



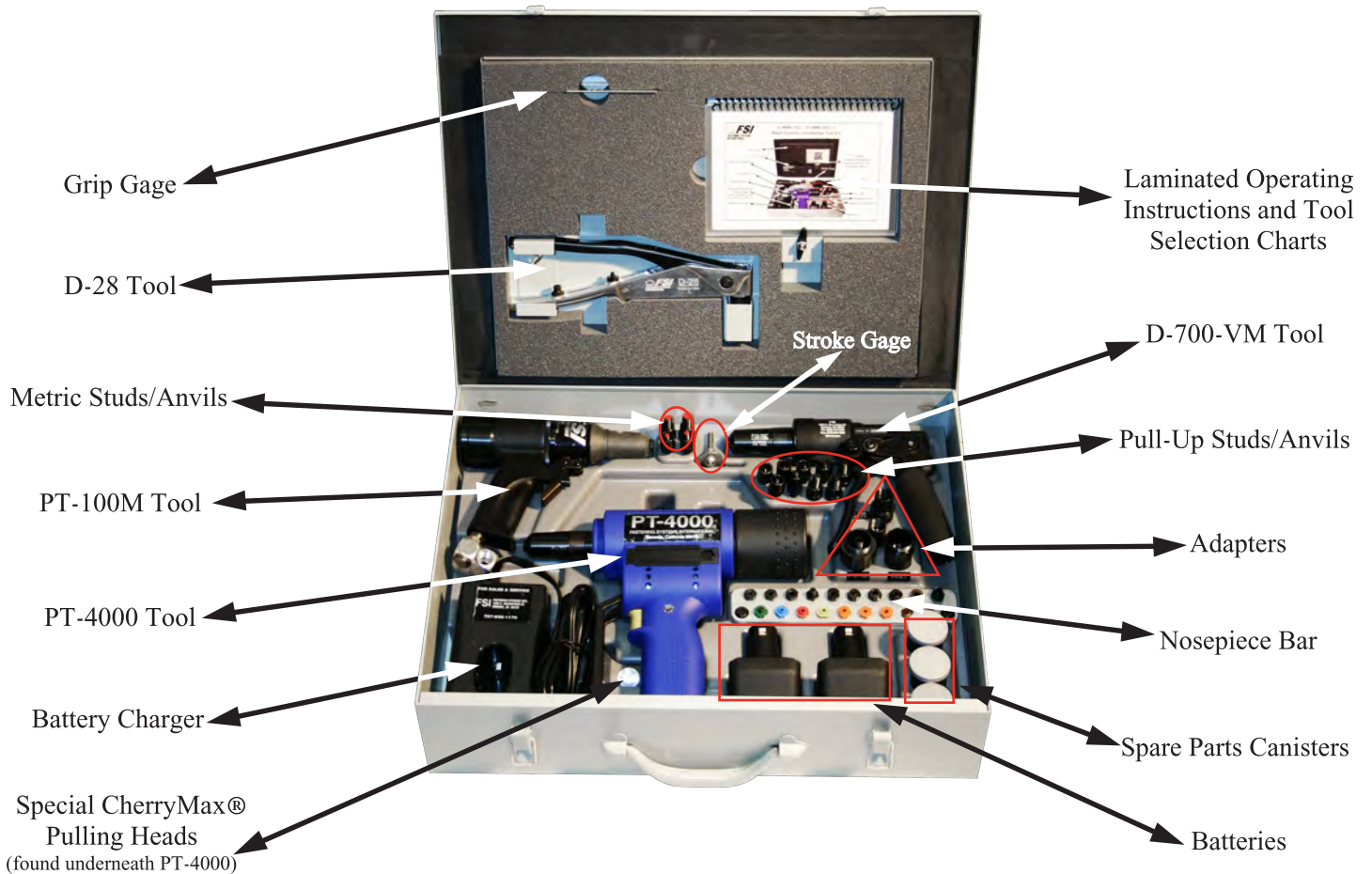
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D-9000-MIL-2

NSN: 5180-01-470-6539

Operations Manual

*D-9000-MIL-2 BLIND FASTENER INSTALLATION TOOL KIT
(Kit contains 86 separate pieces inside its carrying case.)*



D-9000-MIL-2
BLIND FASTENER INSTALLATION TOOL KIT
NSN 5180-01-470-6539

KIT CONTENTS

<u>QTY</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1 EA	D-700-VM	HAND HYDRAULIC RIVETER, PRESSURE VALVE
1 EA	PT-100M	AIR HYDRAULIC RIVETER
1 EA	PT-4000	CORDLESS RIVETER
1 EA	D-28	HAND RIVETER
1 EA	F-4000A	BATTERY CHARGER, SMART
2 EA	F-3001A	BATTERY PACK, Ni-MH (12v, 3.2AH)
1 EA	F156	3/32-1/8 NOSEPIECE
1 EA	F159	1/8 NOSEPIECE
4 EA	F143	1/8-3/16 NOSEPIECE
1 EA	F142	1/4 NOSEPIECE
1 EA	F168	3/16 MONOBOLT NOSEPIECE
1 EA	F169	1/4 MONOBOLT NOSEPIECE
1 EA	F580	3/16 MS NOSEPIECE
1 EA	F396	3/16 BULBTITE NOSEPIECE
1 EA	F398	1/4 BULBTITE NOSEPIECE
1 EA	F155	1/4 "T" RIVET NOSEPIECE
1 EA	F390	3/32 NAS 1400A NOSEPIECE
1 EA	F391	1/8 NAS 1400A NOSEPIECE
1 EA	F392	5/32 NAS 1400A NOSEPIECE
1 EA	F393	3/16 NAS 1400A NOSEPIECE
1 EA	F501	1/8 NAS 1900S NOSEPIECE
1 EA	F502	5/32 NAS 1900S NOSEPIECE
1 EA	F503	3/16 NAS 1900S NOSEPIECE
1 EA	F505U	5/32 MS90353/54-S/U NOSEPIECE
1 EA	F506	3/16 MS90353/54-S/U NOSEPIECE
1 EA	F360	6-32 PULL-UP STUD
1 EA	F367	NO. 6 ANVIL
1 EA	F361	8-32 PULL-UP STUD
1 EA	F364	NO. 8 ANVIL
1 EA	F372	10-24 PULL-UP STUD
1 EA	F176	NO. 10 TSN ANVIL

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FASTENING SYSTEMS INTERNATIONAL, INC
SONOMA, CA 95476
1 OF 2 PAGES

D-9000-MIL-2 KIT CONTENTS

1 EA	F362	10-32 PULL-UP STUD
1 EA	F365	NO. 10 ANVIL
1 EA	F373	1/4-20 PULL-UP STUD
1 EA	F177	NO. 1/4 TSN ANVIL
1 EA	F363	1/4-28 PULL-UP STUD
1 EA	F366	NO. 1/4 ANVIL
1 EA	F374	5/16-18 PULL-UP STUD
2 EA	F378	NO. 5/16 ANVIL
1 EA	F377	5/16-24 PULL-UP STUD
1 EA	F375	3/8-16 PULL-UP STUD
1 EA	F379	3/8 ANVIL
1 EA	F384	5 MM PULL-UP STUD
1 EA	F365M	5 MM ANVIL
1 EA	F380	6 MM PULL-UP STUD
1 EA	F366M	6 MM ANVIL
1 EA	F368	8 MM PULL-UP STUD
1 EA	F378M	8 MM ANVIL
1 EA	F387	10 MM PULL-UP STUD
1 EA	F379M	10 MM ANVIL
1 EA	F170-A	MASTERSHAFT
1 EA	F171	TURN NUT
1 EA	F187-3BCM	ADAPTER SHAFT, COMPENSATING
1 EA	F187-3ACM	ADAPTER SHAFT, THROUGH HOLE
1 EA	F187-1AR	ADAPTER SLEEVE, ROTATING
1 EA	F687-1AF	ADAPTER SLEEVE, FLATS
1 EA	F687-2A	ADAPTER SHAFT, MS STYLE
1 EA	F1074	EXT STR PULLING HD
1 EA	F1075	RIGHT ANGLE PULLING HD
1 EA	F1076	OFFSET PULLING HD
3 EA	F702	SPARE PARTS CANISTER
1 EA	F128	BLIND BOLT JAW HOLDER
3 EA	F122-A	2 PIECE CAST JAW SET
3 EA	F123	3 PIECE CAST JAW SET
1 EA	F123-A	3 PIECE JAW SET/ BB 5/32
1 EA	F123-B	3 PIECE JAW SET/ BB 3/16
1 EA	F758	JAW PUSHER BB, D-700
1 EA	F958	JAW PUSHER. PT-100
2 EA	F990	JAW PUSHER SPRING, PT-100
1 EA	F3245	1/4 JAW FOLLOWER
2 EA	F3081-A	JAW PUSHER SPRING
1 EA	F101	RIVET NUT STROKE GAGE
1 EA	F269C3	RIVET GRIP GAGE
1 EA	F609A	METAL WEATHER TIGHT CASE
1 EA	F701-D9	CD-ROM, USER MANUAL
1 EA	F754-D9000	OPERATING INSTRUCTIONS
1 EA	F755-D9000	LAMINATED TOOL ASSY CARDS

SUPPLIER CAGE CODE: 64878

FASTENING SYSTEMS INTERNATIONAL, INC.
1206 EAST MACARTHUR STREET
SONOMA, CA 95476-1372

ATTENTION TECHNICIANS

The D-9000-MIL-2 Blind Rivet Tool Kit is supplied with four riveters with 3/16" diameter nosepieces installed in their nose assemblies. The D-28 Hand Riveter comes with 2 piece jaws. All other riveters come with 3 piece jaws (F123) which permit installation of most all rivets from 1/8" thru 1/4" simply by changing the nosepiece, ***EXCEPT***, in the case of the PT-4000 Cordless Riveter, which requires a larger jaw follower (P/N F3245) for 1/4" diameter rivets. Except for the D-28 Hand Riveter, which comes with 2 piece jaws, the riveters all will require the use of 2 piece jaws (F122-A) for 3/32" diameter rivet installation. The 2 piece jaws (F122-A) are furnished in the spare parts canister (F701).

Common blind fasteners used throughout the U.S. military branches have been provided in a convenient chart form to help identify the proper nose assembly. For information on any other blind riveting applications for ground and aircraft/aerospace vehicles, please contact us at toll free 1-800-344-2393 or email us at sales@fsirivet.com.

USER GUIDE

BLIND RIVET GRIP GAGE (F269C3)

BLIND RIVET GRIP GAGE

The Blind Rivet Grip Gage, **F269C3**, has been provided to permit the technician to properly select the rivet grip length required for the materials being joined. Blind rivets are normally specified by their diameter (in 1/32 “ increments) and their grip (in 1/16” increments); hence, a 3/16” diameter blind rivet with a 1/4 “ grip would have a suffix of -06-04 after the basic rivet manufacturer’s part number or military specification number (i.e. CR3213-06-04 nominal diameter CherryMax. The numbers are often abbreviated to -6-4).

You will notice that the grip gage has several holes in it. They are to enable the rivet user to distinguish between the oversize (1/64”) and nominal diameter sizes. Once the sheets to be joined are brought tightly together a hole is then drilled and the grip gage can be inserted into the hole. The hook end of the gage should then catch on the back side of the hole and then the slide bar is brought down until it touches the top sheet. The gage can then be removed and the grip measured. Notice that the gage is scaled in 1/16” increments.

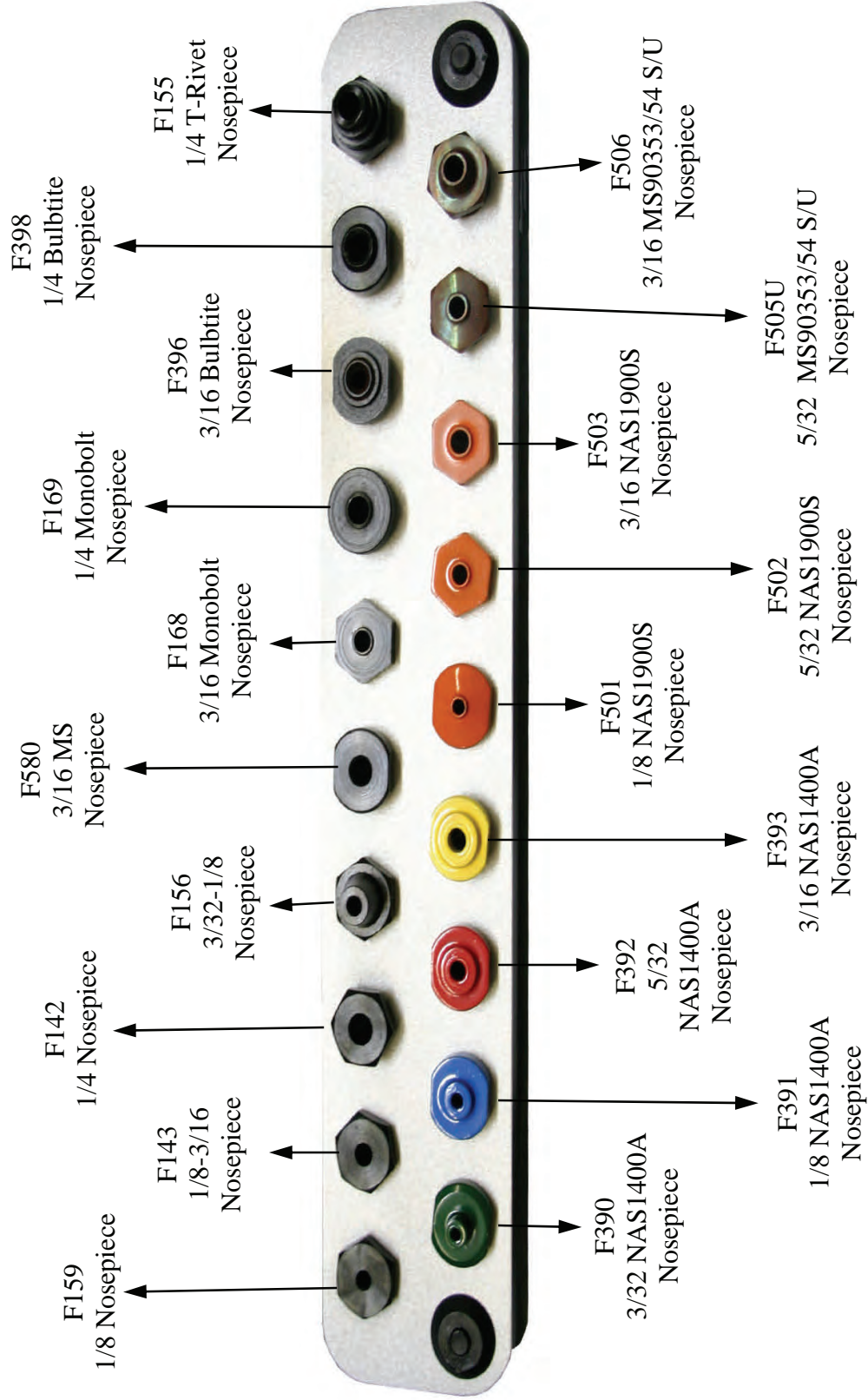
Most commercial and aerospace blind rivets have at least a 1/16” grip range with the dash number signifying the maximum thickness or “grip range” that the rivet may be used in. If the measurement falls right on the line, then the user, in the case of aerospace quality blind rivets, can elect to use either the maximum grip of one rivet or the minimum grip of a longer rivet (i.e. a .250” reading would allow the use of either a -4 grip rivet in its maximum grip or a -5 grip rivet in its minimum grip). In normal circumstances users, if they have the option, will more likely select the rivet used in its maximum grip. This helps minimize blind side protrusion, and helps reduce unnecessary weight. Several thousand rivets can add up to many extra pounds of weight the plane will have to carry over its lifetime which of course translates into fuel consumption.

CAUTION

When gauging the material thickness it is always good to check at least two or more points around the hole. This helps reduce the chance that a burr on the blind side is inadvertently hooked that could give you a false reading. Of course any significant burrs or metal chips should be removed from between the sheets before measuring.



