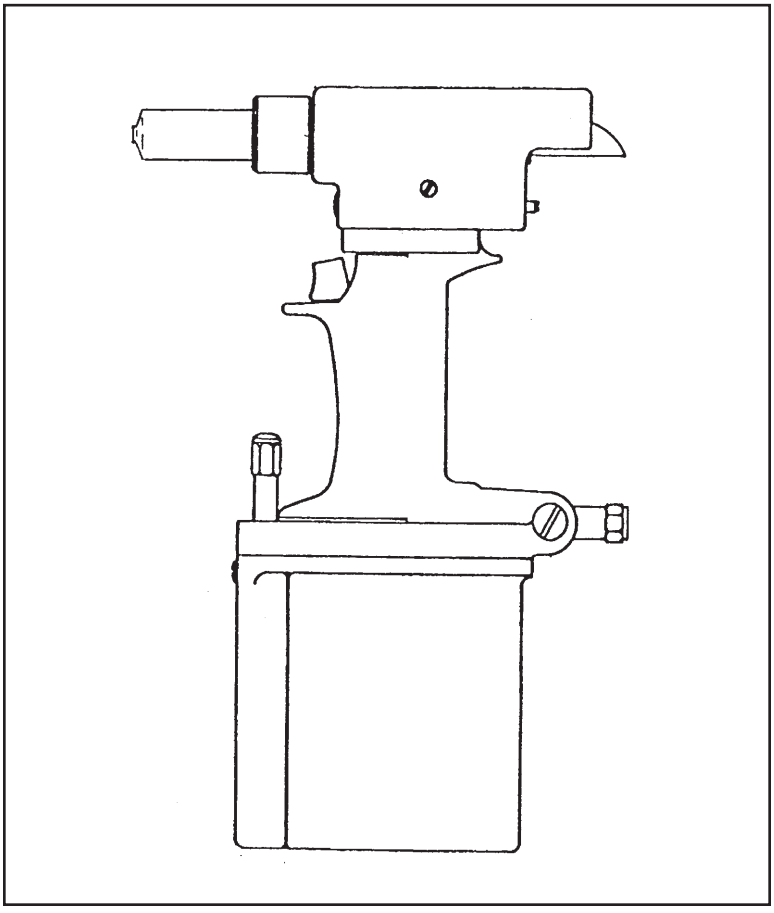
Alcoa Fastening Systems

ALCOA

INSTRUCTION MANUAL

MODEL 200

PNEUDRAULIC INSTALLATION TOOL



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

Form HK 154
03-05-2004

HUCK®

SAFETY

This instruction manual must be read with particular attention to the following safety guide lines, by any person servicing or operating this tool.

1. Safety Glossary

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

 — Read manual prior to using equipment.

 — Eye protection required while using this equipment.

 — Hearing protection required while using this equipment.

WARNINGS - Must be understood to avoid severe personal injury.

CAUTIONS - *show conditions that will damage equipment and or structure.*
Notes - are reminders of required procedures.
Bold, Italic type and underlining - emphasizes a specific instruction.

2. Huck equipment must be maintained in a safe working condition at all times and inspected on a regular basis for damage or wear. Any repair should be done by a qualified repairman trained on Huck procedures.

3. Repairman and Operator must read manual prior to using equipment and understand any Warning and Caution stickers/labels supplied with equipment before connecting equipment to any primary power supply. As applicable, each of the sections in this manual have specific safety and other information.

4. See MSDS Specifications before servicing the tool. MSDS Specifications are available from you Huck representative or on-line at www.huck.com. Click on Installation Systems Division.

5. When repairing or operating Huck installation equipment, always wear approved eye protection. Where applicable, refer to ANSI Z87.1 - 1989

6. Disconnect primary power source before doing maintenance on Huck equipment.

7. If any equipment shows signs of damage, wear, or leakage, do not connect it to the primary power supply.

8. Make sure proper power source is used at all times.

9. Never remove any safety guards or pintail deflector.

10. Never install a fastener in free air. Personal injury from fastener ejecting may occur.

11. When using an offset nose always clear spent pintail out of nose assembly before installing the next fastener.

12. If there is a pinch point between trigger and work piece use remote trigger. (Remote triggers are available for all tooling).

13. Do not abuse tool by dropping or using it as a hammer. Never use hydraulic or air lines as a handle. Reasonable care of installation tools by operators is an important factor in maintaining tool efficiency, eliminating downtime, and in preventing an accident which may cause severe personal injury.

14. Never place hands between nose assembly and work piece.

15. Tools with ejector rods should never be cycled with out nose assembly installed.

16. When two piece lock bolts are being used always make sure the collar orientation is correct. See fastener data sheet of correct positioning.

CONTENTS

CONTENTS (CONT.)

TABLES

NOTE

Throughout this manual, reference numbers for finding a component or (sub) assembly are linked to the figure number where they will be found. Example: (2-21) indicates Pull Piston and Quad Ring Assembly, part number 111078 found in Figure 2.

DESCRIPTION

The Huck Model 200 Installation Tool is designed to install a wide range of fasteners requiring a double action or single action installation tool. Power, speed and accuracy are obtained through a pneumatic-hydraulic intensifier system powered by 90-100 psi air.

The tool consists of three major subassemblies:

1. Head assembly which includes the pull piston and nose gland to hold a variety of nose assemblies required for the installation of specific fasteners.

2. Handle assembly which includes the triggering system and pneumatic and hydraulic pistons.

3. Cylinder assembly which includes an adjustable shift valve mechanism to control the installation of fasteners requiring a double action tool.

Adapters are supplied with the Model 200 Tool which allows either 350 series, 352 series or 200 series nose assemblies to be attached to the nose assembly gland. See Figure 5.

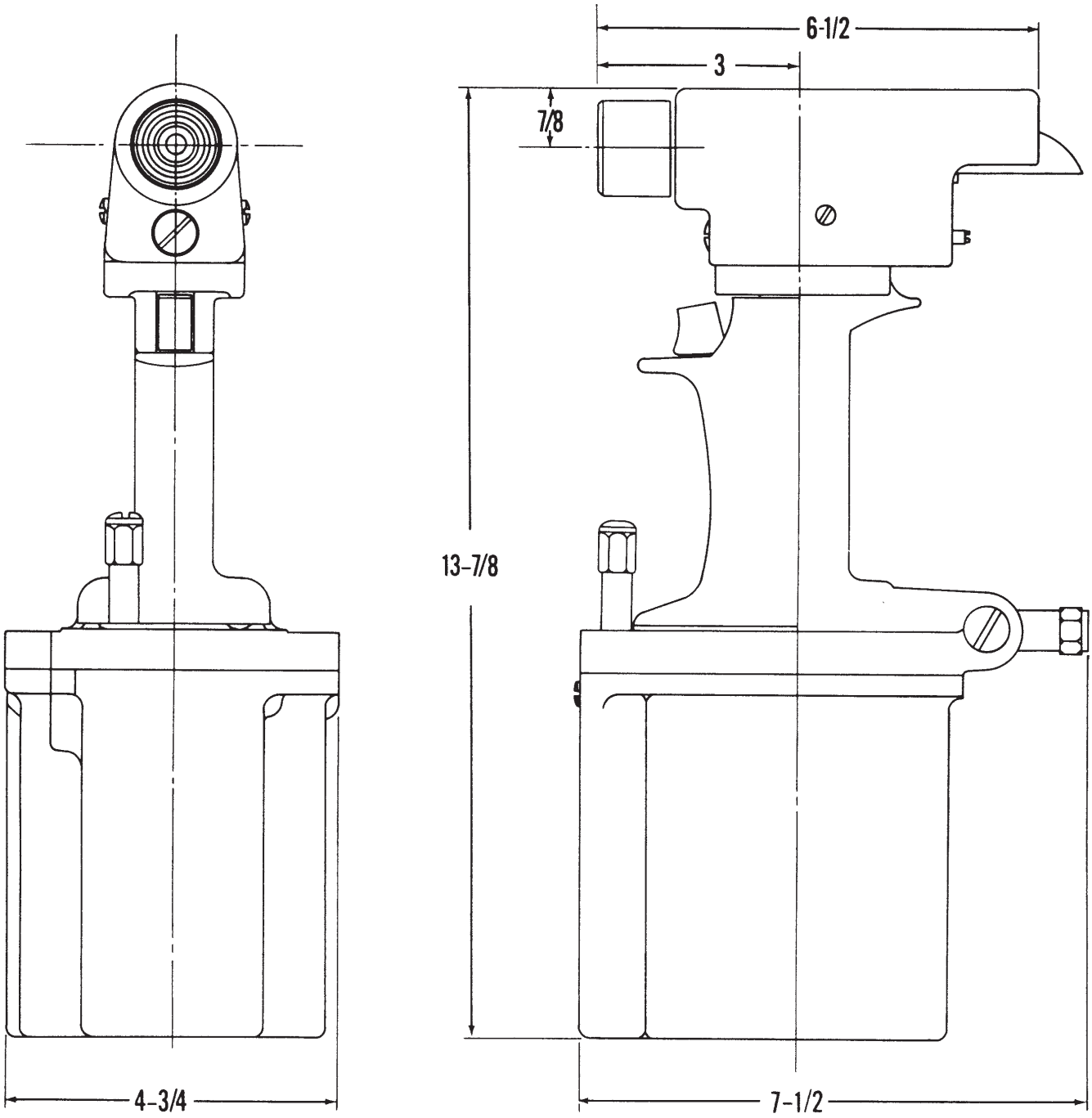
Nose assemblies must be ordered separately as required. See Selection Charts, Form 461, for nose assemblies for a specific fastener.

Table 14 SPECIFICATIONS (Without Nose Assembly)

Length (overall)	71/2 inches	190 mm
Height (overall)	13-7/8 inches	352mm
Width (head)	2 inches	51mm
Width (cylinder)	4.3/4 inches	121 mm
Weight	10-1/2 pounds	4.8kg
Stroke	1-3/16 inches	30mm
Air Required	18CFM@	009 m3/s
	90-100 psi	620-689 kPa

Hydraulic fluid .....Automatic Transmission Fluid, AT-ATF-1428A

Fig. 6



OUTLINE DRAWING

PRINCIPLE OF OPERATION

Operation as A Double Action Tool

When the tool is connected to an air supply and the trigger (3-31) is depressed, air pressure acts on the air piston (3-44) and moves it forward. This causes the small hydraulic piston (3-40) to act on a volume of hydraulic fluid in the handle assembly (1-4). Pressurized fluid is forced into the head assembly (1-1) to move the pull piston (2-21) in conjunction with the nose assembly to start the fastener installation. Pressurized fluid is also acting on the shift piston (2-12) and shift valve (4-19), whose shift force is controlled by the shift spring (4-29) and adjustment of the shift valve adjusting screw (4-30). As the fluid pressure increases, the shift valve opens and allows the fluid resisting movement of the shift piston (2-12) to exhaust. The shift piston moves forward and acts on the thrust bushing and inner anvil of the nose assembly to drive the lock of the fastener. Continued travel of the air piston increases the hydraulic pressure, causing the pull piston to continue its travel. This causes the pintail of fastener to break off and the installation is complete. ‘the trigger is released and all components return to their original position and the cycle is complete.

Operation As A Single Action Tool

The tool operates the same for installing other blind rivets and HUCKBOLT® Fasteners except that the shift valve mechanism does not have a function.

CAUTION

REASONABLE CARE OF INSTALLATION TOOLS BY OPERATORS IS AN IMPORTANT FACTOR IN MAINTAINING TOOL EFFICIENCY AND IN REDUCING DOWNTIME.

DO NOT ABUSE THE TOOL BY DROPPING IT, USING IT AS A HAMMER OR OTHERWISE CAUSING UNNECESSARY WEAR AND TEAR.

BE SURE THERE IS ADEQUATE CLEARANCE FOR THE TOOL AND OPERATOR’S HANDS BEFORE PROCEEDING.

THE PINTAIL DEFLECTOR MUST ALWAYS BE IN PLACE BEFORE USING THE TOOL.

PREPARATION

(See Good Services Practices.)

The Model 200 Huck Installation Tool is shipped with a plastic plug in the swivel air inlet connector (3-4). This connector has 1/4-18 female pipe threads to accept the hose fittings. Quick disconnect fittings and 3/8 inside diameter air hose are recommended. (Air hose and quick disconnect fittings are not available from Huck.) An air filter-regulator-lubricator is also recommended. An air supply of 90-100 psi capable of 18 CFM must be available. (Based on 30 tool cycles per minute). The air connector bolt (3-5) has an air relief valve built in to exhaust air at 100-110 psi.

1. Remove plastic plug from air inlet connector and pour in a small quantity of Automatic Transmission Fluid. Assemble the hose fittings to be used.

2. Set air pressure to 90-100 psi.

3. Blow out air hose and connect to the tool.

4. Hold tool upside down and cycle tool 8 or 10 times by depressing and releasing the trigger.

5. Set tool upright and remove filler plug (3-13) and check hydraulic fluid level. Add fluid if necessary.

6. If tool is to be used in a single action application, the shift valve adjusting screw (4-30) should be backed out leaving surface of adjusting screw 1/8” below surface of cylinder.

7. If tool is to be used in a double action application to install one of the following fasteners, the shift valve must be set.

AF540911-460 & 461/CKL-X
NA51919 & 1921/MLS
MS21140 & 21141/Huck Blind Bolt
M590353 & 90354/Huck Blind Bolt
Oversize Huck Blind Bolt

Select the shift valve setting from Table 16 for the fastener to be installed and the method of setting and checking to be used: (1) Spindle Load at shift using Kit 107569 (preferred method) (2) Hydraulic Pressure at shift using Kit 101300.

