Air-Over-Oil Boosters
15cc & 49cc Oil Capacity User Guide

BTM’s standard Air/Oil Boosters for powering compatible Hand Held Units

> SAFETY

> START-UP

> AIR BLEED

... and more.

www.btmcomp.com
810-364-4567
BEFORE YOU BEGIN

☐ Inspect your unit, hose(s), booster, and any components for damage prior to operation of the unit.
☐ Be sure you are using the correct booster for your hand held unit (See 4.0 Booster Overview).
☐ Verify that the oil level is correct in the booster (See 2.0 Start-up Procedure). Add oil if necessary.

For product questions or service issues, contact BTM’s sales department at +1-810-364-4567.

TABLE OF CONTENTS

Section 1: 1.0 Safety .................................................................................................................................................. 3

Section 2: 2.0 Booster Overview .................................................................................................................................. 4

Section 3: 3.0 Start-Up Procedure .................................................................................................................................. 5

Section 4: 4.0 Bleeding the Hand Unit ......................................................................................................................... 6

Section 5: 5.0 How They Work ....................................................................................................................................... 7

Section 6: 6.0 Troubleshooting ...................................................................................................................................... 8

Section 7: 7.0 15cc Pneumatic Circuit ............................................................................................................................. 11

Section 8: 8.0 Booster Specifications .................................................................................................................................. 13
1.0 - SAFETY

**USER RESPONSIBILITY:** Each person who is to operate or maintain the booster must be familiar with these, and all other safety precautions before attempting to use or to service it. The owner is responsible to train and supervise all personnel in the safe operation & maintenance of the booster.

**SAFETY GLASSES:** Always wear safety glasses while operating and maintaining this equipment.

**DANGER:** Remove all air input sources from the booster before attempting to work on, service, maintain, or disassemble it in any way. NEVER attempt to work on the booster without removing all power sources first.

**OIL CHANGE/FILLING:** Use only BTM approved oil or equivalent. Remove all air input sources from the booster before attempting to change, fill, and/or drain the oil. Never operate the booster without the proper amount of oil installed.

**EQUIPMENT REPLACEMENT PARTS:** Use only genuine BTM parts, or BTM approved parts & seals.

**REGULAR MAINTENANCE:** Check booster regularly for damage or leaks. Discontinue use if such conditions exist.
2.0 - BOOSTER OVERVIEW

BTM manufactures two standard boosters, a 15cc and a 49cc booster.

The 15cc booster is designed to operate most BTM air-over-oil hydraulic hand held units.

The 49cc booster was designed for units which require a larger volume of oil, such as our Crocodile Unit.

NOTES:

• If the customer’s intent is to use a BTM booster to power their own hydraulically driven unit, it is the customer/user’s responsibility that the driven unit is in compliance with local pinch point safety requirements.

• If the customer intends to use their own hydraulic hose assembly be sure the hydraulic hose pressure rating is sufficient for the output ratio from the booster.

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**15cc Booster**

- Pressure Limit Valve
- Air Supply Port 1/2 NPT
- Oil Level Sight Glass
- Oil Fill Plug G3/8-19
- Exhaust
- White Hose Signal Air Return from Unit
- Green Hose Signal Air Out to Unit
- High Pressure Output 9/16-18 37° Flared Fitting

**49cc Booster**

- Pressure Limit Valve
- Air Supply Port 1/2 NPT
- Oil Fill Plug G3/8-19
- Oil Level Sight Glass
- Exhaust
- Exhaust
- Green Hose Signal Air Out to Unit
- White Hose Signal Air Return from Unit
- High Pressure Output 9/16-18 37° Flared Fitting
3.0 - START-UP PROCEDURE

**REQUIREMENTS:**

- Safety Glasses
- 8mm Hex Key
- A regulated air line capable of supplying 5.5 bar [80 psi]
- As many as (2) Adjustable Wrenches

<table>
<thead>
<tr>
<th>Operating Air Pressure:</th>
<th>5.5 bar [80 psi]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BTM recommends that clean, dry air is used.</td>
</tr>
</tbody>
</table>

**Oil:**

| Amoco AW 32 to Mobil DTE 24 or any equivalent, non-foaming oil. |

*Note: Oil should be handled and disposed of properly.*

**READ ALL SAFETY INSTRUCTIONS BEFORE OPERATING THE BOOSTER!**

1. After removing your booster from its shipping box, visually inspect it for damage due to shipping. If damage has occurred, call BTM immediately.

2. Hang the booster from the hole in the hanger bracket. Make sure the booster unit is securely hung in an appropriate location. The booster should be higher than the hand unit during operation.

3. The booster may be shipped with oil in the reservoir. If the oil level is low, add oil by removing the plug at the top of the booster using an 8mm hex key. The proper oil level is denoted by a sticker on the booster.

