



CARDINAL
COMPONENTS · INC

C410 Electric Tool Operating Instructions & Parts List



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C410 Electric Tool

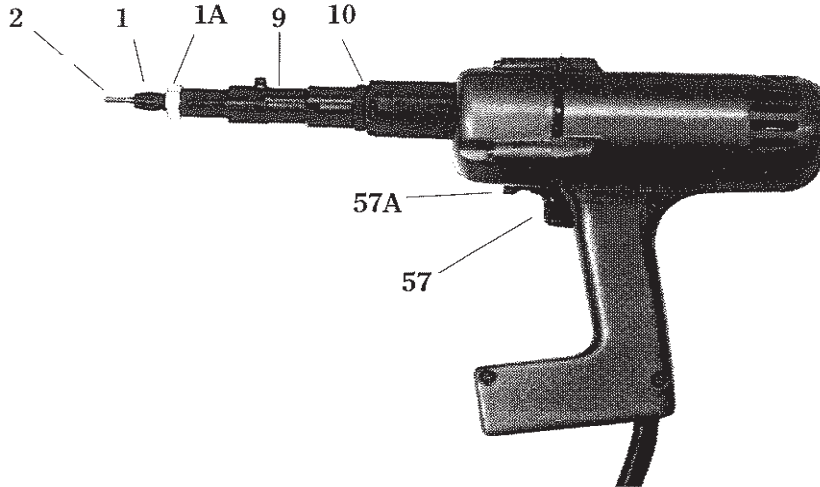


Figure 1 | RIVNUT® Engineered Products | RIVNUT® Header C-410

Weight - 7lbs.

Anvil	1
Anvil Locknut	1A
Pull-up Stud	2
Nose Piece Housing	9
Housing Locknut	10
Trigger	57
Reverse Switch	57A

WARNING:

WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE RISK OF FIRE, ELECTRIC SHOCK, AND PERSONAL INJURY.

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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 or 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.

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C410 Electric Tool Safety Precautions Cont. and Introduction

■ 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

	Aluminum	Brass & Steel	Stainless Steel
#4	■	■	■
#6	■	■	■
#8	■	■	■
#10	■	■	■
1/4"	■	■	■
5/16"	■	■	■
M3	■	■	■
M4	■	■	■
M5	■	■	■
M6	■	■	■
M7	■	■	■
M8	■	■	■

Recommended

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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 vice. Do not support tool by tool handle or use handle as leverage 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-handed thread). Adjust Housing Locknut (10) until the "C" spacing is approximately 3/32". With wrench, and 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

Figure 3
Pull-Up Stud Replacement

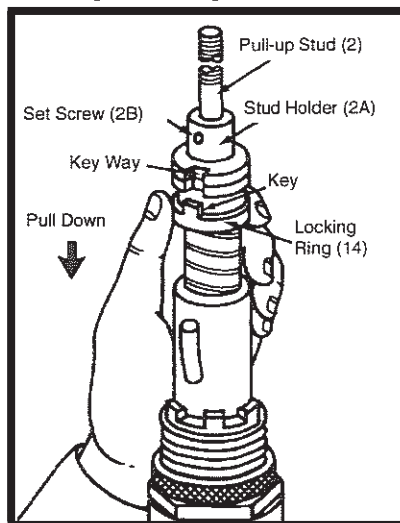
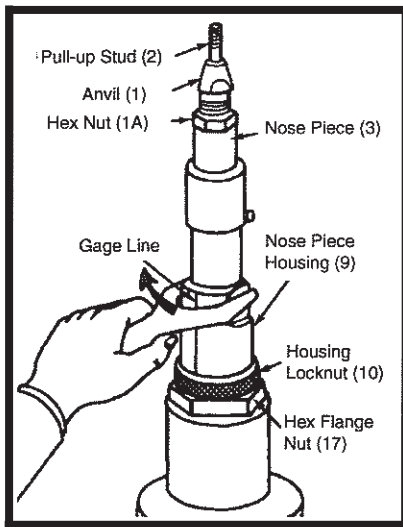


Figure 2 Tool Adjustments



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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 thickness060"