8. Select nose assembly for the fasteners to be installed. See SELECTION CHARTS, Form 461, in HUCK INSTALLATION EQUIPMENT DATA or available separately from your Huck representative.

9. Install nose assembly to the tool following the instructions on the NOSE ASSEMBLY DATA SHEET furnished with each nose assembly.

10. Install a few fasteners in a test plate of the proper thickness and having the proper size holes. Observe the action of the tool and nose assembly; the bulbing of the fastener sleeve and driving of the lock for a double action fastener or swaging of the collar for a single action fastener.

NOTE
If the tool has been disassembled for repair, the hydraulic system must be replenished before pre-paring it for use. See Filling and Bleeding for instructions.

Use

Double Action Application and/or Blind Rivet Application

The fastener may be placed in the work hole or in the end of the nose assembly. In either case, the tool and nose assembly must be held against the work and at right angles to it. Depress trigger and hold it depressed until a sound denoting the pintail breaking is heard.

Single Action Application

Place pin in work hole and collar over the pin. (If collar has only one end tapered, that end should be out towards the tool). Hold the pin and push nose assembly onto pin protruding through the collar until nose assembly anvil touches the collar. Depress trigger and hold it depressed until collar is swaged and a sound denoting the pintail breaking is heard.

NEVER PUSH THE NOSE ASSEMBLY ONTO THE PIN OF A HUCKBOLT© FASTENER WITHOUT THE COLLAR IN PLACE. INJURY TO WORKERS AND DAMAGE TO THE NOSE ASSEMBLY COULD RESULT WHEN THE PINTAIL BREAKS BECAUSE THE PIN WILL EJECT FORCIBLY FROM THE OTHER SIDE OF THE WORK.

Filling and Bleeding

The Model 200 Tool does not require filling (with hydraulic fluid) and bleeding (air) often. When it is necessary because of loss of fluid because of a damaged seal or when the tool has been overhauled, there are two methods which may he used: (1) Manually (2) Using Fill and Bleed Unit, Model No. 970-100. (Preferred method)

Manually

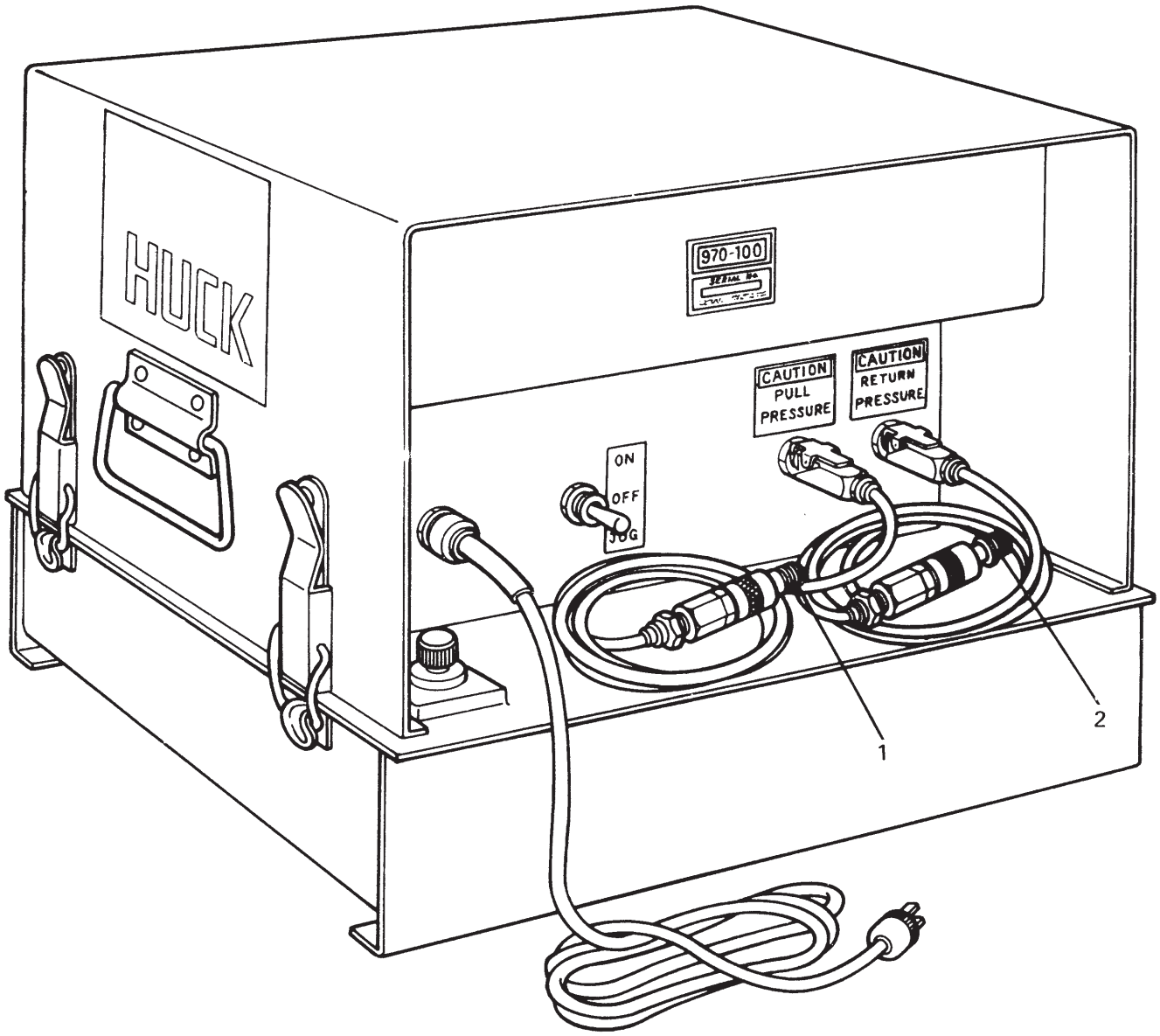
1. Remove air hose from tool.
2. Turn in balancing valve bleed screw (2-40) all the way.
3. Remove filler plug (3-13) and fill with Automatic Transmission Fluid AQ-ATF-1428A or equivalent until the fluid level is up to the bottom of the filler hole threads. (A filler bottle and fluid is available from Huck as part number 100932. It is included in SERVICE TOOL KIT 42-233).
4. Wipe filler plug with a clean, lint-free cloth and replace and tighten.
5. Attach air hose to tool and turn it upside down and cycle 12 times by depressing and releasing the trigger.
6. Set tool upright and remove air hose.
7. Back-out balancing valve bleed screw (2-40) all the way. Leave this screw backed-out.
8. Remove filler plug and again add fluid until the level reaches the bottom of the filler hole threads.
9. Replace filler plug and tighten.
10. Attach air hose to tool and turn it upside down again and cycle tool 50 times permitting full stroke for each cycle.
11. Set tool upright again and repeat steps 8, 9 and 10 until fluid level remains at the bottom of the filler hole threads, the foam and bubbles have disappeared and the fluid is clear.

USING FILL AND BLEED UNIT 970-100

(PREFERRED METHOD)

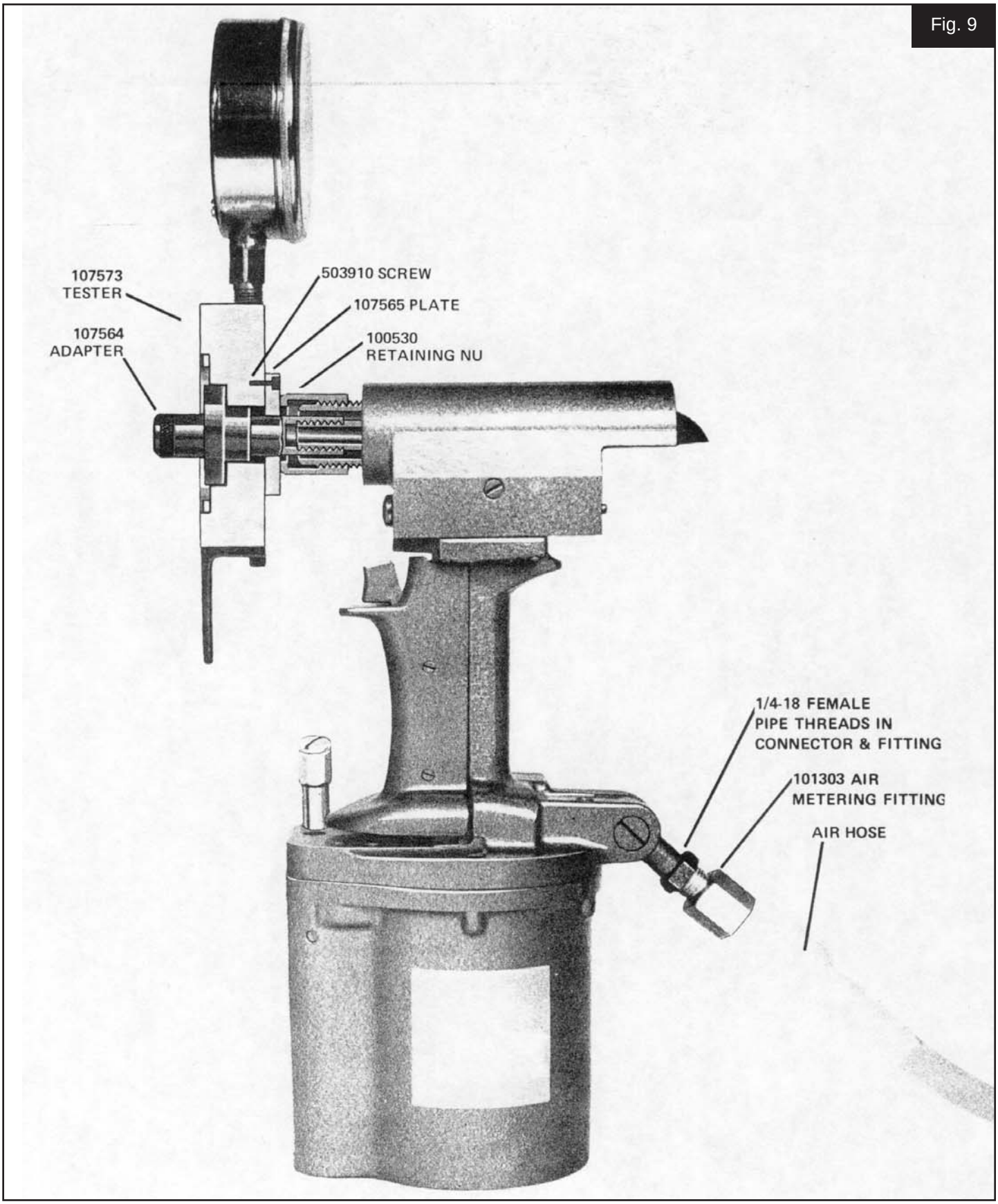
1. Fill unit with hydraulic fluid, Automatic Transmission Fluid, AQ-ATF-1428A or equivalent.
2. Plug unit into 110 volt, single phase, 50/60 hertz outlet.
3. Remove filler plug (3-13). Screw in adapter (8-1) of Pull Pressure Tube Assembly.
4. Remove ball check screw (2-49) from valve B (13-10). Use magnet in filler plug to remove spring (2-52) and ball (2-51). Screw in adapter (8-2) of RETURN PRESSURE Tube Assembly.
5. Turn bleed screw (2-40) all the way out. (Balance valve (2-33) will be closed — see figure 13-11.)
6. Turn unit switch to “ON”. Adjust relief valve to 50-60 psi. Hold tool in all positions until air bubbles stop flowing in RETURN tube. Hold tool in an upright position for the final portion of the bleeding. Back out relief valve retainer (2-44) a few turns until clear fluid (free of air) flows out. Use a combination of “RUN” and “JOG”. Total time for this step is approximately three minutes. Turn unit switch to “OFF”.
7. Unscrew adapter (8-1) from filler port and replace filler plug (3-13).
8. Remove Tube Assembly from PULL PRESSURE port of unit and install other Tube Assembly, P/N 110777.
9. Remove bleed plug (4-2) from front of cylinder. Screw in adapter (8-2) of PULL PRESSURE Tube Assembly.
10. Turn bleed screw (2-40) all the way in. (Balance valve (2-33) will be open — see figure 13-11).
11. Turn unit switch to “ON”. When air bubbles stop flowing in RETURN tube, back out bleed screw (2-40). The balance valve (2-33) will be closed and the pull piston (2-21) will move back full stroke. When flow stops out valve B, screw in bleed screw (2-40) to open balance valve (2-33) and re-establish flow. Hold tool head down to flush all air out valve B. Use a combination of “RUN” and “JOG”. Total time for this step is approximately five minutes. Turn unit switch to “OFF”.
12. Remove Tube Assembly from bleed port in cylinder and re-assemble bleed plug (4-2).
13. Remove ball check screw (2-53) and guide (2-31) from valve A — see figure 13-9. Leave spring (2-52) and ball (2-51) in place. Screw in adapter of Tube Assembly installed in PULL PRESSURE port of unit.
14. Turn unit switch to “ON”. Back out shift valve adjusting screw (4-30), in bottom of cylinder, until there is flow out valve B. Hold tool in all positions, especially head down, until air bubbles stop flowing in the RETURN tube. Total time for this step is ten minutes minimum. Turn unit switch to “OFF”.
15. Remove tube assemblies from the tool and reassemble components iii ports of valves A & B. Fill ports to bottom of threads with hydraulic fluid. Assemble ball check screw (2-53) in valve A port and ball check screw (2-49) in valve B port.
16. If pull piston (2-21) is in back position, turn in bleed screw (2-40), remove filler plug (3-13), and manually return the pull piston to the forward position.
17. Assemble filler plug (3-13) and back out bleed screw (2-40). Turn in shift valve adjusting screw (4-30) a few turns. Tool is now ready to set and check the shift valve adjustment.

