



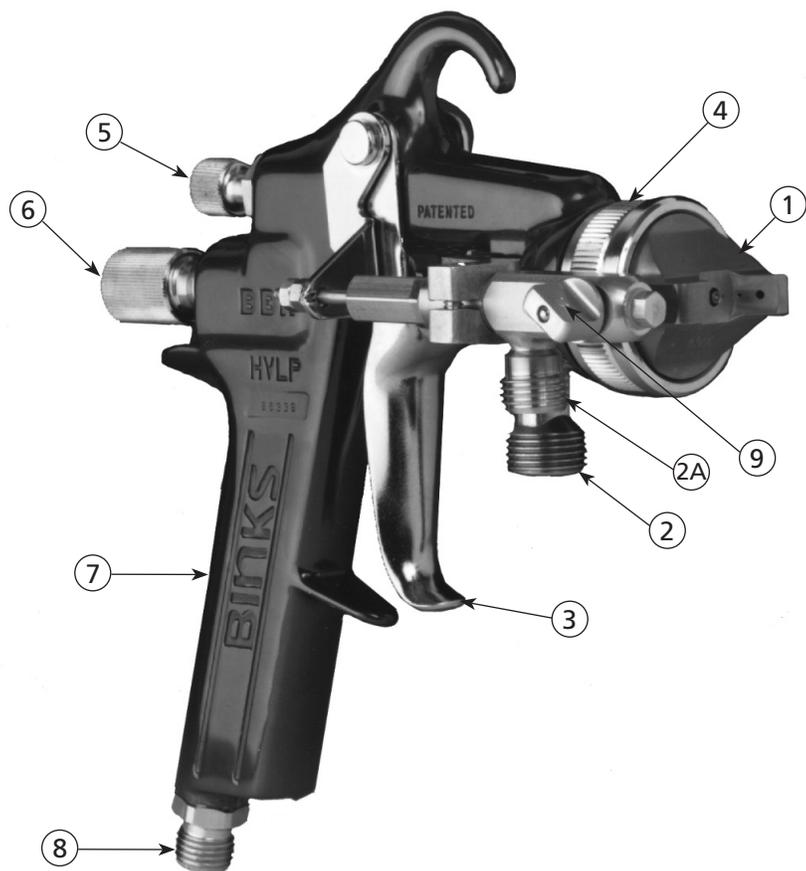
BINKS MACH 1PC HVLP SPRAY GUN FOR PLURAL COMPONENT CATALYST INJECTION

The Binks MACH PLURAL COMPONENT 1PC HVLP Gun is the lightest top quality high performance spray gun available today. You only have to pick it up to feel the difference. Its superbly balanced forged aluminum body offers the operator extra comfort and control. All of the gun's components are machined and finished to exacting tolerances and only the best materials are used, ensuring years of peak efficiency.

The MACH 1PC HVLP Gun is a conventional style air spray gun with special nozzles and modifications that allow it to operate at high transfer efficiencies in compliance with the "California South Coast Air Quality Management District" regulations as a "High Volume, Low Pressure" airspray gun.

A specially designed catalyst injector device is integrated to the HVLP Gun to inject Methyl Ethyl Ketone Peroxide or other catalyst into the stream of coating material. The catalyst is injected immediately after the coating exits the fluid nozzle for even distribution across the pattern.

The air inlet passage in the gun body incorporates a venturi which limits airflow. High pressure airflow is converted to low pressure at this point. Special air and fluid nozzles enable the gun to atomize fluid at low air pressures and velocities, creating the "soft spray" effect for high transfer efficiencies. To obtain optimum performance from your new MACH 1PC HVLP Spray Gun, read all instructions carefully.



