

Section 9

Module

NOTE: This section applies to applicators with bead or slot modules.

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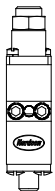
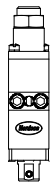
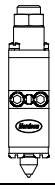


WARNING! Allow only personnel with appropriate training and experience to operate or service the equipment. The use of untrained or inexperienced personnel to operate or service the equipment can result in injury, including death, to themselves and others, and damage to the equipment.

Introduction

This section provides troubleshooting, repair, parts, and specification information for applicators with bead modules. A bead module dispenses a stream of adhesive onto a product in a desired adhesive pattern. Nordson Corporation offers a variety of bead modules, as shown in Table 9-1.

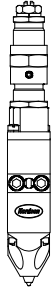
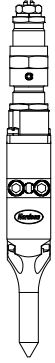
Table 9-1 Modules Used With Bead Applicators

Module Type	Characteristics	Description
ClassicBlue 	<ul style="list-style-type: none"> • ClassicBlue standard module, adjustable (allows changes in bead placement) • Air-open, spring-close (AOSC) operation • Accommodates Saturn single-orifice and right-angle nozzles 	ClassicBlue modules are the industry standard for dispensing conventional hot melt adhesives. The ball and seat design assures clean cutoff at the nozzle. ClassicBlue modules are suitable for low-to-medium speed applications.
ClassicBlue right-angle 	<ul style="list-style-type: none"> • ClassicBlue, right-angle module, adjustable (allows changes in bead placement) • Air-open, spring-close (AOSC) operation • Includes an integrated right-angle nozzle 	ClassicBlue right-angle modules provide 90-degree application flexibility for low-to-medium speed applications.
ClassicBlue reduced cavity 	<ul style="list-style-type: none"> • ClassicBlue reduced cavity module, adjustable (allows changes in bead placement) • Air-open, spring-close (AOSC) operation • Available in four orifice sizes 	ClassicBlue reduced cavity modules have an integrated nozzle and needle assembly that results in self-cleaning action and sharp cutoff. When used in low to medium speed applications, reduced cavity modules provide clog-free/minimum drip operation, uniform beads, and consistent flow over a wide range of temperatures.

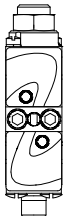
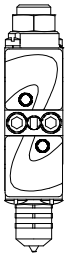
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Introduction *(contd)*

Table 9-1 Modules Used With Bead Applicators *(contd)*

Module Type	Characteristics	Description
ClassicBlue zero cavity (ZC) and zero cavity case sealing (ZCS) 	<ul style="list-style-type: none"> • ClassicBlue zero cavity module with micro-adjuster • Air-open, spring-close (AOSC) operation • Available in six orifice sizes 	Use ClassicBlue zero cavity modules in critical applications that require consistent no-clog/no-drip operation, precise bead placement, and extrusion control. The close-tolerance, matched nozzle-and-needle assembly eliminates the formation of minute adhesive pockets that can lead to nozzle clogging, drool, and adhesive stringing. The movement of the needle within the nozzle creates a self-cleaning action, minimizing blockages and reducing maintenance. Applications for these modules include high-speed cartoning, case sealing, cap lining, nonwovens side seaming and elastic attachment, bonding, and gasketing. Zero cavity modules feature a patented micro-adjust module. A micrometer adjustment screw at the top of the module can reduce adhesive flow by up to 30 percent. Additionally, minor variations in bead position can be achieved via a load adjustment mechanism. These adjustments are especially beneficial in high-speed, multi-module applications.
ClassicBlue zero cavity extended nozzle (ZCE) 		

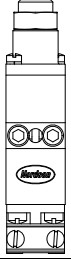
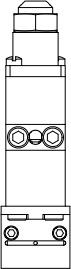
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Module Type	Characteristics	Description
<p>SolidBlue S</p> 	<ul style="list-style-type: none"> • SolidBlue S standard module, spring-tension adjustable (not stroke-adjustable) • Air-open, spring-close (AOSC) operation • Accommodates Saturn single-orifice and right-angle nozzles 	<p>SolidBlue S modules provide longer life than ClassicBlue modules and deliver exceptional adhesive cut-off/ minimum-drip operation for medium-to-high speed applications.</p>
<p>SureBead S</p> 	<ul style="list-style-type: none"> • High quality patterns with virtually clog-free operation, even when using “difficult to machine” low and medium viscosity adhesives • Maximum bead deposition capability • Air-open, spring-close operation (AOSC) • Colored ring on the removable nozzle easily identify orifice size • Nozzles are interchangeable—change orifice sizes without removing the module from the applicator • Nozzle tip is maintained resulting in cleanly applied beads and better product seals 	<p>SureBead modules are designed for easy flushing by removing the nozzle from the module. Nozzles used with a SureBead module are designed to perform similar in function to reduced-cavity and zero-cavity modules. SureBead modules are designed to dispense packaging-grade adhesives.</p>

Continued...

Introduction *(contd)*

Table 9-1 Modules Used With Bead Applicators *(contd)*

Module Type	Characteristics	Description
<p>ClassicBlue slot module</p> 	<ul style="list-style-type: none"> • ClassicBlue slot module with integral slot nozzle, spring-tension adjustable (not stroke-adjustable) • Air-open, spring-close (AOSC) operation • Available in four seat/slot nozzle assembly sizes 	<p>Use ClassicBlue slot modules for applications requiring the intermittent or continuous application of an adhesive film coating.</p>
<p>Mini-Bead module</p> 	<ul style="list-style-type: none"> • Mini-bead module, spring-tension adjustable (not stroke-adjustable) • Air-open, spring-close (AOSC) operation • Available in four seat/nozzle assembly sizes 	<p>Use Mini-Bead modules for high-speed packaging and product assembly multi-line applications requiring uniform beads and clean cutoff. The module's high flow rate accommodates line speeds of up to 137 m/min (450 ft/min).</p>

Module Identification

The face plates of SolidBlue and SureBead modules are color coded for easy applicator and module identification. Figure 9-1 shows the face plate options. Use this information for service and replacement needs.

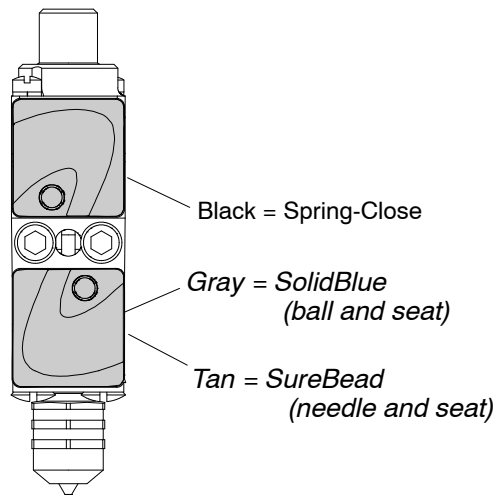


Figure 9-1 SolidBlue and SureBead module identification

Module Overview

Dispensing modules apply adhesive to a product. All modules are air-actuated (or air-open), meaning that an air supply controlled by a solenoid valve is required to open the module. Modules are then spring-closed. In air-open, spring-close (AOSC) modules, the actuating air lifts a needle-and-piston assembly inside the module, thus opening the module and allowing adhesive to flow through the nozzle onto the product. When the actuating air shuts off, a spring returns the needle-and-piston assembly to the closed position, closing the module.

Figure 9-2 shows the flow of adhesive through a bead module. Figure 9-3 shows the key parts of a typical bead module.

