OWNERS MANUAL

H.V.L.P. SPRAY GUNS
TURBINE SYSTEMS
ACCESSORIES

05-03

WARRANTY

THIS NEW TURBINE UNIT AND SPRAY GUN ARE COMPLETELY COVERED UNDER WARRANTY AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF (18) EIGHTEEN MONTHS FROM DATE OF PURCHASE.

AN EXTENDED LIMITED TURBINE WARRANTY IS AVAILABLE AT NO CHARGE BY RETURNING THE WARRANTY REGISTRATION CARD.

AMERICAN TURBINE INC. WILL AT ITS OPTION, REPAIR OR REPLACE ANY TURBINE UNIT OR GUN FOUND TO BE DEFECTIVE DURING THE ABOVE STATED WARRANTY PERIOD.

NEGLECT, ABUSE, MISUSE OR MODIFICATION OF THE ORIGINAL EQUIPMENT WILL RENDER THIS WARRANTY NULL AND VOID.

CAUTION - WARNING

Our Turbines utilize a universal brush type motor. Under no circumstances they to be used in a confined area. A DANGEROUS EXPLOSION May occur if the unit is used in a non ventilated enclosed area. Keep the turbine at least 20' from objects being sprayed. The turbine is NEVER to be placed inside a spray booth. Add additional lengths of hose if the above conditions cannot be met.
Our turbines are provided with a (3) pronged grounded power cord. DO NOT Remove the grounding prong for any reason. Any extension cord(s) used must also utilize the same configuration. Use only on electrically approved grounded outlets. In doubt? Contact a qualified electrician.

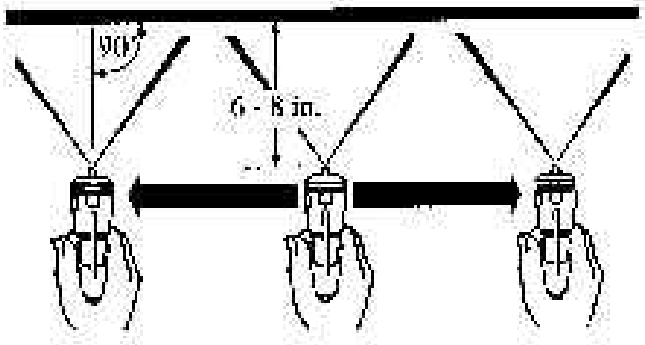
HELPFUL TIPS BEFORE SPRAYING

1. Make certain the proper fluid set and air cap are used for the material being sprayed.
2. Adjust the air cap to ensure the fluid set is flush with the air cap center hole.
3. After turning the turbine on, allow it to warm-up for a few minutes prior to spraying. When the turbine is not in use, remember to turn it off; there is no automatic shut off.
   * If your system has a compressor, it also has to be shut off to avoid over heating.
4. Because the turbine air is warm, the material being sprayed will dry faster; therefore, the use of a slower drying thinner (reducer) may be required.

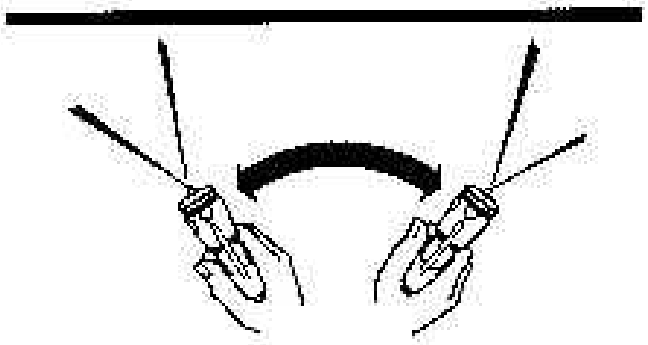
SPRAYING PROCEDURES

1. ***ALWAYS*** keep the turbine out of the spray area.
2. When possible spray a complete wet coat on the object being sprayed.
3. Keep the spray gun lateral when spraying, usually six to eight inches from the object being sprayed.