- | | |
|--|-----------------------------------|
| 1. Lightweight Air Nozzle | 5. Side Port Control |
| 2. Main Fluid Inlet, 3/8 NPS (m) | 6. Fluid Control |
| 2A. Catalyst Inlet, 1/4 NPS (m) | 7. Forged Aluminum Body |
| 3. Extra Smooth Trigger Action | 8. Air Inlet, 1/4 NPS (m) |
| 4. Stainless Steel Fluid Nozzle and Needle | 9. Catalyst Valve Assembly 316 SS |

In this part sheet, the words **WARNING**, **CAUTION** and **NOTE** are used to emphasize important safety information as follows:

⚠ WARNING
Hazards or unsafe practices which could result in severe personal injury, death or substantial property damage.

⚠ CAUTION
Hazards or unsafe practices which could result in minor personal injury, product or property damage.

NOTE
Important installation, operation or maintenance information.

⚠ WARNING

Read the following warnings before using this equipment.



READ THE MANUAL
Before operating finishing equipment, read and understand all safety, operation and maintenance information provided in the operation manual.



WEAR SAFETY GLASSES
Failure to wear safety glasses with side shields could result in serious eye injury or blindness.



DE-ENERGIZE, DEPRESSURIZE, DISCONNECT AND LOCK OUT ALL POWER SOURCES DURING MAINTENANCE
Failure to De-energize, disconnect and lock out all power supplies before performing equipment maintenance could cause serious injury or death.



OPERATOR TRAINING
All personnel must be trained before operating finishing equipment.



EQUIPMENT MISUSE HAZARD
Equipment misuse can cause the equipment to rupture, malfunction, or start unexpectedly and result in serious injury.



KEEP EQUIPMENT GUARDS IN PLACE
Do not operate the equipment if the safety devices have been removed.



PROJECTILE HAZARD
You may be injured by venting liquids or gases that are released under pressure, or flying debris.



PINCH POINT HAZARD
Moving parts can crush and cut. Pinch points are basically any areas where there are moving parts.



AUTOMATIC EQUIPMENT
Automatic equipment may start suddenly without warning.



INSPECT THE EQUIPMENT DAILY
Inspect the equipment for worn or broken parts on a daily basis. Do not operate the equipment if you are uncertain about its condition.



NEVER MODIFY THE EQUIPMENT
Do not modify the equipment unless the manufacturer provides written approval.



KNOW WHERE AND HOW TO SHUT OFF THE EQUIPMENT IN CASE OF AN EMERGENCY



PRESSURE RELIEF PROCEDURE
Always follow the pressure relief procedure in the equipment instruction manual.



NOISE HAZARD
You may be injured by loud noise. Hearing protection may be required when using this equipment.



STATIC CHARGE
Fluid may develop a static charge that must be dissipated through proper grounding of the equipment, objects to be sprayed and all other electrically conductive objects in the dispensing area. Improper grounding or sparks can cause a hazardous condition and result in fire, explosion or electric shock and other serious injury.



FIRE AND EXPLOSION HAZARD
Never use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in equipment with aluminum wetted parts. Such use could result in a serious chemical reaction, with the possibility of explosion. Consult your fluid suppliers to ensure that the fluids being used are compatible with aluminum parts.



TOXIC FLUID & FUMES
Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, injected or swallowed. **LEARN** and **KNOW** the specific hazards of the fluids you are using.



WEAR RESPIRATOR
Toxic fumes can cause serious injury or death if inhaled. Wear a respirator as recommended by the fluid and solvent manufacturer's Safety Data Sheet.



PROP 65 WARNING
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

IT IS THE RESPONSIBILITY OF THE EMPLOYER TO PROVIDE THIS INFORMATION TO THE OPERATOR OF THE EQUIPMENT.

**FOR FURTHER SAFETY INFORMATION REGARDING BINKS AND DEVILBISS EQUIPMENT,
SEE THE GENERAL EQUIPMENT SAFETY BOOKLET (77-5300).**

OPERATION AND MAINTENANCE INSTRUCTIONS FOR THE MACH 1PC HVLP SPRAY GUN

Your new MACH 1PC HVLP Spray Gun is exceptionally rugged in construction and is built to stand up under hard, continuous use. However, like any other fine precision instrument, its most efficient operation depends on a knowledge of its construction, operation and maintenance. Properly handled and cared for, it will produce uniform finishing and mixing results long after other spray guns have worn out.

