

Micro-Fluidization Products

uni-MIST **CONTINUOUS SPRAY SYSTEMS**



"a better idea" from



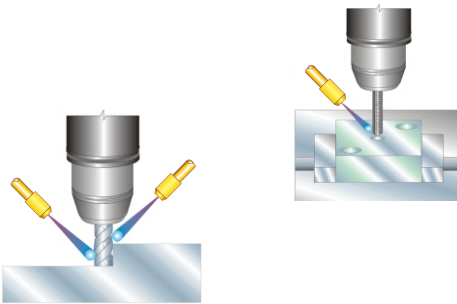
2 UNDERSTANDING THE SPRAY COOLING CONCEPT

EXTERNAL CONTINUOUS SPRAY SYSTEMS



The Mist Advantage

Mist cooling is necessary for a variety of reasons. Wherever friction occurs in machining, tool life is cut short and down time for sharpening or replacement is extended. Burning, warping and discoloring of parts also present a problem. A Uni-MIST system applied at the tool-to-workpiece interface will reduce heat build-up and show the benefits of higher productivity and decreased part re-working and down time. Chips are also removed more rapidly by pressure than by flood cooling, so the tool spends less time recutting those chips.

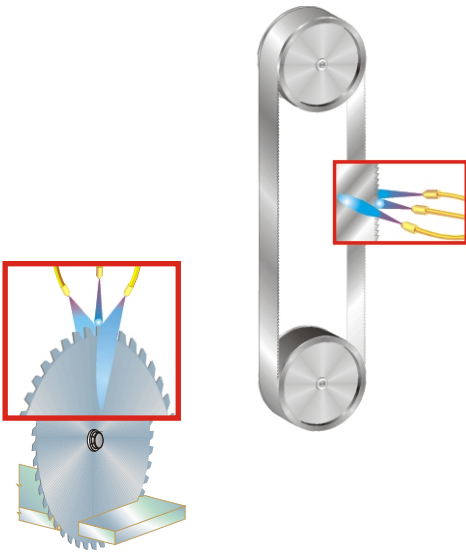


The Pressurized Advantage

Uni-MIST spray systems are all pressurized systems (normally 15-30psi). Uni-MIST moves the coolant/lubricant to the nozzle tip under pressure where an internal mix occurs. Variable amounts of compressed air and liquid enable many degrees of atomization.

Because of the wide range in Uni-MIST controls, the fluid composition is not of critical importance and most any viscosity fluid may be sprayed. Fine atomization of water solubles will optimize the cooling effects of water evaporation. Straight oils may be sprayed by using only enough air to carry the particles to the point of application.

Uni-MIST systems are often used to replace flood systems because of the reduction in air-borne mist particles that are generated in high speed machining operations.



Recommended Uses

External spraying is recommended for machining operations using higher tool RPM's or rapid stock feeding. Uni-MIST continuous spray systems are presently employed in all metalworking operations including both metalcutting and metalforming. Some of these operations include:

- TURNING
- MILLING
- BORING
- SAWING
- DRILLING
- SWAGING
- BROACHING
- GRINDING
- STAMPING
- SHEARING
- FORM ROLLING
- and many others

Uni-MIST systems are used on all metals, exotic metals, and some plastics.

Automatic Operation

With the inclusion of a Uni-MIST solenoid or air pilot valve, the system will automatically shut down or resume with the tool's normal operation. Valves control both air and liquid shut-off, and operate Instantaneously when a signal is supplied. Both valves have the capability to control up to 6 simultaneously in-use nozzles. Quality built aluminum and brass construction can stand up to years of continuous operation.

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SYSTEM COMPONENTS

Uni-MIST spray systems consist of five basic components:

1. The tank and regulator assembly
2. The metering block and nozzle assembly
3. Interconnecting tubing
4. Optional shut-off valves
5. Optional magnetic mounting bases

Because of the many different combinations of components that make up a system, we have put together three complete systems, each covered by a standard system part number. All three systems employ a low pressure, 3 gallon tank, and specified metering block and nozzle assemblies connected to the tank by a set of 1/4" tubing lines. There are manual on/off spool valves on all metering blocks (except the M4 and M5).

