

# NASA TECH BRIEF

## NASA Pasadena Office



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### Injector Has No Backsplash

#### The problem:

A typical liquid rocket-propellant injection element consists of two streams of liquid angled toward each other (see Figure 1) and impinging a short distance downstream from the face of the injector. In this configuration, a small portion of the liquid has a velocity component directed backward toward the injector face. This backslash often accumulates on the injector face to form large droplets, which may cause combustion instability, an unnecessary waste of fuel, and the formation of solid deposits on the injector face.

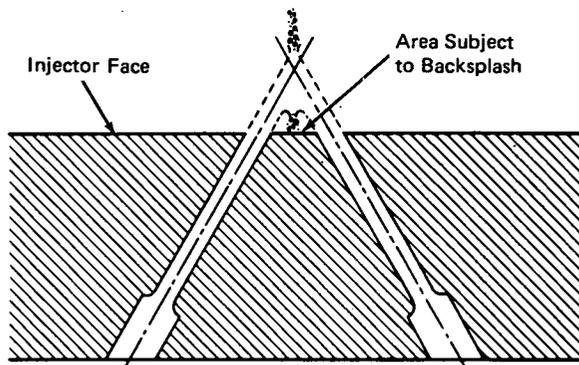


Figure 1. Previous Injector Design

#### The solution:

The passages of an injector have been modified to eliminate backslashing.

#### How it's done:

Figure 2 illustrates the new design; the significant feature is that there is no area subject to backslash.

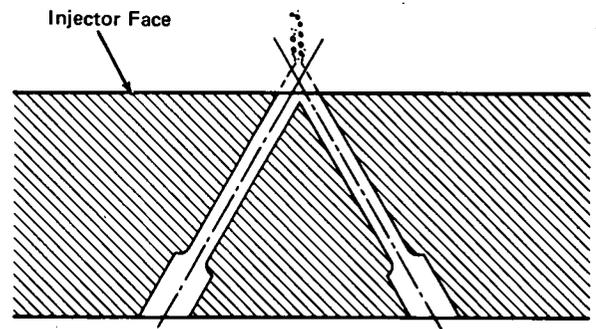


Figure 2. New Injector Design

All of the fluid is expelled in the downstream spray fan. The result is that the face of the injector is completely free of the liquid obstructions.

#### Note:

Requests for further information may be directed to:  
 Technology Utilization Officer  
 NASA Pasadena Office  
 4800 Oak Grove Drive  
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 Reference: TSP73-10461

#### Patent status:

NASA has decided not to apply for a patent.

Source: Walter B. Powell of  
 Caltech/JPL  
 under contract to  
 NASA Pasadena Office  
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