⚠ CAUTION

Before removing any components from the spray gun, shut off the air and material pressure and bleed off excess material.

OIL AND WATER EXTRACTOR IS IMPORTANT

Achieving a fine spray finish without the use of a good oil and water extractor is virtually impossible.

A Regulator/Extractor serves a double purpose. It eliminates blistering and spotting by keeping air free of oil and water and it gives precise air pressure control at the gun. An extractor with a minimum 1/2" pipe inlet is recommended.

SET-UP FOR SPRAYING

CONNECTING GUN TO THE AIR HOSE

Air should be supplied by 5/16" air hose (71-1203) typical, with 1/4" NPS (f) connection at the gun end. Hose lengths in excess of 50 ft., use 3/8" hose (71-1356) typical.

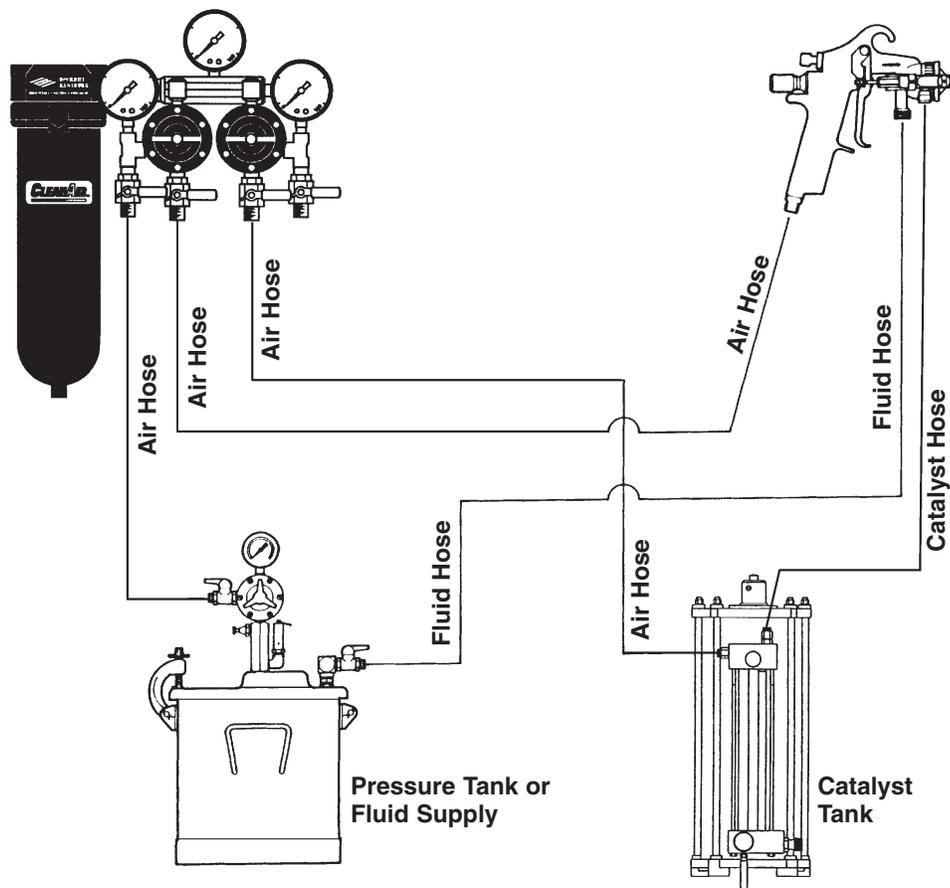
CONNECTING GUN TO THE MATERIAL HOSE

Fluid should be supplied by 3/8" fluid hose (71-3303) typical, with 3/8" NPS (f) connection at the gun end. A 1/4" hose is recommended for use with low viscosity materials. Fluid hoses of different composition are available for special fluids.

CONNECTING GUN TO THE CATALYST HOSE

The catalyst should be supplied by 1/8" catalyst hose (102-3028) typical, with 316 SS 1/4" NPS (f) connections at both ends.