Fig. 8



Fill & Bleed Unit 970-100

Fig. 9



Using Shift Setting Kit 107569

SETTING AND CHECKING SHIFT VALVE USING SHIFT SETTING KIT 107569

(PREFERRED METHOD)

1. Use only a tool which has been prepared for use and filled and bled per instructions in this manual.

2. A filtered-regulated-lubricated air supply capable of supplying 18 CFM @ 90-100 psi must be available.

3. Screw Retaining Nut I 00530 (5-1) againist head (2-1).

4. Assemble Adapter 107564 through Skidmore-Wilhelm Tester 107573 and engage threads of tool pull piston (2-21). Tighten “finger tight.”

5. Screw Air Metering Fitting 101303 into air connector and air supply hose. Set regulator for 90-I 00 psi.

6. Back out shift valve adjusting screw (4-30), keeping surface of adjusting screw approximately 1/8” below surface of cylinder. Use Wrench 100878.

7. Depress tool trigger (3-3 1) quickly and watch needle on tester gage. Full spindle load will be shown. There will not be a pause indicating shifting of the shift valve because it is inoperative with adjusting screw backed out. Release trigger — do not hold down.

8. Select spindle load at shift from table 15 for Huck Fastener to be installed.

9. Turin in adjusting screw until needle of gage pauses before reaching full spindle load when trigger is depressed. This is ‘‘Spindle Load at Shift.’’

10. Adjust screw to obtain desired “Spindle Load at Shift” selected from table.

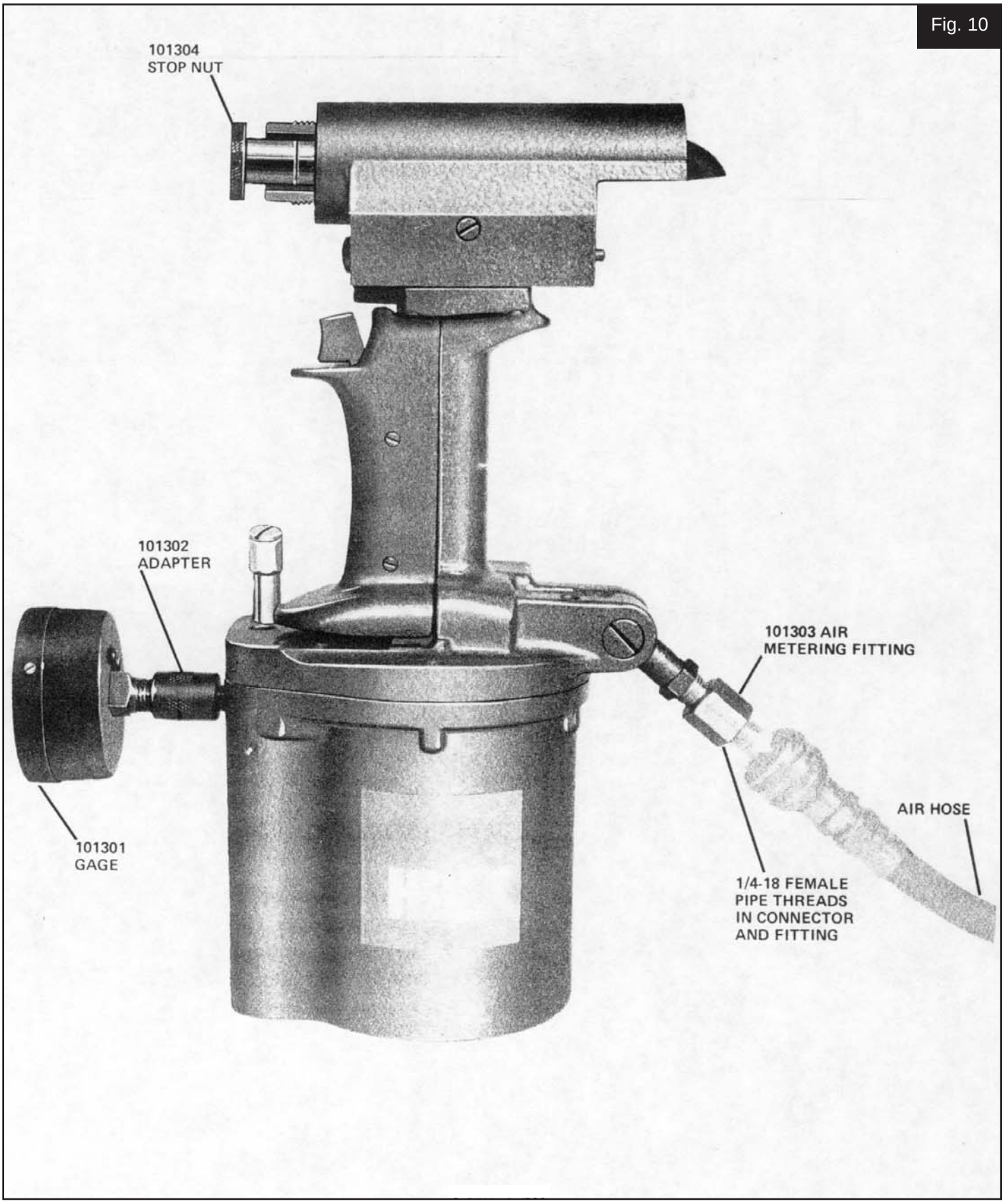
11. Trigger tool ten times to verify setting Note: The needle will bounce slightly when shift occurs. Do not confuse this bounce with the pause indicating shift.

12. Disconnect air supply and remove setting kit and 101303 Air Metering Fitting from tool.

13. Attach nose assembly per instructions on Nose Assembly Data Sheet.

14. Install a few fasteners in a test plate of proper thickness and with proper size holes to verify that shift valve has been set properly and that nose assembly is functioning properly.

Fig. 10



Using Shift Setting Kit 101300

SETTING AND CHECKING SHIFT VALVE USING SHIFT SETTING KIT 101300

(ALTERNATE METHOD)

1. Use only a tool which has been prepared for use and filled and bled per instructions in this manual.

2. A filtered-regulated-lubricated air supply capable of supplying 18 CFM@ 90-100 psi must be available.

3. Screw Stop Nut 101304 onto threads of pull piston (2-21). Tighten “finger tight.”

4. Remove bleed plug (4-2) from side of cylinder (4-1) and screw in Adapter 101302 with Gage 101301. Note: Be sure there is an O-ring on the Adapter.

5. Screw Air Metering Fitting 101303 into air connector (3-4).

6. Attach air supply hose to tool. Set regulator for 90-100 psi.

7. Back out shift valve adjusting screw (4-30) flush with bottom of cylinder (4-1). Use Wrench 100878.

8. Depress tool trigger (3-31) quickly and watch needle on Gage 101301. Full spindle load will be shown. There will not be a pause indicating shifting of time shift valve because it is inoperative with adjusting screw backed out. Release trigger — do not hold down.

9. Select hydraulic pressure at shift from table 15 for Huck Fastener to be installed.

10. Turn in adjusting screw until needle of gage pauses before reaching full spindle load when trigger is depressed. This is “Hydraulic Pressure at Shift.”

11. Adjust screw to obtain desired hydraulic pressure at shift selected from the table.

12. Trigger tool ten times to verify setting. Note: The needle will bounce slightly when shift occurs. Do not confuse this bounce with the pause indicating shift.

13. Disconnect air supply and remove setting kit including Air Metering Fitting 101303.

14. Attach nose assembly per instructions on Nose Assembly Data Sheet.

15. Install a few fasteners in a test plate of proper thickness and with proper size holes to verify that shift valve has been set properly and that nose assembly is functioning properly.

SPINDLE LOADS AND HYDRAULIC PRESSURES AT SHIFT

When used to install double action fasteners, the shift valve of the Model 200 H.I.T. must be adjusted to insure the proper installation of various fasteners. Two methods of checking the shift valve setting are available:

Method #1: Shift Setting Kit No. 107569 employs a Skidmore-Wilhelm Tension Tester to check the spindle Load at shift, in pounds.

Method #2: Shift Setting Kit No. 101300 employs a hydraulic pressure gauge to check the hydraulic pressure at shift, in pounds per square inch (psi).

The table below shows the 'Spindle load at Shift" and "Hydraulic Pressure at Shift" for various fasteners.

Table 15

FASTENERS		POUNDS SPINDLE LOAD AT SHIFT USING SETTING KIT #107569		PSI (2) HYDRAULIC PRESSURE AT SHIFT USING SETTING KIT #101300
AFS 40911-460 AFS 40911-461	CKL-X4	325 (1)		425 (1)
	CKL-X5	500	±25	650
	CKL-X6	725	±25	950
	OCKL-4	450 (1)		575 (1)
	OCKL-5	575	±25	750
	OCKL-6	775	±25	1000
NAS1919 & 1921				
B04	MLS-B04	350 (1)		450 (1)
B05	MLS-B05	500	±25	650
B06	MLS-B06	725	±25	950
B08	MLS-B08	1275	±25	1650
C04	MLS-EU04	875	±25	1125
C05	MLS-EU05	1175	±25	1525
C06	MLS-EU06	1875	±25	2450
M04	MLS-M04	775	±25	1000
M05	MLS-M05	1125	±25	1475
M06	MLS-M06	1775	±25	2325
MS21140	B-EU5	1260	±35	1650
MS21141	B-EU6	1845	±65	2400
MS90353	B-T5	1425	±25	1850
MS90354	B-T6	2200	±50	2875
—	OB-T5	1425	±25	1850
—	OB-T6	2200	±50	2875

(1) Set as close as possible to pounds or psi shown.
(2) Plus or minus 50 psi, unless otherwise specified.

MAINTENANCE

GOOD SERVICE PRACTICES

The efficiency and life of any tool depends upon proper maintenance and good service practices. The tool should be serviced by personnel who are thoroughly familiar with it and how it operates. If possible, the tool should be serviced by personnel trained specifically in servicing the Model 200 Huck Installation Tool. (See notice inside back cover of this manual.) A clean, well-lighted area should be available. Special care must be taken to prevent contamination of the hydraulic system. Proper hand tools, both standard and special, must be available (See Service Tool Kit). All parts must be handled carefully and examined for damage or wear. Seals (O-rings and quad rings) and back-up rings should be inspected and replaced if nicks or wear is detected. A good practice to follow is to always replace O-rings, quad rings and back-up rings when the tool is disassembled for any reason. Service Parts Kit 42-236 includes perishable parts and should be available at all times. Other components, as experience dictates, should also be available. LUBRIPLATE 130AA™ (Fiske Brothers Refining Co.) should be used to facilitate assembly of seals, components and assemblies. Components and assemblies should be disassembled and assembled in straight line without bending, cocking or undue force. Disassembly and assembly procedures outlined in this manual should be followed.

PREVENTIVE MAINTENANCE

The 200 Huck Installation Tool is a production tool, requiring a minimum amount of maintenance. Adherence to the Preventive Maintenance Chart below, however, will help insure longer life with maximum operating efficiency, and eliminate unnecessary breakdowns. Also, refer to Troubleshooting.

Table 16 – PREVENTIVE MAINTENANCE CHART

CHECK	DAILY	WEEKLY	MONTHLY	AS REQUIRED
Air Supply System:				
Air line pressure (90-100 psi)	X			
Moisture traps and filters		X		
Lubricator		X		
Air hose (Blow out dirt and moisture)	X			
Air hose and fittings (deterioration)			X	
Model 200 Tool:				
Air leaks				X
Hydraulic leaks				X
Screws, head to handle (tightness)				X
Screws, handle to cylinder (tightness)				X
Nose Assembly:				
Chuck jaws (clean with mineral spirits, using small pistol brush.)	X			
Adjustment	X			

NOTE: Mineral spirits are recommended for general cleaning of tool components. Do not use chlorinated solvents, because strong solvents may damage O-ring and seal materials.

TROUBLESHOOTING

TOOL MALFUNCTION CAUSE AND REMEDY

A. Air supply pressure low. Air pressure of 90-100 psi required.

B. Air in hydraulic system. Refill and bleed tool per instructions.

C. Check nose assembly for completeness and proper installation per instructions.

D. Shift valve adjustment set too high (13-7). Readjust counter-clockwise per instructions.

E. Shift valve adjustment set too low (13-7). Re-adjust clockwise per instructions.

F. Relief valve (13-8) not sealing. Check 3/16 inch ball (2-47) and seat (2-3) for foreign particles. Clean if dirty. Reseat ball by tapping against brass seat. Replace ball or seat if damaged.

G. Check valve (13-9) for leakage. Clean and reseat ball (2-51) by tapping. If ball or seat (2-2A) are damaged, replace.

H. Bleed screw (2-40) not backed out to stop (13-11). Balance valve (2-33) stuck in open position or foreign material between valve and seat. Free valve and remove any foreign particles. If valve or seat (2-4) are damaged, replace.

I. Check valve (13-10) for leakage. Clean valve and reseat ball (2-51) by tapping. If ball or seal (2-2B) are damaged, replace.

J. Shift sleeve (4-27) loose (13-12). Tighten with Wrench 100878.

K. Shift valve seat (4-13) not sealing (13-13). Replace seat if foreign particles are imbedded in seal, or if seat is damaged.

L. Shift plunger (4-10) sticky in sleeve (4-7). Remove plunger from sleeve. If plunger or sleeve bore is scored, replace (13-13).

