

G704B-40SH

CherryMAX® Split Power Tool

MANUAL



CHERRY®
AEROSPACE

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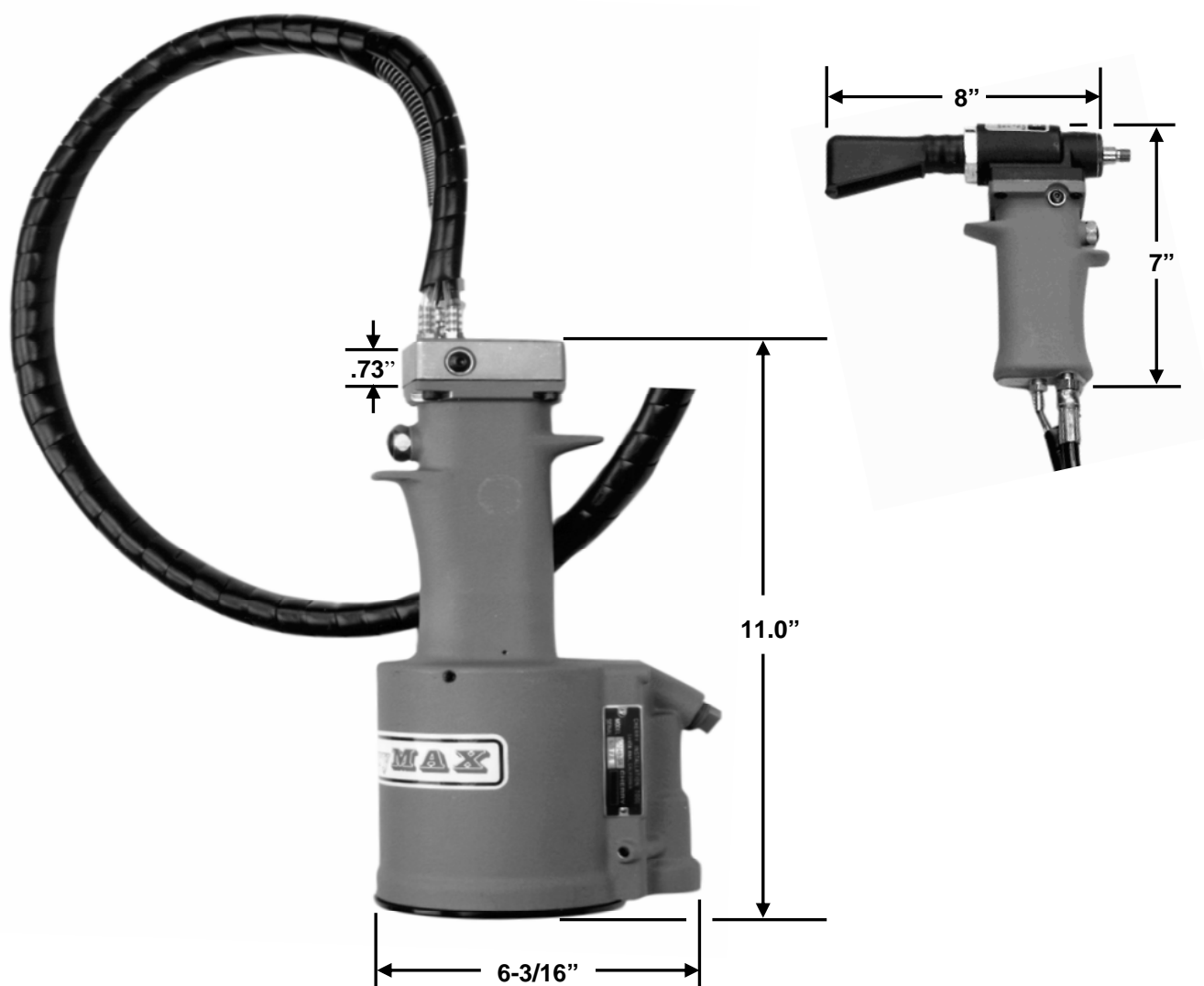
THE G704B-40SH TOOL

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DESCRIPTION

The CherryMax® G704B-40SH is a split riveter which was designed specifically for the installation of CherryMax® rivets in applications with extremely limited access. The tool transmits power from the power unit through a flexible 8 foot hose to a small, lightweight head. By utilizing the proper pulling head, design problems and operator fatigue can be greatly reduced.



