TITAN[®] CAPSPRAY HVLP TRAINING MANUAL



THE LEADER IN PORTABLE HVLP SYSTEMS FOR OVER 35 YEARS

Introduction

The contractor market for HVLP spray systems is the fastest-growing market segment in the spray equipment industry. As you'll soon realize, HVLP sprayers represent a tremendous opportunity to help painters become more competitive and profitable. Used primarily for finishing work, HVLP sprayers work hand-in-hand with airless equipment to help contractors reduce the time and material necessary to complete a job.

The key is minimized overspray and control of the spray pattern. HVLP systems* atomize coatings by supplying air at High Volume (up to 25 CFM – cubic feet per minute) and Low Pressure (up to 10 PSI – pounds per square inch) to the air cap for mixing with the fluid stream from the nozzle. The user can expect transfer efficiency ranging from 65 – 90 percent and can finely control the size and shape of the spray pattern, as well as the rate of application and thickness of coats. The result is:

Less time masking and prep work
Less material waste
MORE PROFITS

In addition, the high transfer efficiency of HVLP assists contractors to comply with new clean air laws designed to reduce volatile organic compounds (VOC) emissions. HVLP paint sprayers help protect the environment–and painters–by reducing overspray and bounceback.

This manual will give an overview of HVLP technology and uses; it will also focus on the specific features and operation of Titan CAPSPRAY[®] HVLP equipment.



*These Systems are fully compliant with: C.A.R.B. (California Air Resource Board) SCAQMD (South Coast Air Quality Board)

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O.T.C. (Ozone Transport Commission) E.P.A. (Environmental Protection Agency) H.V.L.P. Regulating

Spraying Methods

HVLP	Two types of HVLP systems dominate the painting contractor market: portable turbines and direct hook-up guns. The two systems use completely different air sources, but atomize material in similar manners.
	Portable Turbine Most commonly found in the painting contractor market for portable applications, this type of HVLP system uses a centrifugal blower motor as the air source.
	NOTE: For HVLP compliance, air pressures must be limited to produce less than 10 psi measured dynamically at the air cap and air horns.
Conventional Air Spray	Direct Hook-up or High Flow Regulator Guns High flow regulator guns utilize an attached, high flow regulator, which increases air flow and reduces air pressure to achieve HVLP results. Regulators deliver a more precise pressure setting than direct hook-up guns because the regulator is adjustable right at the gun.
	Conventional air spray atomizes material at high air pressure (35 to 80 PSI) and moderate air flow. The negative aspect of conventional air spray is excessive overspray and bounceback that results from high air pressure. Conventional air spray creates excessive turbulence at the air cap, which contributes to excess overspray. Bounceback results from the material being discharged from the nozzle, moving to the substrate at a very high velocity and bouncing off the substrate. The advantage of this method is ultra-fine atomization and a high rate of application. Conventional systems are used on finishing work ranging in size from small jobs to production lines. They generally are found in stationary applications. Required components are an air compressor, air hose and conventional spray gun.
Airless Sprayers	Airless sprayers atomize coatings by forcing the paint through a small tip opening at very high fluid pressure. Working fluid pressures range from 1200 to 3600 PSI. Airless spray transfer efficiency is higher than conventional air spray (see chart on page 1), and offers the ability to spray the widest variety of coatings.
	Airless sprayers typically are portable with gas, electric and air operated available. The primary application is production work. These systems are capable of covering large areas in a short amount of time. When used properly, the correct fluid pressure, hose length and tip size airless systems handle the widest range of applications. As a result, it is rare to find a commercial painting contractor who does not own or need airless spray equipment.

Spraying Methods

Air-Assisted Airless	Air-assisted airless sprayers offer fine finish capabilities combined with a medium production rate. Air-assisted technology uses a combination of airless and air spray. Fluid pressure ranges from 200 to 1500 PSI, with air intermixed at 5 to 25 PSI. The systems typically are found in stationary and portable fine finish production applications.
Electrostatic Spray	Electrostatic spray systems charge the paint at the tip. The charged particles move within the electrostatic field, which is attracted to the grounded object, forming an even coating on its entire circumference. When used properly, the result can be high transfer efficiency with uniform mil thickness.
	A variety of electrostatic systems are available, including conventional airless and air-assisted. Applications include chain link fences, wrought iron, lockers, and metal office furniture.

When to use HVLP Equipment

HVLP equipment is classified as a finishing tool. It is not designed to be used for covering large, flat surfaces, except when using specialty coatings, such as multi-spec, or where overspray may be hazardous.

HVLP systems are designed to cut labor time, minimize waste, and improve the final finish on the substrate. In addition to enhancing profitability, in many states HVLP is compliant with the most stringent transfer efficiency requirements. For this reason, you can expect that HVLP sprayer usage will continue to grow at an accelerated pace.