CAUTION

MAKE CERTAIN THAT VALVE COMPONENTS ARE NOT MAGNETIZED.

M. Extreme temperature variation. Adjust shift valve (13-7) as necessary.

Table 17 – TOOL MALFUNCTION

SYMPTOM	CAUSE AND REMEDY												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Fails to develop full pressure. Will not break pins.	X	X						X				X	
Fails to eject or complete the return stroke.		X	X			X			X			X	
Fails to shift; CKL or MLS fastener collars not driven.	X	X	X	X				X				X	X
Shifts before blind head is formed.		X			X	X	X			X	X	X	X
Erratic shift. Fails to shift or shifts too soon without changing shift valve adjustment.		X				X	X			X	X	X	
Stroke short (Less than 1-3/16 inch).	X	X				X			X				

AIR LEAKAGE CAUSE AND REMEDY

A. Trigger linkage not properly adjusted. With air on tool and trigger in idle position, it should have some free motion before actuat ing air valves. With trigger in depressed position, trigger (3-31), lever (3-29) and cross bar (3-28) should not bottom on handle casting or hand grip (3-32). If either of these conditions occurs, replace worn, bent, or broken parts.

B. Brass air valve seat (3-24) leaking. Lap or reseal with an 11/32 inch ball. Replace seat if leakage still occurs.

C. Right rear insert (3-2) leaking. Replace spring (3-19), if broken. Reseat insert with ball (3-18) by tapping against insert. Replace if leakage still occurs.

D. Left insert (3-2) leaking. Reseat ball against insert. Replace insert if leakage still occurs.

E. Right front insert (3-2) leaking. (See D above.)

F. Slight leakage at this point is permissible.

G. If leakage is excessive, check intensifier gland O-ring (3-47). (First remove handle assembly from cylinder assembly.) It is recommended that H and I also be performed at this time.

H. Remove intensifier gland (3-35) and check O-rings. Replace if damaged.

I. Remove intensifier gland from piston rod (3-34). (First remove small hydraulic piston (3-40) by removing screw (3-43) and slipping piston from rod.)

CAUTION

EXERCISE CARE TO PREVENT SCORING ROD. SLIP OFF GLAND AND REPLACE LOWER INTERNAL QUAD RING.

J. If leakage occurs at small hole in acorn nut (3-12) on swivel fitting, reduce air supply. (90-100 psi air pressure recommended.) If leak stops but air pressure is then too low, add shims (3-9) as required to obtain seal at proper pressure. If leakage still occurs, replace valve (3-8).

K. If leakage occurs at a point other than the hole in the acorn nut, disassemble nut and swivel bolt from assembly. Replace O-ring (3-11), quad rings (3-6) and flat gasket (3-7) as required.

L. Socket head screws loose. Tighten.

M. O-ring seals between faces leaking. Replace.

N. Insufficient bleeding can appear as a leak into the hydraulic system. Rebleed.

O. Head assembly to handle assembly and/or handle assembly to cylinder assembly screws loosened. Tighten screws.

P. Improper hydraulic fluid. Poor substitutes can damage O-rings and seals, and cause foaming. See instructions for proper fluid and procedure.

Q. Rubber reservoir diaphragm (4-4) leaking. Replace as required.

R. Sheared or worn O-rings or seals in oil-to-air joints. Replace as required .

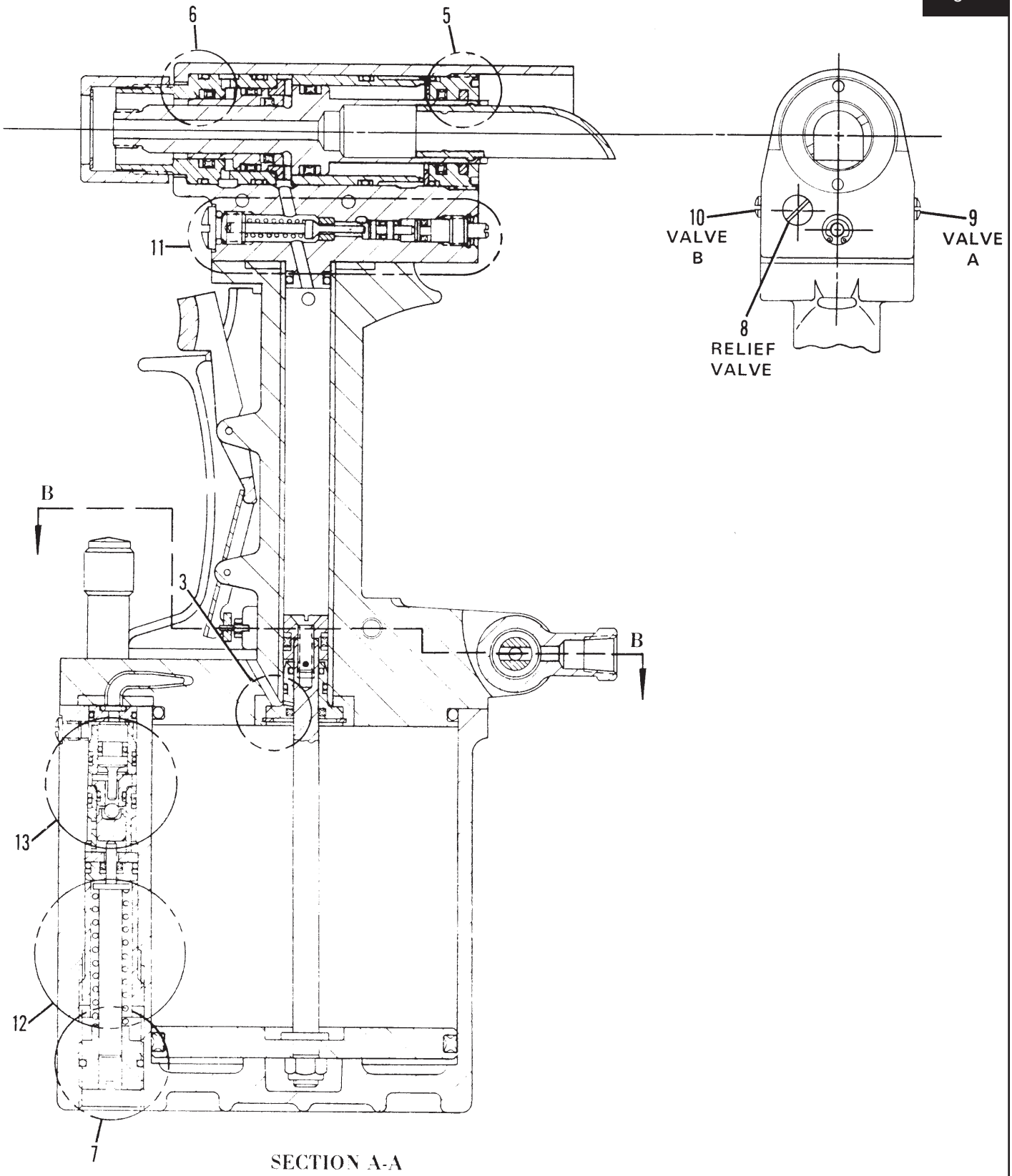
S. Leakage in weldment or handle subassembly (3-1) or at plugs in Cylinder Subassembly 100875.

Table 18 – AIR LEAKAGE

SYMPTOM AND LOCATION	CAUSE AND REMEDY																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Air valve leak with trigger in idle position. (13-1)	X		X																
Air valve leak with trigger in idle position. (13-2)	X	X																	
Air valve leak with trigger depressed. (13-1)	X			X	X														
Air valve leak with trigger depressed. (13-2)	X			X															
Leakage at intensifier gland (3-35) bleed hole. (13-3)						X	X	X	X										
Leakage at air intake swivel fitting assembly. (13-4)										X	X								
Leakage between handle subassembly 101103 and cylinder subassembly 100875 faces.												X	X						
Leakage into hydraulic system.														X	X	X	X	X	X

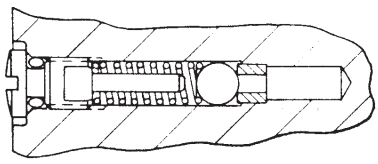
SERVICE NOTES

Fig. 13

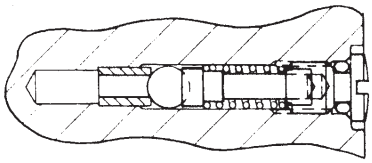


Sectional View

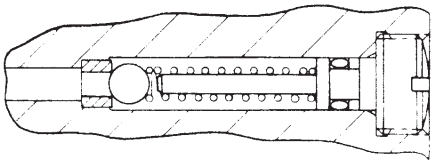
Fig. 12



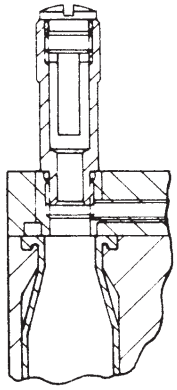
10-VALVE B



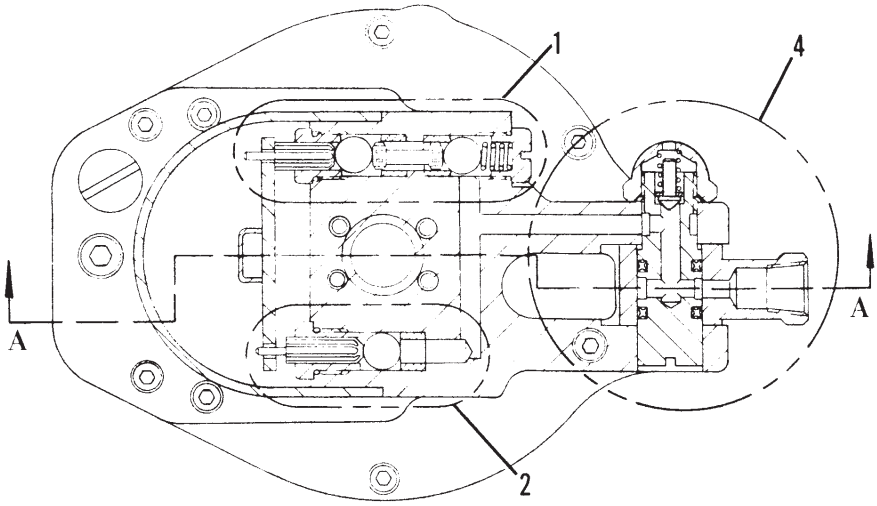
9-VALVE A



8-RELIEF VALVE



SECTION THRU
FILLER TUBE &
RESERVOIR



SECTION B-B

Miscellaneous Valves

HYDRAULIC FLUID LEAKAGE CAUSE AND REMEDY

A. Hydraulic fluid reservoir diaphragm (4-4) leaking. Replace.

B. Rear gland (2-25) loose. Tighten with special Wrench 100556.

C. Socket head screws loose. Tighten.

D. O-ring seals between faces leaking. Replace as required.

E. Shift sleeve (4-27) loose. Tighten with Wrench 100878.

F. Intensifier gland (3-35) rings not sealing. Upper internal O-ring and external O-ring defective. Replace as required.

G. Piston rod (3-34) scored or worn. Replace.

H. O-rings and/or quad rings leaking. Remove gland (2-7) and shift piston (2-12). Replace internal and external rings as required.

I. O-ring and/or quad ring seals in shift assembly leaking. Disassemble and replace rings as required.

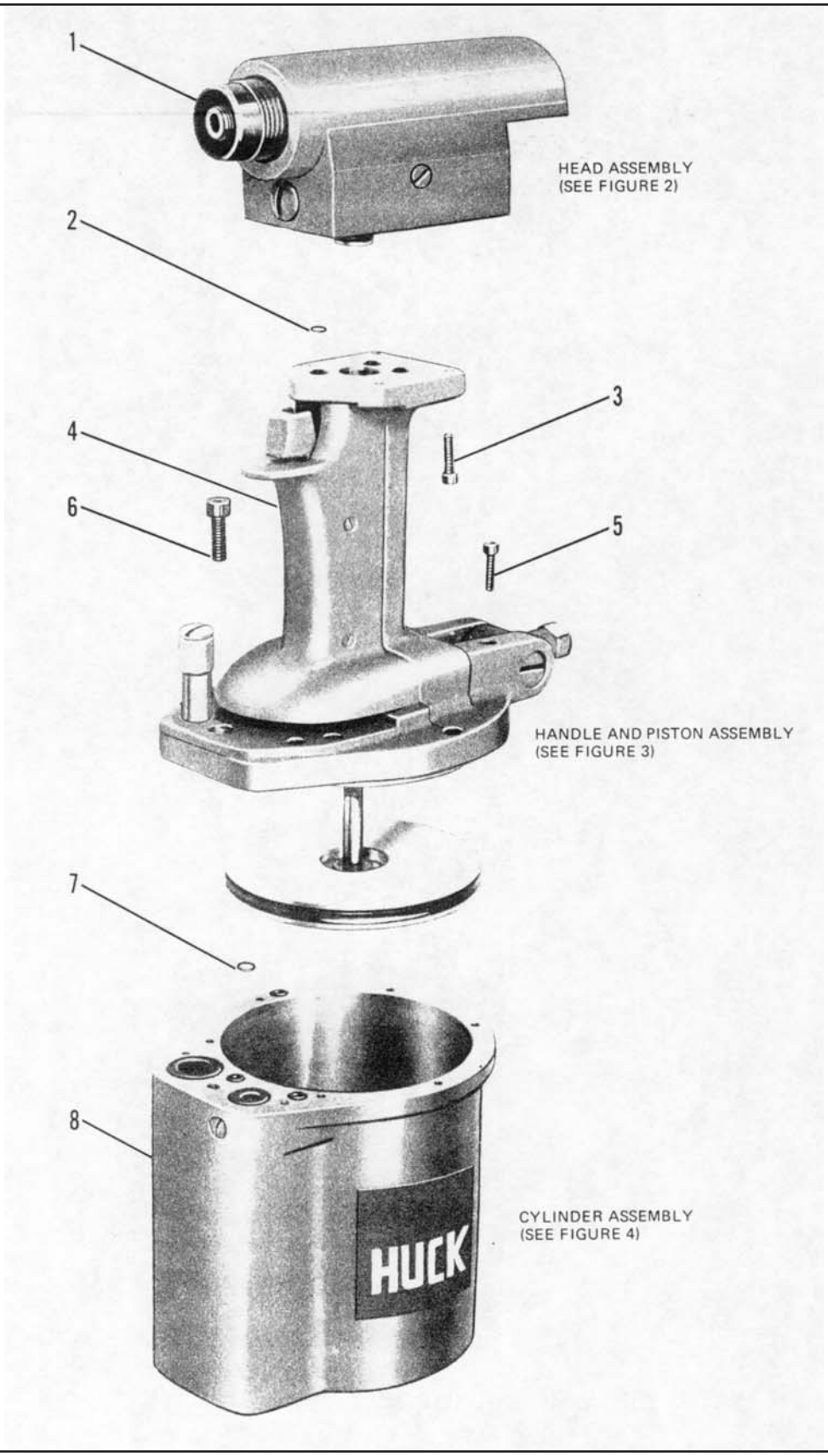
J. Pull piston (2-21) scored or worn. Replace.

