

Use and Maintenance Instruction Manual

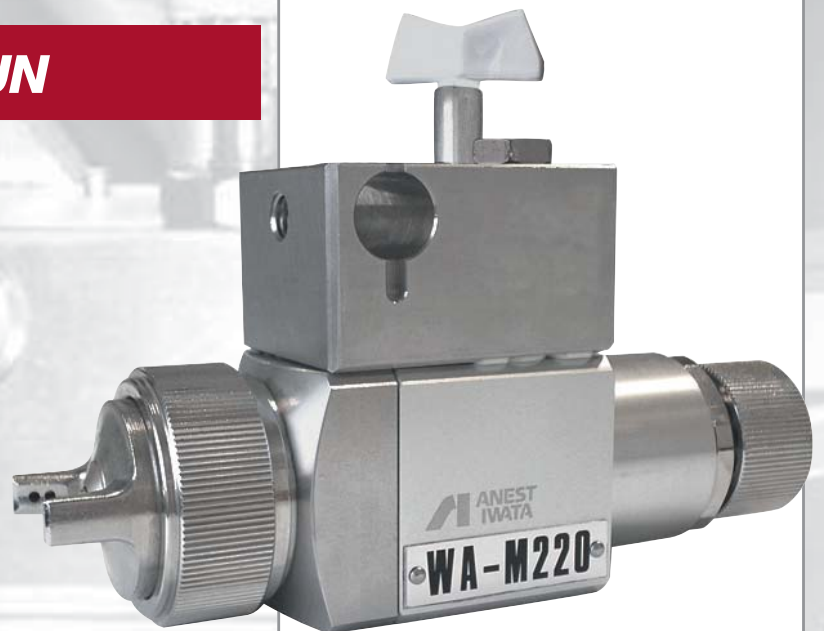
WA-M220

WAMangusta
220
ANEST IWATA

WA-M220 WB








WA-M220 L

AUTOMATIC SPRAY GUN



WA-M220, WA-M220L Automatic Spray Gun

TECHNICAL DATA

Models	 Ø mm	 No.	 bar	 m ³ /min	 N ³ /min	 mm	 g
WA-M220							
WA-M220	0.4 - 0.6 - 0.8 - 1.0	LV2	2.4	100	360	155	690
WA-M220	1.5 - 1.6	G2P		500	530	400	
WA-M220 WB WATER BASED VERSION							
WA-M220WB-081	0.8	WB1	1.5	200	340	300	690
WA-M220WB-101	1.0			250		320	
WA-M220WB-121	1.2			250		330	
WA-M220WB-141	1.4			300		340	
WA-M220WB-161	1.6			300		350	
WA-M220L							
WA-M220-L044	0.4	E4	0.8	10	60	55	730
WA-M220-L064	0.6			30		80	
WA-M220-L084	0.8			45		100	
WA-M220-L104	1.0			60		130	
WA-M220-L124	1.2			75		140	
MANIFOLD UNIT							
WA-M4R							375

NOZZLE_NEEDLE SET COMBINATION

Fluid Nozzle		Fluid Needle	Fluid Nozzle		Fluid Needle
Size	Mark	Mark	Size	Mark	Mark
WA-M220 WB	0.8 (0.031)	W200 WB/08M	WA-M220	0.4 (0.016)	WM04
	1.0 (0.039)	W200 WB/10M		0.6 (0.024)	WM05
	1.2 (0.047)	W200 WB/12M		0.8 (0.031)	WM12
	1.4 (0.055)	W200 WB/14M		1.0 (0.039)	WM12
	1.6 (0.063)	W200 WB/16M		1.5 (0.059)	WM15
				1.6 (0.063)	WM15
					W400 /16



Before use, adjustment or maintenance, it is important to read this instruction manual very carefully. This manual must be stored in a safe place for any future reference.

This ANEST IWATA automatic spray guns complies to ATEX regulations 2014/34/EU.



Protection level: II 2G X Suitable for using Zones 1 and 2.

X marking: Any static electricity discharge from the spray gun is to be diverted to the ground via the conductive air hose as stipulated.



ALWAYS observe WARNINGS and CAUTIONS in this instruction manual.

