



MACH 3SL Hydraulically-Assisted HVLP Spray Gun

WARNING — HIGH PRESSURE — WARNING
UP TO 6000 POUNDS PER SQUARE INCH



INTRODUCTION

The Binks MACH 3SL HYDRAULICALLY-ASSISTED HVLP SPRAY GUN combines the proven HVLP efficiency of Binks best-selling MACH 1 gun with hydraulically-assisted atomization to yield a reliable, carefully engineered special-purpose spray gun. The MACH 3SL provides consistent coatings with difficult materials by “pre-atomizing” pressurized fluid through a constrictive carbide nozzle. Specially designed air nozzles further promote material atomization and ensure consistent, uniform finishes.

The MACH 3SL operates at high transfer efficiencies, and fully complies with all government regulations for HVLP “High Volume, Low Pressure” airspray guns. The MACH 3SL makes use of special features to ensure this compliance by converting the air inside the gun from high pressure inlet air to high volume low pressure atomizing air to create a highly transfer efficient soft spray.”

To gain the optimum performance from your new MACH 3SL HVLP spray gun, please read all instructions carefully.

SPECIFICATIONS

| | |
|------------------------|--|
| Maximum Fluid Pressure | 6000 PSI |
| Maximum Air Pressure | 50 PSI |
| Gun Body | Forged Aluminum Alloy |
| Fluid Path | Stainless Steel and Tungsten Carbide parts |
| Fluid Shut-off Type | Ball and Seat |
| Seat Material | Tungsten Carbide |
| Fluid Inlet Size | 1/4 NPS thread |
| Air Inlet Size | 1/4 NPS thread |
| Gun Weight | 23 Ounces |

NOTE

IMPORTANT REGULATORY NOTE regarding the use of this product appears on page 10.

Replaces
Part Sheet
2666R

Part
Sheet
2666R-1

WARNING



**HIGH PRESSURE CAN CAUSE SERIOUS INJURY IF EQUIPMENT IS INSTALLED OR USED INCORRECTLY—
READ, UNDERSTAND, AND OBSERVE ALL WARNINGS AND INSTRUCTIONS IN THIS MANUAL.**

OPERATE EQUIPMENT ONLY AFTER ALL INSTRUCTIONS ARE CLEARLY UNDERSTOOD.

INJECTION HAZARD

1. The Sprayer pumps coatings at high pressure (6000 PSI/415 Bar). If you spray yourself or anyone else at close range, the stream of material can puncture the skin and cause great harm (possible amputation).
2. **NEVER** point the spray gun at yourself or anyone else. The tip guard provides some protection against injection injuries, but it is mainly a warning device. **NEVER** remove the tip guard. **NEVER** point the spray gun at your hands, fingers, or body. **ALWAYS** keep the spray gun trigger safety catch locked in the OFF position when not in use.
3. **DO NOT** cover the tip guard and attempt to “blow back” fluid. This is not an air sprayer.
4. If injury occurs, see your doctor immediately! **DO NOT TREAT THIS AS A SIMPLE CUT.** Inform your doctor specifically of what fluid was injected.

AVOID STATIC SPARKING

Static electricity charge builds up by high velocity liquid flowing through a hose during flushing, cleaning, or spraying operations. Proper grounding of the airless system safely dissipates this charge.

All high pressure airless systems must be grounded to avoid dangerous static sparking, explosion, or fire when spraying or flushing with flammable liquids.

- Use Binks **NO-WIRE** conductive hose in all airless spraying operations. Be sure the gun and hose have continuity. Check continuity weekly with ohmmeter. Overall (end to end) resistance of unpressurized hose must not exceed 29 megohm (max.) for any coupled length or combination of hose lengths.
- Make sure the airless pump is grounded. **NEVER** operate the unit when it is on a non-grounded platform. Electric airless units are grounded through the grounding prong on the plug. The electric cord or receptacle must be grounded. **DO NOT** alter or remove grounding prong.
- When flushing or cleaning with a combustible solvent,

always use an open metallic container for receiving the waste solvent. Ground the solvent receptacle.

- Bond the spray gun to the waste container with a grounding wire. Be sure there is good metal to metal contact.
- **ALWAYS** remove spray tip when flushing the airless system. Operate the pump at the lowest possible pressure.

GENERAL WARNINGS

1. **NEVER** leave a pressurized sprayer unattended.
2. **DO NOT** use fluids, coatings, or chemicals that are not compatible with nylon hoses.
3. Periodically inspect all hoses for leaks and/or abrasions and tighten all connections before use. **DO NOT ATTEMPT TO REPAIR** a defective hose. **REPLACE** it with another conductive hose.
4. Follow all warnings and precautions of the coating and solvent manufacturers.
5. **ALWAYS** relieve pressure in the system by turning bypass valve to **BYPASS** or triggering spray gun before disassembly of any component parts.

