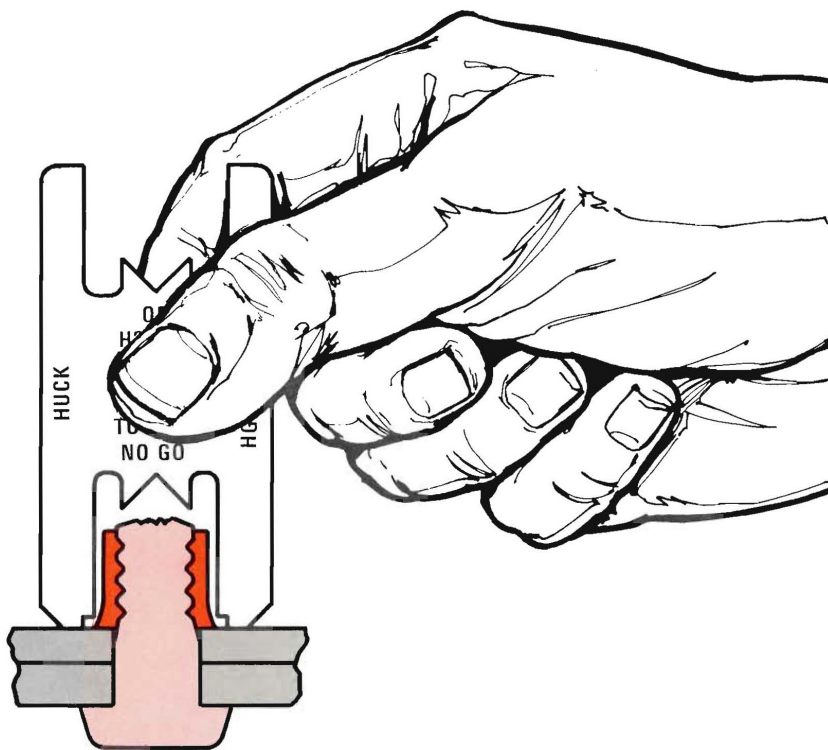




ARCONIC

Instruction Manual How to Use Fastener Gauges



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HUCK IS FOREVER.™

December 15, 2016
HK471


Makers of Huck®, Marson®, Recoil®
Brand Fasteners, Tools & Accessories








Safety Instructions

GLOSSARY OF TERMS AND SYMBOLS:

 - Product complies with requirements set forth by the relevant European directives.

 - Read manual prior to using this equipment.

 - Eye protection is required while using this equipment.

 - Hearing protection is required while using this equipment.

Notes: are reminders of required procedures.

Bold, Italic type, and underline: emphasize a specific instruction.

 **WARNINGS: Must be understood to avoid severe personal injury.**

 **CAUTIONS: Show conditions that will damage equipment or structure.**

I. GENERAL SAFETY RULES:

1. A half hour long hands-on training session with qualified personnel is recommended before using Huck equipment.
2. Huck equipment must be maintained in a safe working condition at all times. Tools and hoses should be inspected at the beginning of each shift/day for damage or wear. Any repair should be done by a qualified repairman trained on Huck procedures.
3. For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on, or working near the assembly power tool. Failure to do so can result in serious bodily injury.
4. Only qualified and trained operators should install, adjust or use the assembly power tool.
5. Do not modify this assembly power tool. This can reduce effectiveness of safety measures and increase operator risk.
6. Do not discard safety instructions; give them to the operator.
7. Do not use assembly power tool if it has been damaged.
8. Tools shall be inspected periodically to verify all ratings and markings required, and listed in the manual, are legibly marked on the tool. The employer/operator shall contact the manufacturer to obtain replacement marking labels when necessary. Refer to assembly drawing and parts list for replacement.
9. Tool is only to be used as stated in this manual. Any other use is prohibited.
10. Read MSDS Specifications before servicing the tool. MSDS specifications are available from the product manufacturer or your Huck representative.
11. Only genuine Huck parts shall be used for replacements or spares. Use of any other parts can result in tooling damage or personal injury.
12. Never remove any safety guards or pintail deflectors.
13. Never install a fastener in free air. Personal injury from fastener ejecting may occur.
14. Where applicable, always clear spent pintail out of nose assembly before installing the next fastener.
15. Check clearance between trigger and work piece to ensure there is no pinch point when tool is activated. Remote triggers are available for hydraulic tooling if pinch point is unavoidable.
16. Do not abuse tool by dropping or using it as a hammer. Never use hydraulic or air lines as a handle or to bend or pry the tool. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime, and preventing an accident which may cause severe personal injury.
17. Never place hands between nose assembly and work piece. Keep hands clear from front of tool.
18. Tools with ejector rods should never be cycled with out nose assembly installed.
19. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet for correct positioning.