SPECIFICATIONS FOR G704B-40SH

Cherry® Aerospace' 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® Aerospace.

AIR PRESSURE	90 PSI (6.2 bar) Min./ 110 PSI (7.6 bar) Max.
STROKE	.518 Inch (13.16 mm)
PULLING FORCE	3,136 Pounds (13.95 kN) @ 90 PSI (6.2 bar)
CYCLE TIME	Approximately One Second
WEIGHT	4 1/4 Pounds (1.93 kg) (power unit only)
NOISE LEVEL	Does not exceed 85dB(A)
AIR CONSUMPTION	4 CFM (110.5 liters/M) at 20 Cycles per Minute

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® Aerospace, or their representatives, shall be the customer's entire responsibility.
Cherry® Aerospace 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 instructions. All repairs shall be undertaken only by personnel trained in Cherry® Aerospace installation tools.
Contact Cherry® Aerospace 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 fluid 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 the pulling head in place.
- Do not operate the tool unless the handle base (17) is fully secured by the retaining ring (18). (See page 10)
- 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 questions regarding the correct operation of the tool and operator safety should be directed to Cherry® Aerospace.**
- 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 G704B-40SH

After selecting the proper pulling head and attaching it securely to the 704B35 Head Assembly, connect the air line to the tool. Insert the rivet stem into the pulling head until the head of the rivet is in contact with the pulling head sleeve. This will ensure full engagement between the jaws and the rivet stem and will prevent slippage.

Once the rivet stem is inserted in the H701B-456 pulling head, the rivet must be installed. The “stem stop” in the pulling head 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 H701B-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 G704B-40SH 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 fluid 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.

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 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 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

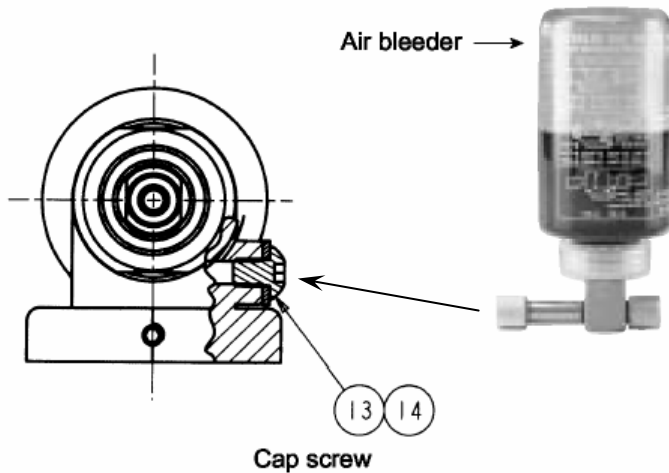
PROPERTIES

<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

To replace a small amount of fluid in the tool, remove cap screw (13), 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. Remove handle manifold assembly (16) from handle assembly (12) by unscrewing cap screws (17). **(See page 9)**
2. Fill handle assembly (12) with the recommended oil to within 1/8" (3.175mm) of the top of the handle casting. **(See page 9)**
3. Place handle manifold assembly (16) on handle (12), being sure gasket (2), and O-ring (3), are properly in place. Tighten cap screws (17) uniformly to prevent leakage around gasket. **(See page 9)**
4. Attach the Cherry air bleeder (700A77). Connect the tool to the air line and cycle a number of times. This will ensure the removal of any air from its hydraulic system and its replacement with fluid.

DO NOT depress trigger while disconnecting the air bleeder and replacing the cap screw (13).

