# *JET-SET®* GUIDES
## MODULE MOUNTING INSTRUCTIONS

### INSTALLATION

1. Using the template provided, select a location that will be convenient for filling the tank and making set-up changes.

2. Drill and tap three holes for bolts to support the module. The template will provide you with the exact location of the holes.

3. Now hang the module and connect shop air to the ¼" F.P.T. brass fitting located on the left side of the module.

4. Place the air switch where the trigger rod* can best be activated by mechanical movement. The switch may be adjusted to fire in either direction or in both directions. To change direction: See attached - *"714-N Air Switch Installation Data." (Pneumatic unit only)*

5. Keeping all the nozzle leads the same approximate length, plug the quick-disconnect hose connectors into the bottom of the Module. Keeping the nozzle leads the same length assures even distribution of fluid to each nozzle. Position nozzles where needed.

6. Fill the tank with with lubricant and turn the slot in the tee-cock shut-off, located at the top right of the control panel, to a vertical position. When using the standard high pressure nylon tubing provided, we recommend spraying light viscosity fluids. *A copper tubing conversion kit is available for spraying heavy viscosity fluids.*

7. With the large knurled knob on the control panel turned all the way out, hand activate the air switch until all air is out of the system. See attached - *" How to Bleed Air From The Manifold of #9100 Pump"*

   *If installing and electrically activated module, a four-way solenoid has been provided to activate the pump. Simply complete the circuit from the four-way solenoid to the switch of your choice. See attached - *"1400-N Solenoid Valve Instructions" or "1400 SMC Valve Instructions"*

### FINAL ADJUSTMENT

1. To adjust the volume of liquid being sprayed, turn the large knurled knob on the control panel clockwise to decrease, and counter-clockwise to increase. With the air regulator set at high pressures it may be necessary to hand activate the air switch to relieve air pressure and allow the knob to move freely.

2. To adjust the air pressure on the unit, turn the adjustment knob which is under the panel and just below the gauge. This adjustment will regulate the velocity of the spray. The higher the air pressure, the higher the velocity of spray. We suggest lowering the air pressure until the best spray pattern has been obtained.

3. Position the spray nozzles for the coverage desired. The distance away from the surface will determine the area of coverage. If longer nozzle leads are required or nozzle placement is a question - CALL YOUR *JET-SET®* DISTRIBUTOR or visit us online at *http://www.JetSetSpray.com*. *JET-SET®* distributors carry a complete line of interchangeable spray tips for changing spray patterns, nozzle holders and the required high pressure nylon tubing.

*For more info and video troubleshooting, visit us online at:*
*http://www.JetSetSpray.com*

(248) 545-4441
info@jetsetspray.com
jetsetspray.com

# JET-SET® #9100 Pump

## STAINLESS STEEL PUMP

All JET-SET® Module Systems have the new stainless steel JET-SET® pump designed for long life cycles. Utilizing stainless components and viton seal. The #9100 pump will give millions of cycles of maintenance-free operation. All JET-SET® pumps provide easy volume regulation by turning the large knob on top of the pump. You can regulate the output of fluid from 0 to 5 cc per cycle. One to three pumps may be mounted in the system. All pumps have five quick disconnect fittings for nozzles.

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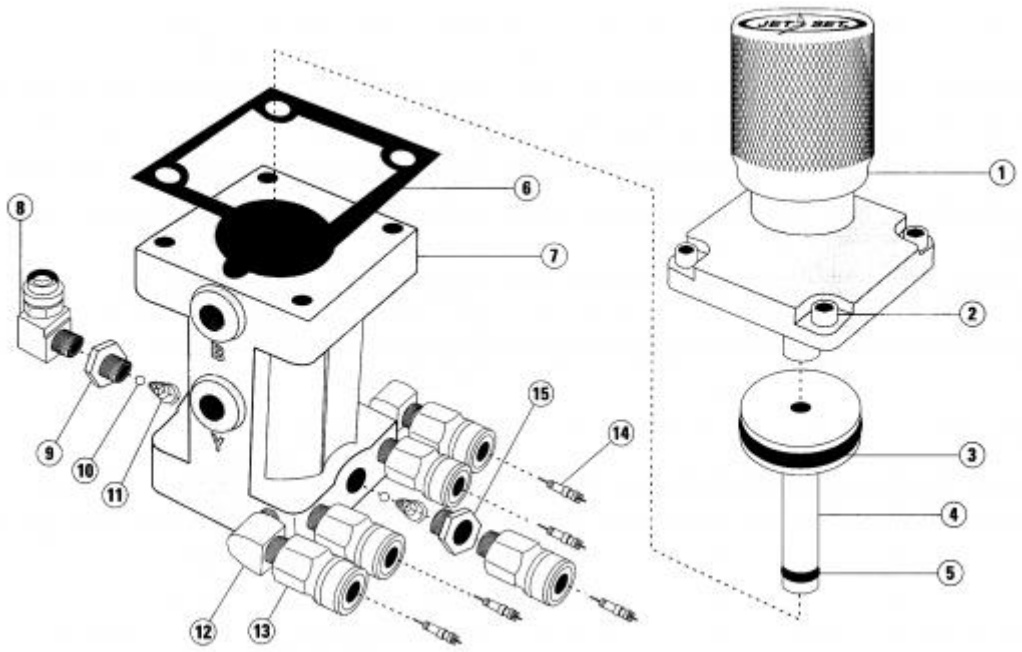
# JET-SET® #9100 Pump

## STAINLESS STEEL PUMP




## Individual part numbers:

1) 9114-A: End Cap Assembly
2) 9121: Socket Cap Screw
3) 9112*: Viton O-Ring
4) 9111: Stainless Steel Piston
5) 9108*: Viton O-Ring
6) 9113*: Gasket
7) 9101: Stainless Steel Pump Body
8) 897: Elbow Connector
9) 9104-I: Stainless Steel Inlet Ball Check
10) 9102*: Stainless Steel Check Ball
11) 9103: Stainless Steel Check Spring
12) 811: Brass Elbow
13) 802: Midget Socket
14) 802-V: Valve Core
15) 9104-0: Outlet Ball Check
16) *Seal Kit available : All parts with ** are included in a replacement 9100 Seal Kit

# JET-SET® GUIDES
## SPRAY SYSTEM TROUBLESHOOTING

### SYSTEM TROUBLESHOOTING:

| Problem | Possible Cause | Possible Solution |
|---|---|---|
| **Entire System Will Not Operate** | 1. Solenoid Wiring | 1. Check for correct wire hook-up. |
| | | 1a. Check for proper placement of sensor or micro switch. |
| | 2. Loss of Air Pressure | 2. Check air regulator for adequate pressure adjust for operation at 10PSI-130PSI. |

