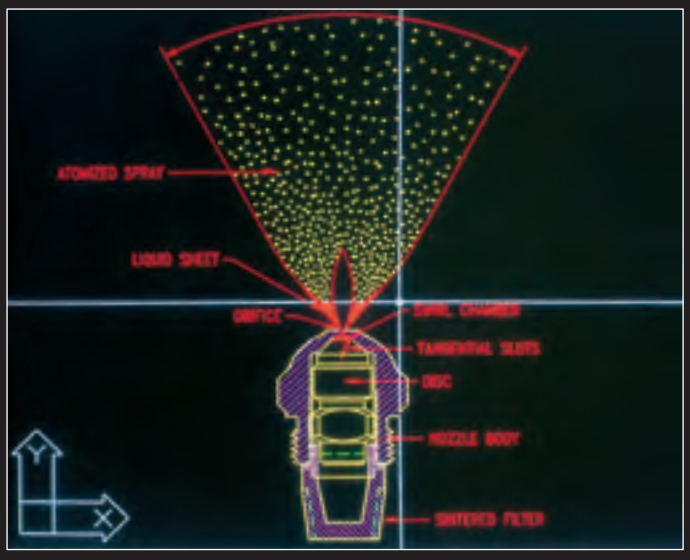
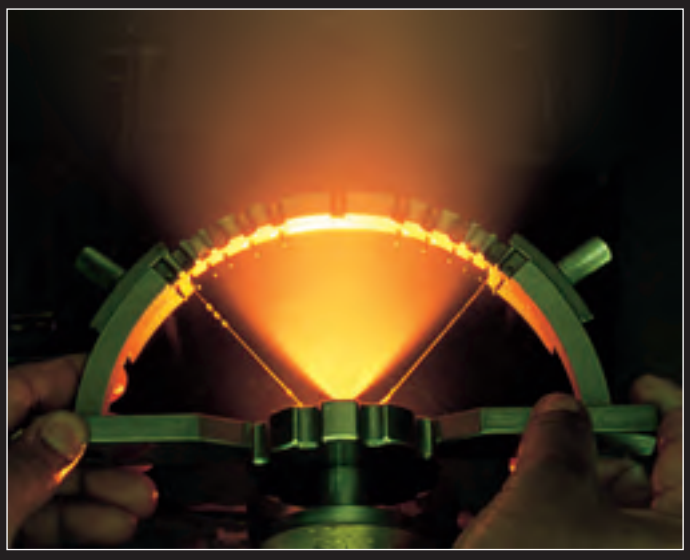
# HAGO
# PRECISION OIL BURNER NOZZLES

100% TESTED

100% GUARANTEED



100% STAINLESS STEEL

總代理

磐亞噴霧系統(常州)有限公司

**PRECISION MANUFACTURING** is a way of life at Hago. From our beginnings in 1937, craftsmanship and innovation have made quality and reliability the cornerstone of our reputation.

We are one of the few nozzle manufacturers who fabricates all of its components in-house - even designing and building most of the machinery that produces our nozzles. This gives us total control over the quality of our products, and is a key reason why our nozzles remain the standard in the industry. Every Hago nozzle is individually tested and guaranteed against defects in material and workmanship.

As one of the world's largest nozzle manufacturers, Hago makes them for virtually every type of oil burner, including specialty nozzles for aerospace and industrial applications. And we never stop searching for better nozzle designs. Our exclusive Ribbed Filter is a recent innovation that provides the largest filtration area in the industry. Precision, craftsmanship and innovation - a way of life at Hago.

***(Left) A sampling of the exotic machine components, pneumatic controls and stepping motors used in the construction of Hago's highly automated production machinery.***

***(Below) Precision grinding of the tiny orifice cutting tools used on Hago's production lines is also done in-house to maintain total quality control, from start to finish.***

## HAGO SIMPLEX OIL BURNER NOZZLES

Developed and refined over many decades, Hago nozzles represent the state-of-the-art in the industry. They are fabricated entirely (except for filtration materials) of a special high chrome, heat and corrosion resisting stainless steel. Our quality control program is second to none — every Hago nozzle is oil-tested for uniform flow rate, spray angle, spray concentricity, spray balance and spray quality. Our Simplex nozzles are available in flow rates from .40 to 120.0 GPH in standard sizes and angles. Special sizes, angles and materials are also available on request.