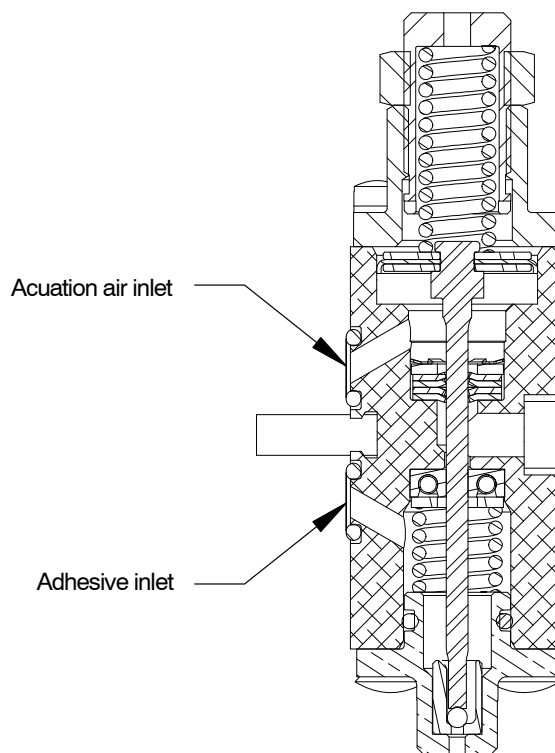


Figure 9-2 Flow of adhesive and air through a bead module (standard ClassicBlue module shown)

Module Overview *(contd)*

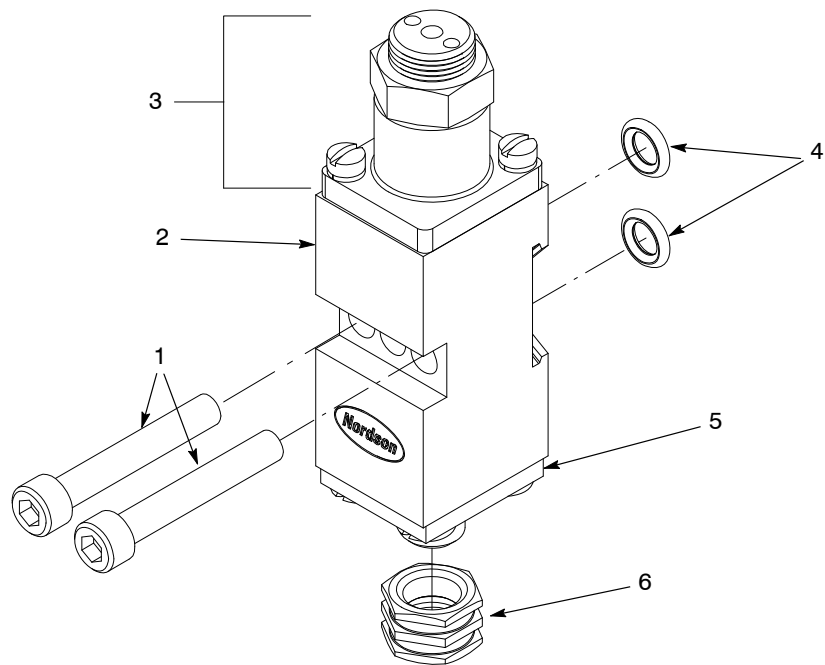


Figure 9-3 Key parts of a typical bead module (standard ClassicBlue module shown)

- | | |
|----------------------------------|-------------------|
| 1. Module mounting screws | 4. Module O-rings |
| 2. Module body | 5. Module seat |
| 3. Air cap assembly (adjustable) | 6. Saturn nozzle |

Module Service

This part of Section 9 provides module-related service procedures.

Adjusting a ClassicBlue Zero-Cavity Module

ClassicBlue zero cavity applicators are equipped with a micro-adjuster that allows the nozzle flow rate to be decreased up to 30 percent from the maximum flow rate set at the factory. Follow this procedure to adjust the adhesive output (flow rate) of an individual module.

NOTE: Modules are set at the factory for operation prior to shipping. Modules should only be adjusted if absolutely necessary for application performance. Stroke adjustments can be made on ClassicBlue zero-cavity modules, and spring-tension adjustments can be made on SolidBlue S and SureBead S modules. Most applications require no adjustments.

NOTE: The adhesive output of an applicator can be adjusted at a system level by increasing or decreasing the melter pump speed(s) or by changing the production line speed. This type of adjustment affects all modules on a single- or multi-module applicator.



WARNING! System pressurized! Relieve system pressure before attempting to adjust a module. If the micro-adjuster is unscrewed too far, adhesive can be released under pressure. Failure to relieve system pressure can result in personal injury.

1. Relieve system hydraulic pressure and disable the applicator. Refer to *Safety*.
2. See Figure 9-4. Use a box-end wrench to loosen the top locking nut (2) on the module.
3. Hold the loading screw (1) in place with a screwdriver and use a box-end wrench to turn the micro-adjuster nut (3) as follows:
 - Turn the nut clockwise to decrease flow rate (this shortens the needle stroke).
 - Turn the nut counterclockwise to increase flow rate (this lengthens the needle stroke).

NOTE: Each quarter-turn of the micro-adjuster nut changes the needle stroke by 0.025 mm (0.001 in.).

Adjusting a ClassicBlue Zero-Cavity Module (contd)

4. Use a torque wrench to tighten the top locking nut to 6.8 N•m (5 ft-lb).
5. Test the adhesive output. Repeat this procedure as needed until the desired adhesive output is obtained.

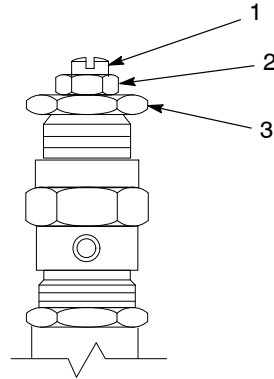


Figure 9-4 Location of loading screw and nuts on a module

- | | |
|------------------|-----------------------|
| 1. Loading screw | 3. Micro-adjuster nut |
| 2. Locking nut | |

Synchronizing Multi-Module Adhesive Output

A loading screw located in the top of the modules can be used to fine-tune the alignment of the adhesive patterns of multi-module applicators, as shown in Figure 9-5.

NOTE: Modules are set at the factory for operation prior to shipping. Modules should only be adjusted if absolutely necessary for application performance. Stroke adjustments can be made on ClassicBlue zero-cavity modules, and spring-tension adjustments can be made on SolidBlue S and SureBead S modules. Most applications require no adjustments.

NOTE: Adjusting the spring tension on SolidBlue S and SureBead S modules **does not** adjust stroke length.

You will need the following items:

- 5/8-in. wrench
- cap/nozzle/filter multi-tool (part 1059671)

NOTE: Refer to *Parts* for the part numbers of parts, tools, and supplies.

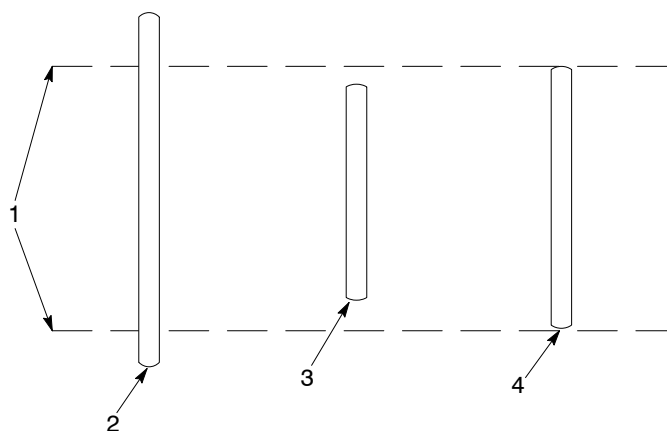


Figure 9-5 Results of module loading screw adjustments

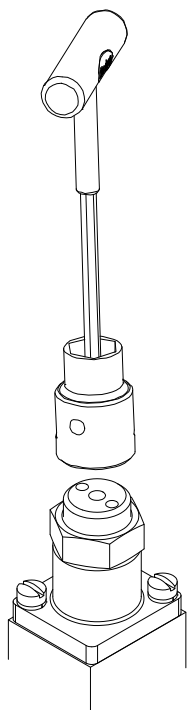
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|---------------------|---------------------------|
| 1. Target area | 3. Pattern too short |
| 2. Pattern too long | 4. Desired pattern length |

See Figure 9-6. To adjust a loading screw, loosen the locking nut (2) at the top of the module and hold it loosely in place with a $\frac{5}{8}$ -in. wrench while turning the loading screw (1) with the multi-tool; then tighten the locking nut. Turn the loading screw as follows:

- To decrease the length of a pattern, turn the loading screw clockwise. This shortens the length at both ends of the pattern.
- To increase the length of a pattern, turn the loading screw counterclockwise. This increases the length at both ends of the pattern.