### PUMP TROUBLESHOOTING:

| Problem | Possible Cause | Possible Solution |
|---|---|---|
| **Pump Will Not Operate** | 1. Pump will not draw fluid in feedline. | 1. Check tank fluid level, be sure fluid stopcock is in open position. |
| | | 1a. Be sure filter surface is clean. |
| | 2. Pump may have an air lock in fluid discharge area. | 2. Follow pump priming procedure. Refer to “Pump Priming Instruction Sheet”. |
| | 3. Oil in feedline rises and falls with each cycle of operation. | 3. Inspect Inlet SS Seat for proper placement of spring and SS Ball. Inspect for foreign matter lodged between seat and ball that may prevent proper seating action. |
| | 4. Fluid in spray line rises and falls with each cycle of operation. | 4. Inspect Outlet SS Seat for proper placement of spring and SS Ball. Inspect for foreign matter lodged between seat and ball that may prevent proper seating action. |
| | 5. Pump passes air into nozzle line while in idle position or during operation. | 5. Check pump position “O” rings for wear. Replace seals if needed. |
| | | 5a. Be sure fluid connectors supplying pump are tight. |



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# *JET-SET®* GUIDES
## SPRAY SYSTEM TROUBLESHOOTING

**SPRAY TROUBLESHOOTING:**

| Problem | Possible Cause | Possible Solution |
|---|---|---|
| **Poor Spray Pattern** | 1. Low air regulator pressure. | 1. Increase regulator pressure to obtain optimum pattern. |
| | 2. Contaminated nozzle ballcheck and strainer. | 2. Clean or replace as necessary. Make sure all nozzles have ballcheck for proper spray checking action. |
| | 3. Flex spray lines too long. | 3. Keep to a minimum all nozzle leads. When using a lubricant with higher viscosity, replace nylon leads with rigid tubing for best spraying results. |
| | 4. Air is trapped in spray lines or in pump outlet manifold. | 4. Bleed all nozzle leads of air. Refer to "Pump Priming Instruction Sheet" to clear air in pump. |

**TO ASSURE CONTINUED TROUBLE FREE OPERATION OF YOUR *JET-SET®* SYSTEM, A DAILY CHECK OF THE FOLLOWING IS RECOMMENDED.**

1. Drain air filter regulator bowl of moisture buildup.
2. Check spray nozzles for proper placement and spray quality.
3. Check for contaminants in holding tank. Clean filter element as needed.
4. Check for proper lubricant level and refill as needed to assure continual operation.



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# *JET-SET®* GUIDES

## VALVE OPERATION

## 1400 JP

### QUALITY

1400-JP air valves are high speed, heavy duty units, designed for general service on all types of automation, for a wide range of air cylinders. These die cast units are direct solenoid actuated; that is, the solenoid plunger directly actuates the spool of the valve. The result is the simplest valve construction on the market today.

They are quality air valves, precision built for rugged service, and offer all the advanced design features of other *JET-SET®* valves.

The 1400-JP offers durability and performance that will give reliable and trouble free service far exceeding industrial standards of design and performance.

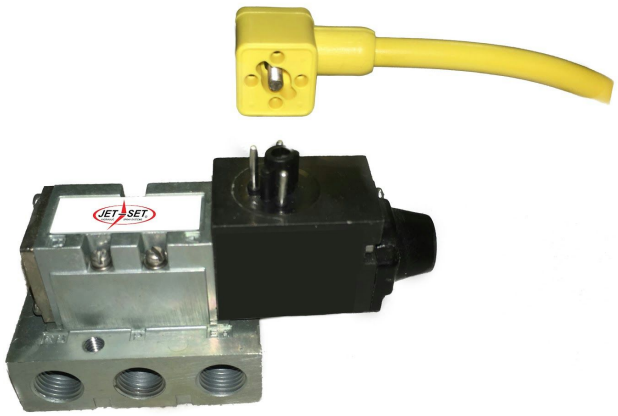
### GENUINE MULTI-PURPOSE CONSTRUCTION

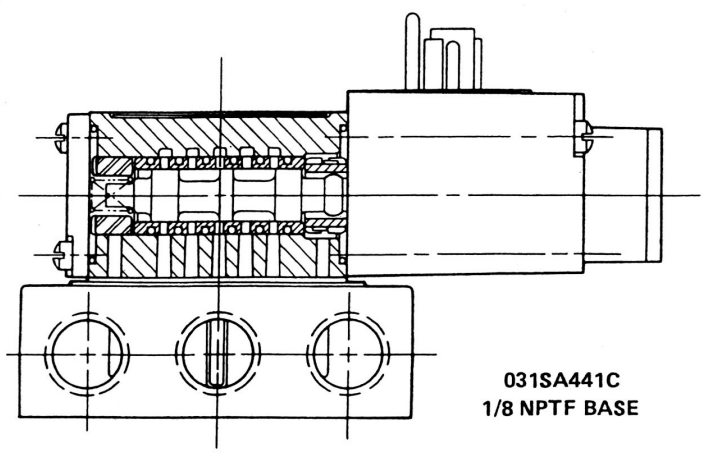
The valves are used for the control of air cylinders where part stroke stopping or inch-ing of the cylinder is not required. The are genuine multi-purpose valves; that is, they may be used as normally open or closed 2 or 3-way valves, single or dual pressure 4-ways, or as selector or diverter valves, dependent only on how they are piped or plugged. Full back pressure at any port has no operating effect on the valve.

**PLUG IN SOLENOID AND 4 FT. OR 6 FT CORD-CABLE ASSEMBLY WITH GROUND PIN**

**OR**

**HARDWIRED SOLENOID WITH 15" LEADS 48" LEADS OPTIONAL**



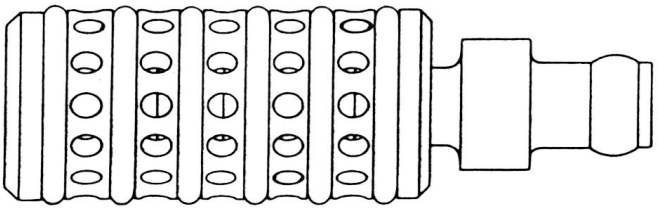



### COMPACT DESIGN AND HIGH FLOW CAPACITY

Although 1400-JP valves are small in size, sound design still permits ample swing clearance between pots for ease of piping. They save space and weight in machine design as well. Despite their small size, the superior design if the 1400-JP valves allows a nominal $C_v$ of .35.