CRAFTED WITH PRIDE IN THE USA

## BY-PASSING OIL BURNER NOZZLES

Also known as “variable flow” nozzles, these are nozzles capable of producing turndown ratios of 4:1. Hago's by-passing nozzles are unique in that they maintain a very steady spray angle across the entire turndown range. Other brands often vary as much as 15 degrees from open to closed by-pass line. Additionally, our nozzles produce a straight line “curve” of pressure vs flow, thereby allowing an enhanced control of flow modulation.

## HUMIDIFYING NOZZLES

Hago specializes in low flow, fine atomizing nozzles, so our expertise is valuable in producing humidifying nozzles for home, agriculture and industry. Atomizing nozzles are available in various grades of stainless steel as well as brass. They are commonly produced in the same basic configuration as oil burner nozzles, but are rated on water. Our #4023 nozzle has a built in check-valve to shut off the orifice during the off cycle, eliminating “after drip”. Our “Mini” nozzle, available in brass or stainless steel is widely used in green houses and for poultry and hog fogging. When it comes to humidifying nozzles, we have the solution.

## INDUSTRIAL OIL BURNER NOZZLES

Hago offers a complete line of Air Operated or Direct Pressure nozzles for firing rates up to 600 GPH. These nozzles embody the expertise gained from over five decades of designing and manufacturing oil burner nozzles.

## ECOVALVE™ NOZZLE ANTI-DRIP VALVE

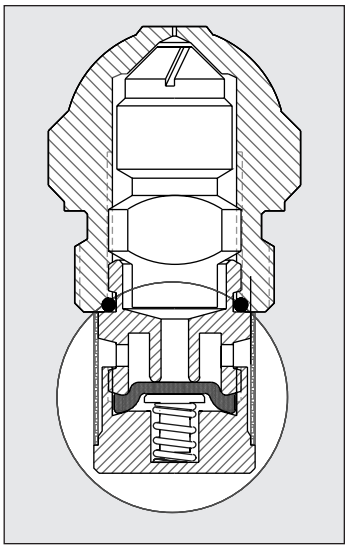
This simply designed device is the answer to the long sought after solution to the problems associated with nozzle after-drip. This combination strainer/check valve screws directly on to the nozzle in place of the normal nozzle filter or strainer. Without requiring any adjustments of the pump and without changing the nozzle’s spray characteristics in any way, the EcoValve produces a razor sharp cutoff of the spray at burner shutdown. No more after-drip caused by pressure dissipation or air bubbles and after-drip caused by heat expansion of the oil is tremendously reduced, as well. Since the shutoff is right at the nozzle, instead of in the pump or 6” back at the solenoid, the closure is instantaneous and greatly more effective. The EcoValve features a wide differential between opening and closing points and is equally effective over a wide range of flow rates and operating pressures.

**Models/Pressure Ranges**

**Model LC -** For operation at Low pressures. Opens @ 90 psi (6.2 Bar), closes @ 55 psi (3.8 Bar).
**Model MC -** For operation at Medium pressures. Opens @ 115 psi (7.9 Bar), closes @ 70 psi (4.8 Bar).
**Model HC -** For operation at High pressures. Opens @ 135 psi (9.3 Bar), closes @ 80 psi (5.5 Bar).

**Features**

Every valve is *individually* tested and calibrated for opening and closing points. Large internal passages resist clogging. At 100 psi: Zero pressure drop to 5.0 GPH. One psi pressure drop to 8.0 GPH. Five psi pressure drop to 15 GPH. Uncomplicated reliable design.



## SPECIALTY NOZZLE DESIGN & MANUFACTURING

Hago frequently accepts the challenge of working with firms to develop solutions for specialized nozzle applications. Our team of experienced nozzle experts, working with the latest in computer-aided design and manufacturing technologies, including CNC precision machine tools and our unique spray analysis lab, has given us the ability to succeed where others have failed. For example, when no other nozzle company proved capable, NASA and Hago engineers developed and are now producing a highly complex specialty nozzle employed on all U.S. Space Shuttles.

