

## MSA-510 SPRAY GUN

**IMPORTANT:** Before using this equipment, read all safety precautions and instructions. Retain for future use.

### DESCRIPTION

The MSA spray gun is a midsize, lightweight spray gun. Fluid passages are 300 grade stainless steel. Fluid tips and needles are 400 grade stainless.

Any standard air cap presently used with JGA spray guns can be used with the MSA gun. For air cap choices see Chart 1 or refer to the Spray Gun Catalog, I-2008.

### OPERATING PRESSURES

Air - 100 PSI Maximum  
Fluid - 150 PSI Maximum

#### Note

This gun may be used with chlorinated solvents; but, see Page 2 for additional warnings.

#### Note

The MSA spray gun is not suitable for highly abrasive materials (i.e. porcelain enamel, certain mica paints, etc). Premature fluid tip & needle wear will occur. We recommend carboly fluid tips (AV-617 series) & needles (JGA-409 series) for use with these coatings.

### OPERATION

Strain material thru 60 or 90 mesh screen. Adjust fluid pressure to deliver the desired paint volume. Adjust air pressure and flow to provide a uniform dispersion of atomized paint throughout the pattern. Keep air pressure as low as possible to minimize bounce - back and overspray. Excessive fluid flow will result in heavy center spray patterns. Inadequate flows may cause the pattern to split. See Spray Gun Guide, SB-2-001 latest revision, for details concerning set up of spray guns.

### PREVENTIVE MAINTENANCE

To clean air cap and fluid tip, brush exterior with a stiff bristle brush. If necessary to clean cap holes, use a broom straw or toothpick. **Never use a wire or hard instrument.** This may scratch or burr holes causing a distorted spray pattern.

To clean fluid passages, remove excess material at source, then flush with a suitable solvent using a device such as the SolventSaver™ (see Accessories). Wipe gun exterior with a solvent dampened cloth. Never completely immerse in solvent as this is detrimental to the lubricants and packings.

### FLUID INLET GASKET (6) REPLACEMENT INSTRUCTIONS

1. Remove fluid inlet adapter with appropriate wrench.
2. Clean loctite from gun body inlet threads and seal area.
3. Place gasket (6) squarely onto fluid inlet adapter and push down until it is flat against the shoulder.
4. Place a couple of drops of thread sealant (i.e. Loctite med. strength #242 blue or equal) on threads before installing fluid inlet adapter.
5. Torque fluid inlet adapter to 20-25 ft. lbs. and tighten locknut.

### CAUTION

To prevent damage to the fluid tip (3) or fluid needle (29), be sure to either 1) pull the trigger and hold while tightening or loosening the fluid tip or 2) remove fluid needle adjusting screw (33) to relieve spring pressure against needle collar.

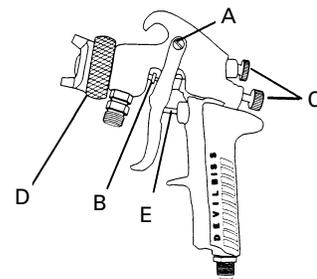
### SPRAY GUN LUBRICATION

Daily, apply a drop of gun lube at trigger bearing stud (20) and the stem of the air valve (15) where it enters the air valve assembly (18). The shank of the fluid needle (29) where it enters the packing nut (11) should also be oiled. The fluid needle packing (10) should be lubricated periodically. **Make sure baffle (5) and retaining ring (1) threads are clean and free of foreign matter. Before assembling retaining ring to baffle, clean the threads thoroughly, then add two drops of •SSL-10 spray gun lube to threads.**

The fluid needle spring (31) and air valve spring (16) should be coated on the ends with a very light grease, ensuring that any excess grease will not clog the air passages. For best results, lubricate the points indicated daily using •SSL-10 spray gun lube.

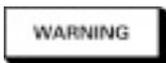
- A. Trigger points
- B. Packing
- C. Adjusting valves
- D. Baffle & retaining ring threads
- E. Air valve cartridge

• "Material Safety Data Sheet" available from DeVilbiss upon request.



**SAFETY PRECAUTIONS**

This manual contains information that is important for you to know and understand. This information relates to USER SAFETY and PREVENTING EQUIPMENT PROBLEMS. To help you recognize this information, we use the following symbols. Please pay particular attention to these sections.



