



MODEL 3050 C-SQUEEZER OPERATION MANUAL

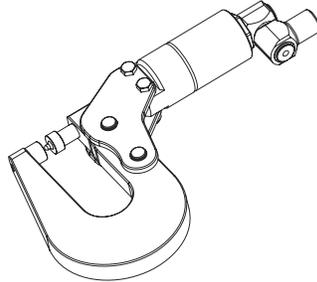


Table of Contents

1.0	Overview	6.0	Maintenance
2.0	Specifications	7.0	Bleeding the Riveter System
3.0	Safety Warnings	8.0	Contact Information
4.0	Assembly	9.0	Parts List
5.0	Operation		

1.0 Overview

The Numatx Model 3050 C-Squeezer is a hydraulically operated hand held tool, designed to squeeze up to 1/8" diameter aircraft grade rivets (AD alloy). This unit is hydropneumatic operated (also known as pneudraulic), in conjunction with Numatx Pressure Intensifiers, such as the Model 3350 and NXI-10. The fully hydraulic C-Squeezer offers the advantages of decreased weight, smaller size, and constant force when compared to traditional pneumatic only squeezers. This reduces operator fatigue, allows for use in more confined areas, and improves control of the squeezing action (feathering operation). The units are built from high quality aircraft grade materials, with parts made on cnc machining centers and features held to close tolerances, for years of dependable operation.

Before using the Model 3050, fully read this operation manual.

2.0 Specifications

DIMENSIONS	FIGURE 1
WEIGHT, NO YOKE	1.05 Lbm (.47 Kg)
WEIGHT, W/3" YOKE	2.48 Lbm (1.12 Kg)
FLUID DISP REQUIRED	.39 in ³ (6.4 cc)
HYDRAULIC PRESSURE, NORMAL	3,500 psi (24.1 MPa)
HYDRAULIC PRESSURE, MAX	4,500 psi (31.0 MPa)
FORCE, NORMAL	2,690 Lbf (11.9 KN)
FORCE, MAX	3,450 Lbf (15.3 KN)
COMPRESSION PIN STROKE	.50" (12.7 mm)

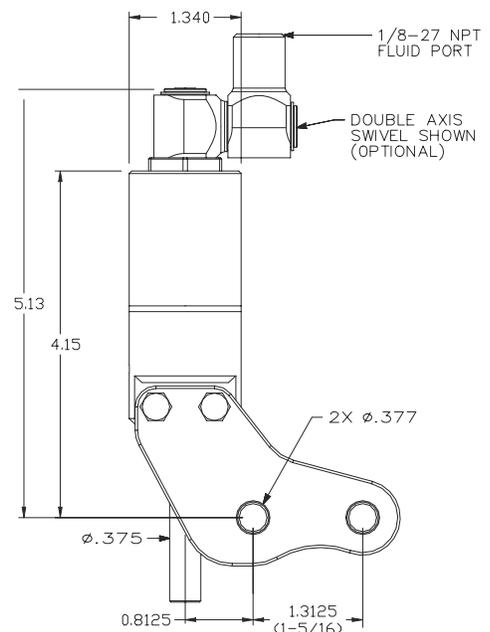


FIGURE 1 DIMENSIONS

3.0 Safety Warnings

- 3.1 NEVER operate the C-Squeezer above 4,500 psi (31.0 Kg/cm²). Operating above this specified pressure can lead to failure of the hydraulic hose, hydraulic seals, and fittings. Numatx C-Squeezers are intended to be operated with Numatx Pressure Intensifiers, refer to the appropriate Numatx intensifier operating manual for the intensifier maximum air pressure. If the C-Squeezer is to be used with alternate hydraulic source, ensure the squeezer hydraulic pressure is limited per Section 2.
- 3.2 NEVER disconnect the hydraulic line while the line is pressurized.
- 3.3 Use Dexron III or equivalent fluid for the C-Squeezer actuation fluid. Other fluids may be suitable, providing the Buna-N (Nitrile) seals are compatible with the alternate fluid.
- 3.4 Properly bleed the C-Squeezer per Section 7 of this manual. **The entire system must be properly bled to function properly.**
- 3.5 Use proper eye protection when overhauling this unit.
- 3.6 Do not use substitute components for repair of any portion of the unit.
- 3.7 The system should be properly maintained and examined at regular intervals for damage.
- 3.8 Avoid excessive contact with the hydraulic fluid, to minimize skin irritation. Refer to Section 6 for Dexron III safety data.