TYPICAL SYSTEM—MACH 1PC SPRAY GUN



OPERATING THE MACH 1PC HVLP SPRAY GUN

CONTROLLING THE FAN SPRAY

The fan pattern is controlled by means of a side port control. Turning this control clockwise until it is closed will give a round spray, turning it counter-clockwise will widen the spray into a fan shape. The air cap cannot be rotated (See drawing below).

CONTROLLING THE MATERIAL FLOW

When used with a pressure tank, an increase in air pressure will increase the rate of flow. The correct fluid nozzle size should be selected for the correct material flow rate. It is not recommended to use the fluid control knob (19) to control resin flow because the catalyst flow will remain constant causing over catalyzation of the resin.

NOTE

Feathering and changing the needle valve opening will affect the ratio of catalyst: resin and gel.

NOZZLE TYPES

Spray patterns are determined by nozzle selection and vary somewhat depending on size, angle, nozzle orifice and output.

NOTE

Care must be exercised when cleaning with metal instruments. These parts are carefully machined and any damage to them will cause faulty spray patterns. If either the air nozzle or fluid nozzle is damaged, these parts must be replaced before perfect spray patterns can be obtained.

AIR LEAKS

1. Leaky spindle (15). Inspect, clean or replace.
2. O-Rings (9) missing or damaged. Inspect and replace.
3. Damaged seat surface in gun body. Replace.

UNMIXED RESIN

1. Clogged filter. Remove the manifold and clean debris from the filter screen.
2. Plugged manifold. Use 102-2658 manifold cleaner to unplug.
3. Insufficient catalyst pressure. Increase pressure.
4. Loose catalyst needle nuts. Readjust, tighten.

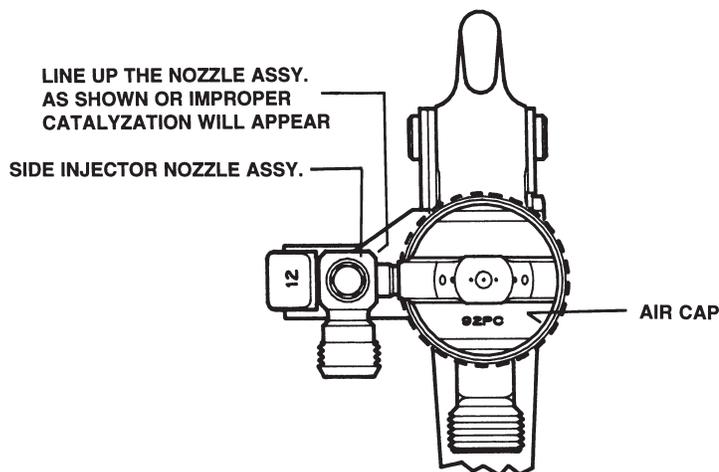
OVER CATALYZATION

1. Material knob (19) has been closed to reduce the flow of resin. Readjust.
2. Fluid nozzle (2) is partially clogged and is restricting the resin flow. Clean.