HVLP Applications Include:

Touch-up
Dentil molding
Crown molding
Cabinets
Door jambs
Elevator doors
Frames
Bi-fold doors

Implement equipment Six-panel doors Appliances Porcelain Furniture Lockers Shutters Dividers

Gutters General maintenance Wicker furniture Shelving Pipes Multi-color finishes Louvered doors Overhangs

HVLP Features:

High transfer efficiency Minimal bounceback Sprays most materials Reduced prep and faster clean-up Affordable Inexpensive to maintain Controlled spraying Portability Reduces material consumption by up to 40% Three spray patterns available Works on 15-amp service Cuts labor time Spray fan patterns from ¼4" to 12" Low fluid pressure means long life Moisture-free atomizing air

How Does HVLP Work?

A pressure vessel (1-quart cup, 2-quart cup, or pressure pot) supplies paint to the gun, where a high volume of low pressure air intersects with the paint stream breaking the paint into small particles. This process is called atomization.



Since the spray pressures are much lower, the atomized paint has less bounceback. This means less overspray, greater transfer efficiency and better control.



How to get acquainted with HVLP

HVLP sprayers are not for every painter. Be certain that HVLP is the right fit for your finishing application. Then match the correct unit size and tip size to the type of materials you will use.

After you have determined the answers to these questions, consider more specific criteria:

- What materials will they be spraying?
- Will the system be used in a stationary or portable application?
- Do you need a one-quart cup system, a two-quart remote cup, a 2.5 gallon pressure pot or a transfer pump system for continuous use?
- Will you need extra maneuverability with the gun?
- *Is maximum hose length a consideration?*
- How often will you use the sprayer?

The significance of the answers to these and other questions are discussed in the following portion of the handbook.

Before operating a CAPSPRAY HVLP spray system, please review the owner's manual. The manual includes all of the information needed to properly operate and maintain HVLP equipment.

Also keep in mind these basic safety considerations:

- Always spray in a well-ventilated area. Always comply with appropriate local, state and national codes governing ventilation, fire prevention, and operation.
- *Never spray near sparks, open flames or hot surfaces. Some coating materials are highly flammable.*
- Before each use, check all material hoses (if you are utilizing them) for cuts, leaks, abrasions, cover bulging or movement of couplings. If any of these conditions exist, replace the hose immediately. Never repair a paint hose.

As with most sprayers, three distinct components make up an HVLP system: air source, air hose, and HVLP spray gun. There are several variations of these components depending upon the manufacturer. We will deal primarily with CAPSPRAY equipment.

Air Source The air source is the heart of the system. It provides the CFM and PSI re q u i red to atomize coatings. Depending on the type of gun and the application requirements, there are two types of air sources–air compressor and turbine.

Air Compressor

Air compressors are used as the air source when using either direct hook-up guns or high-flow regulator systems. Because of high CFM requirements with HVLP direct hook-up guns, the minimum compressor size recommended is 5 HP. Due to the overall size and electrical requirements of 5 HP air compressors, portability is limited. In most cases, direct hook-up guns which require an air compressor as the air source are confined to stationary applications.

Turbine

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The turbine is the most common air source found in the painting contractor market. A turbine is a high-speed centrifugal blower motor which provides the gun with high CFM flow at low air pressures. Because of the high RPM approximately 20,000 RPM in some cases—the air is frictionally heated. This eliminates moisture from the atomizing air. The high RPM also increases the atomizing air temperature reducing flash time and helping to minimize blushing. All CAPSPRAY turbines are commercially rated, heavy-duty and designed for continuous use.

By-Pass Turbine with Tangential Discharge

The tangential discharge turbine is used in the by-pass configuration, using separate cooling and intake fans. This turbine comes from the manufacturer with a built-in air outlet. This type of turbine is found in all CAPSPRAY portabel turbine sprayers.

Although there are many variations and uses, the main function of a turbine in HVLP equipment is to generate a high volume of air at air pressures up to 10 PSI out the air cap. A critical element in determining the amount of air pressure that a turbine can generate is the number of *stages*. A stage, within a turbine, can be viewed as an individual compression chamber. The greater the number of stages within a turbine, the higher the PSI the turbine is able to produce–the more PSI the turbine produces, the heavier the viscosity of material that can be sprayed.



HVLP System Components

Please note that while air flow (CFM) and pressure (PSI) are both important in determining the turbine's ability to atomize coatings, pressure is the key. All manufacturers rate their turbines in the range of 50-170 CFM at free flow (turbine unrestricted, no hose or gun attached). Free flow turbine CFM as a measure of performance is misleading. Whether the turbine produces 50 or 170 CFM, it will have enough air flow to support the gun, which uses up to 25 CFM. Pressure determines the actual flow and velocity of air moving through the air cap. Higher turbine pressure produces higher flow and higher velocity air at the air cap. This creates more turbulence at the nozzle, thus providing the ability to break up and atomize more viscous coatings.

Air Hose The air hose often is ignored, but it is a key element of the HVLP system. Its function-transferring air from the power source to the gun-cannot be overlooked. The CAPSPRAY hose is specifically designed to withstand heat and solvents, while remaining lightweight and pliable.

Hose Length

To determine the maximum air hose length with a turbine, use this general rule of thumb: double the length of hose that comes standard with the turbine. Example: If 20 feet of hose comes with the turbine, the painter can use a maximum hose length of 40 feet. Just screw the hoses together to extend the length.