4.0 Assembly

- 4.1 Per Figure 2, install an AN816-4D fluid fitting into the fluid inlet port of the C-squeezer and the outlet port of the intensifier. Use Teflon tape on the pipe threads, to ensure there are no hydraulic leaks.
- 4.2 Connect the C-Squeezer to the pressure intensifier with the hydraulic hose. Tighten the fluid fittings.
- 4.3 Install the ¼" air lines between the foot valve and intensifier, using the supplied one-touch air fittings. Use Teflon tape on the threads of the air fittings. Note that the default position of the foot valve (pedal un-depressed) should be flowing air to the air fitting located on the top of the intensifier. When the foot valve pedal is depressed, air should be flowing to the air fitting at the bottom of the intensifier. Some foot valves may have Port B as the default position. In this case, attach the air line between Port B of the FV and Port A of the intensifier, and vice versa.
- 4.4 Attach the compression pin (rivet set) to the piston tip using the supplied 3-48 cap screw. DO NOT tighten this screw, simply bring the screw to close engagement. Lubricate the compression pin shank using suitable grease. Note that there is intentional radial play between the compression pin and piston shaft tip, to allow for tolerance stack-up when inserted into the C-Yoke.
- 4.5 Install an appropriate CP-214 compatible C-yoke into the squeezer yoke mount, using the supplied quick release shear pins.
- 4.6 Mount an appropriate rivet die with a .187 diameter (3/16") shank in the tip of the compression pin and C-yoke tip.
- 4.7 Bleed the riveter system per Section 7.

