WARNING:
WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE RISK OF FIRE, ELECTRIC SHOCK, AND PERSONAL INJURY.
C410 Electric Tool
Safety Precautions

READ ALL INSTRUCTIONS

Grounding Instructions
This tool should be grounded while in use to protect the operator from electric shock. The tool is equipped with a 3-conductor cord and 3-prong grounding type plug to fit the proper grounding type receptacle. The green (or green and yellow) conductor in the cord is the grounding wire. Never connect the green (or green and yellow) wire to a live terminal.

Extension Cords
Use only 3-wire extension cords that have 3-prong grounding type plugs and 3-pole receptacles that accept the tool’s plug. Replace or repair damaged cords. The cord must be heavy enough to carry the current the tool will draw. Do not use an undersized cord which will cause a drop in line voltage resulting in loss of power and overheating.

Keep Work Area Clean
Cluttered areas and benches invite injuries.

Consider Work Area Environment
Don’t expose power tools to rain. Don’t use power tools in damp or wet locations. Keep work area well lit. Do not use tool in presence of flammable liquids of gases.

Guard Against Electric Shock
Prevent body contact with grounded surfaces. For example: pipes, radiators, steel enclosures.

Keep Children Away
Do not let visitors contact tool or extension cord. All visitors should be kept away from work area.

Store Idle Tools
When not in use, tools should be stored in a dry place.

Use Safety Glasses

Don’t Abuse Cord
Never carry tool by cord or yank it to disconnect from receptacle. Keep cord from heat, oil and sharp edges.
Disconnect Tools
When not in use, before servicing and when changing thread size (pull-up, stud, coupling, anvil) or replacing carbon brushes.

Avoid Unintentional Starting
Don’t carry plugged-in tool with finger on switch. Be sure switch is off when plugged in.

Outdoor Use Extension Cords
When tool is used outdoors, use only extension cords intended for use outdoors and so marked.

Stay Alert
Watch what you are doing. Use common sense. Do not operate tool when you are tired.

Check Damaged Parts
Before further use of the tool, a part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Have defective switches replaced by RIVNUT Engineered Products. Do not use tool if switch does not turn it on and off.

INTRODUCTION

A. General / RIVNUT Header Tool
The C-410 electric header tool is especially designed to install RIVNUT brand metal fasteners. See Operating Range Chart I. The C-410 header tool will provide long service when kept clean and in proper adjustment.

B. Electrical Supply Requirements
Specifications for Model C-410
Power Source:
- Single phase
- Voltage 120V
- Cycle 60 Hz
- AMPS 3.70

RIVNUT MATERIAL

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Recommended
Operating and Adjustments

NOTE: The operating procedures and adjustments in this section will provide trouble-free performance of the header. The operator should be thoroughly familiar with the header and safety precautions before placing the tool in use.

A. Operating the Header

1. The header is operated by a single Trigger (57, Fig. 1) and in addition has a Reverse Switch Lever (57A, Fig. 1). The header is simple to operate and requires no lengthy training period to familiarize the operator with operating sequence. A few practice cycles using a RIVNUT® fastener are generally sufficient to master the operation.

2. Depress Trigger Switch (57, Fig. 1) slightly. This will rotate the Pull-up Stud (2, Fig. 1) in a clockwise direction and thread into fastener. Release Trigger Switch before fastener head contacts Anvil (1, Fig. 1). Insert fastener in hole drilled for installation. Again, depress Trigger Switch all the way, and hold until fastener is clinched securely in place. Pull-up Stud will automatically reverse from the fastener. Allow enough time for Pull-up Stud to reverse from fastener.

NOTE: Tool has an Emergency Reverse Switch (57A, Fig. 1) on top of main Trigger. Activate if Pull-up Stud did not reverse from fastener or if cross threading occurs in fastener. Caution should be taken not to trigger main switch. This will pull up fastener a second time, and damage to fastener or tool may result.

B. Pull-up Stud Thread Size, Anvil and Stud Holder

Check that the correct Pull-up Stud (2) and Anvil (1) are installed in the header. If incorrect or if it is desired to change thread size, refer to page 7 listing Pull-up Studs, Anvils and Stud Holders.

NOTE: Do not clamp handle in vise. Do not support tool by handle or use handle as lever when tightening or loosening threaded tool components. The handle is not designed to withstand heavy side loading or twisting.