Symbol	WARNING	Hazard level	Consequence
	WARNING	Potentially hazardous situation	Death or serious injury
	CAUTION	Potentially hazardous situation	Minor to moderate injury
	IMPORTANT	Potentially hazardous situation	Property damage

1. TECHNICAL SPECIFICATIONS

Max. working air pressure:	6.8 bar (98 PSI)
Noise level (LAeqT)*:	82.4 dB(A)
Air connection:	G1/8"
Fluid manifold connection:	G1/8"
Max. Temperature range:	Atmosphere 5 ~ 40 °C / Air-Fluid 5 ~ 43 °C
* Measuring point: 1m backwards from gun, 1.6 m height.	

2. SAFETY WARNING FIRE AND EXPLOSION



- Never use the following HALOGENATED HYDROCARBON SOLVENTS:** which can cause cracks or dissolution of gun body (aluminium) due to chemical reaction. UNSUITABLE SOLVENTS: methyl chloride, dichloromethane, 1,2-dichloroethane, carbon tetrachloride, trichloroethylene, 1,1,1-trichloroethane.
- Sparks and open flames are strictly prohibited.** Paints can be highly flammable and can cause fire. Do not expose to open flames, electrical goods, cigarettes etc.
- Securely ground spray gun using conductive air hose.** (Less than 1MΩ) Always ensure that the spray gun is earthed correctly.

PROTECTION OF HUMAN BODY



- Use in a well-ventilated site, using a spray booth.** Poor ventilation can cause organic solvent poisoning and fire.
- Always wear protective gear (safety glasses, mask, gloves) to avoid inflammation of eyes and skin.** In case of any physical discomfort, immediately seek medical advice.
- Wear earplugs if necessary.** Noise level can exceed 85 dB(A), depending on operating conditions and painting site.

IMPROPER USE



- Never point gun towards people or animals.**
- Never exceed maximum working pressure or maximum operating Temperature**

- Always release air and fluid pressure before cleaning, disassembling or servicing.** Otherwise, remaining pressure can cause bodily injury due to improper operation or scattering of cleaning liquid. In order to release pressure, first stop supply of compressed air and fluid to automatic spray gun. Next, supply only piston operating air and exhaust fluid by operating fluid needle, which results in automatic supply stop of all compressed air.

- Tip of fluid needle set has a sharp point.** Do not touch the tip during maintenance to avoid accidents.
- Never use this gun to spray foods or chemicals.** Otherwise, foreign substance, could cause corrosion of fluid passages which could adversely affect health.
- Never alter this spray gun, to avoid insufficient performance and damage.**
- If something goes wrong, immediately stop operation and find the cause. Do not use again, until you have solved the problem.**
- Do not enter working areas, where robots, reciprocators, etc. are used, until they have been turned off.** Otherwise, they could cause injury.

