

## **Product Bulletin for 3200E In-line Coating Systems**

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The AMCOL Model
3200E In-line Coating
System is used to apply oil based and water based rust preventatives onto continuous profiles, such as tubes, pipes and other simple shapes.
These systems are installed between the profile sizing and cut-off and include: an air blow off for mill coolant, an injection metered spray coating within a

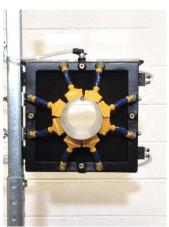
confined spray box, and a contact wipe to spread the coating evenly over the profile surface.

Spray nozzles surround the profile from the top, sides and bottom. When used properly, it provides the following benefits:



- Promotes consistent and predictable coating of profiles.
- Minimizes cross contamination of mill coolants and rust preventatives.
- Collects overspray for potential reuse or segregation and disposal.

Standard systems include a spray box, system controls, a liquid reservoir, and related mounting.



**Spray Boxes** are used to attach spray nozzles and related assemblies and contain/collect any overspray. Standard boxes include an integral air knife manifold, flexible foam pads to seal the entry and exit windows, and a clear plastic top for viewing.

A strut mounting system is also included that

allows for quickly adjusting the center of the box up and down by nearly 3 inches. The telescoping frame allows an even larger adjustment gap. The box can also be quickly removed and placed out of harm's way during roll change and threading the mill.

**Fluid and Air Controls** are plate mounted for ease of viewing and adjustment and include the following:

- The complete system is actuated with a 110V solenoid operated air valve that also includes a manual over-ride for testing purposes.
- Air flow to the blow off is metered with an integral flow control.
- Fluid output is injection metered using the T60A Posi-pump positive displacement pump. One injector is connected to each spray point. Injection
  - rate is adjustable using a pneumatic pulse frequency generator. Injectors are typically in groups of two or four injectors. Each group can be manually turned off and on to match the number of injectors in operation to the size of the profile.
- Air pressure to the spray tip is metered with an integral air regulator.
- Air and liquid travel side by side (biaxial) to the spray box at which point the liquid is transitioned to be inside the air (coaxial).
- Air and liquid are finally mixed inside the Fan Outlet Wet Tip and propelled to the surface of the profile.



## A 10-gallon Gravity

Reservoir with sight gauge and low level float switch for fluid monitoring insures a continuous supply of fluid to the system. An 80-mesh strainer is provided to remove particulate which inadvertently enters the reservoir. The strainer can be easily viewed from the outside and quickly cleaned or replaced as necessary. The reservoir and system controls utilize a shared strut mounting frame as shown.



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### **Alternate Model Specifications**

Each AMCOL 3200E Spray System is designed to address the specific size variation of a given mill. Standard boxes are available in 6x6x8, 8x8x8, 10x10x8, and 12x12x8 inch dimensions, where the first two dimensions are the height and width of the box and the last dimension is the distance through the box. The entry and exit windows through the box are actually 2 inches less as there is a 1" frame around the window. Generally, a larger box is preferred in order to ease maintenance and repair. The box size is sometimes minimized due to space constraints on the mill.

Injectors are typically grouped in two's and four's to aid in the changing from one tube size to the next. The coating width per injector is dependent upon a number of factors, however generally one injector is used per 1.5 to 2.0" of surface width. It is of course possible to turn off and on individual injectors for a more precise system setting in relation to surface area.



## Prior to Getting Started

- Warning! Never adjust system while mill is in operation. Mill must be properly turned off, locked and tagged during any system adjustment!
- Warning! Never use this system to dispense flammable or combustible liquids!
- Warning! Use only chemicals that are compatible with steel, aluminum, and brass!
- Warning! Be sure to properly shut-off system air and lock/tag before any repairs are completed on this system!