NOTE: If the module loading screw is tightened too much, the module will not dispense any adhesive.

To return a loading screw to the factory setting, loosen the locking nut, turn the screw clockwise until it bottoms out, back the screw out three full turns (counterclockwise), and tighten the locking nut.



Using the multi-tool, part 1059671, to adjust a module

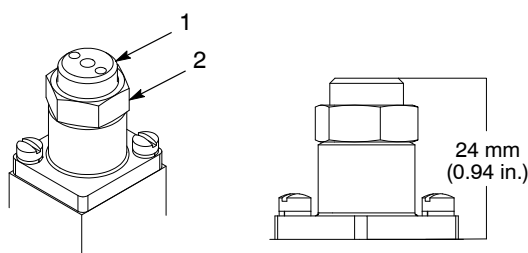


Figure 9-6 Location of the module loading screw and locking nut

- | | |
|------------------|----------------|
| 1. Loading screw | 2. Locking nut |
|------------------|----------------|

Operating Under 30 bar (450 psi) Hydraulic Pressure

Increase the applicator air pressure to operate at a hydraulic pressure as low as 14 bar (200 psi). Refer to Table 9-2. If 3.4 bar (50 psi) cannot be achieved, go to *Compensating for Low Applicator Air Pressure*.

Table 9-2 Increasing Applicator Air Pressure to Operate at Low Hydraulic Pressure

To operate at this hydraulic pressure...	The minimum applicator air pressure required is...
30–90 bar (450–1,300 psi)*	3.4 bar (50 psi)*
20–90 bar (300–1,300 psi)	4.1 bar (60 psi)
14–90 bar (200–1,300 psi)	4.8 bar (70 psi)

*This is the factory setting.

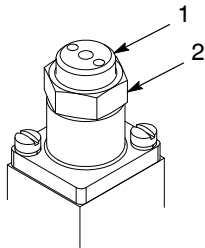
Compensating for Low Applicator Air Pressure (AOSC Applicators)

If an application requires applicator operation at an air pressure below 3.4 bar (50 psi) *and* at a hydraulic pressure below 30 bar (450 psi), reduce the applicator module spring tension.

NOTE: The needle stroke on SolidBlue and SureBead modules cannot be adjusted. Only the module spring tension can be adjusted.



WARNING! Risk of burns. Reducing the applicator module spring tension also reduces the maximum hydraulic pressure at which the module will self-relieve or free-flow. If the maximum hydraulic pressure is exceeded, the applicator module will remain open and dispense adhesive uncontrollably.



See Figure 9-7. To reduce the applicator module spring tension, loosen the locking nut and turn the adjustment screw counterclockwise in $1/2$ -turn increments. Each $1/2$ turn reduces the hydraulic pressure capability by 7 bar (100 psi). Refer to Table 9-3.

Figure 9-7 Location of the module loading screw and locking nut

1. Loading screw
2. Locking nut

Table 9-3 Adjusting a SolidBlue or SureBead Module to Operate at Low Applicator Air Pressure and Low Hydraulic Pressure

Adjustment Screw Position	Maximum Applicator Air Pressure Available	Minimum Hydraulic Pressure
Factory setting	3.4 bar (50 psi)	30 bar (450 psi)
Approximately 1/2 turn counterclockwise from factory setting		24 bar (350 psi)
Approximately 1 turn counterclockwise from factory setting		17 bar (250 psi)

Return a SolidBlue or SureBead Module to the Factory Setting

1. Disable the applicator. Refer to *Safety*.
2. See Figure 9-7. Loosen the module locking nut.
3. Turn the adjustment screw clockwise only until it bottoms out. Do not over-tighten the screw.
4. Turn the adjusting screw counterclockwise two revolutions.
5. Hold the adjustment screw in place and tighten the lock nut.

Replacing a Module

You will need the following items:

- appropriate tools, including a torque wrench
- drain pans and disposable rags
- replacement module
- replacement O-rings (if needed)
- O-ring lubricant (if needed)
- anti-seize lubricant

NOTE: Refer to *Parts* for the part numbers of parts, tools, and supplies.

NOTE: Modules can be rebuilt. To rebuild a module, order the appropriate module rebuild kit and follow the instructions in the kit. For kit part numbers, refer to *Module Rebuild Kits* under *Parts* later in this section.

Remove the Module

1. Heat the system to application temperature.
2. Relieve system pressure. Refer to *Relieving System Pressure* in Section 10, *Filter*.
3. Trigger the applicator solenoid valves to relieve any remaining pressure.
4. Shut off the module-actuating air.
5. See Figure 9-8. Remove the module mounting screws (1) and then remove the module. Remove the module O-rings (2) for inspection.

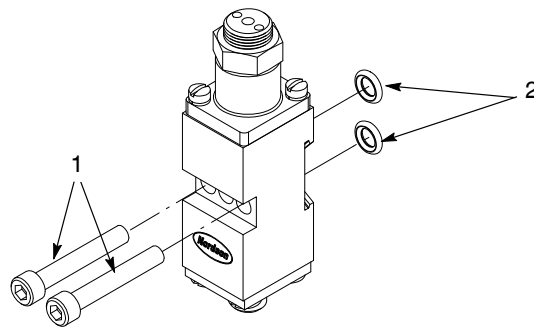


Figure 9-8 Replacing a module (standard ClassicBlue module shown)

1. Mounting screws

2. O-rings

Install the Module

1. Wipe off any adhesive on the applicator, especially around the air passages.
2. Ensure that the module O-rings are lubricated and properly inserted in the O-ring bores on the back of the replacement module.
3. Coat the module mounting screws with anti-seize lubricant and use them to secure the new module to the applicator. Tighten the screws to 3.4 N•m (30 in.-lb).
4. Restore the system to normal operation. For best results, tighten the module mounting screws again after the applicator reaches application temperature.

Rebuilding a Module

To rebuild a module, order a module rebuild kit and follow the instructions provided in the kit. Refer to *Module Rebuild Kits*. The bead/slot module rebuild instruction sheet is P/N 104723. This instruction sheet is also available at <http://emanuals.nordson.com/>.

Nozzle Service

This part of Section 9 provides nozzle-related service procedures.

Removing or Installing a Nozzle

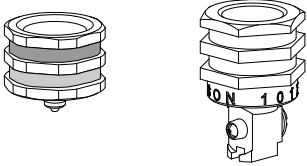
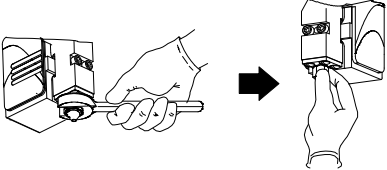
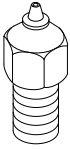
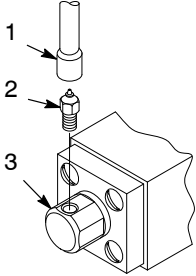
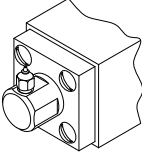
Nozzles may become clogged when char, a by-product of overheating the hot melt, becomes lodged in the nozzle. The use of an in-line filter will significantly reduce nozzle clogging.

1. Heat the applicator to operating temperature.
2. Disable the applicator. Refer to *Safety*.
3. Remove nozzles as shown in Table 9-4.



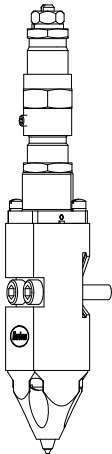
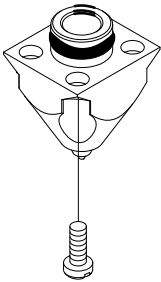
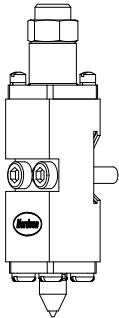
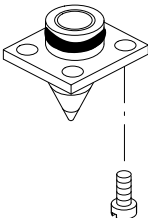
WARNING! Risk of personal injury or equipment damage. The sharp needle on SureBead applicators is exposed whenever the nozzle is removed.