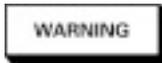
**Important safety information - A hazard that may cause an injury or loss of life.**



**Important information that tells how to prevent damage to equipment.**

**Note**

Information that you should pay special attention to.



**The following hazards may occur during the normal use of this equipment. Please read the following chart before using this equipment.**

| HAZARD   | CAUSE   | SAFEGUARD  |
|--|---|--|
| <b>Fire</b><br>   | Solvent and coatings can be highly flammable or combustible, especially when sprayed.   | Adequate exhaust must be provided to keep air free of accumulations of flammable vapors.<br><br>Smoking must never be allowed in the spray area.<br><br>Fire extinguishing equipment must be present in the spray area.  |
| <b>Solvent Spray</b><br>  | During cleaning and flushing, solvents can be forcefully expelled from fluid and air passages. Some solvents can cause eye injury.  | Wear eye protection.   |
| <b>Inhaling Toxic Substances</b><br>   | Certain materials may be harmful if inhaled, or if there is contact with skin.  | Follow the requirements of the Material Safety Data Sheet by your coating material manufacturer.<br><br>Adequate exhaust must be provided to keep the air free of accumulations of toxic materials.<br><br>Use a mask or respirator whenever there is a chance of inhaling sprayed materials. The mask must be compatible with the material being sprayed and its concentration. Equipment must be as prescribed by an industrial hygienist or safety expert, and be NIOSH approved. |
| <b>Explosion Hazard - Incompatible Materials</b><br>  | Halogenated hydrocarbon solvents - for example; methylene chloride and 1, 1, 1 - Trichloroethane can chemically react with aluminum. The chemical reaction caused by these solvents reacting with aluminum can become violent and lead to an equipment explosion.   | This gun may be used with these solvents. However, aluminum is widely used in other spray application equipment - such as material pumps, regulators, valves & cups. Check all equipment items before use and make sure they can also be used safely with these solvents. Read the label or data sheet for the material you intend to spray. If in doubt as to whether or not a coating or cleaning material is compatible, contact your material supplier.                          |
| <b>General Safety</b>  | Improper operation or maintenance of equipment.   | Operators should be given adequate training in the safe use & maintenance of the equipment (in accordance with the requirements of NFPA-33, Chapter 15). Users must comply with all local & national codes of practice and insurance company requirements governing ventilation, fire precautions, operation, maintenance and house-keeping. These are OSHA Sections 1910.94 and 1910.107 and NFPA-33. Risk is reduced by avoiding or lessening factors 1-7.                         |
| <b>Cumulative Trauma Disorders "CTD's"</b><br><br><b>CTD's, or musculoskeletal disorders, involve damage to the hands, wrists, elbows, shoulders, neck and back. Carpal tunnel syndrome and tendinitis (such as tennis elbow or rotator cuff syndrome) are examples of CTD's</b> | Use of hand tools may cause cumulative trauma disorders "CTD's".<br><br>CTD's, when using hand tools, tend to affect the upper extremities. Factors which may increase the risk of developing a CTD include:<br><br>1. High frequency of the activity.<br>2. Excessive force, such as gripping, pinching or pressing with the hands and fingers.<br>3. Extreme or awkward finger, wrist, or arm positions.<br>4. Excessive duration of activity.<br>5. Tool vibration.<br>6. Repeated pressure on a body part.<br>7. Working in cold temperatures.<br><br>CTD's can also be caused by such activities as sewing, golf, tennis and bowling, to name a few. | Pain, tingling, or numbness in the shoulder, forearm, wrist, hands or fingers, especially during the night, may be early symptoms of a CTD. Do not ignore them. Should you experience any such symptoms, see a physician immediately. Other early symptoms may include vague discomfort in the hand, loss of manual dexterity, and nonspecific pain in the arm. Ignoring early symptoms and continued repetitive use of the arm, wrist and hand can lead to serious disability.      |

## CHART 1

| Nozzle Combinations                          |  |             |             |             |
|--|--|-------------|-------------|-------------|
| Air Cap<br>Sizes<br>Order<br>From<br>Chart 2 | Fluid Tip and Needle Sizes<br>Order From Chart 3 |             |             |             |
|  | E  | EX          | FF          | FX          |
| Tip<br>Orifice<br>in./<br>mm                 | .070<br>1.8                                      | .070<br>1.8 | .055<br>1.4 | .042<br>1.1 |
| 24   | P  |             | P           | P           |
| 30   | P  | S           | S           | S           |
| 58   |  | S           | P           | P           |
| 80   |  | S           | S           | S           |
| 704  | P  |             | P           | P           |
| 765  | P  |             | P           | P           |
| 777  | P  |             | P           |             |
| 797  | P  |             | P           |             |
| 9000   |  | S           | S           |             |