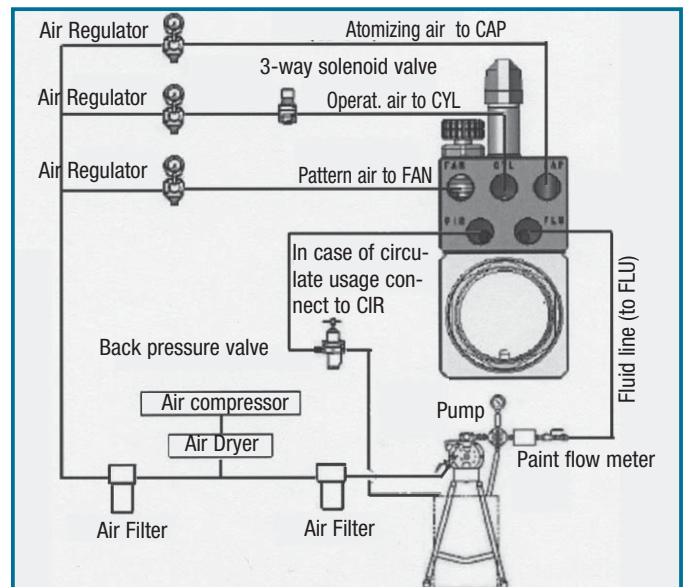
3. HOW TO CONNECT



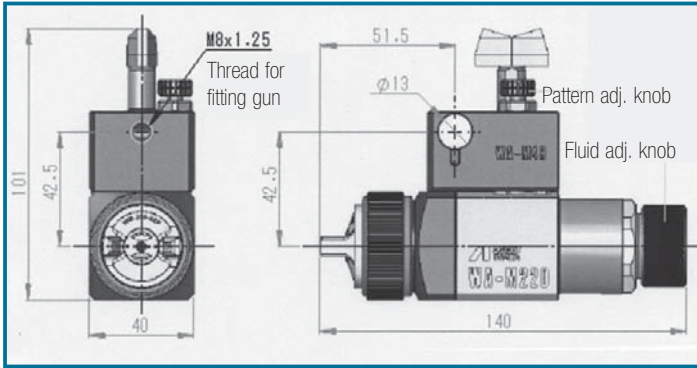
CAUTION: (Use WA-M220 only with manifold WA-M4R)

- Use clean air filtered through air dryer and air filter.
 - When using this automatic gun for the first time after purchase, spray cleaner to clean fluid passages and remove rust preventive oil.
 - Use three-way solenoid valve of more than $\phi 4$ inner dia. cross-sectional area and air hose of over $\phi 6$ inner dia. and less than 10m length. Small dia. of solenoid valve and longer air hose between three-way solenoid valve and gun can cause delay in operation.
 - Firmly fix hose to spray gun, to avoid that the disconnection of hose during operation, can cause bodily injury.
- Connect the gun to the manifold (12) by tightening wing bolt (9) then fit the manifold (12) to fitting stay, aim at spraying direction and fix it by fixing bolt.
 - Connect atomizing air hose to atomizing air inlet (CAP marked side) fan air hose to fan air inlet (FAN marked side) and operating air hose to operating air inlet (CYL marked side) tightly.
 - Connect fluid hose to fluid inlet (FLU marked side) tightly. In case of circulation usage, connect fluid hose to fluid outlet (CIR marked side) tightly, too. In the case of not usage with circulation system, fix tightly the plug (ref.17 as stand-ard accessory) on CIR marked side orifice.
 - Flush the gun fluid passages with a compatible cleaner.
 - Supply paint, test spray and adjust fluid output, air volume and pattern width.

CONNECTING EXAMPLE - DIMENSIONS

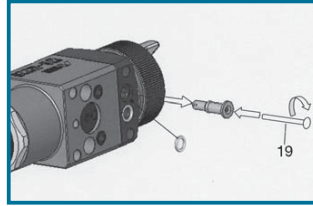


HOW TO CHANGE UNIONS FOR CIRCULATION USAGE



IMPORTANT

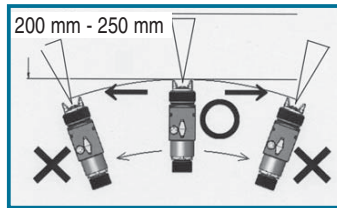
1. Pull plug (3-2) out from gun body, with attached screw (19) as standard accessory.
2. Put O-ring (3-3) as standard accessory, where plug (3-2) has been removed.
3. Connect fitting joint tightly to fluid outlet of manifold (CIR).
4. Connect fluid hose to the joint.



4. HOW TO OPERATE

Suggested operating air pressure is 4 to 5 bar (57 to 71 PSI).

NOTE: Valve orifice inside three-way solenoid valve should be minimum 4mm (0.157in) and also operating air hose length should be within 10m (32.8ft) with the inner diameter more than 6mm (0.236in) to avoid delayed operation and any kind of failure.



5. MAINTENANCE & INSPECTION

CAUTION

! Before carrying out maintenance and inspection ALWAYS observe SAFETY WARNING indications.

- Never use spare parts that are not Anest Iwata originals.
- Never damage fluid nozzle tip, fluid needle or air cap holes.
- Never immerse the spray gun completely in liquids such as thinner.
- Never soak air cap in cleaning liquid for extended period even if cleaning.

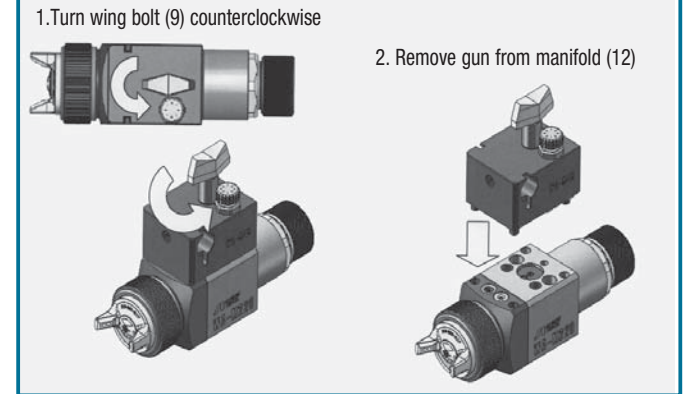
HOW TO PROCEED

! The fluid passages of the gun, must be cleaned thoroughly after each use, especially after use with bi-component paints. Incomplete cleaning can cause defective pattern shape.