### LAPPED SPOOL AND SLEEVE

*JET-SET®* valves employ a lapped spool and floating sleeve principle for most reliable operation and longest service life. Each 1400-JP valve has its own matched set spool and sleeve, precision machined to millionths of an inch, eliminating always troublesome dynamic O-ring seals.



### SOLENOID DESIGN

For all *JET-SET®* valves, next to the lapped spool and sleeve, the most important single component is the solenoid. Our experience has shown that the most reliable valve operation results from a marriage of the spool and sleeve with the time tested and proven direct solenoid construction. With this design, the solenoid pushes directly on the spool and produces and very fast response.

### MANUAL OVERRIDE

A non-locking, manual operator is standard to aid in machine setup and tryout. The operator is recessed to prevent accidental operation. A flush locking override is optional.

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*http://www.JetSetSpray.com*

1400-JP valves contain a multi-purpose floating sleeve and spool with no dynamic rubber seals to wear out. All valves are 5-ported, 4-way, 2-position valves that may be used as 2-way, 3-way, 4-way, selector or diverter valves. They are fully balanced and pressures through the main valve do not affect the pilot pressures or solenoid force required to shift the spool.

Direct solenoid actuated valves are available in two configurations:

Single solenoid, spring return valves are actuated by a “maintained” electrical signal. The spring returns the spool to the original position when the electrical signal is released.

Double solenoid, detented valves are actuated by either a “momentary” or a “maintained” electrical signal alternately on each solenoid. The detent holds the spool in position after electrical power is removed and prevents inadvertent spool shift due to vibration or shock.

Air piloted valves function the same as the solenoid valves except that air signals replace electrical signals. They also offer one important additional feature. Air piloted valves with spring return also have a pilot port on the spring end. An air signal on CB allows the spool to be reversed even when the signal on CA cannot be removed.

## A.N.S.I. SYMBOLS


SINGLE SOLENOID
SPRING RETURN


SINGLE AIR PILOT
SPRING RETURN


DOUBLE SOLENOID
DETENTED


DOUBLE AIR PILOT
DETENTED

## SPECIFICATIONS

**ELECTRICAL:** Solenoids are continuous duty rated. Standard A.C. voltages are 24/50-60, 120/50-60, and 230/50-60. Standard D.C. voltages are 12VDC and 24VDC.

| | | A.C. | D.C. |
|---|---|---|---|
| Inrush current: *(amps)* | @: 120/60 | .085 | _ |
| Holding current: *(amps)* | @: 120/60 | .50 | _ |
| Wattage: | | 5.0 | 6.0 |
| Time to energize: *(secs.)* | | | |
| Single Solenoid | | .008 | .012 |
| Double Solenoid | | .008 | .012 |
| Time to de-energize: *(secs)* | (Single Only) | .010 | .006 |
| Maximum cycle rate: *(continuous)* | | | |
| Single Solenoid | | 1000 cpm | 500 cpm |
| Double Solenoid | | 500 cpm | 500 cpm |

**TEMPERATURE RANGE:**

| | |
|---|---|
| Solenoid Valves: | -10° F to +115° F ambient |
| Air Piloted Valves: | -10° F to +200° F ambient |

**PRESSURE RANGE:**

| | |
|---|---|
| Main Valve: | 28” Hg. vacuum to 150 PSIG |
| Pilot Pressures: | |
| Spring return: | 15 - 100 PSIG |
| Detented: | 10 - 100 PSIG |

**NOTE: Maximum pressures and temperatures may depend on the tubing used.**

**FLOW CAPACITY:** ⅛ NPTF Base: $C_v$ = .35
10-32 Ports with .109 I.D. Fitting installed: $C_v$ = .18

**SERVICE:** Valves can be used on the following properly filtered media: Lubricated air, dry (oil free) air, vacuum, and non-corrosive, nontoxic, nonflammable dry gasses. Contact us for a list of recommended lubricants and filtration requirements for unlubricated service.

**INDIVIDUAL VALVE MODEL SELECTION CHART**

| VALVE TYPE | MODEL NUMBER | | BASE DESCRIPTION (Add to the model number) | WIRING OPTION (Add to the base number) |
|---|---|---|---|---|
| | 10-32 UNF-3B | 1/8 NPTF* | | |
| Single Solenoid 2-Position Spring Return | 030SA4 | 031SA4 | *00 = Valve Unit Only - No Base<br>*01 = Valve Unit with Speed Control<br>41 = Base w/ Side Ports, Ind’l. Exhaust<br>46 - No 41 with Speed Control<br>56 = Base w/ Bottom Ports, Individual Exhaust 10-32 Ports Only<br>58 = No. 56 with Speed Control 10-32 Ports Only | O = Non Plug-in Std. A.C. or Air Pilot<br>B = Non Plug-in Std. D.C.<br>C = Plug-in, Std. A.C.<br>E = Plug-in, Std. D.C.<br><br>For Plug-in Solenoids, Options C and E, Order Cord Assembly Separately.<br><br>Plug w/4’ Cord, No. 230-214A<br>Plug w/6’ Cord, No. 230-260A |
| Double Solenoid 2-Position Detented | 030SS4 | 031SS4 | | |
| Single Air Pilot 2-Position Spring Return | 030PA4 | 031PA4 | | |
| Double Air Pilot 2-Position Detented | 030PP4 | 031PP4 | | |
| Special Options: Add to the model number | | “011B” Flush Locking Override<br>“013A” 48” Solenoid Leads | | Example: 031SA441C 120/60 |

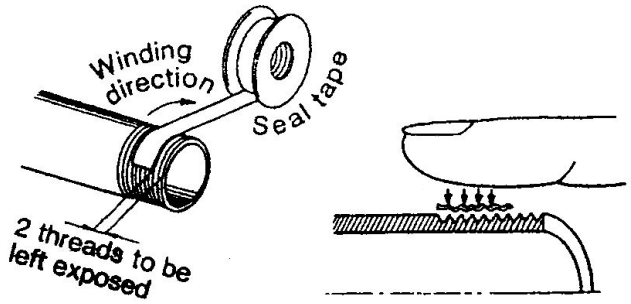
*1/8 is the basic size. Use these model numbers for valve units only.