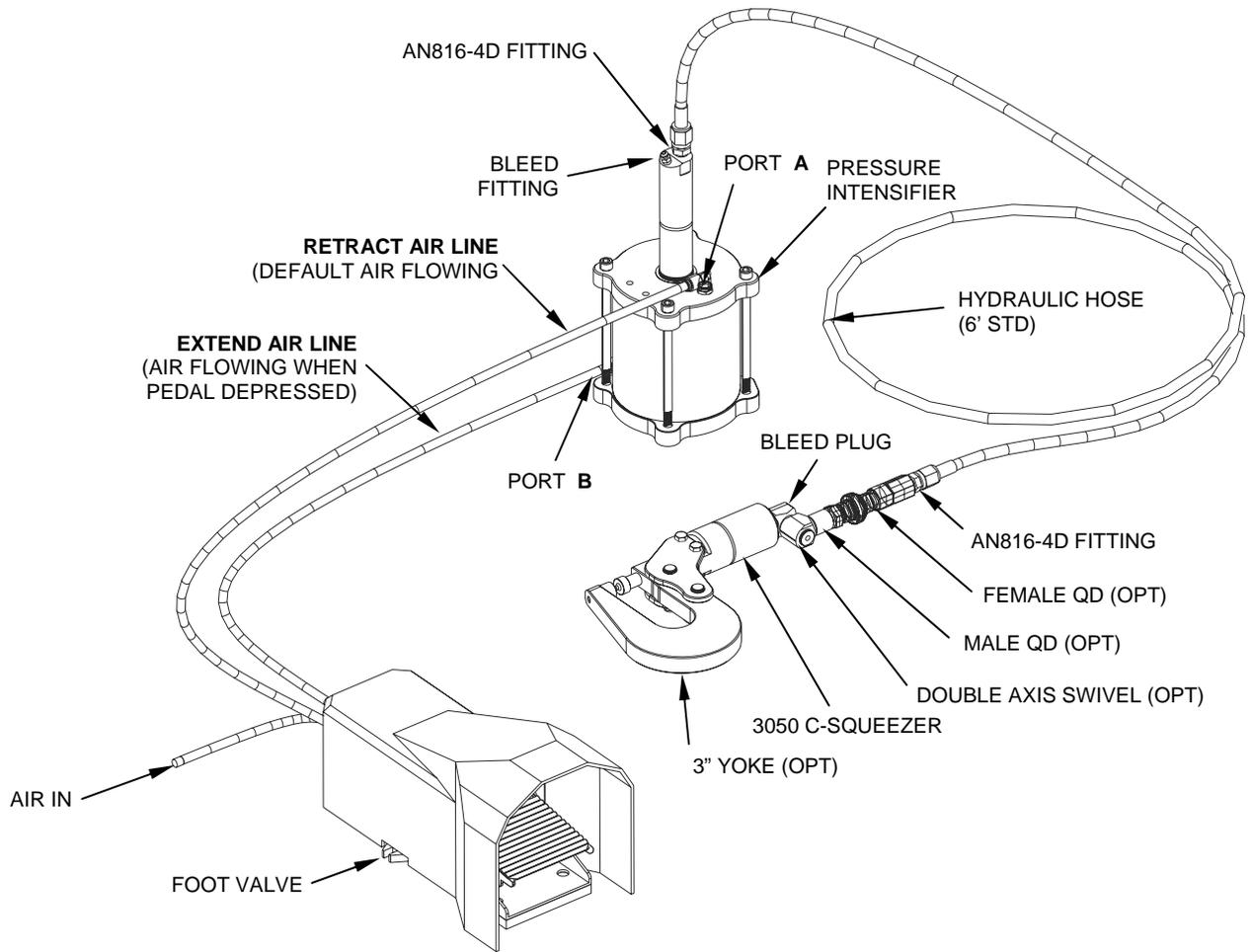


FIGURE 2 C-SQUEEZER SYSTEM

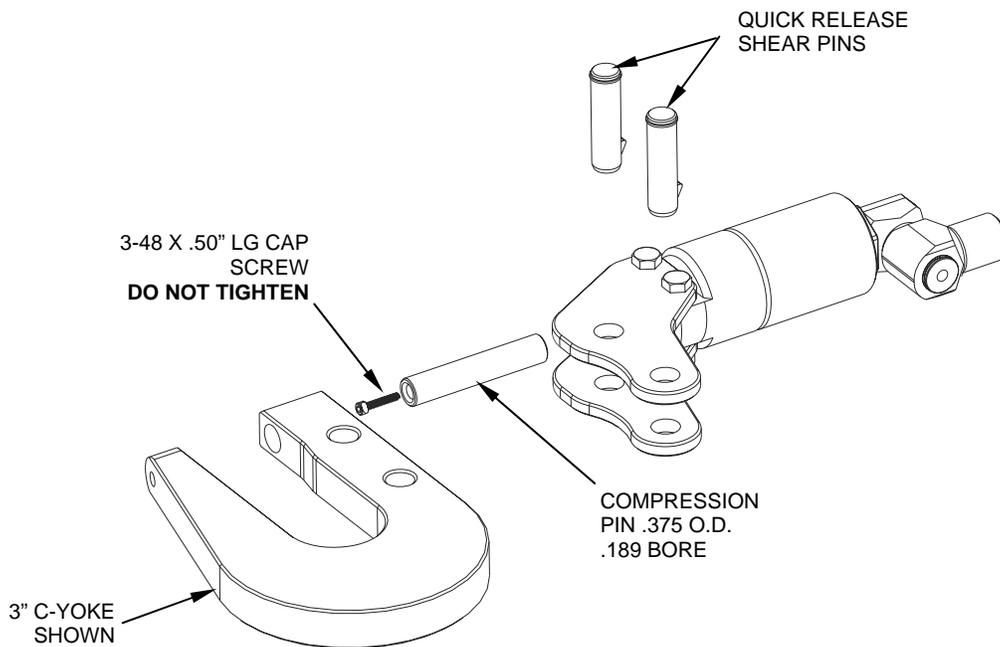


FIGURE 3 MODEL 3050 C-SQUEEZER YOKE INSTALL

5.0 Operation

Traditional pneumatic only squeezers develop peak squeezing force at the final 1/16" – 1/8" of rivet set travel. This means pneumatic squeezers are ALWAYS adjusted so that the rivet set has almost run out of travel as the rivet is about to be compressed. It can sometimes be tedious to adjust the length of the rivet set, via shims and different length dies. It may also be necessary to squeeze the rivet twice to fully set the rivet.