1. **Clean fluid passages and air cap set (1).** Spray a small amount of cleaner to clean fluid passages. Incomplete cleaning can fail pattern shape and uniform particles. Especially clean fully and promptly after use with two-component paint.
2. **Clean each section with brush soaked with cleaner and wipe out with waste cloth.** Do not immerse the whole gun in the cleaner. If done, it can damage parts. When cleaning, never scratch any holes of air cap set, fluid nozzle, or fluid needle set.
3. **Disassembling: Before disassembling, fully clean fluid passages.** During disassembly, do not damage seat sections.

A. Disassemble gun and manifold. Manifold can be kept on fixing stay.

Cause manifold is kept on fixing stay, when spray operation continues, just connect gun to manifold without re-positioning. Hoses are kept on fixing manifold. No need to disconnect and connect again, when maintenance is carried out.



B. Disassemble fluid adjustment set (7), piston spring (6), fluid needle valve spring (5) and fluid needle set (2-2). Pull fluid needle set (2-2) straight to protect fluid needle packing set (3-4). Remove fluid adj. set (7), piston spring (6) and fluid needle valve spring (5), then pull out fluid needle set (2-2) from gun body. Pay attention so that fluid adj. set (7) does not suddenly fly out since it is strongly pushed by fluid valve spring (5) and piston spring (6).

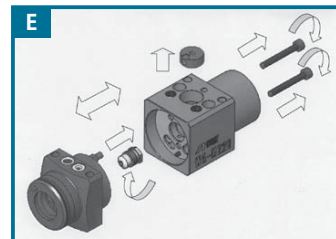
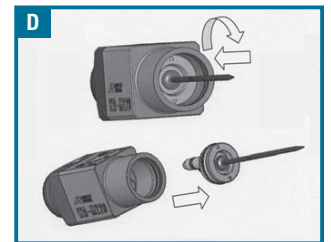
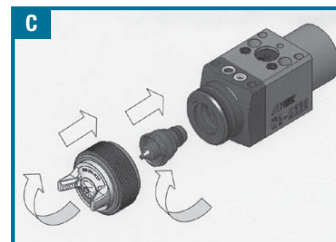
C. Disassemble air cap set (1) and fluid nozzle (2-1). Remove fluid nozzle (2-1) after removing fluid needle set (2-2) or while keeping fluid needle (2-2) pulled, in order to protect seat section.

Tools: Wrench (width 19 mm) - Fluid nozzle

D. Disassemble air piston set (4). Screw rear section of fluid needle set (2-2) into piston (4) and pull out piston set (4). Be careful not to damage piston packing (4-1) and o-rings when pulling out piston set (4).

E. Disassemble gun body and fluid needle packing set (3-4). Disassemble front part and rear part of gun body removing 2 hex. socket head bolts (3-6) from body. Then remove fluid needle packing set (3-4) from front part of gun and remove filler block nut (8) from rear part of gun body.

Tools: Hex. Socket screw key (width 4mm) - Hex. socket head bolt Wrench (width 10mm) - Fluid needle packing set.



INSPECTION & REPLACEMENT STANDARD

WHERE TO INSPECT	REPLACEMENT PART
a. Each hole passage of air cap (1) and fluid nozzle (2-1).	Replace if it is crushed or deformed.
b. Packing and O ring	Replace if it is deformed or worn out.
c. Leakage from seat section between fluid nozzle (2-1) and fluid needle set (2-2).	Replace them if leakage does not stop after fully cleaning fluid nozzle (2-1) and fluid needle set (2-2). If you replace fluid nozzle (2-1) or fluid needle set (2-2) only, fully match them and confirm that there is no leakage.

4. To adjust fluid needle packing set (3-4), first tighten it by hand while fluid needle set (2-2) is inserted. Then tighten it further about 1/6 turn (60-degree) by wrench. When you remove needle packing set (3-4), do not leave plastic piece of needle packing set (3-4) in the gun body.

