

ORIGINAL INSTRUCTIONS

G85D-S

Split Lockbolt Power Riveter



Instruction Manual 

Pass on to user to read and keep for reference

MANUAL



CHERRY®
AEROSPACE



THE G85D-S TOOL

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Seller warrants the goods conform to applicable specifications and drawings and will be manufactured and inspected according to generally accepted practices of companies manufacturing industrial or aerospace fasteners. In the event of any breach of the foregoing warranty, Buyer’s sole remedy shall be to return defective goods (after receiving authorization from Seller) for replacement or refund of the purchase price, at the Seller’s option. Seller agrees to any freight costs in connection with the return of any defective goods, but any costs relating to removal of the defective or nonconforming goods or installation of replacement goods shall be Buyer’s responsibility. SELLER’S WARRANTY DOES NOT APPLY WHEN ANY PHYSICAL OR CHEMICAL CHANGE IN THE FORM OF THE PRODUCT IS MADE BY BUYER.

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DESCRIPTION

The Cherry® G85D-S 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 “split” unit helps accessing tight areas and reduces operator fatigue. Its durable, all metal housing makes this tool very robust for use in a shop environment.

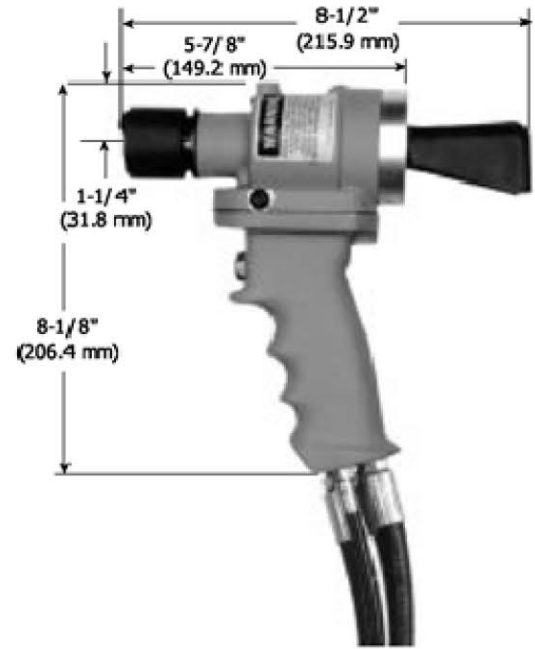
This tool installs all 3/16", 1/4" and 5/16" diameter Lockbolts® (any material type) and 3/8" diameter aluminum lockbolts.

It can also install selected blind bolts and blind rivets.

SPECIFICATIONS

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 us.

AIR PRESSURE	90 PSI (6.2 bar) Min. / 110 PSI (7,6 bar) Max.
STROKE	0.720 in. (18,3 mm)
PULLING FORCE	7,000 lbs. (31,1 kN) @ 90 PSI (6,2 bar),
WEIGHT	Head Only: 4.3 lbs. (1,95 kg) Total: 19.3 lbs. (8,75 kg),
NOISE LEVEL	76.7 dB (A)
VIBRATION	less than 2.5 m/s ²
AIR CONSUMPTION	0.27 SCF/cycle (7.65 L/cycle)



SAFETY WARNINGS

- Do not use beyond the design intent; do not use substitute components for repair.
- Use the tool with a pressure regulator; if one is not available, use the Cherry P-1505.
- Operating this tool with a damaged or missing stem deflector, or using the deflector as a handle, may result in severe personal injury. Rotate the pin deflector facing away from the operator
- Wear proper PPE when operating, repairing, or overhauling this tool ()
- Any modification will void warranty and shall be at the customer's entire responsibility.
- Maintain the tool 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 instructions. All repairs shall be undertaken only by personnel trained in Cherry installation tools.
- Disconnect the air line from the tool inlet before servicing, adjusting, fitting or removing any accessory.
- Ensure that the vent holes do not become blocked or clogged and the hoses are in good condition.
- Wash thoroughly after handling the fluid; excessive contact could cause rashes.
- Operating air pressure not to exceed 110 psi (7.6 bar); use of a pre-set regulator (P1505) is recommended
- Do not operate the tool without the pulling head in place.
- 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 or directed at any person.
- Do not pound on the rear of the tool head to force rivets into holes as this will damage the tool.
- Safety warnings must be explained all operators as part of training.