REPLACEMENT PARTS

The airless sprayer is designed to use authorized parts only. When using this pump with parts that do not comply with the minimum specifications and safety devices of Binks, the user assumes all risks and liabilities.

SPRAY GUN SET-UP

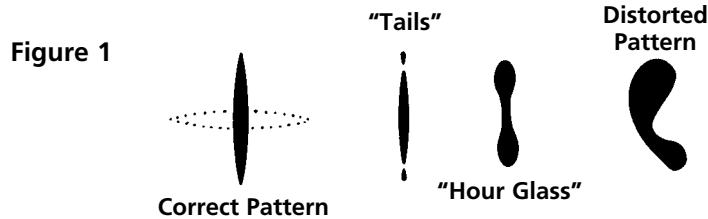
1. Connect your high-pressure airless fluid hose to the gun fluid inlet and tighten securely.
2. Connect your air hose to the gun air connection and tighten securely.
3. Set regulators to provide the gun with about 40 PSI air pressure and about 200 PSI fluid pressure.
4. Rotate the side port control knob fully counterclockwise to obtain maximum fan pattern width. Remove the air cap and spray tip assembly and aim the gun in a container. Pull the gun trigger and start your fluid pump slowly until fluid flows steadily from the gun.
5. Release the trigger. Engage the trigger safety to lock the trigger. Replace the spray tip and air cap.
6. Unlock the trigger safety. With the side port control air shut off, adjust fluid pressure until the spray pattern changes from a pattern with “tails” to a correctly atomized pattern (see Figure 1).
7. Lower fluid pressure until the pattern with “tails” reappears.

8. Turn on the side port control air. Slowly increase gun air pressure until the “tails” disappear and the fluid is well atomized.

If more than 50 PSI air pressure is needed to adequately atomize the fluid, use only 50 PSI air pressure and increase the fluid pressure to improve atomization. Increased fluid pressure will increase fluid flow as well. If this increase is unacceptable, use a smaller spray tip to reduce fluid flow.

Excessive fluid or air pressure will distort the spray pattern, generate “overspray” and reduce transfer efficiency. Atomizing air pressure should not exceed 10 PSI. See regulatory note (Page 10) for further information.

Highly viscous materials or low fluid/air pressures can cause hourglass-shaped or “tailed” patterns. A worn or clogged spray tip can also cause distorted spray patterns.



TROUBLESHOOTING

CAUTION

Never use metal instruments to clean or scrape fluid or air nozzles. These parts have been carefully machined and altering their shape will cause faulty spray.

Uneven spray patterns are usually caused by a clogged spray tip. To clear the tip, engage trigger safety and remove retainer ring, air cap and tip. Rinse tip in solvents and clean the orifice with compressed air, then reassemble.

Intermittent or fluttering sprays are caused by a clogged fluid filter or erratic fluid supply. To service the filter assembly, disassemble and clean thoroughly, then

reassemble. Always inspect the filter element when cleaning the filter assembly and replace the element if damaged.

If fluid leaks from the spray tip when the trigger is not engaged, remove and inspect both the carbide seat and the wire and ball assembly. Replace any worn or damaged parts. **Be sure to follow the safety precautions given on Page 2.**

If fluid leaks past the fluid inlet cartridge, replace cartridge. **If you decide to replace the cartridge, again be sure to follow the safety precautions on Page 2.**

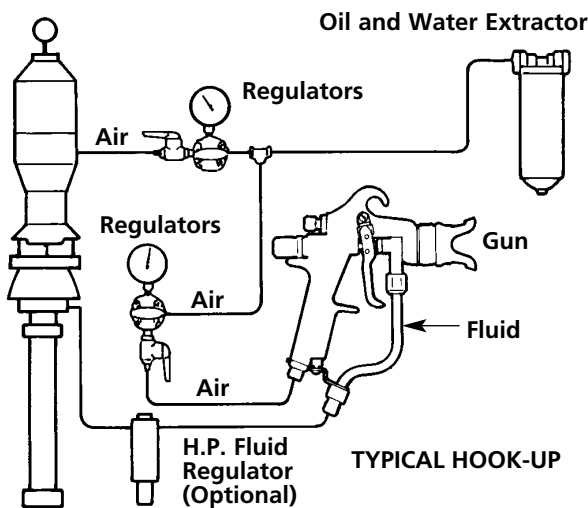


Figure 2

Fan pattern adjustment: turn knob counterclockwise to increase pattern; clockwise to decrease pattern.

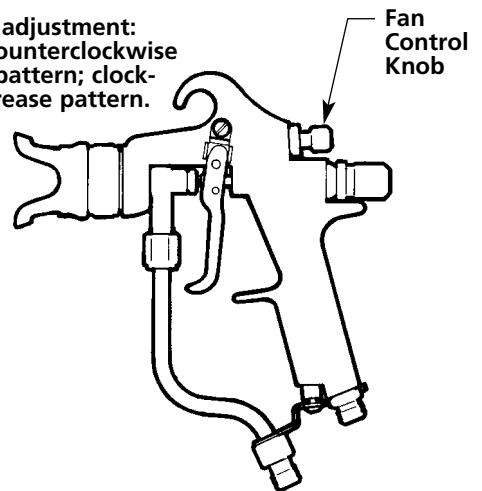


Figure 3

SPRAY GUN MAINTENANCE

CAUTION

Never use metal instruments to clean or scrape fluid or air nozzles. These parts have been carefully machined and altering their shape will cause faulty spray.

