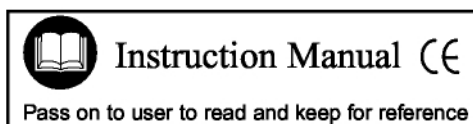


G83

Lockbolt Power Tool
5130-01-435-3507



MANUAL



CHERRY®
AEROSPACE
SPS Fastener Division, a PCC Company

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THE G83 TOOL

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DESCRIPTION

The Cherry G83 pneumatic-hydraulic lockbolt installation tool is a heavy duty production tool designed for high speed, reliable installation of the most popular sizes of aircraft lockbolts.

This extremely powerful tool has been designed with many ergonomic features: light weight (4.95 pounds) (2.25 kg.), less recoil, low noise, and a comfortable fit in the operator's hand. It can be operated in any position with one hand.

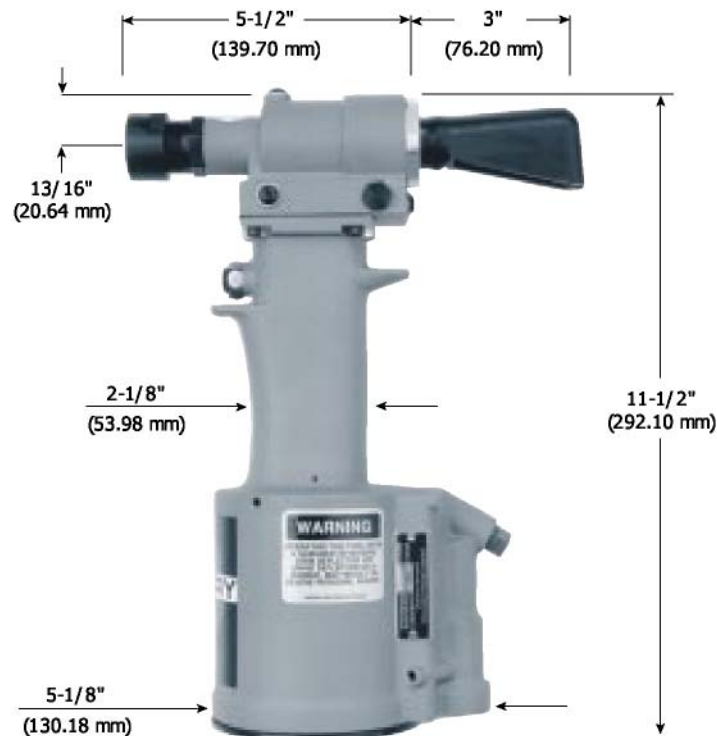
By bending the rubber pin deflector (63) sideways, 1-1/2" additional clearance can be obtained.

This tool can also be used to install blind bolts and blind rivets. See the section on "Pulling Heads" for correct pulling head part number.

SPECIFICATIONS FOR G83

Cherry Aerospace' (CHERRY) policy is one of continuous development. Specifications shown in this document may be subject to change which may be introduced after publication. For the latest information always consult CHERRY.

AIR PRESSURE	90 to 110 PSI (6.2 to 7.6 bar) .
STROKE	7/16 inch (11.1 mm)
PULLING FORCE	3,750 lbs. (16.7 kN) @ 90 PSI (6.2 bar), 800 lbs. (3.56 kN) on return stroke
CYCLE TIME	Approximately one second
WEIGHT	4.95 lbs. (2.25 kg)
NOISE LEVEL	78.4 dB (A)
VIBRATION	less than 2.5 m/s ²
AIR CONSUMPTION	0.16 SCF/cycle (4.53 L/cycle)