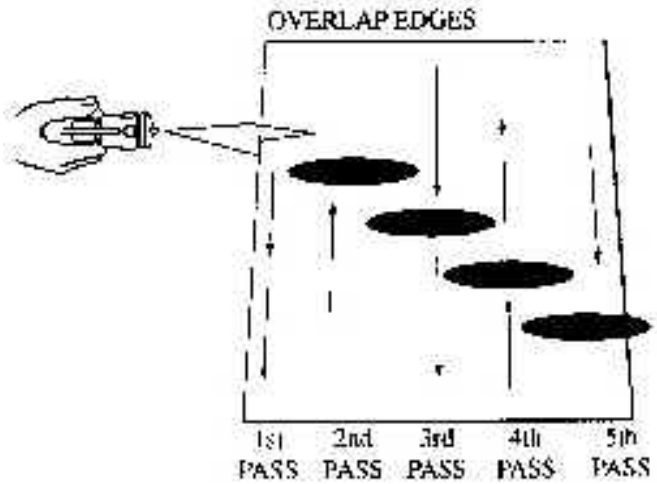
CORRECT



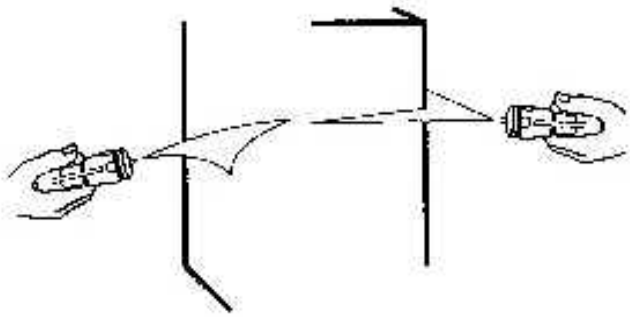
INCORRECT



4. Do not trigger the spray gun until the lateral motion has begun, also before and after each pass Make sure to trigger the gun.
5. It is important to overlap the previous pass about 50% to ensure a even finish.

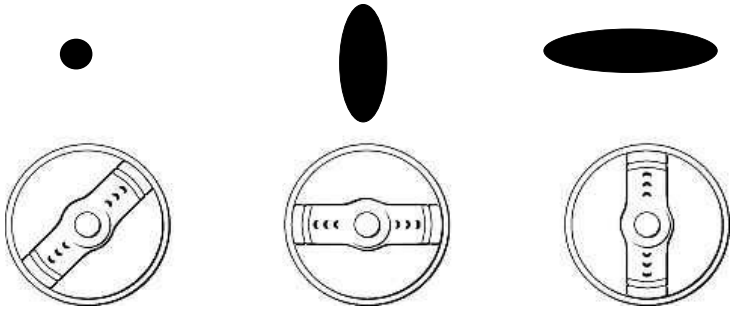


Corners and edges



SHAPE OF SPRAY

To select the desired spray pattern, rotate the air cap. When the air cap is diagonal, the spray pattern will be round. When the air cap is in the horizontal position, the spray pattern will be vertical. And in the vertical position the pattern will be horizontal.



ADJUST SIZE OF SPRAY PATTERN

By turning the pattern control ring on the front of the gun, the pattern can be adjusted from the normal pattern width (air cap and tip of the nozzle are flush). To widen the pattern by turning the pattern control ring in (counterclockwise) which moves the air cap closer to the nozzle. It should be noted the closer the air cap is adjusted to the nozzle the amount of air flow used for atomization is reduced which may cause a poor finish. A narrower pattern is adjusted by turning the pattern control ring out (clockwise).
The further the air cap is adjusted out increases the chance of excessive over spray.

CONTROL OF MATERIAL BEING SPRAYED

The material control knob controls the amount of material being applied. The further the knob is turned out the greater the opening in the nozzle and more material being applied. Adjusting the knob in reduces the amount of material being applied and limits the distance of trigger movement, which may cause the operator to over squeeze the trigger and damage the trigger.

The air control valve is used to adjust the amount of the amount of air to atomize the material being sprayed and reducing over spray (mist).

Caution: Once the spray gun is filled it is important to keep the gun upright. When in use the gun can be tilted as necessary. There is a internal pressure feed tube that may become blocked if gun is placed on its side or upside down, which can prevent pressurization of the cup assembly or material may back up into the gun body.