*For further information about any of the above services, please call our Customer Service at* **0519-89661671~2**

| SPRAY PATTERN | DESCRIPTION | SPRAY ANGLE | FLOW RATE RANGE* |
|---|---|---|---|
|  | **"H" - HOLLOW CONE - RED CAPS**<br>This series distributes the atomized oil particles evenly toward the outside of the spray cone. These nozzles are particularly well suited for low firing rates and burners with a hollow air pattern. Normally used in wider spray angles. | 30°<br>45°<br>60°<br>70°<br>80°<br>90° | .65 - 9.00 GPH<br>.40 - 9.00 GPH<br>.40 - 9.00 GPH<br>.40 - 9.00 GPH<br>.40 - 9.00 GPH<br>.50 - 9.00 GPH |
|  | **"EH" - EXTRA HOLLOW CONE - RED CAPS**<br>The type "EH" is an extension of our hollow cone series. Available from 4.00 GPH through 30.00 GPH. It is specified in many commercial applications. | 45°<br>70° | 4.00 - 30.00 GPH<br>4.00 - 30.00 GPH |
|  | **"S-S" - SEMI SOLID CONE - BLUE CAPS**<br>Most suitable for general applications where exact air pattern or spray pattern requirements can't be established. Droplet distribution is relatively even across spray cone in smaller flow rates, but becomes more hollow as flow rates increase. | 30°<br>45°<br>60°<br>70°<br>80°<br>90° | .65 - 20.00 GPH<br>.40 - 35.00 GPH<br>.40 - 35.00 GPH<br>.40 - 35.00 GPH<br>.40 - 35.00 GPH<br>.50 - 20.00 GPH |
|  | **"B" - SOLID CONE - BLACK CAPS**<br>Designed to give optimum combustion efficiency on high static pressure flame retention burners which specify a "B" pattern. As compared to our "ES" pattern, somewhat more fuel is concentrated towards the center of the spray. | 30°<br>45°<br>60°<br>70°<br>80°<br>90° | .40 - 2.00 GPH<br>.40 - 2.00 GPH<br>.40 - 2.00 GPH<br>.40 - 2.00 GPH<br>.40 - 2.00 GPH<br>.40 - 2.00 GPH |
|  | **"ES" - SOLID CONE - GREEN CAPS**<br>Our original solid cone series for low flow rates. Available for applications specifying a solid "ES" pattern. | 30°<br>45°<br>60°<br>70°<br>80° | .40 - 1.75 GPH<br>.40 - 1.75 GPH<br>.40 - 1.75 GPH<br>.40 - 1.75 GPH<br>.40 - 1.75 GPH |
|  | **"P" - SOLID CONE - GREEN CAPS**<br>The "P" type is an extension of our "B" and "ES" series for firing rates of 2.00 GPH and above. It produces a solid cone pattern in the low rates and becomes more hollow as the flow rate increases. Specially designed with a pocketed disc to reduce combustion noises and pulsation. | 30°<br>45°<br>60°<br>70°<br>80° | 2.00 - 15.00 GPH<br>2.00 - 35.00 GPH<br>2.00 - 35.00 GPH<br>2.00 - 35.00 GPH<br>2.00 - 35.00 GPH |
|  | **"LC" - LARGE CAPACITY - BLUE CAPS**<br>These nozzles are uniquely designed for outstanding combustion in large commercial burners. They have large internal passageways to accommodate high flow rates. They produce a semi-solid "universal" pattern. | 45°<br>60°<br>80° | 35.00 - 120.00 GPH<br>35.00 - 120.00 GPH<br>35.00 - 120.00 GPH |
|  | **"DFN" - DUAL FILTRATION - YELLOW CAPS**<br>Available in hollow (DFN-H) and solid cone (DFN-B) patterns, the DFN nozzles give enhanced protection against clogging in the very low flow rates. | 45°<br>60°<br>70°<br>80° | .30 - 1.00 GPH<br>.30 - 1.00 GPH<br>.30 - 1.00 GPH<br>.30 - 1.00 GPH |

* *FOR AVAILABLE STANDARD FLOW RATE INCREMENTS, SEE TABLE OPPOSITE ON P. 5*

| Standard Flow Rate Increments (Gallons per hour @ 100 psi) | | | |
|---|---|---|---|
| 0.40 | 2.25 | 9.00 | 30.00 |
| 0.50 | 2.50 | 9.50 | 35.00 |
| 0.55 | 2.75 | 10.00 | 40.00 |
| 0.60 | 3.00 | 11.00 | 45.00 |
| 0.65 | 3.25 | 12.00 | 50.00 |
| 0.70 | 3.50 | 13.00 | 55.00 |
| 0.75 | 3.75 | 14.00 | 60.00 |
| 0.85 | 4.00 | 15.00 | 65.00 |
| 0.90 | 4.25 | 16.00 | 70.00 |
| 1.00 | 4.50 | 17.00 | 75.00 |
| 1.10 | 5.00 | 18.00 | 80.00 |
| 1.20 | 5.50 | 19.00 | 90.00 |
| 1.25 | 6.00 | 20.00 | 100.00 |
| 1.35 | 6.50 | 22.00 | 110.00 |
| 1.50 | 7.00 | 24.00 | 120.00 |
| 1.65 | 7.50 | 25.00 | |
| 1.75 | 8.00 | 26.00 | |
| 2.00 | 8.50 | 28.00 | |