SAFETY WARNINGS

- Operating this tool with a damaged or missing stem deflector, or using the deflector as a handle, may result in severe personal injury. The pin deflector should be rotated until the aperture is facing away from the operator and other persons working in the vicinity.
- Approved eye protection should be worn when operating, repairing, or overhauling this tool.
- Do not use beyond the design intent.
- Do not use substitute components for repair.
- Any modification to the tool, pulling heads, accessories or any component supplied by CHERRY®, or their representatives, shall be the customer's entire responsibility. CHERRY® will be pleased to advise on any proposed modification.
- The tool must be maintained in a safe working condition at all times and examined at regular intervals for damage.
- Before disassembling the tool for repair, refer to the Maintenance and Repair instructions. All repairs shall be undertaken only by personnel trained in CHERRY® installation tools. Contact CHERRY® with your training requirement.
- Always disconnect the air line from the tool inlet before attempting to service, adjust, fit or remove any accessory.
- Do not operate the tool when it is directed at any person.
- Ensure that the vent holes do not become blocked or covered and that air line hoses are always in good condition.
- Excessive contact with the hydraulic oil should be avoided to minimize the possibility of rashes. Care should be taken to wash thoroughly.
- Operating air pressure should not exceed 110 psi (7.6 bar).
- Do not operate the tool without pulling head correctly and securely attached.
- Do not operate the tool unless the handle base (66) is fully secured by retaining ring (67) and the base cover (68) is held in place by retaining ring (69).
- All retaining rings, screwed end caps, air fittings, trigger valves and pulling heads should be attached securely and examined at the end of each working shift.
- Do not pull rivet in the air.
- The precautions to be used when using this tool must be explained by the customer to all operators. Any question regarding the correct operation of the tool and operator safety should be directed to CHERRY®.
- Do not pound on the rear of the tool head to force rivets into holes as this will damage the tool.
- Do not depress the trigger while disconnecting the air bleeder and replacing the cap screw when bleeding the tool.

HOW TO USE THE G83

LOCKBOLTS

After selecting the proper pulling head and attaching it securely to the G83, connect the air line to the tool. Place the lockbolt pin into the workpiece and place the collar over the pintail. It may be necessary to hold the lockbolt in the application to prevent it from backing out when placing the pulling head over the serrations.

If you are using a non-self-releasing pulling head, make certain the collar is placed on the lockbolt pintail before placing the pulling head on the pintail. Once the pintail is inserted into the pulling head the jaws will grip the pintail and prevent it from moving out of the front of the pulling head.

If there is sheet gap or a gap between the head of the lockbolt and the workpiece, it may require multiple stroking of the tool for complete installation. The pintail will eject through the rear of the tool when using H513 Series straight pulling heads. The pintail will eject through the rear of the H563 offset pulling head.

If the tool does not kick off the swaged collar, shims should be added behind the collet of the pulling head. See pulling head installation instructions.

BLIND BOLTS AND RIVETS

Insert the blind bolt or blind rivet stem into the proper pulling head until the head of the rivet is in contact with the pulling head nosepiece. This will ensure full engagement between the jaws and the rivet stem and will prevent slippage.

Once the rivet stem is inserted in the pulling head, the rivet must be installed. The "stem stop" in the pulling head (H701 B-456) will prevent the mandrel from moving back out the front of the head.

Insert the rivet into the application and pull the trigger to activate the tool. Upon the release of the trigger, the stem will eject to the rear of the tool (when using the H701 B-456 straight pulling head). When using the H781-456 offset pulling head, the stem will eject through the offset pulling head to the rear. When using the H753A-456 right angle pulling head, the stem will eject out the front.

MAINTENANCE AND REPAIR

The G83 has been manufactured to give maximum service with minimum care. In order that this may be accomplished, the following recommendations should be followed:

1. The hydraulic system should be full of oil and free from air at all times.
2. Keep excessive moisture and dirt out of air supply to prevent wear of air valve, air cylinder and air piston.
3. Tool should be routinely inspected for oil leaks. Oil leaking around screws (49) indicates that a screw is loose or a Stat-O-Seal (50) needs replacing. Oil leaking around the small by-pass hole near the base of the handle grip (1) would indicate worn or damaged O-rings (19).

Use automatic transmission fluid Type "A" (no substitutes). Cherry® Aerospace recommends using, Dexron® III ATF.

DEXRON III OIL SAFETY DATA

FIRST AID

Skin: Wash thoroughly with soap and water as soon as possible. Casual contact requires no immediate attention. If irritation develops, consult a physician.

Ingestion: Seek medical attention immediately. DO NOT INDUCE VOMITING.

Eyes: Flush with copious amounts of water. If irritation develops, consult a physician.

Inhalation: No significant adverse health effect are expected to occur on short term exposure. Remove from contaminated area. Apply artificial respiration if needed. If unconscious, consult physician.

FIRE

Suitable extinguishing media: CO₂, dry powder, foam or water fog. DO NOT use water jets.

ENVIRONMENT

Waste Disposal: In accordance with local, state and federal regulations.

Spillage: Prevent entry into drains, sewers and water courses. Soak up with diatomaceous earth or other inert material. Store in appropriate container for disposal.

HANDLING

Eye protection required. Protective gloves recommended. Chemically resistant boots and apron recommended. Use in well ventilated area.

COMBUSTIBILITY

Slightly combustible when heated above flash point. Will release flammable vapor which can burn in open or be explosive in confined spaces if exposed to source of ignition.

