FIELD GUIDE

MMA

swarco

Road Marking Systems

SWARCO | The Better Way. Every Day.

CONTENTS: (OPTIMIZED FOR SWARCO PRODUCT ONLY)

MMA PRODUCTS

SWARCOPLAST MMA is a solvent-free, 100% solids, a plural-component system designed as a durable agglomerate-type rain safety marking to enhance motorist visibility of the pavement marking under rainy, nighttime conditions. These products are extremely durable and reliable. MMA can be applied to Portland cement concrete and asphalt surfaces. The random distribution of individual agglomerates and open structures provides effective water drainage while remaining resistant to snowplows.

5030/5036 Structured MMA (98:2)

- 100% Solids Chemistry (virtual no VOC emissions)
- Superior durability to any other road coatings
- High reflective qualities
- Enhanced wet night visibility during rainy conditions
- Special chemistry for rapid curing at a wide range of temperatures
- Outstanding long-term abrasion resistance
- Exceptional adhesion to a variety of substrates
- Protection against moisture penetration
- Excellent ultraviolet light stability

5050/5056 Profiled MMA (98:2)

- 100% solids chemistry
- Superior durability to any other road coating
- High reflective qualities
- Rumble and vibratory effect for safety
- Rain safety marking for enhanced wet night visibility
- Special chemistry for rapid curing at a wide range of temperatures
- Outstanding long-term abrasion resistance
- Exceptional adhesion to a variety of substrates
- Protection against moisture penetration
- Excellent ultraviolet light stability

5070/5076 Flat MMA (98:2)

- 100% solids chemistry
- Superior durability to any other road coating
- High reflective qualities
- Rain safety marking for enhanced wet night visibility
- Special chemistry for rapid curing at a wide range of temperatures
- Outstanding long-term abrasion resistance
- Exceptional adhesion to a variety of substrates
- Protection against moisture penetration
- Excellent ultraviolet light stability
- Snowplow resistant

5090/5096 Thin Film MMA (98:2)

- 100 % solids chemistry
- Superior durability
- High reflective qualities
- Special chemistry for rapid curing at a wide range of temperatures
- Outstanding long-term abrasion resistance
- Exceptional adhesion to a variety of substrates
- Protection against moisture penetration
- Excellent ultraviolet light stability
- Snowplow resistance
- Economical durable marking

APPLICATION TIPS

Weather:

SWARCO recommends that the Surface, air, and material temperature should be between **35 - 105 ºF** and at least **5 ºF** above the dew point. Relative humidity must be less than 75%. A record of weather conditions should be kept for the record just in case for warranty reasons and future application knowledge. SWARCO also recommends that the surface must be dry and no build-up of water on the surface or in the grind.

Surface Prep:

Coating performance is directly proportional to the quality of surface preparation. Before applying coatings, surfaces must be clean, dry, or solid. Remove all grease, oil, gasoline, dirt, grass, loose gravel, old, peeling, or flaking paint, and other contaminants. Flux oils of new asphalt are detrimental to the bonding and may lead to discoloration. Since mechanical removal of these oils is not possible, the surface should be exposed to traffic for 2 - 4 weeks before SWARCO MMA is applied. The moisture content of concrete surfaces must not exceed 1% when applying to mark.

Application Coverage:

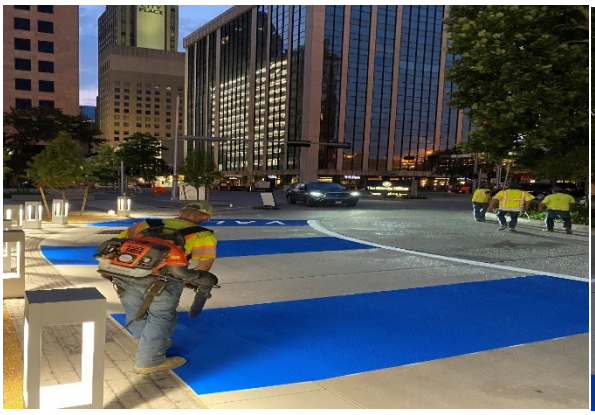
Theoretical coverage for MMA products will vary based on type, desired film thickness, the porosity of the substrate, application equipment, and various other factors. Spray-applied systems (i.e. where the material is applied to the substrate through a spray tip) are typically applied between 25 and 75 mils (0.65 mm – 2 mm). Non-spray systems (i.e. where the material is applied to the substrate using a draw box, squeegee, or other similar equipment), are typically applied between 75 – 150 mils (2 – 4 mm). Non-spray systems include flat, extrude, profiled, structured, and area marking MMA products.

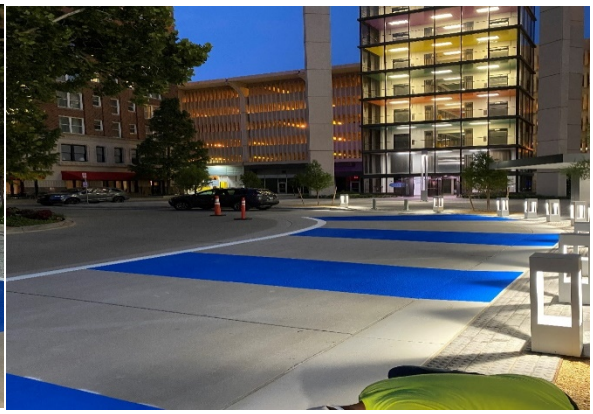
The following table shows the theoretical length of a continuous line of varying widths (in blue) and corresponding thickness (in dark grey):

	Mil Thickness					
Line Width (in inches)	25 mil	50 mil	75 mil	100 mil	125 mil	150 mil
4	192 ft	96 ft	64 ft	48 ft	38 ft	30 ft
6	128 ft	64 ft	43 ft	32 ft	26 ft	20 ft
8	96 ft	48 ft	32 ft	24 ft	19 ft	15 ft
10	77 ft	38 ft	26 ft	19 ft	15 ft	12 ft
12	64 ft	32 ft	21 ft	16 ft	13 ft	10 ft
	Spray MMAs		Spray & non-spray MMAs	Non-spray MMAs*		

* For structured MMA applications, these values are typically 1.5 – 2 times the theoretical line length due to the peaks and voids pattern of properly applied structured material; for profiled MMA applications, these values are generally 10 – 20% less depending on the height of the profiles and the frequency with which they are applied.