60-4020 Single Nozzle System

This portable, universal mist system is for use on single spindle machine operations, but other applications are virtually unlimited. Single cutter installations such as saws, mills, lathes and grinders are just a few examples. Simply fill the tank with coolant and attach an air supply line to the regulator. We recommend a quick disconnect coupling for ease in relieving pressure when refilling, cleaning, etc.

The Tank Assembly

The tank is a 3 gallon, stainless steel vessel with a lifetime guarantee against defects under normal usage. It comes with a large, quick-opening filler hole, pressure regulator, gage, and separate air and liquid fittings. Shop air should be regulated down to 15-40psi normal working pressure.

The Metering Block and Nozzle Assembly

The Uni-MIST metering block has high resolution, individual controls for precise and constant delivery of liquid and air. It is machined in quality brass and comes with an on/off piston for manual control.

The standard nozzle for this system is a 60-6100-12SR semi-rigid copper nozzle, 12" in length*. Flexible nozzles are available in armored steel and our new flexible plastic which is highly resistant to machine vibrations.

Specifications:

- 3 gallon storage tank 60-5020-3
- Single metering block and nozzle assembly 60-6000-12SR
- Set of 5' tubing (tank to metering block)
- Optional valves (see page 9)
- Optional magnetic mounting base 60-6340

For standard systems with other nozzles, add the nozzle suffix to the system part number. Example: A 60-4020 with an 18" flexible steel nozzle would be 60-4020-18F.

STANDARD COMPLETE SYSTEMS



*See page 6 for more information on these nozzles and nozzle suffixes for ordering.

4 CONTINUOUS SPRAY SYSTEMS

STANDARD COMPLETE SYSTEMS



60-4020-T2

60-4020-T2 2 Nozzle System

The No.60-4020-T2 has the same basic set-up as the single nozzle system. Two tank tees are mounted for air and liquid fittings, and a second metering block and nozzle assembly is added. The system comes standard with two sets of 6' lines, but different lengths of tubing can be specified to accommodate any two adjacent machines. Manual on/off pistons are also standard

Specifications:

- 3 gallon storage tank 60-5020-3
- Two single metering block and nozzle assemblies 60-6000-12SR
- Two sets of 6' tubing (tank to metering blocks)

60-4020-M2 Single Manifold- Multiple Nozzle System (M3, M4, and M5)

The 60-4020-M2 has one metering block manifold assembly with two independently controlled nozzles. The same specifications apply to our M3 (3 nozzle system), M4 (4 nozzle system), and M5 (5 nozzle system). Both the M2 and M3 have a common shut-off valve, but due to air flow restrictions, the M4 and M5 do not. We recommend a Uni-MIST solenoid or air pilot valve for on/off control. Single manifold-multiple nozzle systems give better tool coverage on multiple cutters and sheet stock lubrication.

Specifications:

- 3 gallon storage tank 60-5020-3
- Multiple metering block and nozzle assembly 60-6000-12M2SR (M3, M4, or M5)
- Set of 5' tubing (tank to metering block)



60-4020-M2

For standard systems with other nozzles, add the nozzle suffix to the system part number. Example: A 60-4020-M4 with an 18" plastic Nozzle would be No.60-4020-18M4P.

INSTRUCTIONS FOR INSTALLATION AND OPERATION

1. Connect the system tubing:

Check that the line from the tank regulator assembly leads to the side marked "A" for air on the metering block.