Also note that Gear Box (32), Hex Flange Nut (17), Lock Nut (10), and Nose Piece Housing (9) Threads are left handed.

If Nose Piece Housing (9) is excessively tight and Lock Nut (10) cannot be held by hand, hold (10) with Channel Lock Pliers and use wrench on (9) (Left Hand Threads). In extreme situations, use a pipe wrench to hold Locknut (10).

C. How to Interchange or Replace Damaged Pull-up Studs

1. Hold Locknut (10, Fig. 2) by hand and apply wrench to two flats of Nose Piece Housing (9, Fig. 2). Rotate to the left (left-hand thread) and remove to expose Stud Holder (2A, Fig. 3).

2. Pull Locking Ring (14, Fig. 3) back and unthread Stud Holder. Replace in reverse manner with appropriate size.

3. Loosen and remove two Set Screws in Stud Holder and remove Stud by unthreading and replacing with new one. Align flats on Stud to Set Screw holes and reinstall Set Screws securing Stud. See Parts List and select the correct Pull-up Stud, Stud Holder and Anvil (if needed).

D. Anvil Adjustment

1. Run Hex Nut (1A, Fig. 2) on Anvil (1) as far as it will go and insert threaded end of Anvil in Nose Piece (3) as far as it will go.

2. By hand, thread RIVNUT® fastener on exposed end of Pull-up Stud until all threads are engaged.

NOTE: When using closed-end RIVNUT®, thread RIVNUT® on stud eight (8) turns.

3. Hold RIVNUT® fastener with fingers to prevent turning and begin to unscrew Anvil from Nose Piece (3) until face of Anvil contacts flange of RIVNUT® fastener.

4. Prevent Anvil from turning while using wrench to lock Anvil Hex Nut (2) against base of Nose Piece (3).

NOTE: The above procedure adjusts Anvil to the correct position for a particular type of RIVNUT® fastener. It need not be changed unless a different type of RIVNUT® fastener is to be used.

E. Determining Header Pull-up Stroke

1. Hold knurl of Housing Locknut (10, Fig. 4) by hand. With wrench loosen Nose Piece Housing (9, Fig. 4) and rotate to the left (left-hand thread). Adjust Housing Locknut (10) until the “C” spacing is approximately 3/32". With wrench, while holding Housing Locknut (10) in place, adjust Nose Piece Housing against Housing Locknut (10) and tighten. The 3/32” spacing will provide some pull-up of the fastener.

2. Measure and record overall length of RIVNUT® fastener. Hold the fastener tightly and upset as described in paragraph 3-A-2. Measure overall length of pulled-up fastener and record the difference between measurements. This is the amount of pull-up for which the header is adjusted.

F. Determining the Amount of Pull-Up Required

1. Each fastener will accommodate thicknesses of material between the minimum and maximum grip limits (explained in detail in RIVNUT® and PLUSNUT® Fastener Design Guide).

2. WARNING: Excessive pull-up may break pull-up stud, strip fastener threads, or both. Inadequate pull-up may result in loose installation.

3. Refer to Chart II to determine correct pull-up factor needed as explained below.

a. Measure overall thickness of materials in which fastener will be installed. (For dimpled or countersunk holes, measure from top
surface of metal to underside of dimpled hole.)
Always include air gaps, paint, or any burrs which cannot be removed.

b. Determine recommended maximum grip of fastener (stamped on RIVNUT® box label, or refer to RIVNUT® – PLUSNUT® Design Guide).

c. Subtract material thickness from recommended maximum grip.

d. Add difference to applicable pull-up factor from Chart II.

This sum is a close approximation of the pull-up required to attain a proper bulge.

EXAMPLE: S10-80 RIVNUT® fastener, to be installed in 0.060 material.
Maximum grip of RIVNUT® ............. .080"
Material thickness ................. .060"
Difference (.080-.060) ........... .020"
Sum (.020 + .080 pull-up factor) ......100" Pull-up required

e. Compare pull-up recorded under paragraph 3-E-2. Difference indicates amount of pull-up increase or decrease necessary.

f. Slight differences ± .005 may require no further adjustments.

Figure 4
Pull-Up Adjustments

Install several fasteners in sample material for checking.