TROUBLESHOOTING

1. Check the airline for correct pressure at the tool. It must be 90 to 120 psi (6.2 to 8.2 bar).
2. Check the tool for lack of fluid (see Fill and Bleed instructions).
3. Check for oil leakage:
 - Fluid leaking around the cap screw (13) in the head indicates that the screw is loose or the Stat-O-Seal (14) needs replacing. **(See page 11)**
 - If fluid should leak through the by-pass hole at the base of the handle (1) the O-rings (6) are worn or damaged. **(See page 10)**
 - Fluid leaking from the front of the head (2) indicates that O-rings (3) are worn or damaged. **(See page 11)**
4. Check for excessive air leakage from the air valve:
 - If spring (24) 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 7. **(See page 10)**
 - If O-ring (25) on plug (26) is worn or damaged, replace. **(See page 10)**
 - If O-rings (22) on spool valve (26) are worn or damaged, replace. **(See page 10)**
5. Rivet stem sticks in the pulling head:
 - Pulling head components need maintenance. Disassemble the pulling head, clean and replace worn parts. Reassemble as per the instructions given in pulling head tool sheets.
 - Spent rivet stems are wedged side by side in the head piston (1). Disassemble the pulling head, remove stems and reassemble by the instructions given in pulling head tool sheets. **(See page 11)**
- Check movement of the head piston (1). **(See page 11)**
If it does not move freely or is slow in operation:
 - O-rings (3), (5) and (7) may be damaged and require replacement. **(See page 11)**
 - Head piston (1) may be mechanically locked due to damaged parts. **(See page 11)**
 - The O-ring (34) on power piston (4) may be damaged; replace. **(See page 10)**
 - Muffler (28) inside valve spool (26) may be plugged with dirt. Clean them both thoroughly with normal solvent and back-blow with compressed air. **(See page 10)**

OVERHAUL

The disassembly and reassembly procedures can be accomplished by following the instructions below and the drawings on pages 9, 10 & 11.

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. It is recommended that special assembly tools, which can be ordered under part number **G701/G704KT**, be used to overhaul this tool Service kit, **G704KS**, which contains a complete set of O-rings, back-up rings, screws, washers and gaskets should be ordered.

Not shown, but included: 701A67 Seal Guide, 702B62 Power Cylinder Tool, 703A53 Seal Guide, 702A64 Seal Guide, and 744-103 Seal Guide.

THE G701/G704KT TOOL KIT



836B700
Valve Spring Installation Tool



837B700
Valve Sleeve Removal Tool



700A62
Power Cylinder Tool



700A61
Piston Rod Wrench



700B65
Packing Plug Wrench



P1178
Valve Plug Extractor



700A60
Seal Guide



700A77
Air Bleeder

AIR VALVE

***See Handle Cross Section on page 10 for details.**

- Disconnect tool from air supply and remove retaining ring (29) and muffler (28). Insert a valve plug extractor (P1178) into end of valve plug (27) and pull it out. Using the same procedures, pull out valve spool sub-assembly (26).
- Use needle nose pliers to grasp the end of the spring (24), turn clockwise and pull out to dislodge from groove in handle.
- With spring removed, valve sleeve (23) can be pulled out using the valve sleeve removal tool (837B700).

To reassemble, reverse the above procedures, being certain that all O-rings are properly lubricated. To avoid damaging the O-rings (21), carefully install sleeve (23) with your finger. Gently push and wiggle sleeve to allow O-rings to slip past inner ports. Spring (24) is best installed using a valve spring installation tool (836B700) to push the **large** diameter coil into the groove. This requires care as the tool will not operate if the spring is not anchored firmly.

HEAD SUB-ASSEMBLY

***See Full Assembly and Head Sub-Assembly on page 9 & 11 for details.**

- Disconnect tool from air supply and remove the complete pulling head from the tool before attempting to disassemble the head assembly.
- Remove the four socket head cap screws (5). Lift head assembly from the handle (6). Remove O-ring (3) and gasket (2). Empty the oil into a container by pouring from the handle. Dispose of the oil according to environmental regulations. (**See page 9**)
- Remove end cap (9). Push against threaded end of head piston (1) and slide it out of head cylinder (2). Be careful not to damage threads or cause burrs on polished head piston rod surface. (**See page 11**)
- O-rings (3) and back-up rings (4) can now be removed using a bent hook. O-ring (8) can be removed in the same manner. (**See page 11**)