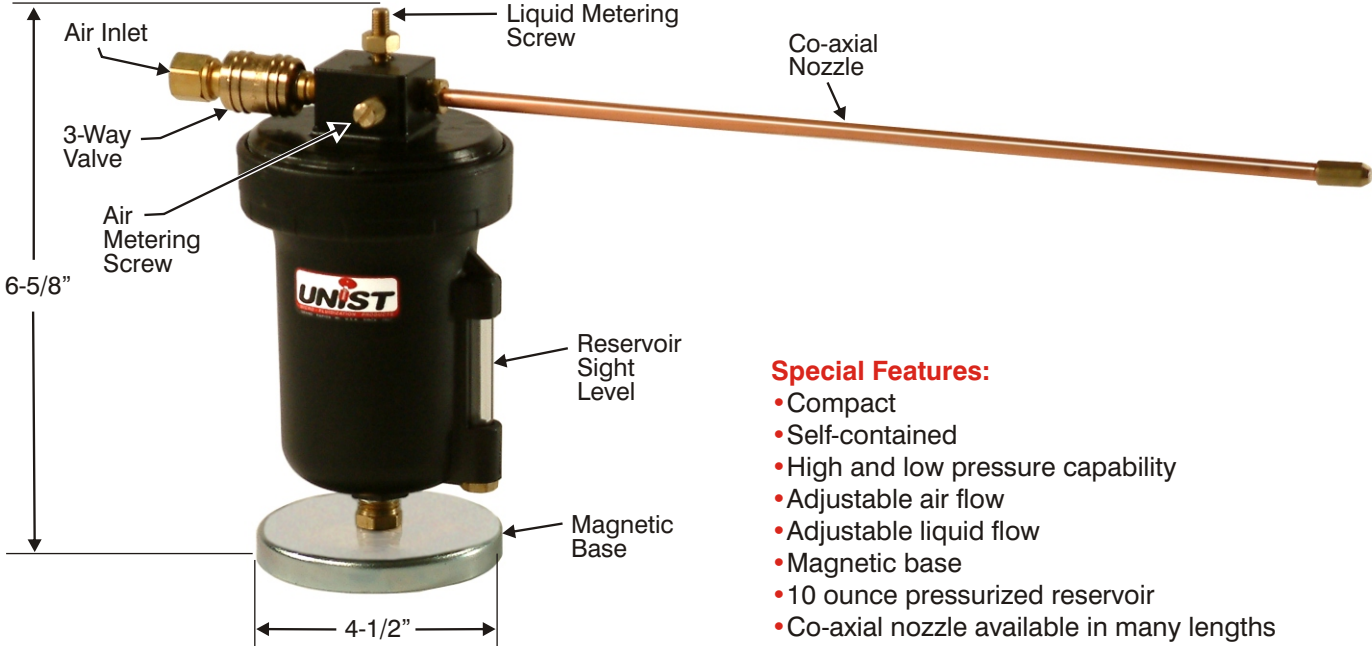
If an air pilot or solenoid valve is included, make certain the air and liquid connections enter the "in" ports of the valve, then follow through to the correct ports marked "L" and "A" on the metering block.

2. Fill the tank with material to be applied.

3. Connect air supply line to the pressure regulator on top of the tank.

4. With the integral spool valve open, adjust the air and coolant flow rates to obtain the desired mist. (Note: With oils and similar lubricants, very little air for atomization should be used. With water soluble coolants, the air flow should be near maximum to utilize the benefits of evaporative cooling.)

Note: The system will function best when the automatic valves are as close to the metering block and nozzle assembly as is possible.



Special Features:

- Compact
- Self-contained
- High and low pressure capability
- Adjustable air flow
- Adjustable liquid flow
- Magnetic base
- 10 ounce pressurized reservoir
- Co-axial nozzle available in many lengths

INEXPENSIVE, VERSATILE AND RELIABLE

The Model 4030 has all the features of larger pressurized systems at a small fraction of the cost.

One piece lid and nozzle assembly unscrews for easy access to the liquid reservoir. Just attach a compressed air line to the 3-way relief valve and you are ready to spray.

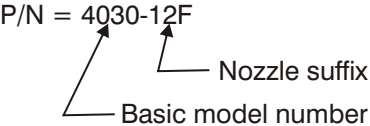
Metering for both air flow and coolant/lubricant is adjustable with the mix occurring at the nozzle tip. The 3-way valve provides manual on/off control, or the unit will operate automatically with a standard solenoid or air pilot valve in the air supply line.