4. Connect the hose assembly to the booster & hand unit.

5. Connect signal lines to the unit.

6. Supply an airline to the booster with clean, dry air, regulated to 5.5 bar [80 psi] pressure.

Now you are ready to setup the unit to make clinch joints.

**Please refer to your hand unit’s user guide, or contact BTM for information on how to set the cap thickness for your clinch joint size/type.**
4.0 - BLEEDING THE HAND UNIT

**YOU WILL NEED:**
- As many as (2) Adjustable Wrenches
- 8mm Hex Key

1. Disconnect air supply to booster. **Do not attempt bleeding procedure under air pressure.**

2. Position gun lower than booster. Keep hose free of loops or kinks to ensure best flow. (A)

3. Locate the oil fill plug (B). Before removal, clean around plug to prevent oil contamination.

4. Using an 8mm hex key, remove plug (B) from top of booster sight glass.

5. Slowly loosen the hose fitting connection from the unit. If the unit uses a swivel fitting, this will require 2 wrenches. (C)

6. Gravity will cause all air (and some oil) to be expelled.

7. Re-tighten fitting at gun. (C)

8. Reinstall plug on top of booster sight glass. (B)

9. Reconnect air to booster inlet.

10. Dry cycle unit multiple times.

11. Make some clinch joints and check cap thickness.

12. If results are not optimal, bleeding procedure may need to be repeated.

13. When unit has been bled, check the oil level at the booster through the sight glass. (D) The level should be between the two points indicated on the decal. Fill as needed. (D)
5.0 - HOW THEY WORK

15CC BOOSTER
(Spring Return)

Compressed air is applied to ports A and C. The air pressure forces the piston into a downward direction.

As the piston is forced downward, oil becomes trapped in the lower section of the booster. As the oil is compressed, a 61:1 pressure ratio develops. A maximum output of 337 BAR (4880 PSI) is generated using only 5.5 BAR (80 PSI) air.

When air pressure is removed, a spring returns the piston to its original, retracted position.

49CC BOOSTER
(Air Return)

Compressed air is applied to ports A and C. The air pressure forces the piston into a downward direction.

As the piston is forced downward, oil becomes trapped in the lower section of the booster. As the oil is compressed, a 64:1 pressure ratio develops. A maximum output of 353 BAR (5120 PSI) is generated using only 5.5 BAR (80 PSI) air.

Air pressure is required to return the piston to its original, retracted position.
6.0 - TROUBLESHOOTING

If the booster appears to be functioning correctly but the hydraulic unit will not work correctly:

1. Confirm that the button/trigger that actuates the booster is being depressed for the entire work cycle.

2. Make sure air supply pressure is correct.
   The 15cc booster has 61:1 ratio and the 49cc booster has a 64:1 ratio.
   a. Example: If you are using a 15cc booster and pneumatic pressure is 70 psi.
      70 psi x 61 = 4270psi hydraulic pressure out.

3. Inspect device and tooling powered by the booster for damage.

4. Visually inspect the booster, confirm oil level is sufficient and there is no physical damage.

5. Check hydraulic hose and fittings to confirm there are no oil leaks.

6. Check pneumatic 4mm signal hoses (green and white) for air leaks.
   The ends of the hoses should be cut square so fittings seal correctly.

7. Be sure signal line hoses are in the correct locations.
   Green line is pneumatic supply to trigger/button (constant pressure).
   The white hose is the return air form the trigger/button.
   a. See booster diagram for the correct signal hose locations.
   b. Confirm the signal hoses are correct on the unit trigger location.
      If using a BTM unit you may refer to the unit’s users guide.
   c. Non BTM units refer to the circuit diagram to help trouble shoot.

8. The booster/unit may require bleeding to purge air that may be trapped in the hose, unit and booster.
   Refer to bleed process...
   a. Note: The bleed process may need to be repeated to achieve optimal hydraulic unit function.
      If the above did not resolve cycling issue:
      1. The booster may require a seal kit.
      2. 15cc booster ONLY: The booster may need to have internal piston return springs replaced.