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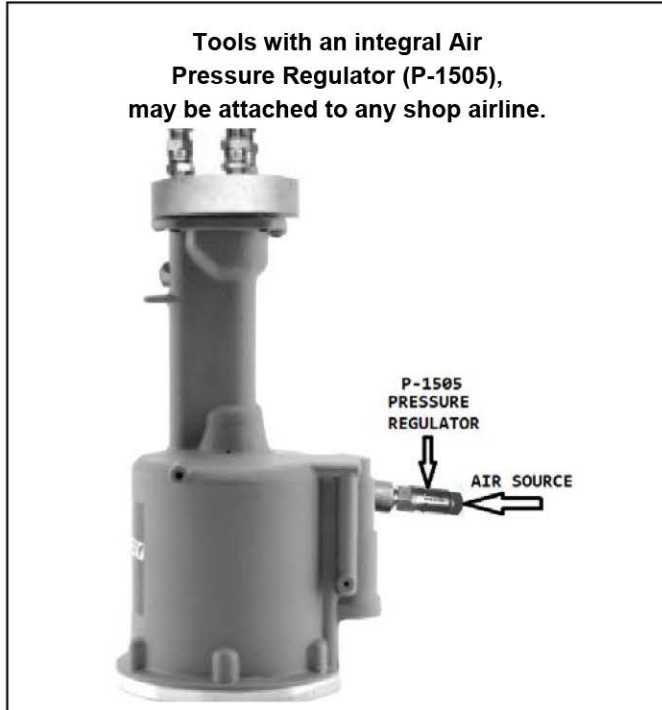
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PUTTING THE TOOL IN SERVICE

The tool must be used with an air pressure regulator. Even if your shop air pressure is below the maximum recommended range, pressure spikes in your airlines could cause serious damage to the tool or cause safety concerns.

Cherry provides a compact in-line air pressure regulator, but any shop air pressure regulator can be used on the dedicated line (see below schematics)



HOW TO USE THE G85D-S

LOCKBOLT



- After selecting the proper pulling head and attaching it to the riveter, connect the air-line to the tool.
- Place the Lockbolt® pin into the work-piece and place the collar over the pintail; it may be necessary to hold the Lockbolt® from backing out when placing the pulling head over the serrations.
- If you are using a non-self-releasing pulling head, make sure 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 riveter when using H513 straight pulling heads, and through the rear of the H562 offset pulling heads.
- 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

- Insert the blind bolt into the proper pulling head until the head of the rivet is in contact with the pulling head nosepiece.
- Insert the blind bolt 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.

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PULLING HEADS (NOSE ASSEMBLIES)

Nose assemblies 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 serration of the jaws and may cause the stem to slip. Please refer to the pulling head charts below for the proper selection. All Huck pulling heads suitable for the 353 style tool will fit directly on this tool.