## PRECAUTIONS

### PIPING

1. Use appropriate I.D. piping.
2. Before piping, flush out to remove dust, scale, chips, seal tape, etc. in the pipeline both on the supply line (supply pressure port side) and secondary side (operational equipment port side).
3. In the case of 3 position closed center valve, check leakage from piping and fittings between the valve and cylinder be means of soapy water to ensure that there is no leakage. Also, check the leakage from cylinder rod seal and piston seal. If there is any leakage, sometimes the cylinder, when valve is deenergized, can move without stopping at midposition. Therefore, leakage from piping and fittings should be avoided.
4. When applying teflon sealing tape to the thread area, wind it around the thread area 1-2 times and fasten it with finger nail. Be sure the thread extends one or two screw pitches beyond the taped area. Also, when applying liquid seal materials, leave 1-2 threads from the end dry, and avoid over-application.

**Never apply to the female side of the equipment.**




### CLAMPING TORQUE

| Thread | Correct clamping torque inch-lbs (kgf/cm²) |
|---|---|
| 10-32 Nom (M5) | 13.0-17.3 (15-20) |
| 1/8 NPTF | 60.7-78.0 (70-90) |
| 1/4 NPTF | 104-121 (120-140) |
| 3/8 NPTF | 190-208 (220-240) |
| 1/2 NPTF | 242-260 (280-300) |
| 3/4 NPTF | 242-260 (280-300) |

### MOUNTING

Single-acting valves can be mounted in any direction. In the case of a double solenoid valve or 3 position vale in a place subject to vibration, the valve should be aligned perpendicular to the to the vibration. (Never use in a vibration condition of more than 5G.)

### ENVIRONMENTAL CONDITIONS

1. When the valve is installed in a dusty area, protect the cylinder rod area to prevent dust from entering the secondary piping via the rod area. Install a silencer or elbow fitting with its outlet downwards to prevent dust from entering the exhaust port of the valve.
2. When used in environmental conditions such as corrosive gas, chemicals or chemical solutions, steam, sea water, or temperatures higher than 140° F (60° C), etc., contact us.

### LUBRICATION

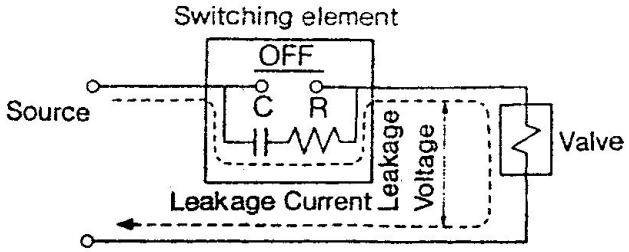
**Valves are pre-lubricated. No further lubrication is necessary.**

If a lubricant is used (if required for cylinder, etc.), install lubricator in the supply side piping.

Also, please note that the recommended lubricant is turbine oil #1 (ISO VG32). (Never use spindle oil or machine oil.) In addition, when valve is used at low temperature, low temperature oil should be used. The use of turbine oil at temperatures lower than 32° F (0° C) leads to increased viscosity and causes the valve to malfunction.

### LEAKING VOLTAGE

It must be noted that in case of connecting C-R element parallel to switching element, leakage current flows through C-R element and the leak voltage increases.




Ensure that any voltage leakage across the coil is as follows:
AC coil: No more than 20% of the rated voltage.
DC coil: No more than 3% of the rated voltage.

### MAINTENANCE

1. Excessive carbon powder and oil waste from air source (mostly from compressor) entering into the valve can lead to increased spool seal resistance and cause valve malfunction. In the worst case the spool can adhere to the valve. It is important to check the quality of air often. Please note that if SUP pressure is left under pressurization for a long time with inferior quality air, carbon powder and oil waste in the compressed air can deposit in the clearance between the spool and sleeve, buildup, and cause the spool to adhere to the valve. To remedy this case, check the compressor oil and use the appropriate least oxidizing compressor oil. A high filtration Mist Separator (Series NAFM) installed behind a regular filter (Series NAF) can prevent foreign particles from entering the valve.
2. If waste from air source adheres to spool and sleeve, disassemble adaptor adaptor plate area and end plate area (return spring insert area). Remove spool and sleeve from valve and cleanse them with trichlorane or freon solutions. When cleaning, prevent O-rings from contacting cleaning solutions. **Be sure to keep each spool and sleeve assembly paired.**
3. When disassembling and re-assembling, please ensure that all components are in their proper positions. Prevent gaskets from slipping, and tighten bolts equally.

# *JET-SET®* GUIDES
## VALVE OPERATION
## 1400-N-NU

**QUALITY**

1400-N-NU air valves are high speed, heavy duty units, designed for general service on all types of automation, for a wide range of air cylinders. They are quality air valves, precision built for rugged service, and offer all the advanced design features of other *JET-SET®* valves.

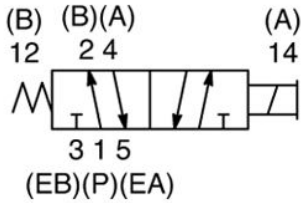
The 1400-N-NU offers durability and performance that will give reliable and trouble free service far exceeding industrial standards of design and performance.

**FEATURES**

5 Ported, 2 and 3 position, 4-way, Spool & Sleeve
Cv: 0.8-1.0

- Direct solenoid actuated
- Plug-in solenoid with indicator light
- Unlubricated or lubricated service
- Integral speed control available
- Integral regulators available
- NEMA 4

single solenoid
2 position 4-way




**TECHNICAL DATA**

| **Valve Data** | **English** | | **Metric** | |
|---|---|---|---|---|
| Cv | ⅛ NPTF = 0.80 | ¼ NPTF = 1.0 | ⅛ G Tap = 0.80 | ¼ G Tap =1.0 |
| Flow Capacity | 37 SCFM<br>Upstream pressure to atmosphere @80 PSIG | 46 SCFM | 790 Nl/m<br>@ 6 bar upstream/5 bar downstream | 985 Nl/m |
| Operating Pressure Range | 28” Hg Vacuum to 150 PSIG | | Vacuum to 10 bar | |
| Temperature Range (Ambient) | -10℉ to +115℉ | | -23℃ to +46℃ | |

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*http://www.JetSetSpray.com*