Table 9-4 Nozzle Removal and Installation Procedures

Nozzle Type	Removal Procedure	Installation Procedure
<p>Standard nut-type nozzles (including Saturn right-angle and SureBead nozzles)</p> 	<p>Use a wrench to loosen the nozzle, then remove the nozzle by hand (wear safety gloves).</p> 	<p>Thread the nozzle onto the module threads by hand; then use a torque wrench to tighten the nozzle to 4.5 N•m (40 in.-lb).</p>
<p>Integrated ClassicBlue right-angle module nozzles</p> 	<p>Turn the nozzle adapter (3) until the nozzle (2) is accessible, then use a nut driver (1) or small socket to carefully unthread the nozzle from the adapter.</p> 	<p>Insert the nozzle into the nut driver or small socket and then carefully thread the nozzle into the nozzle adapter. Tighten the nozzle to 0.46 N•m (4 in.-lb). Do not over-tighten the nozzle. Turn the nozzle adapter until the nozzle points toward the product.</p> 

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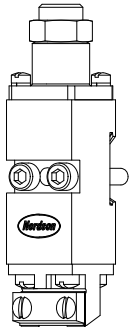
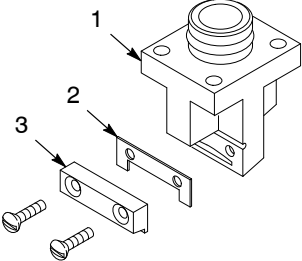
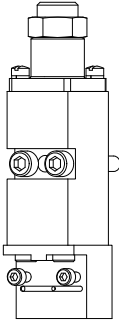
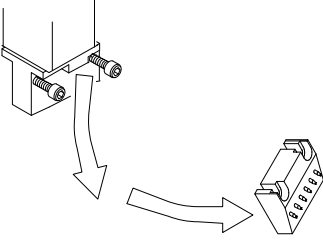
Table 9-4 Nozzle Removal and Installation Procedures (contd)

Nozzle Type	Removal Procedure	Installation Procedure
<p data-bbox="191 247 553 275">ClassicBlue zero cavity module nozzle</p> 	<ol style="list-style-type: none"> <li data-bbox="610 247 1016 373">1 Scribe or otherwise place a distinctive mark on the side of the nozzle. Use the same mark on the applicator manifold to identify the correct replacement location for the nozzle. <li data-bbox="610 384 1016 426">2 Remove the nozzle by removing the four screws that secure it to the module. <li data-bbox="610 436 1016 468">3 Remove and discard the nozzle O-ring. 	<ol style="list-style-type: none"> <li data-bbox="1037 247 1440 300">1 Lubricate and install a new nozzle O-ring. <li data-bbox="1037 310 1440 426">2 Install the nozzle on the module, verifying that the needle guide is still inside the nozzle and that the nozzle is properly aligned with the needle tip and with the scribe made earlier. <li data-bbox="1037 436 1440 489">3 Secure the nozzle with the screws removed previously.
<p data-bbox="191 800 521 827">ClassicBlue reduced cavity module</p> 	<ol style="list-style-type: none"> <li data-bbox="610 800 1016 926">1 Scribe or otherwise place a distinctive mark on the side of the nozzle. Use the same mark on the applicator manifold to identify the correct replacement location for the nozzle. <li data-bbox="610 936 1016 978">2 Remove the nozzle by removing the four screws that secure it to the module. <li data-bbox="610 989 1016 1020">3 Remove and discard the nozzle O-ring. 	<ol style="list-style-type: none"> <li data-bbox="1037 800 1440 852">1 Lubricate and install a new nozzle O-ring. <li data-bbox="1037 863 1440 978">2 Install the nozzle on the module, verifying that the needle guide is still inside the nozzle and that the nozzle is properly aligned with the needle tip and with the scribe made earlier. <li data-bbox="1037 989 1440 1041">3 Secure the nozzle with the screws removed previously.

Continued...

Removing or Installing a Nozzle *(contd)*

Table 9-4 Nozzle Removal and Installation Procedures *(contd)*

Nozzle Type	Removal Procedure	Installation Procedure
<p>ClassicBlue slot module</p> 	<ol style="list-style-type: none"> 1 Remove the screws that secure the nozzle (3) and shim (2) to the module seat (1). 2 Remove the nozzle and shim from the seat. 	<ol style="list-style-type: none"> 1 Clean the nozzle-mounting surface on the module seat. 2 Ensuring that they are even, install the shim and nozzle using the screws removed previously.
<p>Mini-Bead module</p> 	<ol style="list-style-type: none"> 1 Loosen the screws that secure the nozzle (1) to the module seat (2). 2 Remove the nozzle from the seat. 	<ol style="list-style-type: none"> 1 Clean the nozzle-mounting surface on the module seat. 2 Reinstall the nozzle and tighten the nozzle screws.

Cleaning Nozzles

To clean nozzles, obtain the nozzle-cleaning instruction sheet (P/N 1053027) from <http://emanuals.nordson.com/>, or contact your Nordson representative for assistance.

Parts

This part of Section 9 provides detailed parts lists for the module and nozzles. For other applicator parts, including a reference drawing and bill of materials specific to your applicator, refer to Section 8, *Parts*. The following chart provides guidance for reading the parts lists.

ClassicBlue Modules

Replacement modules include screws to mount the modules and the O-rings that seal between the module and the manifold.

Part	Description
1054951	Module blank, ClassicBlue
1048115	ClassicBlue
1051794	ClassicBlue RC08
1051793	ClassicBlue RC12
1051792	ClassicBlue RC12, Kalrez
1051791	ClassicBlue RC16
1051790	ClassicBlue RC20
1054376	ClassicBlue ZE12
1051736	ClassicBlue ZE20
1051737	ClassicBlue ZE32
1051738	ClassicBlue ZE40
1051746	ClassicBlue RA
1054375	ClassicBlue ZC08
1051740	ClassicBlue ZC10
1051741	ClassicBlue ZC12
1051742	ClassicBlue ZC16
1051743	ClassicBlue ZC20
1051744	ClassicBlue ZC32
1051745	ClassicBlue ZC40
1054379	ClassicBlue ZCS12

SolidBlue and SureBead Modules

SureBead modules include nozzles. The color indicated next to the orifice size indicates the color code of the Saturn nozzle of the SureBead modules.

Part	Description
1054951	Module blank, SolidBlue/SureBead
1052925	SolidBlue S
1052928	SureBead S, 0.008 (purple)
1052929	SureBead S, 0.012 (green)
1052931	SureBead S, 0.016 (orange)
1052932	SureBead S, 0.020 (beige)
1056127	SureBead S, 0.032 (gold)
1056128	SureBead S, 0.040 (turquoise)

Nozzles for ClassicBlue, SolidBead, and SureBead Modules

Normally, the choice of nozzle for your applicator will have already been made by you and your Nordson representative. Refer to your sales order to determine what nozzle choices were made. The part numbers for the most commonly used nozzles are provided here.

Standard Bead Nozzles

See Figures 9-9 through 9-13.