WIRE AND BALL ASSEMBLY AND CARBIDE SEAT REPLACEMENT

Refer to assembly drawing on page 6 to locate numbered items.

1. Engage the safety assembly (35).
2. Shut off fluid pump and disconnect its air or power supply.
3. Release pressure from the entire fluid system, from the pump to the spray gun.
4. Remove nozzle guard assembly (1), air cap assembly (2) and spray tip assembly (3). Unscrew seat retainer (5) from fluid nozzle body (12) and remove seat (6), small ring (8), seal gasket (9), large ring (10) and loosen cartridge assembly (34). Unscrew material valve control knob (29) and remove spring (28). Pull back wire and ball assembly (11, 26, & 27) to prevent bending during new seat and gasket installation. Replace items 6, 8, 9 and 10 if necessary. Be sure the taper in the carbide seat faces the wire and ball assembly when reassembling. Screw seat retainer (5) to fluid nozzle body (12) and tighten. Push wire assembly (11), chuck lock (26) and wire chuck (27) forward until it stops. Adjust wire chuck (27) for 1/16" trigger movement from air to fluid.
NOTE: See pages 8 & 9 for proper trigger adjustment.

Reassemble spring (28) and material valve control knob (29). Finally, reassemble spray tip assembly (3), air cap assembly (2) and nozzle guard assembly (1).

FLUID CARTRIDGE REPLACEMENT

Refer to assembly drawing on page 6 to locate numbered items.

1. Engage the safety assembly (35).
2. Shut off fluid pump and disconnect its air or power supply.
3. Release pressure from the entire fluid system, from the pump to the spray gun.
4. Remove nozzle guard assembly (1), air cap (2) and spray tip assembly (3). Remove seat retainer (5), carbide seat (6) and seal assembly (7). Remove material valve control knob (29) and spring (28) from gun.
5. Loosen and remove wire chuck (27) and chuck lock (26) from wire and ball assembly (11). Remove wire and ball assembly from gun front.

6. Loosen ferulok nut (40) and slide over fluid tube. Remove screw (43) and trigger guard assembly (42) from gun. Loosen and remove trigger stud (15), trigger screw (16) and trigger assembly (39) from gun body. Remove fluid nozzle body (12) and head insert (13) and slide fluid inlet (33) out of gun body.
7. Remove and replace cartridge assembly (34).
8. Reassemble fluid inlet (33) and head insert (13) to gun body. Screw fluid nozzle body (12) to head insert (13). Insert wire and ball assembly (11) into gun. Reassemble items 10, 9, 8 and 6 into fluid nozzle body (12). Screw on and tighten seat retainer (5) to fluid nozzle body (12). Reassemble spray tip assembly (3), air cap assembly (2), nozzle guard assembly (1) and trigger assembly (39) to gun. Push wire and ball assembly (11) forward. Screw on chuck lock (26) and wire chuck (27) to wire and ball assembly (11). After this has been done, pull back the wire chuck (27) and adjust it on the wire & ball assembly (11) for approximately 1/16" trigger movement from air to fluid. **NOTE:** See pages 8 & 9 for proper trigger adjustment.

Reassemble spring (28) and material valve control knob (29). Reattach nut (40) along with ferrule (41) and trigger guard assembly (42) to fluid inlet (33). Assemble screw (43) to gun body plug (31). Torque nut (40) to 20 ft. lbs.

WARNING

If nut (40) is not torqued to recommended torque, under high pressure requirements the fluid tube may disengage from fluid inlet and cause serious injury.

SPINDLE ASSEMBLY O-RING REPLACEMENT

Refer to assembly drawing on page 6 to locate numbered items.

1. Engage the safety assembly (35).
2. Shut off fluid pump and disconnect its air or power supply.
3. Release pressure from the entire fluid system, from the pump to the spray gun.
4. Remove material valve control knob (29) and spring (28) from gun rear.
5. Loosen and remove wire chuck (27) and chuck lock (26) from wire and ball assembly (11).
6. Remove housing (25) with a 5/16" Allen wrench and slide spindle assembly (23) from gun body.
7. Lightly lubricate spindle assembly stem and replace o-rings (20).
8. Reassemble in reverse order.

GENERAL SPRAY INSTRUCTIONS

For maximum efficiency and minimum overspray, always spray with the lowest possible fluid/air pressure that will deliver an acceptable spray pattern.