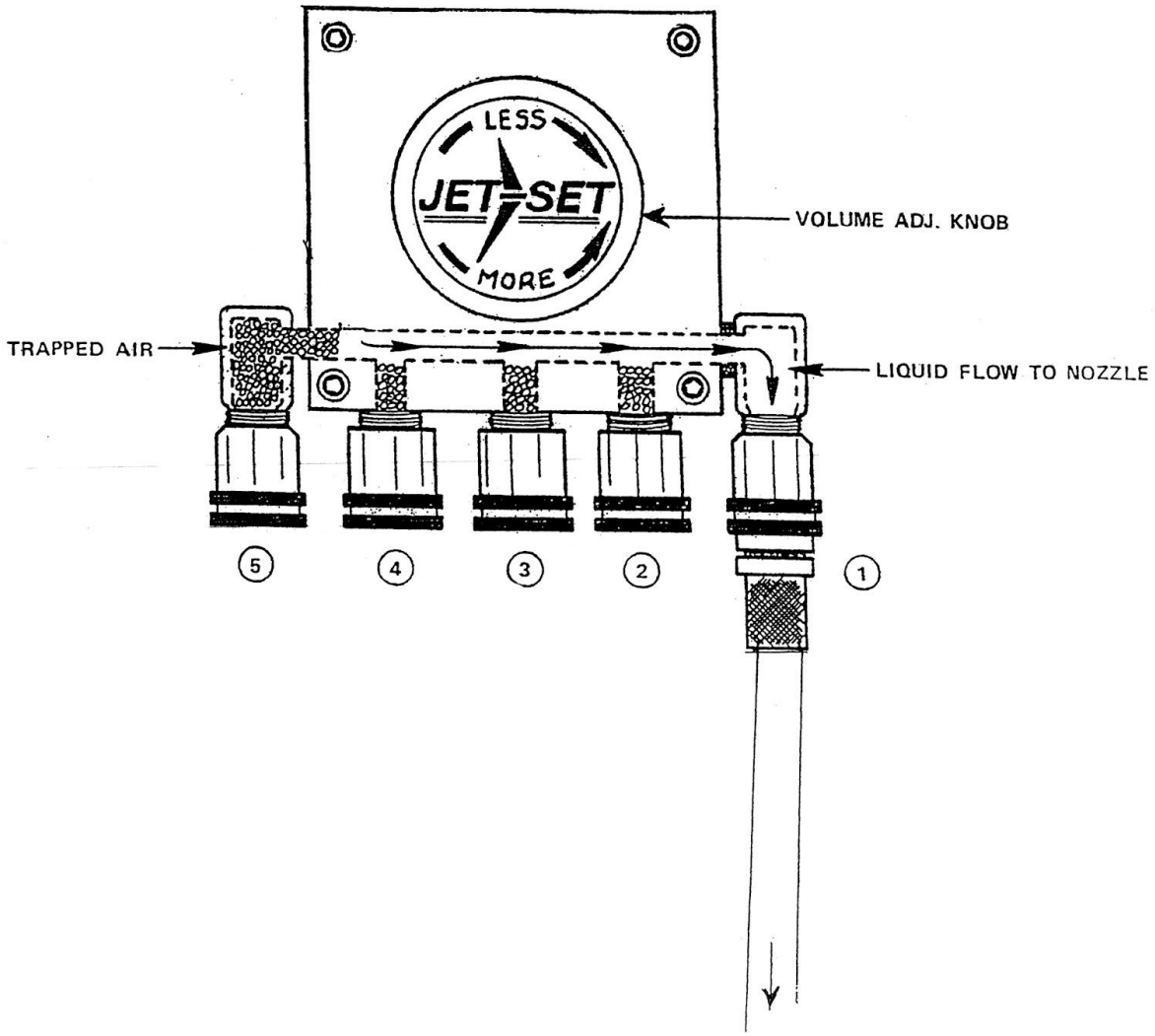
**OPERATING DATA**

| **All Solenoids Are Continuous Duty Rated** | | **12 VDC** | **24 VDC** | **24 VAC 50Hz** | **24 VAC 60 Hz** | **115 VAC 60 Hz** | **120 VAC 60 Hz** | **230 VAC 50 Hz** | **240 VAC 60 Hz** |
|---|---|---|---|---|---|---|---|---|---|
| Power (Watts) | | 6.0 | 6.0 | N/A | N/A | N/A | N/A | N/A | N/A |
| Holding Current (Amps) | | 0.50 | 0.25 | 0.84 | 0.38 | 0.15 | 0.09 | 0.007 | 0.04 |
| Inrush Current (Amps) | | N/A | N/A | 2.25 | 1.85 | 0.41 | 0.38 | 0.021 | 0.19 |
| Energize in Seconds | 2-Position, Single, Spring Return | 0.032 | 0.032 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 |
| | 2-Position, Double, Detented | 0.028 | 0.028 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 |
| | 3-Position, Spring Centered | 0.028 | 0.028 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 |
| De-energize in Seconds | 2-Position, Single, Spring Return | 0.010 | 0.010 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 |
| | 2-Position, Double, Detented | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | 3-Position, Spring Centered | 0.008 | 0.008 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 | 0.018 |

# *JET-SET®* GUIDES

## HOW TO BLEED AIR FROM THE MANIFOLD OF #9100 PUMP

****** PLEASE NOTE: Adjustment knob should be in the full open position (More >) ******
***before each and every time pump is to be primed.***




A #9100 *JET-SET®* pump comes from our factory fully primed, tested and ready to use. It has been found, however, that when first installing the *JET-SET®* system, small amounts of air might be trapped in the manifold of the #9100 pump. This is not noticeable when spraying at full volume, only when spraying very small amounts. Then, the pump may need to be reprimed. For best results, bleed all five connections, in the order shown. Simply plug a nozzle into each connection while the pump is being activated. Release just enough fluid to eliminate air. This will insure good spray pattern and eliminate drippage.

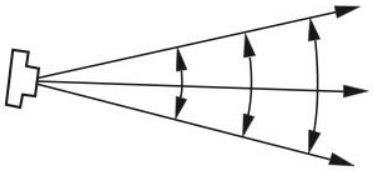
This procedure should never have to be repeated, unless the system runs dry and loses its prime.

*For more info and video troubleshooting, visit us online at:*
*http://www.JetSetSpray.com*

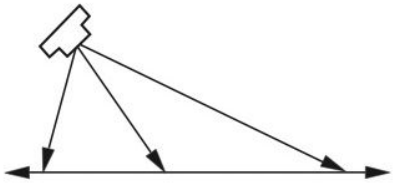
# *JET-SET®* GUIDES
## TIPS FOR SPRAYING

The *JET-SET®* Hydraulic Spray System assures a controlled deposit on any configuration. First, the spray displacement can vary from zero to full capacity by adjusting the volume control on the pump. And second, the velocity can be controlled from a soft, gentle spray to a full strong blast by regulating the pressure in the air supply.