**NOZZLE SPECIFICATIONS**

Nozzles are provided with Hago's unique ribbed sintered bronze filters on sizes up through 1.35 GPH. Larger sizes are equipped with 120 mesh strainers. Large Capacity (LC) nozzles are supplied as “tips only”. All nozzle components are fabricated entirely of a special high chrome, heat resistant grade of stainless steel. Sintered filters are made of bronze and are nominally rated for filtration to 40 microns. Mesh screens are of Type 304 stainless steel on brass support pieces.

**TEST SPECIFICATIONS**

**All Hago oil burner nozzles are 100% tested on oil** for accuracy of flow rate, spray angle, concentricity and spray quality. This individual testing is your assurance of top quality and consistency. **Test Conditions:** 35 SSU viscosity oil (2.7 Cstk) @ 100° F.; specific gravity = .825 @ 60°F., test pressure = 100 psi.

**Flow Tolerances:**
.30 - .45 GPH: = +10%/-0%
.50 - .85 GPH: = +5%/-3%
1.00 - 1.50 GPH = +5%/-2%
1.65 GPH & up = +2.5%/-2.5%

**Spray Angle Tolerances:**
30° & 45° = +10°/-0°
60°, 70°, 80° & 90° = +5°/-0 °

**Rate of Inspection: 100%**

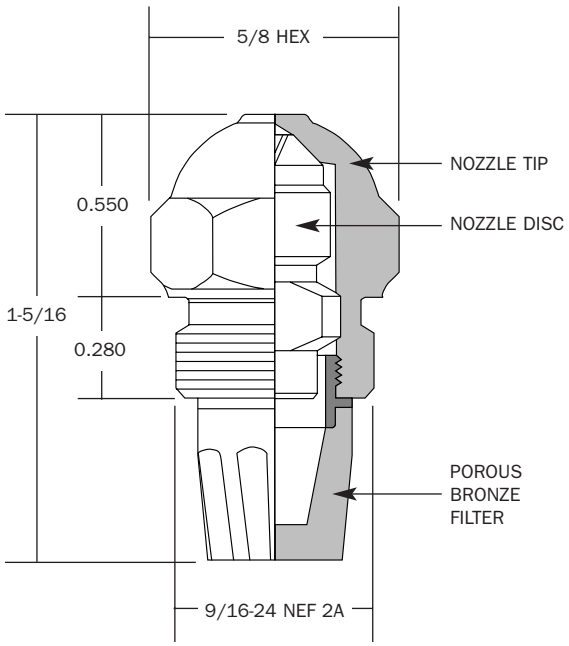
**ORDERING INFORMATION**

For nozzles: Specify quantity, flow rate, spray angle and series.
*Example: (12) .85–80°–B.*

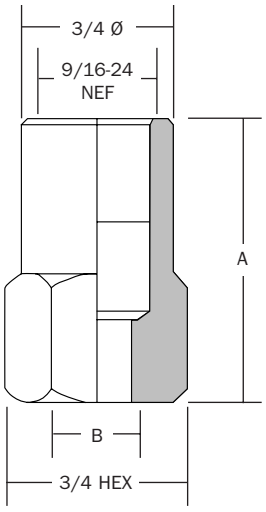
For adapters: Specify quantity, pipe connection, model and material.
*Example: (15) 1/4"standard brass adapters.*