Upon re-assembly, be sure to install O-rings and back-up rings carefully to avoid cutting them. Always lubricate all O-rings. Just prior to placing the head sub-assembly on to the handle, see Fill and Bleed Instructions. Also make sure to place O-ring (3) and the gasket (2) on the top of the handle, and that they are properly oriented. (**See page 9**)

HANDLE SUB-ASSEMBLY

***See Handle Cross Section on page 10 for details.**

- Disconnect tool from air supply and remove parts (15) through (18).
- Place piston rod wrench (700A61) down into the top of the handle (1), into the hex socket in the head of the power piston rod (4). While holding this wrench, remove the locknut (13) using the 7/16" socket.
- Still holding the piston rod wrench, remove the air piston (12) using the packing plug wrench (700B65) by turning counterclockwise. When air piston is completely freed from the piston rod, tap or push on the piston rod wrench to eject the piston from bottom of handle.
- Slide power piston rod (4) back up to the end of its travel. Using the packing plug wrench (700B65), remove packing plug (8). It may be necessary to hold the handle upside down in a vise while removing the packing plug. The O-rings (19) and backup rings (20) are best removed and replaced by using a thin bent hook.
- Power cylinder (5) can be tapped out by lowering power cylinder tool (700A62) down into the top of the handle on to top of cylinder.
- To reassemble 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 (4) and with a mallet, tap the piston rod through the packing plug (8). When reassembling a replacement air piston, items (10) through (13), follow the instructions given below:
- Clamp piston rod wrench (700A61) in a vise with the hex shaft pointed up.
- Turn the handle upside down and place the hex end of the power piston rod (4) onto the wrench. Push handle casting down until it stops.
- Assemble seal (11) and back-up rings (10) to air piston (12).
- Place the air piston (12) into handle bore. Thread the locknut (13) onto the power piston rod (4) and tighten between 50 in.-lb (5.65 N-m) and 59 in.-lb (6.67 N-m).

G704B-40SH PULLING HEADS

Pulling Heads are not furnished with riveter and must be ordered separately.