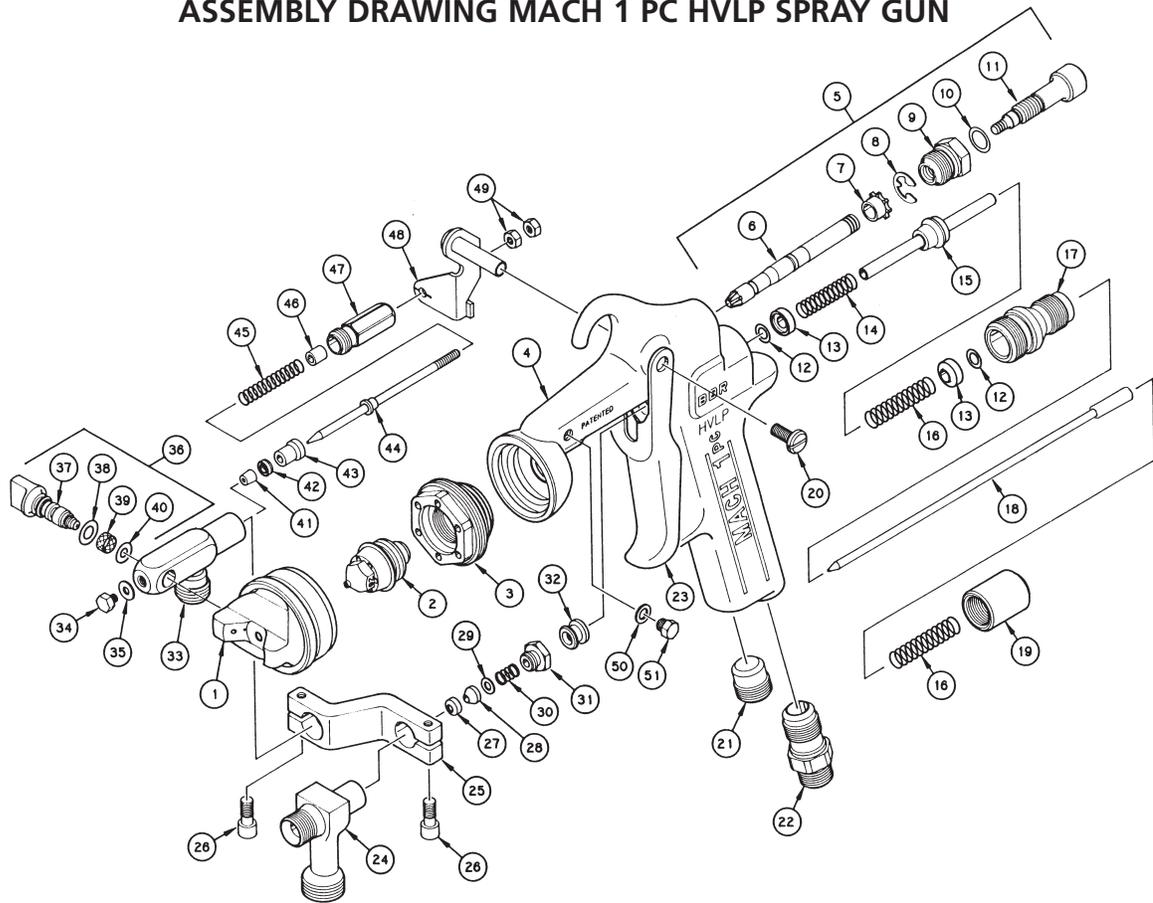
TROUBLESHOOTING

Faulty spray is often caused by:

1. Foreign material in the air and/or fluid passages.
2. Viscosity too high for spraying. Air supply or pressure inadequate.
3. Worn or damaged nozzle surfaces.
4. Gellation in gun head air passages.
5. Loose fluid nozzle.
6. Insufficient material available, check supply and replenish if necessary.



ASSEMBLY DRAWING MACH 1 PC HVLP SPRAY GUN



PARTS LIST

When ordering, please specify Part No.