D-9000-MIL-2 NOSEPIECE BAR



D-9000-MIL-2 Pull-up Studs/Anvils

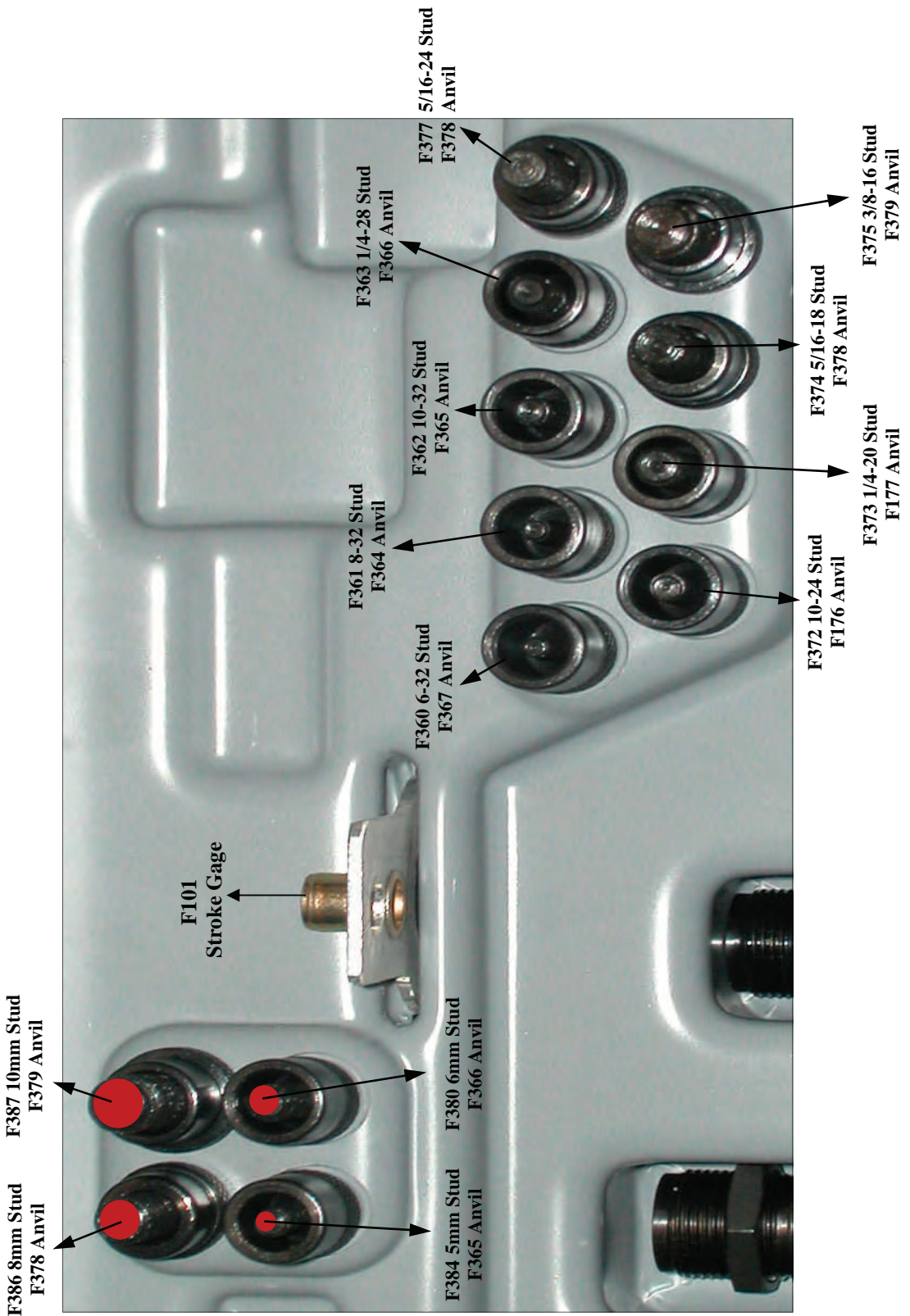
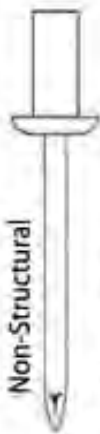





Table I
Industrial Quality Structural and Non-Structural Blind Rivets







Rivet Type	Dia.	Drill Size	D-28 Chart	Nose-piece	PT-100 Chart	Nose-piece	D-700C Chart	Nose-piece	PT-4000 Chart	Nose-piece
POP® Rivets MIL-R-24243  Non-Structural	3/32	40	U	F156NP	H	F156	A	F156	N*	F156
	1/8	30	U	F159-CH	H	F159	A	F159	N	F159
Non-Structural 	5/32	20	U	F143-CH	H	F143	A	F143	N	F143
	3/16	11	U	F143-CH	H	F143	A	F143	N	F143
AVEX® Multi-Grip  Non-Structural	1/4	F	N/A	N/A	H	F142	A	F142	N*	F142
	1/8	29	U	F159-CH	H	F159	A	F159	N	F159
MagnaLok® Interlock® Mega-Grip® M7885/10 IFI-134  Structural	5/32	20	U	F143-CH	H	F143	A	F143	N	F143
	3/16	9	N/A	N/A	H	F143	A	F143	N	F143
	1/4	G	N/A	N/A	H	F142	A	F142	N	F142
	3/16	11	N/A	N/A	H	F580	A	F580	N	F580
	1/4	G	N/A	N/A	H	F142	A	F142	N	F142

*Note: To install 3/32" diameter rivets using the PT-4000, use Chart N but replace 3-pc with 2-pc jaws (F-122-A). To install 1/4" diameter rivets use Chart N and replace 2-pc jaws with 3-pc jaws (F123).

Table I (continued): Industrial Quality Structural and Non-Structural Blind Rivets



Rivet Type	Dia.	Drill Size	D-28 Chart	Nose-piece	PT-100 Chart	Nose-piece	D-700C Chart	Nose-piece	PT-4000 Chart	Nose-piece
Monobolt® IFI-134  Structural	3/16	11	N/A	N/A	H	F168	A	F168	N	F168
	1/4	G	N/A	N/A	H	F169	A	F169	N	F169
Note: Monobolt® is distinguished from the Magnalok/Interlock style rivet by a recess groove in the head of the rivet where the stem enters. It is also often has a drip flange on its plug section base.										
Magnabulb®/ Hemlock*  Structural	1/4	G	N/A	N/A	H	F142	A	F142	N	F142
Olympic Bulb-Tite®  Structural	3/16	4	N/A	N/A	H	F396	A	F396	N	F396
	1/4	E	N/A	N/A	H	F398	A	F398	N	F398
Automotive Split Rivet  Structural	1/4	F	N/A	N/A	H	F155	A	F155	N	F155



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Table II
Aerospace Quality Structural and Non-Structural Blind Rivets










Rivet Type	Dia.	Drill Size	D-28 Chart	Nosepiece	PT-100 Chart	Nose-piece	D-700C Chart	Nose-piece	PT-4000 Chart	Nose-piece
CherryMAX® Huck Clinch® AllMax® M7885/NAS 9300 Structural (nominal diameter)  Gold Washer	1/8	30	U	F159-CH	H	F159	A	F159	N	F159
	5/32	20	U	N/A	H	F143	A	F143	N	F143
	3/16	10	U	N/A	H	F143	A	F143	N	F143
	1/4	F	U	N/A	H	F142	A	F142	N	F142
CherryMAX® Huck Clinch® AllMax® M7885 NAS 9300 Structural (oversize diameter)  Silver Washer	1/8	27	U	F159-CH	H	F159	A	F159	N	F159
	5/32	16	U	N/A	H	F143	A	F143	N	F143
	3/16	5	U	N/A	H	F143	A	F143	N	F143
	1/4	I	U	N/A	H	F142	A	F142	N	F142
Cherry MS Olympic MS MS20600-20605 Non-Structural  Structural 	3/32	40	N/A	N/A	M	F156	A	F156	N	F156
	1/8	30	N/A	N/A	M	F156	A	F156	N	F156
	5/32	20	N/A	N/A	M	F143	A	F143	N	F143
	3/16	10	N/A	N/A	M	F580	A	F580	N	F580

Table II (continued): Aerospace Quality Structural and Non-Structural Blind Rivets



Rivet Type	Dia.	Drill-Size	D-28 Chart	Nose-piece	PT-100 Chart	Nose-piece	D-700C Chart	Nose-piece	PT-4000 Chart	Nose-piece
Huck SMLS® NAS 1919 S/U NAS 1921  Structural	1/8	30	N/A	N/A	K	F501	E	F501	P	F501
	5/32	20	N/A	N/A	K	F502	E	F502	P	F502
	3/16	10	N/A	N/A	K	F503	E	F503	P	F503
Blind Bolt® Maxibolt® MS 90353 S/U MS 90354 S/U  Structural	5/32	19	N/A	N/A	I	F505U	D	F505U	O	F505U
	3/16	7	N/A	N/A	I	F506	D	F506	O	F506
Cherrylock "A" Code Olympic-Lok® NAS 1398/1399 Single Action  Structural	3/32	27	N/A	F390	J	F390	C	F390	Q	F390
	1/8	16	N/A	F391	J	F391	C	F391	Q	F391
	5/32	5	N/A	F392	J	F392	C	F392	Q	F392
	3/16	1	N/A	N/A	J	F393	C	F393	Q	F393



D-700C

<p>Nutserts*</p>	<p>Thin Sheet Nutserts*</p>
<p>AVK Inserts</p>	<p>Rivnuts Plusnuts*</p>
<p>NAS 1329/1330 MS 27130/27131</p>	

See CD-ROM (F701-D9) for technical data on drill size & installation requirements.

Table III
Industrial and Aerospace Quality Blind Rivet Nuts and Inserts

Thread Size	Pull-Up Stud	Anvil
6-32UNC	F360	F367
8-32UNC	F361	F364
10-24UNC*	F372	F365*
10-32UNF*	F362	F365
1/4-20UNC	F373	F366**
1/4-28UNF	F363	F366
5/16-18UNC	F374	F378
3/8-16UNC	F375	F379
5/16-24UNF	F377	F378
5 MM X .8 ISO	F384	F365M
6 MM X 1.0 ISO	F380	F366M
8 MM X 1.25 ISO	F386	F368M
10 MM X 1.5 ISO	F387	F379M

*Use F176 when installing #10 TSN (Thin Sheet Nutsert)

**Use F177 when installing 1/4" TSN



Table IV
Adapters for Special Pulling Heads to Install CherryMax® (M7885, NAS9300), Self-Plugging and Pull Thru (MS 20600-20605), and Cherrylock® "A" / Olympic-Lok® (NAS1400A)

F3187 Assy.
 (F187-3ACM/F187-1AF)



F187-3BCM * Shaft



F687 Assy.
 (F687-2A/F687-1A)



Pulling Head 	F1075  For CherryMax®	F1076  For CherryMax®	F1074  For CherryMax®	H701B-456  For CherryMax®	MS20600**  For Self Plugging	NAS1400A*  For Cherrylock "A" / Olympiclok
 PT-100	F3187AR	F3187AR	F3187AR	N/A	F687	F687
 D-700C	F3187AR	F3187AR	F3187AR	N/A	F687	F687
 PT-4000	F187-3BCM* F187-1AR	F3187AR	F3187AR	F3187AR	F687	F687

See Notes 

***NOTE:** The F187-3BCM is used in conjunction with the sleeve component of the F3187 Adapter (F187-1AF) when used on the PT-4000 due to its longer stroke capability.
****NOTE:** The MS and NAS Pulling Head (not included in the D-9000-MIL-1 Kit) may be used with this Adapter in sizes 3/32" thru 3/16" diameter. (See manual for further information and part numbers)

D-700C Standard Blind Riveting Set-Up

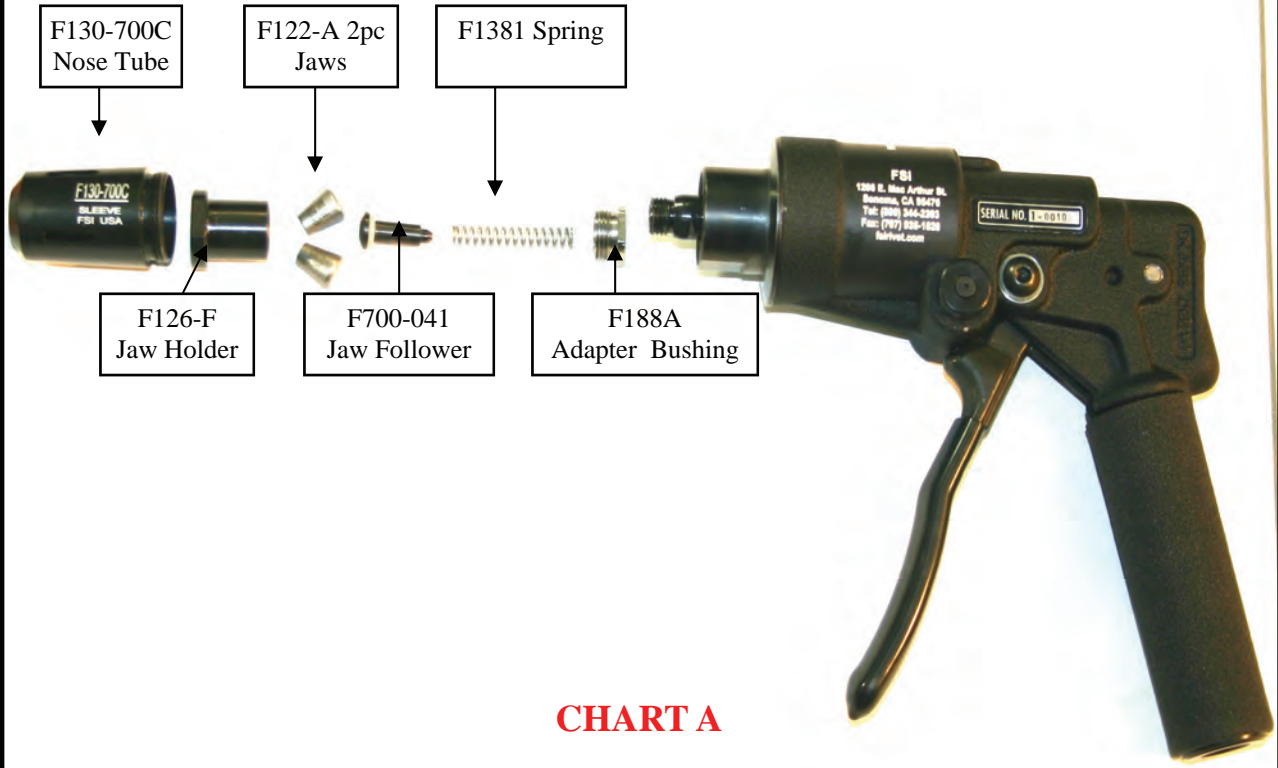


CHART A

D-700C Set-up for Blind Nut Installation

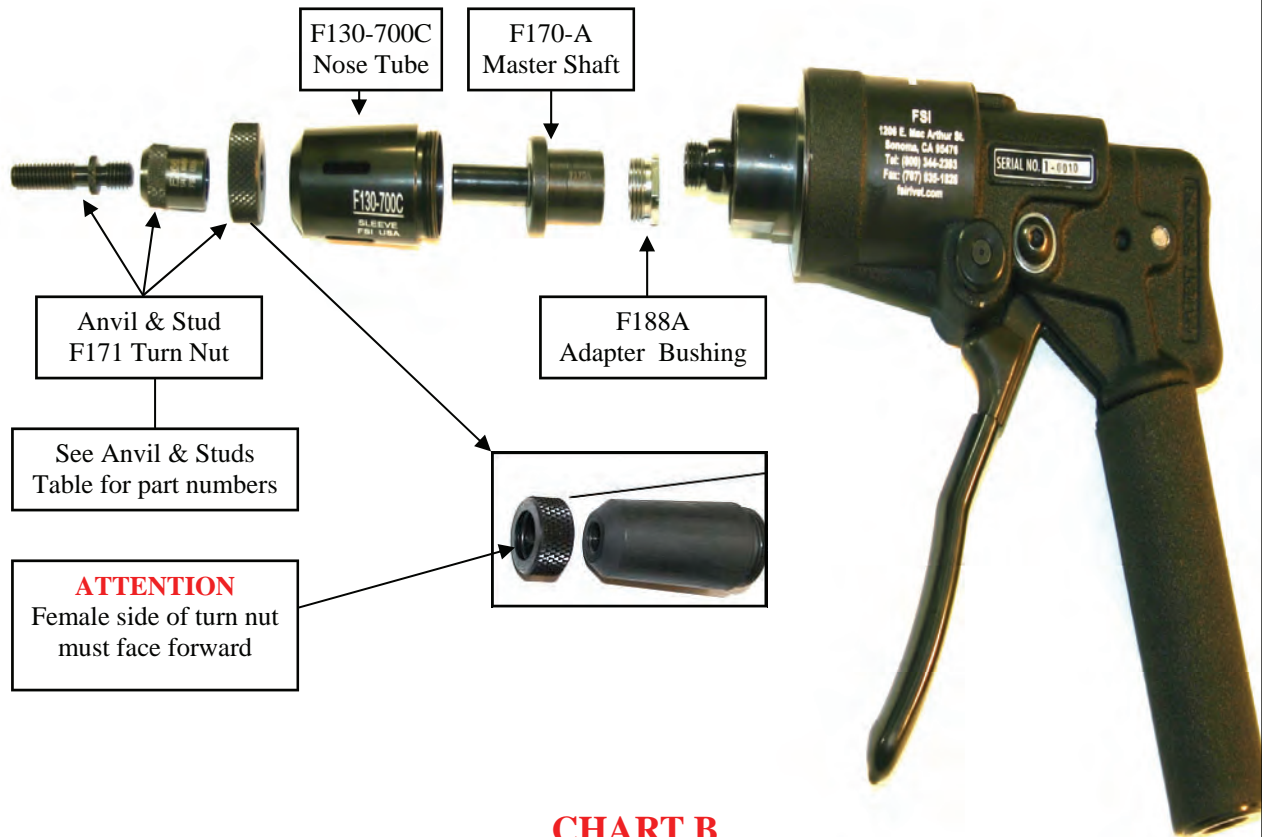
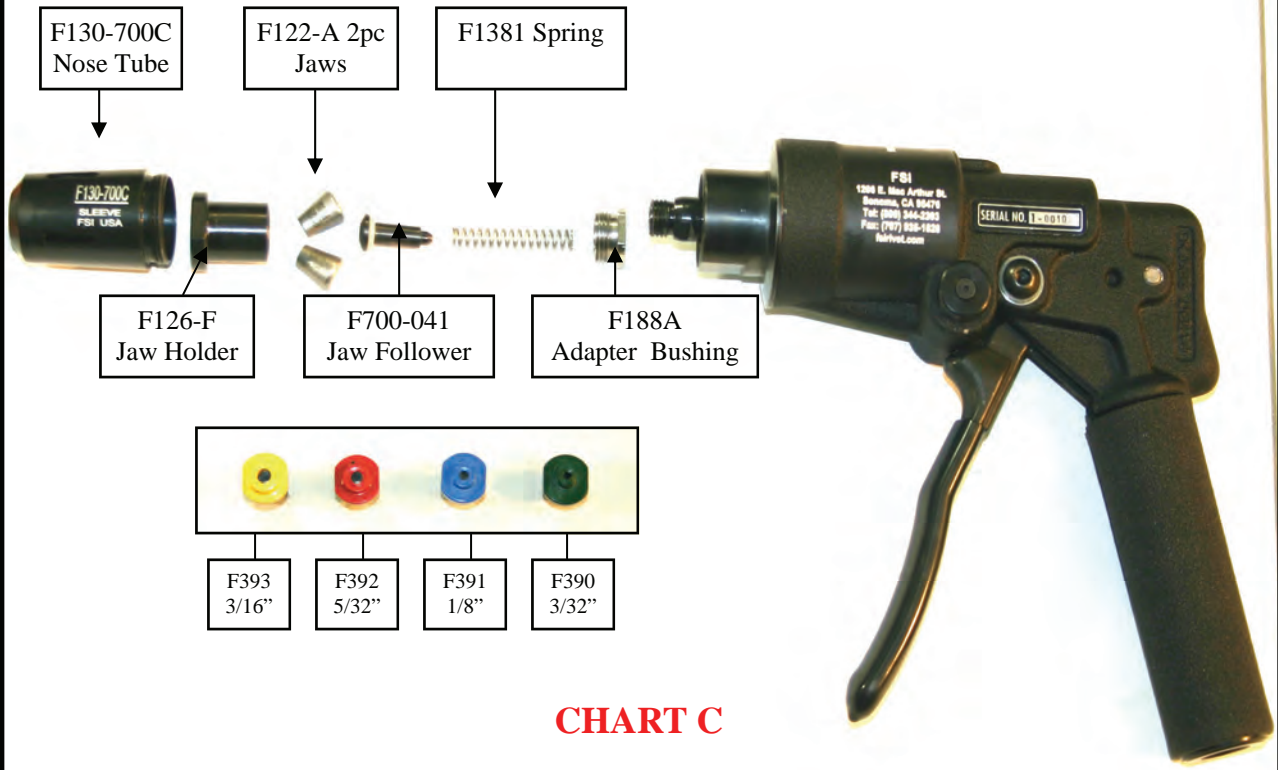
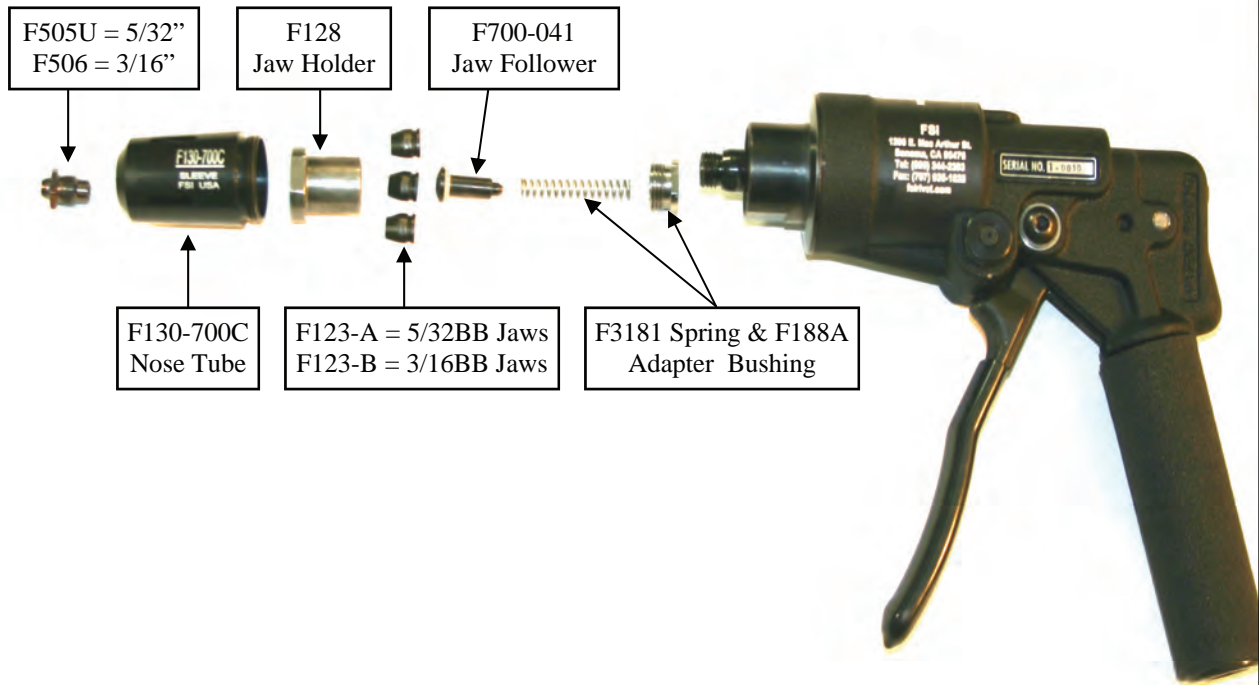


