail A. If holes are reduced in size or blocked from peening action of hammer blows, return the entire breech cap assembly for repairs.

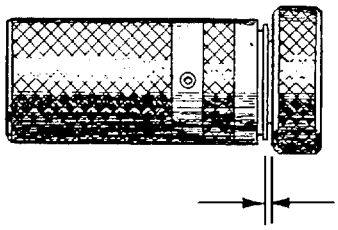
6. Gage the length of piercer pin as shown in Figure 45, Detail B. If pin passes through slot in gage, return the entire breech cap assembly for replacement.

7. Coat all cleaned surfaces and threads with oil.

Features of AMPACT Cleaning Tool 314199-1



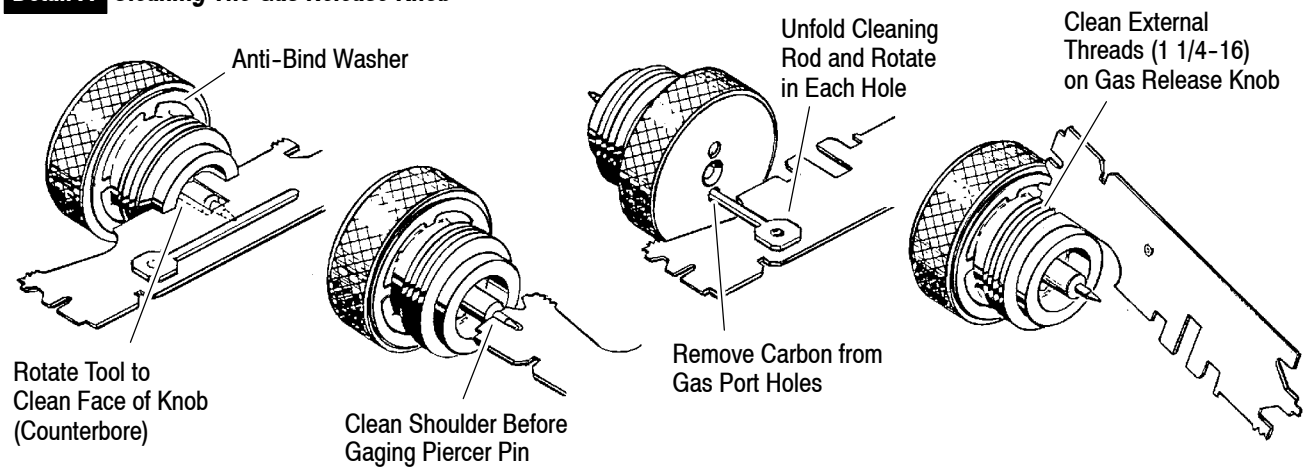
Breech Cap Assembly 314196-1



If Knob Does Not Seat Against Breech Cap Sleeve When Tightened, Remove Excessive Carbon Deposit