P = Pressure Feed Combination

S=SuctionFeedCombination

## CHART 2

| Fluid Tips and Needles   |                                      |                                |                               |
|--|--------------------------------------|--------------------------------|-------------------------------|
| No. on Fluid<br>Tip Order →<br>(I.D. Size)   | *Ref. No. 3<br>Fluid Tip &<br>Gasket | Ref. No. 29<br>Fluid<br>Needle | Lapped Tip<br>& Needle<br>Set |
| <b>400 Grade Stainless Steel</b>   |                                      |                                |                               |
| AV-2115-E (.070")  | →                                    | →                              | JGA-4040-E                    |
| AV-2115-EX (.070")   | →                                    | →                              | JGA-4040-EX                   |
| AV-2115-FF (.055")   | →                                    | →                              | JGA-4040-FF                   |
| AV-2115-FX (.042")   | →                                    | →                              | JGA-4040-FX                   |
| <b>Optional Fluid Tips and Needles - Matched Sets<br/>303 Grade S.S. AND U.H.M.W. Polyethylene</b> |                                      |                                |                               |
| AV-4915-E (.070")  | →                                    | →                              | JGA-4056-E                    |
| AV-4915-FF (.055")   | →                                    | →                              | JGA-4056-FF                   |
| AV-4915-FX (.042")   | →                                    | →                              | JGA-4056-FX                   |

\*AV-1 copper gasket is included with replacement fluid tips.

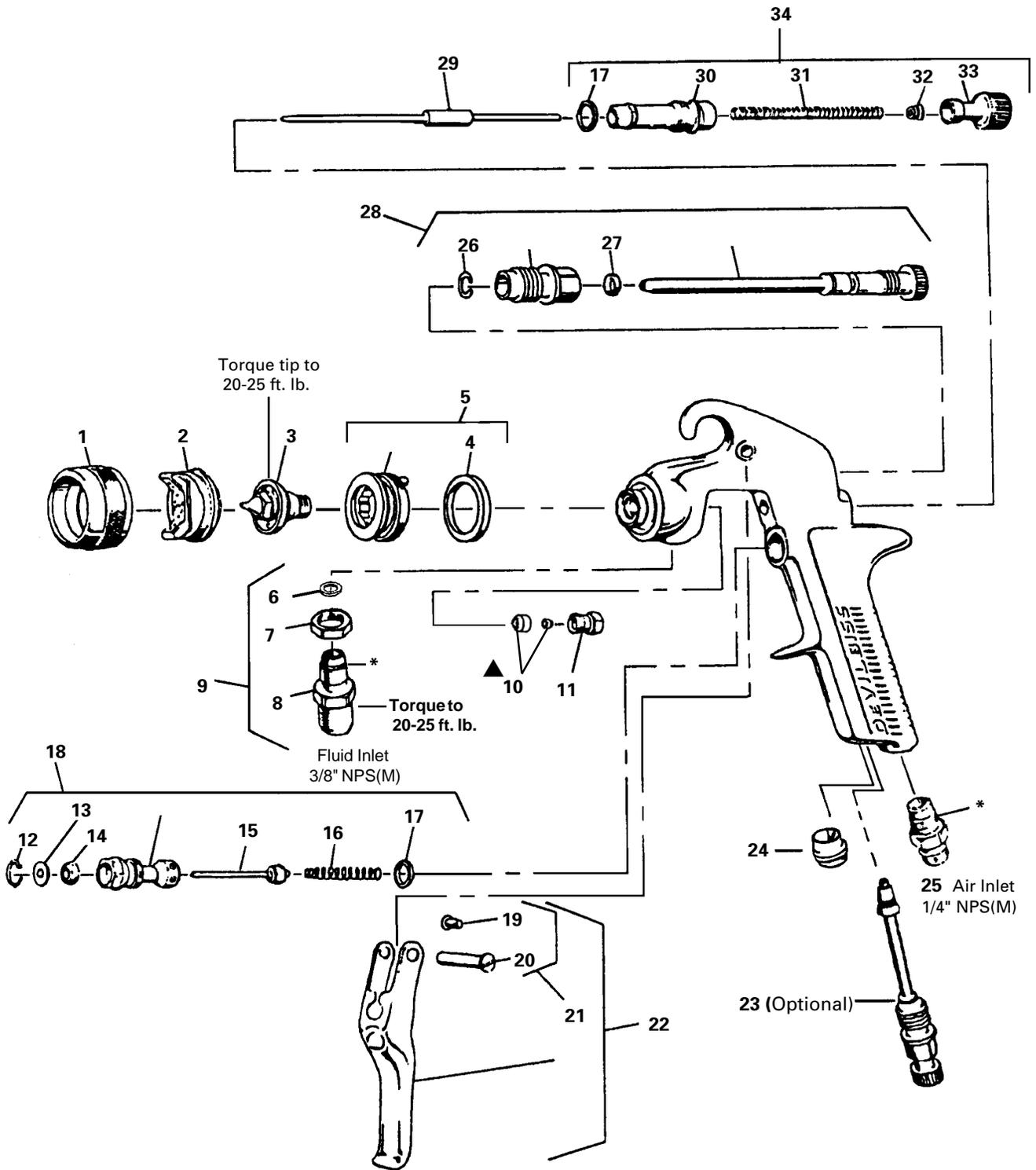
Do not use with the MSA.