Maxum II™ and Maxum Elite™ HVLP Spray Guns

The Maxum II[™] and Maxum Elite[™] non-bleeder guns are the most versatile, painter-friendly HVLP guns available on the market.



HVLP System Components

Maxum II[™] and HVLP guns differ from conventional air spray guns in two main areas: Maxum Elite[™] One difference is the size of the internal air ports. Conventional gun air port openings are approximately 1/4". HVLP guns need more air and use **HVLP Spray Guns** openings 5/8" in size. That makes the air ports more than 6 times as large as (continued) those in conventional guns. Keep in mind that HVLP atomizes with a high volume of air and low pressure. The second major difference is the manner in which the material is moved from the cup out of the nozzle. HVLP units pressurize the cup, *forcing* material to the nozzle. A conventional gun creates a vacuum to *siphon* material to and through the nozzle. Non-Bleeder Gun The term non-bleeder means that when the user releases the trigger of the gun, vs. Bleeder Gun the air flow stops. With a two-stage trigger, the user will first feel air coming from the air cap; trigger further and material flow will begin. With a bleeder gun, air flows continuously; the trigger only starts and stops the paint flow. Both Maxum HVLP guns offer two air inlet locations: one on the bottom of **Optional Air Inlet** the handle for non-bleeder set up and the second directly behind the air control valve. To set up the gun in bleeder spray mode, remove the air control knob and replace it with the air inlet fitting from the bottom of the gun. Close the air inlet fitting with the plug supplied with the gun. The air hose can now be attached to the gun. When using this location, the gun becomes a bleeder gun by always discharging air. This location is particularly helpful spraying inside lockers or cabinets. Another area to utilize the top air inlet is to improve atomization with very heavy materials. Since the air valve in the gun is bypassed in this configuration, air is directly channeled to the air cap resulting in higher atomizing pressure.



Patented conversion feature allows you to change to a bleeder gun if the job requires it.

Maxum II and Maxum Elite HVLP Spray Gun Adjustments

Air Control Valve

*On the Maxim Elite spray gun the air control vale is indexed for easy use.



Material FlowAdjustment *On the Maxim Elite spray gun the material adjustment knob is indexed for easy use.



External Packing Nut

One-Way Valve

*On the Maxim Elite spray gun the check valve is built into the gun body.



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To produce the highest-quality finish possible, the spray gun requires the proper air and material adjustments. You control the air flow with the air control valve, located at the rear of the gun.

The Maxum II gun has a notch that is cast into the control knob on the valve. Air flow is at its fullest when the knob is set at the 12:00 position. Rotating the valve 180° either direction cuts off the air completely.

The air control valve is used when spraying with light viscosity materials

or in confined areas, such as cabinets or lockers. When spraying light material, full air is not needed. Restrict the valve until you achieve proper atomization without excess overspray.

The amount of paint fed from the cup out the nozzle is controlled by the material adjustment knob located at the heel of the gun, just above the handle. To decrea se paint flow, turn the fluid adjustment knob clockwise. To increase the paint



flow, turn the knob counter- clockwise. A little experimentation will give you the correct combination of paint and air necessary to achieve the desired finish and fan size. The material adjustment can also be used to set a specific trigger pull, so the same pattern size and material flow are consistently obtained on each pass.

The external packing nut, located directly in front of the trigger, is used to adjust the packing so a seal is maintained around the needle.

The one-way valve, or serviceable check valve, is designed to allow air into the cup, putting the material under pressure, yet not releasing the cup pressure. CAPSPRAY's one-way valve prevents paint from seeping up the air tube into the air passages of the gun. It also eliminates any delay in material flow when the gun is triggered.

CAPSPRAY's one-way valve is

easily detached for cleaning purposes. The valve simply rotates to open for cleaning and contains a disk that can be removed and cleaned with soap and water for waterborne materials or a compatible solvent for other materials.

Maxum II and Maxum Elite Air Cap Adjustments

Air Cap CAPSPRAY's exclusively designed guided air cap makes it virtually impossible for the painting contractor to misalign. This translates to better spray pattern control.

The air cap design determines the quality of the spray pattern. It is crucial the air cap remains clean and free of dried paint.

Spray Pattern The CAPSPRA

The CAPSPRAY HVLP guns offer a choice of three spray patterns: horizontal flat, vertical flat and round. To select the desired pattern, simply rotate the two air cap "ears" until they click into the desired position.

An up and down position gives you a horizontal pattern. When the ears are side by side, you will get a vertical pattern. And when the ears are diagonal, the pattern is round. **Never trigger the gun while adjusting the spray pattern**.











Diagonal Round Spray Cap Position Pattern

Horizontal Vertical Spray Cap Position Pattern

Vertical Cap Position

Horizontal Spray Pattern

The Fan Size

To change fan size, change the distance from the surface to the gun nozzle. The closer you are to the surface, the smaller the pattern becomes. Moving back increases the fan size.

Trigger pull will also vary the fan size. The greater the trigger pull, the greater the material flow and fan size.