The unit will dispense almost any viscosity liquid from its 10 ounce reservoir. Since the liquid is moved to the nozzle tip under pressure, only small amounts of air are required for atomization. This reduces the overspray and fogging situations which occur with many syphon or suction type mist systems.

The chrome plated magnetic base can be mounted on the bottom or side of the unit. However, bottom mounting is recommended due to machinery vibrations.

All three types of Uni-MIST nozzles (copper, steel or flexible plastic) are compatible with this unit.

Here's how to order:



(See page 6 for nozzle suffixes for ordering.)

6 DESIGNING YOUR OWN UNI-MIST SYSTEM

A STEP BY STEP GUIDE FOR BUILDING A SYSTEM FROM COMPONENT PARTS

STEP 1:

Determine the type and quantity of metering block and nozzle assemblies.

COMPONENT LISTS:

Metering Block Assemblies:

- Single nozzle manifold
- M2 — 2 nozzle manifold
- M3 — 3 nozzle manifold
- M4 — 4 nozzle manifold
- M5 — 5 nozzle manifold

Nozzle Assemblies:

- **SR** — Semi-rigid copper nozzle (12" standard)
 - Conical spray tip (standard)
 - Fan spray tip (specify)
 - **F** — Flexible steel nozzle (12" standard)
 - Conical spray tip (standard)
 - Fan spray tip (specify)
 - **P** — Flexible plastic nozzle (12" standard)
 - Internal mix conical spray tip (standard)
 - Fan spray tip (specify)
- Co-axial liquid tubing / Polyurethane (standard)
 Teflon tubing (specify)
 Nozzles are all interchangeable and come in any length
 Maximum unsupported lengths: SR - 18"; F - 12"; P - 18"

CHECK LIST

- Type of nozzles
- Length of nozzles
- Quantity of nozzles
- Type of metering block(s)
- Number of metering block(s)

EXAMPLES OF PART NUMBERS WHEN ORDERING

SPECIFICATIONS for Single Metering Block and Nozzle Assembly		
Part No.	Nozzle Style	Nozzle Length
60-6000-12SR	SR	12"
60-6000-18SR	SR	18"
60-6000-18F	F	18"
60-6000-24P	P	24"
60-6000-36F	F	36"

SPECIFICATIONS for Multiple Metering Block and Nozzle Assembly					
Part No.	Nozzle Style				
	Style	Length	Quantity	A	B
60-6000-12M2SR	SR	12"	2	7/8"	2-1/2"
60-6000-12M2F	F	12"	2	7/8"	2-1/2"
60-6000-18M3P	P	18"	3	7/8"	3-1/8"
60-6000-24M4SR	SR	24"	4	5/16"	3-1/16"
60-6000-36M5P	P	36"	5	7/32"	3-11/16"

NOTE: This is not a complete part list. It represents only a part breakdown to aid in ordering.

STEP 2:

Determine the minimum tank size based on the following table:

Maximum No. of "In-Use" Nozzles	Minimum Tank Capacity	Tank Part No.
2	2 gallons	69-5500-2
4	3 gallons	60-5020-3
5 to 10	6 gallons	69-5500-6
11 to 16	15 gallons	69-5500-15
17 to 24	30 gallons	69-5500-30
24 to 150	80 gallons	69-5500-80

For ASME tank size tabulation and specifications, see page 8.

TANK ASSEMBLIES

60-5020-3 3 Gallon Tank Assembly

Our 3 gallon stainless steel tank has a normal working pressure of 15-40 psi. Its sturdy, lightweight construction makes it one of the most popular storage tanks available. Simply fill the tank with coolant or lubricant and attach an air supply line to the regulator and you are ready to spray.

Specifications:

- Pressure regulator (50 psi maximum)
- Pressure gage
- Safety valve (50 psi maximum)
- Large, quick opening filler hole
- All welded stainless steel
- Filtered liquid sump tube assembly



60-5020-3

69-5500-(X)* ASME Rated Tank Assemblies

Increase the capacity of your system by incorporating an ASME steel tank. Tanks are available from 2 gallon to 120 gallon capacity (6 gallon pictured). Central supply systems are available to supply coolant to a maximum of 150 nozzles from one tank.