## PARTS LIST

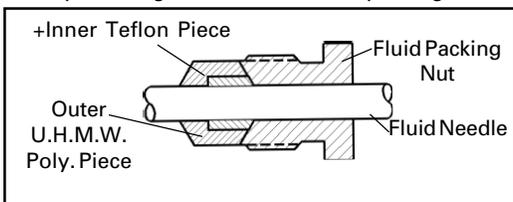
| Ref.<br>No. | Replacement<br>Part No. | Description  | Individual<br>Parts Req |
|-------------|-------------------------|--|-------------------------|
| 1           | MSA-1                   | Retaining Ring (Delrin)                                      | 1                       |
|             | MBC-368                 | Retaining Ring<br>(Nickel Plated Brass)                      |                         |
| 2           | See Chart 1             | Air Cap  | 1                       |
| 3           | See Chart 2             | Fluid Tip  | 1                       |
| •4          | JGD-14-K10              | Seal (Kit of 10)<br>(Polyethylene)                           | 1                       |
| 5           | JGD-402-1               | Baffle & Seal Kit  | 1                       |
| 6           | MSV-3-K10               | Gasket (blue)  | 1                       |
| 7           | ----                    | Locknut  | 1                       |
| 8           | ----                    | Fluid Inlet Adapter<br>3/8" NPS(M)                           | 1                       |
| 9           | JGA-4044                | Fluid Inlet and Nut Kit                                      | 1                       |
| •10 ▲       | JGV-463-K3              | Packing (Kit of 3)   | 1                       |
| 11          | 34411-122-K10           | Fluid Needle Packing Nut<br>(Kit of 10)                      | 1                       |
| •12         | JGA-14-K25              | Snap Ring (Kit of 25)  | 1                       |
| •13         | JGA-15-K25              | Washer (Kit of 25)   | 1                       |
| •14 ▲       | JGS-26-K25              | U-Cup (Kit of 25)  | 1                       |
| •15         | JGS-431-K25             | Air Valve (Kit of 25)  | 1                       |
| •16         | MBD-12-K25              | Spring (Kit of 25)   | 1                       |
| •17 ▲       | JGS-72-K10              | Gasket (Kit of 10) (Teflon)                                  | 2                       |
| 18          | JGS-449-1               | Air Valve Assembly   | 1                       |
| •19         | ----                    | Screw  | 1                       |
| 20          | ----                    | Trigger Bearing Stud   | 1                       |
| 21          | JGS-478                 | Stud and Screw Kit<br>(Kit includes 3 studs<br>and 5 screws) | 1                       |
| 22          | JGS-477-1               | Trigger, Stud & Screw Kit<br>(Kit includes 1 each)           | 1                       |
| 23          | JGA-4005                | Air Adjusting Valve<br>(Optional)                            | 1                       |
| 24          | JGA-132                 | Plug   | 1                       |
| 25          | MSA-3                   | Connector 1/4" NPS   | 1                       |
| •26         | ----                    | Retaining Ring   | 1                       |
| •27 ▲       | SSG-8069-K25            | O-Ring (Viton)   | 1                       |
| 28          | JGA-497-1               | Air Valve Assy. - Horn                                       | 1                       |
| 29          | See Chart 2             | Fluid Needle   | 1                       |
| 30          | -----                   | Gun Body Bushing   | 1                       |
| •31         | MBD-19-K10              | 6# Spring (Kit of 10)  | 1                       |
|             | MSA-4-K10               | 4# Spring (Kit of 10)<br>(Optional)                          | 1                       |
| •32         | -----                   | Spring Pad (included<br>with #31 and 34)                     | 1                       |
| 33          | JGS-16                  | Fluid Needle Adjusting<br>screw                              | 1                       |
| 34          | JGA-4041                | Bushing, Spring, Knob Kit                                    | 1                       |

