3.3 Press Mounting:

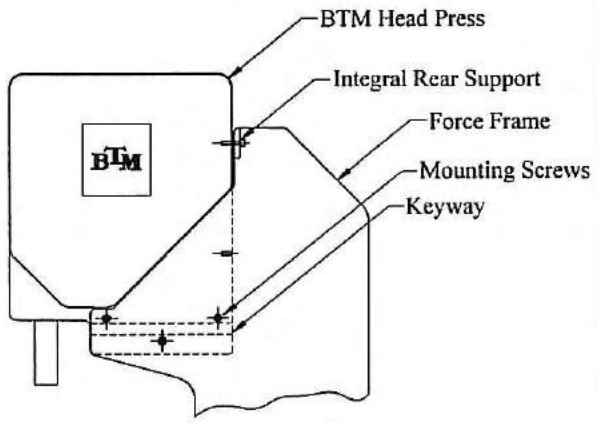
The BTM Air Toggle Press produces high forces which must be contained by the press mounting to ensure maximum life. When constructing force frames for press mounting, rigidity is essential to minimize deflection of the press ram.

Head model (H) presses must be mounted so that both keyways are in direct shear and directly tied to an integral rear support and frame. (Figure E.)

Equalizing (EU & REU) presses have dowel pin holes to be used for precise location. Piping and clearance must allow for movement of the unit. (Figure F.)

Figure E.

BTM Head "H" Presses



3.4 Throat Depth:

Designs incorporating deep throats must have sufficient force frames to inhibit deflection at the tooling. It is recommended that the tooling be mounted in a separate block affixed to the frame to provide final alignment. (Figure G.)

3.5 Anti-Rotation & Guides:

BTM Toggle Presses feature a ± 15' non-rotating ram. The method of mounting tooling to the ram can affect the life and performance of the press and tooling. Alignment of the tooling and containment of the deflection are imperative. In critical applications, usually where die clearance is less than .0005" (0.012mm) per side, it is recommended that an alignment guide be used. Sliding ways or posts and bushings are good techniques for this purpose.

Figure F.

BTM "EU" & "REU" Presses

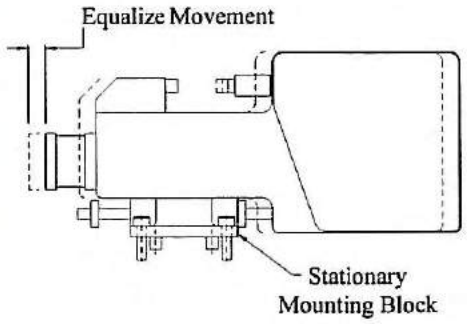
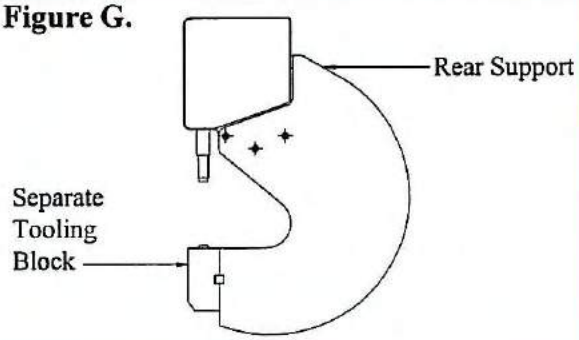


Figure G.



3.6 Shut Height Adjustment:

Various methods of shut height adjustment are provided with standard BTM components. Rams with built-in adjusting screws (PA&PTA), adjustable die button support (PB models) and die set adapter groups (DSAG) are listed in catalog 98P.

3.7 Lifting With The Toggle Press:

Force produced when retracting the toggle press is reverse of the force curve. However, certain long stroke presses will not perform in accordance with the force curve near the retracted position. Consult BTM when considering the lifting of large tools with the retract stroke.

4.0 Equalizing Presses:

Equalizing presses are useful in applications where both the punch and die must move clear of the part for loading and unloading. Two types are available; Equalizing Units (EU) and Reverse Equalizing Units (REU). Both types provide two motions, for die positioning and punch entry.

4.1 EU Models:

EU models are used where the tooling mounted on the *press anvil* is the "first" motion (generally die positioning) and the tooling mounted on the *ram* is the "second" motion (generally punch entry).