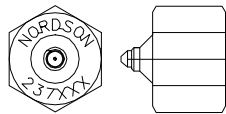


Figure 9-9 Single-orifice nozzle with insert, optional engagement

237XXX Single-orifice with insert	Engagement mm (in.)	Orifice Diameter mm (in.)							
		0.20 (0.008)	0.25 (0.010)	0.31 (0.012)	0.36 (0.014)	0.41 (0.016)	0.46 (0.018)	0.51 (0.020)	0.61 (0.024)
Brass adapter, stainless-steel insert	1.3 (0.050)	237208	237210	237212	237214	237216	237218	237220	237622
	1.9 (0.075)		237621	237312	237314	237316	237318	237320	237623
	2.5 (0.100)			237412	237414	237416	237418	237420	237624
	3.8 (0.150)			237612	237614	237616	237618	237620	237625

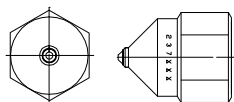


Figure 9-10 Single-orifice nozzle with insert, long engagement

237XXX Single-orifice with insert	Engagement mm (in.)	Orifice Diameter mm (in.)						
		0.31 (0.012)	0.36 (0.014)	0.41 (0.016)	0.46 (0.018)	0.53 (0.021)	0.61 (0.024)	0.71 (0.028)
Brass adapter, stainless-steel insert	7.6 (0.300)	237003	237005	237008	237018	237027	237040	237060



Figure 9-11 Drilled, single-orifice nozzle, fixed engagement

238XXX Single-orifice one piece	Engagement mm (in.)	Orifice Diameter mm (in.)							
		0.31 (0.012)	0.36 (0.014)	0.41 (0.016)	0.46 (0.018)	0.51 (0.020)	0.76 (0.030)	0.89 (0.035)	1.02 (0.040)
Brass	2.54 (0.100)	238004	238005	238006	238007	238008	238009	238058	238010
Stainless-steel		238011	238012	238002	238013	238000	238001	238057	238003

Standard Bead Nozzles (contd)

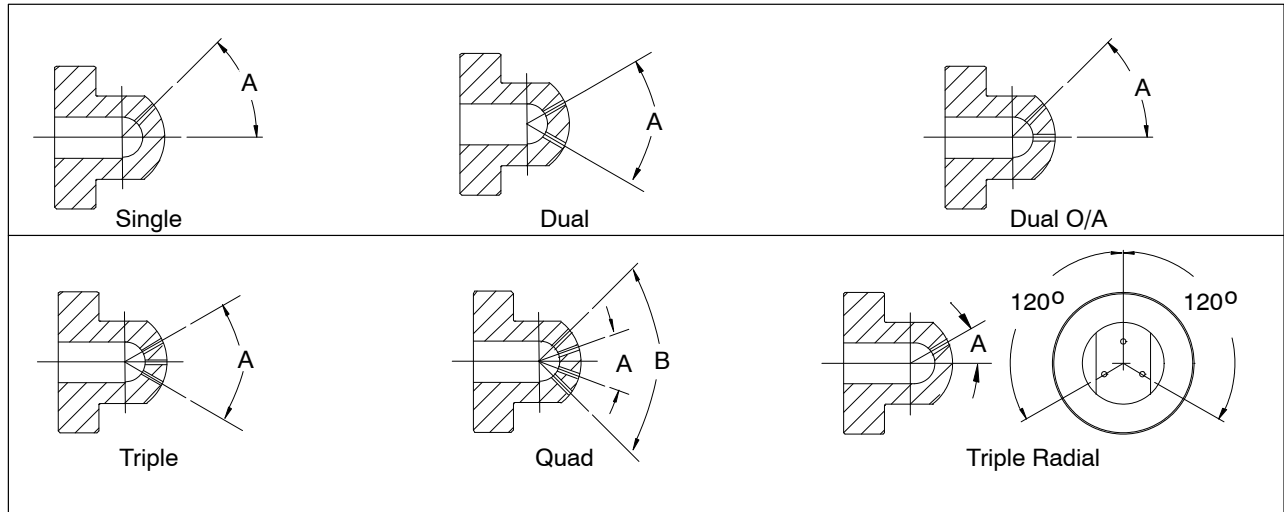


Figure 9-12 Domed nozzles, methods of measuring offsets shown above (A, B = angle between nozzle orifices or centerline)

2380XX Domed Nozzles Phosphor Bronze (See Note A)	Orifice Diameter mm (in.)								
	0.20 (0.008)	0.25 (0.010)	0.31 (0.012)	0.36 (0.014)	0.41 (0.016)	0.46 (0.018)	0.51 (0.020)	0.61 (0.024)	0.76 (0.030)
Single 15°		703299	706078		238015	704891	702927		238016
Single 30°		704542	714977		238017		238018	804520	238019
Single 45°		703464	705512	702598	238020	707218	238021		238022
Single 60°			706057		238023		238024		238025
Dual 15°		238059	238053	238063	238054	130495	238055		238056
Dual 20°		238060	238062	715190	114927	238067			
Dual 30°	804871	703270	238506	704936	114928	805512	238500	238026	238501
Dual 45°	238534	238525	238526	238527	238528	238529	238530	238027	238531
Dual 60°		238061	709371	238064	238028	238068	238029		238030
Dual 0/15°			805397	715462	238031		238032		238033
Dual 0/45°		119360	804761	132567	238034	715872	238035		238036
Triple 30°			238037	238065	238038	238069	238039	238071	238040
Triple 45°			238041	238066	238042	238070	238510	238072	
Triple 60°			238043	807506	238044	708028	238045		238046
Triple Radial 30°	805257		238047		238048		238049		238050
Quad 40°		709479	714855	714856	808696		238051		238052

NOTE A: Use these nozzles with retaining nut part 152926.

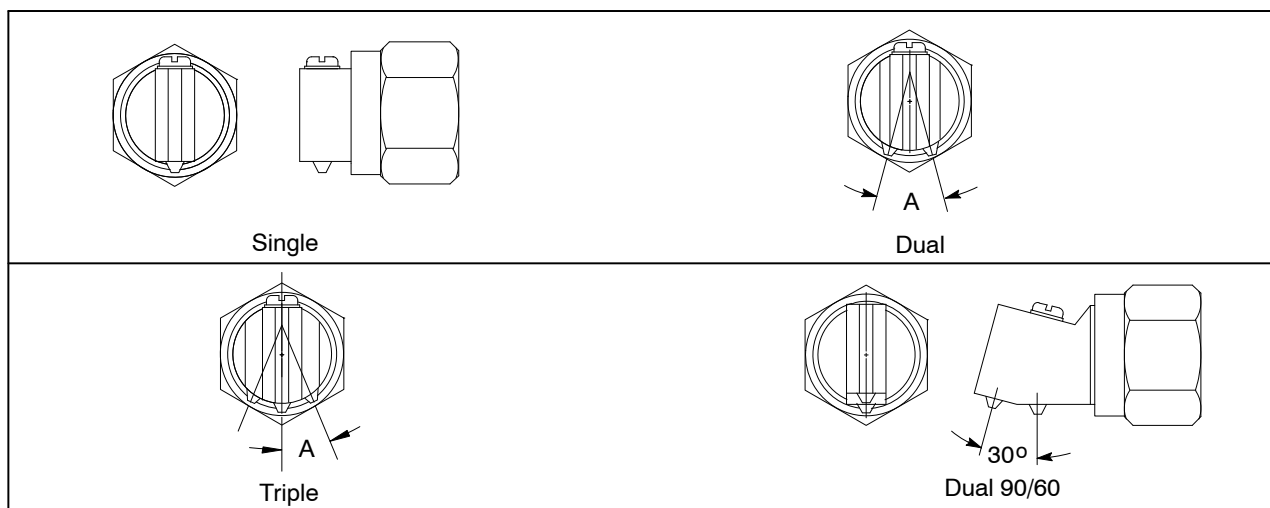


Figure 9-13 Right-angle nozzles, methods of measuring offsets shown above (A = angle between nozzle orifices or centerline)

Right-Angle Nozzles (See Note A)	Orifice Diameter mm (in.)										
	0.20 (0.008)	0.25 (0.010)	0.31 (0.012)	0.36 (0.014)	0.41 (0.016)	0.46 (0.018)	0.51 (0.020)	0.61 (0.024)	0.71 (0.028)	0.81 (0.032)	1.02 (0.040)
Single	707867	714847	244518	244519	244520	165774	270853	165775	271022	231149	804832
Dual 15°			165776	273384	804047	165777	271938	165778	165779		
Dual 30°			270698	270699	270700	165780	709786	165781	808792		
Dual 90/60°			165783	710591	809882		165784		165785		
Triple 19°		142898	165786	165787	806540		808625				
Triple 22.5°			165788	806199	165789		165790				

NOTE A: Right-angle nozzles have a stainless-steel insert, stainless-steel adapter, and brass retaining nut.