STORAGE

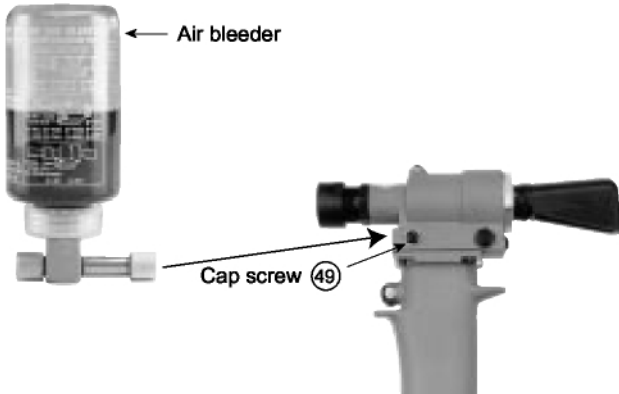
Avoid storage near open flame or other sources of ignition.

PROPERTIES

<i>Specific gravity</i>	0.863
<i>Weight per gallon</i>	7.18 lbs.
<i>Open flash point</i>	>200°C (392°F)

FILL AND BLEED INSTRUCTIONS (see Parts List)

To replace a small amount of oil in the tool, remove cap screw (49) from side of head cylinder (51), attach the Cherry® air bleeder (700A77), connect the tool to the air line and cycle several times. This will ensure the removal of any air from the hydraulic system and its replacement with fluid. Should it become necessary to completely refill the tool (such as would be required after the tool has been dismantled and reassembled), take the following steps:



1. Stand tool upright and connect to air line. Hold trigger down and when air piston (31) bottoms, disconnect tool from air line.
2. Head piston (54) should move to the rear position during Step 1. If it does not, push the piston back manually.
3. Remove the screw (49) and the Stat-O-Seal (50) from the **side** of the head cylinder (51). Connect the pressure oil can filled with automatic transmission fluid Type "A". See chart.
4. Remove the screw (49) and the Stat-O-Seal (50) from the **rear** of the head cylinder (51). Force the fluid into the tool until it flows out the rear hole. Position the tool in such a way that the rear hole is the high point. Keep pumping the oil until all air bubbles are out. Place the screw (49) with the Stat-O-

Seal (50) into the **rear** hole and tighten.

5. Remove the screw (49) and the Stat-O-Seal (50) from the **top** of the head cylinder (51). Force the fluid into the tool until it flows out from the top hole. Position the tool in such a way that the top hole is the highest point. Keep pumping oil until all the air bubbles are out.
 6. Disconnect the pressure oil can from the **side** hole of the head cylinder (51). Replace screw (49) and Stat-O-Seal (50) and tighten.
- NOTE:** For the purpose of bleeding, it is not necessary to remove the pressure relief valve (74) from the head. *Do not* remove any of the hex socket set screws from the head or the handle.
7. Holding a cloth over the tool head, attach tool to air line. Excess oil and air will be discharged into cloth. Place the screw (49) with the Stat-O-Seal (50) into the **top** hole and tighten.

TROUBLESHOOTING

1. Check the airline for correct pressure at the tool. It must be 90 to 110 PSI (6,2 to 7,6 bar).
2. Check the tool for lack of oil (see Fill and Bleed Instructions).
3. Check for oil leakage:
 - Oil leaking around the cap screw (49) in the head indicates that the screw is loose or the Stat-O-Seal (50) needs replacing, side, top and rear.
 - If oil should leak through the by-pass hole at the base of the handle (1) the O-rings (19) are worn or damaged.
 - Oil leaking from the front of the head (51) indicates that O-rings (52) are worn or damaged.
4. Check for excessive air leakage from the air valve:
 - If spring (4) is broken or dislodged, air will bleed directly through the bottom of the air valve and the head piston retreats to its full stroke without returning. See air valve instructions on Page 5.
 - If O-ring (9) on plug (10) is worn or damaged, replace.
 - If O-rings (2) on valve spool (6) are worn or damaged, replace.
5. Check movement of the head piston (54). If it does not move freely or is slow in operation:
 - O-rings (52), (56), (57), and (59) may be damaged and require replacement.
 - Piston (54) may be mechanically locked due to damaged parts.
 - If O-Ring (17) on power piston (15) is worn or damaged, replace.
 - Muffler (11) or air filter (7) inside valve spool (6) may be plugged with dirt. Clean them thoroughly with normal solvent and back-blow with compressed air.
 - Hole in metering screw (8) in valve spool (6) may be blocked or damaged. Hole diameter should be 0.028" (0,711 mm). Clear and size or replace valve spool (6).
6. Stem sticks in the pulling head:
 - Pulling head components need maintenance. Disassemble the pulling head, clean and replace worn parts. Reassemble following pulling head instructions.
 - Spent rivet stems are wedged side by side in the pulling head from failure to eject stem from tool prior to inserting next fastener. Disassemble the pulling head, remove stems and reassemble following pulling head instructions.