CHART B

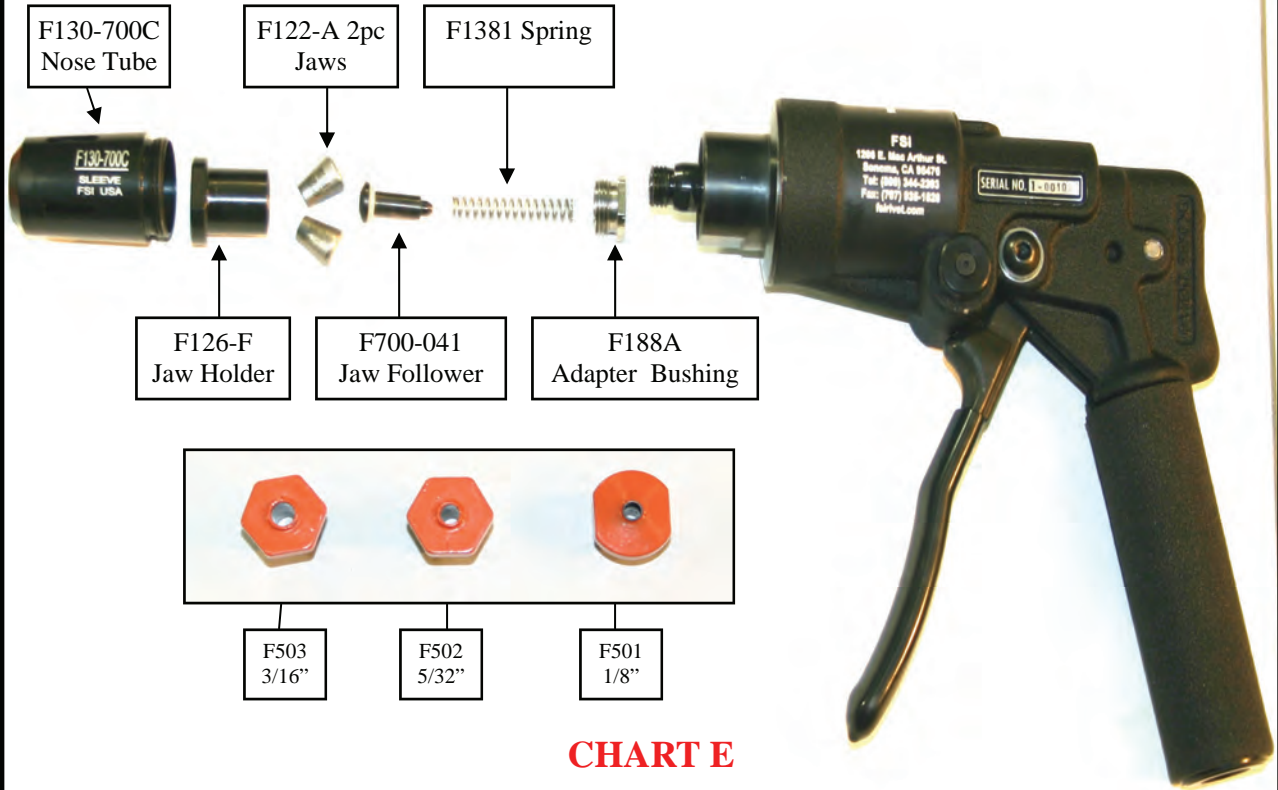
D-700C Standard Set-Up for NAS1400A



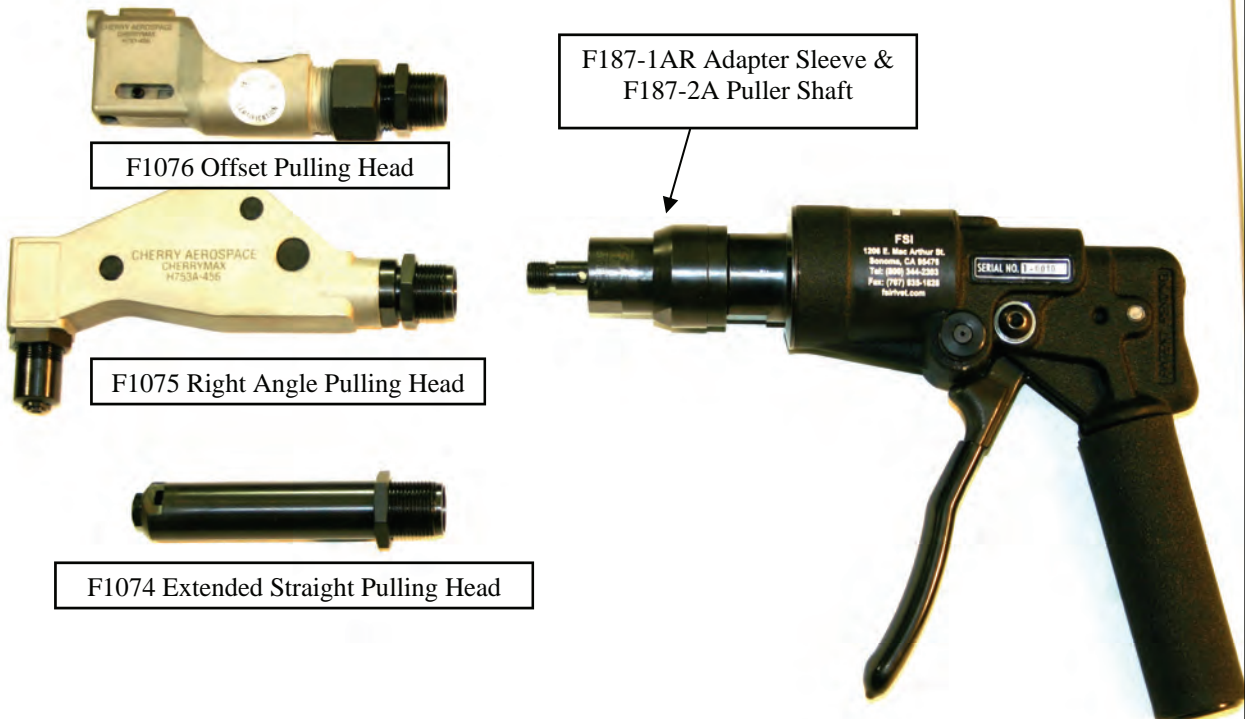
D-700C Standard Set-Up for MS90353/54 S&U & Washer Anvil Driven, Single Action Only



D-700C Standard Set-Up for NAS1900S Type, Single Action



D-700C Set-up for CherryMax® & Huck-Clinch (NAS9300/M7885 Pulling Heads)



D-700C Set-up for MS & NAS1400A Pulling Heads

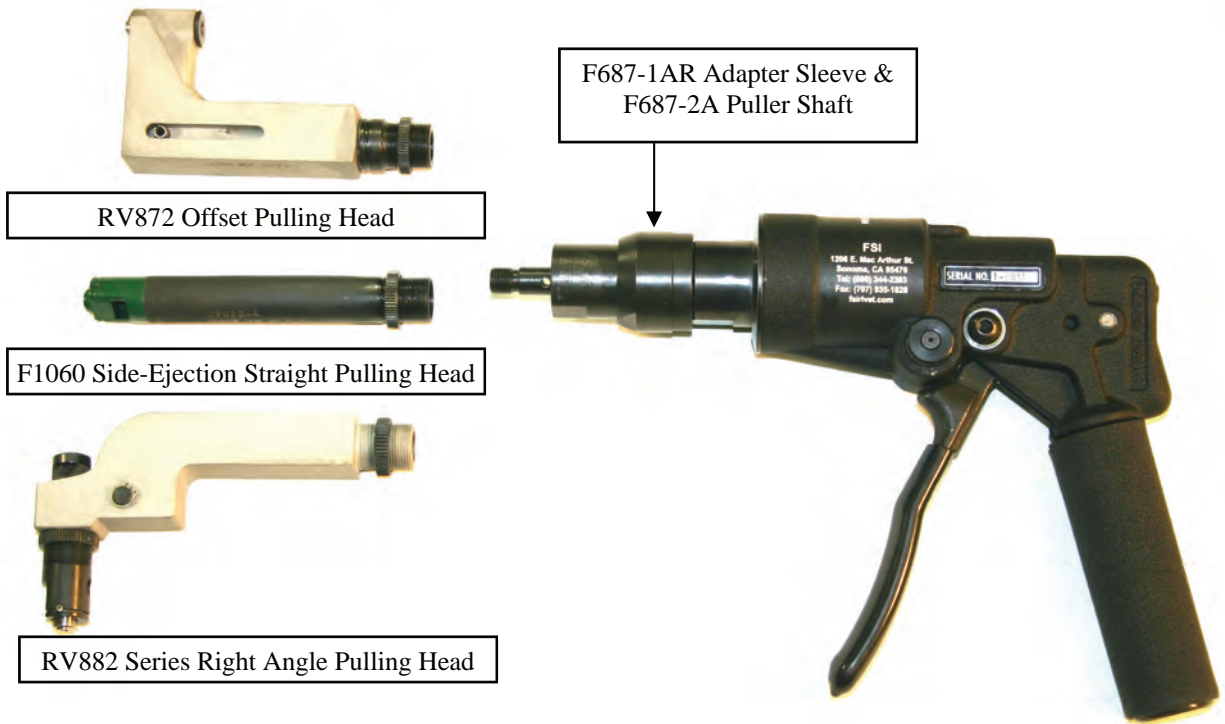
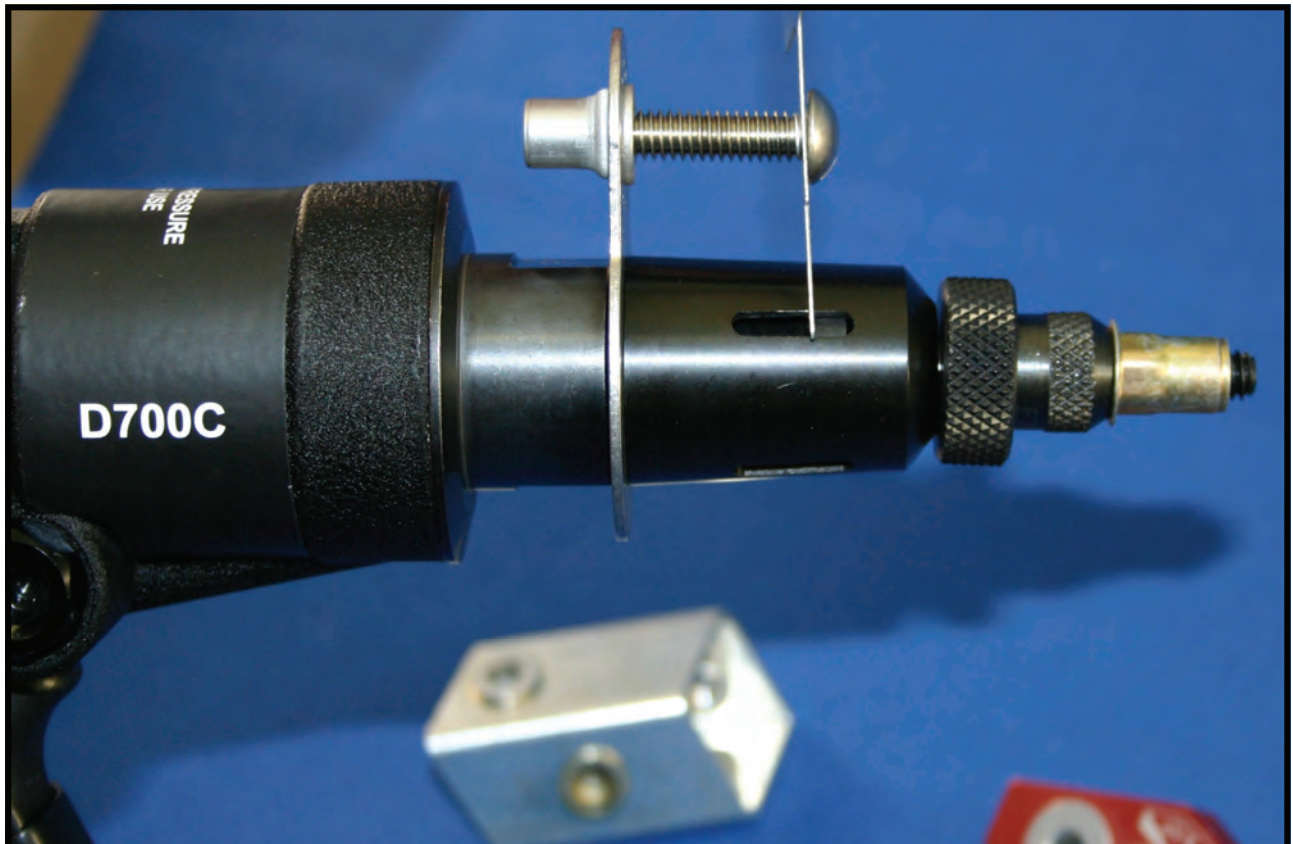
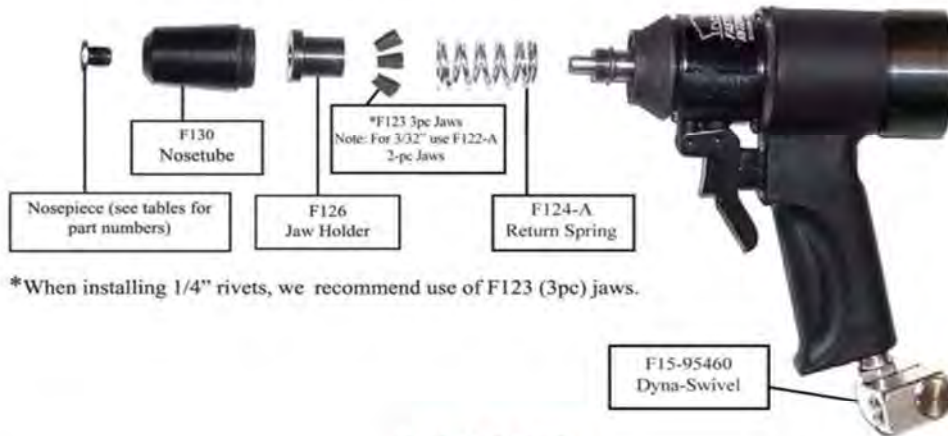


CHART G

D-700C Set-up for Using the Stroke Gage



PT-100M Standard Blind Riveting Set-Up



*When installing 1/4" rivets, we recommend use of F123 (3pc) jaws.