#### Installation

Each AMCOL 3200E Series Applicator is built to order and comes completely assembled and ready to operate. Systems are built according to customer specified floor to profile height and mill direction (L to R or R to L). The following items are required for system installation:

15 ea. ½" Lag Bolts

1 ea. ½" NPT Clean Dry Air Source

1 ea. 110V Actuation Source

1 ea. I/O for Level Indicator (Reed Switch)



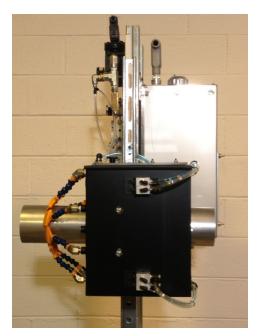
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All components come on a single pallet, completely connected and ready to install. Just follow these simple steps to insure a successful installation of the system:

- 1. Review complete system to insure that damage has not occurred in shipment.
- Place complete pallet as close as possible to installation point. It is
  recommended that the system be operated off line before installation
  in order to allow for a more thorough understanding of system controls
  prior to active use.
- 3. Mount the spray box in position and attach to the floor so that the spray box is centered with the smallest tube when the box is in the "down" slot adjustment (for bottom line only); as the tube is enlarged, the box is subsequently moved up. Additional adjustment capability is possible by loosening the telescoping mounting frame.
- 4. Mount controls so that the operator can easily access the injector frequency generator and piston volume adjustments.
- 5. Connect ½" NPT plant air source and adjust to 60 PSI.
- 6. Connect the I/O (for level indicator), so that a light comes on or the mill shuts off when the fluid is low. Indicator is normally closed when the "0" stamped on the float is up. This can also be flipped according to wiring requirements.
- 7. Connect 110V actuation source.
- 8. Fill reservoir with the appropriate coating oil.
- Manually operate injectors fully open until fluid has reached all spray points.
- 10. You are ready to operate.



## Operation

- 1. Properly set-up and adjust profile according to production requirements.
- 2. Cut off tube prior to spray box position.
- 3. Place spray box in position so that profile is centered in spray box.
- 4. Rotate each Fan Wet Tip for the most efficient coverage of the profile. Fan Wet Tips provide a 6" flat spray at 3" distance from the profile.
- 5. Insert the wiper pads by first cutting the ¾" wiper pad to be ¼ ½" larger than the profile to be coated. Now place the ¼" perforated wiper pad on studs and attach using two wing nuts with stabilizer frames.
- 6. Top off reservoir as necessary.
- 7. Adjust injectors and pulse generator according to coating requirements, taking into account the mill speed and coil thickness. A light coating is approximately 10,000 square feet per gallon and a heavy coating is 3,000 feet per gallon.
- 8. When spray box is not in use, move the box out of the mill path so that the box is not inadvertently damaged.

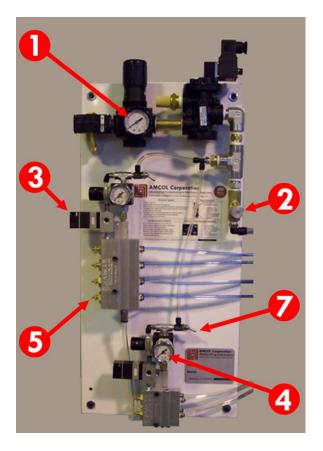


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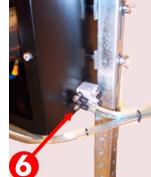
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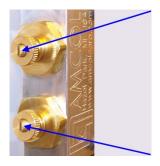
## Recommended System Settings



- System Pressure 60 PSI while system is operating.
- Air Flow to Air Knife Fully open.
- 3. **Pulse Frequency Generator** 0.25 (but not below).
- 4. Air Pressure to Spray 5 PSI.
- 5. **T60A Posi-pump** 1.5 Turns from closed for light coating. 2.0 Turns from closed for Medium Coating. 3.0 Turns from closed for heavy coating.
- 6. Flow Control on Transition Block Approximately 2.0 Turns from closed. Set so as not to atomize or fog liquid. Set at lowest possible setting where the liquid does not drip. With proper setting, it is possible to virtually eliminate the pulsation of liquid and obtain a somewhat continuous spray.
- 7. **The Number of Spray Points** can be quickly modified by shutting off or on a set of injectors or individual injectors. A complete set is actuated with the manual toggle located on each set of injectors.