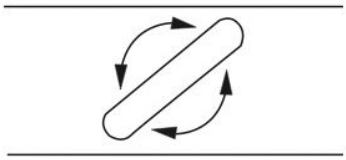
The following three sketches show how coverage and pattern can be varied without changing tips.



1 DISTANCE FROM TIP INCREASES COVERAGE



2 ANGLE OF TIP BROADENS COVERAGE



3 WIDTH OF FLAT SPRAY COVERAGE CAN BE CHANGED BY TURNING TIP

JET-SET® HYDRAULIC SPRAY KITS ARE SHIPPED WITH AN 80015 FLAT SPRAY TIP. THE FOLLOWING INTERCHANGEABLE TIPS ARE AVAILABLE FOR SPECIFIC NEEDS.

### SOLID ROUND SPRAY

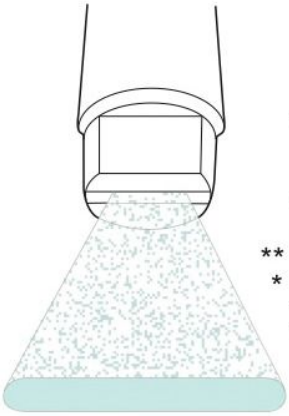
| | CODE | ACTUAL ORIFICE | ANGLE |
|---|---|---|---|
| | TG 0.4 | .022 | 63° |
| | TG 1 | .036 | 60° |
| * | TG 2 | .047 | 50° |
| | TG 3 | .062 | 65° |

* Popular Sizes

### HOLLOW ROUND SPRAY

| | CODE | ACTUAL ORIFICE | ANGLE |
|---|---|---|---|
| | TY 14 | .059 | 68° |
| * | TX 10 | .060 | 76° |
| | T8W | .063 | 136° |

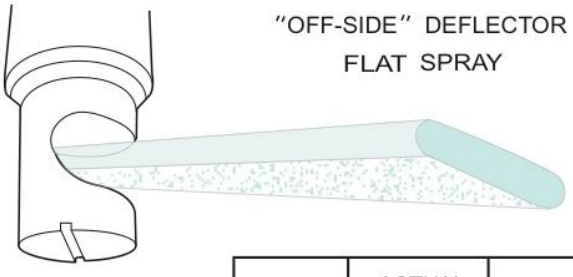
* Popular Sizes



### FLAT SPRAY

| | CODE | EQUIVALENT ORIFICE | ANGLE |
|---|---|---|---|
| | 5001 | .026 | 60° |
| ** | 80015 | .031 | 90° |
| * | 110015 | .031 | 120° |

* Popular Sizes ** Most Popular



### "OFF-SIDE" DEFLECTOR FLAT SPRAY

| | CODE | ACTUAL ORIFICE | ANGLE |
|---|---|---|---|
| | TK 1.5 | .040 | 140° |
| * | TK 2.5 | .051 | 140° |

* Popular Sizes

NOTE: Other tips are available. For recommendation, submit pint sample of liquid and details of operation.

# *JET-SET®* GUIDES
## SPRAY TIPS

Spray tips are available in a wide variety of materials, capacities and spray patterns. For specific information about spray tips or different patterns other than indicated here, please contact us.

**The following spray tips are regularly stocked at *JET-SET®:***

**FLAT SPRAY (TP)**

| TIP# | ORIFICE DIA | SPRAY ANGLE *(Approx.)* | TP |
|---|---|---|---|
| 902-5001 | .026” | 50° @40psi / 60° @ 80psi |  |
| 902-6501 | .026” | 65° @40psi / 74° @ 80psi | |
| *902-80015* | .031” | 80° @40psi / 90° @ 80psi | |
| 902-800050 | .018” | 80° @20psi / 95° @ 80psi | |
| 902-110015 | .031” | 110° @40psi / 120° @ 80psi | |

* This tip comes standard on all of our nozzles unless another tip requested.*

**FULL CONE (TG)**

| TIP# | ORIFICE DIA | SPRAY ANGLE *(Approx.)* | TG |
|---|---|---|---|
| 902-TG 0.3 | .020” | 50° @20psi / 61° @ 80psi |  |
| 902-TG 0.4 | .022” | 56° @20psi / 63° @ 80psi | |
| 902-TG 0.6 | .027” | 54° @20psi / 62° @ 80psi | |
| 902-TG 1 | .036” | 58° @20psi / 53° @ 80psi | |
| 902-TG 2 | .047” | 50° @20psi / 46° @ 80psi | |
| 902-TG 3 | .062” | 65° @20psi / 59° @ 80psi | |



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# JET-SET® GUIDES
## SPRAY TIPS

**DEFLECTED FLAT SPRAY (TK)**

| TIP# | ORIFICE DIA | SPRAY ANGLE *(Approx.)* | TK |
|---|---|---|---|
| 902-TK 1.5 | .040” | 108° @20psi / 130° @ 60psi |  |
| 902-TK 2.5 | .052” | 122° @20psi / 133° @ 60psi | |
| | | | |

**HOLLOW CONE (TX / TY)**

| TIP# | ORIFICE DIA | SPRAY ANGLE *(Approx.)* | TX / TY |
|---|---|---|---|
| 902-TX 10 | .059” | 68° @20psi / 74° @ 40psi |  |
| 902-TY 14 | .070” | 70° @20psi / 76° @ 40psi | |
| | | | |



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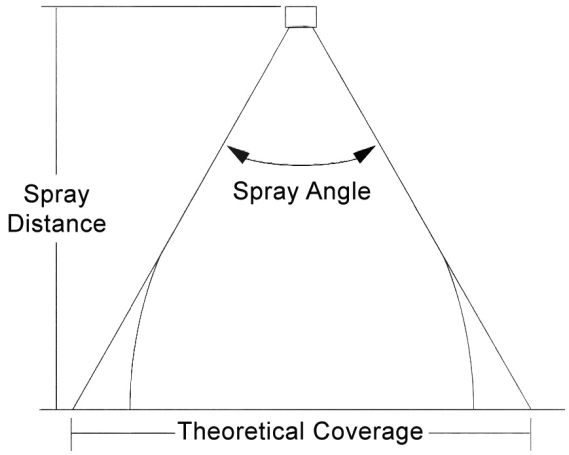
# *JET-SET®* GUIDES
## SPRAY ANGLE AND COVERAGE




Tabulated spray angles indicate approximate spray coverages based on spray or distribution of water. In actual spraying, the effective spray angle varies with spray distance. Liquids more viscous than water form relatively smaller spray angles (or even a solid stream), depending upon viscosity, nozzle capacity and spraying pressure. Liquids with surface tensions lower than water will produce relatively wider spray angles than those listed for water. This table lists the theoretical coverage of spray patterns as calculated from the included spray angle of the spray and the distance from the nozzle orifice. Values are based on the assumption that the spray angle remains the same throughout the entire spray distance. In actual practice, the tabulated spray angle does not hold for long spray distances. If the spray coverage requirement is critical, contact *JET-SET®* for help in determining the specs.