FLUID SET SELECTIONS

A Fluid set contain both needle & nozzle

Size (mm)	Part #	Common Usages
0.5	22201	Dyes & Inks
0.7	22202	Water born urethanes, Lacquers and Non-wiping stains
1.0	22203	Water born urethanes, lacquers Fine finish work
1.2	22204	Lacquers, varnish, primers, enamels, stains, epoxy & urethanes. Fine finish work
1.4	22205	Lacquers, varnish, primers, enamels, stains, epoxy, urethanes
1.6	22206	Industrial finishes - higher output
1.8	22207	Industrial finishes - higher output
2.0	22208	Nitrate and butyrate dope, latex, oil wall paint, wax based strippers
2.4	22209	Latex, oil wall paint, wax based strippers
2.8	22210	Latex and oil paint, wax based strippers And other heavy bodied material

Note: The fluid set needle and nozzle must be the same size. The air cap may be larger or smaller size than the fluid set for atomization of the material being sprayed.

For fine finish work, a multi-hole air cap is recomended

NEEDLES NOZZLES AIR CAPS

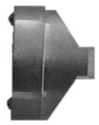
The following needles and nozzles are sold separately. Use the specific part number which corresponds with the correct size needle or nozzle.

Size mm	P/N
0.5	22101
0.7	22102
1.0	22103
1.2	22104
1.4	22105
1.6	22106
1.8	22107
2.0	22108
2.4	22109
2.8	22110

Size mm	P/N
0.5	22115
0.7	22116
1.0	22117
1.2	22118
1.4	22119
1.6	22120
1.8	22121
2.0	22122
2.4	22123
2.8	22124

The following air caps are sold separately. (unlike the needle and nozzles, air caps can be of a different size)

1. The smaller numbered air cap will break the material being sprayed into smaller particles for a finer finish.
2. Larger numbered air cap may reduce the amount of over spray mist.
3. For fine finish work, it is recommended that a multi-hole air cap be used.



Standard

Size mm	P/N
0.5	22128
0.7	22129
1.0	22130
1.2	22131
1.4	22132
1.6	22133
1.8	22134
2.0	22135
2.4	22136
2.8	22137

Multi hole

Size mm	P/N
0.5	22140
0.7	22141
1.0	22142

PREPARATION PRIOR TO SPRAYING

1. Make sure the surface to be sprayed has been cleaned and dry
2. Filter all material to be sprayed through the appropriate strainer to avoid impurities.
3. Practice on a test panel and make adjustments to the gun, speed of application or material being sprayed.
4. Always follow manufacturer s instructions for correct reducer of the material being sprayed.

A QUICK TEST: Submerge a paint stick into the material, remove the stick and if the droplets are about 1 second apart, the correct reduction has been made.

CLEANING GUN AFTER USE

1. Turn off the turbine.
2. Remove cup and remove all excess material.
3. Put a small amount of suitable cleaner in cup.
4. Replace cup on gun, turn on turbine and spray cleaner thru gun.
5. Turn turbine off and disconnect gun.
6. Remove pattern control ring, detent plate, detent spring and clean.
7. Remove material control body, fluid needle and clean.
8. Remove nozzle and clean.
9. Remove air pressure tube between gun body and cup lid and clean.
10. Remove cup assembly by loosening the nut from the fluid fitting, clean lid and pick up tube with a brush.
11. Remove the lower pressure tube (blue) from the elbow and clean both with the brush.
12. Use the brush and clean both the nozzle holder and fluid fitting.
13. Blow off all parts to dry.
14. Apply a thin coat of Vaseline to; shaft of needle, threads of material control body and adjustment screw, threads of pattern control ring.

NOTE: When removing or replacing the cup assembly or material hose, the fluid fitting should be held in place with a wrench to avoid moving the nozzle holder.

ASSEMBLY

1. Reassemble cup assembly and secure to fluid fitting.
2. Connect air pressure tube between the lid assembly and gun body.
3. Insert needle thru nozzle holder and adjust packing if required.

NEEDLE PACKING ADJUSTMENT

With the needle through the nozzle holder, slide the packing adjustment tool (22723) over the needle into the slots of the packing adjustment screw, trigger the gun at the same time tightening the packing adjustment screw until the packing seizes the needle. When this happens, back the adjustment screw 1/4 turn. The needle should move freely.

4. Install nozzle and tighten with nozzle wrench.
5. Adjust needle for trigger play if needed. The gun is preset with about 1/8" trigger play.
   - A. loosen lock nut on needle.
   - B. push needle by hand fully in the nozzle (closed fully) and check for trigger play.
   - C. adjust the adjustment drum to obtain 1/8" play in the trigger and secure lock nut

NOTE: Adjustment of the packing or trigger play most likely will not have to be preformed on a regular basis.