Contact BTM for Service Assistance.
7.0 - 15CC BOOSTER PNEUMATIC CIRCUIT DIAGRAM

PLANT AIR SUPPLY
MINIMUM 3/8" PIPE
RECOMMEND DRY AIR

AIR SUPPLY PORT
< 5.5 BAR [80 PSI] MAX

15cc BOOSTER

PRESSURE LIMIT VALVE

EXHAUST

HYDRAULIC OUT
337 BAR [4880 PSI] MAX

SIGNAL AIR TO TRIGGER VALVE (GREEN TUBING)

SIGNAL AIR TO BOOSTER (WHITE TUBING)

UNIT

TRIGGER VALVE

SINGLE ACTING HYD. CYLINDER

FILTER REGULATOR LUBRICATOR

SET AT 80 PSI

15cc BOOSTER PNEUMATIC CIRCUIT DIAGRAM
7.1 - 49CC BOOSTER PNEUMATIC CIRCUIT DIAGRAM

PLANT AIR SUPPLY
MINIMUM 3/8" PIPE
RECOMMEND DRY AIR

AIR SUPPLY PORT
< 5.5 BAR [80 PSI] MAX

SET AT 80 PSI
FILTER REGULATOR LUBRICATOR

PRESSURE LIMIT VALVE

EXHAUST x2

HYDRAULIC OUT
353 BAR [5120 PSI] MAX

UNIT
TRIGGER VALVE

SINGLE ACTING HYD. CYLINDER

HYDRAULIC OUT (GREEN TUBING)
SIGNAL AIR TO TRIGGER VALVE (WHITE TUBING)
SIGNAL AIR TO BOOSTER (GREEN TUBING)
SIGNAL AIR TO BOOSTER (WHITE TUBING)
# 8.0 Booster Specifications

## 15CC Booster Specifications

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Booster Ratio</td>
<td>61:1</td>
</tr>
<tr>
<td>Weight (without hose)</td>
<td>8.2kg [18 lbs]</td>
</tr>
<tr>
<td>Air Volume Per Cycle</td>
<td>1258cc [76.7in³]</td>
</tr>
<tr>
<td>Maximum Intensified Volume</td>
<td>15.4cc [.94 cu. in]</td>
</tr>
<tr>
<td>Maximum Output</td>
<td>337 BAR [4880 PSI] @ 5.5 BAR [80 PSI]</td>
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<tr>
<th>Air Pressure In</th>
<th>Hydraulic Pressure Out</th>
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<tbody>
<tr>
<td>BAR</td>
<td>PSI</td>
</tr>
<tr>
<td>2.8</td>
<td>40</td>
</tr>
<tr>
<td>3.4</td>
<td>50</td>
</tr>
<tr>
<td>4.1</td>
<td>60</td>
</tr>
<tr>
<td>4.8</td>
<td>70</td>
</tr>
<tr>
<td>5.5</td>
<td>80</td>
</tr>
</tbody>
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Do not exceed 5.5 BAR [80 PSI] air input pressure. Pressure Limit Valve will open.

## 49CC Booster Specifications

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<tbody>
<tr>
<td>Booster Ratio</td>
<td>64:1</td>
</tr>
<tr>
<td>Weight (without hose)</td>
<td>17.8kg [39 lbs]</td>
</tr>
<tr>
<td>Air Volume Per Cycle</td>
<td>7341cc [448in³]</td>
</tr>
<tr>
<td>Maximum Intensified Volume</td>
<td>49cc [3.0 cu. in]</td>
</tr>
<tr>
<td>Maximum Output</td>
<td>353 BAR [5120 PSI] @ 5.5 BAR [80 PSI]</td>
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<td>5.2</td>
<td>75</td>
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<td>5.5</td>
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Do not exceed 5.5 BAR [80 PSI] air input pressure. Pressure Limit Valve will open.

## How to Order

**15cc Booster**  
**BTM Number:** PD238100A  
*Note: Hose Assembly Not Included with Booster.*

**3m [10 ft] Hose Assembly**  
**BTM Number:** 711100C

**49cc Booster**  
**BTM Number:** PD237600A  
*Note: Hose Assembly Not Included with Booster.*

**3m [10 ft] Hose Assembly**  
**BTM Number:** 711100C
Lit-L-Loc Units

BTM’s Lit-L-Loc units are an economical approach to fastening sheet metal assemblies with edge or upstanding flanges. The punch and die can be reversed in these units, allowing the Tog-L-Loc® or Lance-N-Loc™ “button” to form on either side of assembled parts.

DuroLoc7

The Duroloc7 clinching unit features easy to adjust shut height and interchangeable anvils. Shut height cartridges easily swap to accommodate required material thickness ranges. Interchangeable anvils accommodate a wider range of part cross sections than the Lit-L-Loc unit.

Bayonet Units

BTM’s Bayonet units open easily to reach over part cross sections then quickly close and mechanically interlock for safe operation.

15CC BOOSTER

Compatible With:

Lit-L-Loc Units

49CC BOOSTER

Required For:

Crocodile Unit

BTM’s Crocodile Unit was designed especially for clinching HVAC ducting. The unit opens and closes easily to reach over the ductwork flange and is quick cycling.

For more information, or to see our full line of products, please visit:

www.BTMcomp.com