Another way to adjust fan size is to move the air cap in (clockwise) for a larger pattern or out (counter-clockwise) for a smaller pattern. When getting started, the air cap should be flush with the fluid nozzle. This will give you the full range of pattern size control.



Spray pattern width is adjustable from ½" to 12".

Spray Techniques

Spraying Techniques

Position the spray gun perpendicular to and 1 to 8 inches from the spray surface. Spray parallel to the surface and use controlled, smooth passes at an even speed. Start by applying a thin coat of material on the first pass and allow it to tac before applying a second, slightly heavier coat.



How to Make the Correct Pass

When spraying, trigger the spray gun before starting your pass, and release trigger before stopping the pass. The best results will occur when making passes about 20 inches. Keep the gun perpendicular to the surface and overlap passes approximately 50% to obtain the most consistent, professional finish.



Overlapping Each Pass

The CAPSPRAY guns are not "all on" or "all off." With practice, trigger pull and spraying distance can also be used to change the pattern size. The ideal distance for HVLP spraying is 1-8 inches from the substrate. **Remember**, the closer you stay, the more control you have.

The edges of each spray pattern fade slightly. To maintain even coverage, overlap each stroke.



Spray Techniques

Spraying Large Areas

Spray a long panel or wall in sections. Use horizontal or vertical strokes. Keep stroke length to 3 feet. Spraying a longer pattern may cause uneven coverage and excessive overspray. Overlap each section.



Spraying the Outside Edges of Corners

Hold the gun directly facing the corner edge so that the surfaces which form the corner are sprayed along the edge.

Spray horizontally for vertical edges, and spray vertically for horizontal edges.



Spraying the Inside Edges of Corners



Each surface that forms the corner should be sprayed separately. Spray one surface vertically. Spray the other surface with short, even, horizontal strokes. When spraying each surface, overlap slightly into corner.

Spraying Slender Work

Picket fences are sprayed with single strokes, made vertically at an angle. This motion will cover the front and one edge. Spray the other side of each picket at the opposite angle. Place a piece of cardboard behind the fence to catch overspray.



Spray Techniques



Adjust the material adjustment knob to the desired spray width. Spray two adjacent surfaces at the same time.

Grills and Wire Fences



For cylinders up to three feet high or wide, spray vertically. For larger cylinders, such as storage tanks, spray horizontally. For small pipe work or tubular furniture, use the round spray pattern set to the proper diameter.



Cutting In

Cutting a line "in" is a technique best explained with an example.

Suppose you are spraying horizontally on a wall, and you are approaching a door frame. Do not spray horizontally to the edge of the door frame. LEAVING THE AIR CAP HORNS SET AT HORIZONTAL, CUT IN BY MOVING THE GUN IN A VERTICAL FASHION.

This hides the pattern created by cutting in. Feather the spray or reduce paint flow to gun before cutting in. Use horizontally after spraying vertically, leave air cap horns for vertical spray.



Choosing a Projector Set

Projector Set

The projector set determines what materials and viscosities can be sprayed from the gun. A larger projector set has a larger nozzle opening, allowing you to spray thicker, heavier materials.

A projector set consists of a needle assembly, fluid nozzle and air cap.



The Maxum II and Maxum Elite spray gun comes standard with a #3 guided projector set.

You should choose a projector set based on two things: type of material to be sprayed and finish desired. The following charts will help you make the correct choice.

Maxum II Projector Sets

Part Number	Projector Set Size	Orifice Size Inches	Orifice Size in mm	Type of Coating
0276254	#2	.031 in.	0.8 mm	Fine Finish
0276227	#3	.051 in.	1.3 mm	All-Purpose
0276228	#4	.070 in.	1.8 mm	High Output
0276229	#5	.086 in.	2.2 mm	Heavy Viscosity Material
0276245	#6	.097 in.	2.4 mm	Texture Finishes, Herry Viscosity Material
0524211	#7	.105 in.	2.6 mm	Texture Finishes, Herry Viscosity Material

Maxum II Low CFM Projector Sets for use with Compressor Air Sources

Low Flow Projector Set PN	Low Flow Projector Set Size	Orifice Size Inches	Orifice Size in mm	Type of Coating
0277090	#2	.031 in.	0.8 mm	Fine Finish
0277091	#3	.051 in.	1.3 mm	All-Purpose
0277092	#4	.070 in.	1.8 mm	High Output
0277093	#5	.086 in.	2.2 mm	Heavy Viscosity Material
0277094	#6	.098 in.	2.5 mm	Texture Finishes, Heavy Viscosity Materia

Maxum Elite Projector Sets

Part Number	Projector Set Size	Orifice Size Inches	Orifice Size in mm	Type of Coating
0524293	#2	.031 in.	0.8 mm	Fine Finish
0524294	#3	.051 in.	1.3 mm	All-Purpose
0524295	#4	.070 in.	1.8 mm	High Output
0524296	#5	.086 in.	2.2 mm	Heavy Viscosity Material
0524297	#6	.097 in.	2.4 mm	Texture Finishes, Heavy Viscosity Material
0524298	#7	.105 in.	2.6 mm	Texture Finishes, Heavy Viscosity Material