6. Replace the spring and material control body

CHECK FOR NOZZLE ALIGNMENT

Trigger the gun and feel for smooth operation and the needle is flush with the nozzle. If alignment is needed, trigger the gun while looking thru the bore of the nozzle and see if the nozzle is in alignment with the needle; if not, place a 5/8" deep socket over the nozzle and *LIGHTLY* tap in the direction for alignment with a mallet. To check for alignment place air cap on nozzle and spin, if the air cap spins freely the nozzle holder is aligned.

7. Replace the detent spring, detent plate, air cap and pattern control ring. Adjusting so the end of the nozzle is flush with the center hole of the air cap.

IMPORTANT

It is extremely important not to over tighten the pattern control ring, this will cause very poor atomization of the material being sprayed because it will restrict the flow of air from around the air cap which will cause inconsistent material flow, material leaking in the gun body.

Adjusting the material control knob is a mechanical stop for the movement of the needle and trigger. With the material knob adjusted to reduce material flow, the trigger will only move to the point of adjustment and not the full range of the trigger as with the adjustment for maximum material flow, trying to over squeeze the adjustment may cause actuator or related part damage.

PARTS AND ACCESSORIES

Turbine air hose. 3/4" diameter hose. The spring style hose are designed and recommended for use from the turbine system. Hose without the spring are used for extensions from the spring hose.

Hose with spring	P/N	Extension hose	P/N	
20'	41020	5' Red	41006	flex hose
25'	41025	10'	41010	
30'	41030	15'	41015	
40'	41040	20'	41021	
		25' `	41026	

Standard 1/4" & 3/8" lined material hose

1/4" X 20' Material hose	41060	1/4"X 5 ½' Material hose	41055
1/4" X 25' Material hose	41065	1/4" X 30' Material hose	41066
3/8"X25' Material hose	41075	3/8"X40' Material hose	41086

Other sizes available for both air and material hose

Wheel & Handle kit	30070	Snap in handle w/gun hook	30071
Quart cups	22705	Quart cup assemblies	30030
Qt. cup air tight lid	30090	Strainers	22716

Tri-Seal gaskets

Gasket 1 qt cup	22706	Gasket gravity cup 13.5oz	30404
Gasket 1 qt cup 5PK	22720	Gasket gravity cup 20oz	30604
Gasket 8oz touch up	22934	Gasket 2 ½ gallon tank	22742
Gasket 2 qt remote	22756-1		

2 qt remote cup assemblies 2 ½ gallon paint tank Gravity guns 13.5 & 20 oz
Venturi spray guns User kits includes 2 complete fluid sets, gaskets strainer etc.

Repair parts and service for most HVLP guns and turbines

Ref #	P/N	Description	Ref #	P/N	Description	Ref #	P/N	Description
	22000	Gun body only	14	22014	Locking ring	28	22700	Bridge
1	22001	Actuator	15	22015	Spring detent plate	29	22706	Gasket
2	22002	Actuator pin	16	22016	Detent plate	30	22705	1 qt. cup
	22003	Nozzle holder complete	17	22017	Pattern control ring	31	22726	pressure hose lower blue
4	22004	Nozzle holder only	18	22018	Trigger pin guide	32	22703	Cover
5	22005	Packing (5 piece)	19	22019	Trigger pin	33	22702	lever
6	22006	Packing adjustment screw	20	22021	Trigger screw	34	22704	Pick up tube
7	22007	Driving ring	21	22707	Set screw gun to QD	35	22712	Gun male QD
8	22008	Driving ring spring	22	22020	Trigger	36	22721	O ring for QD
9	22009	Adjustment drum	23	22714	Barbed elbow	37	22701	Nut pick up tube
10	22010	Locking nut	24	22709	Plug for pressure gun	38		N/A
11	22011	Needle return spring	25	22708	Hose to press. Cup	39		N/A
12	22012	Body material control	26	22725	Hose barb cup lid	40	22022	Fluid fitting
13	22013	Adjustment screw	27	22727	Elbow cup lid	41	22715	Grip

P/N 30600
CUP ASSEMBLY CUP OVER

P/N 30032
8oz. TOUCH UP CUP ASSEMBLY

NOTE; Check valves are used to prevent material from backing up into the gun.
Install with the air flow towards the cup.