II. PROJECTILE HAZARDS:

1. Risk of whipping compressed air hose if tool is pneumatic or pneumatic.
2. Disconnect the assembly power tool from energy source when changing inserted tools or accessories.

3. Be aware that failure of the workpiece, accessories, or the inserted tool itself can generate high velocity projectiles.
4. Always wear impact resistant eye protection during tool operation. The grade of protection required should be assessed for each use.
5. The risk of others should also be assessed at this time.
6. Ensure that the workpiece is securely fixed.
7. Check that the means of protection from ejection of fastener or pintail is in place and operative.
8. There is possibility of forcible ejection of pintails or spent mandrels from front of tool.

III. OPERATING HAZARDS:

1. Use of tool can expose the operator's hands to hazards including: crushing, impacts, cuts, abrasions and heat. Wear suitable gloves to protect hands.
2. Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool.
3. Hold the tool correctly and be ready to counteract normal or sudden movements with both hands available.
4. Maintain a balanced body position and secure footing.
5. Release trigger or stop start device in case of interruption of energy supply.
6. Use only fluids and lubricants recommended by the manufacturer.
7. Avoid unsuitable postures, as it is likely for these not to allow counteracting of normal or unexpected tool movement.
8. If the assembly power tool is fixed to a suspension device, make sure that fixation is secure.
9. Beware of the risk of crushing or pinching if nose equipment is not fitted.

IV. REPETITIVE MOTION HAZARDS:

1. When using assembly power tool, the operator can experience discomfort in the hands, arms, shoulders, neck or other parts of the body.
2. When using tool, the operator should adopt a comfortable posture while maintaining a secure footing and avoid awkward or off balanced postures.
3. The operator should change posture during extended tasks to help avoid discomfort and fatigue.
4. If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warnings should not be ignored. The operator should tell the employer and consult a qualified health professional.

V. ACCESSORIES HAZARDS:

1. Disconnect tool from energy supply before changing inserted tool or accessory.
2. Use only sizes and types of accessories and consumables that are recommended. Do not use other types or sizes of accessories or consumables.

VI. WORKPLACE HAZARDS:

1. Be aware of slippery surfaces caused by use of the tool and of trip hazards caused by the air line or hydraulic hose.
2. Proceed with caution while in unfamiliar surroundings; there could be hidden hazards such as electricity or other utility lines.
3. The assembly power tool is not intended for use in potentially explosive environments.
4. Tool is not insulated against contact with electrical power.
5. Ensure there are no electrical cables, gas pipes, etc., which can cause a hazard if damaged by use of the tool.

VII. NOISE HAZARDS:

1. Exposure to high noise levels can cause permanent, disabling hearing loss and other problems such as tinnitus, therefore risk assessment and the implementation of proper controls is essential.
2. Appropriate controls to reduce the risk may include actions such as damping materials to prevent workpiece from 'ringing'.
3. Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.
4. Operate and maintain tool as recommended in the instruction handbook to prevent an unnecessary increase in the noise level.
5. Select, maintain and replace the consumable / inserted tool as recommended to prevent an unnecessary increase in noise.
6. If the power tool has a silencer, always ensure that it is in place and in good working order when the tool is being operated.

VIII. VIBRATION HAZARDS:

1. Exposure to vibration can cause disabling damage to the nerves and blood supply to the hands and arms.
2. Wear warm clothing when working in cold conditions and keep hands warm and dry.
3. If numbness, tingling, pain or whitening of the skin in the fingers or hands, stop using the tool, tell your employer and consult a physician.
4. Support the weight of the tool in a stand, tensioner or balancer in order to have a lighter grip on the tool.



– INTRODUCTION –

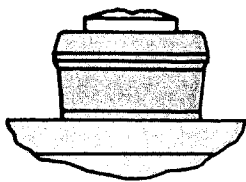
In addition to visual inspection, installed Huckbolt® Fasteners may be inspected using Huck HG inspection gages. “Pin Position” gages have been designed to inspect the position of the installed pin or stump in relation to the sheet line or work surface. This either (1) verifies that the correct length pin or stump was used or (2) indicates that the incorrect length (too long or too short) was used. “Pin Position and Swage” gages, in addition to determining if the proper length pin or stump was used, also have been designed to inspect the swaged collar to determine if the collar is completely or sufficiently swaged.

The proper HG gage to use for each installed fastener is designated on the applicable page in the Huck Fastener Standards Manual or in NAS 1080. For special applications involving unusual combinations of pins or stumps and collars, consult the Huck representative or Huck Engineering.