Once the MMA product has been activated part B (which contains BPO), has an expected pot life between 5 – 30 minutes at 70oF (21oC). For spray-applied MMA, the cure time is expected to be between 5 and 15 minutes. For non-spray MMA, the cure time is expected to be between 10 and 30 minutes. It is important to note the effect of temperature on cure time: elevated temperatures shorten cure time and pot life, and cooler temperatures lengthen it. In 98:2 or 1:1 systems, it is possible to adjust the BPO concentration to help lengthen or shorten cure times. This effect is approximately a 10 – 20% increase/decrease in cure time. To lengthen cure time (usually when applying at elevated temperatures), reduce BPO to as low as 1%. To shorten cure time (usually when applying at cooler temperatures), increase BPO to as high as 3%. We do not recommend going beyond these thresholds as there can be detrimental effects t the product performance.





Preparation Of The MMA (98:2)

Liquid components of SWARCO MMA must be homogeneously stirred in the original containers before mixing Components A and B. When using 5035 Liquid BPO for MMA: Thoroughly mix by weight 2 parts of 5035 Liquid BPO with 98 parts of Component A. When using 5033 BPO for MMA: Thoroughly mix by weight 1 part of 5033 BPO with 100 parts of Component also Do not intermix liquid and BPO. Be precise: performance and durability are dependent on accurate mix ratios. Never prepare more material than what is needed for the application.

Step One

The first step, find your buckets labeled with part A. Get these bucket lids off and near each other. Also get these close to the area that you will apply it. Now prepare your drill with the mixer attached and thoroughly mix part A for approximately 2 minutes. If you have a part B bucket do not mix until sprayed

Step Two

Once you have part A mixed and if you're adding corundum this is the time to put it in part A and mix again for 2 minutes. At this time change mixers on the drill, you don't want to mix these mixers up, so you aren't setting off a part A on the next bucket mix.

Step Three

Once the mixer has been changed grab your BPO packet and pour it into the bucket and grab the drill with the wanted mixer on it and stir the bucket for 1-2mins. And move with haste because you have a max of 15mins to apply before it sets up and about 8 mins are where you want it to be down on the wanted surface.

Items Needed for Applying MMA: Through Cart

- MMA 98:2 Coating
- MMA Glass Beads (T-13 Coated) Must have this bead or regular beads will pop out for bounce due to the coating on the bead.
- BPO Catalyst
- Acetone (for a solvent flush), 5-gallon pail this is good to use for on-site flushing
- Rags
- Empty 5-gallon pails with lids
- Non-Chlorinated Brake Cleaner/ (spray cans)
- 12 x 15 drop cloth / Hardware Store
- Roofing Paper #30 (w/pre-marked lines) / Hardware Store
- Gorilla Duct Tape (Using cheaper tape might bleed through) / Hardware Store
- Flat Shingles (for start/stops) / Hardware Store
- Gas
- Pick/Hook Set
- Pipe Cleaner / Steel Brush Set
- 5-gallon stir sticks aggressive metal ones and personally would get 4-6 just in case of mix-ups. One for each color and one for BPO
- Solvent Proof Rubber Gloves (Champion or Thickster)
- Cordless Drill with paint mixing attachment
- Acetone for cleanout

Items Needed for Applying MMA: Squeegee

- MMA 98:2 Coating
- MMA Glass Beads (T-13 Coated) Must have this bead or regular beads will pop out for bounce due to the coating on the bead.
- BPO Catalyst
- Rags
- Empty 5-gallon pails with lids
- Non-Chlorinated Brake Cleaner/acetone (spray cans)
- 12 x 15 drop cloth / Hardware Store
- Roofing Paper #30 (w/pre-marked lines) / Hardware Store
- Gorilla Duct Tape (Using cheaper tape might bleed through) / Hardware Store
- Flat Shingles (for start/stops) / Hardware Store
- Gas
- Pipe Cleaner / Steel Brush Set
- 5-gallon stir sticks metal ones and personally would get 4-6 just in case of mix-ups
- Solvent Proof Rubber Gloves (Champion or Thickster)
- Cordless Drill with paint mixing attachment
- Metal squeegees (Personally would get a few for mess-ups) Put the tape around the end of these so easily peels off when done
- Rollers with nap 3/8 (Personally would get about 20 just in case)
- Paint rollers with extension handle

EQUIPMENT

SWARCO offers three types of MMA starting with the 1:1v, 4:1v, and 98:2w. These each require their specialized equipment to put down or use the squeegee technique and roll the MMA on. For most applications, an MMA Machine and line laser will be our most recommended route. Working with Hoffman, Endysis, DTC, Graco, and Titan equipment we have been able to create what we recommend for working with MMA. At the End of this booklet, there is an Epic Solutions/Titan quick start guide that has their ProMark 200/250 machines.

Impingement System/ Airless

In the impingement system for the 1:1 system, Part-A and Part-B are mixed at the gun in the mixing chamber. With the pressure being set at around 2500+PSI the product will mix and spray to begin the setup process on the pavement. The Graco MMA machine doesn't require much maintenance other than when you finish make sure to clean out the gun because the buildup will cause the machine to buildup in the gun and get into the side seals. Purging every once in and while will help the system stay clean and you spray.
We recommend starting with these tips for your 4, 6, 8, 12-inch lines. These are what we start to work with while we are in the field. The pressure, temperature, and humidity all play a very large role in field application.