K. Hydraulic system leak in handle assembly weldment. Replace handle (3-1) (contains inserts).

Table 19 – FLUID LEAKAGE

SYMPTOM AND LOCATION	CAUSE AND REMEDY										
	A	B	C	D	E	F	G	H	I	J	K
Excessive hydraulic fluid exhausting with air.	X										X
Leakage at intensifier gland (3-35) bleed hole. (13-3)						X	X				
Leakage at rear pull piston gland (2-18). (13-5)		X						X		X	
Leakage at front pull piston gland (2-7). (13-6)								X		X	
Leakage between head assembly (1-1), handle assembly (1-4) and cylinder assembly (1-8) faces.			X	X							X
Leakage past shift adjusting screw (4-30). (13-7)					X				X		

Fig. 1



Major Subassemblies

MAJOR SUBASSEMBLIES

Table 1 – PARTS LIST

REF. NO.	PART NO.	QUANTITY	PART NAME
1-1	100366	1	Head Assembly (See Figure 2)
1-2	504547	3	O-ring – AS 568-008
1-3	500056	4	Socket Head Cap Screw – #8-32 x 5/8
1-4 – –	101103 100880 103555	1 1 1	Handle and Piston Assembly (See Figure 3) (1) Handle Assembly Piston & Rod Assembly
1-5	500056	8	Socket Head Cap Screw – #8-32 x 5/8
1-6	500071	1	Socket Head Cap Screw – 1/4-20 x 3/4
1-7	504547	12	O-ring – AS 568-008
1-8	100875	1	Cylinder Assembly (See Figure 4)
–	104406	1	Nose Assembly Adapter Group (See Fig. 5)

(1) Indentions indicate the components or (sub) assemblies are included in the assembly immediately above it.

DISASSEMBLY

1. Connect to air supply.
2. Depress trigger and remove air supply. (this moves the air and hydraulic pistons to their full stroke position).
3. Disconnect air supply.

Handle Assembly from Cylinder Assembly

1. Remove eight socket head cap screws (1-5).
2. Remove one socket head cap screw (1-6).
3. Carefully pull handle and piston assembly (1-4) from cylinder assembly (1-8) in a straight line. (This will prevent binding of the air piston and bending of the piston rod).

Head Assembly from Handle Assembly

1. Remove four socket head cap screws (1-3).
2. Carefully pull head assembly (1-1) from handle assembly (1-4).
3. Drain hydraulic fluid.

ASSEMBLY

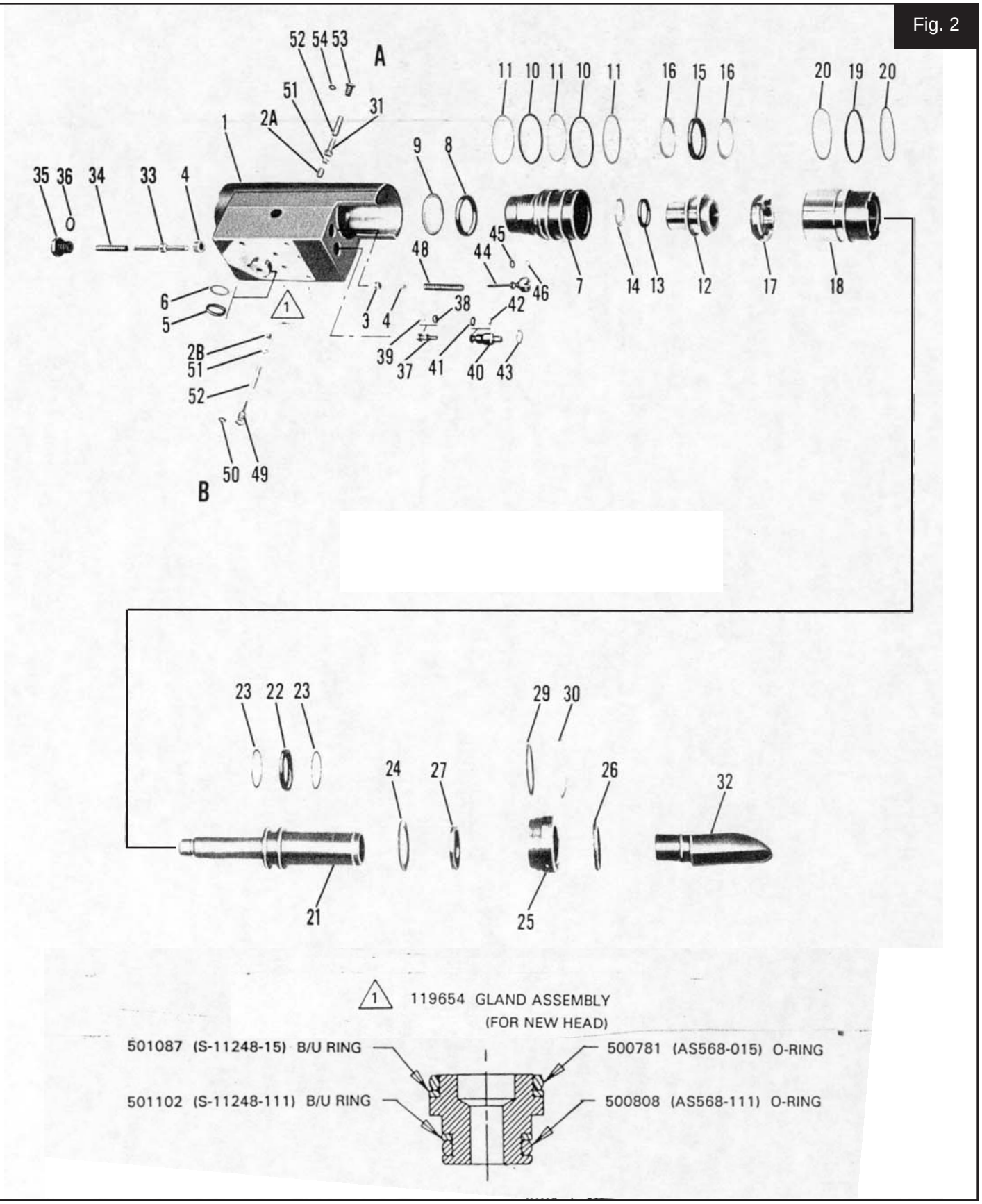
Head Assembly to Handle Assembly

1. Assemble new O-ring (2-5) and new back-up ring (2-6) to pilot of head (2-1).
2. Place three new O-rings (1-2) in counterbores in mating surface of Handle (3-1).
3. Smear LUBRIPLATE 130AA on pilot, O-ring and back up ring.
4. Carefully push head assembly (1-1) and han dle assembly (1-4) together.
5. Install four socket head cap screws (1-3). Tighten screws to 34 inch pounds torque.

Handle Assembly to Cylinder Assembly

1. Remove (unscrew) adjusting screw (4-30) in bottom of cylinder (4-1). Use Wrench 100878. remove spring (4-29) and spring guide (4-28).
2. Unscrew spring sleeve (4-27) to remove pressure on cap (4-5). Use Wrench 100878.
3. Place four new O-rings (1-7) in counterbores in mating surface of cylinder (4-1).
4. Assemble new quad ring (3-45) on air piston (3-44).
5. Assemble new O-ring (3-3) to pilot of handle (3-1).
6. Smear LUBRIPLATE in cylinder bore (4-1), on air piston (3-44), on piston rod (3-34) and on pilot of handle (3-1) and O-ring (3-3).
7. Carefully push piston and handle pilot into cylinder.
8. Install eight socket head cap screws (1-5) and one socket head cap screw (1-6). Tighten eight screws (1-5) to 34 inch pounds torque and one screw to 6-9 foot pounds torque.
9. Tighten sleeve (4-27) to 1 75 inch pounds torque.
10. Reassemble spring guide (4-28) and spring (4-29).
11. Reassemble adjusting screw (4-30). Screw in just far enough put some pressure on the spring.
12. Refill tool with hydraulic fluid and adjust shift valve adjusting screw per instructions included in this manual.

Fig. 2



Head Assembly 100366

Table 2 – PARTS LIST

REF. NO.	PART NO.	QUANTITY	PART NAME
1-1	100366	1	Head Assembly (Complete)
2-1	110656	1	(1) Head, Seats & O-ring Assembly
2-2A	111139	1	Seat – Ball Check "A"
2-2B	100858	1	Seat – Ball Check "B"
2-3	100859	1	Seat – Relief Valve
2-4	100889	1	Seat – Balance Valve
2-5	500808	1	O-ring AS568-111
2-6	501102	1	Back-up Ring S-11248-111
2-7	104272	1	Nose Gland & O-ring Assembly
2-8	501417	1	Quad Ring – MR-Q4211 (Inside)
2-9	501138	1	Back-up Ring – S-11248-211 (Inside)
2-10	500793	2	O-ring – AS 568-027 (Outside)
2-11	501099	3	Back-up Ring – S-11248-27 (Outside)
2-12	104274	1	Shift Piston & Quad Ring Assembly
2-13	501170	1	Quad Ring – MR-Q4114 (Inside)
2-14	501105	1	Back-up Ring – S-11248-114 (Inside)
2-15	501172	1	Quad Ring – MR-Q4213 (Outside)
2-16	501140	2	Back-up Ring – S-11248-213 (Outside)
2-17	100371	1	Piston Locator
2-18	104275	1	Piston Cylinder & O-ring Assembly
2-19	500793	1	O-ring – AS 568-027
2-20	501099	2	Back-up Ring – S-11248-27
2-21	111078	1	Pull Piston & Quad Ring Assembly
2-22	501172	1	Quad Ring – MR-Q4213
2-23	501140	2	Back-up Ring – S-11248-213
2-24	100376	1	Spacer
2-25	111077	1	Rear Gland & O-ring Assembly
2-26	111073	1	Wiper – Piston
2-27	501417	1	Quad Ring – MR-Q4211 (Inside)
2-29	500793	1	O-ring – AS 568-027 (Outside)
2-30	501099	1	Back-up Ring – S-11248-27 (Outside)
2-31	111067	1	Guide

Table 2 – PARTS LIST (Continued)

REF. NO.	PART NO.	QUANTITY	PART NAME
2-32	100378	1	Deflector
2-33	110416	1	Valve – Balance
2-34	100381	1	Spring – Balance Valve
2-35	110413	1	Retainer & O-ring Assembly
2-36	500777	1	O-ring – AS 568-011
2-37	104281	1	Plunger & Quad Ring Assembly
2-38	501409	1	Quad Ring – MR-Q4006
2-39	501078	1	Back-up Ring – S-11248-06
2-40	104283	1	Bleed Screw & Quad Ring Assembly
2-41	501410	1	Quad Ring – MR-Q4007
2-42	501079	1	Back-up Ring – S-11248-07
2-43	500933	1	Retaining Ring – Truarc N5000-37
2-44	104287	1	Relief Valve Retainer & O-ring Assembly
2-45	500772	1	O-ring – AS 568-006
2-46	501078	1	Back-up Ring – S-11248-06
2-47	502929	1	Ball – 3/16 Dia. (Stainless Steel)
2-48	100968	1	Spring – Relief Valve
2-49	111086	1	Ball Check Screw & O-ring Assembly – B
2-50	505438	1	O-ring – AS 568-006
2-51	502929	2	Ball – 3/16 Dia. (Stainless Steel)
2-52	100874	2	Spring – Ball Check
2-53	111079	1	Ball Check Screw & O-ring Assembly – A
2-54	505438	1	O-ring – AS 568-006

(1) Indentions indicate the components or (sub) assemblies are included in the assembly immediately above it.

HEAD DISASSEMBLY AND ASSEMBLY

HEAD DISASSEMBLY

Normally, it should not be necessary to completely disassemble the head assembly. However, in time the O-ring seals may wear and the tool will not function at maximum capacity. The following steps give complete instructions for disassembly.

1. Unscrew rear gland (2-25), using Gland Wrench 100556. Examine rear gland interior quad ring (2-27) for cuts or extreme wear. Also examine rear gland exterior O-ring (2-29) and back-up ring (2-30). Replace these rings where necessary.