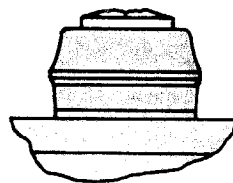
Note that the gages for Shear Pull Type and Shear/Tension Pull Type Fasteners are Pin Position Gages only. Therefore, Swaged Collars are visually inspected as follows:

BEADED COLLARS



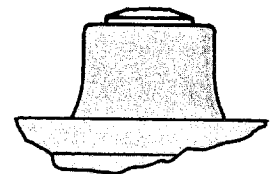
NOT
SWAGED

REJECT



PARTIALLY
SWAGED

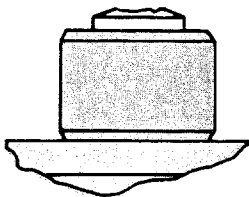
REJECT



FULLY
SWAGED

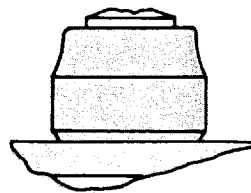
ACCEPT

DOUBLE END COLLARS



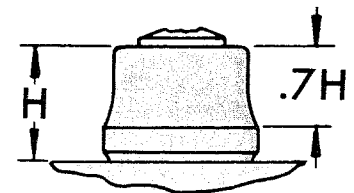
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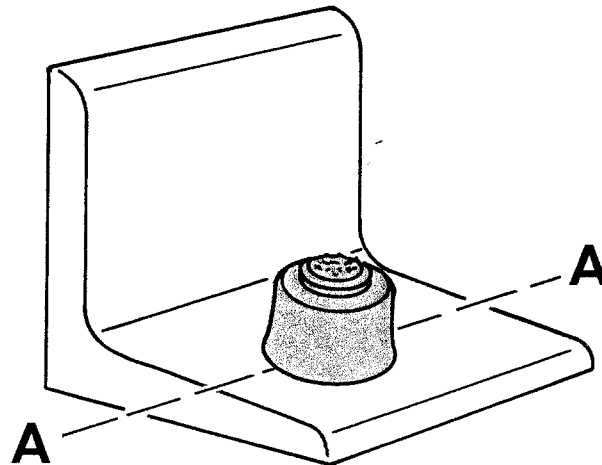


SWAGED
.7H MINIMUM

ACCEPT



The following pages illustrate the use of various “Pin Position” and “Pin Position and Swage Gages”. In each application, the gage is held perpendicular to the work and centered over the installed fastener.



When collars are installed against slopes, use the gage in plane A-A.

NOTE

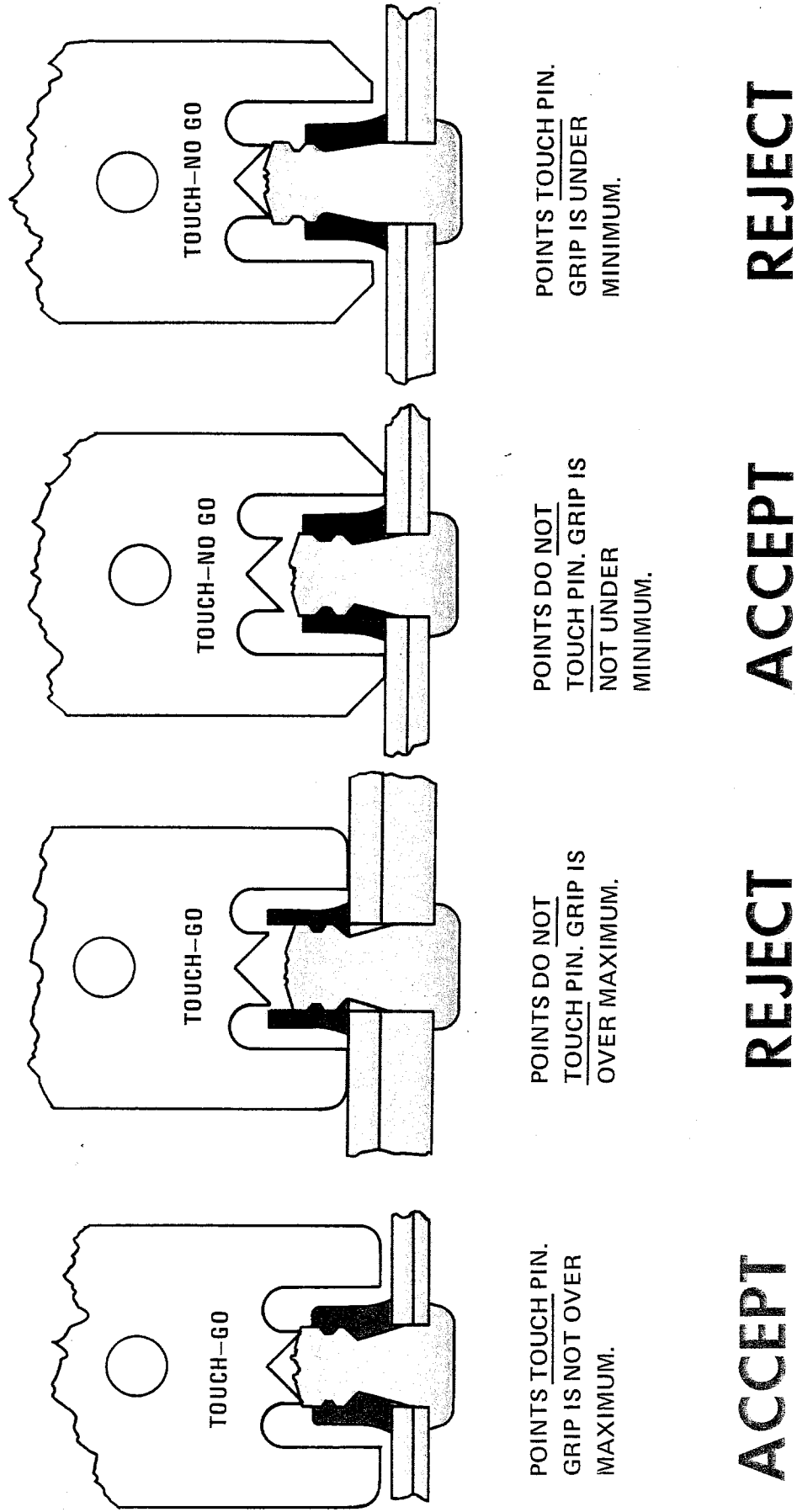
“Pin Position” gages have been designed to inspect installed fasteners only. They are not grip gages for determining the grip or length of pin or stump to be used. Use Huck Grip Gage, P/N 105093 or other measuring tool to determine the thickness of the material to be fastened (grip) and the fastener length (grip dash number to be used.