A good spray finish will depend on proper gun handling. Always hold the gun perpendicular to the target surface and spray by moving the gun in paths parallel to the target (see Figure 4). Start the gun in motion before pulling the trigger, and release the trigger before bringing the gun to a stop. This coating method will give you accurate material and spray gun control.

Gun-to-target distance will depend on material choice and atomizing pressure, but is usually between 6 and 12

inches. Keep the most recent coating stroke even and wet to prevent “dry lap.” Lap each stroke over the preceding stroke for a uniform finish.

Control the fan spray by using the side port control assembly. Turning this control fully clockwise will give a narrow spray pattern; turning the control counterclockwise will widen the spray into a fan shape. The fan spray can be positioned anywhere through 360° by rotating the air cap assembly relative to the gun. To reposition the air cap, loosen the nozzle guard assembly slightly and rotate the air cap to the desired position, then retighten the nozzle guard assembly.

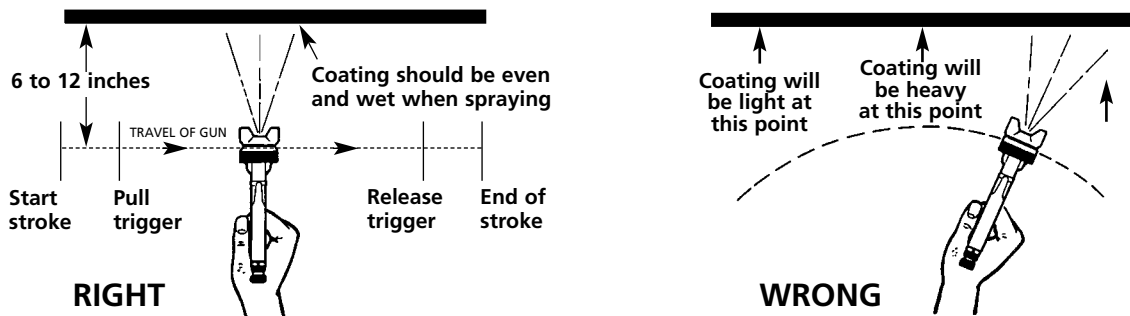


Figure 4

SPRAY GUN CLEANING INSTRUCTIONS

CAUTION

Never immerse the entire gun in solvent or thinners; some gun parts will lose their lubricative film and wear more quickly. Additionally, solvents may carry impurities throughout the gun body and allow them to clog small air and fluid passages.

In certain states it is now illegal to spray solvents containing Volatile Organic Compounds (VOC) into the atmosphere when cleaning a spray gun. Binks recommends that you comply with these new air quality laws by following one of the two methods below when cleaning your spray gun:

1. Use an enclosed clean-up station or enclosure which will condense and collect VOC vapors to prevent

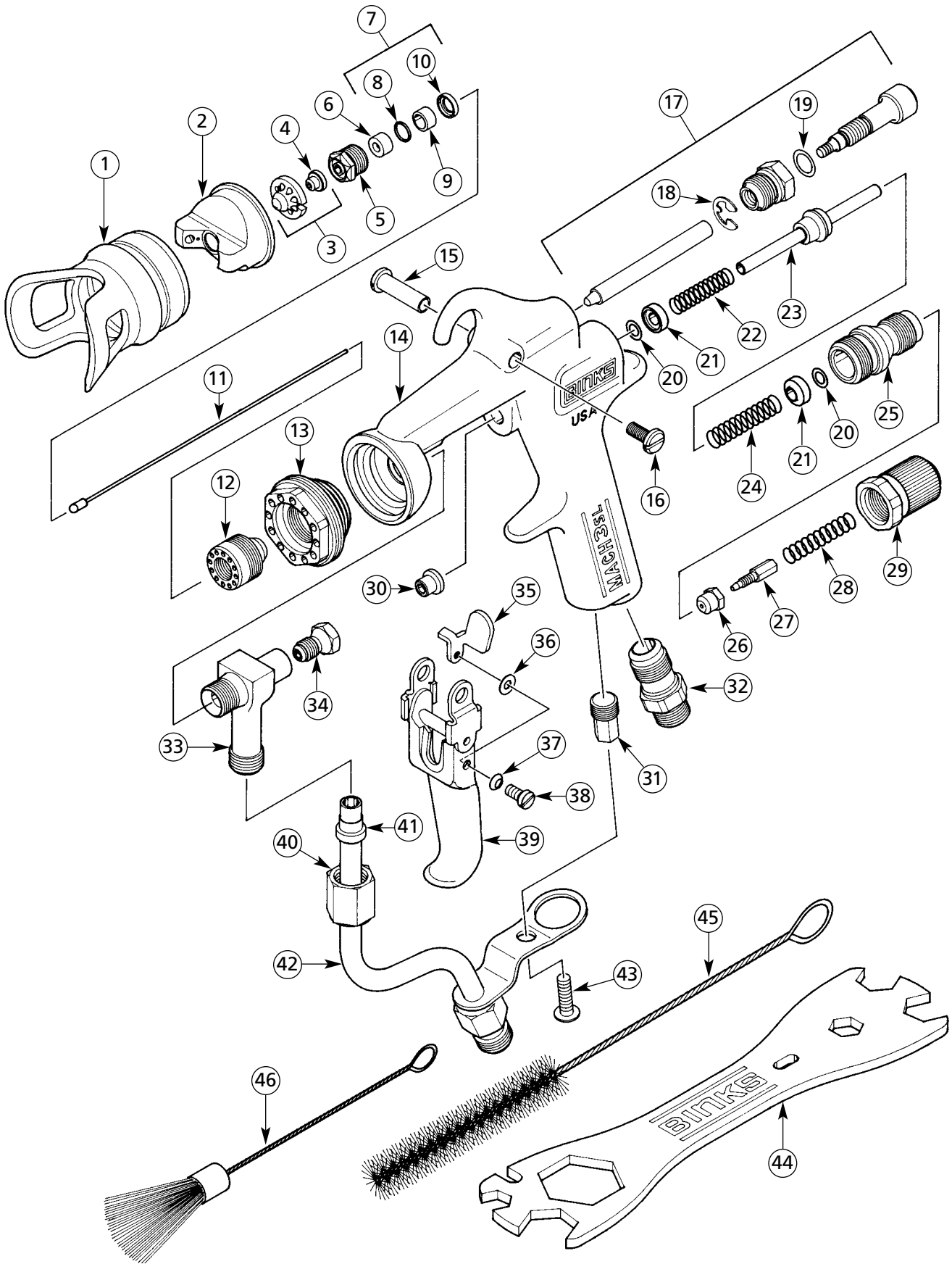
their atmospheric release.