## Standard Dimensions

**SIMPLEX OIL BURNER NOZZLES**

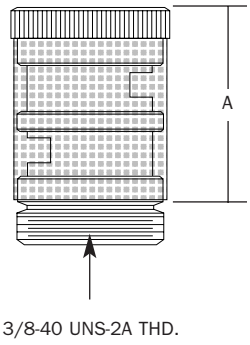



**ADAPTERS**




| | A | B |
|---|---|---|
| SHORT | 1 | 1/8-27 NPT or 1/4-18 NPT |
| STANDARD | 1-3/8 | |
| LONG | 2 | |

**STRAINERS**




| | A |
|---|---|
| SHORT | 3/8 |
| STANDARD | 17/32 |
| LONG | 1-3/32 |

## Oil Burner Nozzle Flow Rates at Various Operating Pressures

| FLOW RATING @ 100 psi GPH | FLOW RATES IN US GPH | | | | | | |
|---|---|---|---|---|---|---|---|
| | 125 psi | 140 psi | 150 psi | 175 psi | 200 psi | 250 psi | 300 psi |
| 0.30 | 0.34 | 0.35 | 0.37 | 0.40 | 0.42 | 0.47 | 0.52 |
| 0.35 | 0.39 | 0.41 | 0.43 | 0.46 | 0.49 | 0.55 | 0.61 |
| 0.40 | 0.45 | 0.47 | 0.49 | 0.53 | 0.57 | 0.63 | 0.69 |
| 0.45 | 0.50 | 0.53 | 0.55 | 0.60 | 0.64 | 0.71 | 0.78 |
| 0.50 | 0.56 | 0.59 | 0.61 | 0.66 | 0.71 | 0.79 | 0.87 |
| 0.55 | 0.61 | 0.65 | 0.67 | 0.73 | 0.78 | 0.87 | 0.95 |
| 0.60 | 0.67 | 0.71 | 0.73 | 0.79 | 0.85 | 0.95 | 1.04 |
| 0.65 | 0.73 | 0.77 | 0.80 | 0.86 | 0.92 | 1.03 | 1.13 |
| 0.70 | 0.78 | 0.83 | 0.86 | 0.93 | 0.99 | 1.11 | 1.21 |
| 0.75 | 0.84 | 0.89 | 0.92 | 0.99 | 1.06 | 1.19 | 1.30 |
| 0.85 | 0.95 | 1.01 | 1.04 | 1.12 | 1.20 | 1.34 | 1.47 |
| 0.90 | 1.01 | 1.06 | 1.10 | 1.19 | 1.27 | 1.42 | 1.56 |
| 1.00 | 1.12 | 1.18 | 1.22 | 1.32 | 1.41 | 1.58 | 1.73 |
| 1.10 | 1.23 | 1.30 | 1.35 | 1.46 | 1.56 | 1.74 | 1.91 |
| 1.20 | 1.34 | 1.42 | 1.47 | 1.59 | 1.70 | 1.90 | 2.08 |
| 1.25 | 1.40 | 1.48 | 1.53 | 1.65 | 1.77 | 1.98 | 2.17 |
| 1.35 | 1.51 | 1.60 | 1.65 | 1.79 | 1.91 | 2.13 | 2.34 |
| 1.50 | 1.68 | 1.77 | 1.84 | 1.98 | 2.12 | 2.37 | 2.60 |
| 1.65 | 1.84 | 1.95 | 2.02 | 2.18 | 2.33 | 2.61 | 2.86 |
| 1.75 | 1.96 | 2.07 | 2.14 | 2.32 | 2.47 | 2.77 | 3.03 |
| 2.00 | 2.24 | 2.37 | 2.45 | 2.65 | 2.83 | 3.16 | 3.46 |
| 2.25 | 2.52 | 2.66 | 2.76 | 2.98 | 3.18 | 3.56 | 3.90 |
| 2.50 | 2.80 | 2.96 | 3.06 | 3.31 | 3.54 | 3.95 | 4.33 |
| 2.75 | 3.07 | 3.25 | 3.37 | 3.64 | 3.89 | 4.35 | 4.76 |
| 3.00 | 3.35 | 3.55 | 3.67 | 3.97 | 4.24 | 4.74 | 5.20 |
| 3.25 | 3.63 | 3.85 | 3.98 | 4.30 | 4.60 | 5.14 | 5.63 |
| 3.50 | 3.91 | 4.14 | 4.29 | 4.63 | 4.95 | 5.53 | 6.06 |
| 3.75 | 4.19 | 4.44 | 4.59 | 4.96 | 5.30 | 5.93 | 6.50 |
| 4.00 | 4.47 | 4.73 | 4.90 | 5.29 | 5.66 | 6.32 | 6.93 |
| 4.25 | 4.75 | 5.03 | 5.21 | 5.62 | 6.01 | 6.72 | 7.36 |
| 4.50 | 5.03 | 5.32 | 5.51 | 5.95 | 6.36 | 7.11 | 7.79 |
| 5.00 | 5.59 | 5.92 | 6.12 | 6.61 | 7.07 | 7.91 | 8.66 |
| 5.50 | 6.15 | 6.51 | 6.74 | 7.28 | 7.78 | 8.70 | 9.53 |
| 6.00 | 6.71 | 7.10 | 7.35 | 7.94 | 8.49 | 9.49 | 10.39 |
| 6.50 | 7.27 | 7.69 | 7.96 | 8.60 | 9.19 | 10.28 | 11.26 |
| 7.00 | 7.83 | 8.28 | 8.57 | 9.26 | 9.90 | 11.07 | 12.12 |
| 7.50 | 8.39 | 8.87 | 9.19 | 9.92 | 10.61 | 11.86 | 12.99 |
| 8.00 | 8.94 | 9.47 | 9.80 | 10.58 | 11.31 | 12.65 | 13.86 |
| 8.50 | 9.50 | 10.06 | 10.41 | 11.24 | 12.02 | 13.44 | 14.72 |
| 9.00 | 10.06 | 10.65 | 11.02 | 11.91 | 12.73 | 14.23 | 15.59 |
| 9.50 | 10.62 | 11.24 | 11.64 | 12.57 | 13.43 | 15.02 | 16.45 |
| 10.00 | 11.18 | 11.83 | 12.25 | 13.23 | 14.14 | 15.81 | 17.32 |
| 11.00 | 12.30 | 13.02 | 13.47 | 14.55 | 15.56 | 17.39 | 19.05 |
| 12.00 | 13.42 | 14.20 | 14.70 | 15.87 | 16.97 | 18.97 | 20.78 |
| 13.00 | 14.53 | 15.38 | 15.92 | 17.20 | 18.38 | 20.55 | 22.52 |
| 14.00 | 15.65 | 16.56 | 17.15 | 18.52 | 19.80 | 22.14 | 24.25 |
| 15.00 | 16.77 | 17.75 | 18.37 | 19.84 | 21.21 | 23.72 | 25.98 |
| 20.00 | 22.36 | 23.66 | 24.49 | 26.46 | 28.28 | 31.62 | 34.64 |
| 25.00 | 27.95 | 29.58 | 30.62 | 33.07 | 35.36 | 39.53 | 43.30 |
| 30.00 | 33.54 | 35.50 | 36.74 | 39.69 | 42.43 | 47.43 | 51.96 |
| 35.00 | 39.13 | 41.41 | 42.87 | 46.30 | 49.50 | 55.34 | 60.62 |