• A quantity of necessary parts is include in primary service Gun Repair Kit KK-4987-2. This kit should be kept on hand for service convenience.

▲ A quantity of necessary parts is included in minor repair kit KK-5034.



▲ Detail Ref. No. 10 - Two piece packing covered by U.S. Patent No. 5,209,501.  
 + Tapered edge faces out towards packing nut.



\*Apply thread sealant (i.e. Loctite #242, med. strength blue or equal) onto these threads.

## TROUBLESHOOTING

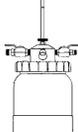
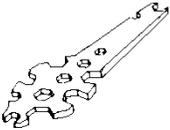
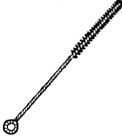
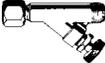
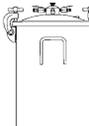
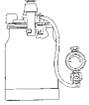
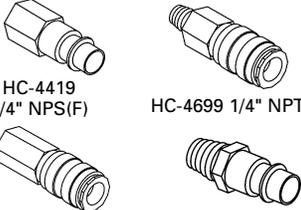
| CONDITION   | CAUSE   | CORRECTION   |
|---|---|--|
| Heavy top or bottom pattern<br>      | Horn holes plugged.<br>Obstruction on top or bottom of fluid tip.<br>Cap and/or tip seat dirty.   | Clean. Ream with non-metallic point.<br>Clean.<br>Clean.   |
| Heavy right or left side pattern<br> | Left or right side horn holes plugged.<br>Dirt on left or right side of fluid tip.<br><br>Remedies for the top-heavy, bottom-heavy, right-heavy and left-heavy patterns:<br>1) Determine if the obstruction is on the air cap or the fluid tip. Do this by making a test spray pattern. Then, rotate the cap one-half turn and spray another pattern. If the defect is inverted, obstruction is on the air cap. Clean the air cap as previously instructed.<br>2) If the defect is not inverted, it is on the fluid tip. Check for a fine burr on the edge of the fluid tip. Remove with #600 wet or dry sand paper.<br>3) Check for dried paint just inside the opening. Remove paint by washing with solvent. | Clean. Ream with non-metallic point.<br>Clean.   |
| Heavy center pattern<br>             | Fluid pressure too high for atomization air (pressure feed).<br><br>Material flow exceeds air cap's capacity.<br>Spreader adjustment valve set too low.<br>Atomizing pressure too low.<br>Material too thick.   | Balance air and fluid pressure.<br>Increase spray pattern width with spreader adjustment valve.<br>Thin or lower fluid flow.<br>Adjust.<br>Increase pressure.<br>Thin to proper consistency.                 |
| Split spray pattern<br>              | Atomization air pressure too high.<br>Fluid pressure too low (pressure feed only).<br><br>Spreader adjusting valve set too high.  | Reduce at transformer or gun.<br>Increase fluid pressure (increases gun handling speed).<br>Adjust.  |
| Jerky or fluttering spray<br>      | *Loose or damaged fluid tip/seat.<br>Material level too low.<br>Container tipped too far.<br>Obstruction in fluid passage.<br>Loose or broken fluid tube or fluid inlet nipple.<br>Dry or loose fluid needle packing nut.   | Tighten or replace.<br>Refill.<br>Hold more upright.<br>Backflush with solvent.<br>Tighten or replace.<br>Lubricate or tighten.  |
| Unable to get round spray   | Spreader adjustment screw not seating properly.<br>Air cap retaining ring loose.  | Clean or replace.<br>Tighten.  |
| Will not spray  | No air pressure at gun.<br>Internal mix or pressure feed air cap and tip used with suction feed.<br>Fluid pressure too low with internal mix cap and pressure tank.<br>Fluid needle adjusting screw not open enough.<br>Fluid too heavy for suction feed.   | Check air supply and air lines.<br>Change to proper suction feed air cap and tip.<br>Increase fluid pressure at tank.<br><br>Open fluid needle adjusting screw.<br>Thin material or change to pressure feed. |
| Excessive overspray   | Too much atomization air pressure<br>Gun too far from work surface.<br>Improper stroking (arcing, gun motion too fast).   | Reduce pressure.<br>Adjust to proper distance.<br>Move at moderate pace, parallel to work surface.   |
| Excessive fog   | Too much, or too fast-drying thinner.<br>Too much atomization air pressure.   | Remix properly.<br>Reduce pressure.  |
| Dry Spray   | Air pressure too high.<br>Gun tip too far from work surface.<br>Gun motion too fast.<br>Gun out of adjustment   | Reduce air pressure.<br>Adjust to proper distance.<br>Slow down.<br>Adjust.  |
| Fluid leaking from packing nut  | Packing nut loose.<br>Packing worn or dry   | Tighten, do not bind needle.<br>Replace or lubricate.  |
| Fluid leaking or dripping from front of pressure feed gun   | Packing nut too tight.<br>Dry packing.<br>Fluid tip or needle worn or damaged.<br>Foreign matter in tip.<br>Fluid needle spring broken.<br>Wrong size needle or tip.  | Adjust.<br>Lubricate.<br>Replace tip & needle with lapped sets.<br>Clean.<br>Replace.<br>Replace.  |