2. Use a washer unit. Your gun washer should completely enclose the spray gun, filter, nozzles and other parts during wash, rinse and drain cycles to prevent the release of VOC vapors into the atmosphere.

To further protect the environment, avoid storing solvents or solvent-soaked wipes, such as those used for surface preparation and clean-up, in open or absorbent containers.

Be sure to disassemble and thoroughly clean the filter assembly each time you clean the spray gun. After cleaning the gun and filter, lightly lubricate the spindle assembly to provide smooth trigger action and reduce wear.

MACH 3SL HYDRAULICALLY-ASSISTED HVLP SPRAY GUN



PARTS LIST

(When ordering, please specify Part No.)

| ITEM NO. | PART NO. | DESCRIPTION | QTY. | ITEM NO. | PART NO. | DESCRIPTION | QTY. |
|----------|-----------|---------------------------------------|------|--|-------------------------------|---|------|
| 1 | 54-3753 | NOZZLE GUARD ASSEMBLY..... | 1 | 26 | 54-3523 | CHUCK LOCK | 1 |
| 2A | 46-9309 | AIR CAP (93 HA Low Volume)..... | 1 | 27 | 54-3524 | WIRE CHUCK..... | 1 |
| 2B | 46-9509 | AIR CAP (95 HA High Volume)..... | 1 | 28 | 54-3639 | SPRING (Red)..... | 1 |
| 3 | * | TIP ASSEMBLY (Includes Tip Seal)..... | 1 | 29 | 54-3542 | MAT'L VALVE CONTROL KNOB ... | 1 |
| 4 | 54-3745▲■ | TIP SEAL▼..... | 1 | 30 | 54-3769 | TRIGGER CAP | 1 |
| 5 | 54-3779 | SEAT RETAINER..... | 1 | 31 | 54-3737 | GUN BODY PLUG..... | 1 |
| 6 | 54-3733▲ | HIGH PRESSURE SEAT..... | 1 | 32 | 54-768 | AIR CONNECTION | 1 |
| 7 | 54-3780▲ | SEAL ASSEMBLY | 1 | 33 | 54-3744 | FLUID INLET | 1 |
| 8 | 54-3791 | SMALL RING (Nylon) | 1 | 34 | 54-3635▲ | CARTRIDGE ASSEMBLY | 1 |
| 9 | 54-3798 | SEAL GASKET (Stainless Steel)..... | 1 | 35 | 54-3552 | SAFETY ASSEMBLY | 1 |
| 10 | 54-3771 | LARGE RING (Nylon) | 1 | 36 | 54-3560 | WASHER..... | 1 |
| 11 | 54-3640▲ | WIRE AND BALL ASSEMBLY | 1 | 37 | 54-3553 | WAVE SPRING..... | 1 |
| 12 | 54-3778 | FLUID NOZZLE BODY | 1 | 38 | 20-5928 | SCREW Pan Head, 6-32 x 5/16 Long..... | 1 |
| 13 | 54-3543 | HEAD INSERT | 1 | 39 | 54-3765 | TRIGGER ASSEMBLY | 1 |
| 14 | 54-3746 | MACH 3SL HANDLE ASSEMBLY... | 1 | 40 | ● | FERULOK NUT 5/16 | 1 |
| 15 | 54-4359 | TRIGGER STUD | 1 | 41 | ● | FERRULE 5/16..... | 1 |
| 16 | 82-126 | TRIGGER SCREW | 1 | 42 | 54-3642 | TRIGGER GUARD ASSEMBLY. | 1 |
| 17 | 54-4343 | SIDE PORT CONTROL ASSEMBLY .. | 1 | 43 | 20-6606 | SCREW Button Head, 10-24 x 1/2 Stainless Steel | 1 |
| 18 | 54-3511 | RETAINING RING..... | 1 | 44 | 54-3918 | WRENCH (Optional) | 1 |
| 19 | 20-6160 | O-RING | 1 | 45 | 82-469 | GUN BRUSH | 1 |
| 20 | 20-4615▲ | O-RING | 2 | 46 | 54-4133 | GUN BRUSH (Optional)..... | 1 |
| 21 | 54-3515 | SPINDLE GUIDE | 2 | OPTIONAL FLUID FILTER ASSEMBLY (100 Mesh-Not Shown) | | | |
| 22 | 54-3520 | SPRING (Yellow)..... | 1 | 54-3655 | FILTER ASSEMBLY | 1 | |
| 23 | 54-3512 | SPINDLE ASSEMBLY | 1 | 54-1835 | FILTER SCREEN (100 Mesh)..... | 1 | |
| 24 | 54-3518 | SPRING (Blue)..... | 1 | | | | |
| 25 | 54-3541 | HOUSING..... | 1 | | | | |