Individual injectors can be turned off by rotating the liquid output adjustment clockwise until piston is not allowed to cycle.



## T60A Injector Adjustment

Rotate fluid adjustment screw:

- clockwise to decrease fluid volume
- counterclockwise to increase fluid volume.



#### **Pulse Frequency Generator Adjustment**

- As the setting decreases towards zero (0), the number of pulses per minute increases.
- Do not set below ¼.



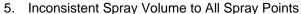
## **Product Bulletin for 3200E In-line Coating Systems**

100 Years

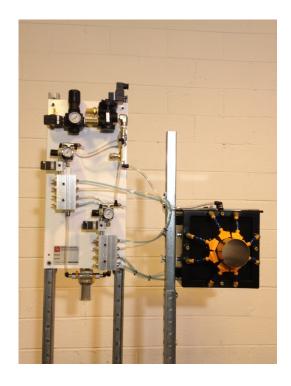
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## System Troubleshooting

- 1. No Fluid at Tip or Tips
  - a. Reservoir is empty. Fill.
  - b. Mesh Filter is clogged. Clean or replace.
  - c. Pulse frequency generator inoperable. Rebuild or replace.
  - d. Injector inoperable. May be dirty, eroded,
- 2. Coolant Removal Incomplete
  - a. Air source is not dry.
  - b. Tip is missing: replace tip.
  - c. Flow control closed: adjust.
- 3. Fluid Volume Inappropriate
  - a. Adjust individual injectors.
  - b. Adjust air pulse generator.
- 4. Inconsistent Spray Volume to One Spray Point
  - Fan Wet Tip is clogged: simply remove coaxial hose extension at bulkhead fitting, remove and clean spray tip, and reattach.
  - b. Spray tip not properly attached: reconnect or replace.
  - c. Liquid or air hose is severed or incorrectly attached: reconnect or replace.



- a. Fluid Level is low: refill reservoir.
- b. Strainer is clogged: clean or replace.
- c. Air pulse generator operating inconsistently: repair or replace.
- Mist or Fog
  - a. Atomizing air pressure set too high: adjust regulator to 10 psi or below.
  - b. Atomizing airflow set too high: adjust flow controls on transition block.
- 7. Liquid from Back of Injector
  - a. Injector contact seals leaking: clean injector and replace o-ring.
- 8. Profile not Completely Coated
  - a. Rotate Fan Wet Tip for more complete coverage.
  - b. Increase number of injectors in use.
  - c. Increase pulse rate.
  - d. Review coolant removal.





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## **Recommended Spares**

Component	Order/Reorder Quantity	Part Number for 6x6 Box	Part Number for 8x8 Box	Part Number for 10x10 Box	Part Number for 12x12 Box
Fan Outlet Jet Tip	1 per Injector	6000-70-1023FW	6000-70-1023FW	6000-70-1023FW	6000-70-1023FW
3/4" Foam Pad	30	0606-1-S75	0808-1-S75	1010-1-S75	1212-1-S75
1/4" Foam Pad w/ Perforated Center	30	0606-1-S25P	0808-1-S25-P	1010-1-S25P	1212-1-S25P
T60 Repair Tool	1	RT-T60	RT-T60	RT-T60	RT-T60
T60A Repair Kit	1 per Injector	T60A-RK	T60A-RK	T60A-RK	T60A-RK
Biaxial Hose	10 feet per Injector	6000-B-BH1	6000-B-BH1	6000-B-BH1	6000-B-BH1
1/8 Capillary Hose for Liquid Line	1 foot per Injector	6000-70-30NOZ	6000-70-30NOZ	6000-70-30NOZ	6000-70-30NOZ
P/H Urethane Tubing @ 3/8 OD	5 feet	U-64	U-64	U-64	U-64
80 Mesh Replacement Screen for T- Strainer (SS)	1	9875K82	9875K82	9875K82	9875K82
Clear Bowl for 1/2 In-line Strainer	1	9875K11-AC	9875K11-AC	9875K11-AC	9875K11-AC
110V Solenoid for Poppet	1	54458-51	54458-51	54458-51	54458-51
Air Knife Nozzle Tip	1 per Air Knife Nozzle	49449-1	49449-1	49449-1	49449-1