G. Adjusting for Correct Pull-Up

1. To Increase Pull-up

a. Note relative position of gage line on Nose Piece Housing (9) Fig. 4, to points of Hex Flange Nut (17) Fig. 4. Alignment of gage line to each of the six points of the Hex Flange Nut represents approximately .006" pull-up. One full turn of Nose Piece Housing results in approximately .040" pull-up.

NOTE: Threads are left-hand.

CHART II PULL-UP FACTOR – INCHES

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Round

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<td>.120</td>
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b. Determine amount of pull-up required as in paragraph 3-F-3.

c. To increase or decrease pull-up apply wrench to flats of Nose Piece Housing (9) and rotate slightly in a left hand direction. Nose Piece Housing (9) will loosen. Rotate Locknut (10) away from Nose Piece Housing (9). Nose Piece Housing may then be moved forward to increase pull-up or backward to decrease pull-up to the amount of pull-up required. Move Locknut (10) clockwise Nose Piece Housing (19) and Housing Locknut (10).

d. Run Locknut (10) against Nose Piece Housing (10) and tighten clockwise Nose Piece Housing (19) and Housing Locknut (10).

e. Install several fasteners in sample material for checking.

NOTE: If pull-up is inadequate or too great, adjust housing accordingly.

H. Operating Cautions

This tool has been subjected to a strict inspection before shipping to be free of electric shock, but it is necessary to insure tool is grounded for protection against such trouble.

NOTE: Tool should be stored in a clean, dry area. If you should release main switch before complete removal from fastener DO NOT push main switch a second time. Use reverse turn switch located above main switch thereby removing Pull-up Stud from fastener. Relocate reversing switch in natural position before attempting next installation.

NOTE: Always unplug tool before any repairs are attempted.
C410 Electric Tool

TROUBLE SHOOTING

ERRATIC OR NO PULL-UP
- Improper Anvil adjustment
- Improper pull-up adjustment
- Inadequate lubrication

EXCESSIVE STUD BREAKAGE
- Excessive pull-up
- Incorrect or wide variations in material thickness
- Failure to hold tool square with work, or bending Stud under load

STRIPPED FASTENER THREADS
- Excessive pull-up
- Improper Anvil adjustment
- Damaged or worn stud
- Incorrect or wide variation in material thickness

LOOSE FASTENERS
- Inadequate pull-up
- Incorrect or wide variations in material thickness

LOSS OF POWER
- Worn brushes
- Dirty motor

See paragraph 3-E, pg. 4
Use material of correct, uniform thickness
Use greater care in handling header
See paragraph 3-F, pg. 4
See paragraph 3-D, pg. 4
See paragraph 3-C, pg. 4
Use material of correct, uniform thickness
See paragraph 3-F, pg. 4
Use material of correct, uniform thickness
See 5-B-2, This page
Return tool to RIVNUT® Engineered Products for complete maintenance

MAINTENANCE

A. General

Any service other than as outlined in this manual should be performed by RIVNUT® Engineered Products.

B. Routine Maintenance

1. Apply wrench to flats of Nose Piece Housing (9) (Fig. 2) and completely remove Housing. Oil acme threads of Jackscrew (item 11) each 10,000 cycles.
2. Replacement of carbon Brushes: Check carbon Brushes (item 65) once a month. If Brushes have worn to the extent of .200” thickness, sparking will become heavy, causing failure. Remove brush cap (item 66), and carbon Brushes. Replace with extreme care.
3. Replace all damaged Pull-up Studs.
4. This tool should be stored in a dry, free-of-dust location.

C. Tool Repair (Mechanical) (See Fig. 5)

1. Jackscrew Removal and Replacement
   a. Loosen and remove Nose Piece Housing (9, Fig. 2). Housing has left-hand thread. Items 11 through 24 will be exposed.
   b. Loosen front Flange Nut (17) left hand thread, and remove items 14 through 24 from Gear Box (32).
   c. Pull off Clutch Sleeve (24). CAUTION, Steel Ball (23) will pop out. Cover with hands to prevent loss of 5/32" Steel Ball. Remove Spring (23).
   d. Remove Roll Pin (13) and Solid Pin (12) from Jackscrew (11).
   e. Insert notched end of Jackscrew (11) in soft Jaw Vice and rotate by hand, Rolling Nut (19) in left-hand direction to remove. The remaining assembly can be removed by hand.
   f. Inspect Jackscrew (11) and Rolling Nut (19) for wear. Oil or apply light grease to threads. Replace if worn.
   g. Assemble Jackscrew in reverse order.

