

## Precision and Saturn® Series Nozzles

*Genuine Nordson nozzles provide superior pattern placement, bead consistency and cutoff.*



# Nordson nozzles optimize system performance, simplify replacement and minimize downtime.



Single- and dual-orifice Saturn right-angle nozzles

Genuine Nordson precision nozzles deliver superior control of adhesive placement and bead width, and provide the most consistent patterns available today.

Nozzles are available in single-orifice, multi-orifice, right-angle and specialty designs.

### New Saturn nozzles feature easy-to-identify, color-coded rings to simplify nozzle replacement and trouble-shooting.

Inconsistent bead deposition, poor cutoff and improper bead placement due to mismatched or incorrect nozzle sizes are significant problems for hot melt equipment users.

Determining the optimum nozzle orifice diameter, engagement length and nozzle angle requires time. Unfortunately, these set-up parameters are often lost when replacement nozzles are installed.



Nordson Saturn Precision Nozzles use color-coded rings to visually identify orifice and engagement or orifice and angle. Color-coding allows you to select the correct replacement nozzle every time. Using the right nozzles provides consistency and helps you maintain product quality and smooth line operation while eliminating downtime caused by incorrect or inferior nozzles.

### Why are nozzle dimensions so important?

Adhesive bond strength depends on consistent bead size and bead placement. A bead that is too small or misplaced can result in bond failure, while too large a bead can lead to adhesive waste and poor cutoff.

The proper combination of nozzle orifice diameter and engagement length gives you controlled flow for consistent bead size and improved cutoff. For right angle nozzles, the tip angle is critical for proper bead placement.

### Choose Saturn right-angle nozzles for low-profile guns.

Nordson's superior right-angle precision nozzles for low-profile packaging applications also use color-coded rings to identify the nozzle's orifice engagement and the angle of the nozzle tip. Right-angle nozzles are available in single-orifice and dual-orifice 15° or 30° styles.



### Right-angle nozzles have been re-designed to improve durability:

- Entire nozzle assembly is made of brass, assuring heat transfer to the nozzle tip.
- A clamping nut securely holds the nozzle in position, even in the most demanding applications.
- Over tightening of the clamping nut will not harm the nozzle assembly.
- Internal o-ring seal has been eliminated, allowing the use of more aggressive cleaning methods and solvents.

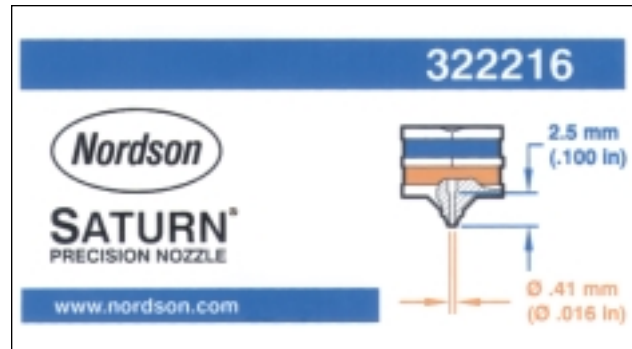
## Simplify nozzle replacement with Saturn Precision Nozzles.

Patented Saturn Precision Nozzles are available as direct replacements for the popular 237XXX series and right angle nozzles used on H-200, H-400, H-440, E-350 and E-380 modules.

The color-coded Saturn ring system simplifies nozzle replacement because the two colored rings represent your nozzle's two key dimensions.

### Single Orifice Saturn Nozzles

The two colored rings of the standard single orifice nozzles represent orifice diameter and orifice length (engagement).



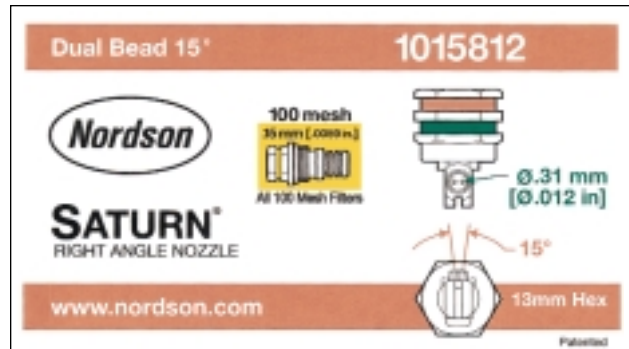
### Saturn Single-Orifice Precision Nozzles Part Number Color Chart