## Brand Interchange

| HAGO | DELAVAN | MONARCH | DANFOSS | STEINEN |
|---|---|---|---|---|
| **H** Hollow .40 - 9.0 Red Caps | **A** .40 - 8.50 | **NS** .50 - 2.0 / **PL** 2.25 - 8.5 | **H** .40 - 3.00 | **H** .40 - 2.25 / **PH** 2.50 - 8.5 |
| **S-S** Semi-solid .40 - 35.0 Blue Caps | **W** .40 - 8.0 | **AR** .50 - 2.00 | **B** .60 - 35.00 | **Q** .50 - 3.00 / **SS** 4.50 - 28.0 |
| **B** Solid .40 - 2.0 Black Caps | **B** .40 - 2.00 | **R** .40 - 2.00 | **S** .60 - 2.00 | **S** .40 - 2.00 |
| **P** Solid 2.0 - 35.0 Green Caps | **B** 2.00 - 35.0 | **PLP** 2.25 - 35.0 | **S** .40 - 3.00 | **S** 2.00 - 4.00 |
| **LC** Large Capacity 35.0 - 100 Blue Caps | **A** 35.0 - 50.0 / **B** 35.0 - 50.0 | **PLP** 35.0 - 100.0 | — | — |

*NOTICE: The Interchanges shown above are "Rule of Thumb" recommendations only. Combustion tests must be made on every installation to assure proper performance. Burner manufacturer's recommendations should always be followed.*

## Pressure vs Flow

For general purposes, change in flow rate due to change in pressure can be estimated as being approximately equal to the square root of the pressure ratio. Therefore:

$$\text{Flow @ the desired pressure} = \text{rated flow @ 100 psi} \times \sqrt{\frac{\text{DESIRED PRESSURE}}{100}}$$

or... $F_2 = F_R \times \sqrt{P_2/P_R}$

**Example 1:** To determine the flow rate of a 1.25 gph nozzle @ 145 psi, multiply 1.25 times the square root of 145/100...

$$\text{or } 1.25 \times \sqrt{\frac{145}{100}}$$

Therefore the flow rate would be about 1.50 gph.