### Theoretical Spray Coverage
at Various Distances in Inches (cm) from Nozzle Orifice

| Spray Angle | 2" | 5 cm | 4" | 10 cm | 6" | 15 cm | 8" | 20 cm | 10" | 25 cm | 12" | 30 cm | 15" | 40 cm | 18" | 50 cm | 24" | 60 cm | 30" | 70 cm | 36" | 80 cm | 48" | 100 cm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5° | .2 | .4 | .4 | .9 | .5 | 1.3 | .7 | 1.8 | .9 | 2.2 | 1.1 | 2.6 | 1.3 | 3.5 | 1.6 | 4.4 | 2.1 | 5.2 | 2.6 | 6.1 | 3.1 | 7.0 | 4.2 | 8.7 |
| 10° | .4 | .9 | .7 | 1.8 | 1.1 | 2.6 | 1.4 | 3.5 | 1.8 | 4.4 | 2.1 | 5.3 | 2.6 | 7.0 | 3.1 | 8.8 | 4.2 | 10.5 | 5.2 | 12.3 | 6.3 | 14.0 | 8.4 | 17.5 |
| 15° | .5 | 1.3 | 1.1 | 2.6 | 1.6 | 4.0 | 2.1 | 5.3 | 2.6 | 6.6 | 3.2 | 7.9 | 3.9 | 10.5 | 4.7 | 13.2 | 6.3 | 15.8 | 7.9 | 18.4 | 9.5 | 21.1 | 12.6 | 26.3 |
| 20° | .7 | 1.8 | 1.4 | 3.5 | 2.1 | 5.3 | 2.8 | 7.1 | 3.5 | 8.8 | 4.2 | 10.6 | 5.3 | 14.1 | 6.4 | 17.6 | 8.5 | 21.2 | 10.6 | 24.7 | 12.7 | 28.2 | 16.9 | 35.3 |
| 25° | .9 | 2.2 | 1.8 | 4.4 | 2.7 | 6.7 | 3.5 | 8.9 | 4.4 | 11.1 | 5.3 | 13.3 | 6.6 | 17.7 | 8.0 | 22.2 | 10.6 | 26.6 | 13.3 | 31.0 | 15.9 | 35.5 | 21.2 | 44.3 |
| 30° | 1.1 | 2.7 | 2.1 | 5.4 | 3.2 | 8.0 | 4.3 | 10.7 | 5.4 | 13.4 | 6.4 | 16.1 | 8.1 | 21.4 | 9.7 | 26.8 | 12.8 | 32.2 | 16.1 | 37.5 | 19.3 | 42.9 | 25.7 | 53.6 |
| 35° | 1.3 | 3.2 | 2.5 | 6.3 | 3.8 | 9.5 | 5.0 | 12.6 | 6.3 | 15.8 | 7.6 | 18.9 | 9.5 | 25.2 | 11.3 | 31.5 | 15.5 | 37.8 | 18.9 | 44.1 | 22.7 | 50.5 | 30.3 | 63.1 |
| 40° | 1.5 | 3.6 | 2.9 | 7.3 | 4.4 | 10.9 | 5.8 | 14.6 | 7.3 | 18.2 | 8.7 | 21.8 | 10.9 | 29.1 | 13.1 | 36.4 | 17.5 | 43.7 | 21.8 | 51.0 | 26.2 | 58.2 | 34.9 | 72.8 |
| 45° | 1.7 | 4.1 | 3.3 | 8.3 | 5.0 | 12.4 | 6.6 | 16.6 | 8.3 | 20.7 | 9.9 | 24.9 | 12.4 | 33.1 | 14.9 | 41.4 | 19.9 | 49.7 | 24.8 | 58.0 | 29.8 | 66.3 | 39.7 | 82.8 |
| 50° | 1.9 | 4.7 | 3.7 | 9.3 | 5.6 | 14.0 | 7.5 | 18.7 | 9.3 | 23.3 | 11.2 | 28.0 | 14.0 | 37.3 | 16.8 | 46.6 | 22.4 | 56.0 | 28.0 | 65.3 | 33.6 | 74.6 | 44.8 | 93.3 |
| 55° | 2.1 | 5.2 | 4.2 | 10.4 | 6.3 | 15.6 | 8.3 | 20.8 | 10.3 | 26.0 | 12.5 | 31.2 | 15.6 | 41.7 | 18.7 | 52.1 | 25.0 | 62.5 | 31.2 | 72.9 | 37.5 | 83.3 | 50.0 | 104 |
| 60° | 2.3 | 5.8 | 4.6 | 11.6 | 6.9 | 17.3 | 9.2 | 23.1 | 11.5 | 28.9 | 13.8 | 34.6 | 17.3 | 46.2 | 20.6 | 57.7 | 27.7 | 69.3 | 34.6 | 80.8 | 41.6 | 92.4 | 55.4 | 115 |
| 65° | 2.5 | 6.4 | 5.1 | 12.7 | 7.6 | 19.1 | 10.2 | 25.5 | 12.7 | 31.9 | 15.3 | 38.2 | 19.2 | 51.0 | 22.9 | 63.7 | 30.5 | 76.5 | 38.2 | 89.2 | 45.8 | 102 | 61.2 | 127 |
| 70° | 2.8 | 7.0 | 5.6 | 14.0 | 8.4 | 21.0 | 11.2 | 28.0 | 14.0 | 35.0 | 16.8 | 42.0 | 21.0 | 56.0 | 25.2 | 70.0 | 33.6 | 84.0 | 42.0 | 98.0 | 50.4 | 112 | 67.2 | 140 |
| 75° | 3.1 | 7.7 | 6.1 | 15.4 | 9.2 | 23.0 | 12.3 | 30.7 | 15.3 | 38.4 | 18.4 | 46.0 | 23.0 | 61.4 | 27.6 | 76.7 | 36.8 | 92.1 | 46.0 | 107 | 55.2 | 123 | 73.6 | 153 |
| 80° | 3.4 | 8.4 | 6.7 | 16.8 | 10.1 | 25.2 | 13.4 | 33.6 | 16.8 | 42.0 | 20.2 | 50.4 | 25.2 | 67.1 | 30.3 | 83.9 | 40.3 | 101 | 50.4 | 118 | 60.4 | 134 | 80.6 | 168 |
| 85° | 3.7 | 9.2 | 7.3 | 18.3 | 11.0 | 27.5 | 14.7 | 36.7 | 18.3 | 45.8 | 22.0 | 55.0 | 27.5 | 73.3 | 33.0 | 91.6 | 44.0 | 110 | 55.0 | 128 | 66.0 | 147 | 88.0 | 183 |
| 90° | 4.0 | 10.0 | 8.0 | 20.0 | 12.0 | 30.0 | 16.0 | 40.0 | 20.0 | 50.0 | 24.0 | 60.0 | 30.0 | 80.0 | 36.0 | 100 | 48.0 | 120 | 60.0 | 140 | 72.0 | 160 | 96.0 | 200 |
| 95° | 4.4 | 10.9 | 8.7 | 21.8 | 13.1 | 32.7 | 17.5 | 43.7 | 21.8 | 54.6 | 26.2 | 65.5 | 32.8 | 87.3 | 39.3 | 109 | 52.4 | 131 | 65.5 | 153 | 78.6 | 175 | 105 | 218 |
| 100° | 4.8 | 11.9 | 9.5 | 23.8 | 14.3 | 35.8 | 19.1 | 47.7 | 23.8 | 59.6 | 28.6 | 71.5 | 35.8 | 95.3 | 43.0 | 119 | 57.2 | 143 | 71.6 | 167 | 85.9 | 191 | 114 | 238 |
| 110° | 5.7 | 14.3 | 11.4 | 28.6 | 17.1 | 42.9 | 22.8 | 57.1 | 28.5 | 71.4 | 34.3 | 85.7 | 42.8 | 114 | 51.4 | 143 | 68.5 | 171 | 85.6 | 200 | 103 | 229 | - | 286 |
| 120° | 6.9 | 17.3 | 13.9 | 34.6 | 20.8 | 52.0 | 27.7 | 69.3 | 34.6 | 86.6 | 41.6 | 104 | 52.0 | 139 | 62.4 | 173 | 83.2 | 208 | 104 | 243 | - | - | - | - |
| 130° | 8.6 | 21.5 | 17.2 | 42.9 | 25.7 | 64.3 | 34.3 | 85.8 | 42.9 | 107 | 51.5 | 129 | 64.4 | 172 | 77.3 | 215 | 103 | 257 | - | - | - | - | - | - |
| 140° | 10.9 | 27.5 | 21.9 | 55.0 | 32.9 | 82.4 | 43.8 | 110 | 54.8 | 137 | 65.7 | 165 | 82.2 | 220 | 98.6 | 275 | - | - | - | - | - | - | - | - |
| 150° | 14.9 | 37.3 | 29.8 | 74.6 | 44.7 | 112 | 59.6 | 149 | 74.5 | 187 | 89.5 | 224 | 112 | 299 | - | - | - | - | - | - | - | - | - | - |
| 160° | 22.7 | 56.7 | 45.4 | 113 | 68.0 | 170 | 90.6 | 227 | 113 | 284 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 170° | 45.8 | 114 | 91.6 | 229 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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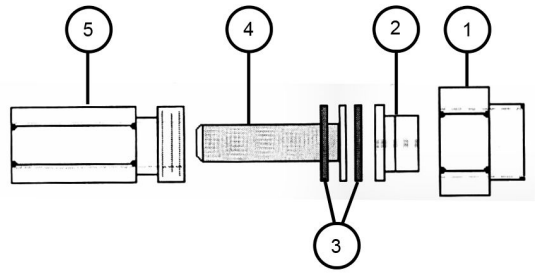
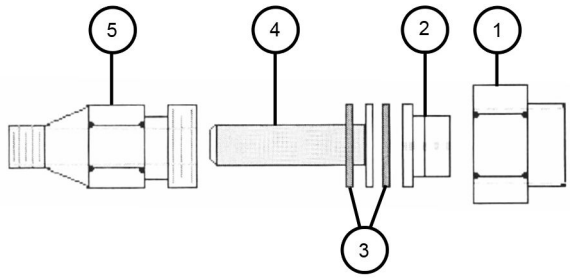
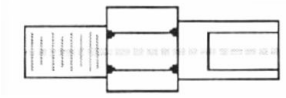
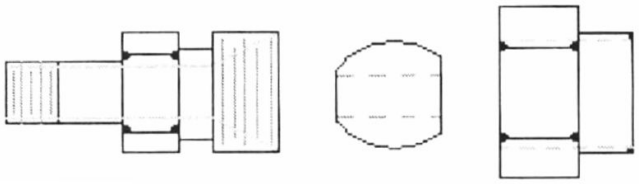
# JET-SET® GUIDES
## NOZZLE ASSEMBLIES