2. Remove washer (2-24) and pull piston (2-21). (Push on threaded end of pull piston.) Examine piston quad ring (2-22) and two back-up rings (2-23), and replace if cut or damaged.

3. Pull piston cylinder (2-18) may not be removed by pushing on projecting end of shift piston (2-12). Be careful not to damage inside of nose gland (2-7) or to cut quad ring (2-8) in nose gland. Shift piston locator (2-17) will slide out with the pull piston cylinder. Check all quad rings for damage.

4. Remove nose gland (2-7) by pushing on the threaded projecting end. Return pressure relief valve is removed by unscrewing retainer (2-44). Relief valve spring (2-48) and ball (2-47) can now be removed. Check O-ring (2-45) and back-up ring 02-46) on relief valve retainer for damage.

5. Disassemble bleed valve from both ends of head housing. Remove retainer (2-35) at front end of housing. Next, remove spring (2-34) and balancing valve (2-33). Valve cone face should be free of score marks. Do not remove valve seat (2-4) unless it appears to be damaged. Check (2-36) O-ring for damage.

6. Remove retaining ring (2-43) and unscrew bleed screw (2-40). Push out plunger (2-37) from other end with small diameter rod. Check all O-rings and quad rings for damage.

7. Unscrew ball check screw (2-49) and remove ball check spring (2-52) and ball (2-51). Check O-ring (2-50) for damage. Do not remove ball check seat (2-2B) unless it appears to be damaged.

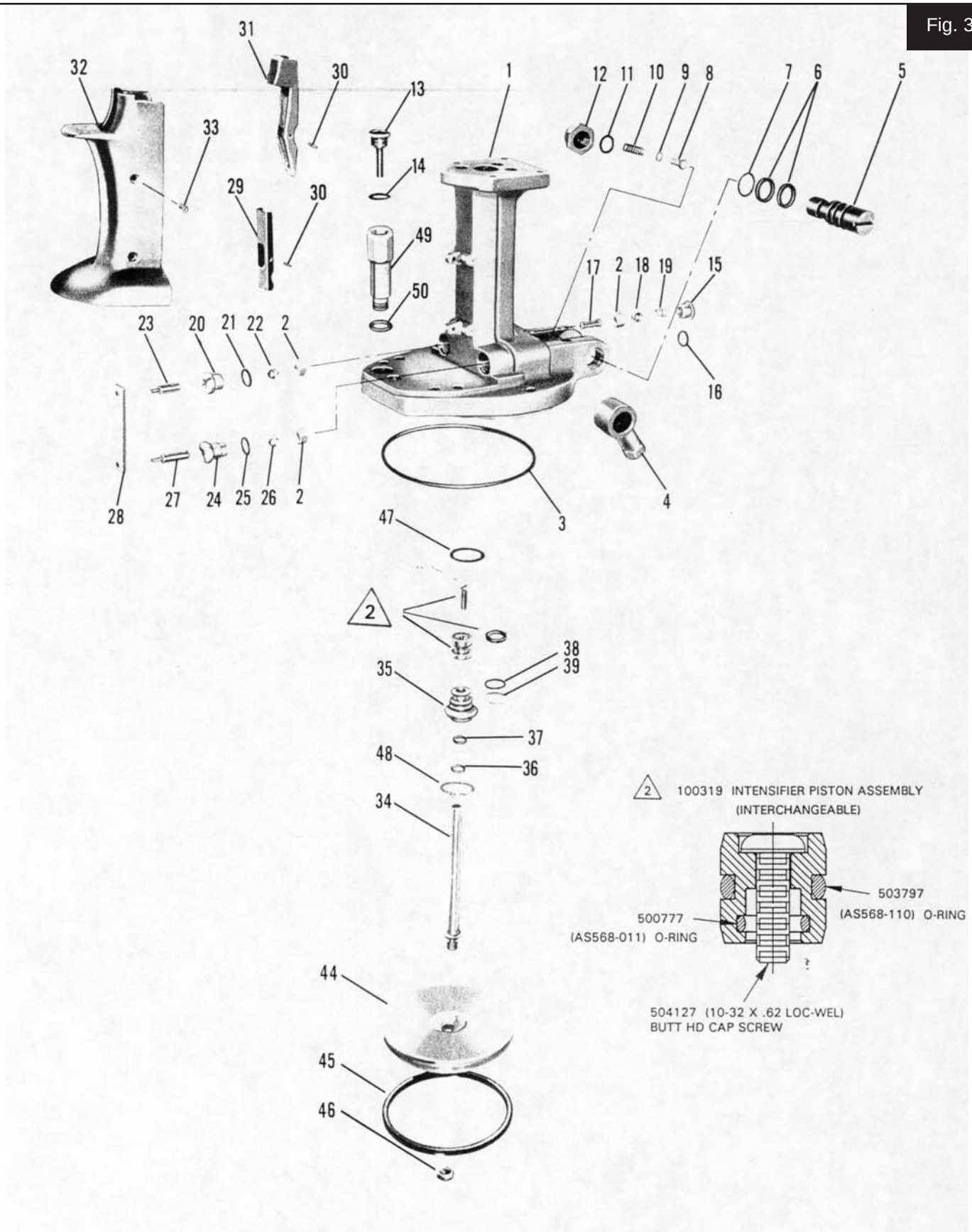
8. Unscrew ball check screw (2-53) and remove ball check spring (2-52), guide (2-31) and ball (2-51). Check O-ring (2-54) for damage. Do not remove ball check seat (2-2A) unless it appears to be damaged..

HEAD ASSEMBLY

Before assembling head assembly, clean all parts thoroughly with mineral spirits and lubricate lightly with LUBRIPLATE NO. 130A. Then assemble, taking care not to damage seals and following figure 2. Assemble Ball Check assemblies last.

NOTE
Do not assemble O-ring (2-29) to gland (2-25). Insert O-ring and then, screw in gland.

Fig. 3



Handle & Piston Assembly 101103

Handle and Piston Assembly
Table 3 - Parts List

REF. NO.	PART NO.	QUANTITY	PART NAME
1-4	101103	1	Handle & Piston Assembly (Complete)
–	100880	1	(1) Handle Assembly
3-1	100881	1	Handle & Inserts Assembly
3-2	100341	3	Insert
3-3	500872	1	O-ring – AS 568-240
3-4	100933	1	Swivel Connector (Air)
3-5	104296	1	Bolt & Quad Ring Assembly
3-6	501414	2	Quad Ring – MR-Q4111
3-7	100346	1	Gasket
3-8	100890	1	Valve
3-9	100891	VAR.	Shim (Use as Required)
3-10	100349	1	Spring
3-11	500779	1	O-ring – AS 568-013
3-12	100350	1	Acorn Nut
3-13	104294	1	Filler Plug & O-ring Assembly
3-14	500778	1	O-ring – AS 568-012
3-15	104298	1	Rear Plug & O-ring Assembly
3-16	500776	1	O-ring – AS 568-012
3-17	100355	1	Pin – Center
3-18	502934	1	Ball – 11/32 Dia. (Stainless Steel)
3-19	100353	1	Spring
3-20	104299	1	Front Plug & O-ring Assembly
3-21	500778	1	O-ring – AS 568-012
3-22	502934	1	Ball – 11/32 Dia. (Stainless Steel)
3-23	100360	1	Pin
3-24	104400	1	Seat & O-ring Assembly
3-25	500778	1	O-ring – AS 568-012
3-26	502934	1	Ball – 11/32 Dia. (Stainless Steel)

Table 3 – PARTS LIST (Continued)

REF. NO.	PART NO.	QUANTITY	PART NAME
3-27	100361	1	Pin
3-28	100362	1	Cross Bar
3-29	100363	1	Lever
3-30	502135	2	Pin – .094 Dia. x 5/8 (Spring – Slotted)
3-31	100364	1	Trigger
3-32	100365	1	Hand Grip
3-33	504378	4	Screw – #4-40 x 1/4
–	103555	1	Piston & Rod Assembly
3-34	100316	1	Rod – Piston
3-35	104403	1	Gland & O-ring Assembly
3-36	501408	1	Quad Ring – MR-Q4011 (Inside)
3-37	500777	1	O-ring – AS 568-011
3-38	500780	1	O-ring – AS 568-014
3-39	503167	1	Back-up Ring – Parbak 8-014
3-44	104402	1	Air Piston & Quad Ring Assembly
3-45	501460	1	Quad Ring – MR-Q4342
3-46	121241	1	**Lock Nut**
3-47	500786	1	O-ring – AS 568-020
3-48	502259	1	Retaining Ring – Truarc 5008-100
3-49	111080	1	Collector & O-ring Assembly
3-50	500778	1	O-ring – AS 568-012

(1) Indentions indicate the components or (sub) assemblies are included in the assembly immediately above it.

HANDLE DISASSEMBLY AND ASSEMBLY

HANDLE DISASSEMBLY

The handle and piston assembly contains a four way air valve, high pressure air relief valve, trigger components, hydraulic cylinder, and piston and rod assembly. Disassemble the handle and piston assembly as follows:

1. Separate head assembly (1-1) and cylinder assembly (1-8) from handle assembly (1-4) per instructions in the Major Subassemblies Section.

2. Using Truarc pliers #0100, Part No. 502857, remove retaining ring (3-48). Remove piston (3-44), rod (3-34), intensifier gland (3-35) and hydraulic piston (3-40) by pulling piston and rod free of handle.

3. Remove flat head screw (3-43) from rod and slip hydraulic piston and intensifier gland off rod. Exercise care to prevent scoring rod.

4. Examine piston, rod, intensifier gland, hydraulic piston and all seals for damage. Replace parts as required.

5. Acorn nut (3-12) contains a spring-loaded valve and should be carefully removed along with spring (3-10) shim(s) (3-9) and valve (3-8). Remove O-ring (3-11).

6. Remove bolt (3-5) and swivel connector (3-4). Examine seals on all components for damage and replace when necessary. Shims (3-9) are used to obtain 100-110 psi air pressure relief.

7. Hand grip (3-32) is removed by unscrewing four screws (3-33). Push out pins (3-30) and remove trigger (3-31) and lever (3-29). Remove cross bar (3-28) and four-way air valve actuating pins (3-23 and 3-27).

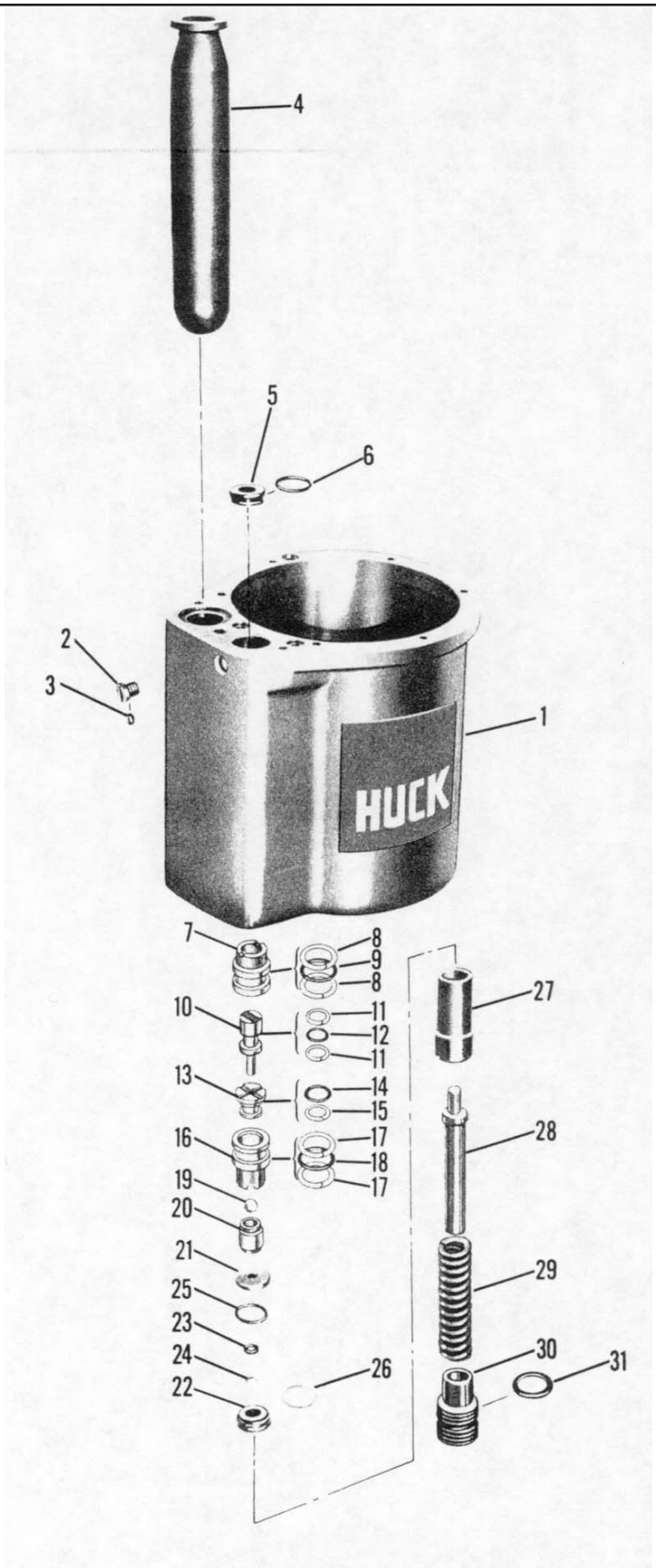
8. Remove air valve seat (3-24), front plug (3-20) and balls (3-22 and 3-26). Remove rear plug (3-15), spring (3-19) and ball (3-18). Inserts (3-2) are press lit.