GRIP is the total thickness of the material to be fastened or joined.

GRIP DASH NUMBER is the corresponding grip range of the pin or stump as specified on the applicable Product Standards Sheet.

How To Use HUCK Pin Position GAGES*

FOR INSTALLED SHEAR PULL TYPE FASTENERS

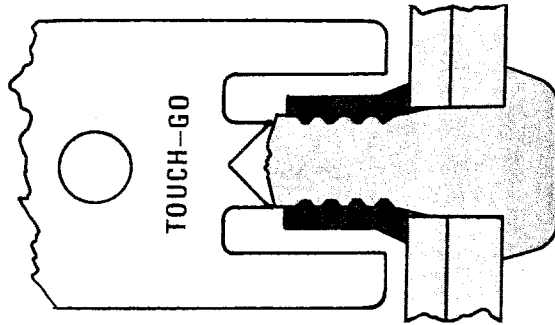


*SHEAR PULL TYPE HG76 & HG90 Note: Both ends of the gage must ACCEPT.

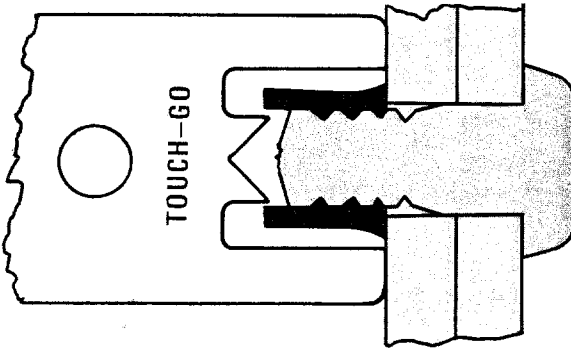


How To Use HUCK Pin Position & Swage GAGES*

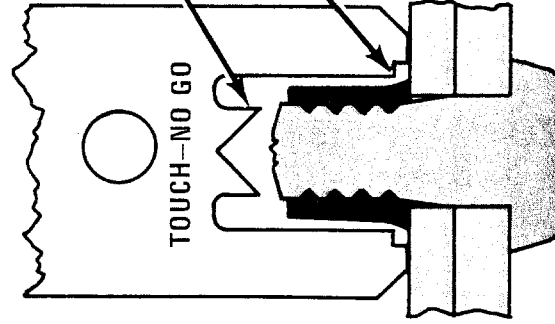
FOR INSTALLED TENSION PULL TYPE FASTENERS



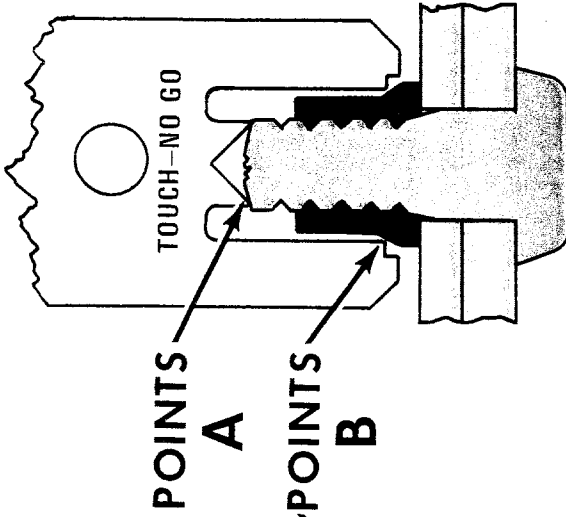
POINTS TOUCH PIN.
GRIP IS NOT OVER
MAXIMUM.