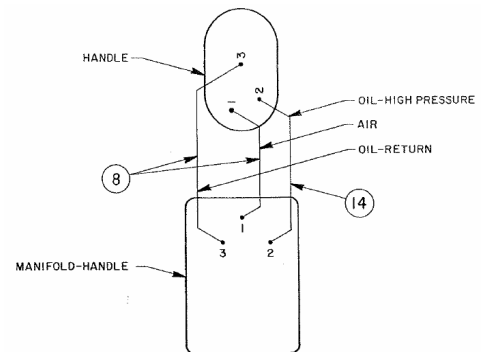
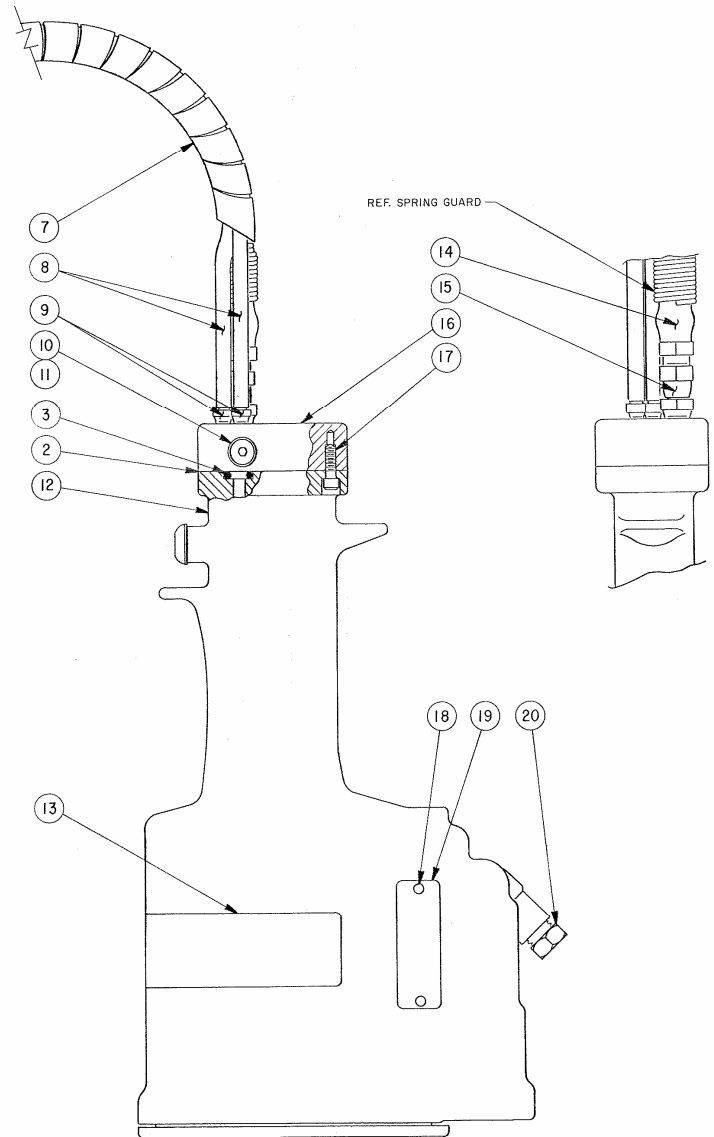
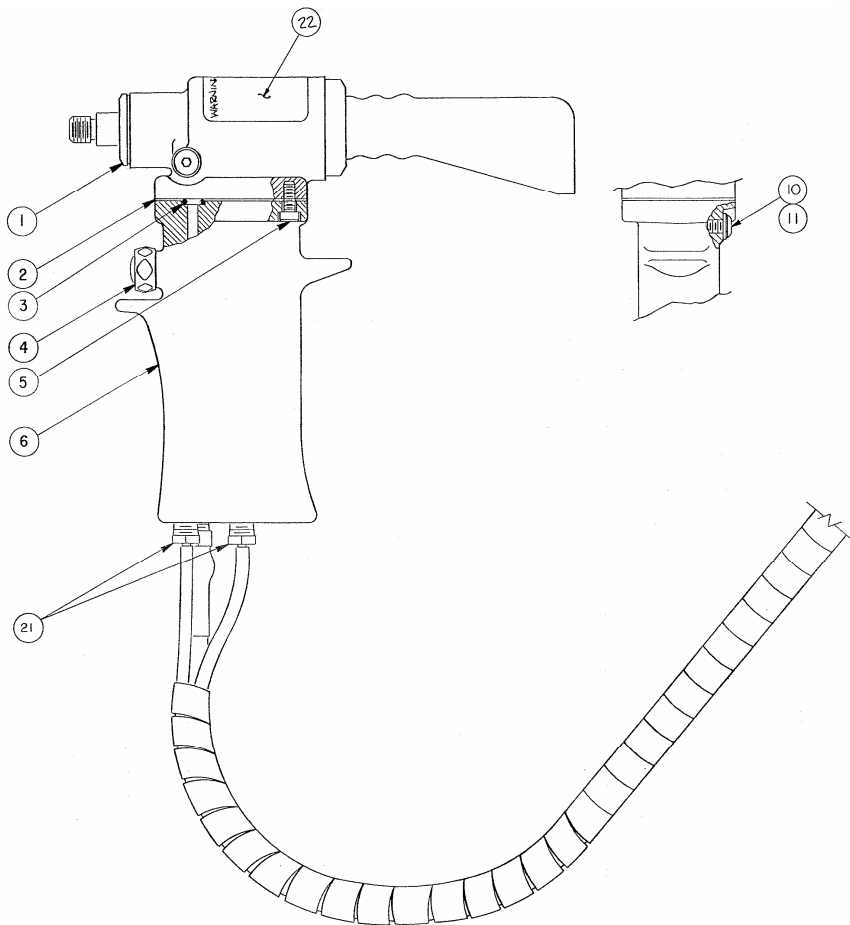
Pulling Head	Type	Adapter	Rivet	Rivet Diameters	Maximum Grip ¹
H701B-456	Straight	-	CherryMAX Bulb	1/8, 5/32, 3/16 ^{2,3}	All
			CherryMAX "AB"	1/8, 5/32, 3/16 ³	-4 ¹
			MBC L/C	1/8, 5/32, 3/16	-4 ¹
H753A-456	Right Angle	-	CherryMAX Bulb	1/8, 5/32, 3/16 ^{2,3}	All
			CherryMAX "AB"	1/8, 5/32, 3/16 ³	-4 ¹
H781-456	Offset	-	CherryMAX Bulb	1/8, 5/32, 3/16 ^{2,3}	All
			CherryMAX "AB"	1/8, 5/32, 3/16 ³	-4 ¹
H9015-Series	Straight	704A9	MS ⁴	3/32, 1/8, 5/32, 3/16	All
H955-Series	Straight	-	CherryLock "A"	3/32, 1/8, 5/32, 3/16 ³	-4 ¹
H782	Straight	-	CherryMAX Bulb	1/8, 5/32, 3/16 ^{2,3}	All
			CherryMAX "AB"	1/8, 5/32, 3/16 ³	-4 ¹
			MBC L/C	1/8, 5/32, 3/16	-4 ¹