OVERHAUL (see Parts List)

The disassembly and re-assembly procedures can be accomplished by following the instructions and drawings on pages 8 and 10. **Use extreme care during disassembly and reassembly not to mar, nick or burr any smooth surface that comes in contact with O-rings.** Before installing O-rings, be sure to apply an O-ring lubricant such as Lubriplate® 630A, or equivalent.

It is recommended that special assembly tools, which can be ordered under part number **G701/G704KT**, be used to overhaul this tool.

Virtually all of the moving parts in the tool ride on O-rings, protected by back-up rings where high pressure dictates. This means no metal-to-metal wear. By use of close tolerances and low micro-inch surfaces against which the O-rings seal, a long tool life can be expected before any overhaul becomes necessary. At that time, complete overhaul can be achieved by the use of **Service Kit G83KS** which contains a complete set of O-rings, back-up rings, screws, washers and gaskets.

Not shown, but included: 701A67 Seal Guide, 702B62 Power Cylinder Tool, 703A53 Seal Guide, 702A64 Seal Guide.

AIR VALVE

To disassemble:

- Disconnect riveter from the air source.
- Remove retaining ring (12) and muffler (11). Insert a valve plug extractor (P1178) or 5/16-18 threaded rod or bolt into end of valve plug (10) and pull it out. Using the same procedures, pull out spool assembly (72).
- NOTE: It should never be necessary to remove valve sleeve (3) unless the ports become plugged from contaminated air.
 - If it is suspected that the ports are plugged, use needle nose pliers to grasp end of spring (4), turn clockwise and pull to dislodge from groove in handle. With spring removed, valve sleeve (3) can be pulled out using an 837B700 valve sleeve removal tool.

To re-assemble:

- Reverse the above procedure making sure that all O-rings are properly lubricated. To avoid damaging the O-rings (2), carefully install sleeve (3) with your fingers. Gently push and wiggle sleeve to allow O-rings to slip past inner ports. Spring (4) is best installed using tool 836B700 to push the large diameter coil into the groove. Caution: the riveter cannot operate if the spring is not anchored firmly.

HEAD SUB-ASSEMBLY

- Always remove the complete pulling head from the tool before attempting disassembly of the head assembly.
- Remove end cap (60). Push against threaded end of head piston (54) and slide it out of head cylinder (51). Be careful not to damage threads or cause burrs on polished piston rod surface.
- O-ring (52), back-up rings (53) then O-ring (57), back-up ring (58) can be removed using a bent hook.
- If the head piston does not return fully forward after the tool has been fully overhauled although it is properly bled, it may be necessary to remove and service the pressure relief valve sub-assembly (74).
 - Remove the pressure relief valve sub-assembly (74) from the head cylinder (51). Remove the O-ring (48) from the head cylinder (51). If damaged, replace. Carefully unscrew the ball seat (45) from the spring seat (42) using soft jaws. The threads of this part have had Loctite® 242 applied. When all components have been removed, clean and dry thoroughly. If the spring (43) appears to have a "set", replace it. This pressure relief valve should hold 1200 psi (82.7 bar) before opening.
 - To re-assembly reverse the above procedure. Apply a small amount of Loctite® 242 on the smaller thread size of the spring seat (42). Allow 30 to 60 minutes for the Loctite® to cure. Before installing the valve sub-assembly back into the head cylinder, make sure the O-ring, (48) is seated concentrically inside of the valve cavity.
- Always lubricate all O-rings with Lubriplate® 630A. The re-assembly sequence is the opposite of disassembly. This includes filling the handle (1) with oil before replacing gasket (70) and O-ring (69), just prior to replacing the head sub-assembly onto the handle.
- Tighten the four socket head cap screws (71) uniformly to prevent leakage around the gasket. When assembled, purge system of air by following the "Fill and Bleed instructions" on page 4.