| **Part# 900** *(O/A Length = 1 7/8" approx.)* | | | **Female Nozzle Assembly** |
|---|---|---|---|
| 1 | 1pc | 901 Nozzle Nut |  |
| 2 | 1pc | 902-80015 Standard Spray Tip | |
| 3 | 2pcs | 904 Nozzle Gasket | |
| 4 | 1pc | 903 20 (40) 20 or 40lb Check Valve | |
| 5 | 1pc | 905 Nozzle Body | |

| **Part# 900-1/8M** *(O/A Length = 1 3/4" approx.)* | | | **Male Nozzle Assembly** |
|---|---|---|---|
| 1 | 1pc | 901 Nozzle Nut |  |
| 2 | 1pc | 902-80015 Standard Spray Tip | |
| 3 | 2pcs | 904 Nozzle Gasket | |
| 4 | 1pc | 903 20 (40) 20 or 40lb Check Valve | |
| 5 | 1pc | 905-1/8 MT Nozzle Body | |

| **Part# 902-80015-M20** *(O/A Length = 7/8" approx. 20lb Check Valve)* | | **Mini Nozzle** |
|---|---|---|
| OR | ****For Use With 908-SW**** |  |
| **Part# 902-80015-MNV** *(O/A Length = 7/8" approx. No Check Valve)* | | |

| **Part# 908-SW 1/8x1/8** *(O/A Length = 1 1/4" approx.)* | **Ball Swivel Assembly** |
|---|---|
| Swivel for 900-1/8M or 902-80015-M's |  |

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