IMPORTANT: If you tighten fluid needle packing set (3-4) too much, fluid needle set (2-2) does not move smoothly, resulting in paint leakage from tip of fluid nozzle (2-1). Try to adjust it carefully while pulling and pushing fluid needle set (2-2) by hand checking its movement. If it is tightened too much, first fully loosen it, then tighten it again carefully. After, assemble gun completely while pulling piston (4) and checking movement of fluid needle set (2-2). If fluid needle set (2-2) does not move smoothly, disassemble again and try to adjust it with the same process.

5. **Assemble gun body.** Insert filler block nut to hole of rear part of gun body and insert pin of the front part of gun body to the hole positioned on the front of rear part of gun body as indicated. Connect front part with the rear part of gun body, tightening 2 hex. socket head bolts (3-6) equally while fluid needle (2-2) is inserted to get right centre position. While tightening the 2 hex. socket head bolts (3-6) to accurately adhere the rear part of the gun to the front part, make sure that the contact planes are at the same level.

IMPORTANT: Tighten 2 hex. socket head bolts (3-6) while fluid needle set (2-2) is inserted to avoid that fluid needle set (2-2) will not move smoothly. The rear part of gun body should be adhered to front part and the 2 contact planes with manifold (12) should be at the same level, to avoid air and fluid leakage. Tighten 2 hex. socket head bolts (3-6) equally.

Tool: Hex. Socket screw key (width 4mm) - Hex socket head bolt.

6. **Assemble piston set (4).** Screw rear section of fluid needle set (2-2) into piston (4) and insert piston set (4) into the gun body. Apply grease to piston packing (4-1) and O-rings. Δ marks are indicated on bottom side of piston. When you insert piston set (4) into the gun body, please make sure the position of Δ marks are correct. Δ marks must be positioned upper side and bottom side of gun body.

IMPORTANT: Apply grease to piston packing (4-1) and O-rings to avoid that piston set (4) does not move smoothly.

7. **Assemble fluid nozzle (2-1) and air cap set (1).**

Tighten fluid nozzle (2-1) and air cap set (1) to the gun body.

IMPORTANT: Fluid nozzle (2-1) should be tightened firmly in order to avoid fluid leakage and fluttering.

Tools : Wrench (width 19mm) - Fluid nozzle

8. **Position of the 2 horns of the air cap set (1), for easier assembly.**

The body side has 1 pin to determine air cap position correctly (Vertical or Horizontal). The air cap has 2 pins for the same function, so air cap can move between the 2 pins 90°. If the air cap is installed correctly, according to air cap marking, it will be possible to get the proper position.

IMPORTANT: Turn air cap (1) and when 2 pins hit, tighten air cap cover and fix it. Horn position is horizontal or vertical.

9. **Assemble fluid needle set (2-2), fluid needle valve spring (5), piston spring (6) and fluid adj. set (7) to gun body.** Apply Vaseline or oil to thread section of fluid adj. set (7) and insert it into gun body while keeping it fully opened.

IMPORTANT: If fluid adj. set (7) is not fully opened, tip seat section of it can contact and damage fluid nozzle (2-1) and cause seizure thread.