HANDLE SUB-ASSEMBLY

- To inspect air cylinder bore, remove parts (34) through (38). Any further disassembly will require removal of the head assembly.
- For complete disassembly, start by removing parts (34) through (38). Holding the tool upright, remove four socket head cap screws (71). Lift head assembly from handle (1) and set aside O-ring (69) and gasket (70). Empty all oil into a container by pouring from handle. Dispose of oil according to environmental regulations.
- Place piston rod wrench (700A61) into the top of the handle, into the hex socket in the head of the piston rod cap (16). While holding this wrench, remove locknut (33) using the 7/16" socket in the packing plug wrench (700B65). Still holding piston rod wrench, remove air piston (31) using packing plug wrench (700B65), by turning counterclockwise. When air piston is completely freed from piston rod, tap or push on the piston rod wrench to eject piston from bottom of handle.
- After removal of air piston, slide piston rod (13) back up to the end of its travel. Using packing plug wrench (700B65), remove packing plug (27). It may be necessary to hold handle upside down in a vise while loosening packing plug. With packing plug removed, power cylinder (20) can be tapped out by lowering power cylinder tool (700A62) down into top of handle onto top of cylinder. The O-rings and back-up rings (24) and (25) are best removed and replaced by using a thin bent hook.

To re-assemble the handle, reverse the above procedure, being certain that all the O-rings are properly lubricated before installation.

- Attach the seal guide (700A60) to the piston rod (13) and with a mallet, tap the piston rod through the packing plug (27).
- Place air piston (31) into handle bore. *Important:* Be sure that the radial pattern embossed side of the air piston is facing downwards toward the smaller washer (30) with the smooth side of the air piston facing you.
- Place the larger washer (32) over the threaded shaft, with the counterbored side toward the air piston.
- To finish the air piston assembly, thread the locknut (33) onto the piston rod.

Most important, to prevent damage to piston threads, the above assembly instructions *must* be followed and the locknut tightened between 50 in.-lb. (5.65 N-m) and 59 in.-lb. (6.67 N-m) of torque.

PULLING HEADS

Pulling heads are not furnished and must be ordered separately. Make certain the nose assembly is kept clean, especially around the riveting end, as adhesives, chips, sealants, etc., will clog up the serrations of the jaws and may cause slippage of the stem. Please refer to the pulling head charts below for the proper selection. All Huck nose assemblies suitable for the 352 and 230 style tools will fit directly on this tool.

Note:

A 5/16" Hex is formed on the riveter head piston to allow tightening of the collets. Insert an Allen wrench into stem deflector to hold head piston while tightening collet.

	BASIC PULLING HEAD NO.	SWIVEL NOSE PULLING HEAD NO.	SWIVEL NOSE SELF-RELEASING PULLING HEAD NO.	SWIVEL NOSE, SELF-RELEASING CHISEL SHAPE NOSE PULLING HEAD NO.	LOCKBOLT DIA.
STRAIGHT PULLING HEADS	H513-04-20 H513-04-35 H513-04-60				-04
	H513-05-35 H513-05-60	H513S-05-20	H513SR-05-20	H513SRC-05-20 H513SRC-05-35	-05
	H513-06-20 H513-06-60	H513S-06-20 H513S-06-35	H513SR-06-20 H513SR-06-35	H513SRC-06-20 H513SRC-06-35	-06
	H513-08-35*	H513S-08-35			-08
OFFSET PULLING HEADS	H563-5B H563-6B H563 SP-5B H563 SP-6B				-05 -06 -05 -06

NOTES:

1. No letter after P/N indicates basic head.
2. "S" after basic P/N indicates swivel nose.
3. "SR" after basic P/N indicates swivel nose, self-releasing.
4. "SRC" after basic P/N indicates swivel nose, self-releasing, chisel shape nose.
5. Straight Lockbolt pulling head Part Numbers indicate pulling head length when attached to the G83.
Example: Part No. H513-04-20 indicates the pulling head extends 2.0" beyond gun line.
6. *Installs Aluminum Lockbolt Only.

G83 PULLING HEAD SELECTION CHART

MAXIBOLT PULLING HEADS

PULLING HEAD	PART NO.	MAXIBOLT DIAMETER	ADAPTER
STRAIGHT	H83B-5MB/5MBU	-5	N/A
	H83B-6MB/6MBU	-6	
	H84B-568	-5 & -6 MB Plus	
RIGHT ANGLE	H828-5MB	-5	744-200
	H828-6MB	-6	744-200

CHERRYMAX® ADAPTER AND PULLING HEADS

PULLING HEAD	PART NO.	CHERRYMAX® DIAMETER	ADAPTER
STRAIGHT	H701B-456	-4, -5, -6	744-300
OFFSET	H781-456	-4, -5, -6	744-300
	H782	-4, -5, -6	744-300
RIGHT ANGLE	H753A-456	-4, -5, -6	744-300