ITEM NO.	PART NO.	DESCRIPTION	QTY.	ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	★	AIR CAP ASS'Y.....	1	27	54-4264 ●	GLAND ADAPTER.....	1
2	★	HVLP NOZZLE.....	1	28	54-4265 ●	NEEDLE SEAL.....	1
3	54-3543	HEAD INSERT.....	1	29	54-4266 ●	SEAL BACKUP.....	1
4	54-3922	MACH 1 PC GUN BODY ASS'Y.....	1	30	54-4267 ●	SPRING.....	1
5	54-3946	SIDE PORT CONTROL ASS'Y.....	1	31	54-4263 ●	PACKING NUT.....	1
6	54-3956	CONTROL STEM.....	1	32	54-3513	VALVE SPINDLE CAP.....	1
7	54-3917	GUIDE BUSHING.....	1	33	102-2710	BODY WELDMENT.....	1
8	54-3511	RETAINING RING.....	1	34	102-2713	PLUG.....	1
9	54-4218	CONTROL BODY.....	1	35	102-2708	GASKET.....	1
10	20-6160	O-RING (PTFE).....	1	36	■	MANIFOLD ASS'Y.....	1
11	54-4217	CONTROL SCREW.....	1	37		TUBE MANIFOLD ASS'Y.....	1
12	20-4615-5	O-RING.....	2			(Part of Item 36)	
13	54-3515	HOUSING.....	2	38	20-6525▲	O-RING.....	1
14	54-3520	SPRING, YELLOW.....	1	39	102-2729▲	FILTER SCREEN.....	1
15	54-3512	SPINDLE ASS'Y.....	1	40	20-6524▲	O-RING.....	1
16	54-3518	SPRING, BLUE.....	2	41	102-2715	CATALYST SEAT.....	1
17	54-3541	HOUSING.....	1	42	102-647	"U" CUP SEAL.....	1
18	54-3941	FLUID NEEDLE.....	1	43	102-2716	FRONT BUSHING.....	1
19	54-3606	MATERIAL VALVE CONTROL KNOB ...	1	44	102-2722	CATALYST NEEDLE ASS'Y.....	1
20	82-126	TRIGGER SCREW.....	1	45	102-2717	SPRING.....	1
21	54-3504	PLUG.....	1	46	102-2718	REAR BUSHING.....	1
22	54-768	AIR CONNECTION.....	1	47	102-2719	SPRING HOUSING.....	1
23	54-3547	TRIGGER.....	1	48	102-483	LEVER ASS'Y.....	1
24	54-3533	FLUID INLET.....	1	49	102-2728	NUT.....	2
25	102-2709	"S" BRACKET.....	1	50	54-3925	GASKET.....	1
26	20-2652-1	SCREW.....	2	51	54-3928	PLUG.....	1

- ★ See Air and Fluid Nozzle Chart on Page 7.
- Part of Self-adjusting Packing Kit (54-4261) without needle.
- ▲ Part is contained in Spare Parts Kit No. 102-2720.
- Refer to Manifold Chart on Page 6.

MACH 1PC HVLP SPRAY GUN MAINTENANCE

TO REPLACE SPINDLE ASSEMBLY (AIR VALVE)

Remove the fluid control knob (19), spring (16) and fluid needle (18). Using an Allen head wrench, loosen the housing (17) until it is finger tight. Reinsert needle (18) and finish unscrewing housing (17). Remove Items 12 thru 18 as one piece. Replace spindle assembly (15) and reinsert Items 12 thru 18 as one piece back into gun and hand-tighten housing (17). Next, remove fluid needle (18) and tighten housing (17) with Allen head wrench. Reinsert fluid needle (18), spring (16) and fluid control knob (19).

NOTE

Springs must be replaced in the same order as they were removed from the gun.

NOTE

If the instructions are not followed as described, Items 12 and 13 may drop into air passages.

TO REPLACE NEEDLE SEAL AND GLAND ADAPTER IN FLUID INLET

Remove fluid control knob (19) and spring (16) and pull out fluid needle (18). Unscrew packing nut (31) and remove spring (30) and seal backup (29). Using a No. 10 x 1-1/4" coarse thread wood screw (Binks Part No. 20-6536) or a small sheet metal screw, remove the needle seal (28) and gland adapter (27). Replace gland adapter (27) and needle seal (28). Reinsert seal backup (29), spring (30) and screw on packing nut (31) a couple of turns so it fits loosely by hand. Reassemble fluid needle (18), spring (16) and material valve control knob (19). Finally, tighten packing nut (31) until it bottoms out on fluid inlet (24).

ADJUSTMENT OF CATALYST NEEDLE

The Catalyst needle assembly is adjustable for length by the location of the adjusting nuts on the needle. The nuts should be adjusted so that when the trigger assembly is in contact with the spindle assembly, a movement of the spindle assembly of 1/16" minimum is required before the catalyst needle moves. Under no circumstances should the resin valve open before the air valve or catalyst valve assembly.