## Maintenance and Repair

### With Each Set-up

- Observe/adjust system settings
- Review/change 3/4" support pad
- Clean ¼" Perforated Wiper Pad
- Adjust Air Knife Nozzle position

### Daily

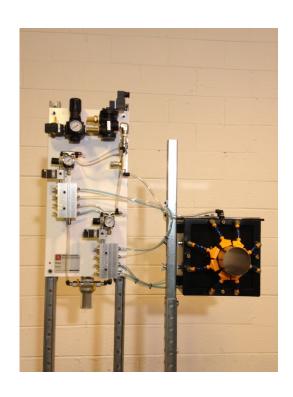
Fill Reservoir

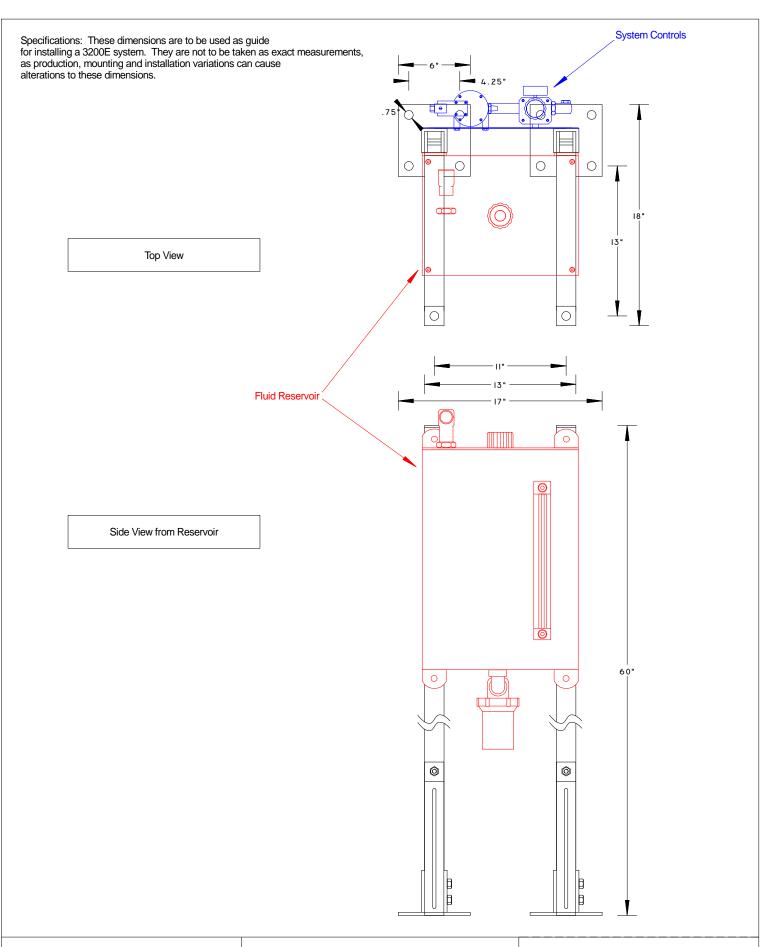
#### Quarterly

- Replace 80 Mesh Replacement Screen for T-Strainer
- Replace Air Knife Nozzles
- Manually Lubricate Solenoid Operated Poppet

### Yearly

- Rebuild All T60A Posi-pumps
- Replace All Air and Liquid Hose
- Empty and Clean Reservoir



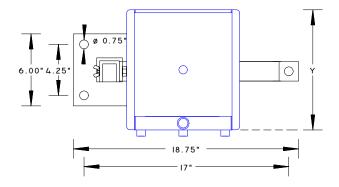


Specifications: These dimensions are to be used as guide for installing a 3200E system. They are not to be taken as exact measurements, as production, mounting and installation variations can cause alterations to these dimensions.

