

A E G I S

APPLICATION ENGINEERING GAS INJECTION SYSTEMS
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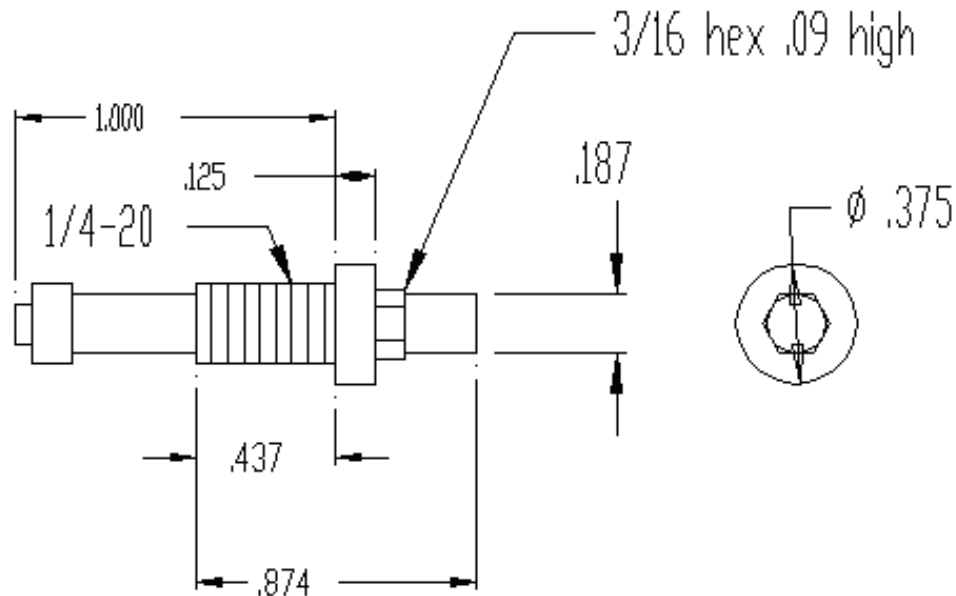
Gas Assist Injector Installation

Date: October 2009

From: AEGIS Component Support Dept.

RE: Gas injector dimensions & generic installation

AEGIS A3SC & A5SC Series - Standard Dimensions



The above dimensions are standard for **A3SC & A5SC Series** self-cleaning gas injectors. Please contact AEGIS regarding dimensions for other standard products, or for special build injectors for your specific application.

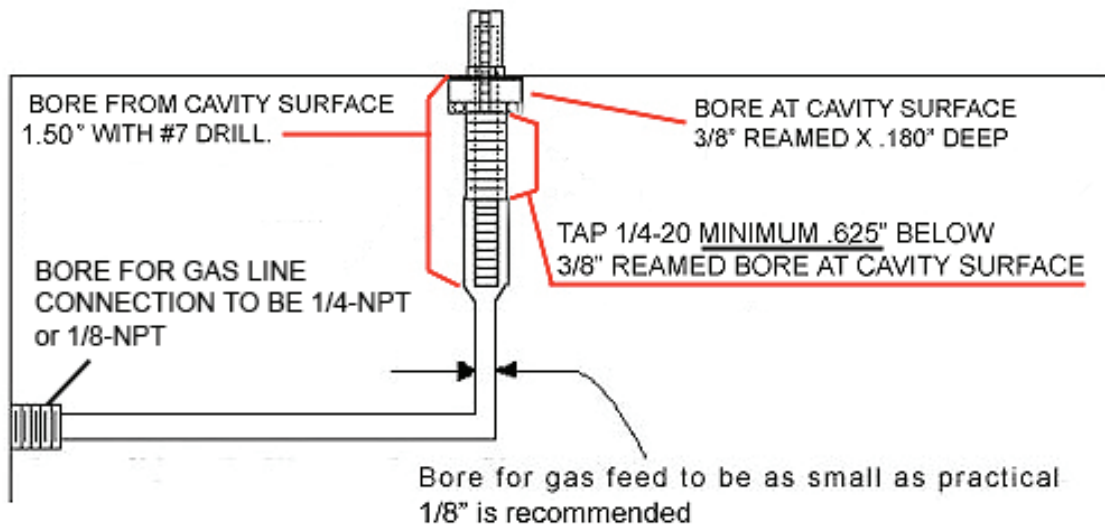
Installation: A3SC & A5SC Series injectors have 1/4-20 male threads. The .375" diameter shoulder assembles into a 3/8" reamed bore in the cavity surface. The 3/8" reamed bore is .180" deep. An O-ring is supplied with each injector that fits above the threads and below this .375" diameter injector base. The O-ring is .060" thick. Assembly of the injector into this bore is to slightly compress the O-ring and so the .375" shoulder is flush with the tool steel surface. *Do not over tighten the injector into the bore.* "Snug" is adequate, with the O-ring compressing slightly, which seals-off gas from passing through the threads and behind the molded part. We strongly recommend PTFE tape on the threads of all AEGIS injectors to provide additional assurance of sealing the assembly, and to facilitate assembly and removal from the mold. AEGIS recommends a 3/16" nut driver with the tip "faced off" for ease of injector installation.