CHART H

***PT-100M Blind Bolt Configuration for MS90353/54 S/U & Washer Anvil Drivers
Single Action Styles Only***

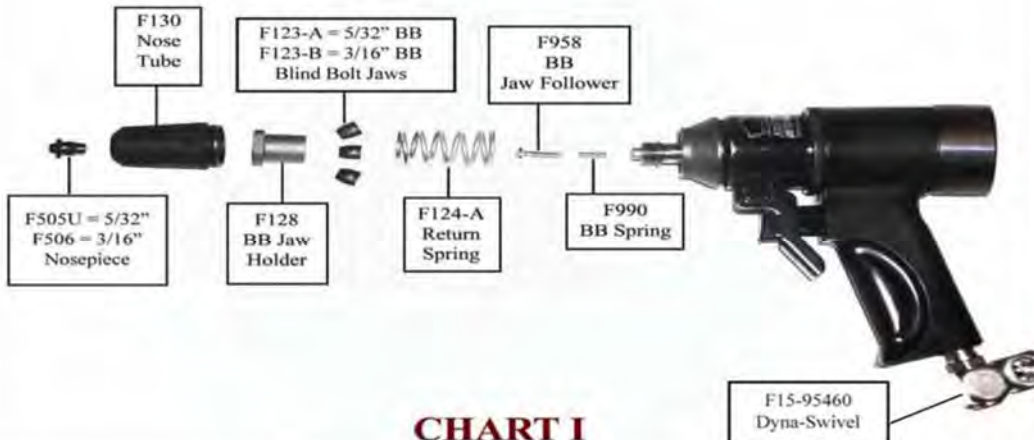
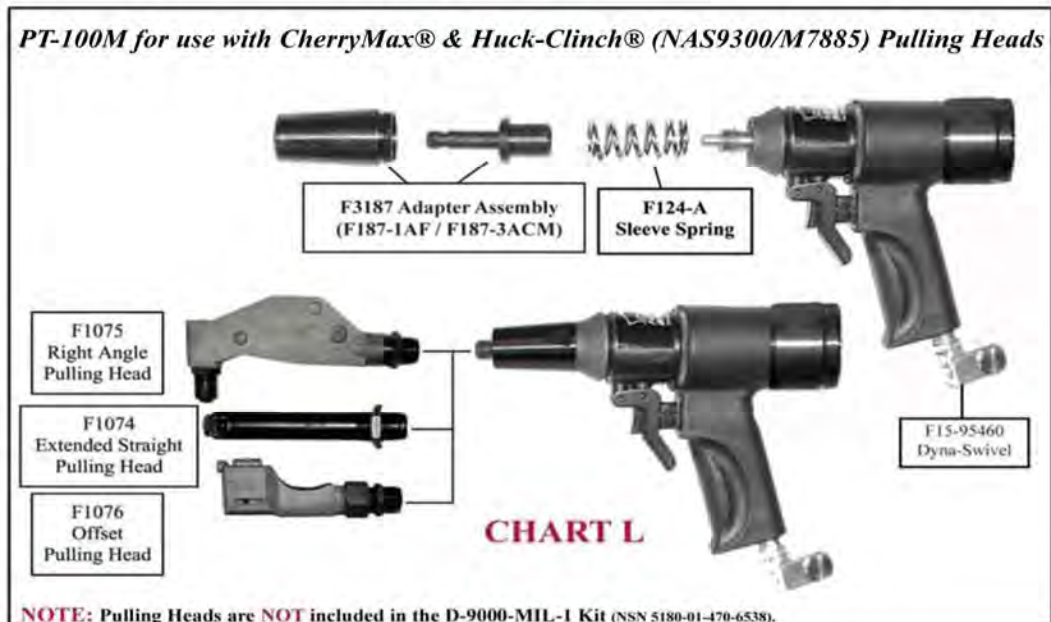
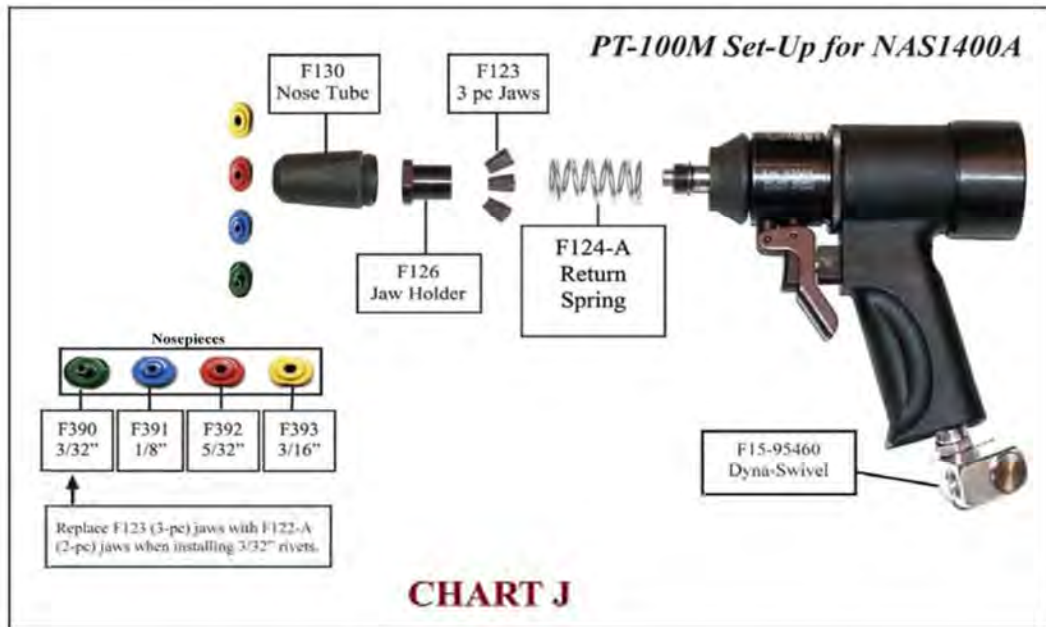


CHART I



PT-100M with MS & NAS1400A Offset, Right Angle & Side Ejection Heads



CHART M

***NOTE:** The RV872, RV882 & the F1060 Series are **OPTIONAL** pulling heads which are sold separately.

PT-4000 Standard Blind Riveting Set-Up

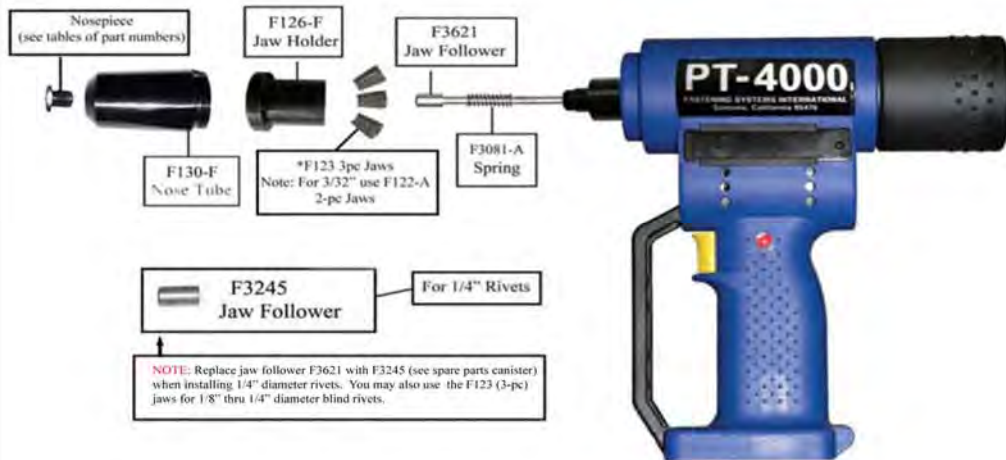


CHART N

***PT-4000 Blind Bolt Set-Up for MS90353/54 S/U & Washer Anvil Drivers
Single Action Styles Only***



CHART O

PT-4000 Set-Up for NAS1900S Type, Single Action Blind Rivets

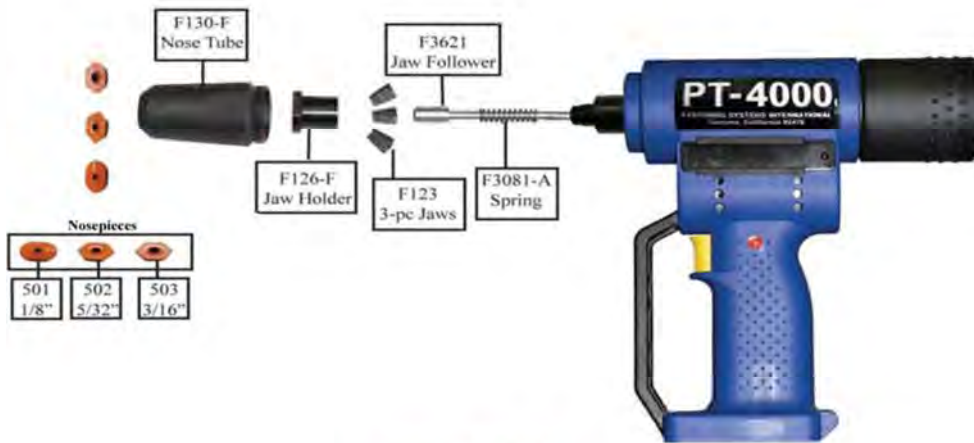


CHART P

PT-4000 Set-Up for NAS1400A Type, Single Action

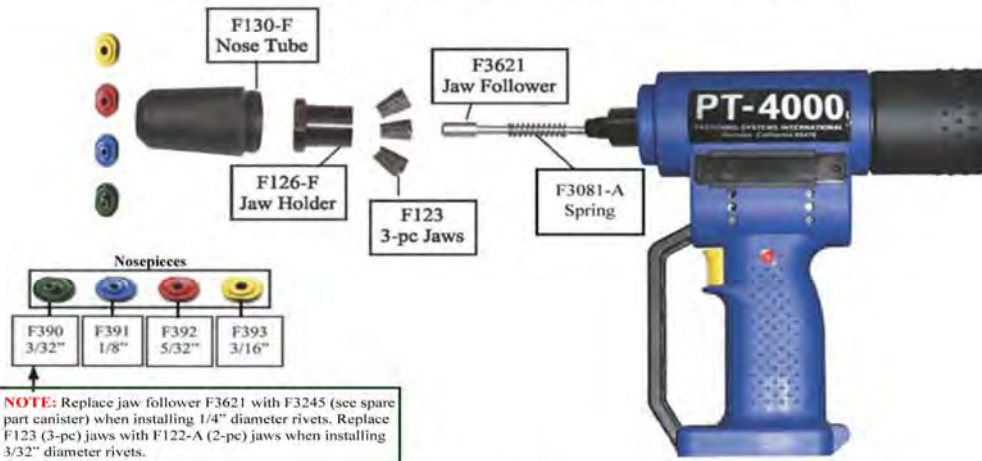


CHART Q

PT-4000 Set-Up for CherryMax®, Huck-Clinch® (NAS9300/M7885) Pulling Heads



CHART R

*(Sleeve component of F3187 adapter)

NOTE: Pulling Heads are **NOT** included in the D-9000-MIL-1 Kit (NSN 5180-01-470-6538).

PT-4000 Set-Up for CherryMax®Riveting w/H701B-465 Pulling Head

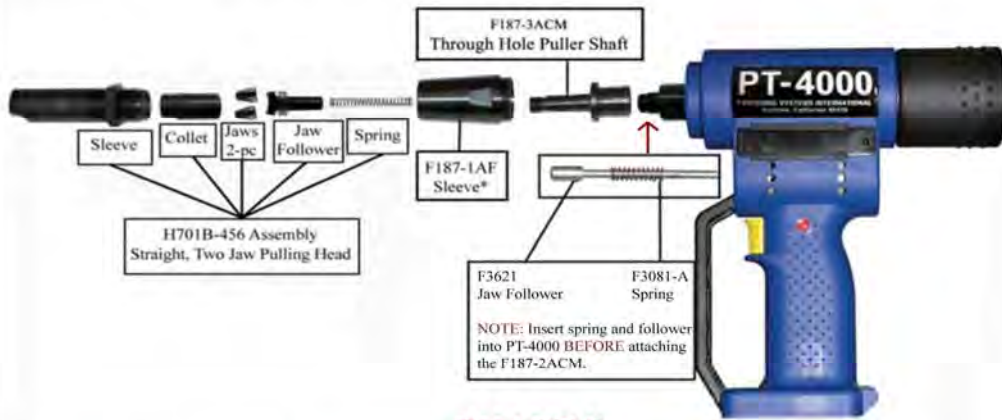


CHART S

*(Sleeve component of F3187 adapter)

-NOTE: The H701B-456 is an **OPTIONAL** pulling Head which is sold separately.

PT-4000 with MS & MASI400A Offset, Right Angle & Side Ejection Heads



CHART T

*NOTE: The RV872, RV882 & the F1060 Series are **OPTIONAL** pulling heads which are sold separately.

D-28 Hand Riveter



CHART U



PT-4000

Operating Instructions



1206 East MacArthur Street • P.O. Box 1372 • Sonoma, California 95476
Phone: (707) 935-1170 • Toll Free: 800-344-2393 • Fax: (707) 935-1828
Email: sales@fsirivet.com • Website: www.fsirivet.com

PT-4000 Rivet Capacity

The PT-4000 pulls most all pull style blind rivets including CherryMax and Cherry "A" Max thru 1/4" diameter in all materials and Blind Bolts and Maxibolts thru 3/16" diameter.

Equipment/Accessories

Nosepieces:	3/32 thru 1/4
Wrench:	SW 12 (covers nosepiece compartment)
Suspension Loop:	Flips open from housing
Battery:	Quick Charge/ 12 Volt DC

Technical Data

Weight:	4.85 lbs (with battery)
Stroke:	787"
Drive Unit:	12 V direct current motor
Traction Power:	3,000 lbs.

Nosepiece Rivets Per Battery Table: Charge

Rivet Dia.	Rivet Body Material	*Rivets Per Charge	Nosepiece Part No.
3/32"	Aluminum	1,900	F140
1/8"	Aluminum	1,300	F159
1/8"	Steel	1,100	F159
1/8"	Stainless Steel	1,000	F159
5/32"	Aluminum	1,000	F143
5/32"	Steel	900	F143
5/32"	Stainless Steel	800	F143
3/16"	Aluminum	700	F143
3/16"	Steel	500	F143
3/16"	Stainless Steel	400	F143
1/4"	Stainless Steel	90	F142

* Rivets per battery charge based on Mil-R-24243 style blind rivets in maximum grip condition

Starting Procedure

Install fully charged battery into housing. Select proper nosepiece (see page 2) and screw into head.

Attention: Do not cover or stick anything into the vent holes.

Operating Procedure

Pushing the trigger starts the operation. When releasing the trigger, the jaw mechanism returns to the start position automatically.

Eject the spent mandrel into the mandrel container by tilting the tool backward, or through the nosepiece by tilting tool forward.

The riveting tool is equipped with overload protection. In case if an overload, the operation will be stopped and the red light goes on. If that happens, release the trigger and the mechanism will return to the start position.

The battery will deliver uniform power for tool operation until depleted to the last 2-3 rivets of charge capacity. It is designed to have the jaw mechanism return to the starting position when the trigger has been released.

Maintenance

The maintenance of the riveting tool is limited to the complete jaw mechanism and the included wearing parts.

Remove the battery (#40) from the tool housing. Unscrew the head (#13) from the tool and clean it. Unscrew the jaw housing (#12) from the coupler. Take out the jaws (#11), clean and lubricate or replace if worn. Reassemble in reverse order and make sure that all parts are tightened!

Warranty

There is a 6 month warranty from the day of delivery on the PT-4000. Damages caused by common wearing, overloading or improper usage or handling are excluded from the warranty. Damages caused by material or manufacturing faults will be covered by this warranty and will be repaired or replaced at no cost. Claims can only be accepted if the complete riveting tool, fully assembled, is returned to the distributor or FSI.

Battery / Charger Technical Data

Charger

Input Voltage: 110 V/60 Hz
Output Voltage: 12 VDC
Recharge Time: Approx. 1 hour
Weights: 2.6 lbs.

Battery

Rated Voltage: 12 VDC
Number of Cells: 10 Pieces
Cell Construction: Nicad with
Overcharge protection
Capacity: 1.4 amp hour
Weight: 1.4 lbs

Recharging Procedure

Take charger out of steel case and connect to power line.

Make sure the voltage is in accordance with the label!

The battery must be installed correctly (positive pole to positive pole) with minimal force into the charger. The quick recharging procedure is automatically started and indicated by red light.

After approximately 1 hour the charging procedure is finished and the charger switches to trickle charge, indicate by a green light.

Place only cool batteries into the charger in order to obtain a full battery recharge.

Battery Handling

The battery is rechargeable up to 1000 times and reaches its full power only after several rechargings. Do not discharge the battery completely. Recharge is not used for an extended period.

Substantially reduced operating time of battery after a proper recharge indicates the battery must be replaced. Keep battery in a cool and dry place, with temperature not to exceed (122 F).

Environmental Protection

If batteries have to be replaced, the following instructions should be followed:

Return used batteries to your supplier or FSI for recycling. Under no circumstances should nickel-cadmium batteries be discarded as normal waste which might be burned or exposed to ground water.

Trouble Shooting

Blind Rivet Cannot be Set

Causes

Depleted battery charge
Jaws dirty or worn
Jaw pusher spring weak
When trigger is pressed, no function
(red indicator light shows)

Remedy

Recharge, if necessary replace
Clean and lubricate or replace
Tighten
Replace

No Spent Mandrel Discharge

Causes

Wrong nosepiece
Nosepiece worn
Mandrel jammed in jaws

Head Dirty inside
Spent mandrel container filled
Passage clogged

Remedy

Exchange according to page 2
Replace
Loosen the mandrel, clean and lubricate the
jaws or replace
Clean
Remove and empty
Remove clogged mandrels and check for free
ejection

Red Light Indicated Faults

A) When trigger is pressed

Causes

Overheating of electronic control
B) While pulling the rivet

Causes

Overloading
Overheating of electronic control
Depleted battery charge

C) After releasing the trigger

Causes

Jaw mechanism is not reaching the front
position

Remedy

Allow too to cool to ambient temperature

Remedy

Check working capacity
Allow tool to cool to ambient temperature
Recharge or replace

Remedy

Tighten jaw mechanism

Maintenance Instructions

General Notes

Warranty repairs are carried out by the manufacturer only. Repairs outside the warranty period should only be carried out by trained personnel. The following instructions must be strictly adhered to, as assembly or adjustment errors may cause major damage to the PT-4000.