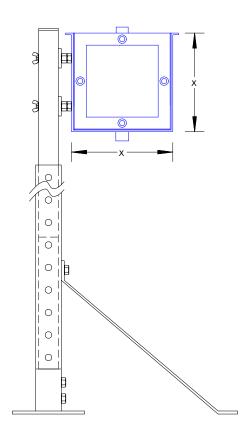
 $\mbox{Dimension(s)}$  "X" is the entry/exit window dimension. Dimension "Y" is the Through the Box Dimension.

System controls and reservoir come separate, and may be floor (as received on frame) or wall mounted.

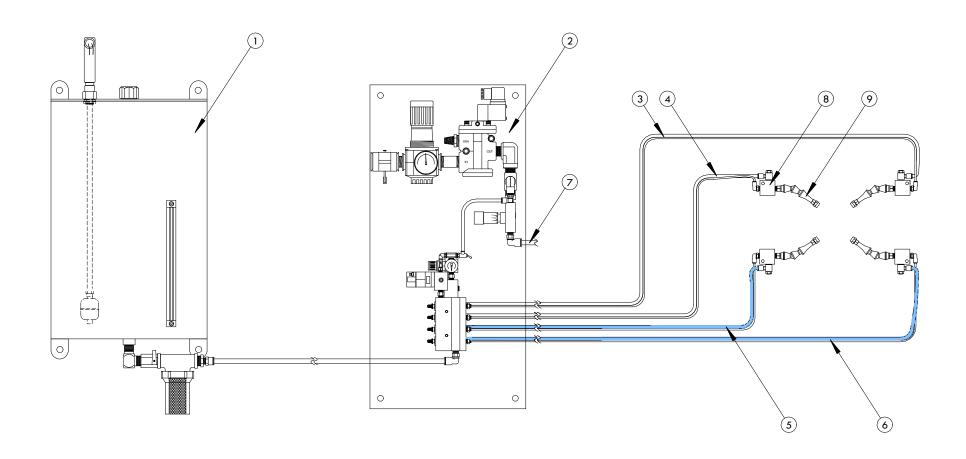
Top View



Entry/Exit View



Ref # Qty Item ID Item Description Referenced Drawings 6000-80-10S-LLI 10 Gallon Gravity Feed Reservoir w/LLI PS04.6000.DWG.Reservoir Options- Wall Mount 3200E-FAC-4B 3200E Fluid and Air Controls- 4 Injector PS04.3200E.DWG.3200E-FAC-4B 3 6000-B-BH1 Biaxial hose (Clear, Black Ink) PS04.6000.DWG.Biaxial Hose Options 10 Biaxial Hose (Clear, White Ink) PS04.6000.DWG.Biaxial Hose Options 10 6000-B-BH1A 6000-B-BH1B Biaxial Hose (Blue, Black Ink) PS04.6000.DWG.Biaxial Hose Options 6000-B-BH1C Biaxial Hose (Blue, White Ink) PS04.6000.DWG.Biaxial Hose Options P/H Urethane Tubing @ 3/8 OD U-64 10 8 6000-B-BLP Transition Block with LPFC & 90 degree PS04.6000.DWG.Transition Blocks 6000-70-2P-1023FW 2" Plastic Nozzle Assembly w/Fan Wet Tip PS04.6000.DWG.Spray Tip Connectors and Tips