G85D-S PULLING HEAD SELECTION CHART

Lockbolt Diameter	Length from Tool Face, (in inches, except Column 3)	1. Straight Nose			2. Chisel Nose	3. Offset
		Short Pintail	Swivel	Swivel Self-Releasing	Swivel Self-Releasing	
1/8"	2	H513-04-20*	-	-	-	H563-4B*
	3-1/2	H513-04-35*	-	-	-	H563SP-4B*
	6	-	-	-	-	-
5/32"	2	-	H513S-05-20*	H513SR-05-20*	H513SRC-05-20*	H563-5B*
	3-1/2	H513-05-35*	H513S-05-35	H513SR-05-35	H513SRC-05-35*	H563SP-5B*
	6	H513-05-60*	-	-	-	-
3/16"	2	H513-06-20*	H513S-06-20*	H513SR-06-20*	H513SRC-06-20*	H563-6B*
	2-3/8	-	H513S-06-24	H513SR-06-24	-	H562-6B
	3-1/2	-	H513S-06-35*	H513SR-06-35*	H513SRC-06-35*	H563SP-6B*
	4-13/16	-	H513S-06-48	H513SR-06-48	-	-
	6	H513-06-60*	-	-	-	-
1/4"	2-3/8	-	H513S-08-24	H513SR-08-24	-	H562-8B
	3-1/2	H513-08-35*	H513S-08-35*	-	-	-
	4-13/16	-	H513S-08-48	H513SR-08-48	H513SRC-08-48	-
5/16"	2-11/16	-	H513S-10-27	H513SR-10-27	-	-
	4-3/16	-	H513S-10-42	H513SR-10-42	-	-
3/8"	2-11/16	-	H513S-12-27	H513SR-12-27	-	-
	4-3/16	-	H513S-12-42	H513SR-12-42	-	-

* These Parts require the 552 adapter when used on cherry G85D-S, G87D or Huck 353. Parts with an asterisk fit directly on the Cherry G83 or Huck 352 tools.

NOTES: S = Swivel; R = Self Releasing; C = Chisel Nose; SP = Short Pintail

MAXIBOLT PULLING HEADS AND ADAPTERS

	PART NO.	MAXIBOLT DIA.	ADAPTER
STRAIGHT PULLING HEAD	H652-8MB	-8	-
	H83B-5MB	-5	552
	H83B-6MB	-6	552
	H84A-8MB	-8	552
	H744-5MB	-5	560-070
	H744-6MB	-6	560-070
OFFSET	H856-6MB	-6	560-070
RIGHT ANGLE	H828-5MB	-5	560-070
	H828-6MB	-6	560-070

CHERRYMAX® PULLING HEADS AND ADAPTERS

	PART NO.	CHERRYMAX® DIA.	ADAPTER
STRAIGHT]	H84A-8	-8	552
	H827-8	-8	560-070
RIGHTANGLE	H828-8	-8	560-070

Note: When using the 560-070 adapter, G85D-S will accept all 744B35 extensions.

MAINTENANCE AND REPAIR

This riveter has been manufactured to give maximum service with minimum care. For optimum function:

1. The hydraulic system to be full of oil and free from air at all times.
2. Use clean and dry air to prevent premature wear and clogging of the air components.
3. Inspect the riveter for fluid leaks routinely

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

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 effects 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 the spent fluid in appropriate containers for disposal.

HANDLING

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

COMBUSTIBILITY

It is slightly combustible when heated above flash point. It will release flammable vapors 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

BLEEDING THE SYSTEM

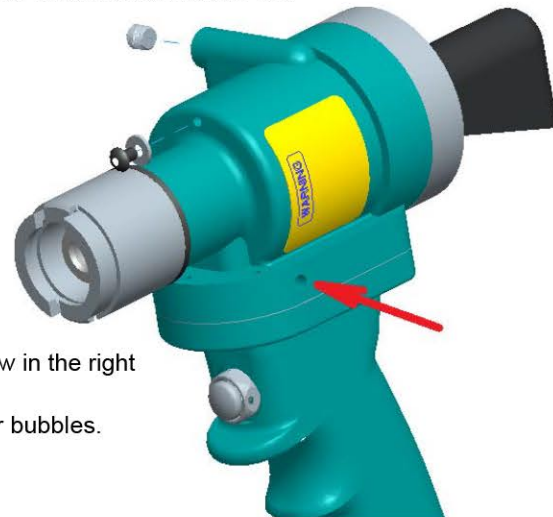
- To replace a small amount of fluid in the tool, remove cap screw (31) and replace with the Cherry Air Bleeder 700A77 & Adapter 700A86 as shown in the picture on the left.
- Connect the air line and cycle several times until no air bubbles surface in the bottle anymore while cycling the tool.