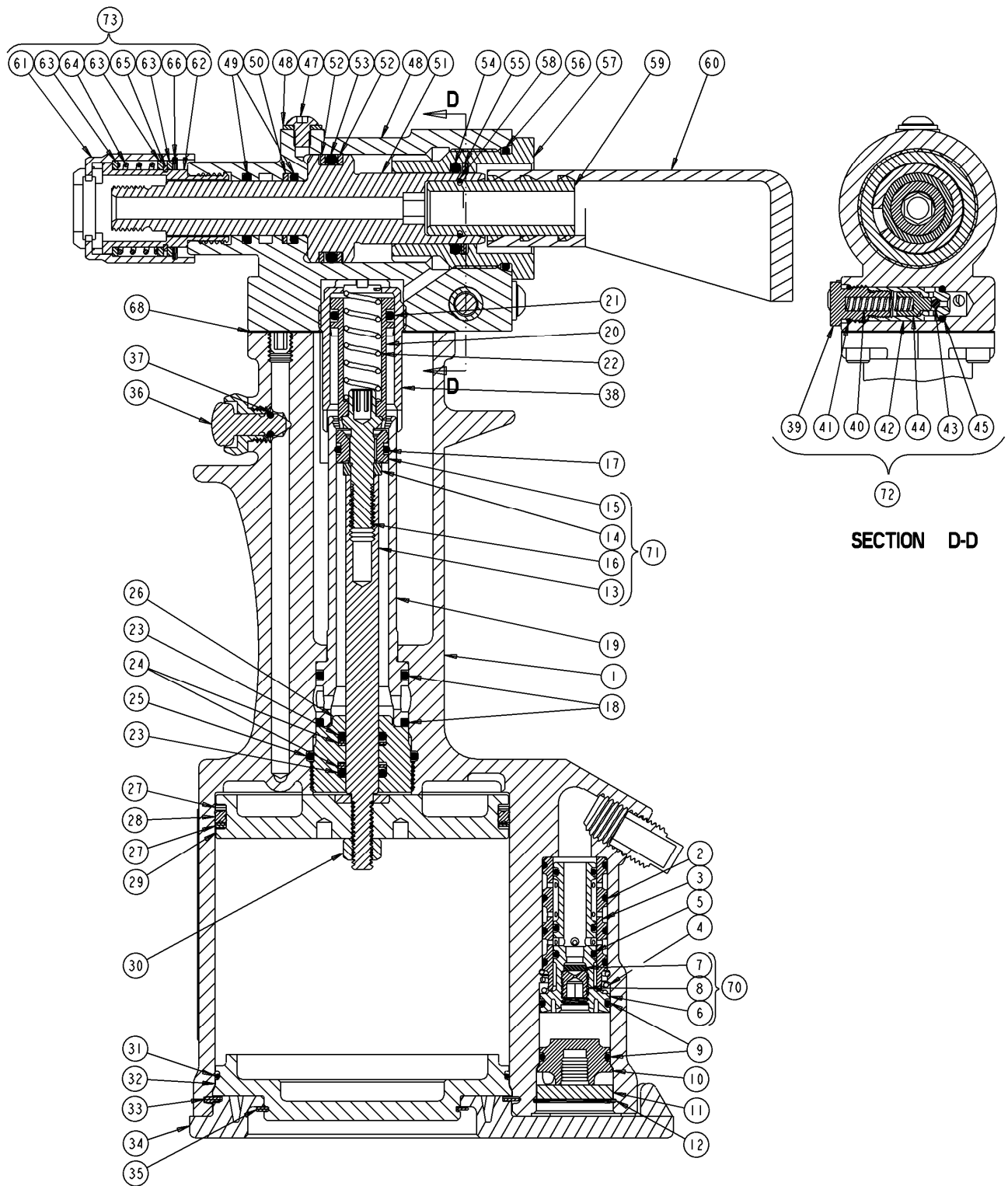
H513SRC-06-35 STRAIGHT PULLING HEAD



The H513 series pulling heads are available to accommodate the 1/8" diameter through 1/4" diameter lockbolts in varying lengths. The pictured head assembly is swivel-nose, self-releasing, chisel nose with a length of 3.5 inches from the riveter line.

FOR MOUNTING AND OPERATING INSTRUCTIONS SEE PULLING HEAD TOOL SHEETS.

