



Cylinder Spray Adhesive - User's Guide

Technical Manual

February 2013

3M™ Scotch-Weld™ Cylinder Spray Adhesives – 3M has a full line of industrial grade bulk spray adhesives, prepackaged in convenient, portable, no-maintenance aerosol cylinders.

Manual Content:

- Equipment Set Up
- Application Temperature
- Surface Preparation
- Handling/Application Information
 - Directions for Use
 - Spraying Adhesive
 - Spray Distance
 - Spray Angle
 - Application Speed
 - Adjusting Spray Pattern
 - Changing Nozzles
 - Coverage
 - Dry Time
 - Open Time – Bonding Range
 - Bonding
- Shut Down
- Storage
- Cylinder Changeover
- Cylinder Sizes
- Cylinder Disposal/Return
- Equipment List (Part Numbers & UPC Numbers)



Equipment Set Up:

¹Attach the larger flare fitting end of the hose to the spray applicator and ²tighten the nut securely. ³Check to see that the applicator gun trigger stop/adjusting nut is fully locked against the trigger. ⁴Attach the other end of the hose, the smaller flare fitting, to the cylinder valve and ⁵tighten securely.

Figure 1

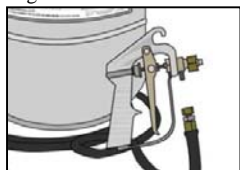


Figure 2

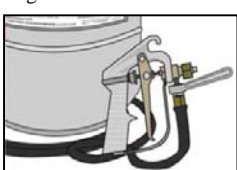


Figure 3



Figure 4



Figure 5



Application Temperature:

For best results the temperature of the adhesive and the surfaces being bonded should be between 60°-80°F (16°-27°C). Temperatures outside this range may affect bonding range and sprayability.

Surface Preparation:

For best results all surfaces to be bonded must be clean, dry and free from dirt, dust, oil, loose paint, wax or grease, etc.

Handling/Application Information**Directions for Use:**

1. Slowly open the cylinder valve and inspect the connections for any leaks. Tighten if needed.
2. Fully open the valve.
3. Unscrew the trigger stop/adjusting nut away from the trigger 3-4 turns and spray a test pattern. For more adhesive output, continue to screw the nut away from the trigger. For less adhesive output, screw the nut back towards the trigger.
4. Hold the applicator 3-10 inches away from the surfaces to be sprayed and apply a uniform coat of adhesive. (The smaller the spray pattern chosen in step 3 the closer the applicator gun will need to be to the surface and vice versa for larger patterns.)
5. Apply 1-3 even coats of adhesive. (This will depend on the needed coverage for the bonding application.)
6. Allow adhesive to dry until tacky and then apply sufficient pressure to ensure complete contact.

Note: Test for tackiness by gently touching the adhesive with your knuckle. If the adhesive transfers to your skin it is too wet. If the adhesive is aggressively tacky and does not transfer to your skin, it is ready to bond. If the adhesive is dry or only has a very light tack it is too dry and another coat of adhesive should be applied to at least one of the surfaces.

Spraying Adhesive:

Spray patterns will vary depending on product due to variations in formulations and cylinder pressure. Ambient temperatures may also have an effect. Higher temperatures may increase solubility of the adhesive and create greater pressure in the cylinder causing an increase in spray width. Colder temperatures will typically cause a decrease in the cylinders pressure resulting in smaller spray widths.

Spray Distance: Unscrew the trigger stop/adjusting nut away from the trigger 3-4 turns and spray a test pattern. The best distance is where the pattern is the widest. For more adhesive output and a wider spray pattern, continue to unscrew the nut away from the trigger. For less output and smaller spray pattern, screw the adjusting nut back towards the trigger. Hold the applicator 3-10 inches away from the surfaces to be sprayed and apply a uniform coat of adhesive. The smaller the spray pattern the closer the applicator gun will need to be to the surface.

Lace Spray Adhesives form an elliptical pattern and should be sprayed at the patterns ⁶widest point.

Pebble Spray Adhesives form more of a continuous triangular pattern that gets larger as you continue to move the applicator from the surface being sprayed.

Mist Spray Adhesives also have the more triangular pattern, like the pebble, but will have considerably more overspray.

⁷Spraying from too close may cause an excess of adhesive to be deposited creating a wet film or puddling.