9. Unscrew filler plug (3-13) and collector (3-49) and check O-rings (3-14 & 3-50).

HANDLE ASSEMBLY

Before assembling handle piston assembly, clean all components thoroughly with mineral spirits, and lubricate lightly with LUBRIPLATE NO.130AA. Then assemble handle, following figure 3. Piston and rod assembly should be assembled last, inserting the hydraulic piston in the bottom of the handle. Take care that rings are not cut or sheared in assembly. Use Truarc pliers #0100, Part No. 502857 to install retaining ring (3-48).

Fig. 4



Cylinder Assembly 100875

Cylinder Assembly

Table 4 - Pasts List

REF. NO.	PART NO.	QUANTITY	PART NAME
1-8	100875	1	Cylinder Assembly (Complete)
4-1	101128	1	(1) Cylinder
4-2	104293	1	Bleed Plug & O-ring Assembly
4-3	**505438**	1	O-ring – AS 568-006
4-4	100313	1	Diaphragm (Reservoir)
4-5	104291	1	Cap & O-ring Assembly
4-6	500780	1	O-ring – AS 568-014
4-7	111083	1	Sleeve & O-ring Assembly – Upper
4-8	503167	2	Back-up Ring – Parbak 8-014
4-9	500780	1	O-ring – AS 568-014
4-10	111081	1	Plunger & O-ring Assembly
4-11	501082	2	Back-up Ring – S-11248-10
4-12	500776	1	O-ring – AS 568-010
4-13	111082	1	Seat & O-ring Assembly
4-14	500776	1	O-ring – AS 568-010
4-15	501082	1	Back-up Ring – S-11248-10
4-16	111084	1	Sleeve & O-ring Assembly – Lower
4-17	503167	2	Back-up Ring – Parbak 8-014
4-18	500780	1	O-ring – AS 568-014
4-19	502509	1	Ball – Steel 1/4 Dia.
4-20	111066	1	Guide – Ball
4-21	100869	1	Spacer
4-22	104292	1	Gland & O-ring Assembly
4-23	501410	1	Quad Ring – MR-Q4007 (Inside)S
4-24	503160	1	Back-up Ring – Parbak 8-007 (Inside)
4-25	500781	1	O-ring – AS 568-015 (Outside)
4-26	503168	1	Back-up Ring – Parbak 8-015
4-27	101101	1	Sleeve
4-28	110414	1	Plunger & Spring Guide
4-29	111071	1	Spring – Shift
4-30	110415	1	Adjusting Screw & O-ring Assembly
4-31	500781	1	O-ring – AS 568-015

(1) Indentions indicate the components or (sub) assemblies are included in the assembly immediately above it.

CYLINDER DISASSEMBLY AND ASSEMBLY

CYLINDER DISASSEMBLY

The cylinder assembly contains the air cylinder and the shift valve components. The handle assembly must be removed from the cylinder assembly when disassembling the shift valve components. Disassemble the cylinder assembly as follows:

1. Remove handle assembly (1-4) from cylinder assembly (1-8) per instructions in Major Sub-assemblies Section. Adjusting screw (4-30), spring (4-29) and plunger (4-28) will be removed at this time.

2. Screw in sleeve (4-27) few turns, using Wrench 100878 to dislodge cap (4-5). Remove cap.

3. Carefully remove hydraulic fluid diaphragm (4-4).

4. Remove sleeve (4-27) with Wrench 100878, and push remaining valve parts out of bottom of cylinder using brass rod. (1)

5. Remove bleed plug (4-2).

6. Remove and discard all O-rings and quad rings. Replace back-up rings and diaphragm if damaged.

CYLINDER ASSEMBLY

Before assembling cylinder assembly, clean all components thoroughly with mineral spirits and lubricate lightly with LUBRIPLATE NO. 130AA. Inspect all parts for damage and replace parts as required.

1. Dip new O-rings and quad rings furnished in Service Parts Kit 42-236 in hydraulic fluid or lubricate with LUBRIPLATE NO. 130AA.

2. Assemble O-rings, quad rings and back-up rings as follows:

   a. O-ring (4-3) to bleed plug (4-2).

   b. O-ring (4-6) to cap (4-5).

   c. O-ring (4-9) and two back-up rings (4-8) to upper sleeve (4-7).

   d. O-ring (4-12) and two back-up rings (4-11) to plunger (4-10).

   e. O-ring (4-14) and back-up ring (4-15) to seat (4-13).

   f. O-ring (4-18) and two back-up rings (4-17) to lower sleeve (4-16).

   g. Quad ring (4-23) and back-up ring (4-24) to I.D. and back-up ring (4-26) to O.D. of gland (4-22). Do not assemble O-ring (4-25) at this time.

   h. O-ring (4-31) to adjusting screw (4-30).

3. Install cap (4-5) from top side of cylinder.

(1) If quad ring (4-23) or O-ring (4-25) require replacement, a soft brass rod with a tapered end can be used to remove gland (4-22) and spacer (4-21) without removing cylinder assembly from handle assembly. The brass rod also facilitates assembly of gland and spacer.

CYLINDER ASSEMBLY (CONT.)

4. Push plunger (4-10) into upper sleeve (4-7). Drop into cylinder from the bottom side of cylinder.

CAUTION - *DO NOT PUSH SLEEVES PAST THE BLEED PLUG (4-2) HOLE.*

5. Push seat (4-13) into lower sleeve (1-16). Turn over and drop ball (4-19) into sleeve. Smear lubriplate on guide (1-20) and insert into sleeve. Drop into cylinder.

6. Install spacer (4-21) and O-ring (4-25).

7. Push back-up ring (4-26) on gland (4-22). use plunger (4-28) as a guide and install gland in cylinder. Remove plunger. (A brass rod may be used to tap components into place.)

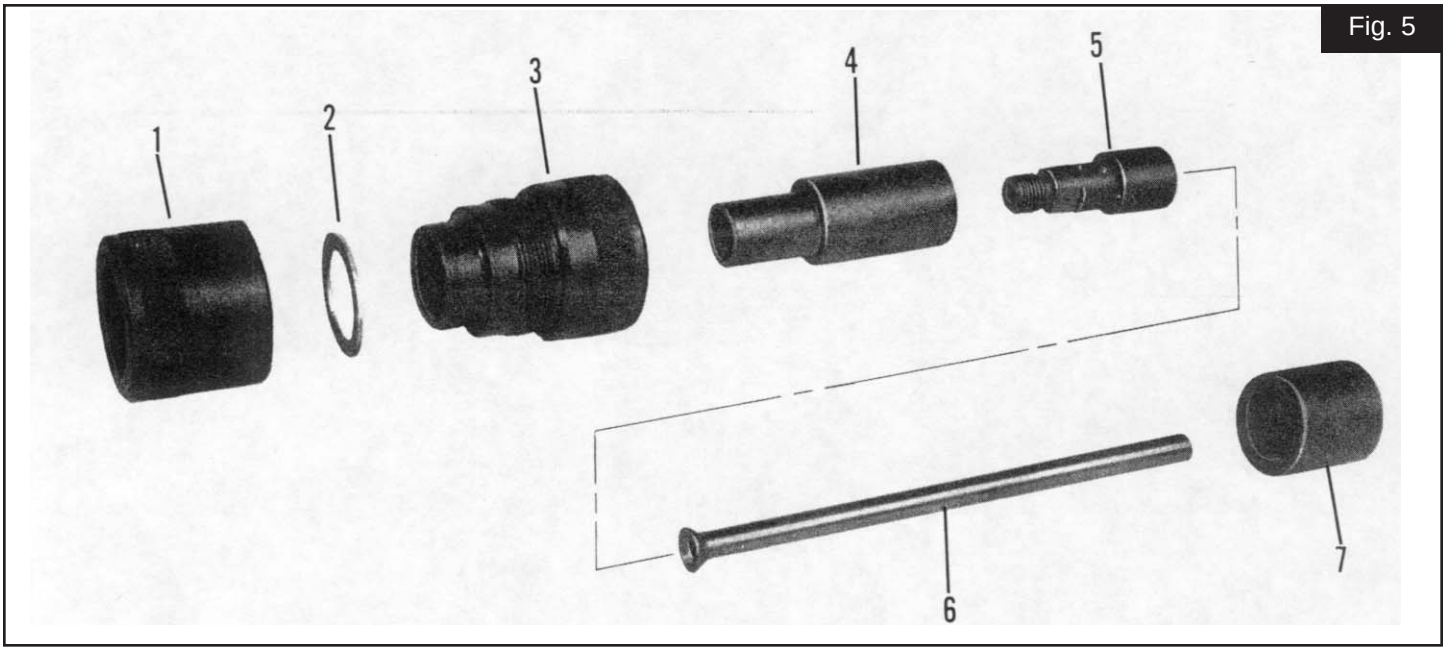
8. Install sleeve (4-27) loosely using Wrench 100878. Do not tighten sleeve as this will unseat cap, (4-5).

9. Install hydraulic fluid diaphragm (4-4) and bleed plug (4-2).

10. Assemble cylinder assembly to handle assembly per instructions in Major Subassemblies Section. Sleeve (4-27) will be tightened and plunger (1-28), spring (4-29) and adjusting screw (4-30) installed during this operation. If handle assembly is not being installed on cylinder assembly at this time, plunger, spring and adjusting screw may be installed loosely for storage purposes.

SERVICE NOTES

NOSE ASSEMBLY ADAPTER GROUP



NOTE

Use Ref. Nos. 1 (& 6 as applicable) for Series 200 Nose Assemblies (Double Action).

Use Ref. Not 1 & 2 (& 6 as applicable) & 7 for Series 352 Nose Assemblies (Single Action).

Use Ref. Nos. 1, 2, 3, 4, 5 (& 6 as applicable) for Series 350 Nose Assemblies (Double Action.)

Table 5 – PARTS LIST

Nose Assembly Adapter Group

REF. NO.	PART NO.	QUANTITY	PART NAME
5-1	100530	1	Retaining Nut
5-2	101280	1	Stop – Retaining Nut
5-3	100533	1	Nose Adapter
5-4	100532	1	Shift Sleeve
5-5	100531	1	Spindle Reducer
5-6	100534	1	Pintail Tube
5-7	100536	1	Spacer 200 Tool

NOTE
See applicable Nose Assembly Data Sheet for detailed instructions on the use of these components.

Model 200 Installation Kits

The Huck Model 200 Installation Tool is available in kit form which allows the purchase of one part number that includes the 200 Tool, Carrying Case, Nose Assemblies, etc. as shown below.

Table 6: 200-52 (Ref. NSN 5130-014-1979)

Part NO.	PART NAME	PART NO.	PART NAME
200	Installation Tool	104271	Inner Anvil -4
78972	Nose Assy 100V-4	83289	Outer Anvil -4
78973	Nose Assy 100V-5	83290	Thrust Bushing -4
78974	Nose Assy 100V-6	100820	Inner Anvil -5
79626	Nose Assy -8 Rivet	83294	Outer Anvil -5
99-1601T-352	Nose Assy -05 GP Tens	83295	Thrust Bushing -5
99-2555CH	Nose Assy -06 GP Chis	100799	Inner Anvil -6
99-86	Nose Assy -08 OSR	83296	Outer Anvil -6
G58-1	Grip Gage 1/8 & 5/32	83297	Thrust Bushing -6
G58-2	Grip Gage 3/16 & 1/4	42-233	Service Kit
105805	Nose Assembly Brush	110206	Carrying Case
105806	Nose Assembly Brush		

Table 7: 200-53 (Ref. NSN 5130-778-1675)

Part NO.	PART NAME	PART NO.	PART NAME
200	Installation Tool	78974	Nose Assy 100V-6
78972	Nose Assy 100V-4	42-233	Service Kit
78973	Nose Assy 100V-5	110206	Carrying Case

Table 8: 200-54 (Ref. NSN 5130-908-3262)

Part NO.	PART NAME	PART NO.	PART NAME
200	Installation Tool	110206	Carrying Case
42-233	Service Kit		

Table 9: 200-55

Part NO.	PART NAME	PART NO.	PART NAME
200	Installation Tool	83289	Outer Anvil -4
78972	Nose Assy 100V-4	83290	Thrust Bushing -4
78973	Nose Assy 100V-5	100820	Inner Anvil -5
78974	Nose Assy 100V-6	83294	Outer Anvil -5
79626	Nose Assy -8 Rivet	83295	Thrust Bushing -5
99-1601T-352	Nose Assy -05 GP Tens	100799	Inner Anvil -6
99-2555CH	Nose Assy -06 GP Chis	83296	Outer Anvil -6
99-86	Nose Assy -08 OSR	83297	Thrust Bushing -6
G58-1	Grip Gage 1/8 & 5/32	83300	Outer Anvil P-4
G58-2	Grip Gage 3/16 & 1/4	83301	Outer Anvil P-5
105805	Nose Assembly Brush	83302	Outer Anvil P-6
105806	Nose Assembly Brush	42-233	Service Kit
104271	Inner Anvil -4	110206	Carrying Case

SERVICE NOTES

ACCESSORIES

SERVICE PARTS KIT 42-236

Service Parts Kit 42-236 contains replacement parts needed when overhauling ONE Model 200 Tool, or forreplacing a damaged or worn 0-ring, etc.