Maxum II and Maxum Elite Gun Projector Set Recommendation Chart

Material	Projector Set Recommended	Smallest Unit Recommended	Projector Set Orifiice Size (in.)
Nitrocellulous Lacquer	2 to 3	75	.031 to .051
Stain/Varish	2 to 3	75	.031 to .051
Lacquers	3 to 4	75	.051 to .070
Shellac	3 to 4	75	.051 to .070
Enamels	3 to 4	75	.051 to .070
Alkyd	3 to 4	75	.051 to .070
Water base acrylic	3 to 4	75	.051 to .070
Polyurethane	3 to 4	75	.051 to .070
Sealer	3 to 4	75	.051 to .070
Latex Wall Paint	3 to 4	95	.070 to .086
Ceiling Paint	4 to 5	95	.070 to .086
Water base epoxy	4 to 5	95	.070 to .086
Latex Primer	4 to 5	95	.070 to .086
Oil-base Multi-Color	4 to 5	75	.070 to .086
Metal Latex	4 to 5	95	.070 to .086
Water base Multi-Color	5 to 6	75	.086 to .098
Adhesives, high viscosity gels	5 to 6	95	.086 to .098
Extra heavy viscosity	6 to 7	105	.098 to .105
Orange peel, sand texture	7	105	.105

Notes: Most "water like" coatings require no thinning.

Because of variations in material, recommendations in this chart should be used as starting points. You may achieve acceptable results using different combinations.

Cleaning Your Equipment

Spray Gun

It is important to clean your spray gun thoroughly after each use.

- **1.** *Empty the spray material from cup.*
- **2.** Pour a small amount of the appropriate solvent in the cup and attach the cup to the spray gun.
- **3.** Shake and spray the gun in a well-ventilated area. Back-flushing of the system is not necessary, so do not restrict the nozzle when cleaning.
- 4. Repeat the steps above until the solvent appears clear.
- **5.** Wipe the exterior of the cup and the spray gun with the appropriate solvent until it is clean.
- 6. Make sure the air holes and material passages are completely clean. Never use metal tools or picks to clean the air cap or nozzle.
- **7.** Thoroughly clean the check valve and hoses. Do not soak check valve hoses in hot solvents. Failure to clean check valve will result in problems the next time you use the gun.



It is a good idea to lubricate any threaded parts on the sprayer with petroleum jelly when you put them back together. This helps keep them working properly. However, do not use any lubricants containing silicone, which can cause problems when used with some paints.

The cup gasket must be replaced periodically due to normal wear. It is important to inspect the gasket during each cleaning.

If material leaks from around or through the packing nut, tighten the packing nut slightly. Squeeze the trigger to see if the leaking has stopped. If it has not, continue to tighten the packing nut until the leaking stops. Be careful not to over-tighten the packing nut or the needle will stick in the packing. If adjusting the packing nut does not stop the leak, replace the packing.

1. Remove the filter covers on each side of the turbine by turning them counterclockwise.

- **2.** *Remove each filter set (pre-filter and filter) from the filter housing on each side of the turbine.*
- **3.** Clean the filters. Either tap the filters to knock out the contaminants or use pressurized air to blowout the contaminants. For material that is not blown or knocked loose easily, soak the filters in soapy water or mineral spirits. Allow the filters to drycompletely before placing them back in the turbine.

NOTE: Do not soak the pleated filter.

4. Insert each filter back into its corresponding filter can.

- 5. Replace the filter covers on each side of the turbine by turning them clockwise.
- After several cleanings, it may become necessary to replace the filters. Refer to your owner's manual for the filter replacement kit.

Filter

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HVLP Spray Equipment Troubleshooting

Problem Cause		Solution	
Little or no material out of nozzle.	Out of paint. Air cap screwed clockwise too far. Check valve plugged. Material viscosity too heavy. Nozzle plugged.	Fill cup or pot with paint. Adjust air cap. Clean or replace check valve assembly. Thin material. Try Paint Mate as an additive for latex. Clean nozzle.	
	Cup or pot lid is loose. <i>Pressure Pot System:</i> Fluid hose clogged. Regulator not adjusted. Pot gasket worn. Pick-up tube bottomed out on gallon can. No air pressure in pot.	Tighten cap lever or pot wing nuts. Clean by flushing with water or solvent, or replace hose. Adjust regulator properly (10-15 psi). Replace. Pour paint into pot or shorten tube. Inspect air tube or pot gasket; clean or replace.	
Paint leaking from front of gun.	Needle or nozzle worn. Needle sticking. Improper needle or nozzle size. Loose nozzle. Loose packing nut. Needle not closing properly.	Replace. Adjust needle packing; check for bent needle. Replace with correct size for material. Tighten. Tighten. Loosen packing nut, replace needle spring, remove dried paint from needle.	
Paint leaking from packing nut.	Packing damaged.	Replace.	
Poor spray pattern.	Air holes in air cap ears are clogged. Nozzle is clogged. Damaged nozzle or needle. Air cap screwed in too far. Gun too far from surface.	Remove and clean air holes. Clean with appropriate solvent. Remove and replace. Adjust air cap to proper setting. Move gun closer (within 6").	
Pulsating spray pattern.	Loose or damaged packing.	Adjust or replace packing.	
Pattern off center; heavy to one side.	Air cap holes plugged. Gun not held perpendicular to surface. Damaged air cap.	Clean holes in cap. Position gun correctly. Replace.	
Pattern heavy in the middle.	Too much fluid pressure.	Reduce pressure.	
Gun spitting paint.	Check valve not operating properly. Material too thick.	Clean or replace valve assembly. Thin material. Try Paint Mate as an additive for latex.	
Paint build-up on air cap.	Improper adjustment of the cap.	Adjust per manual instructions.	
Excessive overspray.	Gun too far from surface. Air pressure too high. Material too thin.	Move closer. Reduce air pressure to level that adequately atomizes coating. Add unthinned material.	
Restricted or no air flow.	Air control valve turned off. Air filters clogged.	Adjust air control valve. Clean or replace filters.	