Figure 44

Detail A ***Cleaning The Gas Release Knob***



Detail B ***Gaging The Piercer Pin***

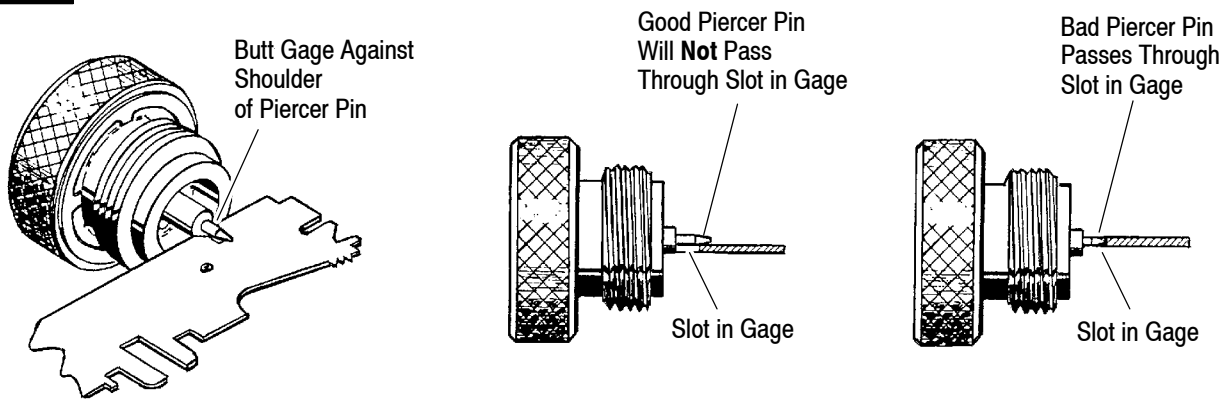


Figure 45

8.2. Cleaning Breech Cap Sleeve with Cleaning Tool 314199-1

1. Clean piercer pin guide and surfaces indicated in Figure 46, Detail A, by inserting correct end of cleaning tool into gas release end of sleeve. Rotate tool several times making sure that all surfaces are clean. If pin guide hole is oval or worn, return entire breech cap assembly for replacement or repair.

2. To clean interior threads ($1\frac{1}{4}$ – 16) in gas release end of sleeve, tilt correct end of cleaning tool and insert until bottomed in sleeve, as shown in Detail A. Make sure that grooves in tool are aligned with sleeve threads. Rotate tool until threaded surfaces are clean.

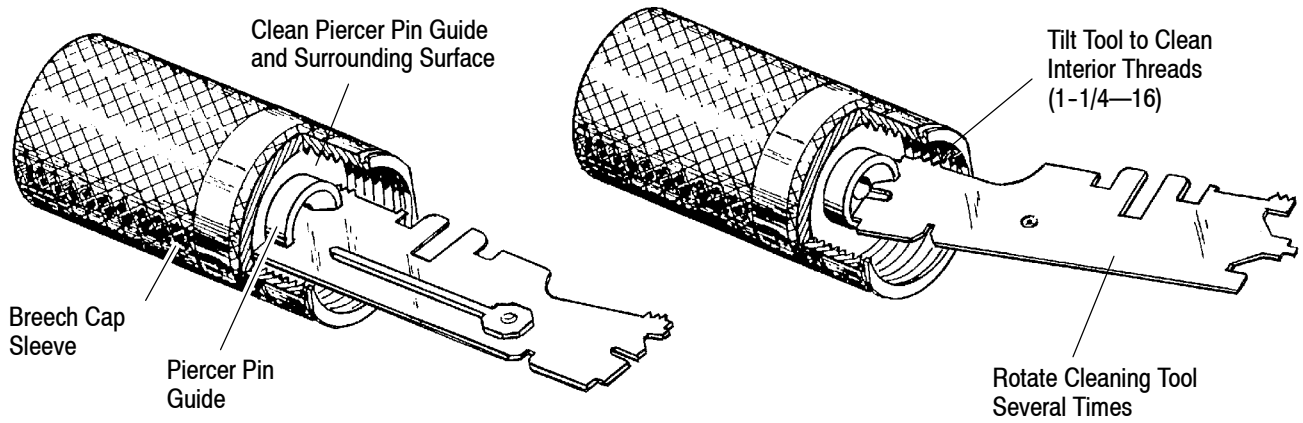
3. Clean recess in breech cap sleeve by inserting correct end of cleaning tool into front of sleeve as shown in Figure 46, Detail B. Rotate cleaning tool until recessed surface is clean. To clean interior threads ($1\frac{1}{4}$ – 12) in the breech end, insert correct end of cleaning tool as shown in Detail B. Make sure grooves in tool are aligned with threads. Rotate until clean.

4. Coat all cleaned surfaces and threads with solvent.

5. Screw gas release knob with anti-bind washer into breech cap sleeve until it bottoms.

6. Install retaining spring by placing one end of loop into slot in breech cap sleeve groove. Slide other loop into groove and snap spring into place. See Figure 47. Unscrew gas release knob against retaining spring loops to ensure that they are properly seated in slots.