P/N30400
CUP OVER ASSEMBLY 13.5 OZ.

P/N 30070
WHEEL KIT

2 QT. REMOTE CUP ASSEMBLY

P/N 30012Q TURBINE AIR P/N 30014Q WITH TURBINE AIR WITH HOSES

P/N 30016Q SHOP AIR P/N 30018Q SHOP AIR WITH HOSES

WARNING

Always relieve pressure in the cup assembly with relief valve F before loosening or removing the cover

NEVER EXCEED THE RATED PSI INDICATED ON THE COVER

OPERATING INSTRUCTIONS

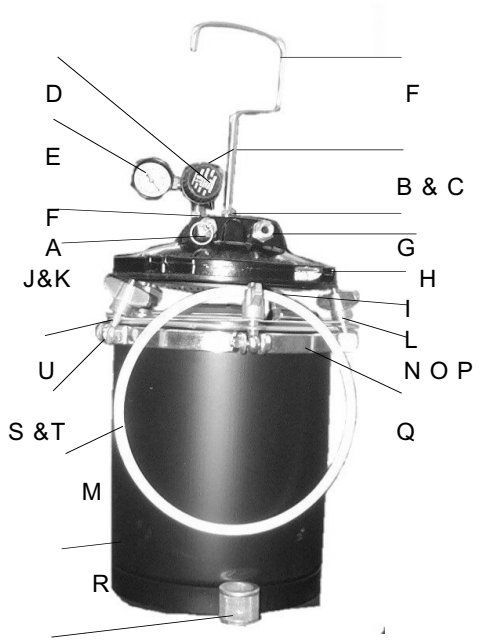
1. Ensure the regulator is backed off all the way by turning the knob counterclockwise until it stops.
2. With air and material hose connected, turn on the compressor and slowly increase pressure while triggering the gun until the material stream of medium viscosity material may have a arch (drop) 8-12 inches from the gun. (Lighter material may require a longer stream and heavy material such as latex my be considerably shorter). Practice along with trial and error will be beneficial.
3. At this point turn on the turbine air and adjust the atomizing with the air valve for optimal material break up.
4. Fine tune the material being sprayed with the tank and gun adjustments as needed.

NOTE;

1. Turn unit off completely when not in use, compressor will overheat if left running with turbine off.
2. Always keep cup in the upright position to avoid material from entering the regulator.
3. Hand tighten cover only, this will avoid gasket damage.

2 ½ GALLON PAINT TANK
P/N 30080

P/N 30083 SHOP AIR



WARNING

Never exceed 50 PSI into the tank.

Never attempt to remove cover or work on gun
Until all pressure has been relieved from the tank.

CAUTION

Hand tighten container wing nuts only.

Once pressure has been applied to the container,
The gun is loaded.

**** NOTE ****
Turn compressor and turbine off when not in use.
The compressor will overheat if left running with the turbine off.

V

OPERATING INSTRUCTIONS

1. Connect material hose from tank fluid outlet fitting to the gun.
2. With the turbine and compressor off, adjust the regulator control knob counter clockwise until it stops.
3. Turn compressor on and slowly increase the pressure, while at the same time triggering the gun until a fluid stream 8" to 10" is obtained before the arch (drop) in the stream occurs.
4. Turn the turbine on and adjust atomizing air with the air valve.

Note; p/n 30080 is for turbine use. The air supply is p/n 22752 elbow and p/n 22746 male plug QD
p/n 30083 is for shop air applications. The air supply to the container and spray gun is a 1/4" TEE fitting

Fig	P/N	Description	Fig	P/N	Description	Fig	P/N	Description
A	22731	Hex nipple	B.	22752	Elbow 1/4" Shop air 1/4" T	C	22746	Male plug QD
D	22735	Regulator	E	22730	Gauge 0-30psi	F	22752	Handle
G	22783	Handle nut	H	22797	Material hose connector	I	22782	Container cover
J	22785	O ring	K	22784	Relief valve	L	22786	Fluid pipe
M	22737 22745TS	Lacquer gasket Tri-Seal gasket	N	22782	Wing nut	O	22788	Washer
P	22789	Eye bolt	Q	22709	Band segment	R	22780	Container 2 ½ gallon
S	22716	Bolt (segment)	T	22795	Nut (segment)	U	22798 30085 30082	Molded liner Molded liner 5 pack Tank liner 10 pack
V	22716	Strainer						

TURBINE AND RELATED EQUIPMENT INFORMATION

TURBINE

Replace pre-filter when a build up is noticed, also check the main filter for a build up and if noticeable clean per instructions on the filter (51030) or replace the main filter.