Specifications:

- Pressure regulator and gage
- 150 psi working pressure
- 1-1/4" solid brass threaded filler plug
- 1/4" NPT air inlet / 1/4" NPT liquid outlet
- Sight gage on 15 gallon and larger tanks protected by side plates
- Filtered liquid sump tube assembly
- Drain plug



69-5500-6

*X represents tank size.

8 DESIGNING YOUR OWN UNI-MIST SYSTEM

ASME TANK ASSEMBLIES

Tank Part No.	Gallon Cap	Style	Mounting Holes					
			Size	Hor C-C				
69-5500-2	2	Wall Mount	9/16"	8-1/2"	4-1/2"	8"	17"	
69-5500-6	6	Wall Mount	5/8"	11"	4-1/2"	12"	20"	
69-5500-15	15	Wall Mount	5/8"	11"	4-1/2"	12"	38"	
69-5500-30	30	Free Stand	Not Applicable				16"	48"
69-5500-80	80	Free Stand					24"	58"
69-5500-120	120	Free Stand					24"	76"

OPTIONAL ACCESSORIES FOR ASME TANKS



12" Pigtail Leads
1/2" Conduit Threads

High and Low Level Switches

High and low level switches can be wired to a control box or light box for automatic warning in case of overfilling or tank running dry. Switches are available for all ASME Rated tanks from 2 gallon to 120 gallon.

No.69-5521 (switch only)
No.69-5500-(X)-HL or -LL
X represents tank size.



69-5500-30

Central Supply Systems

Systems are available for supplying up to 150 nozzles with coolant from a single tank source. An unlimited combination of valves and nozzles is possible. Call our toll free number and our engineers will assist you in outfitting a central supply system.



ASME SYSTEMS FOR OEM

When ordering, specify:

1. Tank Assembly No.
2. Metering Block and Nozzle Assembly No.
3. Solenoid or Air Pilot Valve No. (optional)



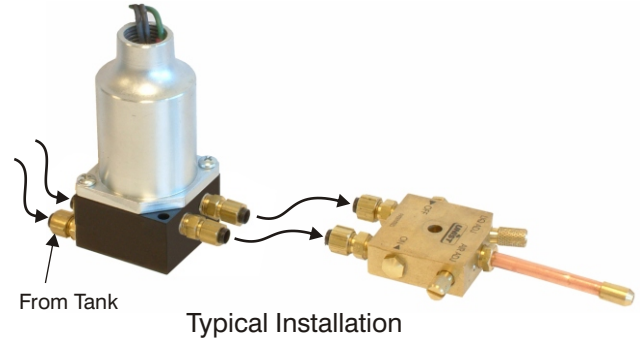
Leg brackets are available for converting 2, 6 and 15 gallon wall mount tank assemblies to free standing units.

STEP 3:

Determine type of valve needed for automatic operation.

Valve Installation

Uni-MIST valves will operate up to six nozzles simultaneously. Both the solenoid and the air pilot valve can be mounted anywhere between the tank and the metering block, however the best response is obtained when the valve is as close as possible to the metering block assembly.



68-1000-110 Solenoid Valve Specifications:

- Two 1/8" NPT inlets
- Two 1/8" NPT outlets
- Viton seals standard
- 1/2" NPT conduit
- Dimensions: 2" x 2" x 4-1/2"
- Two .210 diameter mounting holes on 2.312 diagonal centers
- 110V (standard) (24VDC, 24VAC, 220V or 440V available)



No. 68-1 000

68-1010 Air Pilot Valve Specifications:

- Two 1/8" NPT inlets
- Two 1/8" NPT outlets
- Viton seals standard
- One 1/8" NPT pilot inlet
- Dimensions: 2" x 2" x 2"
- Two .210 diameter mounting holes on 2.312 diagonal centers