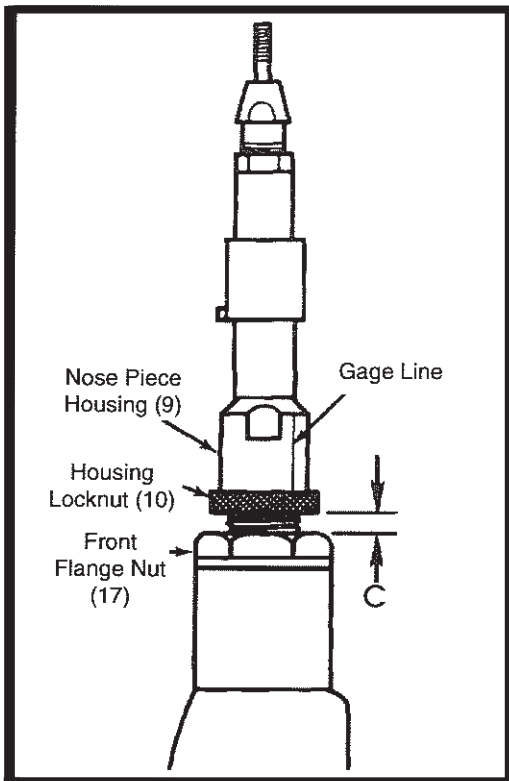
Difference (.080-.060)020"

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

Fastener Thread Size	Round RIVNUT®	Heavy Duty Hex RIVNUT®	Standard Hex RIVNUT®
No. 4	.055	–	–
No. 6	.065	–	–
No. 8	.065	–	–
No. 10	.080	.060	–
No. 1/4	.095	–	.080
No. 5/16	–	–	–

	Round RIVNUT®	Hex Shank RIVNUT®
M3	.055	–
M4	.075	–
M5	.095	.065
M6	.115	.070
M7	.115	–
M8	.125	.120

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. Housing Locknut (10) 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) against Housing (9). Hold Locknut with fingers while Housing (9) is tightened against Locknut.

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.

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TROUBLE SHOOTING

ERRATIC OR NO PULL-UP

- Improper Anvil adjustment See paragraph 3-D, pg. 4
- Improper pull-up adjustment See paragraph 3-F, pg. 4
- Inadequate lubrication See paragraph 5-C-1, This page

EXCESSIVE STUD BREAKAGE

- Excessive pull-up See paragraph 3-F, pg. 4
- Incorrect or wide variations in material thickness Use material of correct, uniform thickness
- Failure to hold tool square with work, or bending Stud under load Use greater care in handling header

STRIPPED FASTENER THREADS

- Excessive pull-up See paragraph 3-F, pg. 4
- Improper Anvil adjustment See paragraph 3-D, pg. 4
- Damaged or worn stud See paragraph 3-C, pg. 4
- Incorrect or wide variation in material thickness Use material of correct, uniform thickness

LOOSE FASTENERS

- Inadequate pull-up See paragraph 3-F, pg. 4
- Incorrect or wide variations in material thickness Use material of correct, uniform thickness

LOSS OF POWER

- Worn brushes See 5-B-2, This page
- Dirty motor 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.