REFILLING THE SYSTEM

To completely refill the tool (a source of pressurized fluid is needed):

- Place the Power Unit in a container big enough to contain any fluid spills.
- Remove screws # 13 & 21. Replace screw 31 with a pressurized fluid source (red arrow in the right picture). Hold the handle and Head Cylinder at highest position.
- Run fluid through the system until it comes out of the Head Cylinder smooth, free of air bubbles.
- Tighten screw #13 & 21 back in and bleed per procedure given above.



TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE REASONS / SOLUTIONS
Piston does not move after depressing Trigger	- No air supply is connected: Connect to a clean, filtered air source at 90 to 110 psi (6,2 to 7,6 bar).
	- Faulty trigger: Remove and replace trigger assembly.
	- Broken power piston: Service the Handle Subassembly.
Short stroke or low pull force	- Significant fluid loss: Bleed the system to purge the air out. If performance doesn't improve, or excessive leakage continues, see below.
Head Cylinder Fluid leakage	- Leaks around the seals or fittings indicate that they are not tightened to seal properly: Tighten until no more leaks are observed.
	- Leaks at the front or back of head cylinder indicate worn/ damaged seals: Service head cylinder per instructions provided herein
Air leakage at the spool valve	- Broken or dislodged valve spring (item 59)- Remove and replace spring
	- Worn or damaged valve spool seals: Disassemble and service the air valve
Head piston is slow or seizes	- Piston or seal damage: Service head cylinder.
	- Oil bypassing due to power piston displacement off its seat: Service Handle Subassembly per instructions provided below.
	- Clogged air muffler or filter Clean thoroughly with solvent and back-blow with compressed air.
Head Piston (64) does not return fully forward even after system bleeding	- Pressure relief valve (items 14 through 19) malfunction: Remove, inspect and clean components thoroughly. Replace seals and damaged components.
	- Return Cylinder Spring (46) is damaged or broken: Remove head assembly and replace the damaged spring.
	- Seal surface between Return Piston (48) and Piston Rod Cap (75) is damaged or dirty: Remove head assembly and inspect the parts; replace/clean as necessary.

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TOOL SERVICE / OVERHAUL

Tool overhaul is needed in case of tool malfunction, massive fluid loss or as part of your routine maintenance program.

TOOLS NEEDED: **G85KT** – tool kit, **Needle Nose Pliers**,
G85D/G87D-KS – service kit:



SERVICE PROCEDURE

Caution:

- Maintenance and repair to be conducted only by trained personnel.
- Make sure the air is disconnected prior to attempting any repair or maintenance work.

Disassembly / Assembly General Instructions:

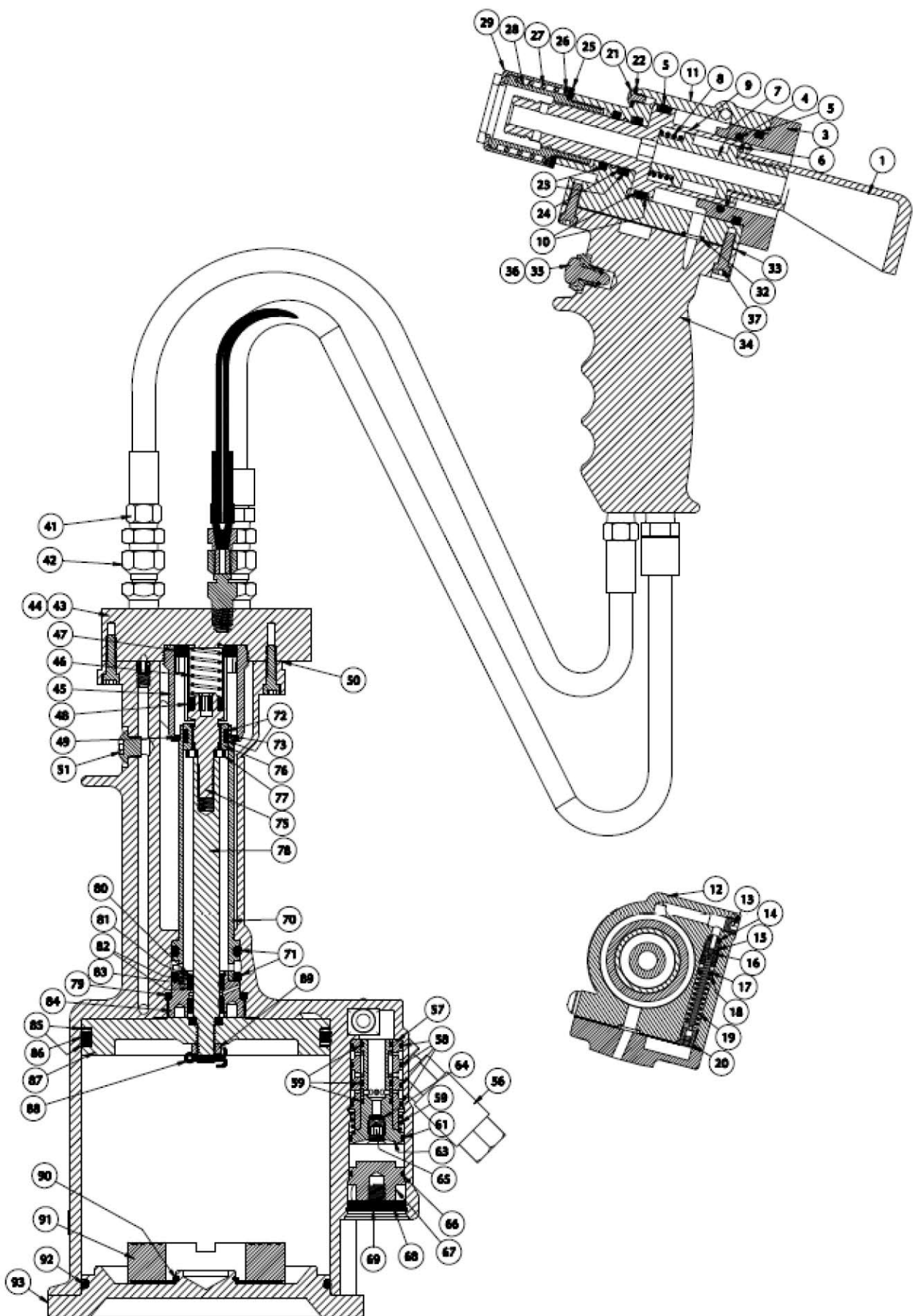
- Follow the schematics and the BOM provided below; only use proper tooling (see tooling Kit G85KT) to disassemble/assemble the tool.
- Empty oil into a container by draining from head, hoses and power unit. Dispose of it according to environmental regulations.
- Use a bent hook to gently remove the O-Rings, Quad Rings and Back-up Rings.
- Use the protective caps 530A80 and 530A81 on the piston threads to prevent Seal damage.
- Replace all seals; before re-assembly, apply an O-ring lubricant (Parker® silicone lube or equivalent) on all O-rings
- Apply a small amount of Loctite® 242 on the threaded components; curing time about 30 to 60 minutes.
- Tighten the slotted nut (item 89) using a torque between 50 and 59 in.-lb. (5,65 and 6,67 N-m). Do not over-tighten as it may damage the piston.
- If replacing the Hoses (38, 39 & 40) make sure that they are assembled at the right location: the High Pressure Hoses (item 38) at ports 2 & 4, Air Hose at port 1, Low Pressure Hose at port 3.
- Before pressure testing, make sure that all the screws are tightened securely.
- After service, fill and bleed the tools per instructions on page 6.