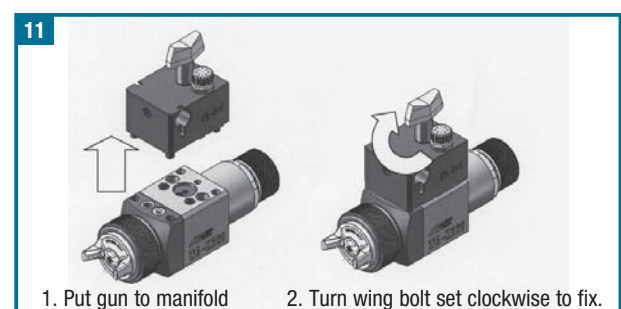
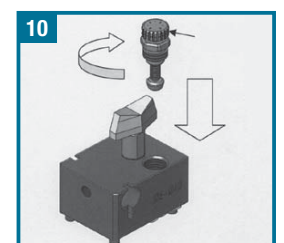
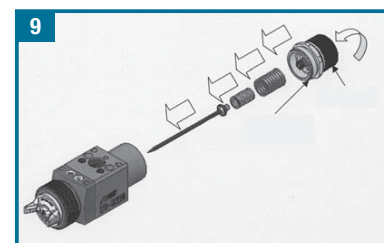
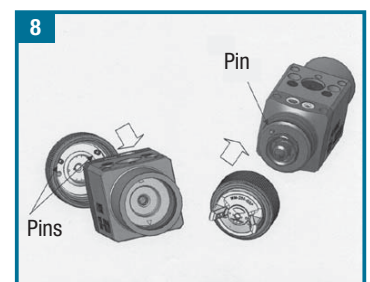
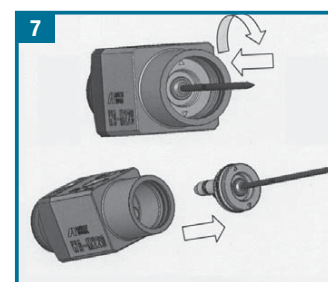
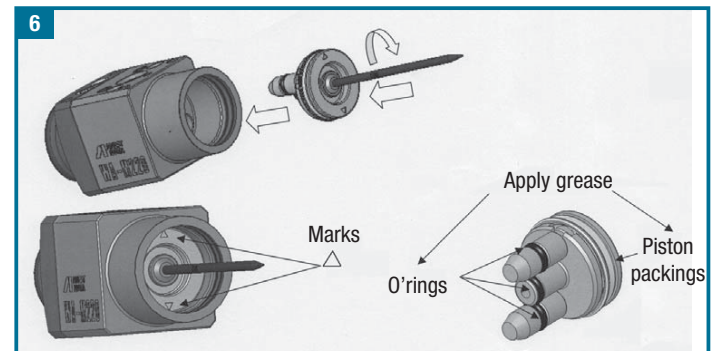
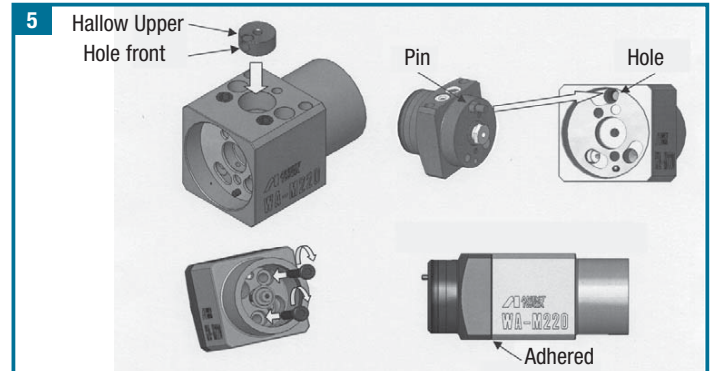
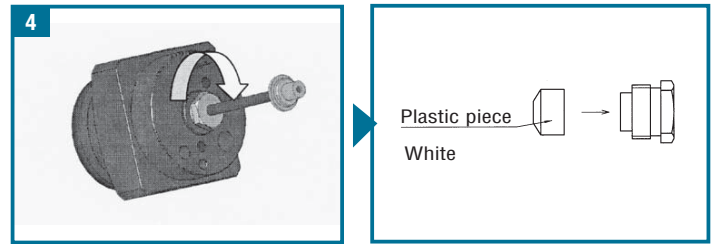
Tool: Wrench (width 32mm) - Fluid adj. set

10. Turn pattern adj. set (11) counter-clockwise to fully open. And then tighten pattern adj. guide into manifold (12).

IMPORTANT: If pattern adj. set (11) is not fully opened, tip of it can contact and damage tip of manifold set (12) and cause seizure of thread.

Tool: Wrench (width 13mm) pattern adj. knob

11. Connect the gun to the manifold (12). Gun is adhered to manifold firmly.
Gun should be adhered to manifold (12) to avoid air and fluid leakage.



6. TROUBLESHOOTING

GUN DOES NOT SPRAY



- Fluid adj. set (7) closed. Check and adjust.
- Tip hole of nozzle obstructed. Check and clean.
- Paint buildup, between fluid needle set (2-2) and needle packing set (3-4). Check and clean.

INTERMITTENT SPRAY PATTERN



- Air escapes from fluid nozzle (2-1) and tapered seat of gun body. Check , clean & replace if necessary.
- Air escapes from fluid needle packing set (3-4). Tighten.
- Air escapes from hose joint. Tighten.