Repair Tools & Lubricant

For repair of the PT-4000, the following should be available:

Screw Driver Torx T 20
Hexagonal Wrench SW 2.5 mm
Open End Wrench 27 mm
Open End Wrench 17 mm
Open End Wrench 14 mm
Lubricating Grease (#46)

Dismantling the PT-4000

Remove battery (#40) from the tool. Unscrew spent mandrel container (#39). Remove housing screw (3 pcs. #32 & 5 pcs. of #33) with screw driver Torx T 20.

Take off hand guard (#31). Take off top of tool housing (#1) and pull off the red and blue connecting wires from the electronic control (#26). Unscrew electronic control (#26) using screw driver Torx T 20.

Unscrew magnet holder (#27) using the hexagonal wrench SW 2.5mm. Take out electronic control (#26) and magnet holder (#27). Take out motor (#25).

ATTENTION: Reassembly Tip: Note how connecting wires to the motor are laid out in the tool housing!

Take out drive system (#42). Unscrew head (#13) using open end wrench SW 27mm. Unscrew jaw housing (#12) using open end wrench SW 17mm and take out jaws (#11), jaw pusher (#10) and jaw pusher spring (#9).

Unscrew jaw housing coupler (#7) with scraper ring (#8) using open end wrench SW 14mm.

Remove screws (4 of #6) using hexagonal wrench SW 2.5mm. Pull off drive bearing (#3) and pinion shaft (#4) with snap ring (#6) and bushing (#20).

Assembly & Stroke Adjustment

Assembly of Drive System (#42) Slip drive bearing (#3) over ball screw drive (#2) and put pinion shaft (#4) together with snap ring (#5) in bearing place.

Attention: Before screwing ball screw drive (#2) and drive bearing (#3) together, make sure the locating marking “B” of the bearing disk inside the ball screw drive (#2) is placed opposite the pinion shaft (#4). See Parts Drawing.

Assemble this entire unit together with the 4 screws (#6) using hexagonal wrench SW 2.5mm. Screw jaw housing coupler (#7) with scraper ring (#8) onto ball screw using open end wrench SW 14mm.

Put jaw pusher spring (#9) and jaw pusher (#10) onto jaw housing coupler (#7). Place the jaws (#11) in jaw housing (#12) and screw this onto jaw housing coupler (#7) using open end wrench SW 17mm.

Screw head (#13) on using open end wrench SW 27mm.

Assembly of the PT-4000

The sub-assemblies and other parts should be put into tool housing half (#1) containing the nosepiece bracket as follows:

To install drive system (#42), slip the bushing (#20) onto the shorter end of the pinion shaft (#4) while ensuring that the snap ring (#5) is pressed to the gear.

To insert the tube (#22), the longer end of the tube must be inserted into the ball screw, while the collar of the tube must be inserted into the provided recess of the tool housing.

To place the motor connecting wire, the red wire should be bent downwards at the soldering tag towards the blue wire, then bent again to be parallel with the blue wire.

To install motor (#25), the two connecting wires are to be placed side by side around the first guiding stud of the tool housing and behind the middle guiding studs. The wires should then be brought up in front of the third guiding stud.

The electronic control unit (#26) should be installed by putting it on the stud inside the tool housing and then fastened with the housing screw (#32). Click magnet holder (#27) in the guiding slot of the electronic control (#26).

Fasten other end of magnet holder (#27) to ball screw drive (#2) with magnet holder screws (#28) together with two spring lock washers (#29) using the hexagonal screw driver SW 2.5. For later stroke adjustment, do not tighten the screws. Plug the two blue connecting wires of motor (#25) and electronic control unit (#26) together.

DO NOT CONNECT RED WIRE YET!!

Stroke Adjustment

Turn gear of pinion shaft until distance “A” measures 0.118” -See Parts Drawing. Then insert battery (#40) correctly in tool housing.

Attention: Positive pole of battery (#40) must be at top to avoid damage of electronic control unit (#26).

While trigger is pressed, magnet holder (#27) must be adjusted in slot of electronic control until red indicator light goes on. After releasing trigger, the two magnet holder screws (#28) must be tightened. NOW connect red wire to electronic control (#26).

Attention: Both connecting wires must be placed around guiding stud on electronic control (#26) in such a way to keep slot free for movement of magnet holder (#27).

Preliminary Motor Test: Motor (#25) is be carefully held down at both ends. Make sure to allow room for magnet holder to move back and forth. Pull trigger to move jaw mechanism about .200 to .400 inches, and release trigger.

Check distance “A” (See Parts Drawing). It must be 0.039” - 0.051”

If distance “A” gap is below 0.039”, magnet holder (#27) should be moved carefully to the right after loosening the two screws (#28) in order to obtain .039 to .051 gap.

If distance “A” gap is larger than 0.051”, magnet holder must be moved to the left accordingly. After tightening the screws (#28), repeat test and recheck distance “A”. Take battery (#40) out of tool housing.

Finishing

Lubricate gear teeth with lubricating grease (#46). Insert suspension loop (#30). Insert hand guard (#31). Replace second half of tool housing.

Tighten both halves of tool housing (#1) together with the five housing screws (#33) and the three housing screws (#32) using screw driver Torx T 20.

Safety Notes

The PT-4000 has been designed and manufactured in accordance with the applicable safety regulations. If the PT-4000 is being used for the intended purpose in accordance with instructions and normal safety measures, there is no danger involved during operation.

WARNING! Never operate the PT-4000 without placing the blind rivet in proper hole of the work piece or material. The rivet could be propelled from the tool. Avoid pointing the tool at anyone during operation.

The spent mandrel container (#39) must always be firmly screwed into place on the tool during operation. Do not plug or cover vent holes in tool housing at any time.

Repairs should be carried out by trained personnel only. Otherwise, return PT-4000 to supplier or to FSI.

Do not operate the PT-4000 and the Battery Charger in an environment allowing exposure to moisture, combustible fluids or gases.

Safety Notes: (continued)

Avoid damage to cord and plug of charger. Inspect regularly for any damage. Ensure that the battery is properly secured in the tool housing.

Take the charger out of steel case when recharging the battery. Place the battery in the correct position (+pole to +pole) and do not force it into the charger.

Always remove the battery before servicing / repairing the PT-4000.

Do not discard batteries into water or fire as danger of explosion exists. Any used battery be disposed of in accordance with environmental regulations.

Do not use the PT-4000 for any function other than riveting, especially not as a hammer.

Safety Precautions**PT-4000 CORDLESS BLIND RIVETER**

The PT-4000 Blind Riveter has been designed with safety in mind and it conforms to all applicable regulations governing cordless battery operated tooling. If utilized in accordance with operating instructions, danger free application of the tool is assured.

CAUTION: Do not rivet without the rivet being installed into material. The rivet body and a portion of the mandrel can shoot away from the tool which could cause injury.

Stem canister (Item #39) should always be mounted on the tool to catch spent stems.

The ventilation holes to the electric motor must not be obstructed. Do not cover or place anything over them.

Repairs should only be undertaken by skilled and trained repair technicians. If unsure, send the tool back to your dealer or the factory.

The PT-4000 and the battery charger unit must be kept away from moist / wet surroundings and away from flammable liquids and gases. Do not use in temperatures above 120 degrees F.

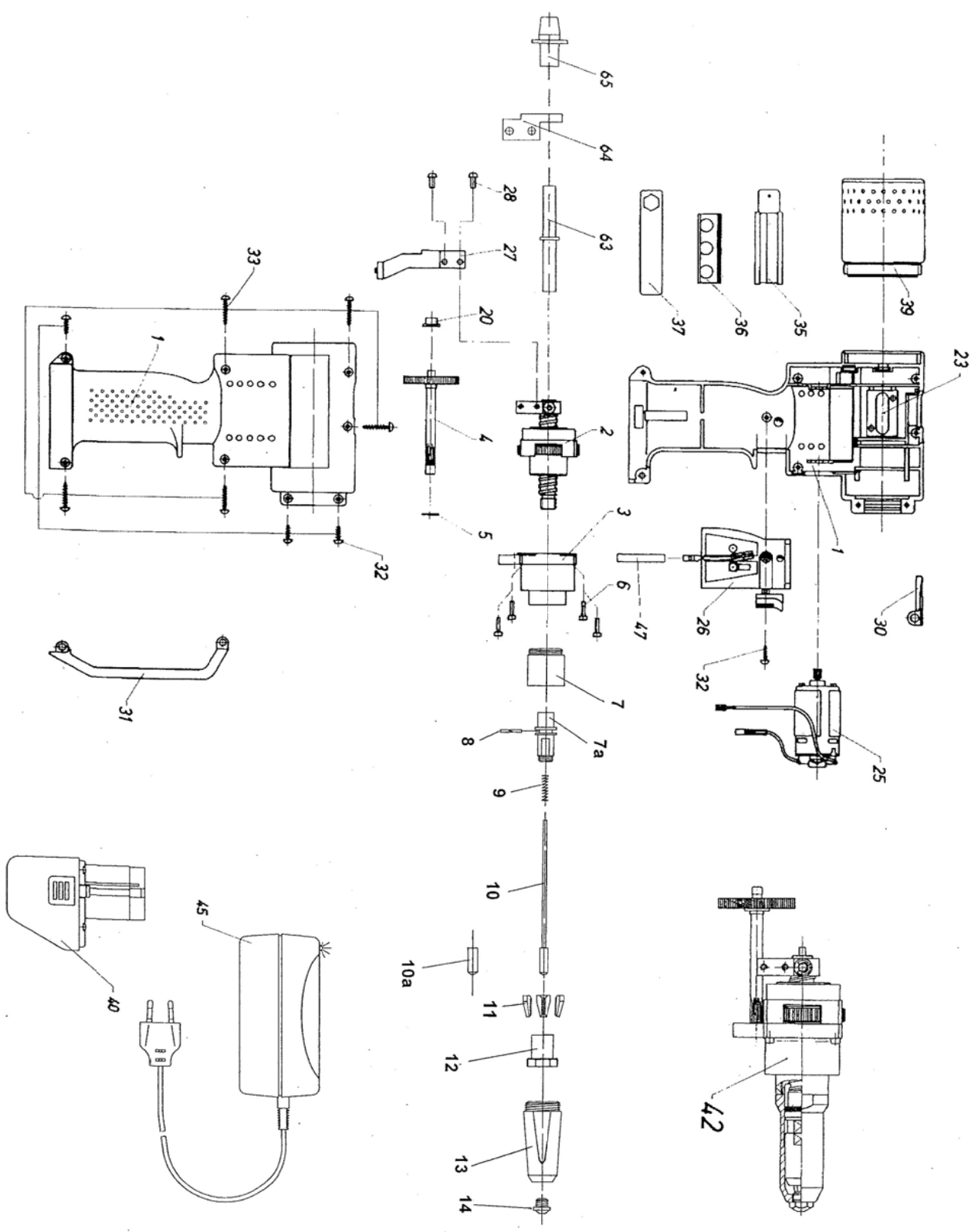
Socket, Plug and Charger unit should be routinely inspected, and if damaged, replaced or repaired.

To charge batteries, remove charger from steel case. The battery pack will only fit into charger socket in proper orientation and is installable with a minimum amount of insertion pressure.

When working on the PT-4000 (i.e., replacing jaws, jaw follower or spring) be sure the battery pack is removed from the riveter.

Do not throw battery pack into water or fire as they can explode. The battery pack should be recycled according to instruction manual.

Item	Part No.	Description	Item	Part No.	Description
1	F3014	Tool Housing, complete	22	F3761	Spent mandrel tube
2	F3189	Ball screw drive, assembled	25	F3103	Motor, complete
3	F3185	Drive bearing, complete	26	F3850	Electronic control
4	F3193	Power transfer gear	27	F3266	Magnet holder, complete
5	F3753	Snap ring	28	F3990	Magnet holder screw
6	F3932	Screw	29	F3008	Spring lock washer
7	F3605	Draw Bolt	30	F3559	Suspension loop
8	F3745	Scraper ring	31	F3540	Hand guard
9*	F3081	Jaw pusher spring	32	F3032	Housing screw
10*	F3245	Jaw pusher, 1/4"	33	F3024	Housing screw, short
11*	F123	Jaws (3 pc)	35	F3030	Nosepiece bracket
12	F3126	Jaw housing	36	F3091	Nosepiece holder
13	F3130	Nosetube	37	F3834	Nosepiece wrench
14	F505	Nosepiece, 5/32" Blind Bolt	39	F3282	Spent mandrel container
15	F506	Nosepiece, 3/16" Blind Bolt	40	F-3001	Battery
16	F505-MB	Nosepiece, 5/32" Maxibolt	41	F3555	Lubricating grease
17	F506-MB	Nosepiece, 3/16" Maxibolt	42	F3197	Drive system (pos. 2-13,15)
18	F169	Nosepiece, 1/4" Monobolt	43	F142	1/4" Nosepiece
19	F143	Nosepiece, 3/16 CherryMax	45	F-4000A	Battery Charger
20	F3893	Bushing			* Wearing Parts



PT-4000 (optional) Configurations

Standard Configuration

Nosepiece

F130-F
Nose Tube

F126-F
Jaw Holder

F123
3 pc Jaws

F3621
Jaw Follower

F3081
Spring

F3605
Draw Bolt



CherryMax® Pulling Head Configuration

Extended Straight Pulling Head F1074

Right Angle Pulling Head F1075

Offset Pulling Head F1076



F187-1AF
Sleeve

F187-3BCM
Adjustable Adapter Shaft

CherryMax® & Pop® Rivets Configuration

*Note: Replace Jaw Follower F3621 with F3245 (see spare parts canister) when installing 1/4" dia. rivets. You may also use the F123 (3pc) jaws for 1/8" thru 1/4" diameter blind rivets.

F126-F
Jaw Holder

*F3621
Jaw Follower

F130-F
Nose Tube

F122-A
2 pc Jaws

F3081
Spring

*F3245
Jaw Follower

1/4" Rivets

MS90353/54 "U" & "S" Type Blind Bolt Configuration

Nosepiece

F130-F
Nose Tube

F123-A or
F123-B
BB Jaws

F128
BB Jaw Holder

F3245
Jaw Follower

F3081
Spring

Rivet Types:

Types of rivets installable with the PT-4000 include, but are not limited to, virtually all CherryMax® (M7885), Avdel®, or Cherry Monobolts®, Cherry Interlock®, Huck MagnaLok®, and Pop type rivets. The PT-4000 is also capable of installing both 5/32" and 3/16" Blind Bolts (MS90353/54-S/U) with the proper nosepieces (provided in the Mil-1 and MIL-2 kits).

Aerospace and Industrial Sheet Metal
●Applications●

Pulling Head Assembly

Right Angle Pulling Head (F1075): Thread the internal threads of the pulling head's draw bolt two or three turns onto the adapter puller shaft. Next, engage the threads of the pulling head housing and continue threading into place. To minimize stroke requirement and to set a particular rivet size, simply adjust the nose tube of the right angle head by loosening the jam nut at its base.

Extended Straight (F1074): Thread the extended straight pulling head's jaw holder assembly onto the adapter puller shaft assembly. (Tighten by putting rivet stem into adapter puller shaft hole to keep it from rotating.) Next, take the straight pulling head's jam nut and back it off at least ten full turns from the end. Now thread the adapter sleeve into place, approximately six full turns. Use the red marker on the jam nut to aid in counting. Next, engage battery pack into tool and fully retract the draw bolt / jaw holder assembly. While keeping the jaw holder fully retracted, insert desired rivet stem into nosepiece (to set up for use with all sizes 3/16 oversize). Now allow the jaw holder assembly to come forward. If it easily accommodates the stem (ie, you can move it in and out freely), you can now tighten the jam nut into place. If, however, it does not readily accept or release the stem freely, begin turning the outer sleeve clockwise in quarter turn increments until a proper setting is reached.

Offset Pulling Head (F1076): Thread the internal threads of the offset pulling head's draw bolt onto the male thread of the adapter puller shaft. Take two or three turns before engaging the male threads of the pulling head housing. How thread both into place until there is no gap between the housing and the draw bolt. Now tighten jam nut.

CAUTION: If you tighten the outer sleeve too far down, it will restrict the return of the draw bolt, thereby causing an overload condition on the tool. The red indicator light will come on. Remove the battery immediately, loosen outer sleeve, and restart assembly procedure. Failure to relieve

For Blind Bolt and Maxibolt Conversion

When pulling Blind Bolts and Maxibolts you will need to use the following items:

For 5/32 or 3/16 Blind Bolts and Maxibolts:

Remove **Nose Tube (F130-F)**. Thread off **Jaw Holder (F126-F)** and **Jaws (F122-A)** and set aside. Be careful not to allow the spring and jaw follower to come out of the tool. Next, you will need the **Blind Bolt Jaw Holder (F128)**. Insert **Jaw Set (F123-A)** 5/32 size into holder, keep rubber O-Ring securely around the three piece jaws. This is important because you must keep the jaws aligned at all times while pulling Blind Bolts or Maxibolts to prevent the stem from jamming and cracking the jaws. Thread **Jaw Holder (F128)** onto the **Draw Bolt (F3605)** and thread nose tube back onto the tool. Then use the **5/32 Maxibolt Nosepiece (F505-MB)** for S-Type Blind Bolts or the **5/32 Blind Bolt Nosepiece (F505)** for the U-Type Blind Bolts. Reverse the process to assemble tool for regular CherryMax riveting.

For 3/16 Blind Bolts and Maxibolts:

Remove **Nose Tube (F130-F)**. Thread off **Jaw Holder (F126-F)** and **Jaws (F122-A)** and asset aside. Be careful not to allow the spring and jaw follower to come out of the tool. Next, you will need the **Blind Bolt Jaw Holder (F128)**. Insert **Jaw Set (F123-B)** 3/16 size into holder, keep rubber O-Ring securely around three piece jaws. This is important because you must keep the jaws aligned at all times while pulling Blind Bolts or Maxibolts to prevent the stem from jamming and cracking the jaws. Thread **Jaw Holder (F128)** onto the **Draw Bolt (3605)** and thread nose tube back onto the tool. Then use the **5/32 Maxibolt nosepiece (F506-MB)** for S-Type Blind Bolts or the **5/32 Blind Bolt Nosepiece (F506)** for the U-Type Blind Bolts. Reverse the process to assemble the tool for regular CherryMax riveting.