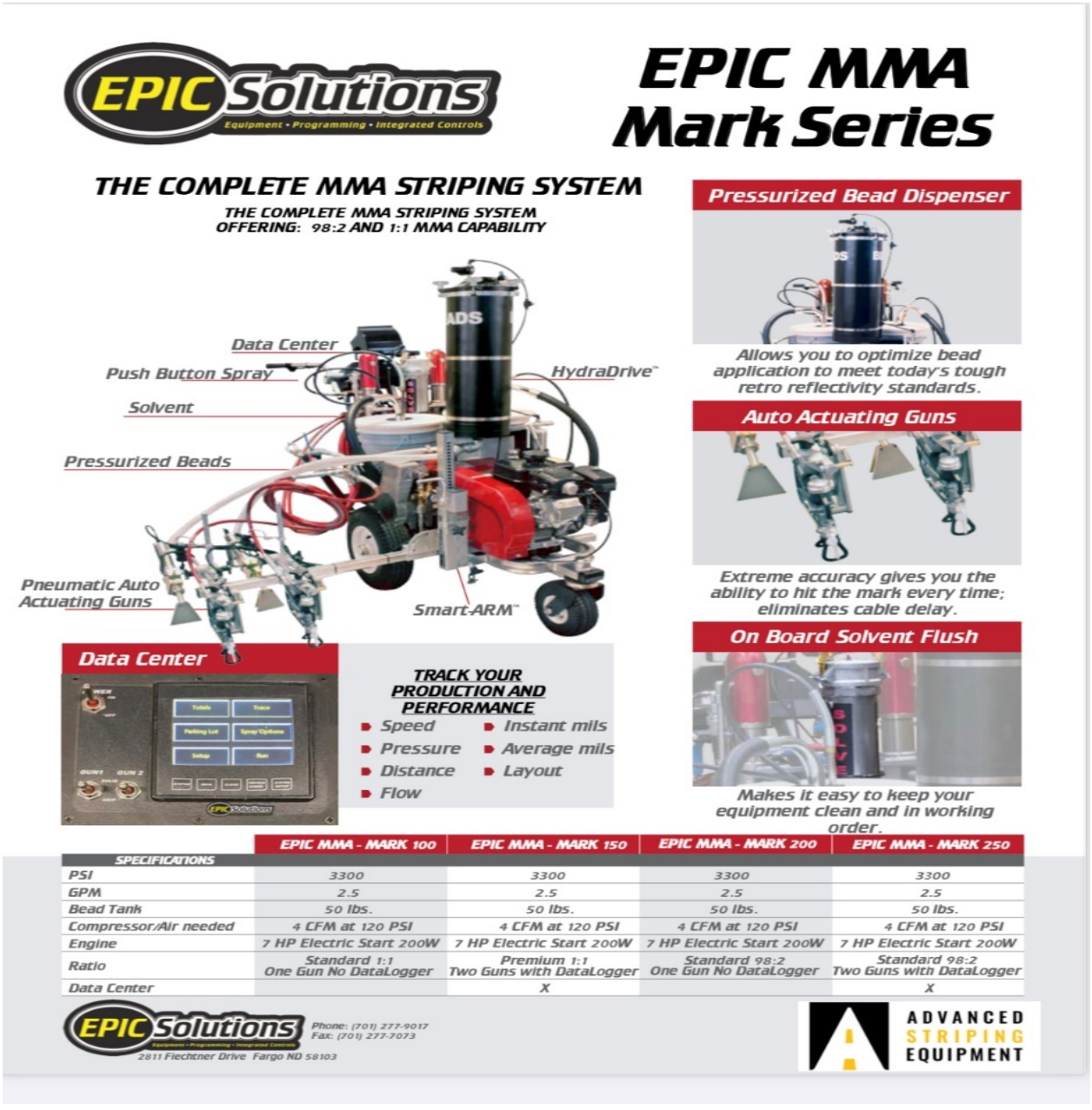
- 427-4”
- 627-6”
- 635-8”
- 827-12”

These are the gun tips we recommend, and you can always raise and lower your guns or move the tips. However, your bead guns must always be angled straight down on the line for the best embedment.

MANUFACTURES OF EQUIPMENT 98:2

Working with Titan/DTC/Endysis and DTC we have found this equipment to work with. For our 98:2 product, we tested with a titan ProMark machine. They also have been kind enough to let us distribute their QuickStart guide which is located at the end of the book. These are the advantages of this machine they offer

For more information, please contact Tom Heine at tomh@epicsolutions.us



MANUFACTURES OF EQUIPMENT 1:1

Working with Graco for SWARCO's 1:1 MMA we have found that this Graco LineLazer V 200MMA has strong reliability on putting down a clean line. This LineLazer produces great results. Now working with this machine your PSI needs to be within 200 of each other or the product will not properly mix. 2500+PSI

For more information, please contact Tom Heine at tomh@epicsolutions.us

MANUFACTURES OF EQUIPMENT 98:2

DTC "QUALITY EQUIPMENT FOR PROFESSIONALS"