Table 10 - PARTS LIST

PART#	QTY	PART NAME	REF. NO.
100378	1	Diaphragm	4-4
100341	1	Deflector	2-32
100313	3	Insert	3-2
100346	1	Gasket	3-7
100349	1	Spring, Air Valve	3-10
100353	1	Spring	3-19
111073	1	Wiper, Piston	2-26
100381	1	Spring, Balance Valve	2-34
100858	1	Seat, Ball Check ‘B”	2-2B
100859	1	Seat, Relief Valve	2-3
100874	2	Spring, Ball Check	2-52
100889	1	Seat, Balance Valve	2-4
100891	4	Shim	3-9
100968	1	Spring, Relief Valve	2-48
104285	1	Ball Check Plug & O-ring Assembly	2-49
111139	1	Seat, Ball Check ‘A”	2-2A
500056	12	Screw, Socket Head Cap #8-32 X 5/8	1-3, 1-5
500071	1	Screw, Socket Head Cap 1/4-20 X 3/4	1-6
500772	1	O-ring AS 568-006	2-45, 2-54, 4-3
504547	7	O-ring AS 568-008 Viton, 90 durometer	1-2, 1-7
500776	3	O-ring AS 568-010	4-12, 4-14
500777	2	O-ring AS 568-011	2-36, 3-37
500778	4	O-ring AS 568-012	3-14, 16, 21, 25, & 50
500779	1	O-ring AS 568-013	3-11
500780	4	O-ring AS 568-014	3-38, 4-6, 4-9, 4-18
500781	2	O-ring AS 568-015	4-25, 4-31
500786	1	O-ring AS 568-020	3-47
500793	4	O-ring AS 568-027	2-10, 2-19, 2-29
500808	1	O-ring AS 568-111	2-5
500872	1	O-ring AS 568-240	3-3
500933	1	Retaining Ring, Truarc N5000-37	2-43

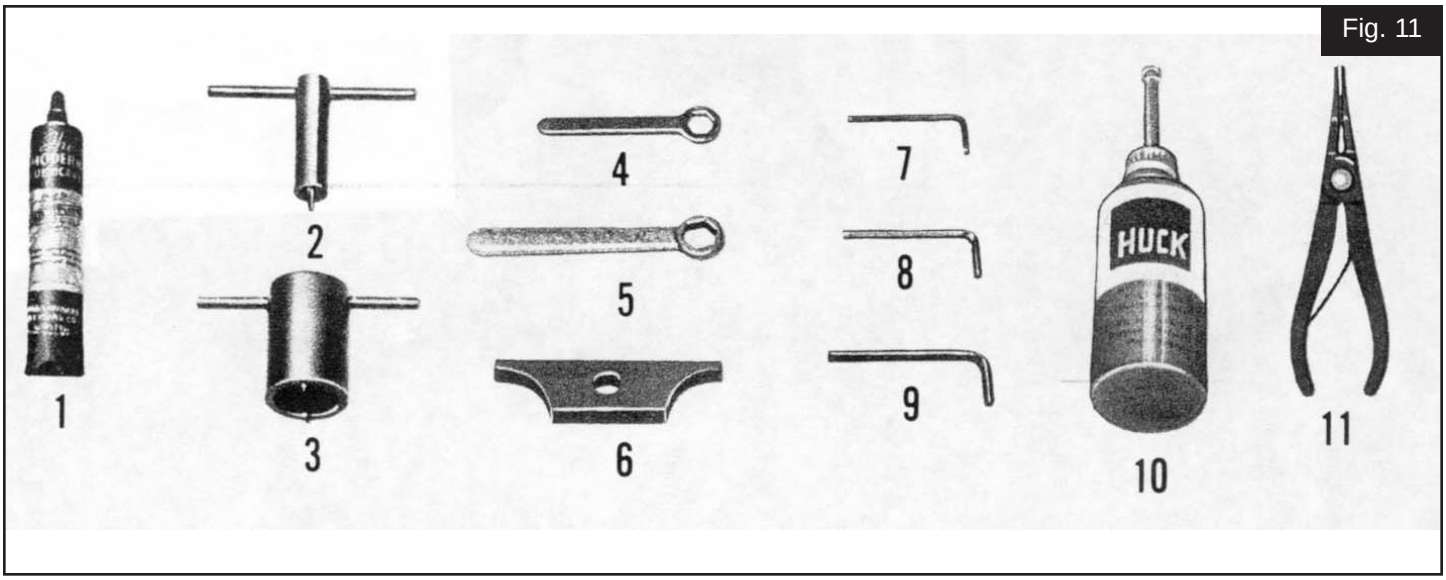
Table 10 - PARTS LIST (Continued)

PART#	QTY	PART NAME	REF. NO.
501078	2	Back-up Ring S-11248-06	2-39, 2-46
501079	1	Back-up Ring S-11248-07	2-42
501082	3	Back-up Ring S-11248-10	4-11, 4-15
501099	6	Back-up Ring S-I 1248-27	2-11, 2-20, 2-30
501102	1	Back-up Ring S-11248-111	2-6
501105	1	Back-up Ring S-11248-114	2-14
501138	1	Back-up Ring S-11248-211	2-9
501140	5	Back-up Ring S-11248-213	2-16, 2-23
501170	1	Quad Ring MR-Q4114	2-13
501172	3	Quad Ring MR-Q4213	2-15, 2-22
501408	1	Quad Ring MR-Q4011	3-36
501409	1	Quad Ring MR-Q4006	2-38
501410	2	Quad Ring MR-Q4007	2-41, 4-23
501414	3	Quad Ring MR-Q4111	3-6, 3-41
501417	2	Quad Ring MR-Q4211	2-8, 2-27
501460	1	Quad Ring MR-Q4342	3-45
502135	2	Pin, Slotted .094 Dia. X .62	3-30
502259	1	Retaining Ring, Truarc 5008-100	3-48
502509	1	Ball, 1/4 Dia. Steel	4-19
502929	3	Ball, 3/16 Dia. Stainless Steel	2-47, 2-51
502934	3	Ball, 11/32 Dia. Stainless Steel	3-18, 3-22, 3-26
503160	1	Back-up Ring Parbak 8-007	4-18
503167	5	Back-up Ring Parbak 8-014	3-39, 4-8, 4-17
503168	1	Back-up Ring Parbak 8-015	4-26
503195	2	Back-up Ring Parbak 8-111	3-42
504378	4	Screw, Self-tapping #4-40 X 1/4	3-33

NOTES:

1. All part numbers shown in this manual are available from Huck. The 500000 series part numbers are standard parts which generally can be purchased locally.
2. O-ring sizes are specified as “AS” dash num bers. (AS 568 is an AEROSPACE SIZE STANDARD FOR O-RINGS and was formerly known as ARP 568).
3. The compound for O-rings and Quad Rings is SAE-ASTM SB715 BE, E_3 F_1 or F_2 (Nitrile or Buna N, 70 Durometer, except as noted.
4. Back-up rings are either W.S. Shamban & Co. Series S-11248 (MS-28774 TEFLON) or Parker Seal Co. PARBAK Series 8. Dash numbers correspond to AS dash numbers of O-rings.

Fig. 11



SERVICE TOOL KIT 42-233

Service Tool Kit 42-233 contains the tools required (in addition to common screwdrivers, etc.) to disassemble and reassemble the Model 200 Installation Tool.

Table 11 – PARTS LIST

REF. NO.	PART NO.	PART NAME	USED ON
1	502723	Lubriplate 130AA (Tube)	Miscellaneous
2	100878	Wrench	4-21, -24
3	100556	Wrench	2-25
4	502912	Wrench – 7/16 Inch	Collets
5	502914	Wrench – 9/16 Inch	Collets
6	111239	Wrench	2-21
7	502294	Hex Key – 1/8 Inch	1-3 (Old Series)
8	502655	Hex Key – 9/64 Inch	1-3 (New Series)
9	502296	Hex Key – 3/16 Inch	1-6
10	100932	Filler Bottle & Fluid	4-4
11	502857	Truarc Pliers #0100	3-48

FILL AND BLEED UNIT MODEL 970-100

Fill and Bleed Unit, Model 970-100, is designed for the rapid and efficient filling of a tool with hydraulic fluid and bleeding air from the hydraulic system. It can be used to fill and bleed a Model 200, Model 970, 10000 or 40000 Huck Installation Tool. The Fill and Bleed Unit weighs 50 pounds as shipped, without hydraulic fluid. The outside dimensions are 14” wide x 16” long x 14” high.

The unit operates on 110 volt, single phase, 50/60 hertz electrical power.

CARRYING CASE

Carrying Case, part number 110206, is available to store or carry a Model 200 Tool. Compartments are provided for storing nose assemblies and accessories.

SHIFT SETTING KITS

Shift Setling Kit 107569 is used to check the spindle load (pounds) at shift. The tester, gage and adapters are housed in a sheet metal case.

(PREFERRED METHOD)

Table 12 – PARTS LIST (Kit 107569)

PART NO.	QUANTITY	PART NAME
107573	1	Skidmore-Wilhelm Model S Tester
107564	1	Adapter
107565	1	Plate
503910	2	Socket Head Cap Screw #5-40 x 1/4
107570	1	Carrying Case
101303	1	Air Fitting

Shift Setting Kit 101300 is used to check the hydraulic fluid pressure (psi) at shift. The gage and adapters are housed in a sheet metal case.

(ALTERNATE METHOD)

Table 13 – PARTS LIST (Kit 101300)

PART NO.	QUANTITY	PART NAME
107892	1	Pressure Gage & Adapter Assembly
101301	1	Pressure Gage
101302	1	Gage Adapter
500772	1	O-ring – AS 568-006
101303	1	Air Fitting
101304	1	Stop Nut
500772	5	O-ring – AS 568-006 (Spares)
102549	1	Carrying Case

Tool & Product Update

*This revised Bulletin obsoletes and supersedes Bulletin 141 dated 7-15-75

SPINDLE LOADS AND HYDRAULIC PRESSURES AT SHIFT FOR HUCK MODEL 200 INSTALLATION TOOL

When used to install double action fasteners, the shift valve of the Model 200 H.I.T. must be adjusted to insure the proper installation of various fasteners. Two methods of checking the shift valve setting are available:

Method #1: Shift Setting Kit No. 107569 employs a Skidmore-Wilhelm Tension Tester to check the spindle load at shift, in pounds.

Method #2: Shift setting No. 101300 employs a hydraulic pressure gauge to check the hydraulic pressure at shift, in pounds per square inch (psi).

The chart below shows the "Spindle Load at Shift" and "Hydraulic Pressure at Shift" for various fasteners. It may be necessary to retrofit some older tools prior to serial number 5161 (except 5081 thru 5090 and 5120 thru 5135), using Shift Valve and Balance Valve Retrofit Kit No. 100434, to insure repeatability of the shift valvesettings.

FASTENERS		POUNDS SPINDLE LOAD AT SHIFT USING SETTING KIT #107569		PSI (2) HYDRAULIC PRESSURE AT SHIFT USING SETTING KIT #101300
AFS 40911-460 AFS 40911-461	CKLX4	325 (1)		425 (1)
	CKLX5	500	±25	650
	CKLX6	725	±25	950
	OCKL-4	450 (1)		575 (1)
	OCKL-5	575	±25	750
	OCKL-6	775	±25	1000
NAS1919 & 1921				
B04	MLS-B04	350 (1)		450 (1)
B05	MLS-B05	500	±25	650
B06	MLS-B06	725	±25	950
B08	MLS-B08	1275	±25	1650
C04	MLS-EU04	875	±25	1125
C05	MLS-EU05	1175	±25	1525
C06	MLS-EU06	1875	±25	2450
M04	MLS-M04	775	±25	1000
M05	MLS-M05	1125	±25	1475
M06	MLS-M06	1775	±25	2325
MS21140 MS21141	B-EU5 B-EU6	1260 1845	±35 ±65	1650 2400
MS90353 MS90354	B-T5 B-T6	1425 2200	±25 ±50	1850 2875
— —	OB-T5 OB-T6	1425 2200	±25 ±50	1850 2875

(1) Set as close as possible to pounds or psi shown.
(2) Plus or minus 50 psi, unless otherwise specified.

Date REVISED 8-20-75
No. 141

SERVICE NOTES

Limited Warranties

Tooling Warranty: Huck warrants that tooling and other items (excluding fasteners, and hereinafter referred as "other items") manufactured by Huck shall be free from defects in workmanship and materials for a period of ninety (90) days from the date of original purchase.

Warranty on "non standard or custom manufactured products": With regard to non-standard products or custom manufactured products to customer's specifications, Huck warrants for a period of ninety (90) days from the date of purchase that such products shall meet Buyer's specifications, be free of defects in workmanship and materials. Such warranty shall not be effective with respect to non-standard or custom products manufactured using buyer-supplied molds, material, tooling and fixtures that are not in good condition or repair and suitable for their intended purpose.

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Huck's sole liability and Buyer's exclusive remedy for any breach of warranty shall be limited, at Huck's option, to replacement or repair, at FOB Huck's plant, of Huck manufactured tooling, other items, nonstandard or custom products found to be defective in specifications, workmanship and materials not otherwise the direct or indirect cause of Buyer supplied molds, material, tooling or fixtures. Buyer shall give Huck written notice of claims for defects within the ninety (90) day warranty period for tooling, other items, nonstandard or custom products described above and Huck shall inspect products for which such claim is made.

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The only warranties made with respect to such tool, part(s) or other items thereof are those made by the manufacturer thereof and Huck agrees to cooperate with Buyer in enforcing such warranties when such action is necessary.

Huck shall not be liable for any loss or damage resulting from delays or nonfulfillment 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

Canada
6150 Kennedy Road Unit 10, Mississauga, Ontario, L5T2J4, Canada.
Telephone (905) 564-4825 FAX (905) 564-1963

Outside USA and Canada
Contact your nearest Huck International Office, see back cover.

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 Tools Kits and Nose Assemblies. Please contact your Huck Representative or the nearest Huck office listed on the back cover for the ATSC in your area.

HUCK

For the Long Haul™

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