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6 • PARTS LIST

RIVNUT® Engineered Products • Header C-410

Index #	Part #	Part	Quantity	Index #	Part #	Part	Quantity
1	See Fig. 7	Anvil	.1	42	EN-42	Micro Switch Base	.1
1A	C88367	Anvil Hex Nut (1/2"-20)	.1	43	EN-43	Insulating Tube	.1
2	See Fig. 7	Pull-Up Stud	.1	44	EN-44	Wire Guard	.1
2A	See Fig. 7	Stud Holder	.1	45	EN-45	Pan Head Screw (M4 x 8MM)	.1
2B	C-5	Set Screw (#8-32 x 1/8")	.2	46	EN-46	Gear Box Cover	.1
3	L-3	Nose Piece	.1	47	EN-47	Bearing	.1
4	EN-04	Safety Cover	.1	48	EN-48	Pan Head Screw (M4-x 65MM)	.2
6	EN-06	Lock Washer	.1	49	EN-49	Lockwasher	.2
7	EN-07	Socket Head Cap Screw (M4 x 5)	.1	50	EN-50	Armature	.1
8	EN-08	Spacer	.2	51	EN-51	Bearing	.1
9	EN-09	Nose Piece Housing	.1	52	EN-52	Socket	.1
10	EN-10	Lock Nut	.1	53	EN-53	Insulating Tape	.1
11	EN-11	Main Jackscrew	.1	54	EN-54	Stator	.1
12	EN-12	Pin	.1	55	EN-55	Bail Ring	.1
13	EN-13	Roll Pin	.1	56	EN-56	Name Plate	.1
14	EN-14	Coupling Lock	.1	57	EN-57	Trigger Switch	.1
15	EN-15	Coupling Spring	.1	58	EN-58	Vent Cover	.1
16	EN-16	Clutch	.1	59	EN-59	Pan Head Screw Washer (4M x 8MM)	.2
17	EN-17	Hex Flange Nut	.1	60	EN-60	Set Screws (M4 x 6)	.2
18	EN-18	Thrust Ball Bearing	.1	61	EN-61	Housing	.1
18A	EN-18A	Bearing Race	.1	62	EN-62	Brush Holder	.2
19	EN-19	Rolling Nut	.1	63	EN-63	Lockwasher	.2
20	EN-20	Rolling Pin	.2	64	EN-64	Pan Head Screw (M3 x 4MM)	.2
21	EN-21	Rolling Piece	.1	65	EN-65	Carbon Brush	.2
22	EN-22	Ball Spring	.1	66	EN-66	Brush Cap	.2
23	EN-23	Steel Ball	.1	67	EN-67	Handle Cover	.1
24	EN-24	Clutch Sleeve	.1	68	EN-68	Pan Head Screw (M4 x 20MM)	.3
25	EN-25	Limit Pin	.1	69	EN-69	Relay	.1
26	EN-26	Spindle	.1	70	EN-70	Pan Head Screw (M4 x 6MM) Copper	.1
27	EN-27	Key	.1	71	EN-71	Lockwasher	.1
28	EN-28	Retaining Ring C-Type	.1	72	EN-72	Pan Head Screw/Washer (M4 x 10MM)	2
29	EN-29	Spacer	.1	73	EN-73	Cord Anchor	.1
30	EN-30	Machine Screw (M4 x 40MM)	.3	74	EN-74	Insulated Butt Connector	.2
31	EN-31	Lock Washer	.3	75	EN-75	Insulated Pigtail Connector	.1
32	EN-32	Gear Box	.1	76	EN-76	Strain Relief	.1
33	EN-33	Gear No. 4	.1	77	EN-77	Tie Straps	.2
34	EN-34	Bearing	.1	78	EN-78	Power Supply Cord w/Plug	.1
35	EN-35	Gear No. 2 and Gear No. 3	.1	79	EN-79	Anchor	.1
36	EN-36	Flat Washer	.1	80	EN-80	Pan Head Screw w/Washer (M4 x 10)	.1
37	EN-37	Switch Cover	.1	81	EN-81	Fan Guide	.1
38	EN-38	Machine Screw (2M x 14MM)	.2	82	EN-82	Pipe Spacer	.2
39	EN-39	Nuts (M2)	.2	83	EN-83	River Screws	.4
40	EN-40	Micro Switch	.1	84	EN-84	Spanner A	.1
41	EN-41	Pan Hand Bolts (M4 x 10MM)	.2	85	EN-85	Spanner B	.1

UNIFIED THREAD SYSTEM (Two-piece assembly)

Thread Size	Stud Holder	Pull-Up Stud	Anvil for RIVNUT®	Anvil for Standard Hex & ITR
4-40		60-2300-1032	60-1000-440	60-3000-4 -
6-32	60-2300-1032	60-1000-632	60-3000-6	-
8-32	60-2300-1032	60-1000-832	60-3000-8	-
10-24	60-2300-1032	60-1000-1024	60-3000-10	60-3004-10
10-32	60-2300-1032	60-1000-1032	60-3000-10	60-3004-10
12-24	60-2300-2528	60-1000-1224	60-3000-12	-
1/4"-20	60-2300-2528	60-1000-2520	60-3000-25	60-3004-25
1/4"-28	60-2300-2528	60-1000-2528	60-3000-25	60-3004-25
5/16"-18	60-2300-2528	60-1300-3118	60-3000-31	60-3004-31
5/16"-24	60-2300-2528	60-1300-3124	60-3000-31	60-3004-31