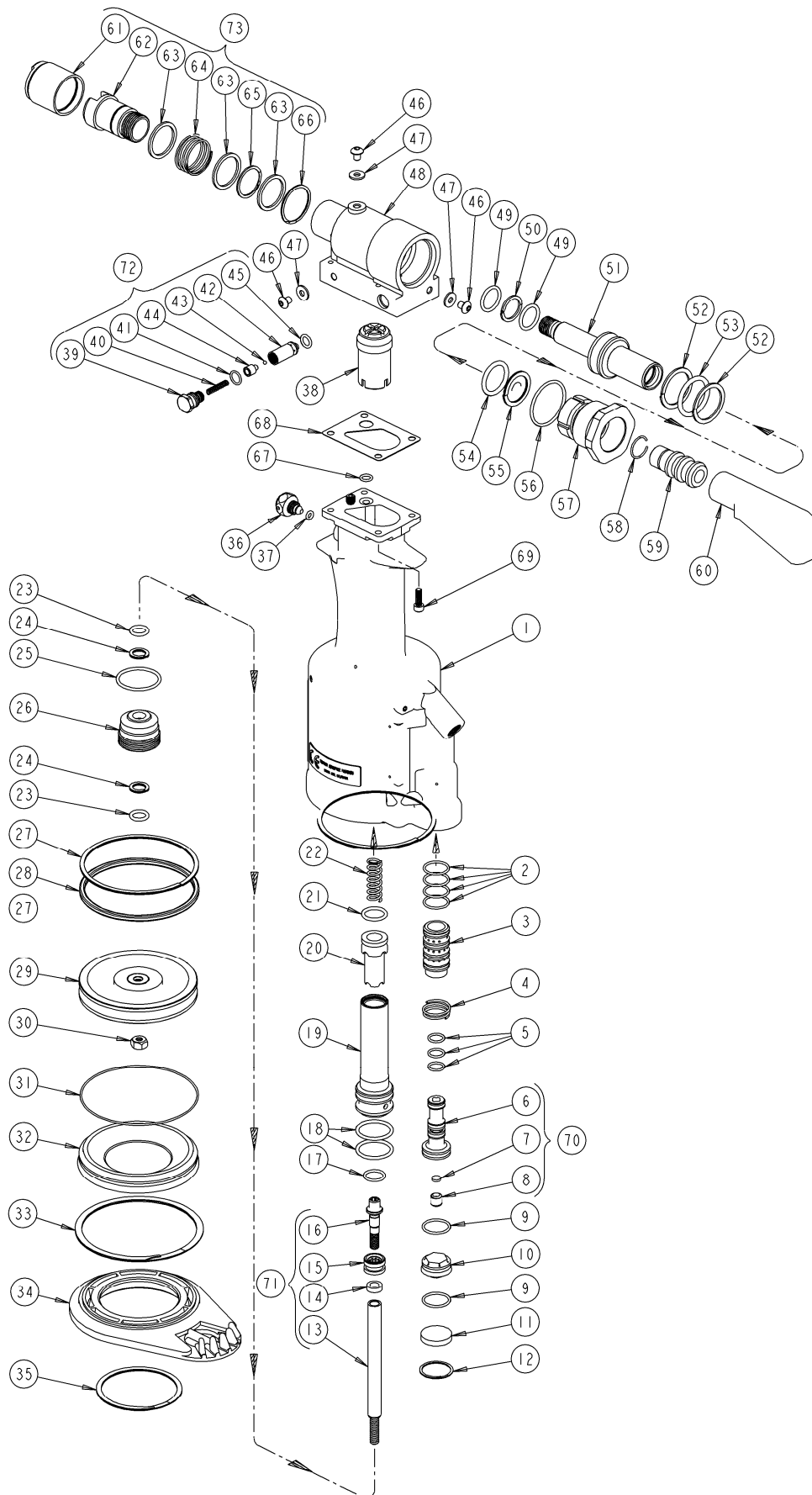
CROSS SECTION OF G83



PART LIST FOR THE G83 (700-200) LOCKBOLT POWER TOOL ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
700-216 SUB-ASSEMBLY, HANDLE			
1	700-229	HANDLE, MACHINED	1
2	P-653	O-RING (.691, .551, .070)	4
3	700B73	SLEEVE, VALVE	1
4	700A67	SPRING	1
5	P-829*	O-RING, DISOGRIN (.504, .364, .070)	3
70	700A15	SUB-ASSEMBLY, VALVE SPOOL	
6	700D15-2	SPOOL, VALVE	1
7	700A18	FILTER, AIR VALVE	1
8	700A69	SCREW, METERING	1
9	P-834*	O-RING, DISOGRIN (.816, .676, .070)	2
10	700A16	PLUG, VALVE	1
11	700A17	MUFFLER	1
12	P-279	RING, RETAINING (INT..906 DIA.)	1
71	700-219	POWER PISTON & ROD SUB-ASSEMBLY	
13	700A10**	ROD, POWER PISTON	1
14	702A12**	STOP, PISTON	1
15	700B118**	PISTON, POWER	1
16	700-202**	CAP, PISTON ROD	1
17	P-830	O-RING (.629, .489, .070)	1
18	P-833	O-RING (1.068, .862, .103)	2
19	700C122	CYLINDER, POWER	1
20	700-205	PISTON, RETURN	1
21	P-508	O-RING (.755, .549, .103)	1
22	P-1367	SPRING	1
23	P-838*	O-RING, DISOGRIN (.568, .362, .103)	2
24	P-115	RING, BACK-UP (.551, .375, .088)	2
25	P-727	O-RING (1.318, 1.112, .103)	1
26	700B93	PLUG, PACKING	1
27	P-731	RING, BACK-UP (3.365, 3.125, .120)	2
28	P-730	RING, QUAD (3.387, 3.109, .139)	1
29	700B6	PISTON, AIR	1
30	P-737	NUT, CONELOK, 1/4-20	1
31	P-725	O-RING (3.129, 2.989, .070)	1
32	700B4	BASE, HANDLE	1
33	P-735	RING, RETAINING (INT. 3.500 DIA.)	1
34	700B109	COVER, BASE	1
35	P-736	RING, RETAINING (EXT. 2.250 DIA.)	1
36	703A33	ASSEMBLY, TRIGGER (INCLUDES P-223)	1
37	P-223	O-RING (.285, .145, .070)	1
700-213 SUB-ASSEMBLY, HEAD CYLINDER			
38	700-204	CYLINDER, RETURN	1
72	700-214	SUB-ASSEMBLY, RELIEF VALVE	
39	700-218	SEAT, SPRING	1
40	P-1366	SPRING	1