NOTE: Care must be exercised during assembly of Clutch Sleeve (24) compress 5/32" Steel Ball (23) against Spring (22) and into Clutch (21) when assembling Clutch Sleeve (24).

2. Housing and Gear Removal and Replacement
   a. Remove three matching Screws (48) to separate Housing (32) from Main Housing (61).
   b. Remove Retaining Ring (28) from end of Spindle (26). Gear (33) may be removed from Spindle (26). Spindle (26) may be removed from forward end of Gear Box (32).
   c. Limit Pin (25) may be removed from Spindle (26).
   d. The remaining Gear (35), Bearing (34), and Spacer (36) may be removed from Housing (32). Replace in reverse order applying light grease to all gears.

NOTE: Do not forget to replace Limit Pin in Spindle.

3. Electrical

To assure product safety and reliability only routine maintenance (replacement of carbon brushes) should be performed. All other electrical repairs and replacement should be performed by RIVNUT® Engineered Products.
# C410 Electric Tool Parts List

**6 • PARTS LIST**

RIVNUT® Engineered Products • Header C-410

## Index # • Part # • Part • Quantity
1. See Fig. 7
   - Anvil
   - 1
1A. C8367
   - Anvil Hex Nut (1/2"-20)
   - 1
2. See Fig. 7
   - Pull-Up Stud
   - 1
2A. See Fig. 7
   - Stud Holder
   - 1
2B. C-5
   - Set Screw (#8-32 x 1/8")
   - 2
3. L-3
   - Nose Piece
   - 1
4. EN-04
   - Safety Cover
   - 1
6. EN-06
   - Lock Washer
   - 1
7. EN-07
   - Socket Head Cap Screw (M4 x 5)
   - 1
8. EN-08
   - Spacer
   - 2
9. EN-09
   - Nose Piece Housing
   - 1
10. EN-10
    - Lock Nut
    - 1
11. EN-11
    - Main Jack Screw
    - 1
12. EN-12
    - Pin
    - 1
13. EN-13
    - Roll Pin
    - 1
14. EN-14
    - Coupling Lock
    - 1
15. EN-15
    - Coupling Spring
    - 1
16. EN-16
    - Clutch
    - 1
17. EN-17
    - Hex Flange Nut
    - 1
18. EN-18
    - Thrust Ball Bearing
    - 1
18A. EN-18A
    - Bearing Flange
    - 1
19. EN-19
    - Rolling Nut
    - 1
20. EN-20
    - Rolling Pin
    - 1
21. EN-21
    - Rolling Piece
    - 1
22. EN-22
    - Ball Spring
    - 1
23. EN-23
    - Steel Ball
    - 1
24. EN-24
    - Clutch Sleeve
    - 1
25. EN-25
    - Limit Pin
    - 1
26. EN-26
    - Spindle
    - 1
27. EN-27
    - Key
    - 1
28. EN-28
    - Retaining Ring C-Type
    - 1
29. EN-29
    - Spacer
    - 2
30. EN-30
    - Machine Screw (M4 x 40MM)
    - 3
31. EN-31
    - Lock Washer
    - 1
32. EN-32
    - Gear Box
    - 1
33. EN-33
    - Gear No. 4
    - 1
34. EN-34
    - Bearing
    - 1
35. EN-35
    - Gear No. 2 and Gear No. 3
    - 1
36. EN-36
    - Flat Washer
    - 1
37. EN-37
    - Switch Cover
    - 1
38. EN-38
    - Machine Screw (2M x 14MM)
    - 2
39. EN-39
    - Nuts (M2)
    - 2
40. EN-40
    - Micro Switch
    - 1
41. EN-41
    - Pan Hand Bolts (M4 x 10MM)
    - 2

## UNIFIED THREAD SYSTEM

(Three-piece assembly)

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<th>Anvil for Standard Hex &amp; ITR</th>
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## METRIC THREAD SYSTEM

(Three-piece assembly)

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**ISO CERTIFIED**

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Visa, Mastercard, Discover & AMEX Accepted • Fax: 262.252.5033

CARDINAL COMPONENTS • INC