DEFECTIVE SPRAY PATTERN



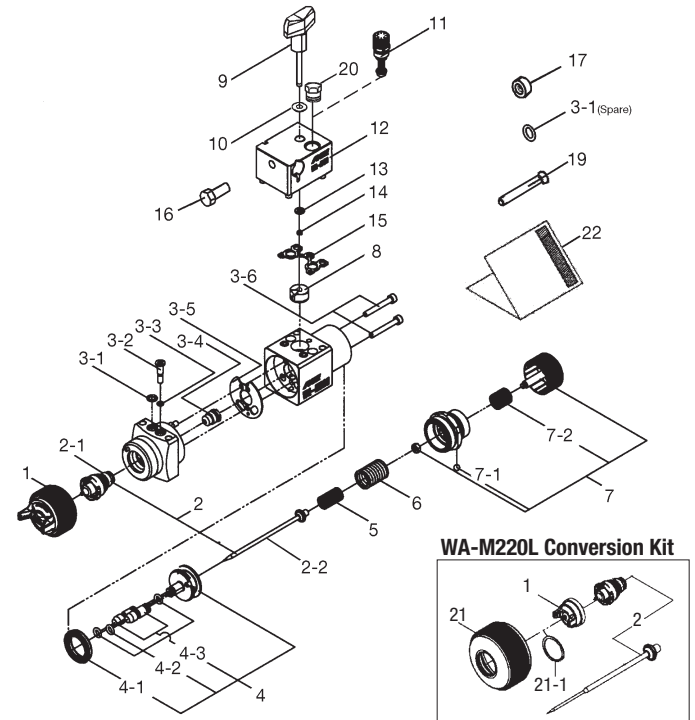
- Dirty nozzle (2-1) or air cap (1). Clean carefully.
- Fluid nozzle (2-1) or air cap (1) has been damaged. Replace if damaged.
- Fluid nozzle (2-1) is not properly fitted. Remove and clean seated section.
- Paint viscosity too high or too low. Dilute paint or increase viscosity .
- Fluid output too high or too low. Adjust fluid adj. set (7) to reduce or increase.

LEAKING



- Fluid nozzle (2-1), needle set (2-2), Clean or replace if necessary dirty, damaged, worn on seat.
- Fluid adjustment knob is loose. Tighten.
- Fluid needle spring is worn. Replace.
- Fluid nozzle (2-1) and gun body are loose. Tighten.
- Needle packing set (3-4) dirty or too tighten. Clean or adjust.
- Needle packing set (3-4) is worn or too loose. Replace or adjust.
- Needle packing set (3-4) and fluid needle set (2-2) are worn. Replace.
- Quick lock-release system of manifold (12) is loose. Tighten.
- Manifold seal (15) damaged or worn. Replace.
- Piston set (4) dirty, damaged, worn on seat. Clean or replace if necessary
- Gun body seal, dirty, damaged, worn on seat. Clean or replace if necessary
- Piston spring (6) is worn. Replace.
- Piston O'rings (4-2) worn. Replace.

7. SPARE PARTS LIST



Ref.	DESCRIPTION
1	Air cap set
2	● Fluid nozzle-needle set
2-1	Fluid nozzle
2-2	Fluid needle
3-1	● O'ring
3-2	Plug
3-3	● O'ring
3-4	Fluid needle packing set
3-5	Gun unit seal
3-6	Hex. socket head bolt
4	Piston set
4-1	● Piston packing
4-2	● O'ring
4-3	● Air valve
5	Fluid needle valve spring
6	Piston spring
7	Fluid adj. set
7-1	Ball
7-2	Fluid adj. spring
8	Filler nut block
9	Wing bolt set
10	Washer
11	Pattern adj. set
12	Manifold set WA-M4R
13	Turn shaft washer
14	Retaining ring
15	Manifold seal
Accessories	
16	Fixing bolt
17	Hex. plug
3-1	O'ring
19	Screw
20	Hex. plug
WA-M220L Conversion Kit	
1	Air Cap
21	Air cap cover
21-1	Packing
2	Fluid needle

● Marked parts are wearable parts.

NOTE: When ordering parts, specify gun model, part name with ref. No. and marked No. of air cap set, fluid nozzle and fluid needle.