No. 68-1010

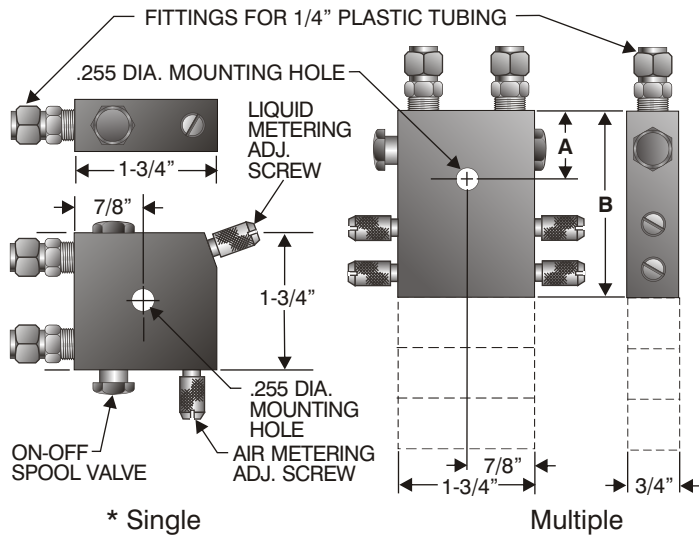
VALVE REPAIR KITS AND ACCESSORIES

- | | |
|--|---|
| <p><input type="checkbox"/> Solenoid Repair Kit..... 68-1009
Kit includes: Two insert valves.
Two sets of Balls and Springs.
One brass Plunger.</p> <p><input type="checkbox"/> Air Pilot Repair Kit..... 68-1009A
Kit includes: Two Insert valves.
Two sets of Balls and Springs.
One reinforced Gasket.</p> <p><input type="checkbox"/> Solenoid Assembly (replacement)..... 68-1015-110</p> <p><input type="checkbox"/> Coil Assembly for Solenoid..... 68-1016</p> | <p><input type="checkbox"/> 1/4" x 1/4" Outlet Tees..... 60-6320
For supplying two lines from a common tank.</p> <p><input type="checkbox"/> 1/4" x 1/4" Line Tees..... 60-6321
For splitting 1/4" tubing lines</p> <p><input type="checkbox"/> 1/4" Polyurethane Tubing, Twin..... 60-6400
Specify footage when ordering.</p> <p><input type="checkbox"/> 1/4" x 1/8" Connectors..... 60-5035</p> <p><input type="checkbox"/> Ferrules for 1/4" Tubing..... 60-6301</p> |
|--|---|

NOTE: Viton seals are standard.

10 COMPONENT PART LIST

METERING BLOCK ASSEMBLIES

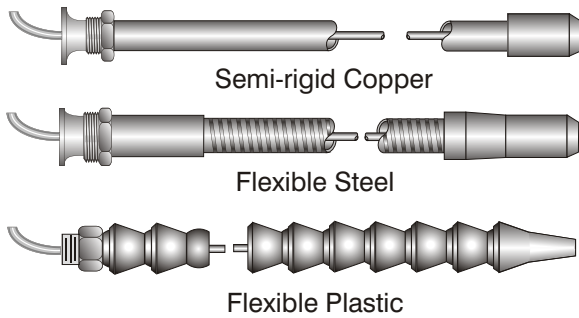


EXAMPLES OF PART NUMBERS WHEN ORDERING

SPECIFICATIONS for Metering Block Assemblies				
Part No.	Style*	Nozzle	A	B
60-6200	S	1	—	—
60-6200-M2	M	2	7/8	2-1/2
60-6200-M3	M	3	7/8	3-1/8
60-6200-M4	M	4	5/16	3-1/16
60-6200-M5	M	5	7/32	3-11/16

For use with any No. 60-6100 nozzles.