Always operate the turbine with unobstructed air flow around the unit.

Refer to and follow all warning and caution on the turbine and in the owners manual.

1. **NEVER** REMOVE THE GROUNDED PRONG FROM THE POWER CORD.

2. **ONLY** USE TURBINE IN **WELL VENTILATED AREA**.

Turn off unit when not in use, Do not close air valve completely while in use this may overheat the turbine and shorten its life.

Compressor equipped systems

A diaphragm type compressor is used in these systems to pressurize the remote tank assembly. If the unit has been stored for a extended period of time or in a cool area, the diaphragm may become stiff and will require the manual turning of the compressor.

1. Place unit in warm area.
2. **DO NOT** plug the unit in.
3. Remove the pre-filter and main filter.
4. Manually rotate the cooling fan on the compressor several rotations.
5. Plug in power cord and switch the compressor on.
    A. If compressor will not run, disconnect power cord and repeat steps 4 & 5.
6. Replace main filter and pre-filter.

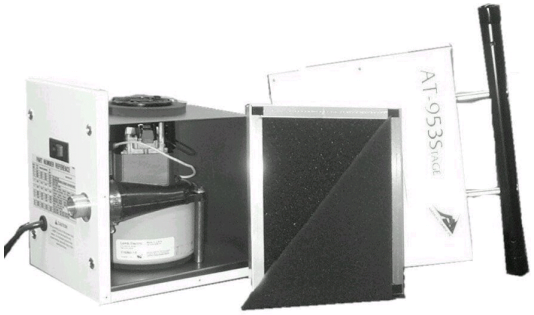
Always turn the Compressor and Turbine off when not in use. The compressor will overheat if left running without the turbine on.

NEVER EXCEED 50 PSI IN ANY PAINT TANK OR REMOTE CUP

AMERICAN TURBINE INC.
TURBINE UNIT REPAIR PARTS

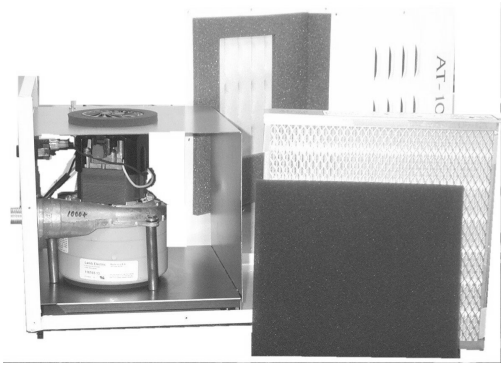
This list represents the most common repair and replaceable items for the unit listed

AT 950 & AT 953



	AT 950	AT 953
Turbine	30057	30058
Switch	51045	51065
Power Cord	51029	51029
Main Filter	30099	30099
Pre-Filter	30098	30098

AT1000 AT1000+ AT3000 AT4000



	AT 1000	AT 1000+	AT 3000	AT 4000
Turbine	30057	30058	30073	30074
Switch	51045	51065	51065	51065
Power Cord	51029	51029	51029	51029
Main Filter	51030	51030	51030	51030
Pre-Filter	51031-1	51031-1	51031-1	51031-1

AT1500 AT1500+ AT3500 AT3550

	AT1500	AT1500+	AT3500	AT3550
Turbine	30057	30058	30073	30073
Switch	51045	51065	51065	51065
Power Cord	51029	51029	51029	51029
Comp. Switch	51075	51075	51075	51075
Main Filter	51030	51030	51030	51030
Pre-Filter	51031	51031	51031	51031
Compressor	51073	51073	51073	51073
Dump Valve	22747	22747	22747	22747