METRIC THREAD SYSTEM

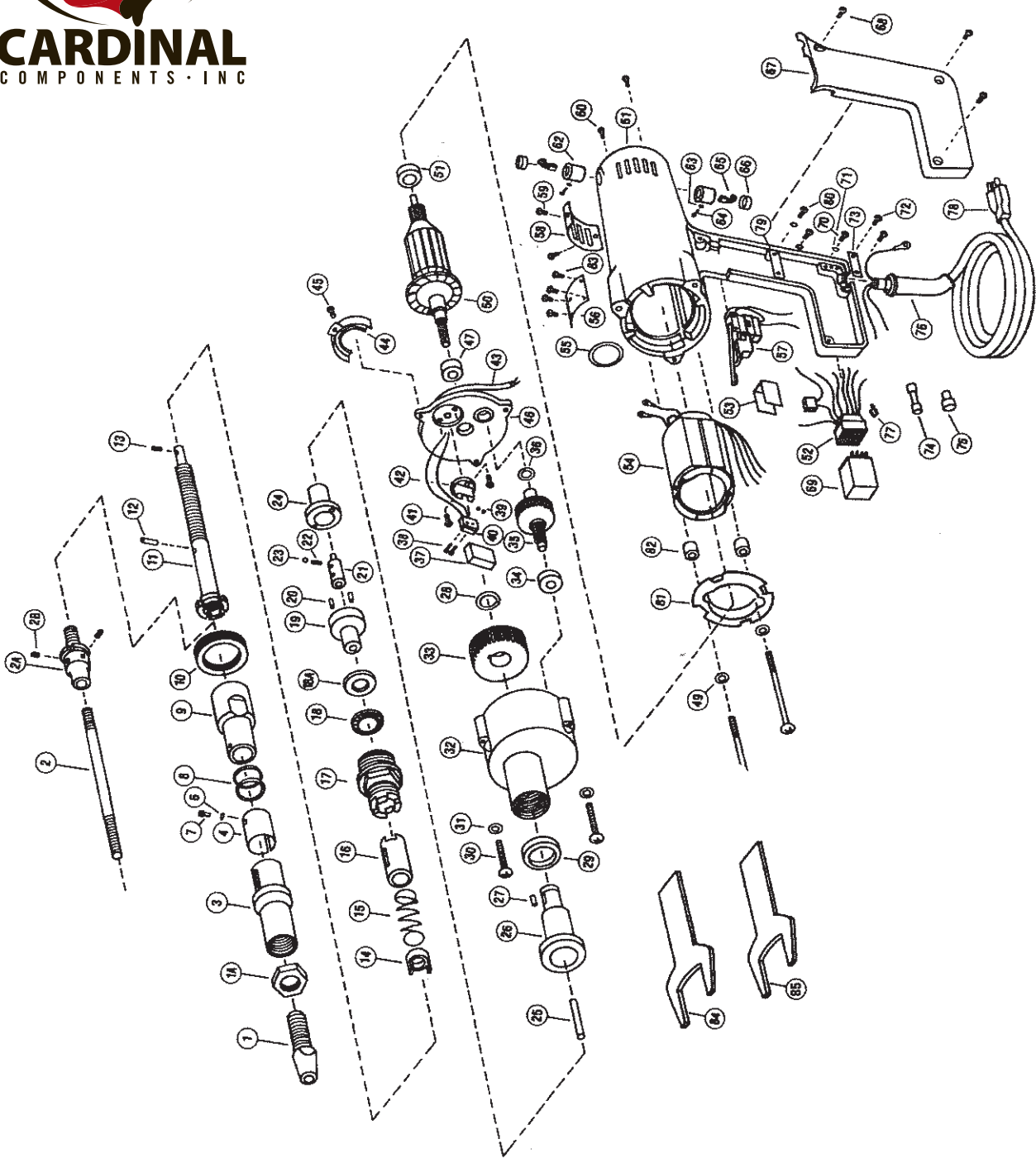
Thread Size	Stud Holder	Pull-Up Stud	Anvil for RIVNUT®	Anvil for Standard Hex & ITR
M3 X 0.5	60-2300-1032	60-1005-M3	60-3003-1M3	-
M4 X 0.7	60-2300-1032	60-1005-M4	60-3003-M4	60-3004-M4
M5 X 0.8	60-2300-2528	60-1005-M5	60-3003-M5	60-3004-M5
M6 X 1.0	60-2300-2528	60-1005-M6	60-3003-M6	60-3004-M6
M7 X 1.0	60-2300-2528	60-1300-M7	60-3003-M7	60-3004-M7
M8 X 1.25	60-2300-2528	60-1300-M8	60-3003-M8	60-3004-M8

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