How it works:

1. Press is mounted to a machine base, both die and ram tooling are retracted to allow loading of the part onto stationary gauging. The open position stop collar is used to adjust the die position away from the part. (Figure H.)
2. Air pressure at 40 psi (2.7 bar) is applied to port AA of the equalize cylinder, advancing the die to the part. The closed position stop collar is used to adjust the die position to the part.
3. Air pressure at 80 psi (5.5 bar) is applied to port A of the press, advancing the ram and punch to the work.
4. Air pressure is switched to port B, retracting the ram.
5. Air pressure is switched to port BB, retracting the die.

Figure H.

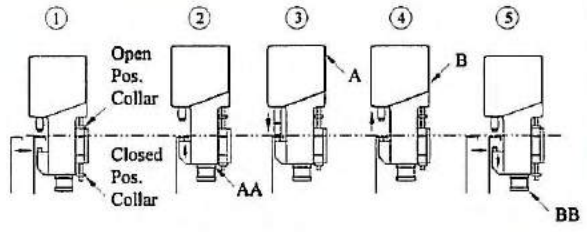
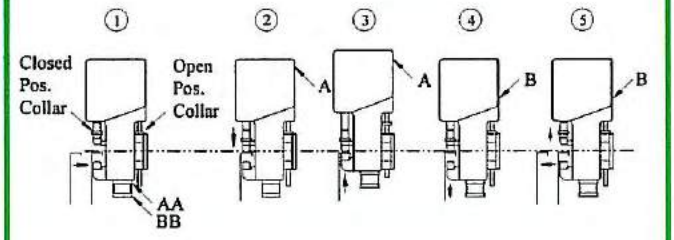


Figure I.



4.2 REU Models:

REU models are used where the tooling mounted on the *press ram* is the "first" motion (generally die positioning) and the tooling mounted on the *anvil* is the "second" motion (generally punch entry).

How it works:

1. Press is mounted to a machine base, both die and ram tooling are retracted to allow loading of the part onto stationary gauging. The open position stop collar is used to adjust the tooling position away from the part. The equalize cylinder acts as an air spring, with constant pressure at port BB. This pressure should be regulated to the minimum required to retract the tooling. Port AA is vented to atmosphere. (Figure I.)
2. Air pressure at port A advances the ram tooling (die) to the part. The closed position stop collar is used to adjust the die position relative to the part.
3. The remainder of the stroke is used to pull the (punch) tooling to the part, completing the work and compressing the air spring.
4. Air pressure is switched to port B, retracting the press ram. The first portion of this travel allows the air spring to extend, retracting the (punch) tooling.
5. The remaining ram travel retracts the (die) tooling from the part.

4.3 Design & Set Up:

EU Model (Figure H)

1. Designing an EU model into a machine and setting up the unit after installation are both performed with the unit in the closed position (air on port AA), and the open position stop collar threaded away from the mount block to its stop.
2. The closed position stop collar is then turned against the mount block until the open position collar is one inch from the mount block. This sets the unit to the position shown in the catalog drawings.
3. Tooling is designed in this position relative to the press keyway and the part position. The two stop collars may be used to fine tune the open and closed press positions.

REU Model (Figure I)

1. Designing an REU model into a machine and setting up the unit after installation are both performed with the unit in the closed position (air on port A), and the open position stop collar threaded away from the mount block to its stop.
2. The closed position stop collar is then turned against the stop block until the open position collar is one inch from the mount block. This sets the unit to the position shown in the catalog drawings.
3. Tooling is designed in this position relative to the press keyway and the part position. The two stop collars may be used to fine tune the open and closed press positions.

5.0 Maintenance:

Properly sized and applied, BTM Toggle Presses will provide a long service life. They require only regular lubrication and a clean, dry air supply. After extended service, seal replacement may be necessary. This is a relatively simple procedure and is outlined in **5.2.**

5.1 Lubrication:

The BTM Air Toggle Press is a mechanical device using air as its power source and therefore requires clean, dry air. A filter and pressure regulator must be incorporated into the air supply line. Light in-line lubrication is also recommended, but not required, as press seals are lubed for life at assembly. When incorporating in-line lubrication, use a light spindle oil in the lubricator (a reclassifier is also recommended). Lubrication is required every 20,000 cycles at grease fittings only. See lube tags on front of press assembly for specific lubrication instructions. Grease fittings are provided to lubricate the bearing and link pin areas on most presses. Use Chevron Rykotac Grease EP or equivalent at grease fittings. **Note:** Not all greases are compatible. If other grease will be used, you must verify its compatability. Failure to follow recommended lubrication procedures will void warranty. A video is available upon request detailing general press maintenance and seal replacement procedures.