Numatx C-Squeezers output CONSTANT FORCE over the entire stroke range of the rivet set. Thus, it is only necessary to adjust for gross clearance of the rivet set. Providing the Numatx Squeezer rivet set does not run out of travel, varying rivet lengths can be squeezed without adjusting the rivet set final length.

Adjust the air pressure supplied to the Pressure Intensifier, within the allowable operating range of the Intensifier. The force of the squeezer is directly proportional to air pressure. Once the desired air pressure is achieved for a particular rivet material and rivet diameter, no further adjustment will be necessary to the compression pin length, providing the pin does not run out of travel.

- 5.1 To squeeze a rivet, depress the foot pedal (or actuate a control valve) connected to the intensifier. The pressure intensifier will displace hydraulic fluid along the length of the hydraulic hose, forcing the piston in the squeezer to move.
- 5.2 To retract the squeezer compression pin, release the foot valve (or other control valve). The piston of the intensifier will return to a retracted state, allowing the fluid in the squeezer to return to the intensifier.
- 5.3 "Feathering" (variable rivet set positioning) can be achieved by carefully pressing down on the foot valve pedal, to an intermediate position.

6.0 Maintenance

The NUMATX Model 3050 C-Squeezer has been manufactured to give maximum service with minimum care. In order that this may be accomplished, the following recommendations should be followed.

- 6.1 The squeezer system should be full of oil and properly bled per Section 7.
- 6.2 Use only Dexron III or compatible fluid. See Dexron III safety Data below.
- 6.3 Using an air tool Oil, lubricated the pressure intensifier daily, using 4-6 drops of a quality air tool oil. Oil should be introduced at the source air line of the intensifier. Alternately, use an in-line oiler (Filter/Regulator/Lubricator - FRL).
- 6.4 Keep the unit clean and free of excessive moisture, to minimize wear on moving parts.
- 6.5 It is recommended to use dry filtered air as a pressure source to the intensifier, which will extend the seal life of the intensifier piston.
- 6.6 The system should be routinely inspected for oil leaks. Check the bleed fittings of the intensifier and forming heads to ensure they are tight. DO NOT OVERTIGHTEN.
- 6.7 The bleed plug in the squeezer may be removed to examine the fluid level.
- 6.8 Avoid dropping any portion of the unit, as this may cause damage to close tolerance parts.
- 6.9 Section 9 shows exploded parts list for the C-Squeezer unit.

DEXRON III OIL SAFETY DATA

First Aid

Skin: Wash thoroughly with soap and water as soon as possible. Casual contact requires attention.

Ingestion: Seek Medical attention, immediately. **DO NOT INDUCE VOMITING.**

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

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

Fire

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

Environment

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

Spillage: Prevent entry into drains, sewers and water courses. Soak up with inert material. Store waste fluid in an appropriate container for disposal.

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

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

Properties

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

7.0 Bleeding the Riveter System

In order to develop maximum force and full compression pin extension, entrapped air bubbles must be removed from the system. Bleeding the system is similar to bleeding brakes on a car. If a QD is used in the system, and is disconnected routinely, the bleeding frequency will be higher than a system without a QD. It may be necessary to pass the equivalent of several 30cc charges of fluid through the unit to fully dispel any trapped air. If the unit does not seem to be performing properly, it is likely not fully bled of all air. Refer to Figure 4.

- 7.1 Place the unit so that the intensifier and the hydraulic hose are below the forming head. Minimize low points in the hydraulic hose which could create space for an air pocket. The air lines to the intensifier do not need to be hooked up, providing that the intensifier air cylinder is fully retracted. The bleed port on the forming head should be as close to the relative high point in the system as possible, to preclude the possibility of an air pocket. Installing the squeezer in a vise may help position the bleed port. Remove the squeezer bleed plug, and install a 1/16" NPT plastic barb fitting and clear drain tube into the port, to channel excess fluid to a drain cup.
- 7.2 Slightly open the bleed fitting on the intensifier approximately 1 to 1-1/2 turns. Do not overly open this fitting, otherwise residual fluid may exit the intensifier due to gravity.