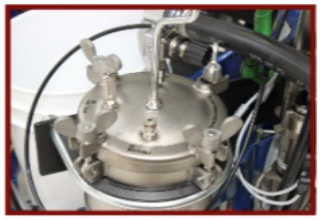
Dispensing Tecnology Corporation

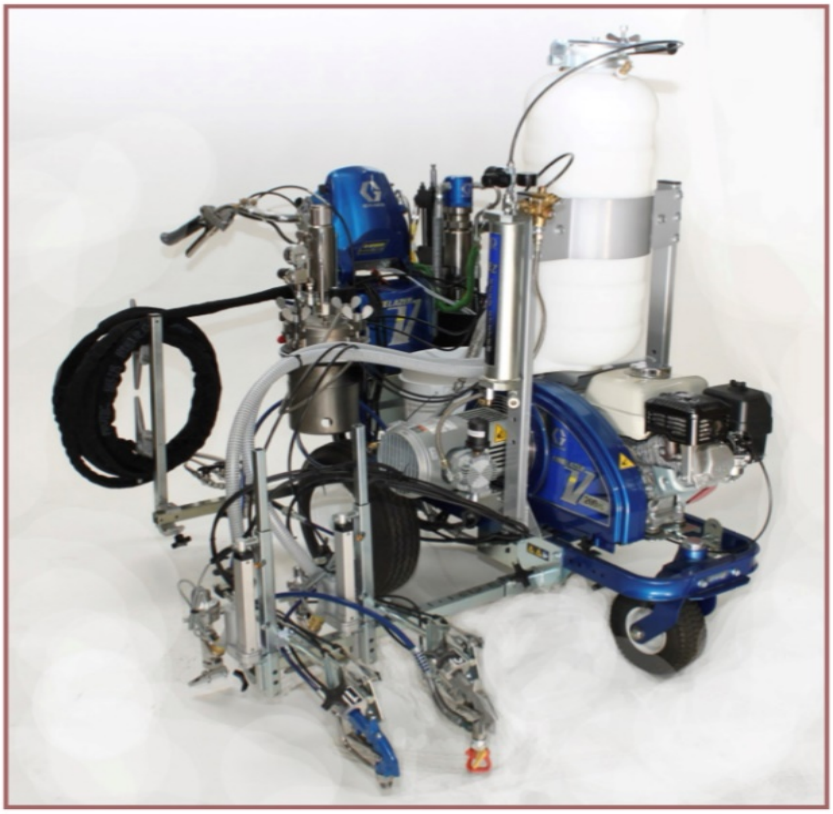
Call For More Information

800-529-7733

KoldSpray MMA 98:2 HD

Modular Spraying System





- 98 to 2 mix ratio by volume
- 5 gallon Resin (A) reservoir
- .5GAL/2L Catalyst (B) reservoir
- .5G/2L Solvent tank
- 1.3 GPM pump output at 100 cycles
- 35' output hoses
- Honda GX 200 6.5 HP gasoline engine
- Engine powered 4 cfm compressor
- ***KOLDSPRAY*** Plural component airless spray gun
- Easily changed disposable static mixer mixing system
- Locking front swivel caster
- Pressure or gravity flow bead systems available
- Pressure compensated hydraulic pump
- Completely self-contained, just add fuel and material.

For More Information

1-800-529-7733

1-805-388-5575

Sales@dispensingtech.com

DTC "QUALITY EQUIPMENT FOR PROFESSIONALS"

Dispensing Technology Corporation

5500 Adolfo Rd. Camarillo, CA 93012 805-388-5575 Tel 805-388-5560 Fax www.dispensingtech.com

jefff@dispensingtech.com

MANUFACTURES OF EQUIPMENT 98:2

An Engineered Distribution Specialties, LLC Company

98:2 MMA Liner

Pavement Marking Machine

20 Years Of Fluid Delivery Service

EnDiSys

MMA Liner

DESCRIPTION	PART #:
MMA Liner	2006477
SPECIFICATIONS:	
MAX TIP SIZE:	0.055
MAX GPM (LPM):	2.5 (9.5)
MAX PSI (BAR):	3300 (227)
HONDA GX ENGINE CC (HP):	390 (13)
WEIGHT LBS (KG):	910 (415)

Programmed EnDiSys Monitor
For ratio assurance and flush timer.

Automatic Gun Control System
Manual or automatic paint and bead guns with the push of a button.

Electric Clutch System
Disengages engine for fast starting.

15 Gallon (57 L) Resin Feed Hopper
Easy to service & repair.

Honda® 360 GX Engine
Industry proven performance with the most demanded engine by contractors.

Endurance Piston Pump System
Long life pump provides precise flow for striping with MMA.

Rear Gun Mount System
Provides straighter long lines – perfect for bike paths, airports and other long line jobs.

Self-Centering Front Wheel
Eliminates one user interface for simpler operation.

Mix Manifold
Easily removable for precise stencil work.

Graco Hydraulic Motor System
Graco's no-stall hydraulic motor for uninterrupted performance.

BPO SST Graco Pump
Engineered for superior ratio control. Adjustments from 1.5 to 4.0%.

Flushable Static Mixer Assembly
Manifold is designed to prevent cross-over contaminaiton and is easily flushable.

Pressurized Bead System
Consistent pressurized delivery of beads through Graco's standard bead module.

Solvent Flush System
2-Gallon (8 L) reservoir and air-operated-double diaphragm pump provides pressurized flushing capability of manifold, hose assembly and gun.

2 Gallon (8 L) BPO SST Tank
Polyethylene tank liners available for quick color change and easy clean-up.

15 Gallon Resin Hopper
Extended striping time with large capacity hopper.

EnDiSys 14329 Northdale Blvd, Rogers, MN 55374 Tel: 763-428-5075 / Fax 763-428-5078 sales@endisys.com

SWARCO GLASS BEADS

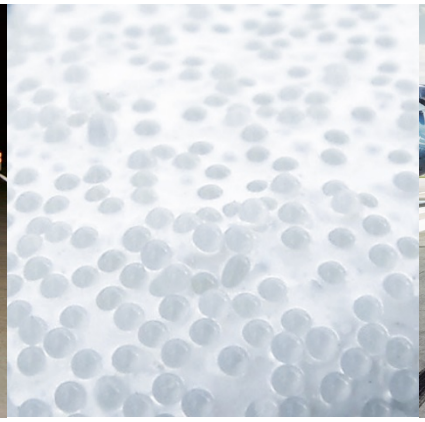
Our high-grade glass beads are mixtures of our different beads and thanks to the improved optical properties of the bead surface, they achieve very high levels of retro-reflection. Suitable for thin-layered marking systems with improved visibility in wet conditions.

SWARCO Bead Types

These are the 5 optimized products that SWARCO offers. Each has different sieve ranges and its optimal main uses. Each product is produced with the highest regard for maintaining higher visibility. See the SWARCO website to see specs and tech info on each.

SWARCOLUX

MEGALUX-BEADS



PLUS9BEADS

SWARCOFLEX

SWARCO DURALUX

Calibration

How to Check Bead Drop Rate

- Use the calibration chart based on the truck speed
- Time for 10 seconds and measure the volume of beads
- The truck must maintain a consistent speed

Essential Formula for striping a 4” line

A. Usage = (footage/300)* drop rate
B. Drop Rate = (usage/footage)* 300
C. Footage = (300/Drop Rate)* usage

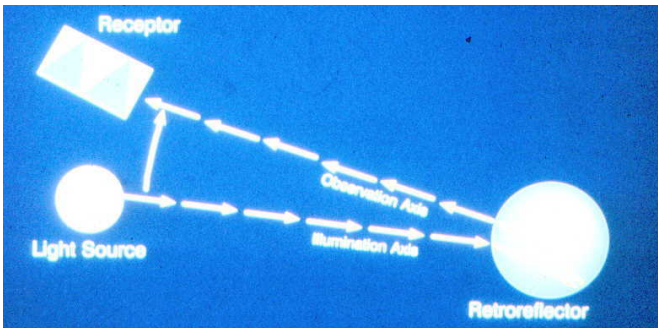
5” marking use 250 for a constant / 6” marking use 200 for a constant