* See Chart Below.

■ Available in 5-Pack 54-3745-5.

▲ Included in Spare Parts Kit 54-3645.

▼ For older 9- and 10- Tips, order 54-3781

● Part of Trigger Guard Assembly (42).

Seal (while quantities last).

Cannot be purchased separately.

SPRAY TIP ASSEMBLY CHART

NOTE: Tip seal is included with all spray tip assemblies.

| Part Number | Stamp No. | Orifice (inches) | Spray Width (at 12") | Part Number | Stamp No. | Orifice (inches) | Spray Width (at 12") |
|-------------|-----------|------------------|----------------------|-------------|-----------|------------------|----------------------|
| 110-0904 | 0904 | .009 | 4 | 110-1804 | 1804 | .018 | 4 |
| 110-0908 | 0908 | .009 | 8 | 110-1808 | 1808 | .018 | 8 |
| 110-0910 | 0910 | .009 | 10 | 110-1810 | 1810 | .018 | 10 |
| 110-1104 | 1104 | .011 | 4 | 110-1814 | 1814 | .018 | 14 |
| 110-1108 | 1108 | .011 | 8 | 110-1820 | 1018 | .018 | 20 |
| 110-1114 | 1114 | .011 | 14 | 110-2108 | 2108 | .021 | 8 |
| 110-1304 | 1304 | .013 | 4 | 110-2110 | 2110 | .021 | 10 |
| 110-1306 | 1306 | .013 | 6 | 110-2114 | 2114 | .021 | 14 |
| 110-1308 | 1308 | .013 | 8 | 110-2120 | 2120 | .021 | 20 |
| 110-1314 | 1314 | .013 | 14 | 110-2608 | 2608 | .026 | 8 |
| 110-1504 | 1504 | .015 | 4 | 110-2610 | 2610 | .026 | 10 |
| 110-1508 | 1508 | .015 | 8 | 110-2614 | 2614 | .026 | 14 |
| 110-1510 | 1510 | .015 | 10 | 110-2620 | 2620 | .026 | 20 |
| 110-1514 | 1514 | .015 | 14 | 110-3610 | 3610 | .036 | 10 |