- 7.3 Attach a 1/4" O.D. tubing to the syringe, and fill the syringe with Dexron III fluid.
- 7.4 Make sure all air bubbles are out of the syringe and attached tubing before hooking it up to the bleed fitting of the intensifier. To do this, position the syringe so that the tubing is facing upward, and allow a small quantity of fluid to be dispelled from the syringe, force any air bubbles fully out of the syringe and attached tubing.
- 7.5 Inject the fluid into the intensifier bleed fitting. If it is difficult to force the fluid into the unit, SLIGHTLY open the bleed fitting in approximately 1/2 turn increments.
- 7.6 Observe the tubing connected to the squeezer head, watching for fluid exiting the clear tube. Continue injecting hydraulic fluid until no air bubbles are seen in the fluid exiting the forming head. An unfilled system requires several 30cc syringe injections.
- 7.7 When finished injecting fluid, tighten the bleed fitting of the intensifier BEFORE removing the tubing from each bleed fitting. This will prevent additional air from entering the system.
- 7.8 Remove the clear tube at the squeezer head, and check the fluid level at the port. Fluid may be added to "top off" the unit.
- 7.9 Reinstall the squeezer plug and tighten. Use Teflon tape on the pipe threads.
- 7.10 Wipe up any excess fluid which may be present on the intensifier and forming head.