Orifice Diameter	Engagement Length				
	1.3 mm (0.050 in.) Purple	1.9 mm (0.075 in.) Brown	2.5 mm (0.100 in.) Blue	3.8 mm (0.150 in.) Green	7.6 mm (0.300 in.) Black
0.20 mm Purple (0.008 in.)	322008				
0.25 mm Blue (0.010 in.)	322010	322110			
0.31 mm Green (0.012 in.)	322012	322112	322212	322312	322412
0.36 mm Yellow (0.014 in.)	322014	322114	322214	322314	322414
0.41 mm Orange (0.016 in.)	322016	322116	322216	322316	322416
0.46 mm Red (0.018 in.)	322018	322118	322218	322318	322418
0.51 mm Beige (0.020 in.)	322020	322120	322220	322320	
0.51 mm Brown (0.021 in.)					322421
0.61 mm Gray (0.024 in.)	322024	322124	322224	322324	322424
0.71 mm Black (0.028 in.)					322428

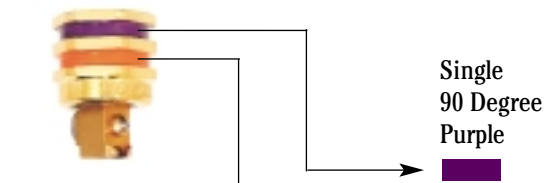
Easy-to-use, peel-off labels shipped with each nozzle affix to the gluing station for quick reference. These labels indicate the color codes, part number and actual nozzle dimensions.

### Right-Angle Saturn Nozzles

The two colored rings of the Saturn right angle nozzle represent the angle of the nozzle tip and the orifice diameter.



### Saturn Right-Angle Precision Nozzles Part Number Color Chart



**Orifice Diameter**

0.20 mm Purple  
(0.008 in.)



Single  
90 Degree  
Purple

1011008

0.25 mm Blue  
(0.010 in.)



1011010

0.31 mm Green  
(0.012 in.)



1011012

Dual  
15 Degree  
Brown



1015812

Dual  
30 Degree  
Blue



1015912

0.36 mm Yellow  
(0.014 in.)



1011014

1015814

1015914

0.41 mm Orange  
(0.016 in.)



1011016

1015816

1015916

0.46 mm Red  
(0.018 in.)



1011018

1015818

1015918

0.51 mm Beige  
(0.020 in.)



1011020

1015820

1015920

0.61 mm Gray  
(0.024 in.)



1011024

1015824

1015924

0.71 mm Black  
(0.028 in.)



1011028

1015828

1015928

0.81 mm Gold  
(0.032 in.)



1011032

1.02 mm Turquoise  
(0.040 in.)



1011040

Service Kit  
(screw and washer - 10 ea. per kit)

1027389

1027389

1027389

**NOTE:**  
 • 7-digit Nordson part number  
 • 13 mm hex size  
 • Do not mix with old 6-digit part number nozzles

# Precision manufacturing delivers consistent rewards.

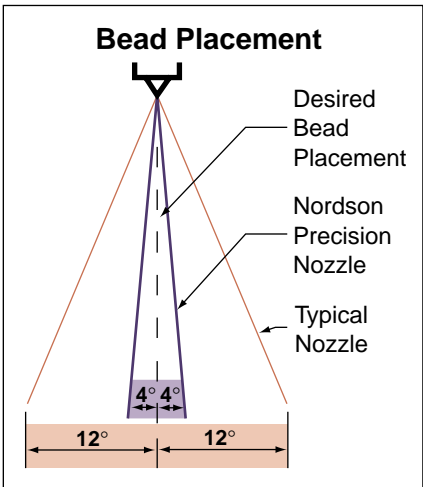
Strict quality control is the reason that all Nordson precision-manufactured nozzles, including the Saturn series, provide consistent performance.

Nordson nozzle inserts are manufactured and controlled to strict tolerances for inside diameter (orifice) and length (engagement) to maximize your control over adhesive deposition. Lack of precise control over these important factors can result in widely fluctuating adhesive deposition rates that waste adhesive or cause product rejects.

### Bead placement accuracy helps reduce product rejects.

Inconsistent bead placement is typical if nozzle specifications are not strictly controlled. Misplaced beads can cause pop-opens, poor product appearance or adhesive buildup on the line that can cause product jams.

Nordson precision nozzles are manufactured to consistently place adhesive beads at a tightly controlled distance of less than  $\pm 4^\circ$  from the centerline. In Nordson nozzle conformance testing, our accuracy is normally within 1 to  $2^\circ$ . Other nozzles on the market can exceed this differential by as much as 300%. The further the bead placement drifts from the centerline, the more likely your bond integrity will be jeopardized, resulting in more product rejects.

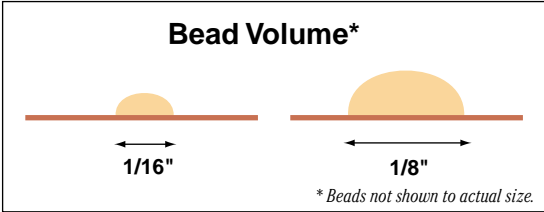


The bead placement of typical nozzles can vary  $\pm 12^\circ$  from desired centerline. Nordson precision nozzles accurately place the bead within  $\pm 4^\circ$  from centerline, improving your finished product and reducing adhesive costs.