ARTICULATED TRIGGER ADJUSTMENT

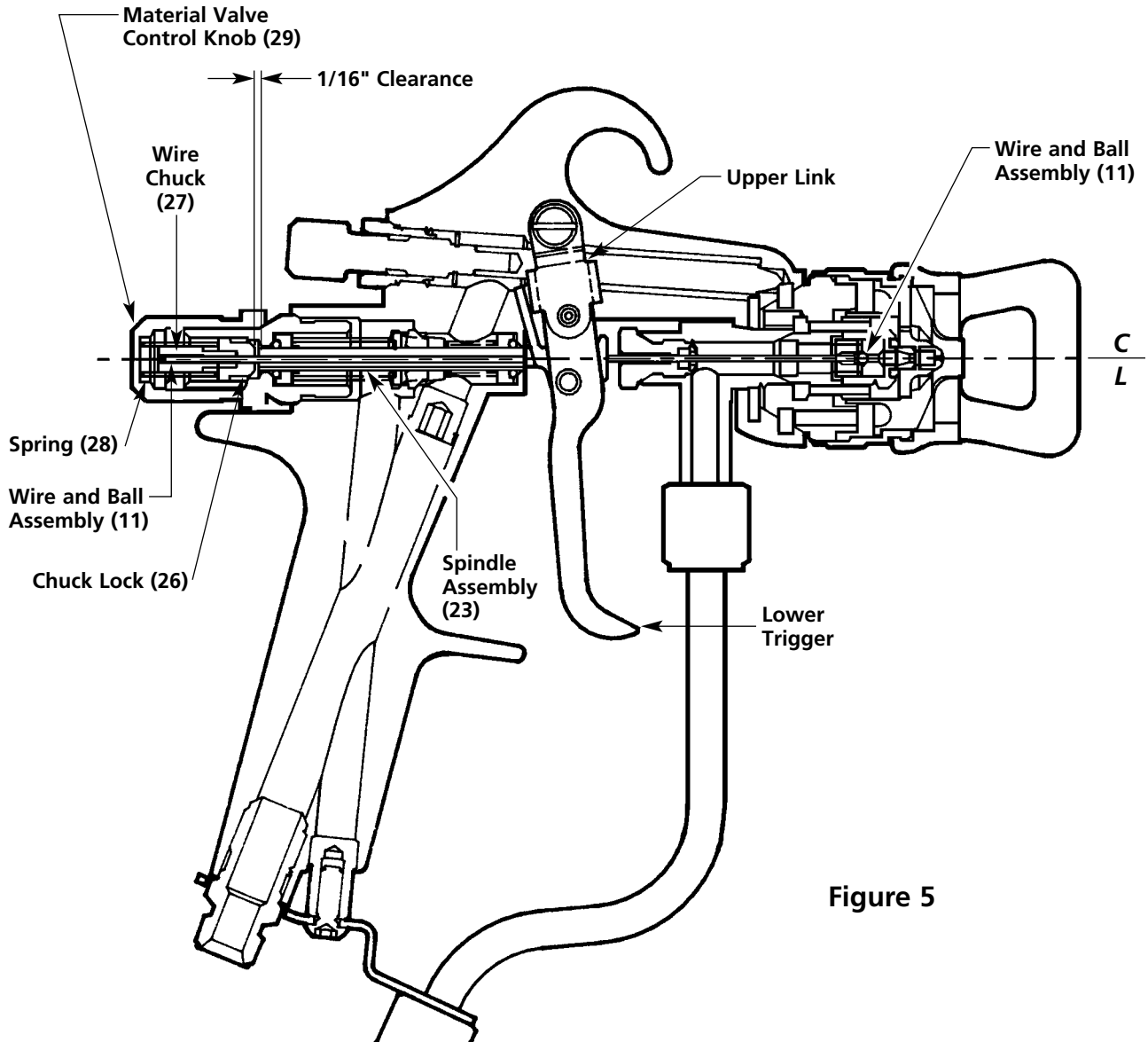


Figure 5

Refer to assembly drawing on page 6 to locate numbered items.

1. Remove material valve control knob (29) and spring (28).
2. Loosen wire chuck (27) from chuck lock (26) just enough to allow wire and ball assembly (11) to move.
3. Push wire and ball assembly forward until it stops.
4. Push wire chuck (27) and chuck lock (26) forward until they stop.
5. Holding forward pressure against the rear end of the wire and ball assembly (11), pull the trigger (39) back until the air valve spindle assembly (23) moves back 1/16".
6. Without moving the wire chuck and lock (27 & 26), release pressure on the trigger (39) and tighten the wire chuck and chuck lock in place.
7. Check for proper travel as shown in figures 6 thru 9.

NOTE

Incorrect trigger adjustment may result in a substantial increase in trigger pull.