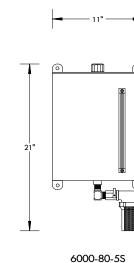
3200E-6000 Components File: PS04.3200E.DWG.6000 Components Status: Approved for Use Updated: 02/15/2013

Ref	Item ID	Description
1	10F50SHC	10-32 x 1/2 Socket Cap Screw
2	9563K46	7/8" ID Nickel Plated Plug
3	HC-120	Filler Cap
4	2-2.5GR	2 1/2 Gallon Gravity Reservoir
5	B-1 <i>57</i> 9-1	Flush Channel Level Gauge (10" center to center)
6	3175 60 14	3/8 Tube x 1/4 Male Thread Connector
7	3109 60 14	Pushlock Elbow 3/8 Tube x 1/4 Male Thread Connector
8	U-64	P/H Urethane Tubing @ 3/8 OD
9	209P-8-4	1/2-1/4 Reducer
10	9875K11-AC	Clear Bowl for 1/2" Inline Strainer With Gasket*
11	9875K82	80 Mesh Replacement Screen for T-Strainer (SS)*
12	2P132	1/2 In-line Strainer (Acrylic)
13	MV608-8	1/2" M x 1/2" F Ball Valve
14	8-PC-17	1/2 NPT X 1/2 NPT Brass Elbow
15	80-5-20	5 Gal Wall Mount Reservoir- Box Only
16	80-10-20	10 Gal Wall Mount Reservoir- Box Only
1 <i>7</i>	LLI-622-10W	Low Level Indicator for 10 gallon reservoir

Low Level Indicator for 5 and 2 1/2 gallon reservoirs (not shown)

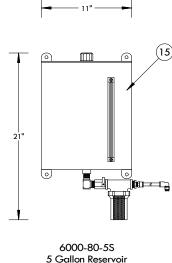
\*Included with Ref# 12.

17a LLI-622-5W



33" 

6000-80-10S-LLI 10 Gallon Reservoir with Low Level Indicator



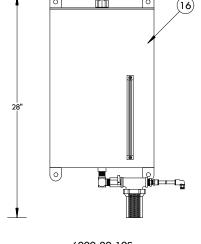


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6000-80-2S

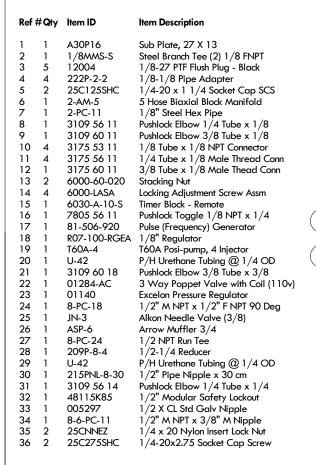
2.5 Gallon Reservoir

6000 Reservoir Options Wall Mount



6000-80-10S 10 Gallon Reservoir

File: PS04.6000.DWG.Reservoir Options- Wall Mount Updated: 01/05/2012 Update Reason: New Original Status: Approved for Use



#### Sub-Assemblies and Repair Parts

(A) 18-013-209: 160 PSI Pressure Gauge (1/4" Back Mount)

(B) 54458-51: 110V Solenoid for Poppet

(C) 18-013-212: 160 PSI Pressure Gauge (1/8" Back Mount)

T60A-2-BA-NS: T60A Posi-pump, 2 Injector and Timer Block Assembly Includes: 4, 8, 10, 11, 16 and T60A-2\*.

T60A-4-BA-NS: T60A Posi-pump, 4 Injector and Timer Block Assembly Includes: 4, 8, 10, 11, 16 and 20.