Standard Saturn Nozzles

See Figure 9-14. Saturn precision nozzles have patented color-coded rings that provide easy identification of nozzle orifice size. Refer to the *Adhesives and Sealants Equipment Guide* for a full listing of available Saturn nozzles.

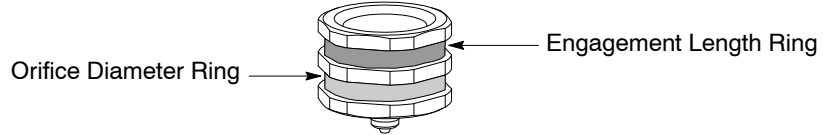


Figure 9-14 Saturn nozzle rings

Orifice Diameter and Bottom Ring Color mm (in.)	Engagement Length and Top Ring Color mm (in.)				
	1.3 (0.050) Purple	1.9 (0.075) Brown	2.5 (0.100) Blue	3.8 (0.150) Green	7.6 (0.300) Black
0.20 (0.008) Purple	322008				
0.25 (0.010) Blue	322010				
0.31 (0.012) Green	322012	322112	322212	322312	322412
0.36 (0.014) Yellow	322014	322114		322314	322414
0.41 (0.016) Orange	322016	322116	322216		322416
0.46 (0.018) Red	322018	322118		322318	322418
0.51 (0.020) Beige	322020	322120			
0.53 (0.021) Brown					322421
0.61 (0.024) Gray					322424
0.71 (0.028) Black					322428

Saturn Nozzles for SureBead Modules

See Figure 9-15. SureBead nozzles are similar in design to standard Saturn nozzles, with a gray upper ring to indicate a pressed-in seat with minimal engagement and a color-coded lower ring to indicate orifice size. The self-cleaning action of the integrated nozzle and needle assembly produces clean patterns and sharp cutoff. Because of improved design efficiency of the SureBead applicators, adhesive bead volume may vary slightly from equivalent ClassicBlue RC and ZC modules. Adjust the adhesive pressure to compensate.

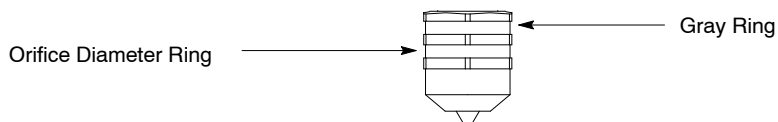


Figure 9-15 SureBead Saturn nozzle

Part	Description
339695	Kit, nozzle, .008 (purple)
339696	Kit, nozzle, .012 (green)
339697	Kit, nozzle, .016 (orange)
339698	Kit, nozzle, .020 (beige)
1055563	Kit, nozzle, .032 (gold)
1055560	Kit, nozzle, .040 (turquoise)

ClassicBlue Slot Modules

Replacement modules include screws to mount the modules and the O-rings that seal between the module and the manifold.

The nozzle on ClassicBlue slot modules is integral to the module—no separate nozzle purchase is required.

Part	Description
1051718	ClassicBlue slot, 0.38 in.
1051719	ClassicBlue slot, 0.50 in.
1051720	ClassicBlue slot, 0.75 in.
1051721	ClassicBlue slot, 2.00 in.

Mini-Bead Modules

Replacement modules include screws to mount the modules and the O-rings that seal between the module and the manifold.

Part	Description
175785	Mini-Bead, 1.00 in.
234790	Mini-Bead, 1.50 in.
175788	Mini-Bead, 2.00 in.
175791	Mini-Bead, 3.00 in.

Nozzles for Mini-Bead Modules

Normally, the choice of nozzle for your applicator will have already been made by you and your Nordson representative. Refer to your sales order to determine what nozzle choices were made. The part numbers for the most commonly used nozzles are provided here.

Mini-Bead nozzles are available in 1.0, 1.5, 2.0 or 3.0 inch nozzle widths for either horizontal or vertical applicator mounting and for multi-module configurations with various centerline spacings. The following tables list the selections according to nozzle width, orifice size, and number of orifices per nozzle.

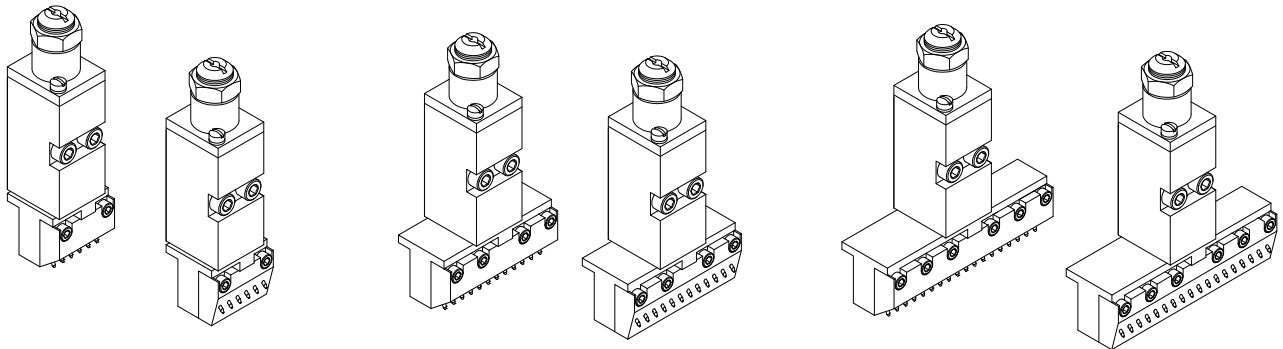


Figure 9-16 Mini-Bead nozzles (1.0-, 2.0- and 3.0-in. horizontal and vertical widths, 1.5-in. nozzles not shown)

Horizontal Mini-Bead Nozzles

Refer to Tables 9-5 to 9-8 for the values of A–B, shown in Figure 9-17.

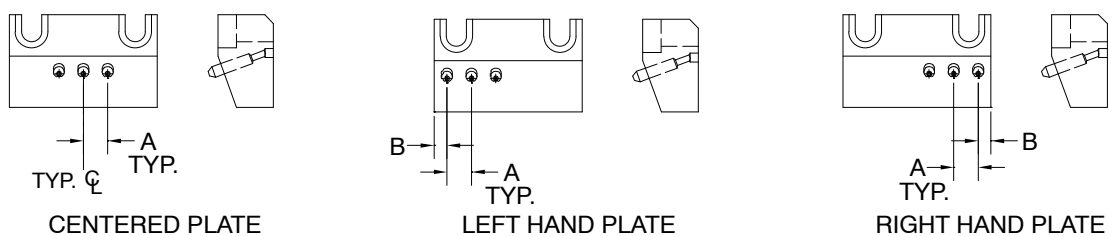


Figure 9-17 Horizontal Mini-Bead nozzle dimensions

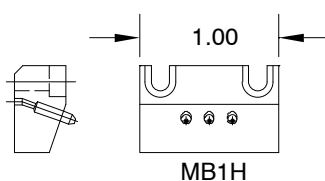
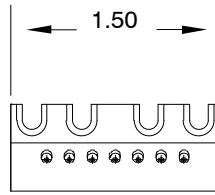


Table 9-5 Mini-Bead 1.0-in. Horizontal (MB1H) Nozzles

No. of Orifice	Dimensions (in.)		Position	Orifice Diameter						
	A	B		0.012	0.014	0.016	0.018	0.021	0.024	0.028
1	—	0.087	L	181300	181301	181302	175935	181303	181353	181354
1	—	0.087	R	181405	181406	181407	175937	181408	181409	181410
2	0.087	0.165	L	175815	175814	175813	175812	724941		
2	0.087	0.165	R	175820	175819	175818	175817	724940		
2	0.826	—	C				724193			
2	0.125	—	C						224536	
2	0.197	—	C			725059				
3	0.165	0.087	R					724238		
3	0.165	0.087	L				724194	724239		
3	0.330	0.083	L					725139		
4	0.165	0.087	R					724240		
4	0.165	0.087	L				724195	724241		
5	0.165	0.087	R					724242		
5	0.165	0.087	L					724243		
6	0.165	—	C	175928	175929	175930	175931	169915	175932	175933