⁸Spraying from too far away may cause a “cobwebbing” of the adhesive and many open areas that have no adhesive coverage at all.

Figure 6

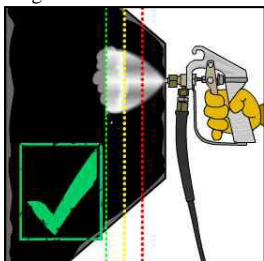


Figure 7

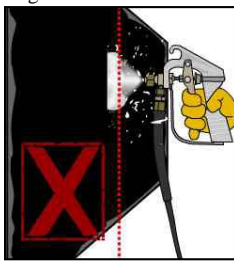
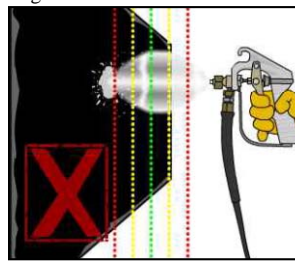


Figure 8



Spray Angle: For best results, ⁹maintain a 90° angle, between the surface and the applicator gun. This is done by moving the applicator parallel to the spray surface and keeping the wrist in a fixed position, moving at a constant rate. ¹⁰Poor coverage with inconsistent bond strength may be seen if the wrist is turned, as the spray distance (see notes above) will constantly be changing.

Figure 9

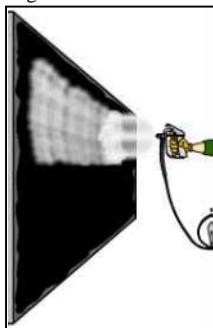
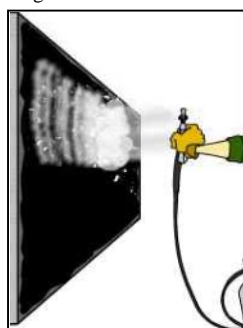


Figure 10



Application Speed: ¹¹Maintaining a constant speed that is delivering between 80-90% adhesive coverage per pass is optimal. Applications requiring more adhesive should be achieved with multiple coats not heavier coats.

¹²Spraying too fast may result in inadequate adhesive coverage.

¹³Spraying too slow may cause an excessive amount of adhesive to be deposited creating a wet film or puddling.

Figure 11

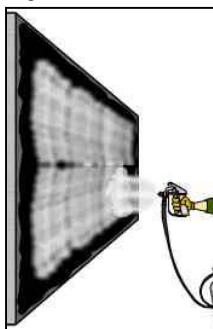
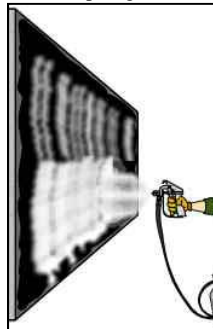


Figure 12 Top, Figure 13 Lower



Adjusting Spray Pattern: A combination of: Adhesive formula, Trigger stop/adjusting nut setting, Spray distance, Spray Angle, Application speed, Surface to be bonded and Spray tip selection can all be factors in the adhesives spray pattern.

Adhesive Formula cannot be adjusted in the cylinder system.

Trigger Stop/Adjusting Nut can be adjusted to dial the spray pattern width from a range dependent upon the selected spray tip - smaller pattern (opened a little), larger pattern (continued further opening in the counter clockwise direction).

Spray Distance, Spray Angle and Application Speed can and should be adjusted for optimal spray pattern. See notes above on spray distance, spray angle and application speed.

Surface to be Bonded should be understood. The porosity, soak in properties and surface texture may warrant spraying from a distance that is typically not optimal. Example: It is possible that spraying from a further distance could allow for more adhesive to sit up higher on the surface of a rough substrate.

Spray Tip selection should be based on the application needs. Most of the spray tips have a number associated with them, for example: 9501, 4001, 250050. The first two numbers represent a spray angle and the rest of the numbers represent an orifice size. We also have a tip – QSS, that is a much higher output tip and should only be used with a few of our products (70, 78ET and 78HT). The table below shows spray pattern width estimates of our nozzles capabilities. These should be considered only representative. Different adhesives may have different capabilities.

Tip	250050	4001	650050	6501	730154	8002	9501	QSS
Spray Width Range	1 – 3	2 - 6	3 - 8	3 - 8	4 - 10	4 - 10	5 - 12	5 - 15

Changing Nozzles: To change tips, ¹⁴unscrew the tip retainer completely, remove the tip and replace with the alternate tip. ¹⁵Adjust the orientation for the desired pattern direction and retighten the retainer nut.