Typical Application Rates

- **Paint**: 6 lbs. per 100 Square Feet
- **Thermoplastic**: 6-12 lbs. per 100 sqft
- **Epoxy**: 20-25 lbs. 100 sqft
- **Polyurea**: 10-12 lbs. 100 sqft
- **MMA:** 8-10 lbs./100 sqft

RETROREFLECTIVITY OF PAVEMENT MARKINGS

This is the amount of retroreflection that occurs when a surface returns a large portion of the directed light beam to its source. Retroreflective materials appear brightest to observers nearest the light source. The object's brightness depends on the intensity of the light striking the object and the materials the object is made of. In all states, they have a spec that will determine the amount of light that must reflect the driver. In our case beads will have an incoming light beam that bends as it passes through a glass bead, reflects off a mirrored surface behind the bead, then the light bends again as it passes back through the bead, and returns to the light source.



When finding your retros, you will have to use a Retro-reflectometer and this device comes in a small handheld device, a mobile device for your car, a lightweight device you set on the line. These devices will make sure that your beads are giving off the required light to be seen at night. This is important to take while spraying so you follow state specs. If you need retros based on the state you can follow your paint truck, so you do not need to waste time replacing a line that does not pass retros. Now when you are on-site and using this device you want to try and maintain the same height when taking the retro, this will provide the best numbers throughout the job.

FACTORS OF RETROREFLECTIVITY

Glass Index

The glass bead index is the amount of light that bends through the glass bead when it is hit. The higher index will make the focal point smaller which will have a higher degree of reflected amount of light. The number you are looking for on the index is 1.50-1.55 optical index is the most common.

The Quality of Glass Bead

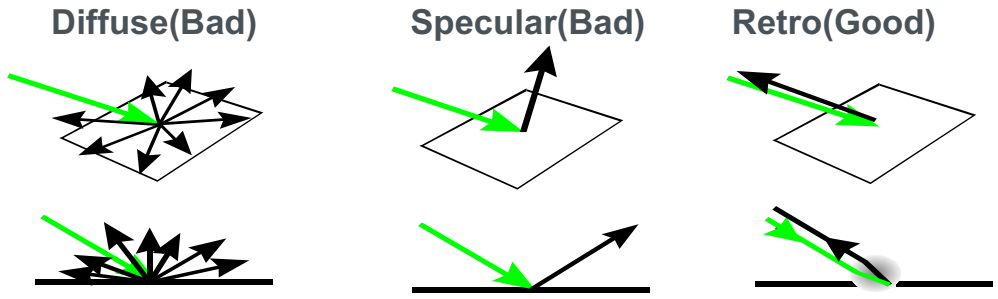
How light is reflected and bent through the shape of the bead, will include the roundness, clarity, color, and down to the percentage of error is under 3%. If you have flaws in the bead anywhere it will cause light to not reflect the driver. If your beads do not have the clarity it needs, it will be cloudy which will give you poor retros. SWARCO offers five different types of beads and has a higher quality of retro the better bead you get.

The Different Sizes of Beads

Bead sizes vary between many different types. SWARCO offers a variety of types from type zero being the smallest and largest being type five. There are also a variety of textured options you can get. The proper blend of beads will give off the best numbers for retros. You can blend these to meet your state/job site specs. Ask your SWARCO sales rep for the best bead option that is offered.

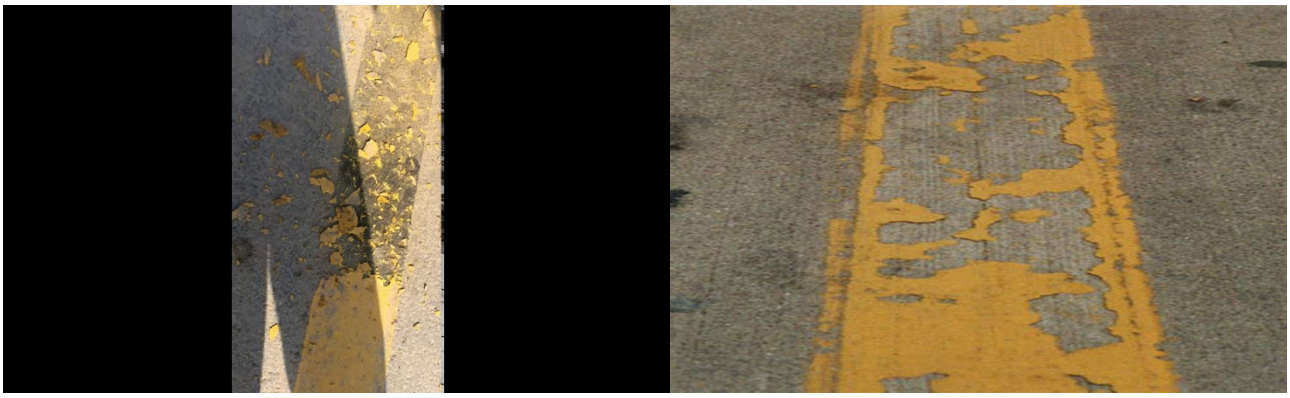
Bead Embedment

Bead embedment is how the bead has been dropped into the line and how exposed it is to the light and if it will stay in the line. The binder must cross the equator of the bead to provide the necessary mechanical bond and provide the optimal Retroreflectivity. This relates to 50-60% embedment on the bead. This will create the retros you need to pass your state's spec.



TROUBLESHOOTING SOLUTIONS

Bond Failure



Problem: This issue is caused by the product not bonding onto the surface due to the surface not being properly cleaned before installation.

Solution: Before spraying the product, we recommend all prior products be removed before install. Whether you must water blast, shot blast, grind you will have to follow up with blowing off the line because your blower/vacuums on trucks will not clean off the line enough all the time. Please refer to the surface prep page for more. These will assist in creating a better product result.

1. **Problem:** BPO failure to mix. This issue is when the line after 15-20mins still has wet spots in it. If the line is still completely we after 20mins it's a BPO failure to mix as well.