NOTE: Positions: C = Centered Pattern; R = Right-Hand Pattern; L = Left-Hand Pattern

Horizontal Mini-Bead Nozzles (contd)

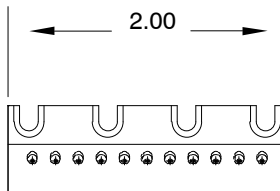


MB1.5H

Table 9-6 Mini-Bead 1.5-in. Horizontal (MB1.5H) Nozzles

No. of Orifice	Dimensions (in.)		Position	Orifice Diameter						
	A	B		0.012	0.014	0.016	0.018	0.021	0.024	0.028
7	0.197	—	C					234787		

NOTE: Positions: C = Centered Pattern

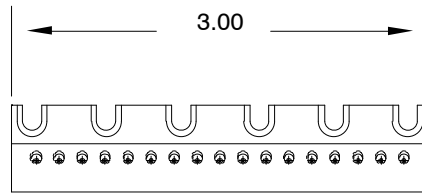


MB2H

Table 9-7 Mini-Bead 2.0-in. Horizontal (MB2H) Nozzles

No. of Orifice	Dimensions (in.)		Position	Orifice Diameter						
	A	B		0.012	0.014	0.016	0.018	0.021	0.024	0.028
4	0.375	—	C	724435						
4	0.394	—	C			725010				
12	0.165	—	C					169920		

NOTE: Positions: C = Centered Pattern



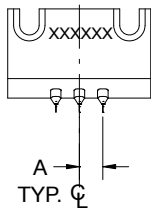
MB3H

Table 9-8 Mini-Bead 3.0-in. Horizontal (MB3H) Nozzles

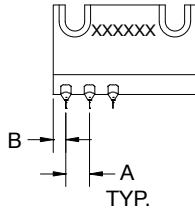
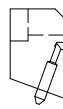
No. of Orifice	Dimensions (in.)		Position	Orifice Diameter						
	A	B		0.012	0.014	0.016	0.018	0.021	0.024	0.028
7	0.165	—	C					169925		

NOTE: Positions: C = Centered Pattern

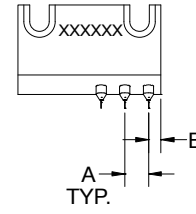
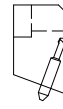
Vertical Mini-Bead Nozzles



CENTERED PLATE



LEFT HAND PLATE



RIGHT HAND PLATE

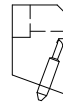


Table 9-9 Mini-Bead 1.0-in. Vertical (MB1V) Nozzles

No. of Orifice	Dimensions (in.)		Note	Position	Orifice Diameter						
	A	B			0.012	0.014	0.016	0.018	0.021	0.024	0.028
1	—	0.087		L	181411	181412	181413	181414	724186	181415	181416
1	—	0.087	A	L				724797			
1	—	0.087		R	181417	181418	181419	181420	724187	181421	181422
1	—	0.087	A	R				724583			
1	—	0.050		R				724801			
1	—	0.253		L		724612		189535			
1	—	0.253		R		724613		189536			
1	—	0.418		L					725148		
1	—	0.418		R				724194	725149		
2	0.165	0.087		L	175825	175824	175823	175822	724296		
2	0.165	0.087		R	175830	175829	175828	175827	724297		
2	0.660	—		C		724536			724476		
2	0.197	—		C			725100				
2	0.256	—		C			725122		724243		
2	0.312	—		C			724544		724674		724675
2	0.400	—		C					725116		
2	0.472	—		C				724695			
2	0.830	—		C				724925			
2	0.157	0.079		R					724596		
2	0.157	0.079		L					724603		

NOTE: Positions: C = Centered Pattern; R = Right-Hand Pattern; L = Left-Hand Pattern

NOTE A: Chemcoated

Continued...

Table 9-9 Mini-Bead 1.0-in. Vertical (MB1V) Nozzles (contd)

No. of Orifice	Dimensions (in.)		Note	Position	Orifice Diameter						
	A	B			0.012	0.014	0.016	0.018	0.021	0.024	0.028
2	0.157	0.158		R					184318		
2	0.157	0.158		L					184320		
2	0.498	0.085		L				724929	724930		
2	0.550	0.15		R					184319		
2	0.550	0.158		L					184321		
3	0.165	—		L		724667	725043	724471	724174		
3	0.165	—		R			725042	724927	724175		
3	0.100	—		C							724836
3	0.157	—		C				724987			
3	0.188	—		C					724143		
3	0.236	—		C						725111	
3	0.265	—		R							724433
3	0.330	0.088		*					724942		
3	—	—		*		725103					
3	—	—		*					724600		
3	—	—		*					725115		
3	—	—		*					724599		
3	—	—		*					724597		
3	—	—		*					725004		
4	0.165	0.087		L			724741	725144	724176		
4	0.165	0.087	A	L					724585		
4	0.165	0.087		R			724742		724173		
4	0.165	0.087	A	R					724586		
4	0.165	—		C							724654
4	0.100	—		C	724533		725088				
4	0.100	0.080		L					724893		
4	0.250	—		C							724673

NOTE: Positions: C = Centered Pattern; R = Right-Hand Pattern; L = Left-Hand Pattern; * = Special Pattern
NOTE A: Chemcoated

Continued...

Vertical Mini-Bead Nozzles (contd)

Table 9-9 Mini-Bead 1.0-in. Vertical (MB1V) Nozzles (contd)

No. of Orifice	Dimensions (in.)		Note	Position	Orifice Diameter						
	A	B			0.012	0.014	0.016	0.018	0.021	0.024	0.028
4	—	—		*					724188		
4	—	—		*					724189		
4	—	—		*					724190		
4	—	—		*					724598		
4	—	—		*					724601		
4	—	—		*					724602		
5	0.165	0.087		L		724668	724170	724472	724178		
5	0.165	0.087		R			724169		724177		
5	0.150	—		C	724362						
5	0.165	—	B	C				724453			
5	0.200	—		C	725138						
6	0.165	—		C	724619	724620	724168	724470	169932		724434
6	0.165	—	A	C					724584		
6	0.100	—		C		724572		724928			
6	—	—		*					724772		
6	—	—		*					724773		
6	—	—		*							724890
8	0.100	—		C	724481				724854		
8	0.100	0.100		L					724474		
8	0.100	0.100		R					724475		
8	0.100	0.080		L					724569		
8	0.100	0.080		R					724571		
9	0.100	—		C			724342		724473		
9	0.105	—		C					724570		

NOTE: Positions: C = Centered Pattern; R = Right-Hand Pattern; L = Left-Hand Pattern; * = Special Pattern
 NOTE A: Chem-coated
 B: PMB version (has feed slot on back side)

Refer to Tables 9-10 to 9-12 for values of A–B, shown in Figure 9-18, when selecting 1.5, 2.0, and 3.0 in. nozzles.