A3SC and A5SC assembly into the mold: The shoulder of the injector should be flush with the tool steel surface. If the injector base is assembled so that the shoulder is *below* the tool steel surface, there will be a slight “boss” in the molded part. If the injector is assembled into the tool so it stands “proud” in the tool, there will be a slight “countersink” in the molded part. Neither of these conditions may be a problem, but it is best for the injector base to be flush with the tool surface.

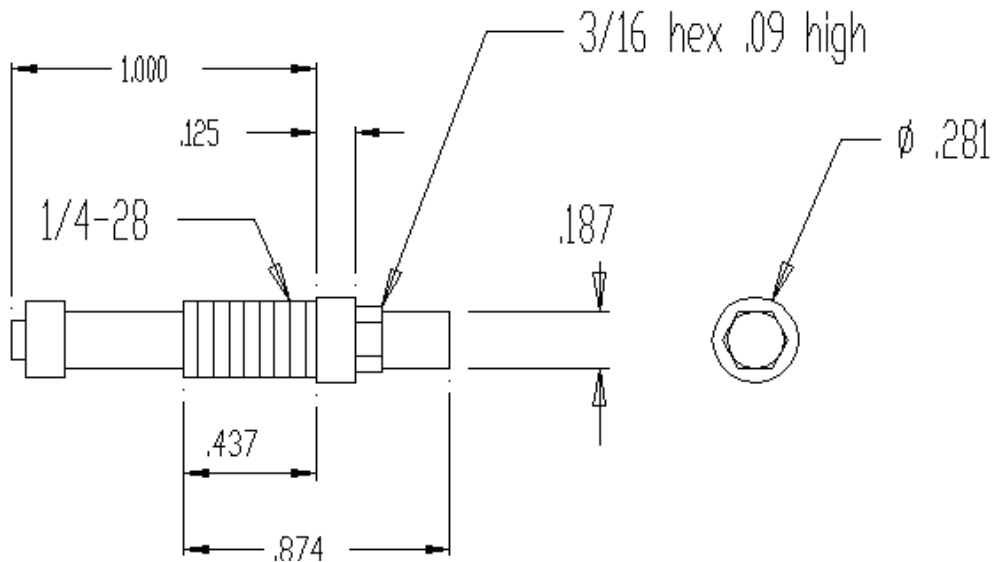
Note: The standard injector shoulder is .125” thick; the O-ring is approximately .060” thick. The bore that receives the injector base is 3/8” diameter reamed, .180” deep. These dimensions are recommended for proper fit of the injector and O-ring. See diagram below.