   Solution: Check your system pressure and make sure is at 2800PSI and run a couple of test strips to make sure it sets up before spraying. If the line doesn't set up make sure to grind it back off. Make sure you have BPO in the tank.

2. **Problem:** Retro readings not shooting high enough on initials with the MMA line.

   Solution: When using SWARCO MMA we use a T-13 Coated bead and the coating on the bead allows it to stick into the line and before you run you should make sure you are using these beads. Using other beads without the coating will cause the bead to pop out of the MMA and retros will be insufficient. The best trick you can do is go to the gas station get a bottle of Dr. Pepper and Windex. Pour each onto the line use a rag and wipe down the line in the spot you're wanting to shoot your retros. This will clean the line to its proper potential.

SWARCO CONTACT LIST

Customer Service for Colorado Paint Products

Sara Hinkle - **Office Assistant/Customer Representative**

- Cell: 303-388-9265
- Email: Sarah.hinkle@SWARCO.com
- Email(Orders): officecpc@SWARCO.com

Field Product Related Issues

Call these numbers for all on-site failures and issues

- Bradley Henry- Liquid Sales Rep/Field Tech Manager

  Cell: 785-213-2071 Email: Brad.henry@SWARCO.com
- Trevor Cunningham-Henry- Field Service Rep/Sales Rep

  Cell: 785-424-5708 Email: Trevor.cunningham-henry@SWARCO.com

Product Sales - Order Status - Product Information

Call your SWARCO Sales Rep for your region or known person to help direct you for all your sales-related inquiries

- Jonathan Knutson - **Pacific region**

  Cell: 503-421-5227 Email: Jonathan.Knutson@SWARCO.com
- Darryl Anderson - **Mountainous Region**

  Cell: 303-877-1816 Email: Darryl.Anderson@SWARCO.com
- Mark Colombo - **Central Region**

  Cell: 314-729-7833 Email: Mark.colombo@SWARCO.com
- Frank Coghlan – **Southwest Region**

  Cell: 936-967-5028 Email: frank.coghlan@SWARCO.com
- Scott Pantall – **Southeast Region**

  Cell: 904-716-7445 Email: Scott.pantall@SWARCO.com
- John Giordano – **Northeast Region**

  Cell: 201-341-1581 Email: John.giordano@SWARCO.com

TITAN PROMARK QUICK GUIDE

EPIC Solutions
Equipment • Programming • Integrated Controls

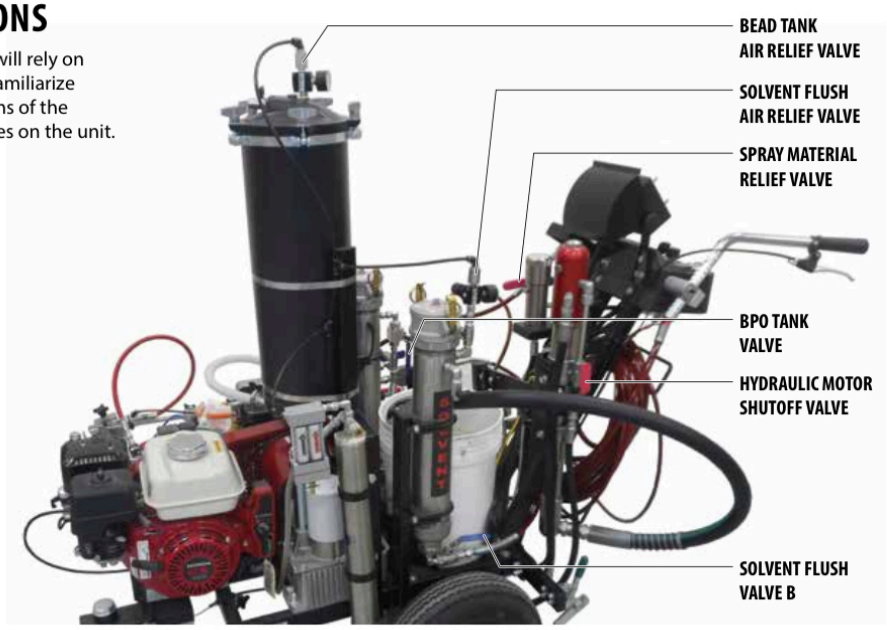
QUICK START GUIDE

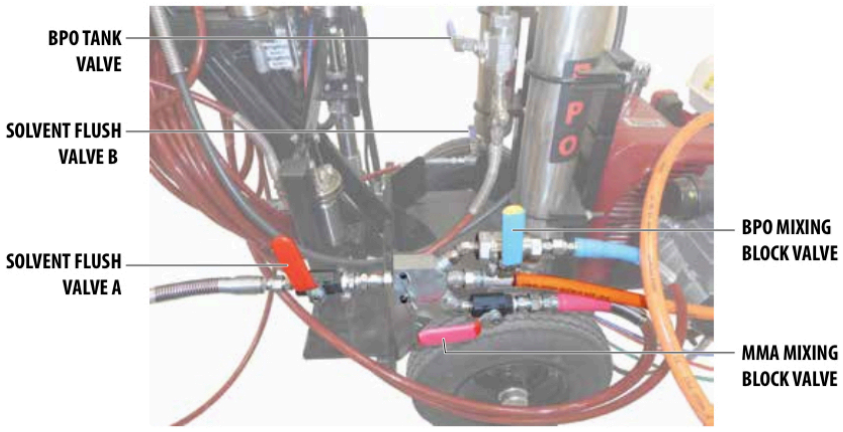
ProMark™ 200 / 250

REFER TO THE OWNER'S MANUAL FOR DETAILED WARNINGS AND INSTRUCTIONS

VALVE LOCATIONS

Many sprayer functions will rely on proper valve position. Familiarize yourself with the locations of the various fluid and air valves on the unit.