Nozzle Positions

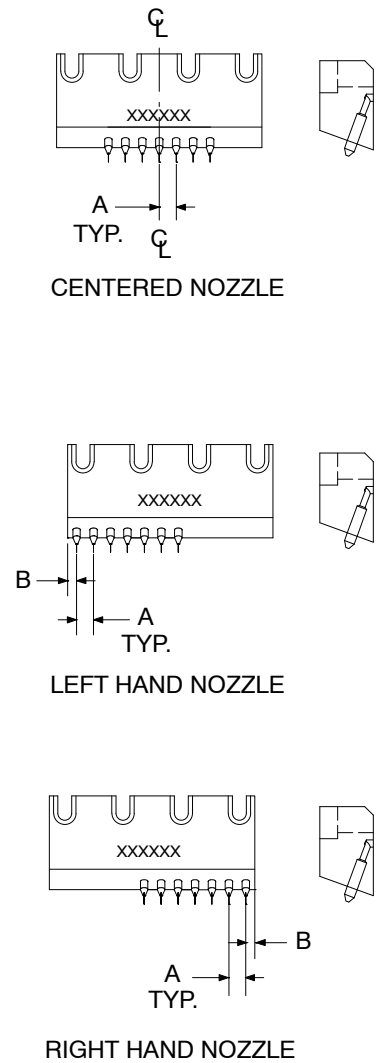
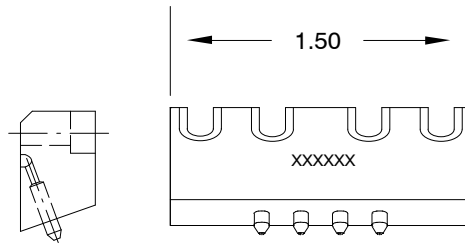


Figure 9-18 Vertical Mini-Bead nozzle dimensions

Vertical Mini-Bead Nozzles (contd)



MB1.5V

Table 9-10 Mini-Bead 1.5-in. Vertical (MB1.5V) Nozzles

No. of Orifice	Dimensions (in.)		Position	Orifice Diameter							
	A	B		0.012	0.014	0.016	0.018	0.021	0.024	0.028	
1	0.197	—	C	725082							
1	—	—	*	725083							
2	0.197	—	C					234785			
2	0.098	—	C								724934

NOTE: Positions: C = Centered Pattern; * = Special Pattern

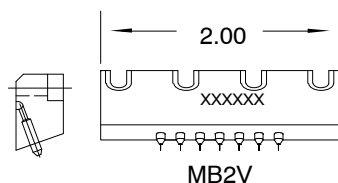
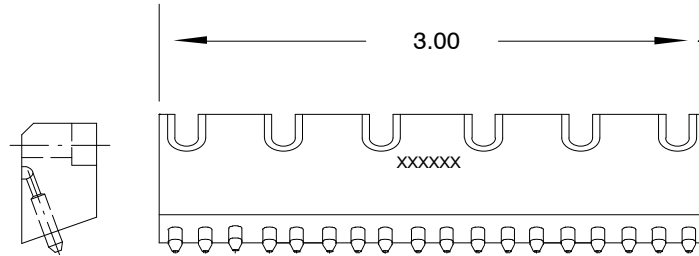


Table 9-11 Mini-Bead 2.0-in. Vertical (MB2V) Nozzles

No. of Orifice	Dimensions (in.)		Position	Orifice Diameter				
	A	B		0.012	0.014	0.016	0.018	0.021
3	0.590	—	C	724657				
4	0.590	—	C	724656				
4	0.394	—	C	724842				
4	0.500	—	C		724879			
5	0.315	—	C					724510
6	0.165	0.087	R					725061
6	0.165	0.087	L					725062
7	—	—	*					724728
8	0.100	—	C	724310				724348
8	—	—	*				724965	
9	0.165	0.087	R					724114
9	0.165	0.087	L					724115
10	0.100	—	C	724311				724349
10	0.165	0.087	R					189537
10	0.165	0.087	L					189538
10	0.165	—	C		725132			
12	0.100	—	C	724312				724350
12	0.113	—	C					724145
12	0.165	—	C					175773
13	0.105	—	C				222626	
14	0.100	—	C	724313				724351
16	0.100	—	C	724314				724352
17	0.100	0.100	R			724411		
17	0.100	0.100	L			724412		
17	0.103	—	C				222625	
18	0.100	—	C	724315				724353
19	0.100	—	C			724410		

NOTE: Positions: C = Centered Pattern; R = Right-Hand Pattern; L = Left-Hand Pattern; * = Special Pattern

Vertical Mini-Bead Nozzles (contd)



MB3V

Table 9-12 Mini-Bead 3.0-in. Vertical (MB3V) Nozzles

No. of Orifice	Dimensions (in.)		Position	Orifice Diameter				
	A	B		0.012	0.014	0.016	0.018	0.021
18	0.165	—	C					175780

Module Rebuild Kits

ClassicBlue Rebuild Kits

NOTE: ClassicBlue rebuild kits can be used for standard ClassicBlue modules, ClassicBlue slot modules, and Mini-Bead modules (except for the ZC kits).

Part	Description	Note
1055414	Module rebuild kit, ClassicBlue	A
1055411	Module rebuild kit, ClassicBlue	B
1055413	Module rebuild kit, ClassicBlue	B, C
1055415	Module rebuild kit, ClassicBlue	D
1055395	Module rebuild kit, ClassicBlue	E
1055416	Module rebuild kit, ClassicBlue, ZC40	A
1055417	Module rebuild kit, ClassicBlue, ZC32	A
1055462	Module rebuild kit, ClassicBlue	F
1055464	Module rebuild kit, ClassicBlue	D
<p>NOTE A: Rebuilds one module B: Rebuilds ten modules C: Does not include the needle-and-piston assembly D: Rebuilds 50 modules E: Rebuilds 500 modules F: Rebuilds 20 modules</p>		

SolidBlue Rebuild Kits

Part	Description	Note
1057974	Module rebuild kit, SolidBlue S	A
1057973	Module rebuild kit, SolidBlue S	B
1057972	Module rebuild kit, SolidBlue S	C
1057971	Module rebuild kit, SolidBlue S	D
1057948	Module rebuild kit, SolidBlue S	E
<p>NOTE A: Rebuilds one module B: Rebuilds ten modules C: Rebuilds 50 modules D: Rebuilds 500 modules E: Pistons and seals only</p>		

SureBead Rebuild Kits

Part	Description	Note
1057966	Module rebuild kit, SureBead S	A
1057965	Module rebuild kit, SureBead S	B
1057964	Module rebuild kit, SureBead S	C
1057963	Module rebuild kit, SureBead S	D
1057946	Module rebuild kit, SureBead S	E
NOTE A: Rebuilds one module B: Rebuilds ten modules C: Rebuilds 50 modules D: Rebuilds 500 modules E: Pistons and seals only		

Recommended Spare Parts and Supplies

For a general spare parts and supplies list, refer to *Recommended Spare Parts and Supplies* in Section 8, *Parts*.

Part	Description	Note
-----	Replacement module(s)	A
-----	Kit, module rebuild	B
-----	Nozzles	C
901915	Kit, nozzle cleaning, small orifice	
231100	Kit, nozzle cleaning, large orifice	
1059671	Kit, multi-tool, cap/nozzle/filter (for adjusting a module)	
1108372	Lubricant, O-ring, NSF-H1, food grade (for O-rings)	
1108371	Lubricant, Never-Seez, NSF-H1, food grade (for screw threads)	
1108369	Sealant, paste, PTFE, NSF-H1, food grade (for the seat and air cap screw threads)	
NOTE A: Refer to the appropriate module parts list earlier in this section. B: Refer to <i>Module Rebuild Kits</i> earlier in this section. C: Refer to the appropriate nozzle parts list earlier in this section.		

Technical Data

Applicator Specifications

Table 9-13 provides specifications for an applicator with bead modules. Refer to *Applicator-Specific Reference Drawings* in Section 8, *Parts*, for the following information about your applicator:

- dimensions
- cordset style
- number and orientation of filters
- number of modules
- type and number of solenoid valves

Table 9-13 Bead Applicator Specifications

Item	Specification			Note
	ClassicBlue (all)	SolidBlue	SureBead A	
Operating hydraulic pressure	103 bar (1,500 psi) maximum			
Operating air pressure	2.8–4.8 bar (40–70 psi)	3.1–5.5 bar (45–80 psi)		A
Operating speed	Exceeds 3,500 cycles per minute			
Operating temperature	230 °C (450 °F) maximum			
NOTE A: Recommended range. Dry, regulated, unlubricated air required for applicator operation.				

Torque Specifications

These torque specifications are also stated within the appropriate procedures.

Item	Torque Specification
Standard nut-type nozzles (including Saturn right-angle and SureBead nozzles)	4.5 N•m (40 in.-lb)
ClassicBlue integrated right-angle module nozzles	0.46 N•m (4 in.-lb)
Module mounting screws	3.4 N•m (30 in.-lb)
Air cap screws	1.5–1.7 N•m (13–15 in.-lb)
Seat retaining screws	1.7 N•m (15 in.-lb)