POINTS DO NOT
TOUCH PIN. GRIP IS
OVER MAXIMUM.



POINTS A DO NOT
TOUCH PIN. GRIP IS
NOT UNDER
MINIMUM.
POINTS B DO NOT
TOUCH COLLAR -
COLLAR IS SWAGED
ENOUGH.



POINTS A TOUCH
PIN. GRIP IS UNDER
MINIMUM AND/OR
POINTS B TOUCH
COLLAR - COLLAR
NOT SWAGED
ENOUGH.

ACCEPT REJECT

*TENSION PULL TYPE HG85
EXCEPT HG85-10

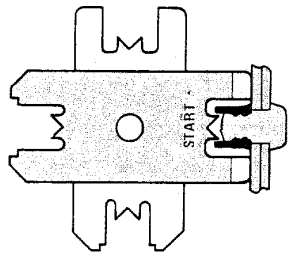
ACCEPT

Note: Both ends of the gauge must **ACCEPT**

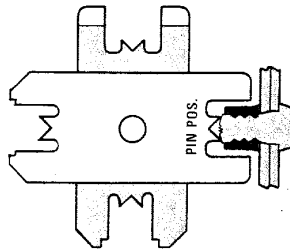
REJECT



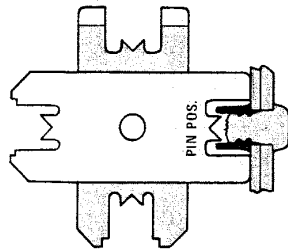
How To Use HUCK Pin Position & Swage GAUGE HG85-10