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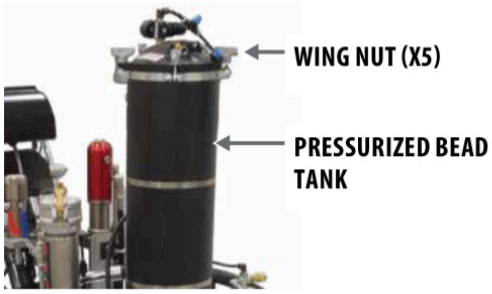
2811 FIECHTNER DRIVE
FARGO, ND 58103

701-277-9017 Phone
701-277-7073 Fax

epicsolutions.us

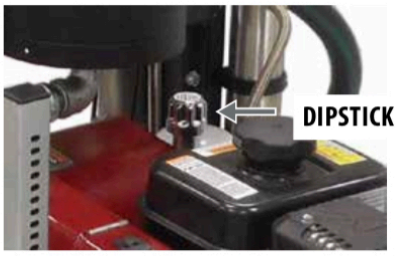
❹ VERIFY PRESSURIZED BEAD DISPENSER

- Loosen the wing nuts located around the lid of the bead dispenser and lay back the tank lid pins.
- Fill the tank with beads before every use. The tank will hold approximately 80 pounds of beads.
- Replace the dispenser lid and secure with the wing nuts.



❺ CHECK HYDRAULIC FLUID LEVEL

- Remove the hydraulic pump dipstick. The hydraulic fluid level should be at the "Full" mark on the dipstick.
- If more hydraulic fluid is needed, refer to section 4.8 in the Operating Manual.



❻ CHECK ENGINE

- Fill the engine with gasoline before every use.
- Check the engine oil level daily before starting the sprayer. The gasoline engine oil level is determined by the engine manufacturer. Refer to the engine manufacturer's service manual supplied with this sprayer.

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STARTUP

❶ START ELECTRICAL POWER

- Turn the key on the dashboard ON. DO NOT start the engine.
- Flip the spray gun toggle switches to "SOLID" for each spray gun you intend to use in a solid line.
- Flip the spray gun toggle switches to "SKIP" if you intend to perform skip line markings.
- If you do not intend to use one of the spray guns, leave the toggle switch on in the middle. This is considered the "OFF" position.

❷ SET SPRAY OPTIONS

- Press the "Setup" square on the DataLogger™.
- This will allow you to set all of your spray options required for the job. Refer to section 3.5 in the Operating Manual for more a more detailed look at all of the setup options.

❸ POSITION THE SPRAY GUN(S) AND BEAD DISPENSERS

- Make sure the spray guns are moved horizontally to a sufficient distance from the sprayer so that the tires do not roll through the spray material.
- Line width depends upon gun height (i.e. the closer the spray gun is to the spraying surface, the more narrow the line width, and vice versa). Refer to section 4.5 in the Operating Manual for a more detailed description of how to adjust the spray guns and bead dispensers.

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❹ CHECK FLUID AND AIR VALVE POSITIONS

- When a valve is "OFF", that means it is closed and no material will flow. The valve handle will be perpendicular to the fluid line it is attached to.
- When a valve is "ON", that means it is open and material will flow through it. The valve handle will be in line (parallel) to the fluid line it is attached to.
- There are three air valves that also need to be checked: the **bead tank air bleed valve,** the **air cylinder bleed valve** and the **solvent flush air bleed valve**. See below for locations. They need to be closed at startup to prevent loss of air pressure.
- Prior to starting the engine, the various shutoff valves located within the system need to be in the correct position in order to prevent unwanted fluid movement and air leakage:

VALVE	LOCATION	STATUS
• MMA mixing block valve	The bottom valve on the front of the mixing block	Closed
• BPO mixing block valve	The top valve on the front of the mixing block	Closed
• Solvent flush	On the rear of the mixing block	Closed
• Solvent flush relief	On the bottom of the solvent flush tank	Closed
• Hydraulic motor shutoff	On the red hydraulic motor	Closed
• Bead tank air bleed valve	On top of the pressurized bead tank	Closed
• Solvent flush air bleed valve	Near the solvent flush pressure gauge	Closed
• Air cylinder bleed valve	On the bottom of the air cylinder	Closed
• BPO tank	Near the top of the BPO tank	Open
• Relief valve	Near the manifold filter	Open

❺ START THE ENGINE

- Refer to section 5.1 in the Operating Manual for detailed instructions on how to start the engine.
- Leave the engine running for the next section.

PRIMING

While engine is running, perform the following:

❶ TEST BEAD GUN(S)

- Place a waste container under the bead gun(s).
- On the DataLogger main screen, press “SPRAY OPTIONS”, then press “PAINT OFF”. This selection will now be highlighted in yellow.
- Press the red actuator button on the right handlebar 1-2 times and ensure that beads are flowing from the bead gun(s).

❷ TEST SPRAY GUN ACTUATOR(S)

- Remove the spray gun(s) from the holder(s).
- On the DataLogger main screen, press “SPRAY OPTIONS”, then press “BEADS OFF”. This selection will now be highlighted in yellow.
- If you pressed the “PAINT OFF” button in the previous section, make sure to press it again to activate the guns.
- Press the red actuator button on the right handlebar 3-5 times to ensure that the trigger mechanism in the gun holder(s) is operating properly.
- Replace the spray gun(s) into the holder(s).

❸ CHECK FOR CIRCULATION

- Peel open the spray material container lid. Fluid should be flowing from the return hose.
- Make sure the BPO tank valve is open (in line with the BPO tank hose).
- Carefully remove the BPO tank lid by prying loose the two brass clasps on either side of the lid. Visually verify that the BPO fluid should be circulating through a small hole in the side of the tank back into the fluid.
- Leave the BPO tank lid removed and engine running for the next steps.

❹ BPO VERIFICATION/INSPECTION

- Make sure the **BPO mixing block valve** (located on the top of the mixing block) is **CLOSED** (valve handle should be perpendicular to the hose).

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- With an adjustable wrench (and ensuring that the **BPO mixing block valve** on the top of the mixing block is closed) remove the angled fitting that attaches the BPO hose to the mixing block. This is the angled fitting with the hose marked in blue at the top part of the mixing block.
- Hold the angled fitting over the BPO tank.
- **OPEN** the **BPO mixing block valve** that is now in your hand (no fluid will flow yet).

- While holding the fitting over the BPO tank, **CLOSE** the **BPO tank valve** (the valve attached to the BPO tank). The valve handle should be in the horizontal position.

i	Once the BPO tank valve is closed, BPO should begin to flow from the end of the angled fitting. This verifies that the BPO hose is free from obstruction.
i	Brand new units will take a few minutes to fill the BPO hose en route to the angled fitting.