TROUBLE SHOOTING

Problem	Probable cause	Solution
Turbine not operating at all	A. No power to the turbine unit B. Rocker switch tripped	A. Check power source B. Turn switch off and on to reset. If caused by excessive heat allow unit to cool.
Low air flow	A. Filter is blocked B. Unit discharge vents are obstructed. C. Kink in hose D. Broken or damaged hose.	A. Clean or replace pre-filter or main filter as necessary. B. Allow air to move freely around unit. C. Keep hose as straight as possible. D. Repair or replace hose.
Turbine overheating	A. Ambient air is hot. B. Turbine filters are blocked. C. Turbine vents are blocked	A. Use in a cooler environment if possible. B. Clean or replace filters. C. Allow air to move freely around unit. D. Additional lengths of turbine hose may help but may decrease gun pressure.
Uneven spray pattern	A. Air cap holes plugged B. Dry paint on fluid tip C. Incorrect fluid set.	A. Clean air cap B. Clean tip. C. Use correct fluid set for material being sprayed.
Material leaking from cup and/or bubbling in cup.	A. Gasket leaking	A. Replace gasket. B. Check lid assembly for leaks.
Material leaking in gun body. Cup gun Pressure gun	A. Packing loose. B. Crack in nozzle holder or fluid fitting C. Material from remote container over pressurized.	A. Packing needs adjustment. B. Replace nozzle holder or fluid fitting. C. Reduce air pressure in remote container.
Not spraying or inconsistent material flow (spitting). Cup gun Pressure gun	A. Air cap too close to nozzle. B. Dry paint in fluid set. C. Material dried in cup pressure tube. D. Insufficient pressure in paint tank. E. Fluid hose plugged. F. Fluid hose kinked. G.Tank not sealed. H. Not enough material in container.	A. Increase the distance between the nozzle and air cap. B. Clean fluid set. C. Clean or replace hose. D. Increase pressure to pressure tank. E. Disconnect fluid hose from gun, increase pressure in tank to flush hose. F. Remove kink and straighten hose. G. Check gasket for leaking and tighten cover. H. Add material
Material leaking from fluid tip.	A. Damage to needle or nozzle.	A. Check and replace if needed.

TROUBLE SHOOTING

Problem	Probable cause	Solution
Excessive over-spray	A. Excessive air volume for material being sprayed. B. Spraying too far from surface.	A. Adjust air control valve to reduce air volume to gun. B. Spray 6" to 8" from surface.
Runs or Sags	A. Material has been over diluted. B. Application speed too slow. C. Improper overlapping. D. Fluid set too large. E. Film thickness too thick for one coat. F. Gun too close to surface. G. Insufficient atomizing air.	A. Add undiluted material and mix thoroughly and flush gun with mixture. B. Increase application speed. C. Overlap passes by up to 50%. D. Replace fluid set. E. Consider spraying several coats F. Spray 6" to 8" from surface. G. Open air valve fully. Try different air valves.
Orange Peel Finish has texture of a orange peel, dimpled and often glossy	A. Insufficient dilution. B. Incorrect thinning solvent, evaporating too fast. C. Gun too far from surface D. Film thickness too thin E. Incorrect amount atomizing air. D. Ambient temperature too high.	A. Check viscosity, add thinning solvent. B. Use slower thinning solvent or retarder. C. Spray 6" to 8" from surface. D. Apply wetter coat. E. Adjust air control valve or experiment with different air caps. F. Reduce temp in spray area and or add retarder to material.
Fish Eyes Small depressions in the paint film, normally form when sprayed.	A. Contamination on the surface (oil, moisture etc) preventing the material from adhering to the surface in spots.	A. Almost impossible to correct once surface has been sprayed. Always ensure surface is clean and dry prior to spraying.
Dry Spray Surface is dull and rough, dry paint particles on surface. Dry spray surface is low in gloss.	A. Gun too far from surface. B. Incorrect amount of atomizing air C. Incorrect thinning solvent; solvent is evaporating too fast. D. Film thickness too thin. E. Application speed too fast.	A. Spray 6" to 8" from surface. B. Adjust air control valve. C. Use slower thinning solvent or retarder. D. Apply wetter coat E. Slow down speed of motion.
Blushing Large whitish area in the finish.	A. High humidity in spray area, moisture has condensed in the coating as it is sprayed. B. Incorrect thinning solvent. The solvent is evaporating too fast.	A. Reduce humidity in the spray area and/or add retarder to the material being sprayed. B. Use slower thinning solvent or retarder.

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