AIR VALVE SUB-ASSEMBLY

Disassembly Instructions:

- After removing the retaining ring and muffler (68 & 69), pull the Valve Plug (67) and Spool Assembly (61) using tool P1178;
- It is not usually necessary to pull the Valve Sleeve (57) out. If it becomes necessary, use tool 837B740
- When re-assembling, use tool 836B740 to push the Valve Spring (59) into its groove.

CROSS SECTION DRAWING OF G85D-S



PART LIST FOR THE G85D-S (530D120A) SPLIT RIVETER ASSEMBLY

ITEM NO.	DESCRIPTION		QTY
530C136 HEAD CYLINDER ASSEMBLY			1
1	530A16	STEM DEFLECTOR	1
2	P-64	SCREW, SOC. HD. CAP 10-24 X 3/4	12
3	530B7	HEAD CAP	1
4	P-196	O-RING (1.574,1.296, .139)	1
5	P-221	QUAD RING (1.762, 1.484, .139)	2
6	P-206	RETAINING RING	1
7	530A17	DEFLECTOR FITTING	1
8	530A20-1	SPRING	1
9	530B4	HEAD PISTON	1
10	P-212	BACK-UP RING (1.742, 1.500, .121)	2
11	530C107A HEAD ASSEMBLY		1
	12	530C107 HEAD CYLINDER	1
	13	P-370 PIPE PLUG SCREW	1
	14	P-595 O-RING (.254, .114, .070)	1
	15	530A22-2 SEAT, BALL	1
	16	P-164 BALL, STEEL Ø 1/8	1
	17	530A47 GUIDE, SPRING	1
	18	P-425 WASHER	1
	19	530A20-3 SPRING	1
	20	530A48 PLUG, 5/16-24	1
	21	P-413 BUTTON HEAD SCREW	1
	22	P-693 STAT-O-SEAL	1
23	P-217	QUAD RING (1.137, .859, .139)	2
24	P-210	BACK-UP RING (1.117, .875, .121)	1
25	530A40**	THRUST WASHER	1
26	P-236**	RETAINING RING (INT. Ø 1.456)	1
27	530A42**	LOCKING SPRING	1
28	530A5**	HEAD EXTENSION	1
29	530A6**	LOCKING SLEEVE	1
30	530A21-1	WASHER	1
31	P-225	BUTTON HD. CAP SCREW (1/4-20 X	1
32	P-194	O-RING (.441, .301, .070)	3
33	530B108	HEAD GASKET (HANDLE)	1
34	530D106	HAND GRIP	1
35	703A33	TRIGGER ASSEMBLY (INCLUDES	1
36	P-223	O-RING (.285, .145, .070)	1
37	P-73	SOC. HEAD CAP SCREW (10-24 X 5/8)	6
38	530A123-8	HIGH PRESSURE HOSE	2
39	530A119-8	AIR HOSE	1
40	530A122-8	LOW PRESSURE HOSE	1
41	P-579	STEEL BUSHING	4
42	P-456	HOSE ADAPTER FITTING	4
43	P-505	PIPE PLUG (1/8-27 NPTF)	1
44	530B109	MANIFOLD BLOCK,	1
45	530B9B	RETURN CYLINDER	1
46	560A20	SPRING	1
47	P-266	O-RING (1.191, 1.051, .070)	1
48	530B10B	RETURN PISTON	1
49	P-267	RETAINING RING (INT. Ø 1.188)	1
50	530B8	HEAD GASKET (MANIFOLD)	1