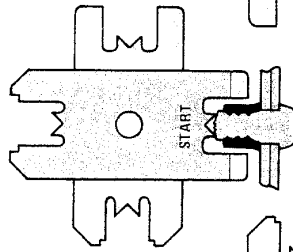
STEP 1a



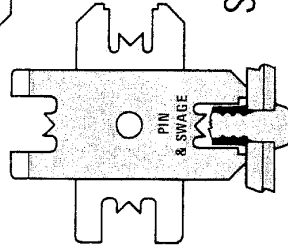
ACCEPT



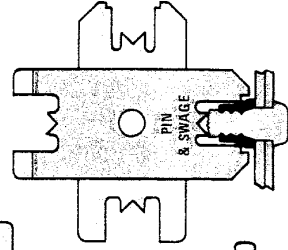
REJECT



STEP 1b

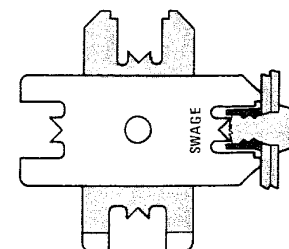


ACCEPT

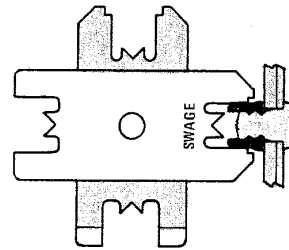


REJECT

STEP 3a & b



ACCEPT



REJECT

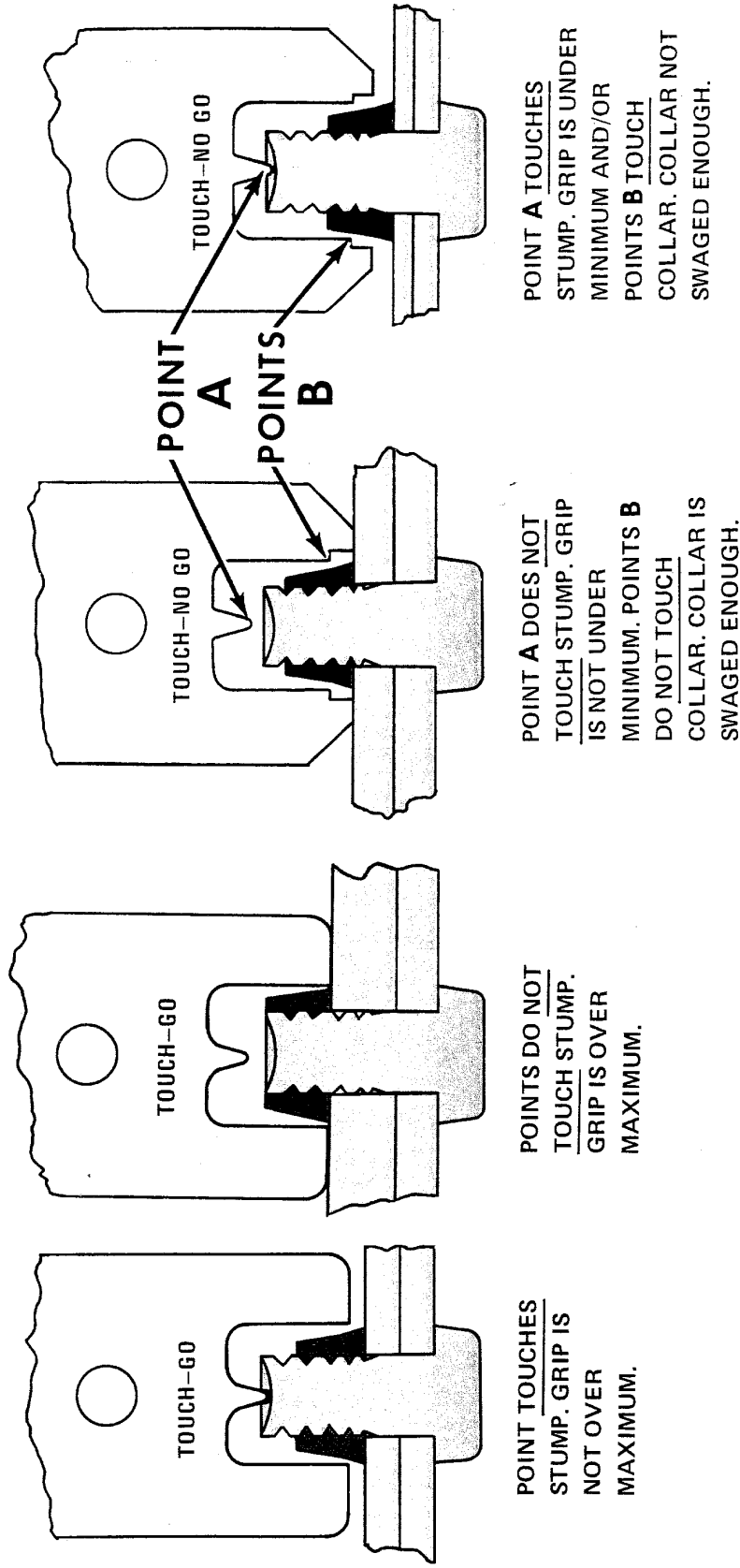
STEP 2b

- STEP 1:** USE START
- IF COPPER PLATE FINISH TOUCHES THE SHEET, SEE 2 BELOW.
 - IF BLACK TOUCHES THE PIN, SEE 3 BELOW.
- STEP 2:** USE COPPER PLATE FINISH
- CHECK PIN POSITION (LEGS MUST NOT TOUCH THE SHEET).
 - CHECK SWAGE (LEGS MUST TOUCH THE SHEET).
- BOTH ENDS OF THE GAUGE MUST ACCEPT**
- STEP 3:** USE BLACK
- CHECK PIN POSITION (LEGS MUST TOUCH THE SHEET).
 - CHECK SWAGE (LEGS MUST TOUCH THE SHEET).