PT-100 / PT-100M Riveter Operating Instructions

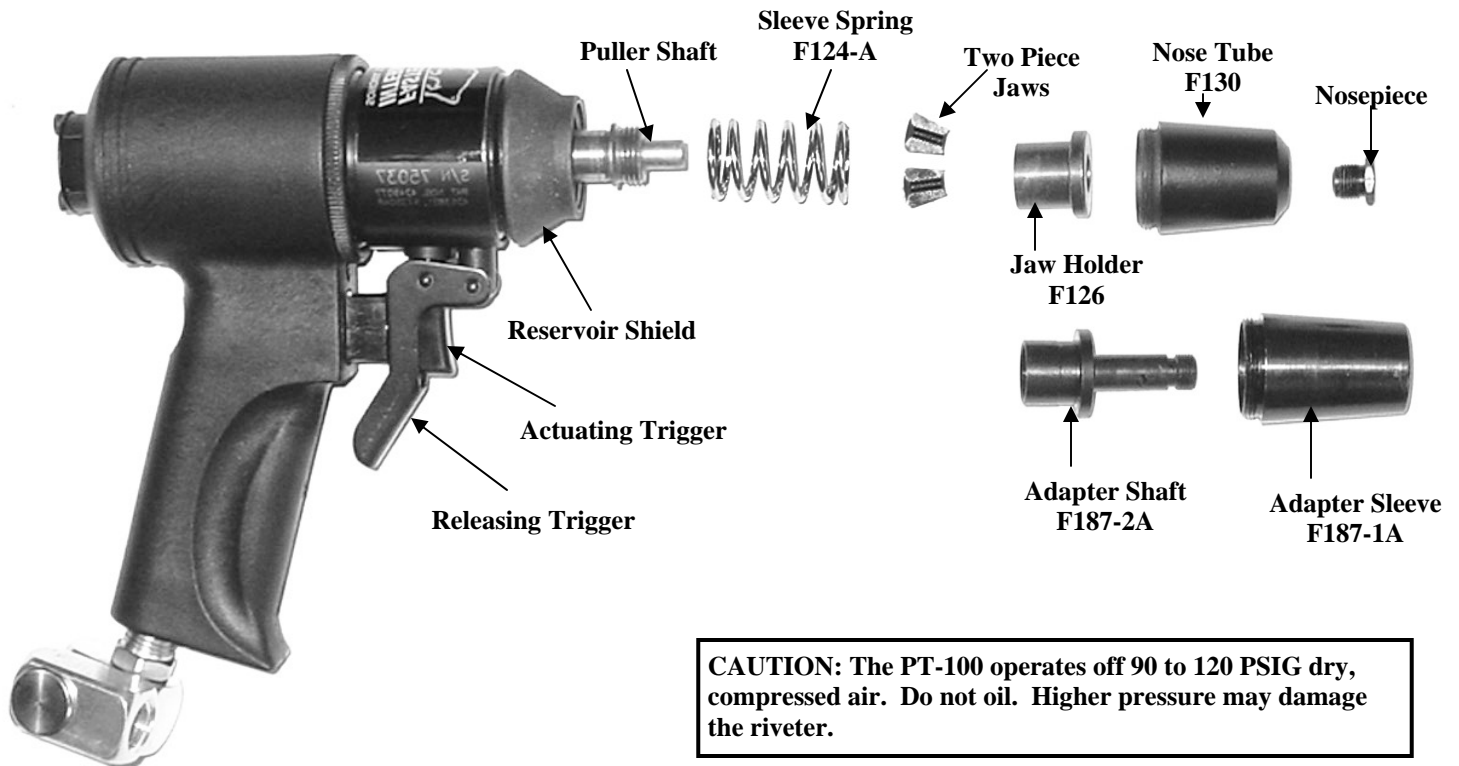


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PT-100 SERIES RIVETER

NSN 5130-01-397-6805

ASSEMBLY DIAGRAM/OPERATING INSTRUCTIONS



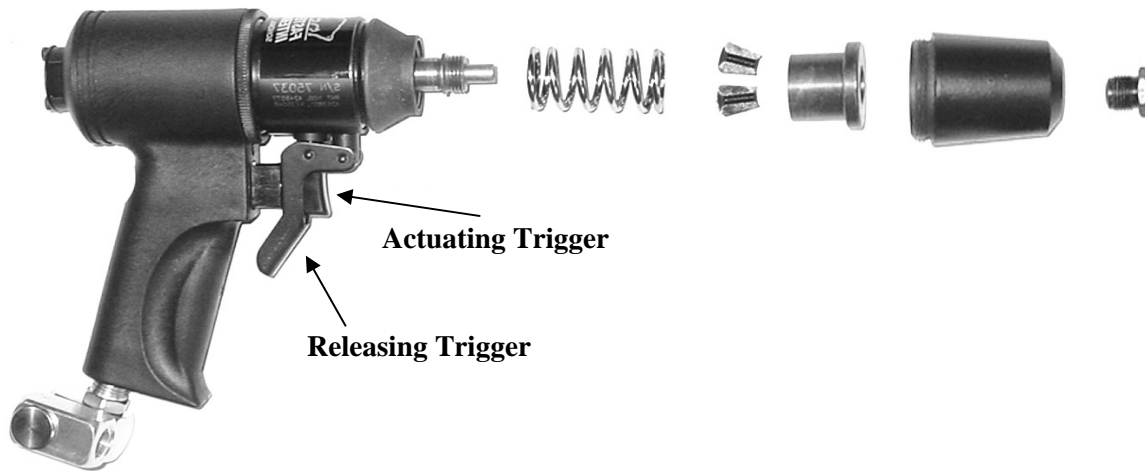
CAUTION: The PT-100 operates off 90 to 120 PSIG dry, compressed air. Do not oil. Higher pressure may damage the riveter.

Assembly Procedures:

1. Place the **Two Piece Jaws (F122-A)** inside the **Jaw Holder (F126)**.
2. Place the assembled item into one end of **Sleeve Spring (F124-A)**. The flange on the **Jaw Holder** should bottom out on the **Sleeve Spring**. These two items fit together firmly, thus some pressure may be required.
3. Next, point the tool downward, and place the open end of the **Sleeve Spring (F124-A)** over the **Puller Shaft** and thread the **Jaw Holder** onto the **Puller Shaft** until it bottoms out against **Puller Shaft** flange. (**WARNING: FAILURE TO BOTTOM OUT AGAINST THE FLANGE MAY DAMAGE THREAD AND/OR CAUSE RIVETS TO JAM**).
4. Place the **Nose Tube (F130)** over the complete assembly and hand tighten. Threads on the outer sleeve should disappear and the **Reservoir Shield** should be stationary.
5. Now select the proper nosepieces for the diameter and type of rivet being used and thread into the end of the **Nose Tube** until it bottoms out. It may be necessary to extend the nose tube by actuating the trigger (see operating instructions) in order to thread the nosepiece completely into place.

CAUTION: Nosepieces can loosen with use and may cause damage to the threads if not kept tight. Check periodically, and if no other nosepieces are going to be needed for the day, tighten with a wrench.

PT-100 SERIES OPERATING INSTRUCTIONS



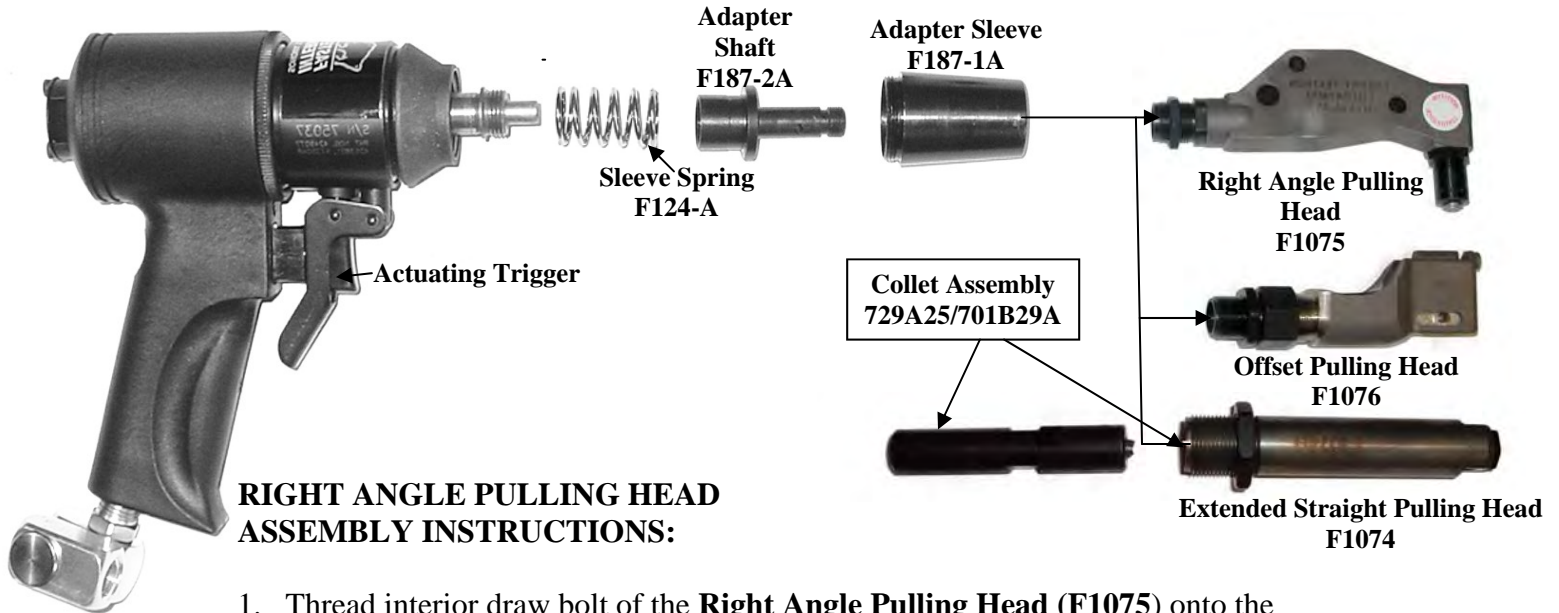
1. Connect **PT-100** riveter to air source. Be sure to utilize clean, dry compressed air over a 90 to 120 PSIG range. If using a multi-plane swivel be sure swivel is properly tightened into tool before installing air fitting into swivel.
2. Select the proper nosepiece for installing the blind rivet being used and hand tighten it into the nose tube. If frequent changing of the nosepiece is not required, slight tightening with a wrench is recommended in order to prevent the nosepiece from backing out during riveting operation. If rivet nosepiece will not easily install into nose tube simply actuate the **Actuating Trigger** and cause the nose tube to move forward thus allowing ease of nosepiece installation.
3. Insert rivet into nosepiece being sure that the riveter is in the fully retracted position. (If nose tube is partially extended, simply depress **Releasing Trigger** until the nose tube fully retracts to starting position.) Place rivet into properly prepared hole and hold riveter against materials being riveted using firm, steady pressure. Be sure to keep riveter as perpendicular to work surface as possible (within +/- 1.5 degrees from centerline). Next, depress **Actuating Trigger** being careful not to depress the **Releasing Trigger** at the same time. If you do, the tool will not actuate and the hydraulic fluid (no. 10 machine oil) will just circulate through the by-pass valve. The riveter has a maximum stroke of .625" and will set most blind fasteners in one stroke; however, if the tool reaches the end of its stroke before setting a fastener: **DO NOT CONTINUE TO DEPRESS THE ACTUATING TRIGGER.** Release the **Actuating Trigger** and depress the **Releasing Trigger**. The riveter will then retract and you can re-grip the fastener and reactivate the tool until you upset the fastener.
4. After the rivet stem breaks you may depress the **Releasing Trigger**, point the tool downward and the broken rivet stem will drop out of the nosepiece. *NOTE: If the rivet stem sticks in the nosepiece after the rivet is set, lightly tap the end of the rivet stem on a hard surface while holding the **Releasing Trigger** in the full depressed position. This should then free the jaws and permit the tool to release the rivet stem. If the rivet stem continues to bind or hang up in the nose assembly check the jaw holder by removing the nose tube to see if it is properly tightened into place. If loose, tighten and reassemble after checking the jaws to see that they are not severely worn. Replace if necessary.*

NOTE OF CAUTION: If you cause the riveter to reach its maximum stroke you may cause the riveter to go into a by pass mode which causes a pressure relief valve to open (this occurs when approximately 4,400 lbs. of pulling force is reached). This condition will often cause the normal hand releasing pressure required to return the tool to its normal position to increase. Simply increase pressure on the releasing trigger and the tool will release.

F187 ADAPTER FOR SPECIAL PULLING HEADS INSTRUCTIONS:

1. Place the **Adapter Shaft (F187-2A)** into end of the **Sleeve Spring (F124-A)**
2. Place other end of the **Sleeve Spring (F124-A)** over the **Puller Shaft** and thread the **Adapter Shaft (F187-2A)** onto the **Puller Shaft** hand tight against it so no threads are showing.
3. Place the **Adapter Sleeve (F187-1A)** over assembly and hand tighten until threads disappear. Reverse for disassembly.

ASSEMBLY IS NOW READY FOR ANY OF THE SPECIAL PULLING HEADS.



RIGHT ANGLE PULLING HEAD ASSEMBLY INSTRUCTIONS:

1. Thread interior draw bolt of the **Right Angle Pulling Head (F1075)** onto the **Adapter Shaft (F187-2A)** 3 turns.
2. Push the **Right Angle Pulling Head (F1075)** into the **Adapter Sleeve (F187-1A)** and mate thread. Thread at least 5 full turns until rivet stem fits easily into nose piece (Adjust nose piece in for larger diameters).
3. Position head direction and set jamb nut. Reverse for disassembly.
4. Depress **Actuating Trigger** to install rivet (see operating instructions).

OFFSET PULLING HEAD ASSEMBLY INSTRUCTIONS:

1. Open **Offset Pulling Head (F1076)** 1/4" as shown.
2. Thread interior draw bolt of the **Offset Pulling Head (F1076)** onto the **Adapter Shaft (F187-2A)** 4 turns.
3. Push the **Offset Pulling Head (F1076)** into the **Adapter Sleeve (F187-1A)** and mate threads. Thread in until 1/4" head gap is fully closed. **DON'T GO BEYOND!**
4. Position head direction **COUNTERCLOCKWISE ONLY**. Set jamb nut.
5. Depress **Actuating Trigger** to install rivet. Rivet stems will push out the back. Reverse for disassembly.

EXTENDED STRAIGHT PULLING HEAD ASSEMBLY INSTRUCTIONS:

1. Thread the **Collet Assembly (749A25/701B29A)** onto the **Adapter Shaft (F187-2A)**
2. Slide the **Pulling Head Sleeve (F1074)** over the **Collet Assembly (749A25/701B29A)** and into the **Adapter Sleeve (F187-1A)** and mate threads. Thread on and bottom out against assembly. **DON'T GO BEYOND!**
3. Set jamb nut. Reverse for disassembly.
4. Rivet may be forced in to open jaws initially.
5. Depress **Actuating Trigger** to install rivet.

ASSEMBLY DIAGRAM FOR OLYMPIC-LOK PULLING HEADS

- The Olympic-Lok (NAS1400 'A' Code) and the Cherry-Lok use the same non-shift tooling system
- One pulling head installs both flush and protruding head rivets in all grips
- No tool adjustment required with this system

F687 ADAPTER FOR SPECIAL PULLING HEADS– INSTRUCTIONS

1. Place the **Adapter Shaft (F687-2A)** into the end of the **Sleeve Spring (F124-A)**.
2. Place other end of the **Sleeve Spring (F124-A)** over the **Puller Shaft** and thread the **Adapter Shaft(F687-2A)** onto the **Puller Shaft** hand tight against it.
3. Place the **Adapter Sleeve (F687-1A)** over assembly and hand tighten (threads should disappear). Reverse for disassembly.

ASSEMBLY IS NOW READY FOR ANY OF THE SPECIAL PULLING HEADS.



OFFSET PULLING HEAD ASSEMBLY INSTRUCTIONS:

1. Thread interior draw bolt of **RV872 or RV8872** onto the **Adapter Shaft (F687-2A)** approx. 4 turns.
2. Push **RV872 or RV8872** into the **Adapter Sleeve (F687-1A)** and mate threads. Thread in until head gap is fully closed. **DON'T GO BEYOND!**
3. Position head direction counterclockwise only. Set jamb nut.
4. Depress **Actuating Trigger** to install rivet. Rivet stem will push out the back. (see operating instructions) Reverse for disassembly.

STRAIGHT EXTENSION PULLING HEAD ASSEMBLY INSTRUCTIONS:

1. Thread **RV812** onto the **Adapter Shaft (F687-2A)**.
2. Thread the sleeve of the **RV812** over assembly and into the **Adapter Sleeve (F687-1A)**. Thread on and bottom out against assembly. **DON'T GO BEYOND!**
3. Set jamb nut. Reverse for disassembly.
4. Rivet may be forced in to open jaws initially.
5. Depress **Actuating Trigger** to install rivet.