ITEM NO.	DESCRIPTION		QTY.
530D149 POWER UNIT ASSEMBLY			1
51	530A113	BUTTON HD. CAP SCREW	1
52	530A146	POWER UNIT HANDLE	1
53	530A34	SWIVEL	1
54	P-195	O-RING (.630, .424, .103)	2
55	530A35	SWIVEL BOLT	1
56	P-1505	PRE-SET PRESSURE REGULATOR	1
57	530B179	VALVE SLEEVE	1
58	P-848	O-RING (.941, .801, .070)	4
59	P-701	O-RING (.629, .489, .070)	3
60	P-244	O-RING, (1.066, 926, .070)	1
61	530B143 VALVE SPOOL ASSEMBLY		1
	62	530B143-1* VALVE SPOOL	1
	63	700A18* FILTER	1
	64	700A69* METERING SCREW	1
65	530A178	SPRING	1
66	P-723	O-RING, 90 SHORE A	1
67	530A144	VALVE PLUG	1
68	530A145	MUFFLER	1
69	P-699	RETAINING RING (.INT. Ø, .1.125)	1
70	530B13B	POWER CYLINDER	1
71	P-218	QUAD RING (1.324, 1.046, .139)	2
72	P-209	BACK-UP RING (.864, .688, .088)	2
73	P-216	QUAD RING (.880, .674, .103)	1
74	530A60 POWER PISTON & ROD ASSEMBLY		
	75	530A62 PISTON ROD CAP	1
	76	530A11 POWER PISTON	1
	77	560A63 PISTON STOP	1
	78	560A61 POWER PISTON ROD	1
79	P-196	O-RING (1.574 1.296, .139)	1
80	P-204	RETAINING RING (INT. Ø.687)	2
81	530A21-3	WASHER	2
82	P-213	RING, BACK-UP (.676, .500, .088)	4
83	P-215	RING, QUAD (.693, .487, .103)	2
84	530B14	PACKING PLUG	1
85	P-214	BACK-UP RING (4.745, 4.375, .185)	2
86	P-222	QUAD RING, (4.770, 4.350, .210)	1
87	530B15	PISTON, AIR	1
88	P-301	COTTER PIN Ø3/32 X 3/4	1
89	P-302	SLOTTED NUT	1
90	P-537	RETAINING RING (EXT. Ø 1.125)	1
91	530B92	BONDED CUSHION	1
92	P-197	O-RING (4.462, 4.484, .139)	1
93	530C141	POWER UNIT BASE	1
94	P-700	FLAT HEAD CAP SCREW (5/16-18 X 1)	6

