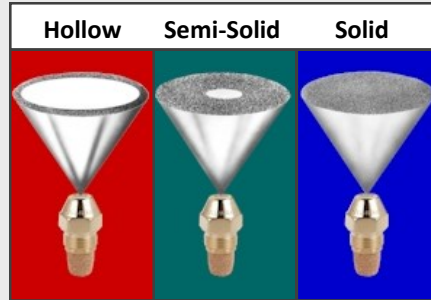


## Oil Burner Nozzle Guide

Oil burner nozzles come in several spray angles and spray rates that determine the efficiency of the oil burner. Oil burners are designed to work with specific groups of nozzles and the burners installation manual should always be consulted to determine what spray angle and GPH is needed for proper firing of your oil burner. Below is information on common nozzle types and terms for selection.

### Hollow Cone Nozzle (Type A)

Hollow cone nozzles can be used in burners with a hollow air pattern and also for use in small burners (those firing 1.0 GPH and under), regardless of air pattern. Hollow cone nozzles generally have more stable spray angles and patterns under adverse conditions than solid cone nozzles of the same flow rate. This is an important advantage in fractional gallon nozzles where high viscosity fuel may cause a reduction in spray angle and an increase in droplet size. Type A nozzles produce a spray which delivers fine droplets outside the periphery of the main spray cone. These fine droplets greatly enhance ignition and create a stable flame for use with flame retention burners.



### Solid Cone Nozzle (Type B)

Type B nozzles produce a spray which distributes droplets fairly uniformly throughout the complete pattern. This spray pattern becomes progressively more hollow at high flow rates, particularly above 8.0 GPH. These nozzles may be used in larger burners (those firing above 2.0 or 3.0 GPH) to provide smoother ignition. They can also

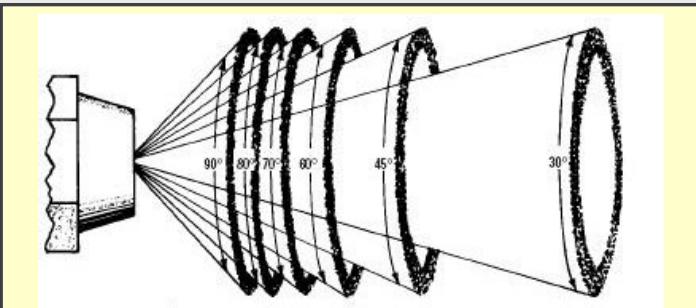
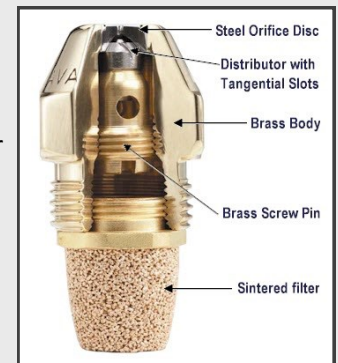
be used where the air pattern of the burner is heavy in the center or where long fires are required.

### Semi-Solid (Type W)

Type W nozzles are neither truly hollow nor solid. These nozzles frequently can be used in place of either solid or hollow cone nozzles between 0.40 and 8.0 GPH, regardless of the burner's air pattern. The lower flow rates tend to be more hollow. Higher flow rates tend to be more solid.

### Flow Rate

Atomizing nozzles are available in a wide range of flow rates, all but eliminating the need for specially calibrated nozzles. Between 1.0 GPH and 2.0 GPH, for example, seven different flow rates are available. Generally, with hot water and warm air heat, the smallest firing rate that will adequately heat the house on the coldest day is the proper size to use and the most economical. Short on-cycles result in low efficiency. Another guideline is to select the flow rate that provides a reasonable stack temperature regardless of the connected load. (According to the New England Fuel Institute, aim for a stack temperature of 400°F or lower on matched packaged units or 500°F or lower on conversion burners.) If the boiler or furnace is undersized for the load, it may be necessary to fire for the load and ignore the efficiency.



### What does the angle represent when selecting a Nozzle

Spray angles are available from 30° through 90° in most nozzle sizes to meet the requirements of a wide variety of burner air patterns and combustion chambers. Usually it is desirable to fit the spray angle to the air pattern of the burner which is listed in the OIPM of the burner unit. In today's flame retention burner, it is possible to fire more than one spray angle with good results. Generally, round or square combustion chambers should be fired with 70° to 90° nozzles. Long, narrow chambers usually require 30° to 60° spray angles.

Information sources include W.W. Grainger, Goodrich Corporation,

If you are still having difficulty choosing a Oil Burner Nozzle,  
please contact us at [askzoro@zoro.com](mailto:askzoro@zoro.com) or 855-289-9676



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