**TIP:** Another way to describe the relationship of pressure vs flow is to remember that in order to double the nozzle flow, you would have to quadruple the line pressure.

But what if you want to make the reverse calculation? Suppose you have a 1.25 gph nozzle but you want to adjust the pressure to obtain a flow rate of 1.50 gph and you are wondering what pressure is required...

**Example 2:** Required pressure = (Desired flow rate/Rated nozzle flow rate)$^2$ or... $P_2 = (F_2/F_R)^2$. Divide the desired flow (1.50 gph) by the nominal flow (1.25 gph). The answer is 1.21. Now multiply this number by itself, i.e. "square it" and the answer is 1.46 or approximately 145 psi.

**Simpler yet** — contact us for one of our handy *Pressure vs Flow Pocket Calculators* at no charge.

Millions of Installations with this special nozzle construction have proven Hago's Dual Filtration technology. The Type DFN, Double Filter Nozzles, are uniquely designed to help overcome the problems of clogging normally associated with very low flow rate nozzles. Since the internal openings of low flow rate nozzles can be nearly as small as a human hair, conventional nozzles are extremely vulnerable to clogging from any impurities in the oil. The Double Filter feature of the DFN nozzles gives a greatly added security against nozzle failures due to clogging, unmatched by any standard nozzle.

Type DFN nozzles are equipped with Hago's external "Ribbed" sintered bronze filter that provides up to 30% more filtration area than competitor's filters. Additionally, there is a secondary internal sintered bronze filter that catches any impurities that may have penetrated the outer filter. This inner filter provides an additional 35% more surface filtration area to help prevent nozzle clogging. Both the external and internal filters are made of grade 68 HP bronze powder and are nominally rated at 30 to 40 microns (.0012" - .0016") filtration.

To give you the most options, the Hago DFN nozzle is offered in two spray patterns, the DFN-B solid cone and the DFN-H hollow cone. With either version, your installation reliability against premature burner shutdown on low flow rate jobs due to nozzle clogging will be greatly improved, compared to conventional nozzles.

## ACCESSORIES


### Inspection Mirrors

Hago's selection of flame inspection mirrors feature plated telescoping handles and optical quality stainless steel mirrors. Handles and replacement mirrors are available independently. Shown above:
**(1) Mini Mirror:** 1-1/4" x 2-1/8".
**(2) Standard Mirror:** 2-1/2" x 4-1/4"
**(3) Round Mirror:** 4-1/4" diameter
All are 10-1/2" collapsed and 28-1/2" fully extended.
A cloth bag is provided to protect the mirror finish.


### Nozzle Adapters

Single nozzle adapters are offered in three sizes. Also available are both a double and dual adapter (single and two stage) which allow two nozzles to spray simultaneously or independently of each other. Standard construction is brass, but adapters made of Type 303 or Type 316 stainless steel are available on special order. Available in either 1/8" or 1/4" NPT female connections. (See p. 5 for specifications.)