HVLP Spray Equipment/Finish Troubleshooting

Problem	Cause	Solution
Filter warning light on.	Air filters clogged.	Clean or replace filters.
No trigger pull.	Material adjustment knob too tight.	Turn counter-clockwise.
Unit has no power.	Blown fuse/tripped breaker reset.	Check and replace fuse.
Cup doesn't pressurize.	Worn cup gasket. Cup ears bent.	Replace. Straighten (do not over-tighten).
Excessive arcing/sparking.	Worn turbine brushes. Damaged commutator.	Replace brushes. Replace turbine motor.
Finish Troubleshooting:		
Orange peel.	Paint drying too fast. Gun too far from surface. Material too heavy.	Use slower solvent or retarder. Move closer. Reduce viscosity. Try Paint Mate as an additive for latex.
Dry spray with lacquer.	Solvent flash too fast.	Add retarder to slow flash time.
Runs and sags.	Material too thin. Moving gun too slow. Too much material.	Add unthinned material. Speed up passes. Reduce material flow by adjusting material adjustment knob.
Pinholing and solvent pops.	Trapped solvents. Pigment settling. System contamination.	Apply material in lighter coats allowing solvents time to evaporate. Possible bad product. Replace. Thoroughly clean all parts.
Fish eyes.	Possible silicone contamination.	Use solvent to clean all parts.
Blistering.	Moisture in/on spray surface. Incompatible topcoats or undercoats.	Dry surface completely. Ensure coatings' compatibility.
Lumpy, coarse surface.	Dirt on spray surface.	Thoroughly clean surface.
Mottled surface finish.	Too much thinner. Poor spray technique.	Reduce thinner. Always square gun with spray surface.

Note: For fast-drying automotive materials and some lacquers, prepare material to be sprayed according to manufacturer's recommendation. The hot air produced by the turbine quickly dries the solvents required to thin these materials. We recommend that you thin these materials 5% to 10% more than the recommended instructions of the manufacturer, or use a retarder.

CAPSPRAY™ 75 Model No. 0524031

The CS75 is ideal for jobs that require continuous spraying and the ability to handle difficult-to-atomize materials. It sprays stains, clear coats, lacquers, oil-based epoxies. Also applies most water-reducible coatings, including waterborne lacquer and finish-grade latex.

The large or small contractor taking a wide variety of jobs will benefit from the CS75. Meant for continuous use, the CS75 will become an invaluable painting partner for residential, commercial or maintenance painting. Meant for large jobs, the CS75 comes with 25 feet of air hose (can add additional 25' length and 5' whip hose) giving the contractor a great deal of maneuverability.



Features:

- Maxum II spray gun, with 1-quart cup and multi-position pick-up tube
- Dual air filtration
- Filter warning light tells you when to clean or change air filters
- 25-foot high-flex air hose
- Three-stage tangential turbine
- Integrated cup holder
- Tough metal housing
- Built-in noise reduction system
- Built-in tool box
- Optional cart mounting
- Optional fluid transfer pump

Specifications:

- 7.5 PSI
- 10.5 AMPS (15 AMP circuit, 110V)
- Weight: 20.4 lbs.



Fine porosity foam main filter (green color) for gun atomizing air

CS75 units have dual filtration; separate filters for the motor cooling air and gun atomizing air. Pre-filters are installed on both sides in front of the main filter to extend life and to simplify cleaning and replacement.

CAPSPRAY™ 95 Model No. 0524032

The CS95 is powered an exclusive, 4-stage tangential turbine to produce the pressure required to spray continuously and to atomize coatings with minimal amount of reduction. Sprays stains, clear coats, lacquers, oil-base, and multi-color coatings. Also applies most water-reducible coatings, including waterborne lacquer and finish-grade latex.

The CS95 offers you versatility, since it mounts directly to the Portable Cart and can use up to 60 feet of air hose plus a 5 foot whip. With the quiet, patented, noise-reduction system, you can use the CS95 in places where other turbine systems would be too noisy. And the integrated gun holder prevents gun damage when transporting or storing.