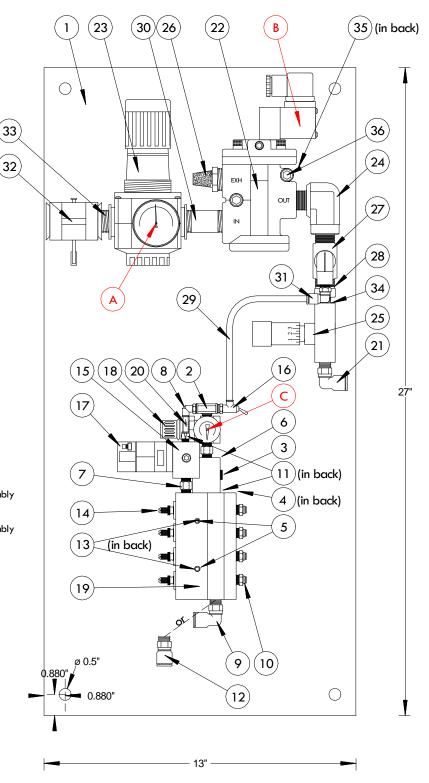
T60A-RK: T60A Rebuild Kit (1 per injector)\*

RT-T60: Air Meter Assembly Tool for T60 and T60A\*

6000-60-A10: Pulse (Frequency) Generator Assembly Includes: 4, 8, 16, and 18

6000-60-A: Pulse (Frequency) Generator, Gasket/Bladder\*

\* Item not shown For T60A Rebuilds, please refer to document: PS04.T60A.PB





3200E Fluid and Air Controls 4 Injector File: PS04.3200E.DWG.3200E-FAC-4B Status: Approved for Use

Updated: 02/15/2013

#### Description:

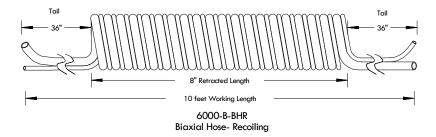
Biaxial hose is used to transport liquid and air, side by side, from the AMCOL 6000 Series Precision Applicator Systems to the point of dispensing.

Four standard polyurethane types are available, which vary only by color and print, for identification purposes. These can be purchased in up to 500 foot reels and are purchased by the foot. This hose is very flexible and relatively tenacious. Hose is cut to length and then split as shown using a sharp edge; warning, be sure to wear appropriate hand protection. The liquid coil must be burr free in order to provide an ideal seal at the fitting connection.

The polytetrafluoroethylene (PTFE) is for high temperature and/or rugged applications and/or those which require chemical resistance. Because the hose is not bonded, the surface is such that it is used where a leak free liquid or air connection is an absolute necessity. It is available in up to 25 foot lengths and purchased by the foot.

The Recoiling hose is designed for use in applications that involve moving lube points where the hose must expand and contract. Generally the hose should be supported by a rod or bar. This product is available in one length only. It is possible to obtain longer lengths by incorporating a biaxial splicer kit or shorten by cutting.

Biaxial hose can be repaired using the push-to-connect, biaxial splicer kit (shown below). It can also be split, assuming the spray points are a short distance away, equidistant, and identical, using the biaxial Y-fitting kit (shown below).





6000-B-BS Biaxial Splicer Kit



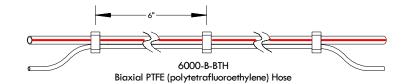
6000-B-YF Biaxial Y-Fitting Kit













6000 Biaxial Hose Options File: PS04.6000.DWG.Biaxial Hose Options Updated: 10/31/2011 Update Reason: New Original Status: Approved for Use

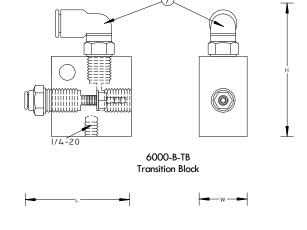
кет	item ID	Description
1	B-TB	Transition Block
2	3175 53 11	1/8 Tube x 1/8 NPT Connector
3	27-1	Barbed Connector for 1/8 Tubing*
4	6030-70-201	Interior Flow Control
5	6000-LPFC	Low Profile Flow Control
6	3109 53 11	Pushlock Elbow $1/8$ Tube x $1/8$ M thread
7	3109 56 11	Pushlock Elbow 1/4 Tube x 1/8 M thread

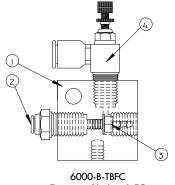
<sup>\* 8358</sup>A23-AC1: 27-1 Installation Tool may be necessary for repairs.