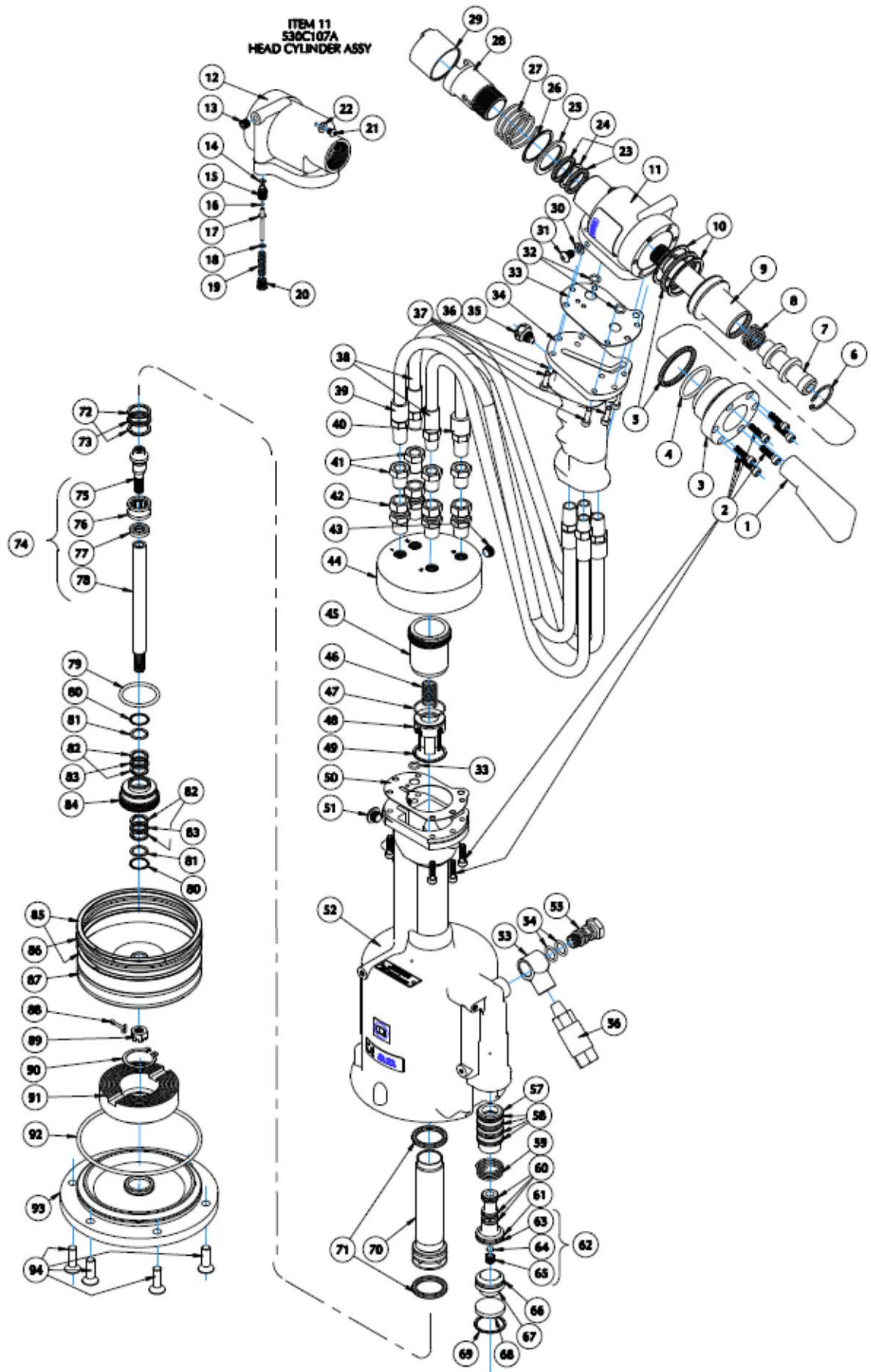
*These parts cannot be purchased separately, but must be ordered as a sub-assembly.
 ** May be ordered as Assembly No 530A5A; Shim P/N 530A50 may be needed to ensure the desired alignment when tightening.

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EXPLODED VIEW OF G85D-S





CHERRY® AEROSPACE
SPS Fastener Division, a PCC Company
CE

Declaration of Conformity

We, **Cherry Aerospace**

Located at **1224 East Warner Avenue, Santa Ana, CA 92705-0157, USA,**

In accordance with the provisions of

Machine Directive 2006/42/EC

Hereby declare under our sole responsibility that:

Equipment: Pneumatic Hydraulic Hand Riveter

Model Number: G85D-S

Serial Number: _____

Is in conformity with the applicable requirements of the following standards:

EN ISO 12100:2010	Safety of Machinery; General Principles for design; Risk Assessment and Reduction
ISO/TR 14121-1&2:2007	Safety of Machinery, Risk assessment
EN 792-1:2000 + A1:2008	Safety requirements; Assembly power tools for non-threaded mechanical fasteners
ISO 8662-11	Hand-held portable power tools -- Measurement of vibrations at the handle
ISO 3744	Acoustics – Determination of sound power levels of noise sources
ISO 4413:2010.	Hydraulic fluid power - General Rules of safety
ISO 4414:2010.	Pneumatic fluid power - General Rules of safety

Signed by  _____

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Sr. Technical Services / Installation Tooling Engineer

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