Note - ¹⁶Trigger stop/adjusting nut should always be fully screwed forward against the trigger to prevent accidental discharge of adhesive material when making spray tip adjustments.

Figure 14

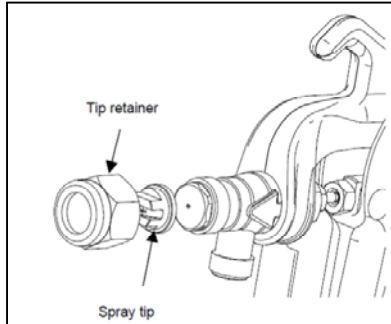


Figure 15

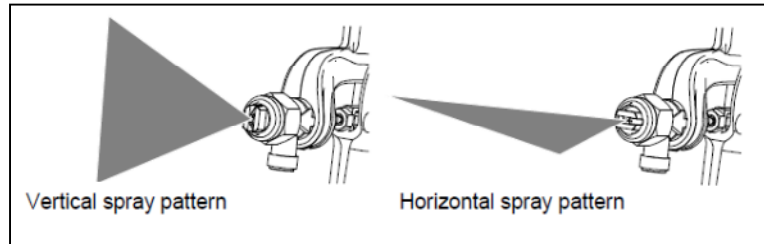
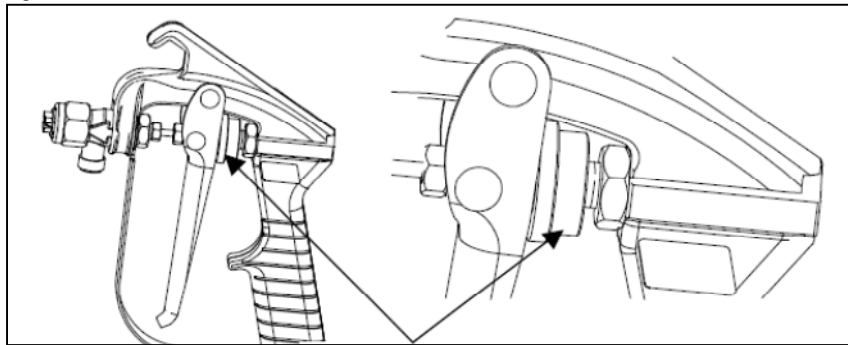


Figure 16



Coverage: Coverage yield is dependent on using consistent spray techniques. Coverage for light weight bonding may be 0.5–1.0 grams per square feet (of dried adhesive) but more typically 2.0-3.0 grams per square feet is needed. Coverage yield can be estimated by multiplying the net weight (grams) of adhesive by the percent solids in the adhesive and then dividing by the intended coverage to be used.

Example: 3M™ Scotch-Weld™ Postforming Hi-Strength 94 CA Spray Adhesive

Large Cylinder Net Weight = 26.2 pounds = 11,884.12 grams

11,884.12 grams x 28% solids = 3,327.55 grams of solid adhesive

3,327.55 grams / 2.5 grams per square feet = 1,331 square feet of coverage per Large Cylinder

Dry Time: This is the time needed after applying the adhesive before a bond should be made.

Note: Test for tackiness by gently touching the adhesive with your knuckle. If the adhesive transfers to your skin it is too wet. If the adhesive is tacky and does not transfer to your skin, it is ready to bond. If the adhesive is dry or only has a very light tack it is too dry and another coat of adhesive should be applied to at least one of the surfaces.

Open Time – Bonding Range: This is the time immediately following the dry time and extending until the adhesive has very little to no tack. This can be tested using the above noted knuckle test. Different products have different Open Times and the individual products Technical Data Sheet should be referenced.

Bonding: Substrates should be joined during the adhesives Open Time. Applying sufficient and uniform pressure is very import for ensuring strong and lasting bonds.

Shut Down: Shut the trigger stop/adjusting nut all the way to the trigger lock position (Figure 16). The cylinder valve can be either left open, which is best for minimizing potential for drying adhesive in the hose or closed, which would better protect against inadvertent connection leak potential. Another option would be to shut off the valve and then purge the remaining adhesive in the hose out to completely empty the hose and then to shut the trigger stop/adjusting nut all the way.