Detail A ***Cleaning Gas Release End Of Sleeve***



Detail B ***Cleaning Breech End Of Sleeve***

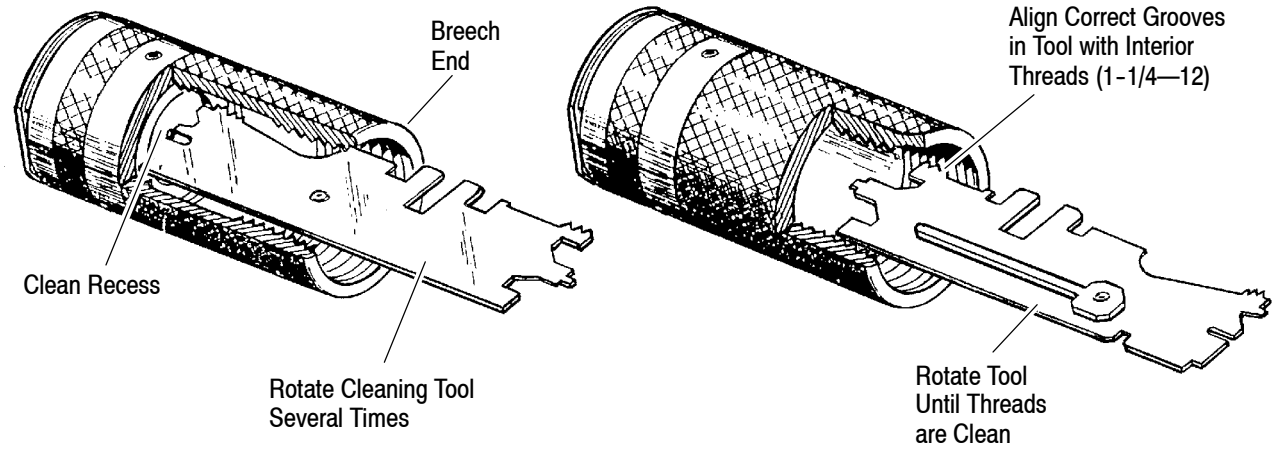


Figure 46

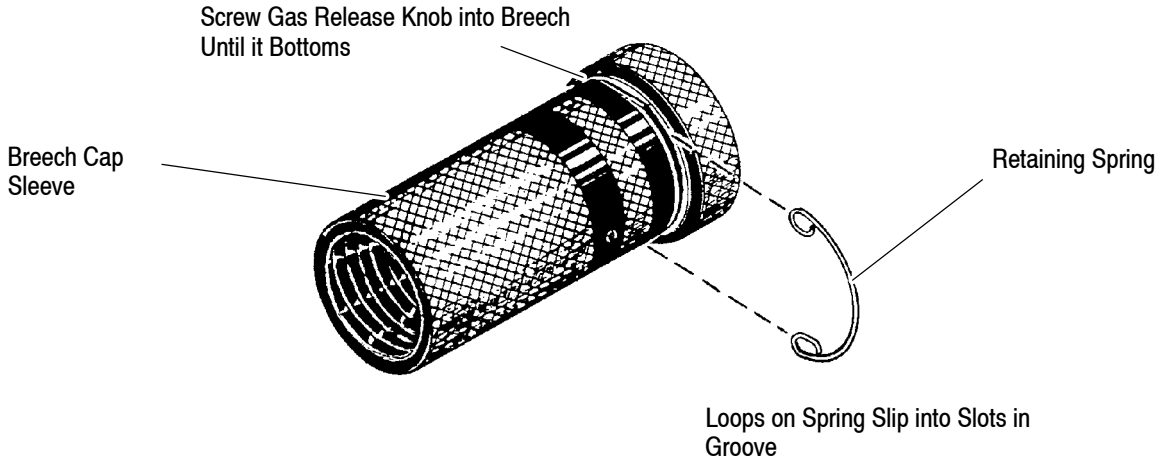


Figure 47

8.3. Cleaning the Ram

1. The ram must slide freely in the coupling. Check ram movement as shown in Figure 48, Detail A. **If ram travel is more than 51 mm [2 inches], the tool should be returned to the factory for repairs.**

2. Clean ram by first removing breech cap assembly and pouring a few drops of solvent into the breech. Work ram up and down as shown in Figure 48, Detail B and C.