1. On the first stroke. 2. Nominal and oversize. 3. No 3/16 aluminum, alloy steel and monel only. 4. Serrated stems only.
5. See H782 tool sheet for complete list of fastener compatibility.

FOR MOUNTING AND OPERATING INSTRUCTIONS SEE PULLING HEAD TOOL SHEETS.

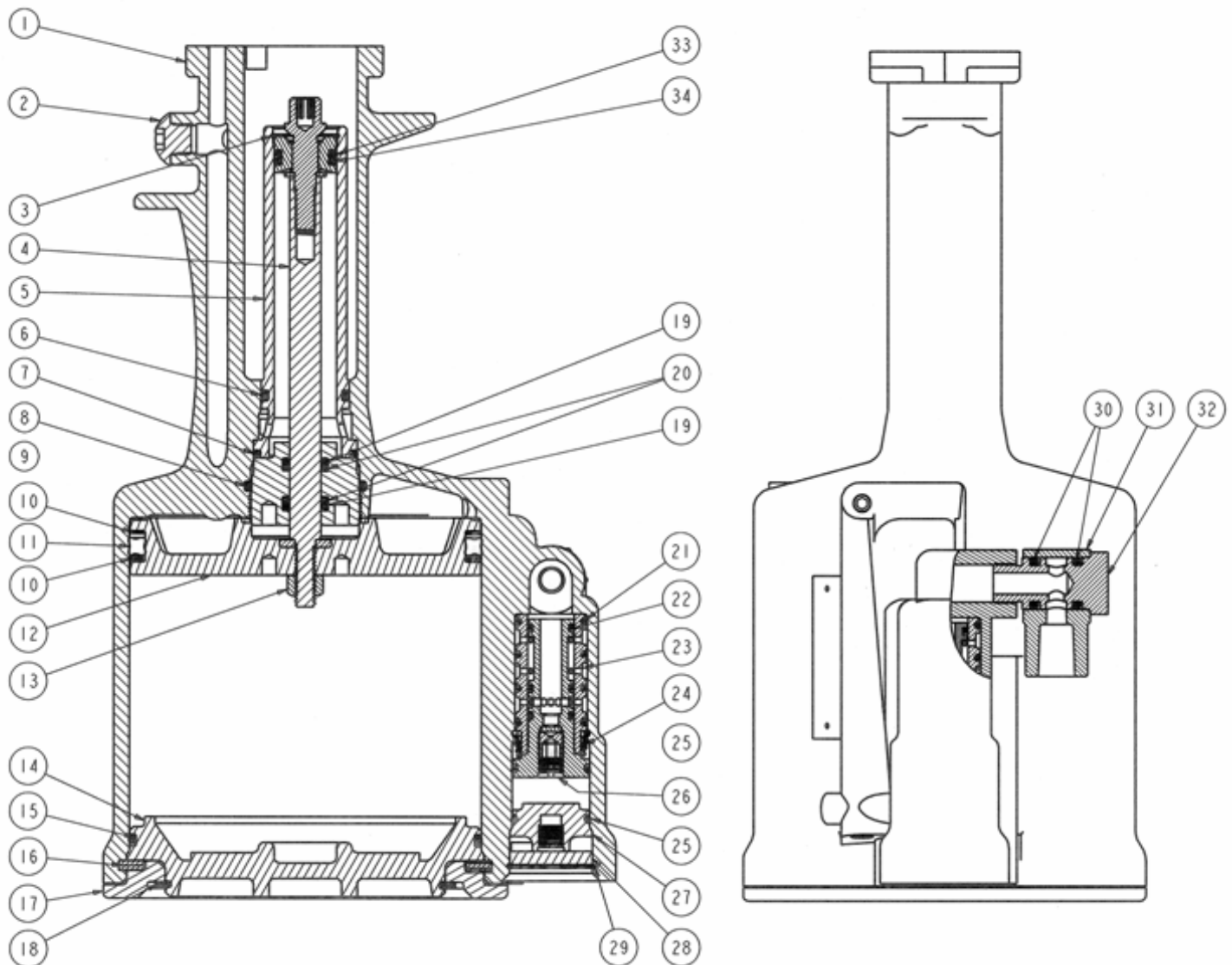
FULL ASSEMBLY OF G704B-40SH

22	1	WARNING LABEL	435A60
21	2	HOSE FITTING	P-1198
20	1	CA-PLUG	P-273
19	1	NAME PLATE	435A2
18	2	DRIVE SCREW	P-134
17	4	HEX SOC. CAP SCREW	P-91
16	1	HANDLE MANIFOLD	744C46
15	1	SWIVEL ADAPTER	P-533
14	1	HOSE ASSEMBLY	P-1182
13	1	CHERRYMAX LABEL	435B32-1
12	1	HANDLE ASSEMBLY	740C29
11	2	BUTTON HD. SOC. SCREW	P-573
10	2	STAT-O-SEAL	P-572
9	2	HOSE FITTING	P-1181
8	2	TUBING-FLEXIBLE	704A48-8
7	1	CABLE WRAP	704A47-8
6	1	HANDLE	704C28
5	4	HEX SOC. CAP SCREW	P-27
4	1	TRIGGER ASSEMBLY	703A33
3	2	O-RING	P-832
2	2	HEAD GASKET	700A22
1	1	HEAD ASSEMBLY	704B35
ITEM NO.	REQ.	DESCRIPTION	DWG. NO.