A3SC & A5SC Series Gas Injector Assembly

AEGIS A3SC and A5SC Series Installation in Mold

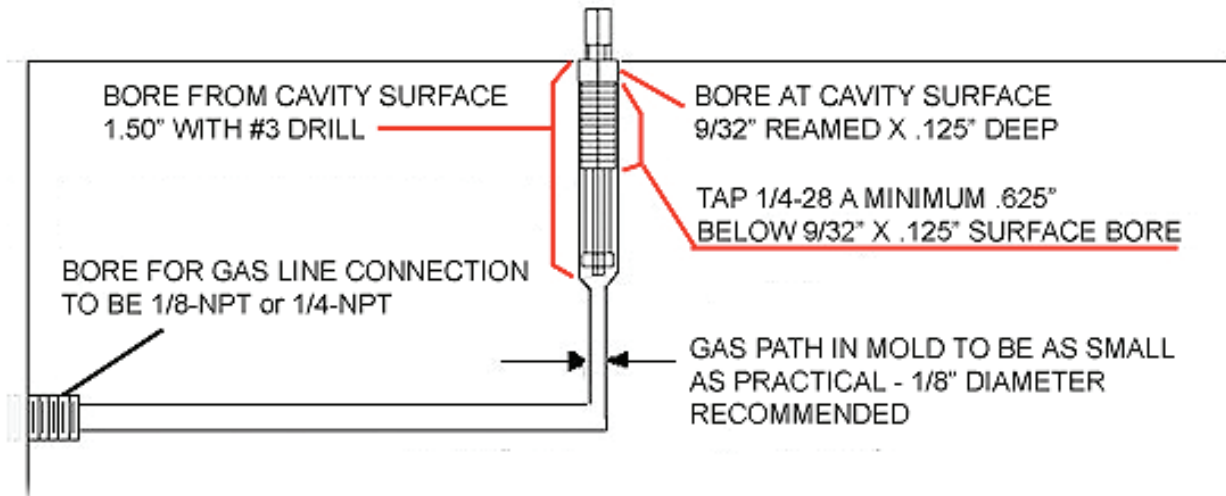


AEGIS A4SC & A6SC Series - Standard Dimensions



The above dimensions are standard for our **A4SC & A6SC Series** self-cleaning gas injectors. Please contact AEGIS regarding dimensions for other standard products, or for special build injectors for your specific application.

A4SC & A6SC Series Gas Injector Assembly



A4SC and A6SC assembly into the mold: The .281" diameter shoulder of the injector should be flush with the tool steel surface. If the injector base is assembled so that the base is *below* the tool steel surface, there will be a slight "boss" in the molded part. If the injector is assembled into the tool so it stands "proud" in the tool, there will be a slight "countersink" in the molded part. Neither of these conditions may be a problem, but it is best for the injector base to be flush with the tool surface. With this diameter shoulder (.281"), it is not possible to fit an O-ring between the shoulder and the bore in the tool. Always use PTFE tape on the threads of the A4SC and A6SC Series AEGIS injectors to provide assurance of sealing the assembly, and to facilitate assembly and removal from the mold.

Operation: All AEGIS gas injectors have an open vent at all times to allow precise cavity/process pressure profiling during the gas injection process. Pressure profiling is necessary by varying degrees depending on the application to prevent gas penetration into areas of the molded part where it is not acceptable, and, to eliminate the need for secondary methods to release the gas pressure. It also assists in eliminating hesitation lines on the molded part surface by "ramping up" at the *start* of the gas injection sequence with little or no delay time from the gas injection start signal. AEGIS injectors do NOT require hydraulic, pneumatic, or electronic actuation; they remain static in the mold - the A3SC, A4SC, A5SC and A6SC Series opens to a *larger* vent upon gas *flow*, enhancing flow capacity, and to achieve their self-cleaning function.

During processing, it is best to maintain gas pressure throughout the cooling cycle, as this keeps the exterior molded part surface against the tool cavity for maximum cooling efficiency. Venting (gradual pressure reduction) should begin 5 to 7 seconds before the end of the cooling cycle, and be reduced to "0" only a couple seconds before the mold is set to open. Gas assist controls with pressure ramping capabilities are strongly recommended for optimum results.

AEGIS Consultants Tech Memo: Gas injector dimensions and installation

A note about tool steel (O1) vs. 316 stainless steel gas injectors:

We recommend stainless steel gas injectors *only* when processing corrosive resins such as PVC or flame retardant resins. Hardened steel injectors perform better in all other resins due to their superior resistance to wear, particularly in reinforced resins.

E-mail AEGIS at engineering@gaspins or give us a call at 757-271-9927 for more information. We would be pleased to assist with your specific application to achieve the most problem free process with the widest possible processing window.

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