#### Assemblies:

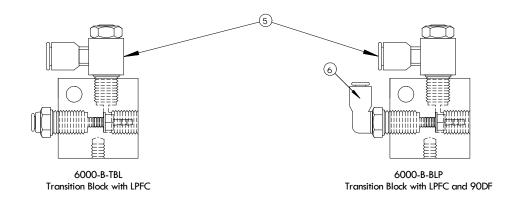
Item ID	Description	W	H**	L**
6000-B-TB	Transition Block	0.75"	2"	1.75"
6000-B-TBFC	Transition Block with Flow Control	0.75"	2.5"	1. <i>75</i> "
6000-B-TBL	Transition Block with Low Profile Flow Control	0.75"	2.1"	1.75"
6000-B-BLP	Transition Block with Low Profile Flow Control and 90 Degree Fittings	0.75"	2.1"	1.9"

<sup>\*\*</sup> Dimensions are approximate and may vary based on thread tightening.







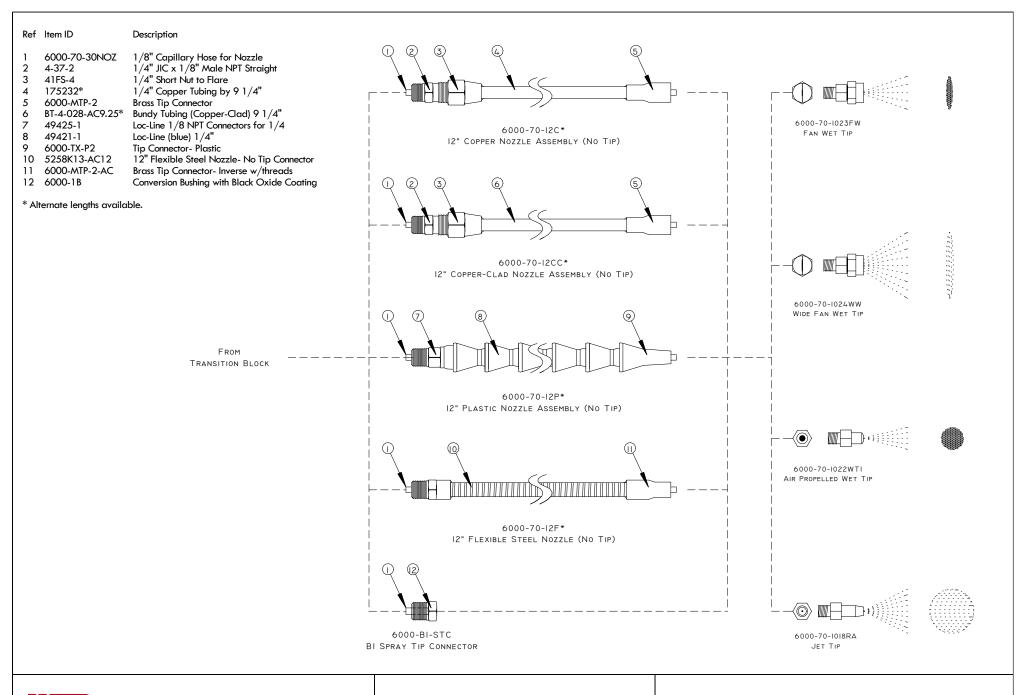




6000 Transition Blocks

Drawing: PS04.6000.DWG.Transition Blocks Updated: 10/14/2011

Update Reason: New Original Status: Approved for Use





6000 Spray Tip Connectors and Tips For Transition Blocks File: PS04.6000.DWG.Spray Tip Connectors and Tips Updated: 10/14/2011 Update Reason: New Original Status: Approved for Use