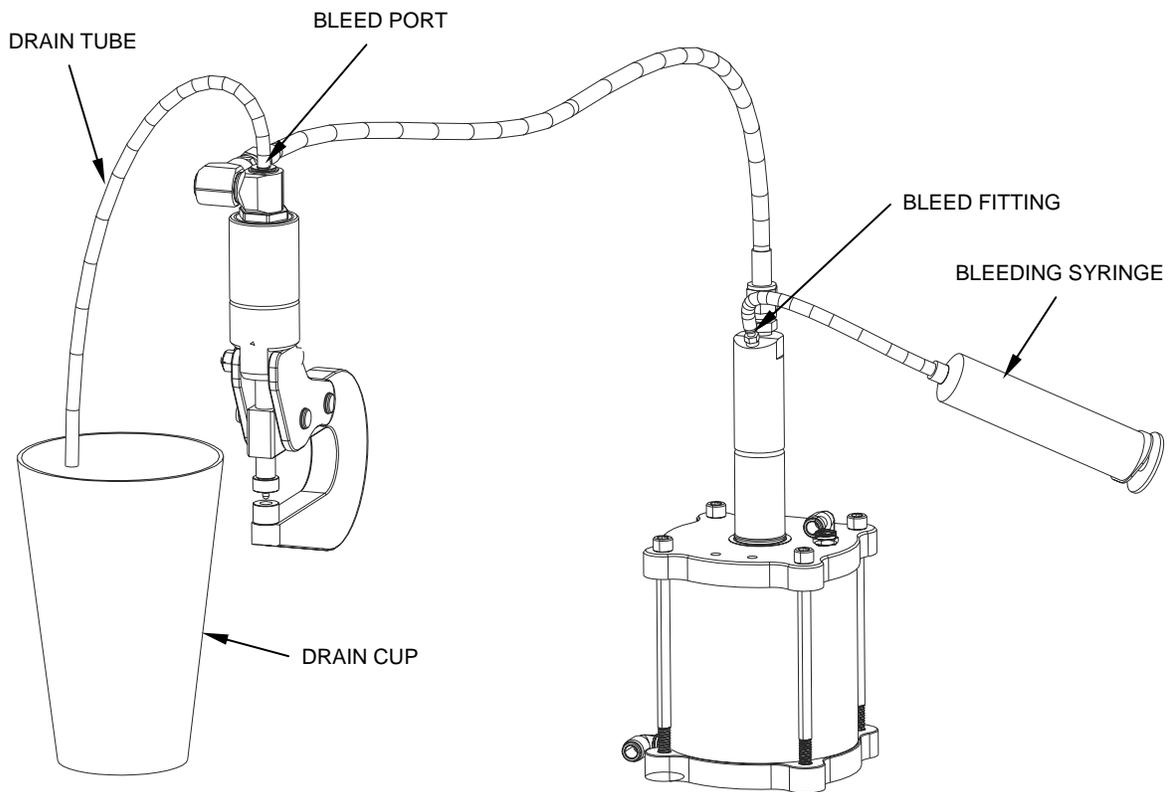


FIGURE 4 SYSTEM BLEEDING

8.0 Contact Information

NUMATX welcomes any comments, suggestions or questions regarding this product.

www.numatx-tools.com

numatx@att.net

Rev – AUG 2016

9.0 Parts List

REV	DESCRIPTION	DATE	APPROVED

REV	DESCRIPTION	DATE	APPROVED

1. IS SINGLE AXIS VARIANT
 2. IS DOUBLE AXIS VARIANT
 3. ACCEPTS 21-3-48 CAP SCREW SHOULD BE MINIMALLY TIGHT
 4. COMPRESSION PIN (RIVET SET) TRAVEL IS .500 (12mm)
 5. (TO ALLOW FOR RADIAL FLOAT OF COMPRESSION PIN)
 6. WEIGHT W/O YOKE IS 2.5 LBM
 7. WEIGHT W/O YOKE IS 1.0 LBM

1 1 21 3-48 X 1/2 SOCKET HEAD SCREW
 1 1 20 PLUG, PIPE, 1/16 NPT
 1 1 19 RING, RETAINING
 2 2 18 AN965-1032 NUT, LOCK
 2 2 17 AN3-13A BOLT
 4 2 16 100-012-BU BACKUP RING, BUNA
 1 1 15 100-020-BU BACKUP RING, BUNA
 1 1 14 100-117-TBU BACKUP RING, TEFLON
 4 2 13 100-012 O-RING
 1 1 12 100-020 O-RING
 1 1 11 100-117 O-RING
 1 1 10 C0600-072-1500 SPRING, RETURN
 1 1 9 C0850-092-1500 SPRING, RETURN
 2 2 8 3066-2 PIN, SHEAR
 1 1 7 3015-1 SWIVEL, DOUBLE AXIS
 1 1 6 3014-1 SWIVEL, SINGLE AXIS
 1 1 5 3055-1 COVER, CYLINDER
 ALT 1 4 3054-2 PIN, COMPRESSION
 1 1 4 3054-4 PIN, COMPRESSION
 1 1 3 3053-1 PISTON
 1 1 2 3052-1 CYLINDER
 2 2 1 3051-1 SHEAR PLATE
 2 2 1 3051-1 SHEAR PLATE

1 1 21 3-48 X 1/2 SOCKET HEAD SCREW
 1 1 20 PLUG, PIPE, 1/16 NPT
 1 1 19 RING, RETAINING
 2 2 18 AN965-1032 NUT, LOCK
 2 2 17 AN3-13A BOLT
 4 2 16 100-012-BU BACKUP RING, BUNA
 1 1 15 100-020-BU BACKUP RING, BUNA
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 ALT 1 4 3054-2 PIN, COMPRESSION
 1 1 4 3054-4 PIN, COMPRESSION
 1 1 3 3053-1 PISTON
 1 1 2 3052-1 CYLINDER
 2 2 1 3051-1 SHEAR PLATE
 2 2 1 3051-1 SHEAR PLATE

DIMENSIONS ARE IN INCHES
 FRACTIONS DECIMALS ANGLES
 .XX ±.03 ±1°
 .XX ±.03 ±1°
 DO NOT SCALE DRAWING
 THIRD ANGLE PROJECTION

APPROVED DATE
 DESIGN M. SWINFORD 20JAN16
 ENGR M. SWINFORD 20JAN16
 CHECK MFG

NUMATX
 DAYTON, OH USA
 C-YOKE SQUEEZER,
 MINI 3K
 SIZE PROJECT NO. 3050
 REV C
 SCALE 1/1
 SHEET 1 OF 1