5.2 Seal Replacement:

Refer to the catalog page showing your press model to order seal kit.

5.2.1 Loosen all the cover plate nuts by two threads only. Apply air to either port (80 psi maximum). This will separate one of the cover plates from the press body.

5.2.2 Remove all the cover plates screws & nuts, and the cover plate. The opposite cover plate will usually remain sealed to the body, and may be tapped loose using a wood block and a mallet. Remove the second cover plate.

5.2.3 Position the press body with the ram horizontal to prevent the ram from falling out when the link pin is removed. Remove the retainer ring from the ram link pin. The link pins on P-1 models are pressed into one side of the link and do not have retaining rings. Tap the link pin out and slide the ram out of the body.

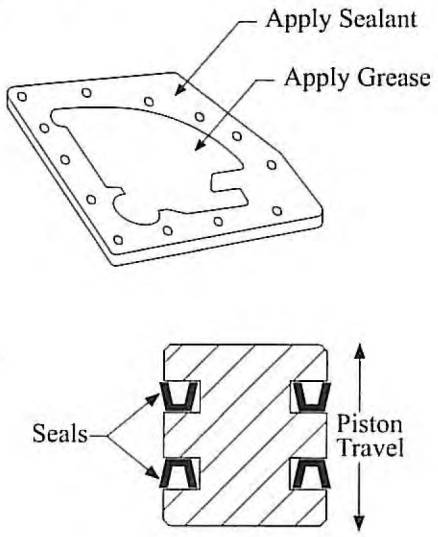
5.2.4 Remove the piston and link from the body, and remove the old seals from the piston.

5.2.5 Remove the ram O-Ring from the body. The O-Ring on PB models is located on the ram.

5.2.6 Clean all parts. Inspect all parts for signs of wear or damage.

5.2.7 Check the cover plates to see if a "pencil" outline of the press cavity is visible. (Figure J.) If it is not , align the cover plates with the body and outline the contour with a pencil. Repeat procedure on second cover plate.

Figure J.



5.2.8 Install new piston seals with "V" grooves facing the powered surfaces of the piston. (Figure J.)(opposite each other)

5.2.9 Install new ram O-Ring.

5.2.10 Grease and re-assemble the piston, link and ram into the press body.

5.2.11 Apply a thin layer of grease to the area of the cover plates inside the "pencil" line. Apply a thin layer of Accuflex* Sealant to the area outside the "pencil" line. (Figure J.) Do not apply sealant inside the line.

5.2.12 Assemble the cover plates to the press and torque screws according to the chart in (Figure K). Make sure all threads are free of sealant. A slight bypass of air is normal due to the rectangular seals.

Figure K. Cover Screw Size & Torque

	1 & 2 Ton		5 & 10 Ton	20 & 40 Ton
Screw Size	1/4	5/16	3/8	1/2
Torque in Ft / Lbs	9	23	50	110
Torque in N • m	12.2	31.2	67.8	149.0

5.3 Replacing Components:
Worn or damaged component parts may be replaced following the same procedure described at **5.2**. Components are listed on the catalog 02P pages for each model. Presses may be returned to BTM for factory repair.

WARRANTY

BTM Corporation warranties its Air Toggle Presses against defects in material and workmanship for (1) million cycles or a period of (1) year after the ship date from BTM, whichever comes first. This warranty is limited to replacing or repairing at BTM's option, F.O.B. BTM's factory, any part found by BTM to be defective in materials and/or workmanship. Any application of a BTM product outside the intended use of the product or non compliant with the application guidelines in this catalog shall not be warranted by BTM Corporation. Furthermore, BTM will not be liable for any expenses incurred for repairs or replacement made outside BTM's facilities without written consent (or damages arising out of such replacements or repairs). Under no circumstances will BTM be held responsible for any consequential damages. The warranty is limited to the repair or replacement of the defective part(s) and does not include installation. This warranty is the only warranty extended by the seller in connection with any sale made hereun der and is in lieu of all other warranties, express, implied or statutory including warranties of merchantability and fitness for purpose.

*** Note Regarding Sealant**

BTM Air Toggle Presses manufactured after August 2001 use polyurethane sealant to seal the side cover plates. A tube of SIKAFLEX 221 is included with each BTM Seal Kit. Presses manufactured before August 2001 were sealed with RTV-108 silicone sealant. Silicone is no longer provided with BTM Seal Kits. Presses that were originally sealed with silicone can be re-sealed with SIKAFLEX 221.