ARTICULATED TRIGGER ADJUSTMENT

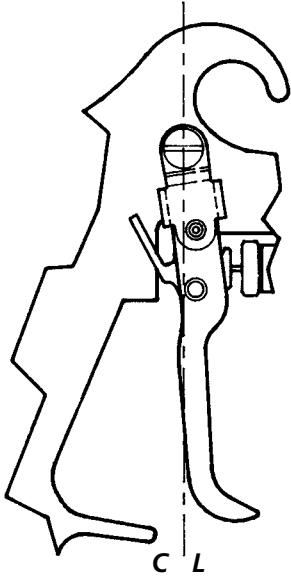


Figure 6

Gun in closed (untriggered) position

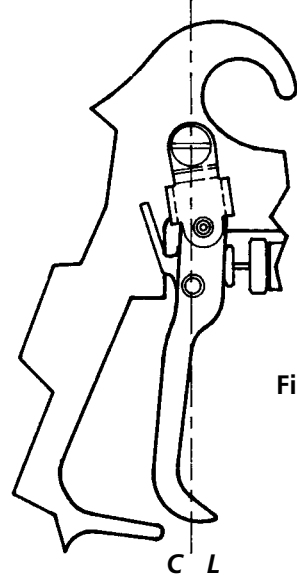


Figure 7

Air Valve opens and Upper Link of Trigger remains stationary

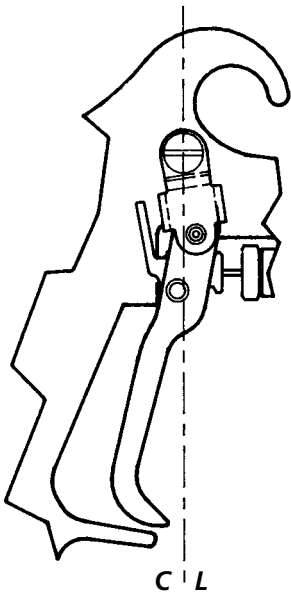


Figure 8

Fluid Ball unseats (approx. 1/32")
Upper Link remains stationary

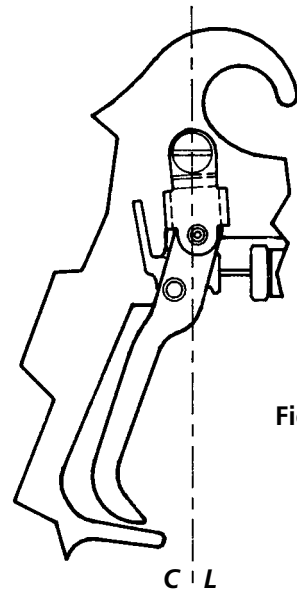
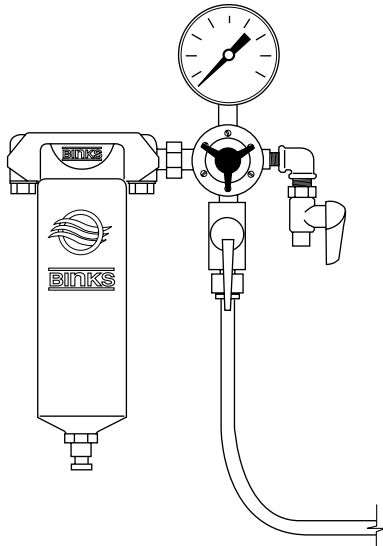


Figure 9

Full open air and fluid.
Upper Link moves with Lower Trigger



BINKS OIL AND WATER EXTRACTOR IS IMPORTANT

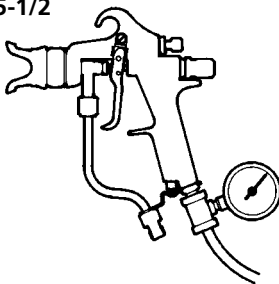
Achieving a fine spray finish without the use of a good oil and water extractor is virtually impossible.

A Binks 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.

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:

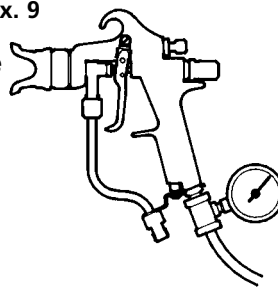
Approx. 5-1/2
psi at
nozzle



**Only 34 psi
at gun inlet**

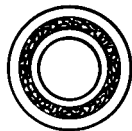
25 feet of 1/4" I.D.
hose causes a drop
of 26 psi between
the air supply and
the gun.

Approx. 9
psi at
nozzle



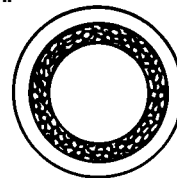
**48 psi
at gun inlet**

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 recom-
mend the use of
5/16" hose.



1/4"

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



5/16"

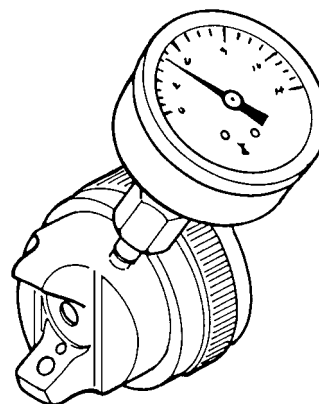
IMPORTANT REGULATORY NOTE

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 the gun inlet pressure indicated on the air cap and/or in these instructions. 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 air nozzle test gauge assembly available on site to verify that the gun is being operated within the limits of applicable rules.

AIR NOZZLE TEST GAUGE ASSEMBLY

54-3774 95HA 50 PSI Air Nozzle (50 PSI max. inlet pressure)
54-3622 93 HA 12 PSI Air Nozzle (12 PSI max. inlet pressure)



59-299 Gauge

NOTES

Sales and Service Through a Nationwide Network of Industrial Distributors.

Customer Service in USA / 1-800-992-4657
Technical Support in USA / 1-888-992-4657

2666R-1 Revisions: (P7) Changed Item (4) to Part No. 54-3745, changed Item (17) to 54-4343, added footnote referring to Spare Parts Kit 54-3745-5, added footnote referring to 54-3781 Seal, changed all Part Nos. and Stamp Nos. in Spray Tip Assembly Chart; (P10) New illustration for Oil and Water Extractor.



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