41	P-383	O-RING (.441, .301, .070)	1
42	700-215	SEAT, BALL	1
43	P-688	BALL (3/32 DIA.)	1
44	700-217	PISTON, VALVE	1
45	P-111	O-RING (.379, .239, .070)	1
46	P-573	SCREW, BUTTON HD CAP, 10-32 X 1/4	3
47	P-572	STAT-O-SEAL (.430, .180, .125)	3
48	700-203	CYLINDER, HEAD	1
49	P-568	O-RING (.818, .612, .103)	2
50	P-242	RING, BACK-UP (.801, .625, .088)	1
51	700-210	PISTON, HEAD	1
52	P-932	RING, BACK-UP (1.242, 1.000, .121)	2
53	P-113	O-RING (1.262, .984, .139)	1
54	P-107	O-RING (1.074, .796, .139)	1
55	P-108	RING, BACK-UP (1.054, .812, .121)	1
56	P-1373	O-RING (1.403, 1.171, .116)	1
57	700-212	CAP, END	1
58	P-880	RING, RETAINING, NON-STANDARD	1
59	703A13	FITTING, DEFLECTOR	1
60	530A16	DEFLECTOR	1
73	700-211	SUB-ASSEMBLY, ADAPTER	
61	700-256	SLEEVE, LOCKING	1
62	700-255	EXTENSION, HEAD	1
63	700-257	SPACER, ADAPTER	3
64	P-1372	SPRING	1
65	P-957	RING, RETAINING (EXT Ø.875)	1
66	P-699	RING, RETAINING (INT Ø1.125)	1
67	P-832*	O-RING, DISOGRIN (.379, .239, .070)	1
68	700-230	GASKET	1
69	P-27	SCREW, SOCKET HEAD CAP, 8-32 X 1/2	4
<p>*No substitutions. ** Not sold separately *** Included in Air Piston Kit 700A115</p>			

EXPLODED VIEW OF G83



Declaration of Conformity

We, Cherry® Aerospace, 1224 E. Warner Ave., Santa Ana, CA 92705

declare under our sole responsibility that the product

type **G83**

Serial No.-

to which this declaration relates is in conformity with the following standards

EN292 part 1 and part 2
ISO 8662 Part 1
ISO 3744

following the provisions of the Machine Directive 89/392/EEC
(as amended by Directive 91/368/EEC) and 93/68/EEC

Santa Ana, CA -
date of issue

Original certification and signatures on file

WARRANTY

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