How To Use HUCK Stump Position And Swage GAGES*

FOR INSTALLED SHEAR AND TENSION AND TENSION STUMP TYPE FASTENERS

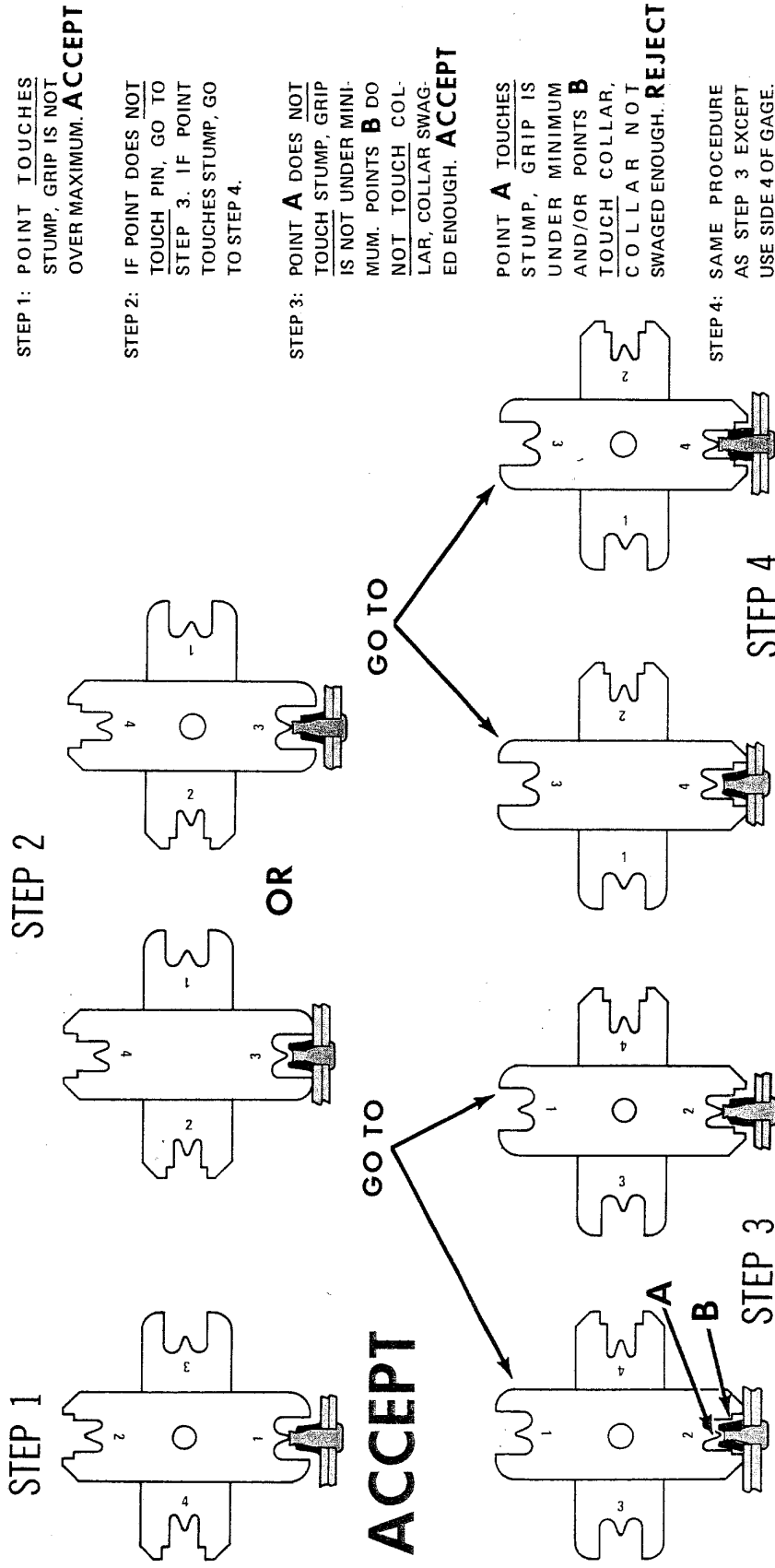


* SHEAR STUMP TYPE HG75 EXCEPT HG75-6 & HG75-7 AND TENSION STUMP TYPE HG34D.

Note: Both ends of the gage must ACCEPT.



How To Use HUCK Pin Position & Swage GAGES HG75-6 & HG75-7



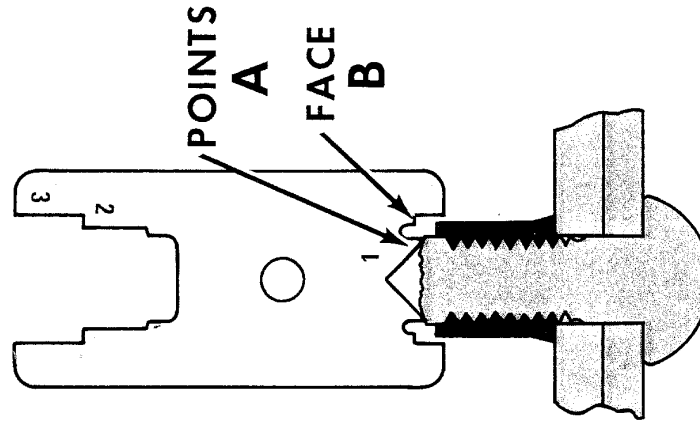
Note: Both Step 1 and Step 3 or Step 4 must ACCEPT.

ACCEPT REJECT
GRIP GREATER THAN NOMINAL
ACCEPT REJECT
GRIP LESS THAN NOMINAL

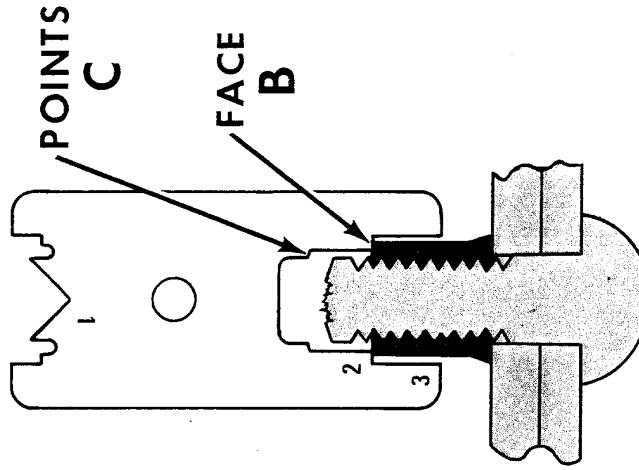


How To Use HUCK Pin Position & Swage GAGES*

FOR INSTALLED C50L PULL TYPE FASTENERS



POINTS **A** TOUCH PIN. FACE **B** DOES NOT TOUCH TOP OF COLLAR. GRIP IS NOT OVER MAXIMUM.