3. Continue flushing the solvent and working ram until it moves freely. (The ram will fall from its own weight in a tool in good working order.)

4. Wipe all surfaces clean. Coat ram and inside of breech with solvent.

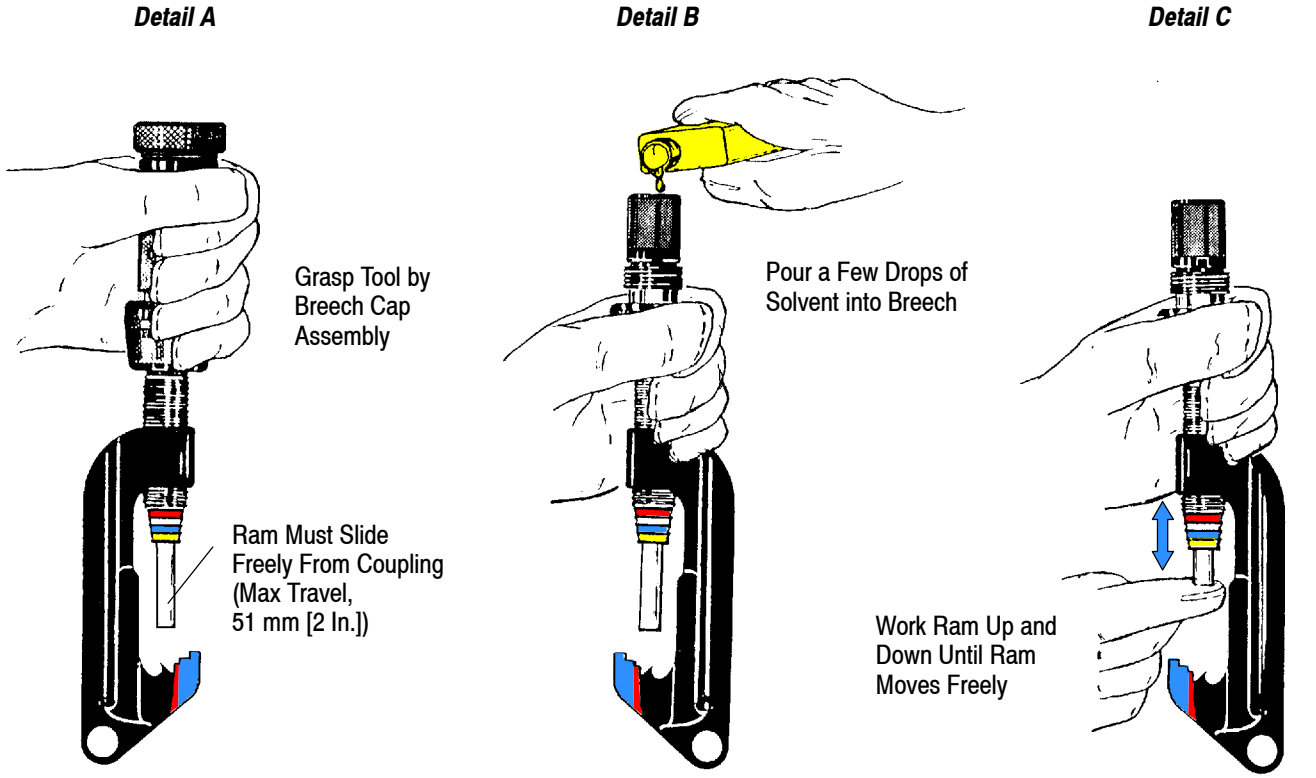
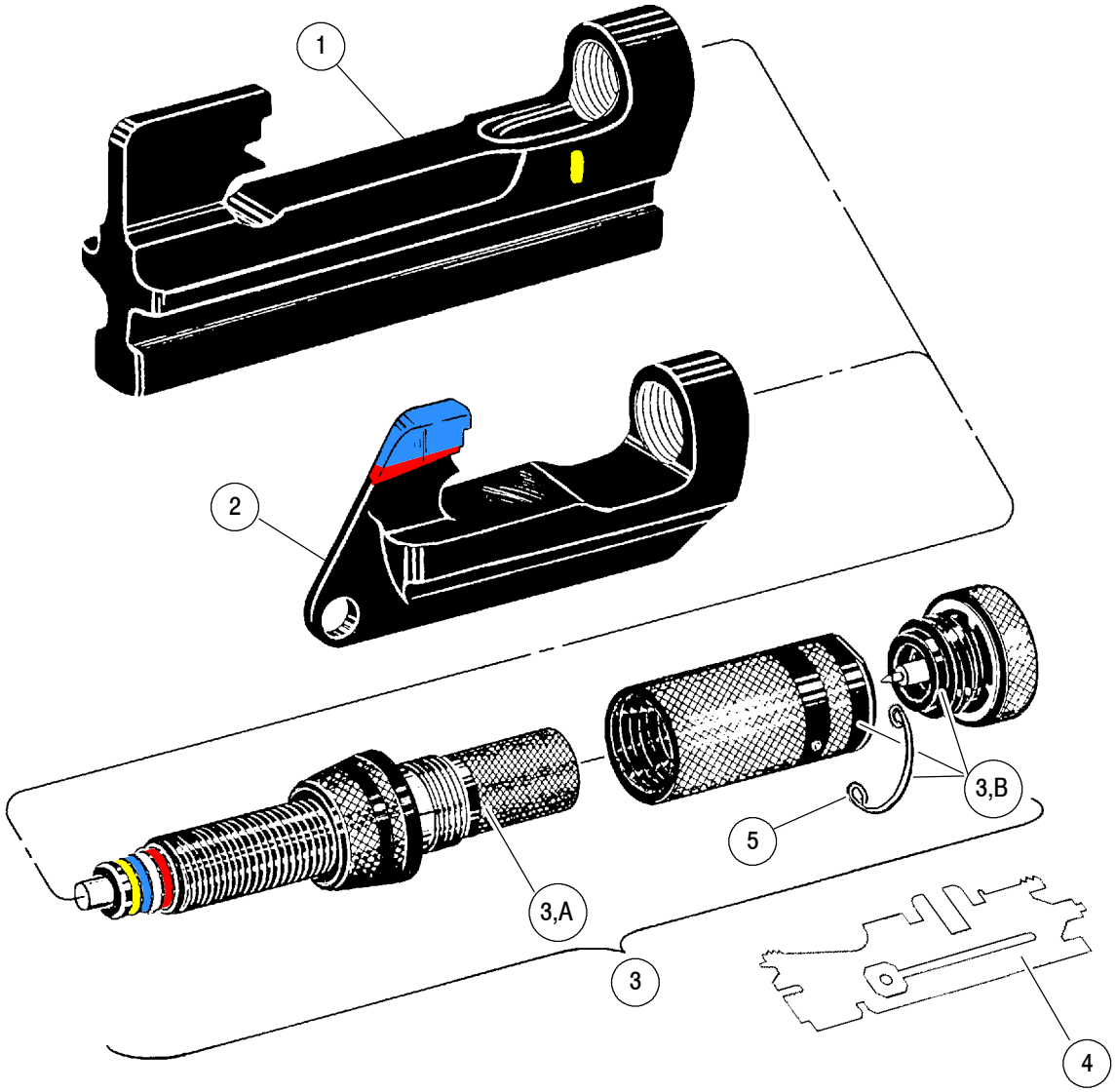


Figure 48

9. TOOL REPLACEMENT PARTS

Refer to the exploded view and table in Figure 49 for replacement part numbers.



REPLACEMENT PARTS LIST

ITEM	PART DESCRIPTION	PART NUMBER
1	Large Tool Head	69633-2
2	Small Tool Head	47667-8
3	Universal Power Unit	69612
3,A	Breech Assembly	308967-1
3,B	Breech Cap Assembly (3-Pc)	314196-1
4	Cleaning Tool	314199-1
5	Retaining Spring	5-304668-3

BREECH CAP ASSEMBLY REPLACEMENT KIT 314196-1

Includes breech cap sleeve, gas release knob, and retaining spring. These items are wearable parts and **should** be replaced in unison.

Figure 49