HOSE ATTACHMENT DIAGRAM

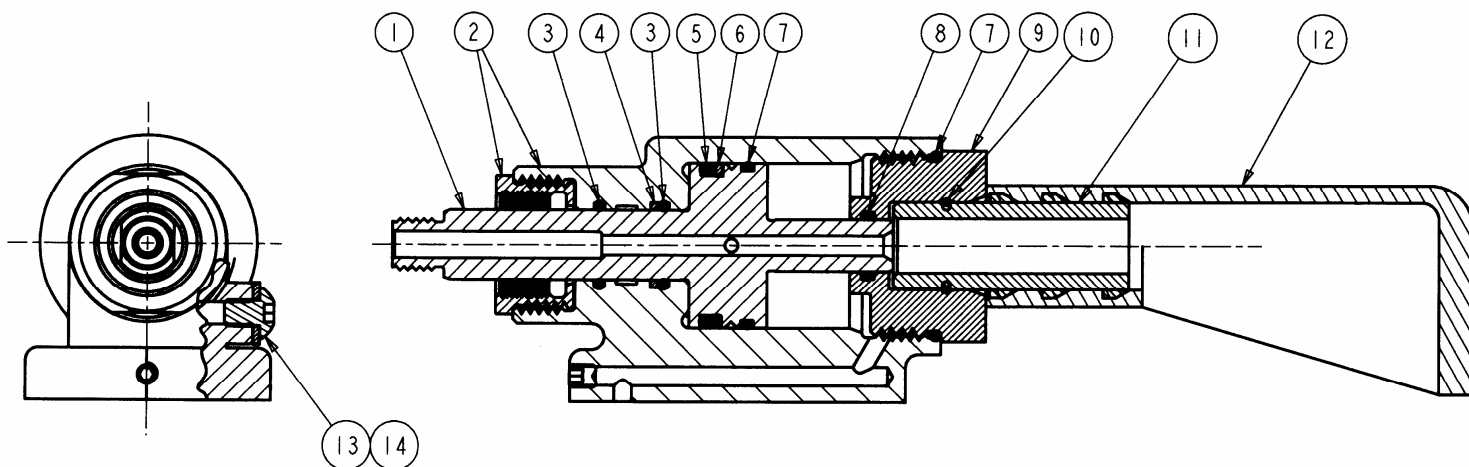
740C29 BASE HANDLE ASSEMBLY



17	1	740B5	COVER, BASE
16	1	P-886	RING, RETAINING (INT. Ø4.250)
15	1	P-890	O-RING(4.193,3.897,.103)
14	1	740C4	BASE, HANDLE
13	1	P-737	NUT, CONELOK(1/4-20, GRADE C)
12	1	740B6	PISTON, AIR
11	1	P-887	RING, QUAD(4.270,3.850,.210)
10	2	P-909	RING, BACK-UP(4.245,3.875,.034)
9	1	740B13	PLUG, PACKING
8	1	P-889	O-RING(1.505,1.299,.103)
7	1	P-892	O-RING(1.255,1.049,.103)
6	1	P-833	O-RING(1.068,.862,.103)
5	1	740C7	CYLINDER, POWER
4	1	740A8	SUB-ASSY., POWER PISTON & ROD
3	1	P-885	RING, RETAINING (INT. Ø.781)
2	1	530A113	SCREW, BUTTON HD, CAP 10-24x5/8
1	1	743A11	HANDLE
ITEM NO.	REQ.	PART NO.	DESCRIPTION

34	1	P-508	O-RING(.755,.549,.103)
33	1	P-908	RING, BACK-UP(.738,.562,.088)
32	1	530A35	BOLT, SWIVEL
31	1	530A34	SWIVEL
30	2	P-195	O-RING (.630,.424,.103)
29	1	P-321	RING, RETAINING (INT. Ø1.000)
28	1	740A17	MUFFLER
27	1	740B16	PLUG, VALVE
26	1	740A15	SPOOL, VALVE
25	2	P-848	O-RING(.941,.801,.070)
24	1	740A18	SPRING
23	1	740B14	SLEEVE, VALVE
22	3	P-891	O-RING(.566,.426,.070)
21	4	P-268	O-RING(.816,.676,.070)
20	2	P-115	RING, BACK-UP (.551,.375,.088)
19	2	P-838	O-RING(.568,.362,.103)
18	1	P-884	RING, RETAINING (EXT. Ø3.375)

704B35 HEAD SUB-ASSEMBLY



14	1	P-572	STAT-O-SEAL (.430, .180, .125)
13	1	P-573	SCREW, BUT. SOC. HD, 10-32 X 1/4
12	1	530A16	DEFLECTOR, PIN
11	1	703A13	FITTING, DEFLECTOR
10	1	P-880	RING, RETAINING (NONSTANDARD)
9	1	704B4	CAP, HEAD CYLINDER
8	1	P-112	O-RING (.504, .364, .070)
7	2	P-870	O-RING (1.191, 1.051, .070)
6	1	P-1000	BACK-UP RING (1.176, 1.000, .088)
5	1	P-931	O-RING (1.193, .987, .103)
4	1	P-998	BACK-UP RING (.609, .503, .053)
3	2	P-701	O-RING (.629, .489, .070)
2	1	704C19	CYLINDER, HEAD
1	1	704C3	PISTON, HEAD
ITEM NO.	REQ.	PART NO.	DESCRIPTION

WARRANTY

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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Seller shall not be liable under any circumstances for incidental, special or consequential damages arising in whole or in part from any breach by Seller, AND SUCH INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES ARE HEREBY EXPRESSLY EXCLUDED.

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