### Flow accuracy and consistency increase application control and reduce adhesive usage.

Strict tolerance control of nozzle dimensions provides accurate, consistent adhesive flow rates. Consistent flow allows you to optimize the adhesive patterns for long-term adhesive savings without risking bond quality.

Wide variation in adhesive flow rates between nozzles of the same size is very costly. Variation from the average flow rate between Nordson nozzles of the same size is minimal; about 2 lbs/hr. Some non-genuine Nordson nozzles purported to be the same as Nordson nozzles show undesirable variations from their own average flow rates by as much as 4 lbs/hr.



Inconsistent adhesive flow can be costly. A bead doubled from  $1/16''$  to  $1/8''$  consumes four times more adhesive.

What is the cost of inconsistent adhesive nozzle flow to your production? You can experience a very small bead size that can lead to pop-opens or, as typically happens, you will increase your adhesive output to compensate for the lowest volume nozzle on the line. How much additional adhesive could you potentially use? For a typical cartoning line applying 8 one-inch beads/carton at 140 cartons/minute, you can consume an additional 90 pounds of glue during one, two-shift day if your bead size doubles from  $1/16''$  to  $1/8''$  bead. Multiply that 90 pounds by your number of production lines and by 200 or more days per year. The annual increased adhesive amount is astounding.

### Controlled nozzle manufacturing keeps lines cleaner and running longer.

Since engagement can be used to control adhesive velocity, strict quality control of this dimension permits up-firing and through-rail applications with accurate bead placement and reduced back-splash.

Poorly machined (competitive) nozzles contain imperfections that can create bead problems. Nordson's precision manufacturing processes produce a clean, well-defined tip, enabling precise extrusions that keep lines running smoothly.

## Precision nozzles keep adhesive application under control.

Nordson's family of precision nozzles includes standard nozzles for electric guns, pneumatic guns and handguns. All Nordson nozzles are manufactured and controlled to strict tolerances for inside diameter and engagement to maximize your control over adhesive deposition.

### Specifications

#### H-400, H-440, H-200, E-350, E-380 gun nozzles

Nozzle	Orifice Diameter <sup>3</sup>	Engagement <sup>3</sup>
Saturn 322 XXX <sup>1</sup>	0.008 - 0.024 in. (0.020 - 0.61 mm)	0.050 - 0.150 in. (1.27 - 3.81 mm)
Saturn 322 4XX <sup>1</sup>	0.012 - 0.028 in. (0.30 - 0.71 mm)	0.300 in. only (7.62 mm)
Saturn Rt. Angle 320 XXX	0.008 - 0.040 in. (0.20 - 1.02 mm)	0.075 in. inserts (1.9 mm)
238 OXX <sup>1</sup>	0.012 - 0.040 in. (0.030 - 1.02 mm)	0.100 in. only (2.54 mm)
238 XXX <sup>2</sup>	0.008 - 0.030 in. (0.020 - 0.76 mm)	N/A

Single and multi-orifice H-20 and E-700/M-700 gun nozzles provide high flow rate and clean cutoff. ▶



#### Handgun nozzles

Nozzle	Orifice Diameter <sup>3</sup>	Engagement <sup>3</sup>
238 Male <sup>1</sup> threaded	0.020 - 0.156 in. (0.51 - 3.96 mm)	2.55 in. (64.77 mm)



◀ Screw-in nozzle for H-20, H-200 and T-bar adapters delivers uniform patterns and consistent flow.

#### E-700, M-700, H-20 gun nozzles

Nozzle	Orifice Diameter <sup>3</sup>	Engagement <sup>3</sup>
232 XXX <sup>1</sup>	0.008 - 0.024 in. (0.20 - 0.61 mm)	0.050 - 0.150 in. (1.27 - 3.81 mm)
220 XXX <sup>2</sup>	0.008 - 0.020 in. (0.20 - 0.51 mm)	0.050 - 0.150 in. (1.27 - 3.81 mm)
236 XXX <sup>1</sup>	0.008 - 0.020 in. (0.20 - 0.51 mm)	0.050 - 0.150 in. (1.27 - 3.81 mm)
236 OXX <sup>1</sup>	0.016 - 0.028 in. (0.41 - 0.71 mm)	0.300 in. only (7.62 mm)

**ISO 9000**

QUALITY SYSTEMS

1. Available in single-orifice nozzle.
2. Multi-orifice nozzle; requires retaining nut; steel and phosphor bronze designs available.
3. Orifice diameter and engagement significantly affect the nozzle's flow rating. Generally, the flow rate will increase exponentially with increasing orifice diameter and will decrease linearly with increasing engagement. Nordson recommends testing the flow rate using your material and equipment prior to large-scale nozzle changes. Optimal pressure range for positive cutoff is 400-700 psi.

For more information, talk with your Nordson representative or contact your Nordson regional office.

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