- Allow the BPO to flow for two (2) minutes back into the BPO tank.
- After two (2) minutes, **OPEN** the **BPO tank valve** (handle in vertical position). This should stop the flow of BPO from the angled fitting.
- **CLOSE** the **BPO mixing block valve** that is still in your hand (the valve handle should be perpendicular to the hose). Allow any remaining BPO to drip out.
- Reconnect the angled fitting onto its place on the mixing block. Tighten with a wrench. Priming is now complete. The engine can keep running and the system is ready for spraying.

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BEGIN SPRAYING

❶ CHECK FLUID AND AIR VALVE POSITIONS

VALVE	LOCATION	STATUS
• MMA mixing block valve	The bottom valve on the front of the mixing block	Closed
• BPO mixing block valve	The top valve on the front of the mixing block	Closed
• Solvent flush	On the rear of the mixing block	Closed
• Solvent flush relief	On the bottom of the solvent flush tank	Closed
• Hydraulic motor shutoff	On the red hydraulic motor	Closed
• Bead tank air bleed valve	On top of the pressurized bead tank	Closed
• Solvent flush air bleed valve	Near the solvent flush pressure gauge	Closed
• Air cylinder bleed valve	On the bottom of the air cylinder	Closed
• BPO tank	Near the top of the BPO tank	Open
• Relief valve	Near the manifold filter	Open

❷ TURN SPRAY PRESSURE DOWN

- Turn the pressure control knob on the dashboard fully counterclockwise to its lowest setting. Pressure will not start to build until the fluid valves are turned to their appropriate positions.

❸ SET PRESSURIZED BEAD TANK PRESSURE

- Set the regulator (black knob) on top of the pressurized bead tank. To turn the knob, pull it out, turn it to desired pressure (gauge should read between 15-20 PSI) and then press it back in to lock it in place.

❹ BUILDING BPO PRESSURE

- **CLOSE** the **BPO tank valve** (located on the BPO tank). The valve handle should be horizontal. This will start the flow of BPO to the mixing block.
- Observe the BPO ("B") pressure gauge. When it builds to approximately 2300 PSI, immediately follow the next steps.

ⓘ When you actually start spraying, the BPO ("B") pressure gauge will drop to 1700-2000 PSI. If the pressure drops below 1500 PSI, stop spraying immediately.

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❺ BUILDING MMA SPRAY MATERIAL PRESSURE

- **CLOSE** the **relief valve** (located near the manifold filter). This will start the flow of spray material to the mixing block.
- Turn the pressure control knob clockwise to increase the pressure. Adjust the pressure control knob until the MMA ("A") pressure gauge reads approximately 2000 PSI.
- Once both the "A" and "B" pressure gauges read approximately 1700-2000 PSI, you are almost ready to begin spraying.

Tip: This is the time to ensure that your traffic control is in place and your markings are plotted. Minimizing starts and stops is key.

❻ OPEN THE BLOCK VALVES TO START MATERIAL FLOW

- Remove the spray gun(s) from the holder(s). Have covered waste containers (to prevent bounceback) ready to collect spray material.

⚠ Attention	Once you perform these steps, you will have a maximum of 5 minutes to begin spraying or solvent flush before material will mix together in the mixing block, travel to the mixing tube and then harden, rendering the system inoperable.

- **OPEN** the **BPO mixing block valve** (the top valve on the front of the mixing block).
- **OPEN** the **MMA mixing block valve** (the bottom valve on the front of the mixing block).
- If using a two-gun system, make sure the 2nd gun shutoff valve is OPEN if your job requires two guns.
- Trigger the spray guns and spray catalyzed material into the covered waste containers, while allowing the hydraulic motor piston to cycle a minimum of 7 times (1 cycle is a complete up and down movement). This will ensure that the material is properly mixed and all solvent has been purged.
- Spray a couple of test passes onto a drop cloth to ensure proper flow and fan pattern is achieved. Once achieved, replace the spray gun(s) into the holder(s).

  You are now ready to begin spraying. If you need to stop spraying for more than 5 minutes, a solvent flush needs to be performed. Follow the steps on the next pages.

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SOLVENT FLUSH

Follow these steps whenever temporarily stopping spraying for any reason. This will prevent the spray mixture from setting up in the system and clogging it. These steps should be completed in quick succession.

❶ SHUT OFF THE BEADS

- Use the DataLogger to shut off the bead guns:
  Main Screen => SPRAY OPTIONS => BEADS OFF

❷ PREPARE THE SOLVENT FLUSH

- **CLOSE** both the **BPO mixing block valve** (the top valve on the front of the mixing block) and the **MMA mixing block valve** (the bottom valve on the front of the mixing block).
- **OPEN** the **relief valve** located near the manifold filter, and the **BPO tank valve** located on the BPO tank.
- **CLOSE** the **hydraulic motor shutoff valve** (located on the red hydraulic motor).
- IMMEDIATELY **OPEN** the **solvent flush valve** (located on the rear of the mixing block). Also ensure that the **solvent flush relief valve** (located at the bottom of the solvent tank) is open. This will start the flow of solvent through the system.

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❸ FLUSH THE SPRAY GUNS

- Remove the spray guns(s) from the spray holder(s).
- Make sure spray gun triggers are locked. Carefully remove the spray tip guard(s) from the spray gun(s). Set aside but keep nearby.
- Unlock the spray gun(s) and spray into waste container until spray material (MMA) stops flowing from the guns and solvent starts spraying.
- Lock the spray gun triggers. Replace the spray tip guards.
- Unlock the spray gun triggers and spray solvent through the guns for a minimum of 30-45 seconds to ensure a proper flush.
- Turn the spray tips 180º and spray the solvent to ensure both ports of the spray tips are flushed.
- **CLOSE** both the **solvent flush valve** (located on the rear of the mixing block) and the **solvent flush relief valve** (located at the bottom of the solvent tank).

❹ RESUME SPRAYING

- Repeat the steps in "BEGIN SPRAYING" section.
- Some solvent will most likely remain in the system. Make sure to purge this into a waste container prior to resuming spraying.

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