D-700C

Hand-Powered Riveter
PATENT PENDING



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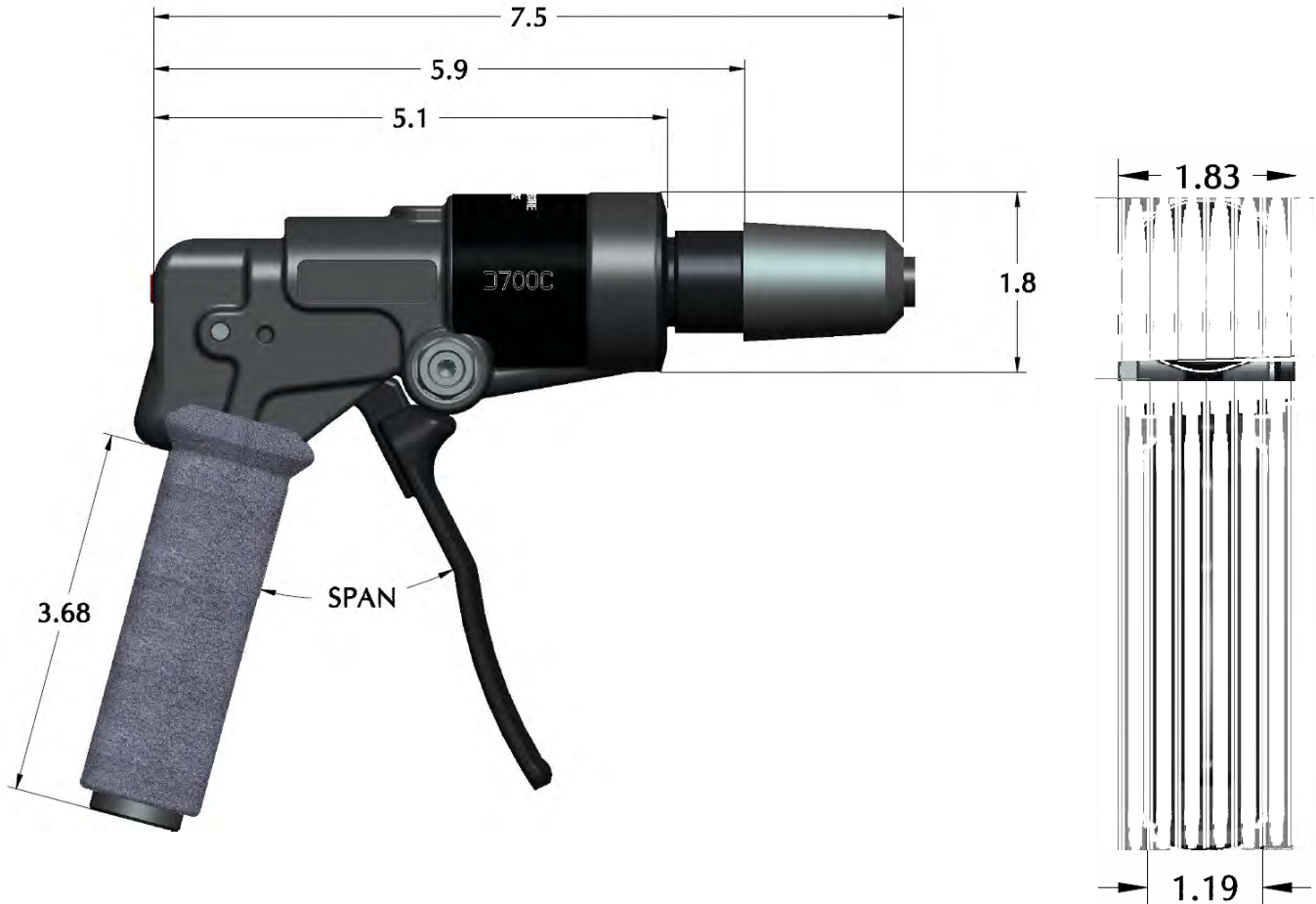
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DESCRIPTION

D-700C is a lightweight ergonomic hand powered riveter providing means to install a wide variety of blind type fasteners in the absence of other power sources (compressed air or electricity). It combines the safe and smooth operation of well-known pneumatic hydraulic riveters with the latest research in automatic systems.

It features an "intelligent" power optimization system that provides high installation loads at low hand effort. Its durable, all metal design makes this powerful and robust tool ideal for use in rugged repair facilities and field repair.

D-700C features a high strength steel mounting system compatible with the previous D-700A and D-100.



SPECIFICATIONS

Fastening Systems International, Inc 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 FSI.

STROKE	PULLING CAPABILITY	POWER SOURCE	HAND EFFORT (Lbs)	WEIGHT (INCLUDING PULLING HEAD)
0.750"	Above 5000 Lbs-F	Hand Pump	30 @ 3000 Lbs.	1.96 Lbs.

SAFETY WARNINGS

- Do not operate the tool when it is directed at any person and do not pull rivets in the air.
- Do not pump beyond your hand strength capability; use of two hands to complete an installation is OK
- Do not exceed a maximum output load adjustment of 5500 Lbs;
- Do not throw, drop or use the tool as a hammer.
- Do not use the tool beyond its design intent.
- Consult the tool manual before disassembly, troubleshooting or repair. It is advised that major repairs be undertaken by personnel trained by Fastening Systems Int'l, Inc. (FSI); contact us with your training requirement.
- Wear appropriate personal protection equipment when operating, repairing, or overhauling this tool.
- Never use Loctite® when mounting offset or right angle pulling heads.
- No component substitutions are authorized; any modification to the tool, pulling heads, accessories or FSI supplied components shall be at the customer's entire responsibility. FSI 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 maintenance, place the tool in an oil pan; dispose of used fluid properly.
- Avoid excessive skin contact with the fluid. Wash thoroughly after handling the fluid.

ERGONOMIC ADJUSTMENTS

For item and part numbers, refer to the component list and exploded views on page 8.

Lever Span

Tools necessary: 5/32" hex wrench

Adjust how far the pump lever extends from the handle for a comfortable operation; thread set screw 42 in to bring the lever closer, thread-out to increase lever distance- see picture below.

Maximum output load

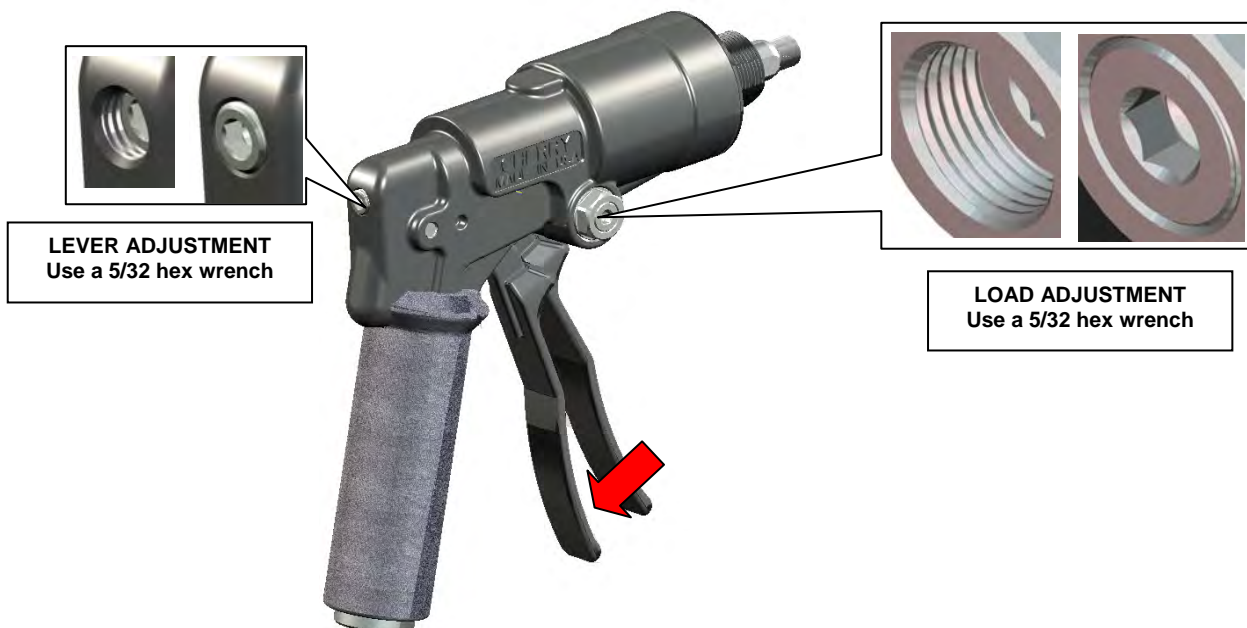
Tools necessary: 5/32" wrench

This is a maximum output load adjustment; if you need a more precise adjustment contact FSI.

- Thread-out the adjustment screw (33) to lower the load, thread-in to increase it;

Cautions: Do not thread out beyond flush with the pressure relief body (36) – see picture below.

- Do not exceed a maximum output load adjustment of 5500 Lbs;



TOOL OPERATION

Prior to using the hand riveter, make sure that:

- The piston is fully returned forward by depressing the side pressure relief button (48)
- The hand lever is properly adjusted for comfortable operation
- The correct pulling head is properly mounted; see pulling head documentation for additional instructions

Fastener Installation

- Insert the blind fastener into the structure and place the riveter onto the rivet stem.
- Hand pump to complete installation; after each pump allow the lever to fully return to its original position. Short stroking is not recommended as it will increase the number of pumps.
- Depress the pressure relief button and allow the broken stem to eject through the front

RECOMMENDED PULLING HEADS

- Contact FSI at 1-800-344-2393 or 707-935-1170 or by e-mail at sales@fsirivet.com for recommendations.

TROUBLESHOOTING GUIDE

For item and part numbers, refer to the component list and exploded view on page 8.

The stem of the fastener to be installed won't fit;

- Make sure the correct pulling head is used, and that it is properly adjusted (the jaws should free the broken stem when the side button is depressed)
- Check for jammed stems inside the jaws; press the side button to properly eject the stem

The stems will not break to complete the installation

- Check the jaws- replace or clean them as necessary.
- Make sure that the proper pulling head and optional components are used
- Check the fluid level; replenish if low.

Nothing happens when I pump

- Check the fluid level –add fluid as needed
- Re-adjust to increase output load
- Service or replace the pressure relief valve
- Disassemble and clean thoroughly the internal components; debris or contamination in the fluid will cause the internal valves to malfunction.

Too easy or too hard to pump (it doesn't seem to shift)

- Replace or service the stage piston (20);

Output piston goes back and forth as I pump

- Make sure that the hollow set screw (14) is threaded in properly and has not backed off.
- Unthread set screw (14), remove and inspect the compression spring (15); replace if damaged. Clean the valve cavity before re-assembling

The lever bounces back forcefully preventing you to pump Disassemble and service the reservoir piston (44)

Fluid traces that keep coming back even after wiping off the tool.

- Fluid leaks are caused by worn seals. Disassemble and replace the seals in the area where leaks are noticed.
- To keep the tool in optimum operating condition we recommend inspecting and replacing all the seals as necessary (see tool service, page 6)

MAINTENANCE AND REPAIR

This riveter was designed to be robust and require minimum troubleshooting and maintenance.

In order to keep it in optimum operating condition, inspect routinely for leaks and damage and check the fluid level.

TOOL SERVICE

For item and part numbers, refer to the component list and exploded views on page 8.

- Place the riveter over an oil pan to avoid and contain fluid spills; clean up and dispose of used fluid properly.
- Use care handling the internal components and valve cavities; nicks or scratches may make components unusable.
- Make sure that you have all the tools necessary before proceeding to service the tool.
- Apply an O-ring lubricant to all seals and mating surfaces.
- When installing Back-up Rings, make sure the curved surface faces the O-ring.
- Use Loctite® only where indicated; use of Teflon tape is prohibited.
- Handle with care and clean components thoroughly; avoid contamination as it causes internal valve malfunction.

Tools needed:

- F800KS maintenance kit , Loctite® 545 (or comparable)
- 1/16", 1/8" and 5/32" hex wrenches,
- 2" deep socket hex wrench, 9/16" size
- Adjustable wrench, a pair of pliers
- Bent hook for O-ring removal
- Oil Pan large enough to contain fluid spills

BEFORE TAKING THE TOOL APART

Remove the foam handle by twisting and pulling it off; if removal is not possible, it may need to be cut off and replaced. With the 5/32" hex wrench remove the side screw, spring and ball (45, 46, 15 & 16); place them in a clean area.

HYDRAULIC PUMP SERVICE

Unthread and remove the front Adaptor (2). Unthread the hydraulic pump with a 9/16" deep socket wrench and pull it out carefully; you may need to extract it with the help of a pair of pliers (grab on the smaller diameter towards the front). Place pump assembly in a vise and unthread item 16 (use the socket wrench). Push the stage piston (20) out so the O-rings are accessible for replacement. Unthread set-screw 14 with the help [of the 1/8 hex wrench and remove the spring and ball (15 & 16); clean the ball and cavity carefully with a soft, lint free piece of cloth. Replace spring (15), re-assemble with ball (16) and thread-in the set-screw (14) flush with the front surface of item 17. Replace O-ring 18.

Place stage piston (20) in a vise, unthread the cap (21) and clean it. Inspect the edge of the hole facing the ball to make sure it is clean and in good condition, free of nicks and scratches; reassemble the stage piston (20).

Replace the larger O-ring and back-up ring (11 & 12).

Remove O-rings and back-up ring (9, 30, and 31) from the power cylinder (29) and replace them.

Apply O-ring lubricant to all the seal surfaces and push the stage piston (20) back into the power cylinder (29). Re-assemble the rest of the components (17 & 18, 19); use Loctite® on the threads and tighten securely.

The hydraulic pump is now completed.

PRESSURE RELIEF VALVE SERVICE

With the help of the 1/16 hex wrench, unthread the flat head screw (47) while holding the button (48). Pull button (48) out carefully. Unthread the pressure relief valve (32) with a 9/16" deep socket wrench. Unthread the adjustment plug (33) and remove the spring and poppet (25 & 34). Replace the spring with a new one. The seals can now be removed using a bent hook; make sure to remove the seals 38 & 39 from inside the cavity. Clean

and inspect the inside of the valve body and the poppet (34 & 36); replace the seals. Place the poppet and spring (34, 25) back into the body (36) and thread in the adjustment plug (33 - no Loctite® on these threads). Place a new O-ring and back-up ring (38 & 39) onto the poppet stem protruding out of the pressure relief valve.

The valve is now completed.

PISTON AND ADAPTOR

Unthread adaptor (49) and push piston rod (10) out of the adaptor (2). Remove and replace seals (1, 3, 4, 6 & 7). Remove the retaining ring (5) and push piston (8) and rod (10) apart (light tapping with a mallet is OK). Replace O-ring (9) and reassemble piston and rod (8 & 10) by pressing them into each other and secure with the

retaining ring (5). Remove the internal O-ring and back-up ring (11, 12) with a bent hook and replace them. Apply O-ring lubricant to all seal surfaces; push piston rod (10) through the adaptor (2).

Re-assemble and tighten piston rod adaptor (49); use Loctite to secure in place.

FINAL ASSEMBLY

Place the hydraulic pump inside the riveter body and thread it in with the help of the 9/16" deep socket wrench. Make sure it there that the lever is pushed forward and there is no play after fully threading the hydraulic pump in. Place spring (13) inside the riveter body, over the hydraulic pump and thread in the piston and adaptor completed above (use Loctite® on the threads). Tighten the adaptor securely. Prime, fill and bleed the riveter (see next page).

FILL AND BLEED INSTRUCTIONS

To fill and bleed, you will need: a 5/32" hex wrench, a container with the recommended transmission fluid and an oil pan. Make sure to place the tool over an oil pan to avoid and contain fluid spills.

FLUID USED

Use automatic transmission fluid Type "A" (no substitutes). FSI 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.

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

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

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.

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.

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

STORAGE: Avoid storage near open flame or other sources of ignition.

PROPERTIES

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

PRIMING AND FILLING WITH FLUID

- Perform as part of servicing the tool; refer to the Parts List and Exploded Views on page 9.
- Use proper safety equipment per your shop's policy, including rubber or latex gloves.

Step 1. To prepare the tool, remove the handle insulation, side screw, spring and ball (43 & 15, 16, 45 & 46) and place them in a clean, safe place. Unthread and pull the reservoir piston assembly (44) out of the handle and set it aside. Follow the below procedures; select the one that pertains to you situation, depending upon whether you are at a repair facility and a pressurized fluid source is available or not:

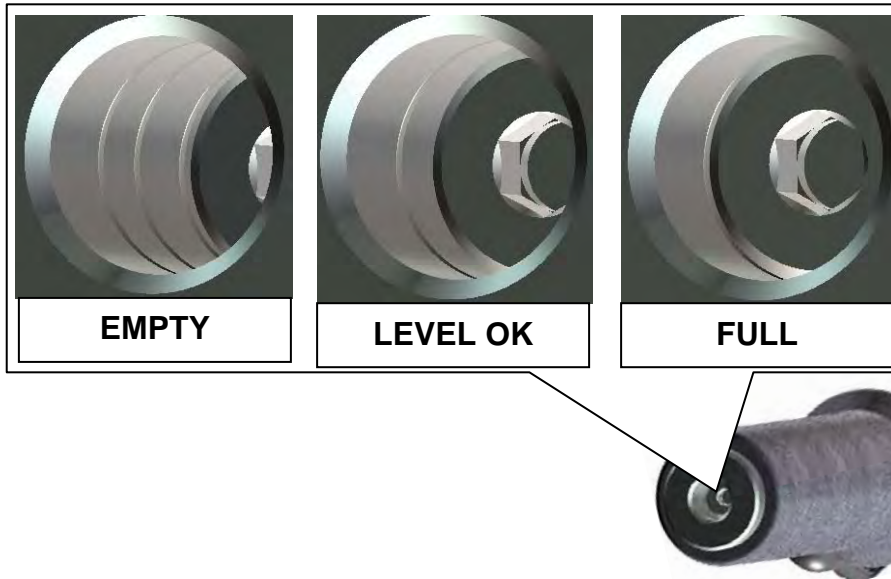
A. At repair facility (hydraulic pump or manual oil canister are available): After step one (above) place the spring and ball (15 & 16) back into the side port and thread-in the hydraulic hose from the pressurized fluid source. Turn the riveter up-side so the inside of the handle is visible; depress the pressure relief button and pump fluid through the system using the riveter's lever (in some cases, the fluid pressure may be enough to fill the tool without hand pumping). The fluid level in the handle will increase until it overflows. Watch for air bubbles and keep pumping until no more air bubbles are observed. Remove the hydraulic hose and place thumb over the hole; push the reservoir piston (44) into the handle as far as it goes without threading it in (allow excess fluid to leak out from under your thumb.) Thread in and tighten the side screw and seal (45 & 46). Thread in the reservoir piston (44) and check the fluid level.

B. Field filling (no pressurized fluid supply available): After step 1 (above) thread screw and seal (45 & 46) back in (leave 15 & 16 out). Turn the riveter up-side so the inside of the handle is visible and fill it with fluid. Pump the lever while holding the pressure relief button depressed; the fluid level in the handle will decrease. Re-fill with fluid as needed. Watch for air bubbles resurfacing in the fluid inside the handle while pumping; keep pumping until there are no more air bubbles. Release the pressure relief button and pump until the piston to full stroke. Remove the side screw (46) and place thumb over the hole. Push the reservoir piston (44) into the handle as far as it goes without threading it in (allow excess fluid to leak out from under your thumb.) Re-assemble the ball and spring (15 & 16). Thread in and tighten the side screw and seal (44 & 45). Thread in the reservoir piston (44) and check the fluid level.

CHECKING THE FLUID LEVEL

Turn the riveter upside down and observe the position of the indicator with respect to the silver grooves visible inside the handle.