NOZZLE ASSEMBLIES



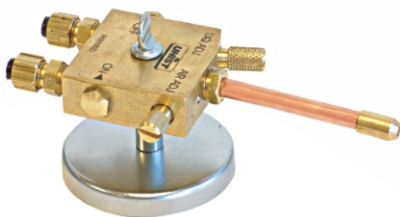
EXAMPLES OF PART NUMBERS WHEN ORDERING

SPECIFICATIONS for Nozzle Assemblies		
Part No.	Length	Style
60-6100-12SR	12"	SR
60-6100-12F	12"	F
60-6100-12P	12"	P
60-6100-18SR	18"	SR
60-6100-18P	18"	P
60-6100-24F	24"	F
60-6100-36P	36"	P

- SR — Semi-rigid copper nozzle (12" standard)
- F — Flexible steel nozzle (12" standard)
- P — Flexible plastic nozzle (12" standard)
- Conical spray tip (standard)
- Fan spray tip (specify)
- Conical spray tip (standard)
- Fan spray tip (specify)
- Conical spray tip (standard)
- Fan spray tip (specify)

Nozzles are all interchangeable and come in any length. Maximum unsupported lengths: SR - 18"; F - 12"; P - 18"

MISCELLANEOUS PARTS



60-6340 Magnetic Mounting Base
Functional chrome plated mounting base allows for easy relocation of all UNIST metering blocks.

1/4" x 1/4" Tank Tees..... 60-6320

For supplying two lines from a common tank.

1/4" x 1/4" x 1/4" Line Tees..... 60-6321

For splitting 1/4" tubing lines.

1/4" Polyurethane Tubing, Twin..... 60-6400

Specify footage when ordering.

Ferrules for 1/4" Tubing..... 60-6301

Ferrules w/Nut for 1/4" Tubing..... 60-6302

Magnetic Mounting Base..... 60-6340

O-Ring, Viton..... 60-6204-V

For metering screws and on-off pistons.

60-5020-3 3 Gallon Storage Tank.

- 60-5026..... Safety Valve
- 60-5032..... Regulator
- 60-5034..... 1/4" x 1/4" Half Union
- 60 5035..... 1/4" x 1/8" Half Union
- 60 5037..... Strainer
- 60-5031..... Gasket

Replacement Parts For 69-5500 ASME Tank Assembly.

- 69-5504..... Air Strainer
 - 69-5505-215..... Gasket
 - 69-5506..... 3-Way Valve
 - 69-5507..... 1/8" lower Gage
 - 69-5512..... Filler Plug
 - 69-5515..... Check Valve
 - 69-5500-(X)-LL..... Low Level Switch (mounted in tank)
 - 69-5521..... High/Low Level Switch (Assembly only)
 - 69-5522-(X)..... Sump Tube and Strainer Assembly
 - 69-5508-(X)..... Sight Gage
- X represents tank size.*

Replacement Parts For Metering Block and Nozzle Assemblies

Metering Block

- 60-6106..... Lock Nut
- 60-6201..... Metering Block
- 60-6202..... Liquid Metering Screw
- 94-6202..... Air Metering Screw
- 60-6203..... On/Off Piston
- 60-6204..... 0-Ring
- 60-6209..... Piston Stop
- 60-6202-J..... Metering Screw w/Jam Nut

Nozzle Assemblies

- 60-6101..... Nozzle Tip
- 60-6102..... Director
- 60-6104..... 1/8" Tubing
- 60-6105..... Hex Nut



Overhaul and Repair Kits.

Metering Block Overhaul Kit..... 60-6210
 Kit Includes:

- Two Metering Screws 60-6202 and 94-6202
- Two Piston Stops No.60-6209
- Nine 0-Rings No.60-6204-V

Valve Repair Kits..... 68-1009

- Kit includes:
- Two insert valves
 - Two sets of Balls and Springs
 - One Brass Plunger

Solenoid Assembly (replacement)..... 68-1015

NOTE: **Viton** seals are standard.

INSTRUCTIONS FOR ORDERING

CALL our toll-free number **1-800-253-5462** and our qualified sales people will assist you with your order. Engineering consultation is available to meet your specific design requirements.

FAX ORDERS: (616)949-9503

e-mail:unimail@unist.com

Distributors are available worldwide. Call our main office for the UNIST distributor nearest you.



CONTINUOUS SPRAY SYSTEMS

LOCAL REPRESENTATIVE



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