The correct timing adjustment is: air-catalyst-resin. The timing is correctly set at the factory. However, repositioning the catalyst needle nuts will affect the timing.

GUN CLEANING

Submerging in solvents is a poor practice because of the solvent residue that may cling to interior air passages. Clean solvent *must* be used if the gun is to be submerged.

The best practice is to remove the air nozzle and to flush solvent through the fluid passages. All nozzles may be placed in solvent for washing. The nozzle orifice and angle passageways are critical. Always wash and rinse with a clean solvent to prevent residue accumulation in the minute holes.

CAUTION

If using metal instruments for cleaning, use extreme caution. DO NOT gouge or distort surfaces. Use the brush supplied with the gun.

NOTE

Some air quality agencies prohibit the spraying of solvent into the atmosphere when flushing spray guns. In some areas spray guns must be cleaned in a completely enclosed gun cleaning device which prevents solvent vapors from escaping to the atmosphere. Consult with your local Binks distributor if you are not sure of requirements in your area.

OPTIONS

MANIFOLDS	TUBE I.D.	IDENTIFICATION
102-2676	.012	12 (standard)
102-2677	.016	16
102-2678	.023	23

ACCESSORIES

54-3918	Gun Wrench
102-2656	Large O-Ring Installation Tool
102-2657	Small O-Ring Installation Tool

GENERAL SPRAY INSTRUCTIONS AND SPRAY TECHNIQUE

To reduce overspray and obtain maximum efficiency, always spray with the lowest possible fluid/air pressure. This will produce an acceptable spray pattern.

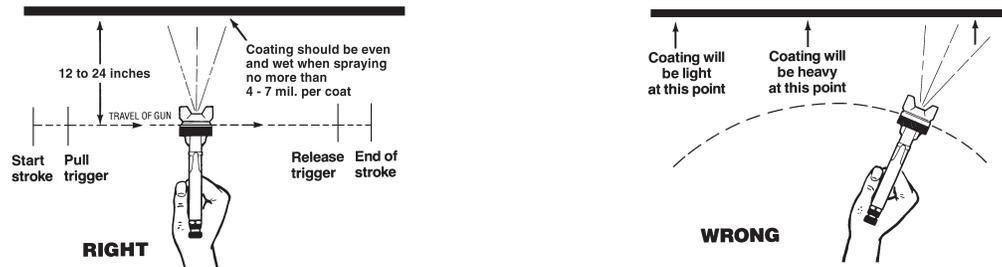
Excessive atomizing air pressure can increase overspray, reduce transfer efficiency, and with some materials, atomizing air pressure should not exceed 10 PSI. See the table in the air pressure recommendation and regulatory note on Page 8.

For best results, use only enough pressure for desired flow (1.5 - 2 pounds). Higher fluid pressure may be required for heavy bodies materials, low fluid pressures will produce a narrower than normal spray pattern.

SPRAY TECHNIQUE

The first requirement for a good resultant finish is the proper handling of the gun. The gun should be held perpendicular to the surface being covered and moved parallel with it. (See illustrations.)

The distance between the gun and surface should be 12 to 24 inches depending on material and atomizing pressure. The material deposited should always be even and wet. Lap each stroke over the preceding stroke to obtain a uniform finish.



FLUID NOZZLES, AIR CAPS AND NEEDLES

FLUID NOZZLE DESCRIPTION	FLUID NOZZLE PART NO.	FLUID NOZZLE ORIFICE SIZE	COMPATIBLE AIR CAPS DESCRIPTION AND PART NUMBER	COMPATIBLE NEEDLE PART NUMBER
90	45-9000	(.030 DIA) 0.6mm	91PC (102-2682), 92PC (102-2681) 91PC SS (102-2926), 92PC SS (102-2924)	54-3941
90F	45-9002	(.030 DIA) 0.6mm	91PC (102-2682), 92PC (102-2681) 91PC SS (102-2926), 92PC SS (102-2924)	
91	45-9100	(.040 DIA) 1.0mm	91PC (102-2682), 92PC (102-2681) 91PC SS (102-2926), 92PC SS (102-2924)	54-3941
91F	45-9102	(.040 DIA) 1.0mm	91PC (102-2682), 92PC (102-2681) 91PC SS (102-2926), 92PC SS (102-2924)	54-4023
92	45-9200	(.046 DIA) 1.2mm	91PC (102-2682), 92PC SS (102-2924)	54-3941
92F	45-9202	(.046 DIA) 1.2mm	91PC (102-2682), 92PC SS (102-2924)	54-4024
905	45-9050	(.089 DIA) 2.3mm	905PC (102-2684)	54-3941