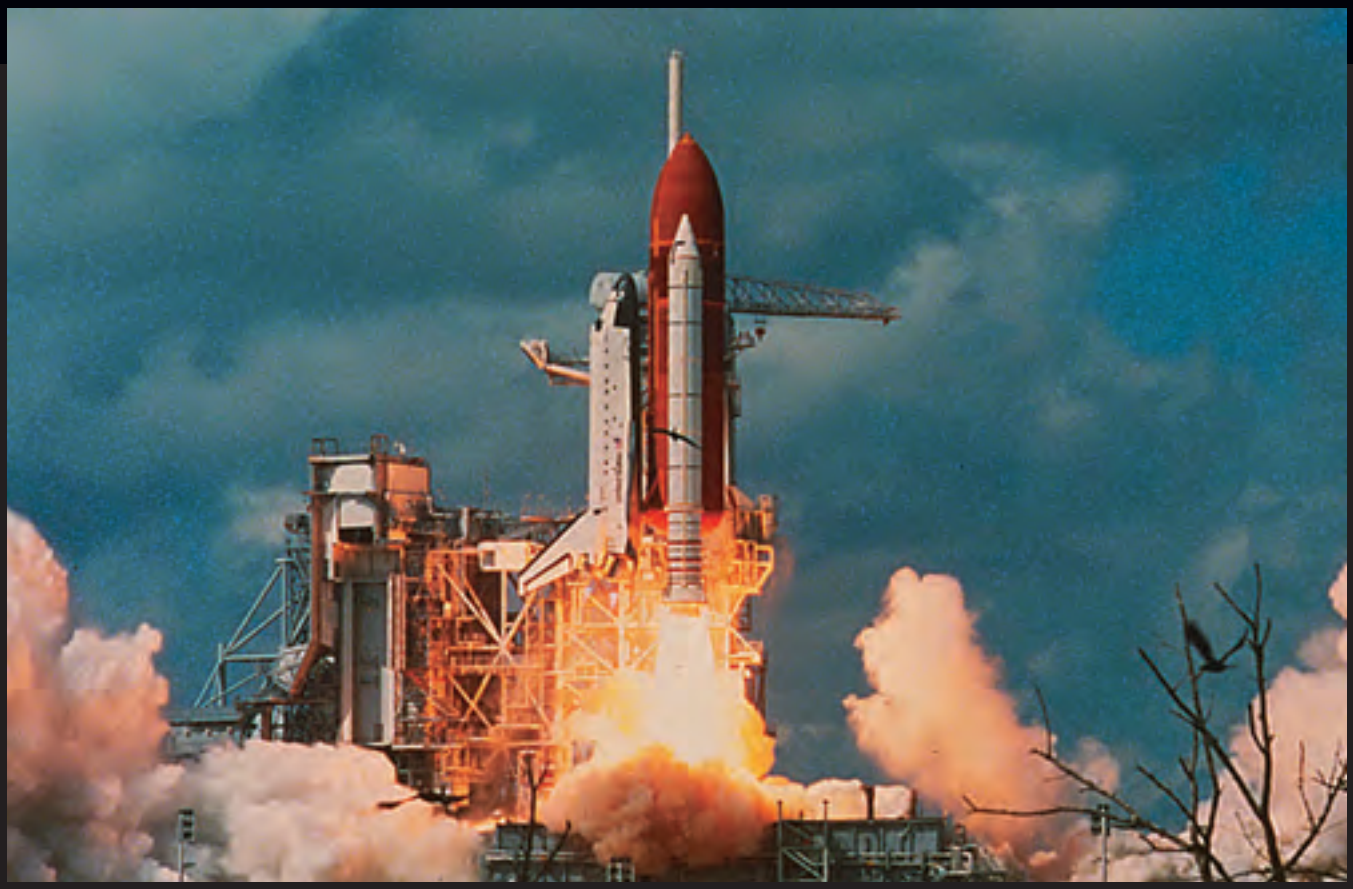
### Strainers & Filters

Nozzle strainers are available in a several configurations and are supplied standard on flow rates of 1.50 and above. Bodies are brass, although stainless steel bodies are available on special order. Screens are 120 mesh stainless steel wire cloth with 200 mesh available for fractional size nozzles, upon request. Sintered bronze filters rated to 40 microns are supplied on all nozzles of 1.35 & below. All strainers and filters are made with a 3/8"-40 UNS male thread to match the Hago nozzle. (See p. 5 for specifications.)

### Nozzles Boxes / Display Rack

Our nozzle boxes are made of a rugged, durable heavy gauge steel. The **Single Nozzle Box** (left) measures 10-1/4" x 7-1/4" x 1-5/8" and holds 50 nozzles, with spaces also conveniently provided for three adapters. The **Double Decker Box** (right) holds 100 nozzles plus space for 6 adapters. It measures 10-7/8" x 7" x 3-1/4". Both have plastic inserts that accommodate nozzles of all brands. Our **Steel Nozzle Display Rack** (not shown) holds 648 nozzles on 36 vertical shelves for quick access. It measures a spacious 32" x 14- 1/2". Our **Plastic Nozzle Display Rack,** with a transparent snap-on lid, is a compact 14-1/2" x 15" and holds 140 nozzles.

***Hago Manufacturing Company makes special nozzles for the National Aeronautic & Space Administration (NASA) for use on the US space shuttles***



**HAGO**
**PRECISION OIL BURNER NOZZLES**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