- **One indicator line is visible:** the tool is full of fluid. The tool was filled and bled properly
- **Two indicator lines are visible:** the fluid level is OK for optimal function
- **Three indicator lines are visible:** the fluid level is dangerously low. Inspect for leaks, service and re-fill as necessary.



FINAL STEP IN FILLING THE RIVETER

Clean the riveter thoroughly and push the foam insulation (43) all the way over the handle.

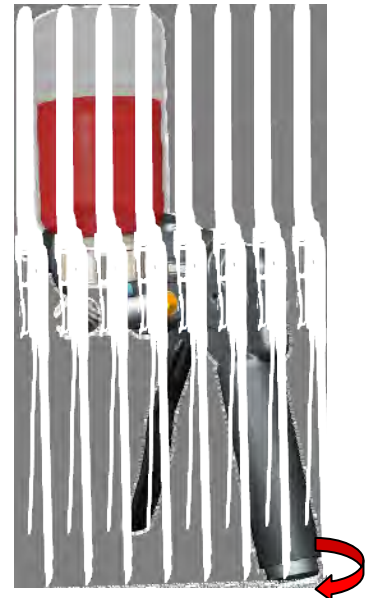
This foam insulation is part of the service kit F800KS and we recommend replacing it every time the tool is serviced.

REPLENISHING FLUID

This operation is useful whenever you need to add some fluid in order to restore the fluid level. It cannot be used after completed disassembly; prime and fill with fluid in that case (see previous page).

Tools needed: 5/32" hex wrench and the 700A77 Bleeder Bottle with F1484 adaptor. The Bleed Bottle should have at least 2 fl oz. (about 5 mL) of fluid (recommended fluid on page 7)

- Remove the side screw, spring and ball (15, 16, 45 & 46) and place them in a clean place.
- Attach the bleed bottle to the side hole;
- With the bottle up-side down (see picture) unthread the reservoir piston (44) until fully disengaged; do not pull the piston assembly out of the reservoir. During this process, fluid will be drawn into the reservoir.
- Remove the bleed bottle and place the ball and spring (15 & 16) back into the side port, then tighten the screw and seal (45 & 46).
- Thread-in and tighten the reservoir piston (44); check the fluid level
- If the fluid level is still low, then tool needs to be primed and filled (see page 6).



D-700C PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
F800-000 (TOP ASSEMBLY)			
1	F701	O-RING (BLACK, OD 5/8", W .07")	1
2	F800-027	CHERRY HOUSING ADAPTOR	1
3	F1467	O-RING (WHITE, OD 1.5", W .07")	1
4	F1479	SEAL (BLACK, OD 3/4", W 1/8")	1
5	F165	EXTERNAL RETAINING RING (5/8")	1
6	F299	O-RING (OD 1.39" W.14")	1
7	F869	BACK-UP RING (OD 1.39" W.14")	1
8	F800-013	WORK PISTON	1
9	F721	O-RING (WHITE, OD 3/4", W.07")	1
10	F800-026	PISTON ROD (7/16-20UNF)	1
11	F891	O-RING (OD 9/16" W.07")	2
12	F1061	BACK-UP RING (OD 9/16", W.05")	2
13	F1315	COMPRESSION SPRING	1
14	F1476	HOLLOW SET-SCREW	1
15	F1473	COMPRESSION SPRING	1
16	F117	STEEL BALL (3/16")	2
17	F800-011	POWER CYLINDER EXTENSION	1
18	F269	O-RING (OD 15/16" W.07")	1
19	F1463	COMPRESSION SPRING	1
20	F800-006*	STAGE PISTON	1
21	F800-010	PISTON CAP	1
22	F1294	O-RING	1
23	F800-009	POWER PISTON	1
11	F891	O-RING (OD 9/16" W.07")	(1)
12	F1061	BACK-UP RING (OD 9/16", W.05")	(1)
15	F117	STEEL BALL	(1)
24	F800-008	SHIFT PISTON	1
25	F1383	COMPRESSION SPRING	1
26	F1475	O-RING	1
27	F1471	BACK-UP RING	2
28	F800-007	POWER PISTON ROD	1

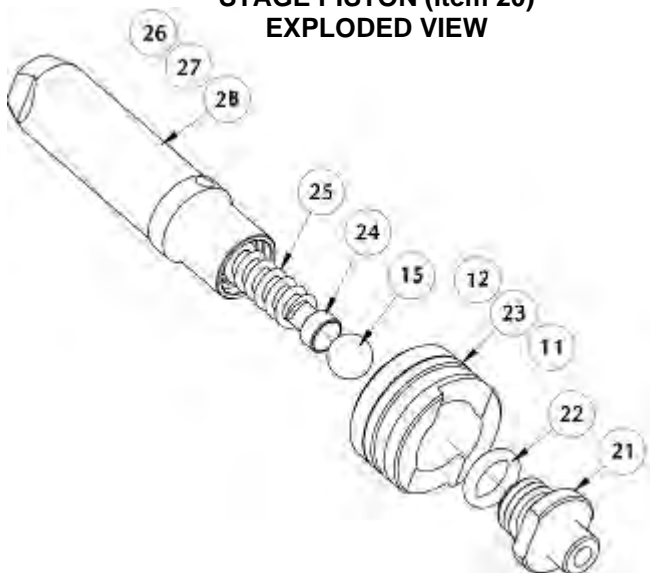
ITEM	PART NO.	DESCRIPTION	QTY
29	F800-005	POWER CYLINDER	1
30	F383	O-RING (OD 7/16", W.07")	2
31	F732	BACK-UP RING (OD 7/16, W .05")	1
32	F800-018*	PRESSURE RELIEF VALVE	1
33	F800-021	ADJUSTMENT PLUG	1
25	F1383	COMPRESSION SPRING	1
33	F800-020	VALVE POPPET	1
1	F701	O-RING (OD 5/8", W .07")	
35	F194	O-RING	
36	F800-019	BODY, PRESSURE RELIEF	
37	F1474	O-RING (WHITE, OD 9/16" W.07")	1
38	F293	O-RING (OD 5/16", W.07")	1
39	F1472	BACK-UP RING (OD 5/16, W .05")	1
40	F800-028	CHERRY AEROSPACE LABEL	1
41	F800-002*	RIVETER BODY	1
42	F1465	SET-SCREW	1
43	F1469	FOAM HANDLE	1
44	F800-023*	REZERVOIR PISTON ASSEMBLY	1
1	F701	O-RING (OD 5/8", W .07")	1
45	F670	STAT-O-SEAL	1
46	F1464	BUTTON HEAD SCREW	(1)
47	F1470	FLAT HEAD SCREW	1
48	F800-022	PLASTIC BUTTON	1
49	F800-041	PISTON ROD ADAPTOR BUSHING	1

* Must be ordered as a sub-assembly.

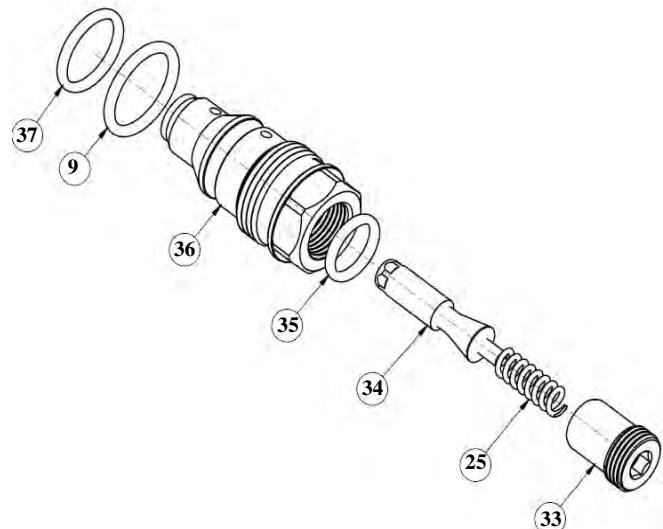
No substitutions

SUBASSEMBLY EXPLODED VIEWS

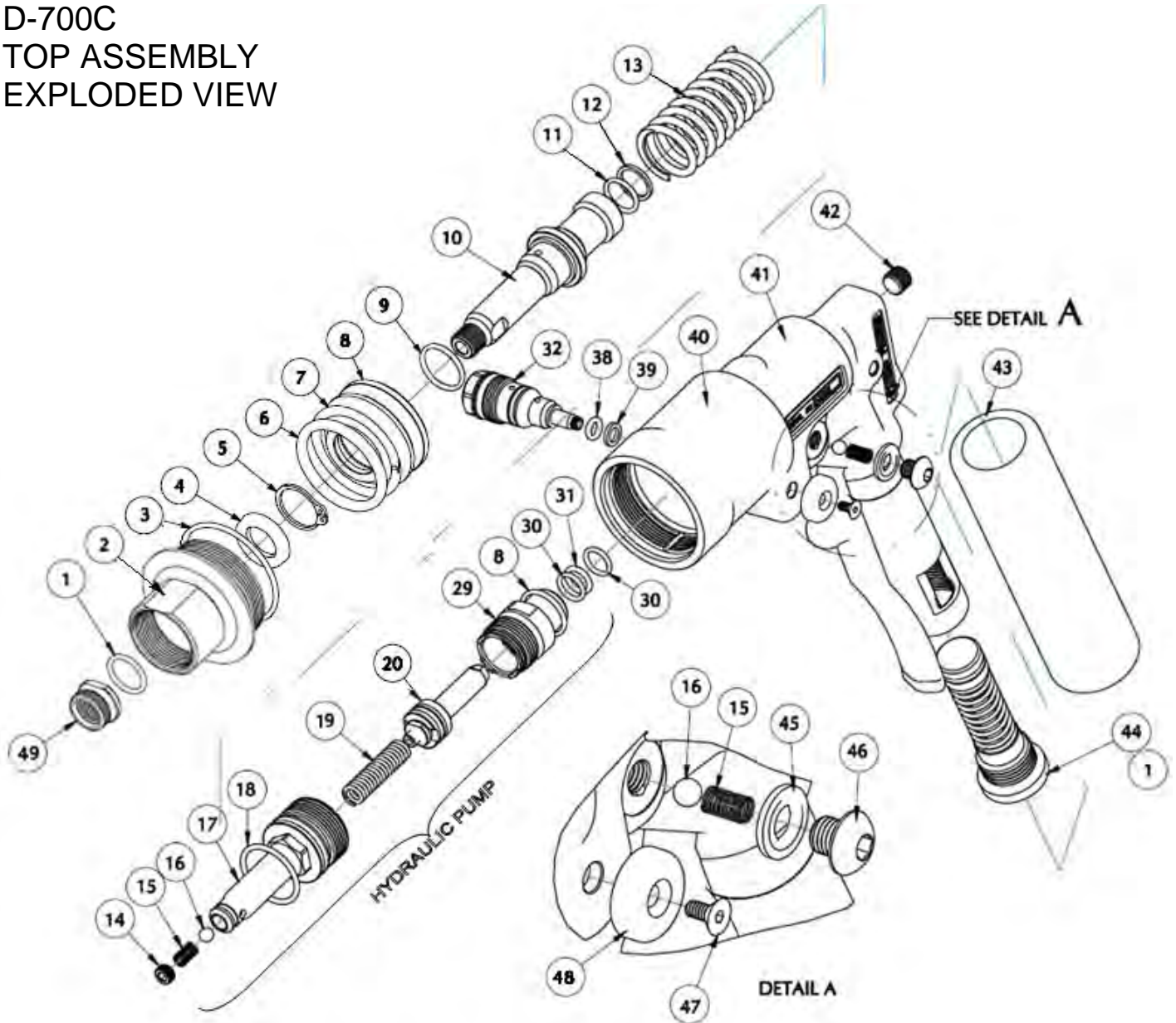
STAGE PISTON (item 20)
EXPLODED VIEW



PRESSURE RELIEF VALVE (item 32)
EXPLODED VIEW



D-700C
TOP ASSEMBLY
EXPLODED VIEW



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.

THE FOREGOING EXPRESS WARRANTY AND REMEDY ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES AND REMEDIES; ANY IMPLIED WARRANTY AS TO QUALITY, FITNESS FOR PURPOSE, OR MERCHANTABILITY IS HEREBY SPECIFICALLY DISCLAIMED AND EXCLUDED BY SELLER. THIS WARRANTY IS VOID IF SELLER IS NOT NOTIFIED IN WRITING OF ANY REJECTION OF THE GOODS WITHIN ONE (1) YEAR AFTER INITIAL USE BY BUYER OF ANY POWER RIVETER OR NINETY (90) DAYS AFTER INITIAL USE OF ANY OTHER PRODUCT.

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.

For more information please contact FSI Technical Services Department at Tel. 707-935-1170

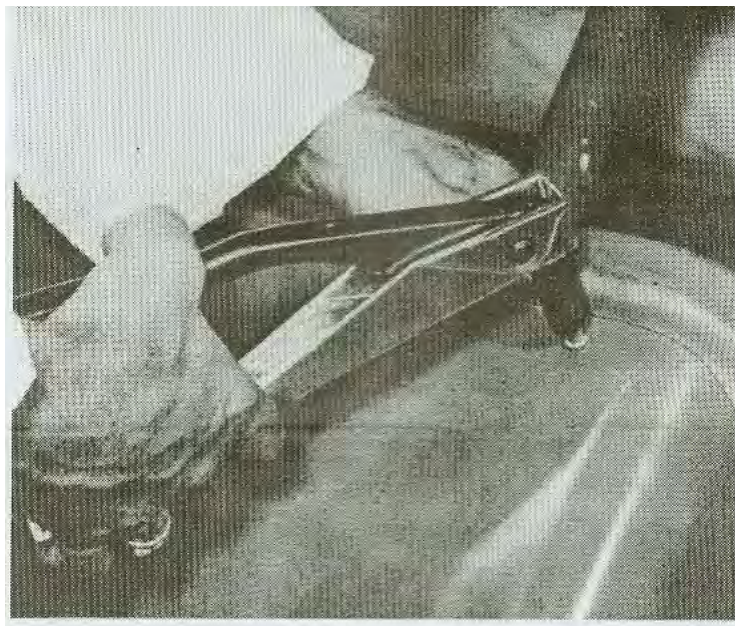
D-28 OPERATION:

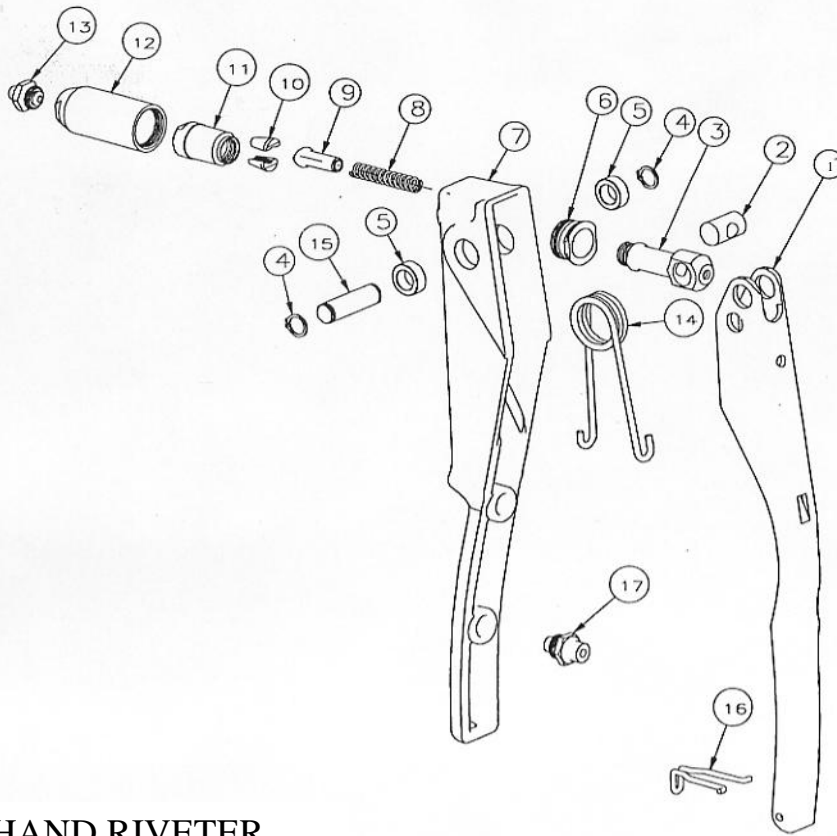
1. Insert rivet stem into nosepiece.
2. Insert rivet into work with riveter nose-piece held firmly and squarely against head of rivet.
3. Squeeze the handles to install the rivet. An additional stroke may be necessary depending on the rivet length and the thickness of the material being joined.



D-28 TROUBLESHOOTING:

1. If rivet stem will not enter the pulling head with the handles fully extended, the tool is probably contaminated with dirt or metal chips. Dismantle pulling head (parts 8 through 13), clean with a solvent, examine jaw teeth for signs of wear and replace if worn.
2. If rivet stem enters pulling head but is not gripped by jaws, disassemble as in above and check for worn jaws or a weak jaw spring. Jaw spring should not be less than 1 1/4" long.
3. If rivet stem enters, grips and sets rivet but does not release rivet, disassemble as above and check for dirt, weak jaw spring or worn jaws.
4. Pulling head components (8 through 13) should be clean and dry. The only lubrication necessary is on the outside of the jaws (10) to assure a sliding action between the collet taper and the backs of the jaws. Use a clear grease such as Lubriplate. Tighten all components snugly with a wrench.





D-28 HAND RIVETER

REFERENCE NUMBER	PART NUMBER	DESCRIPTION	QUANTITY REQUIRED
1	F728C3	LEVER ARM	1
2	F728A12	PIVOT PIN, DRAWBOLT	1
3	F728A10	DRAWBOLT	1
4	FP295	RETAINING RING	2
5	F728A14	BUSHING	2
6	F728A11	ADAPTER BUSHING	1
7	F728B2	HANDLE	1
8	F728A6	SPRING	1
9	F728A5	JAW FOLLOWER	1
10	F728B4	JAWS (2-PC SET)	1
11	F728A7	JAW HOLDER	1
12	F728A8	NOSE TUBE	1
13	F143-CH	NOSEPIECE	1
14	F728A15	TORSION SPRING	1
15	F728A13	PIVOT PIN, LEVER ARM	1
16	F728A16	CLIP	1
17	F159-CH	NOSEPIECE	1
18	F156-NP	NOSEPIECE	1