AIR PRESSURE REQUIREMENTS W/92PC AIR NOZZLE

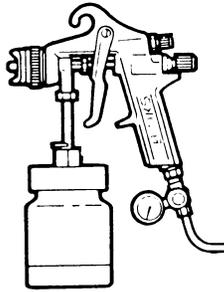
ATOMIZING PSI	SIDE PORT CONTROL		NOZZLE ATOMIZING AIR FLOW (SCFM)
	GUN INLET PSI	REGULATOR PSI*	
03	06.0	08.0	4.5
05	08.5	10.0	6.0
09	13.5	17.5	7.5
10	15.0	19.0	8.0

***NOTE:** Regulator pressures are based on 25' of 5/16" hose in good condition without Quick-Disconnects or other restrictive fittings. Use the Air Nozzle Test Gauge accessory to conform the atomizing/regulator pressure relationship for your actual air supply set-up. Adjust air pressure as necessary for your specific application. Maximum recommended atomizing pressure is 10 PSI.

Atomizing pressure must be set to allow for the drop in air pressure between the regulator and the spray gun.

With 60 PSI applied at air supply:

Approx. 5 1/2 PSI at nozzle

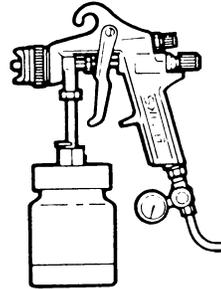


Only 34 PSI at gun inlet

25 feet of 1/4" I.D. hose causes a drop of 26 PSI between the air supply and the gun.

(NOT RECOMMENDED)

Approx. 9 psi at nozzle



48 PSI at gun inlet

25 feet of 5/16" I.D. hose causes a drop of 12 PSI between the air supply and the gun. For this reason we recommend the use of 5/16" hose.

(RECOMMENDED)



1/4"

Cross section view showing comparison of inside hose diameters (actual size).



5/16"

IMPORTANT REGULATORY NOTE

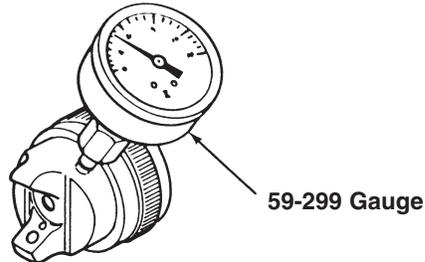
Some Regulatory Agencies prohibit the operation of HVLP spray guns above 10 PSI nozzle atomizing pressure. Users subject to this type of regulation should not exceed 10 PSI (50 PSI gun inlet pressure). See General Spray Instructions and Air Pressure Recommendations, Page 7. It is recommended that the Nozzle Test Gauge (see below) be used to confirm actual nozzle operating pressure.

It may also be a requirement of some Regulatory Agencies that users have this Gauge Nozzle available on site to verify that the gun is being operated within the limits of applicable rules.

AIR NOZZLE TEST GAUGE ASSEMBLY

54-3935 for 90 Series Nozzles

NOTE: Test gauge should be cleaned after use.



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WARRANTY POLICY

Binks products are covered by Carlisle Fluid Technologies one year materials and workmanship limited warranty. The use of any parts or accessories, from a source other than Carlisle Fluid Technologies, will void all warranties. For specific warranty information please contact the closest Carlisle Fluid Technologies location listed below.

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