Storage – The units can be stored in the Shut Down modes referenced above or if the storage is of a longer term nature they could be shut down and the hose taken off. To take the hose off - shut off the valve and then purge the remaining adhesive in the hose out to completely empty the hose. It is a good idea to shake the hose while purging the hose (particularly with Adhesives: FB30, 60CA, 94CA, 94ET – systems with compressed gases for the propellants). Once empty, slowly loosen the connection of the hose and cylinder by turning the wrench counter clockwise until it comes off. Replace the original valve cap onto the cylinder. It would be a good idea to clean the hose with a solvent to make sure the adhesive residue remaining on the walls of the hose does not settle and cause a clog.

Cylinder Changeover - When cylinders are near empty the adhesive spray will start to spit and sputter indicating it is time to change to a new cylinder. To change cylinders, use the long term storage technique mentioned above under the Storage heading to get the hose off the old cylinder. Immediately attach the hose onto the new cylinder by connecting the flare fitting to the cylinder valve and tighten securely. Slowly open the cylinder valve and inspect the connections for any leaks. Tighten if needed. Fully open the valve.

Cylinder Disposal/Return – For Disposable: Mini and Large cylinders - Use extreme caution. Empty cylinder completely. Puncture the friable disc on the cylinder using a non-spark producing tool. Dispose of the scrap metal in accordance with local regulations.

For Returnable: Intermediate and Jumbo cylinders follow the four step process:

- 1) Collect 4 or more empty Intermediate or Jumbo cylinders.
- 2) Prepare information for the return, which includes the 3M stock number (62-xxxx-xxxxx), quantity being returned, pickup address, contact name and phone number.
- 3) Call the number on the cylinder (1-877-262-6079) and speak directly to an empty cylinder return specialist.
- 4) The empty cylinder return specialist will collect information and arrange the pickup.

Cylinder Sizes – Not all products are available in every size. Check with sales or distribution for specific size availability.

Size Availability



Size	Width (inches)	Height (inches)	Empty Weight (pounds)
Mini	7.5	15	3.7
Large	12.2	17.6	10.8
Intermediate	15	47	75
Jumbo*	24	45	225

*Jumbo has pallet legs attached that are 29 inches wide with 9 inch center block

Equipment List:

	3M™ Scotch-Weld™ Cylinder Spray Adhesive Applicators & Accessories	3M ID Numbers	UPC Numbers
Appicators:	Cylinder Adhesive Applicator w/9501 tip	62-9880-9930-5	00-048011-61706-0
	Cylinder Adhesive Applicator H Reduced Output w/4001 tip	62-9880-9950-3	00-051115-25039-2
	Cylinder Adhesive Applicator High Output w/QSS tip	62-9880-9960-2	00-051111-07329-2
	Cylinder Adhesive Applicator EX w/18" Extension and 9501 tip	62-9880-9940-4	00-051115-25779-7
Hoses:	Cylinder Adhesive 6 Foot Hose	62-9880-0006-3	00-051115-25036-1
	Cylinder Adhesive 12 Foot Hose	62-9880-0012-1	00-048011-61988-0
	Cylinder Adhesive 25 Foot Hose	62-9880-0025-3	00-048011-61989-7
	Cylinder Adhesive 50 Foot Hose	62-9880-0050-1	00-051115-25782-7
Tips:	Cylinder Adhesive 250050 Spray Tip	62-9880-8133-7	00-051115-25780-3
	Cylinder Adhesive 4001 Spray Tip	62-9880-4001-0	00-048011-61990-3
	Cylinder Adhesive 650050 Spray Tip	62-9880-8173-3	00-051115-25781-0
	Cylinder Adhesive 6501 Spray Tip	62-9880-6501-7	00-048011-61991-0
	Cylinder Adhesive 730154 Spray Tip	62-9880-7301-1	00-051115-25832-9
	Cylinder Adhesive 8002 Spray Tip	62-9880-8002-4	00-051111-07772-6
	Cylinder Adhesive 9501 Spray Tip	62-9880-9501-4	00-048011-61707-7
	Cylinder Adhesive QSS Spray Tip	62-9880-8148-5	00-048011-61993-4
	Cylinder Adhesive T-Fitting	62-9880-8348-1	00-048011-61987-3
	Cylinder Adhesive Hose Swivel	62-9880-7948-9	00-048011-61992-7

**Precautionary
Information**

Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, call 1-800-364-3577 or (651) 737-6501.

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