FACE **B** RESTS ON TOP OF COLLAR. POINTS **C** DO NOT TOUCH PIN. GRIP IS NOT UNDER MINIMUM AND COLLAR HAS BEEN SWAGED TO THE PROPER DIAMETER AND DEPTH.



Limited Warranties

Limited Lifetime Warranty on BobTail® Tools:

Huck International, Inc. warrants to the original purchaser that its BobTail® installation tools manufactured after 12/1/2016 shall be free from defects in materials and workmanship for its **useful lifetime**. This warranty does not cover special order / non-standard products, or part failure due to normal wear, tool abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

Two Year Limited Warranty on Installation Tools:

Huck International, Inc. warrants that its installation tools and Powerigs® manufactured after 12/1/2016 shall be free from defects in materials and workmanship for a period of two years from date of purchase by the end user. This warranty does not cover special order / non-standard products, or part failure due to normal wear, tool abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

90 Day Limited Warranty on Nose Assemblies and Accessories:

Huck International, Inc. warrants that its nose assemblies and accessories shall be free from defects in materials and workmanship for a period of 90 days from date of purchase by the end user. This warranty does not cover special clearance noses, or special order / non-standard product, or part failure due to normal wear, abuse or misapplication, or user non-compliance with the service requirements and conditions detailed in the product literature.

Useful lifetime is defined as the period over which the product is expected to last physically, up to the point when replacement is required due to either normal in-service wear, or as part of a complete overhaul. Determination is made on a case-by case basis upon return of parts to Huck International, Inc. for evaluation.

Tooling, Part(s) and Other Items not manufactured by Huck:

HUCK makes no warranty with respect to the tooling, part(s), or other items manufactured by third parties. HUCK expressly disclaims any warranty expressed or implied, as to the condition, design, operation, merchantability, or fitness for use of any tool, part(s), or other items thereof not manufactured by HUCK. HUCK shall not be liable for any loss or damage, directly or indirectly, arising from the use of such tooling, part(s), or other items or breach of warranty or for any claim for incidental or consequential damages.

Huck shall not be liable for any loss or damage resulting from delays or non-fulfillment of orders owing to strikes, fires, accidents, transportation companies or for any reason or reasons beyond the control of the Huck or its suppliers.

Huck Installation Equipment:

Huck International, Inc. reserves the right to make changes in specifications and design and to discontinue models without notice.

Huck Installation Equipment should be serviced by trained service technicians only.

Always give the serial number of the equipment when corresponding or ordering service parts.

Complete repair facilities are maintained by Huck International, Inc. Please contact one of the offices listed below.

Eastern

One Corporate Drive Kingston, New York 12401-0250
Telephone (845) 331-7300 FAX (845) 334-7333

Outside USA and Canada

Contact your nearest Huck International location (see reverse).

In addition to the above repair facilities, there are Authorized Tool Service Centers (ATSC's) located throughout the United States. These service centers offer repair services, spare parts, Service Parts Kits, Service Tool Kits and Nose Assemblies. Please contact your Huck Representative or the nearest Huck International location (see reverse) for the ATSC in your area.



ARCONIC
Innovation, engineered.

Arconic Inc. (NYSE: ARNC) creates breakthrough products that shape industries. Working in close partnership with our customers, we solve complex engineering challenges to transform the way we fly, drive, build and power.

Through the ingenuity of our people and cutting-edge advanced manufacturing, we deliver these products at a quality and efficiency that ensures customer success and shareholder value.

Arconic Fastening Systems and Rings world-wide locations:

AMERICAS

Kingston Operations

1 Corporate Drive
Kingston, NY 12401
800-278-4825
845-331-7300
FAX: 845-334-7333

Tucson Operations

3724 East Columbia
Tucson, AZ 85714
800-234-4825
520-747-9898
FAX: 520-748-2142

Carson Operations

900 Watson Center Rd.
Carson, CA 90745
800-421-1459
310-830-8200
FAX: 310-830-1436

Acuña Operations

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TELEX: 1173530 LUKSME

Waco Operations

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01952-290011
FAX: 0952-290459

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Clos D'Asseville
95450 Us par Vigny
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FAX: 33-1-34-66-0600

FAR EAST

Melbourne Operations

11508 Centre Road
Clayton, Victoria
Australia 3168
03-764-5500
Toll Free: 008-335-030
FAX: 03-764-5510

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