Features:

- Maxum II spray gun, with 1-quart cup and multiposition pick-up tube
- Dual air filtration
- Filter warning light tells you when to clean or change air filters
- 30-foot high-flex air hose
- Four-stage tangential by-pass turbine
- Tough metal housing
- Integrated cup holder
- Built-in tool box
- Built-in noise reduction system
- Optional cart mounting
- Optional fluid transfer pump

Specifications:

- 9.5 PSI
- 11.2 AMPS (15 AMP circuit, 110V)
- Weight: 21.2 lbs.

Automotive Quality atomizing air filter

CAPSPRAY 95-115 units have dual filtration; separate filters for the motor cooling air and gun atomizing air. Pre-filters are installed on both sides in front of the main filter to extend life and simplify cleaning and replacement.



CAPSPRAY^{IM} 105 Model No. 0524033 With Maxum II Gun 0524098

With the 105 you can spray hard to atomize coatings with little to no thinning and increased production rates. Due to the higher atomizing pressure, the 105 will spray the widest range of coatings, including latex and other water based coatings. This unit also offers all of the same versatility as the CS95 described previously.



Features:

• 5 Stage turbine

• Maxum Elite spray gun with 1 quart cup and multiposition pick up tube

- Includes #3 and #4 Proset
- Dual air filtration
- Integrated cup holder

• 30 ft. standard hose length with 5 ft. whip hose

- Filter warning light tells you when to clean or change your filters
- Tough metal housing
- Built in tool box
- Built in noise reduction system
- Optional cart mounting
- Optional fluid transfer pump

Specifications:

- 10 PSI
- 15 AMPS (15 AMP circuit, 110V)
- Weight: 22.5 lbs.

Automotive Quality atomizing air filter

CAPSPRAY 95-115 units have dual filtration; separate filters for the motor cooling air and gun atomizing air. Prefilters are installed on both sides in front of the main filter to extend life and simplify cleaning and replacement.





CAPSPRAY™ 115 Model No. 0524034 With Maxum II Gun 0524099

The CS115 is the most powerfull portable turbine available. It is ideal for spraying hard to atomize coatings with little to no thinning including most exterior coatings. The CS115 is meant for larger jobs where speed, power and control are needed. It also has a two speed switch that allows you to lower the pressure output for spraying light-bodied materials while reducing noise and heat.





Gravity Cup Gun Assembly with Stand Included with model (P/N 0524034)





Features:

- 6 Stage turbine
- Two Speed switch
- Maxum II Elite spray gun, with 1-quart cup and multi-position pick-up tube
- Includes #3, #4 and #5 Proset
- Filter warning light tells you when to clean or change air filters
- Dual Air Filtration
- 30-foot air hose with 5 foot air whip
- Integrated cup holder
- Tough metal housing
- Built-in tool box
- Built-in noise reduction system
- Optional cart mounting
- Optional fluid transfer pump

Specifications:

- 11.5 psi air pressure
- 15 AMPS (15 AMP circuit, 110V)
- Weight 22.5 lbs

Automotive Quality atomizing air filter

CAPSPRAY 95-115 units have dual filtration; separate filters for the motor cooling air and gun atomizing air. Prefilters are installed on both sides in front of the main filter to extend life and simplify cleaning and replacement.

>

CAPSPRAY[™] 2 Quart Remote Model No. 0524203



CAPSPRAY has designed the Remote Cup System to add higher material capacity to the EXCLUSIVE power and performance found in all CAPSPRAY Turbine models. With quick air and fluid connections you can transform your turbine system into a higher capacity sprayer, no need to add the cost and weight of a bulky compressor system.

- The Remote Cup System doubles the reservoir capacity of standard HVLP guns.
- •Reduces arm and hand fatigue by removing the weight of the material reservoir from the gun.
- Easier to paint inside cabinets and other hard to reach areas.
- •Allows you to spray upside down.
- •Weighs less than competitive two quart systems.

Assembly

- 1. Insert the handle through the air fitting bracket and thread into the fluid fitting. Tighten for at least three (3) revolutions.
- 2. Tighten locking nut.
- 3. Push air tube over air tube fitting. Ensure that the check valve assembly is oriented as shown (see inset).
- Convert the gun to pressure feed.

 Loosen the retaining nut using a wrench and remove the one-quart cup assembly.
 - b. Pull the air tube off the air tube fitting on the spray gun.
 - c. Push a supplied air tube cap over the air tube fitting.
- 5. Connect hoses:
 - a. Make sure turbine is turned OFF and unplugged.
 - b. Attach remote pressure pot to the turbine via the hose configuration shown below.
 - c. Tighten the air hose connections by hand.
 - d. Tighten the fluid hose connections with an adjustable wrench.



NOTE: If previously assembled, disconnect the 5 ft air whip hose from the 25 or 30 ft air hose, add the supplied female quick-disconnect to the end of the 25 or 30 ft air hose. Connect the 2 quart pressure pot as shown.



NOTE: Whip hose shown comes with 5 or 6 stage models \lceil

CAPSPRAY™ HVLP Transfer Pump Model No. 0524038



Transfer Pump Controls

Speed settings

The speed setting is used to adjust the volume of material available to the spray gun. It is best to use the lowest speed possible in order to maximize seal life. For most applications, LOW speed will perform sufficiently while putting the least amount of wear of the seals.



- LOW up to 14 fluid ounces per minute
- MED up to 17 fluid ounces per minute
- HIGH up to 20 fluid ounces per minute
- FLUSH 40 ounces per minute (to be used only during cleanup)

Pressure Settings

The pressure setting is used to determine the amount of force used to deliver the material. The pressure settings range from PRIME (no pressure) to 6 (max pressure). The CAPSPRAY HVLP Transfer Pump is a revolutionary piston pump that turns your HVLP turbine sprayer into a production fine finishing tool.

Designed for extended use on jobs where frequent quart cup refilling is not desirable. Pump plugs directly into the CS75, 95, 105 and 115 cup holder and is powered from the turbine unit to pump directly out of a 1 gallon or larger can for continuous spraying.

Eliminates the need for a cup at the gun, providing more flexibility for spraying in tight areas, like inside cabinets. Recommended for fine finishing professionals and contractors with mid-size and larger finishing projects.

Designed for extended use on jobs where frequent quart cup refilling is not desirable. Recommended for fine finishing professionals and contractors with serious finishing projects.

- Pumps directly out of containers for continuous painting applications
- 4 pumping speeds with an adjustable pressure control
- Pumps stains to interior latex
- Eliminates the need for a quart cup
- Includes suction and return tubes, 30' paint hose, and suction filter
- Fits directly into the CAPSPRAY 75, 95, 105, or 115





- Locate the small connector cover on the top of the turbine. Open the cover and slide the Transfer Pump into the turbine cup holder.
- The cover should click over the locking tabs and securely hold the pump in place.

Make sure the siphon tube is firmly inserted into the inlet fitting, past the O-ring. If the tube is not fully inserted, a seal will not be achieved and the pump will not prime. DO NOT insert the notched end of the suction tube into the inlet fitting.



Connecting the Material Hose

- Thread the end of the fluid hose onto the Transfer Pump fluid oulet and tighten with a wrench.
- Thread the other end of the material hose onto the spray gun inlet and tighten with a wrench.



Refer to manual for complete details.

CAPSPRAY[™] Power Cart Model No. 0524000

The Portable Cart is compatible with the 75, 95, 105 and 115 for complete mobility around job sites. Built-in air compressor and 2 1/2-gallon pressure pot allows fast, continuous spraying for larger jobs. Higher fluid PSI results in faster application rates with the pressure pot.





Features:

- Lightweight construction
- Semi-pneumatic tires (no flats)
- 30-foot fluid hose
- Telescoping for storage or transporting
- Compressor filtered for longer life
- *Wide cart for better stability*

Set-up for the Portable Cart is fast and simple.

- **1.** Convert the spray gun from the Maxum II or Maxum Elite cup gun to a pressure gun (see cart manual).
- **2.** Mount the cart bracket to the bottom of the turbine as shown in the diagram on p. 26.
- 3. Plug turbine power cord into cart outlet.
- 4. Connect the compressor air hose into the pressure pot inlet.
- **5.** Attach the material hose to the material outlet fitting of the pressure pot, and to the material inlet of the gun.
- 6. Attach the turbine air hose to the air outlet fitting of the turbine, and to the air inlet fitting on the handle of the gun.
- 7. Place up to 2.5 gallons of paint into the pressure pot. Note: When using a 1-gallon can in the pressure pot, make sure the pick-up tube does not bottom out on the can, obstructing the flow of paint to the gun. In this instance the pick-up tube must be reduced by 1/4". If using a pot liner, pour the paint directly into the liner and secure the pressure pot lid.
- 8. Plug the cart power cord into a 110-volt power supply. Turn cart and turbine power switches to ON position.
- **9.** Adjust the power regulator to approximately 6 PSI for lightviscosity materials (lacquers or stains). Use 8 to 15 PSI for heavier paints (enamels to latex).

The correct pressure setting is critical when using the pressure pot. Always start with the lowest possible setting depending on your material viscosity.

The fluid pressure is adjusted by the regulator located on the lid of the pressure pot. Turn clockwise for higher PSI and counterclockwise for lower PSI.

Material Viscosity Gauge Setting Fluid Pressure

Light	3-10	
Medium	6-15	
Heavy	10-25	

CAPSPRAY™ Portable Cart - Mounting for Model No. 0524000



Mounting the Turbine:

1. Insert plastic latch bracket into the bottom of the turbine as shown.

2. Using a cordless drill with a Phillips driver, insert provided screws into the casing using a low clutch setting. DO NOT over-torque.



NOTE: If the drill does not have a clutch, drive the screw with the drill until the threads start to engage, and then tighten by hand.

3. Place the turbine onto the power cart. Push the latch bracket in to secure the turbine.



Assistance/Warranty

Ordering Information

Please contact your local Authorized Titan CAPSPRAY Distributor or call to find your closet dealer:

1-800-526-5362

Questions concerning applications, technical or service information can call toll free:

1-800-292-4637

Notes









Call Technical Services at **1-800-526-5362** for complete warranty information.

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