\*Most common problem.

**TROUBLESHOOTING (continued)**

| CONDITION  | CAUSE   | CORRECTION  |
|--|---|---|
| Runs and sags  | Too much material flow.<br>Material too thin.<br>Gun tilted on an angle, or gun motion too slow.  | Adjust gun or reduce fluid pressure.<br>Mix properly or apply light coats.<br>Hold gun at right angle to work and adapt to proper gun technique   |
| Thin, sandy coarse finish drying before it flows out | Gun too far from surface.<br><br>Too much air pressure.<br>Improper thinner being used.   | Check distance. Normally approx. 8".<br><br>Reduce air pressure and check spray pattern.<br>Follow paint manufacturer's mixing instructions.  |
| Thick, dimpled finish "orange peel".                 | Gun too close to surface.<br>Too much material coarsely atomized.<br>Air pressure too low.<br>Improper thinner being used.<br>Material not properly mixed.<br>Surface rough, oily, dirty. | Check distance. Normally approx. 8".<br>Increase air pressure or decrease fluid pressure.<br>Increase air pressure or reduce fluid pressure.<br>Follow paint manufacturer's mixing instructions.<br>Follow paint manufacturer's mixing instructions.<br>Properly clean and prepare. |

**ACCESSORIES**

|  |   |  |  |   |   |
|--|---|--|--|---|---|
| <p><b>KB-555 Alum. &amp; KB-545-SS Stainless Steel 2 Qt. Pressure Feed Cups</b></p>  <p>Includes a 0-30 psi gauge.</p>   | <p><b>JGA-52-K10 Leather Packings</b></p>  <p>Used when abrasive materials are sprayed (i.e. porcelain enamel). Use (2) JGA-52 packings in place of JGV-463 packing.</p> | <p><b>VS-531 Low Pressure Strainers</b></p>  <p>The VS-531 Low Pressure Fluid Strainer provides a final filter for trapping foreign particles in the paint supply.</p>  | <p><b>HAV-500 or HAV-501 Adjusting Valve (HAV-501 Shown)</b></p>  <p>Use to control air pressure at gun. (HAV-500 has no gauge.)</p>  | <p><b>Spray Gun Lube SSL-10 (2 oz. bottle)</b></p>  <p>Compatible with all paint materials: contains no silicone or petroleum distillates to contaminate paint. MSDS available upon request.</p>     | <p><b>HD-503 SolventSaver™</b></p>  <p>2 Quart Hose Cleaner used to clean the inside of hose and material passages of gun. 2 Gallon galvanized also available.</p> |
| <p><b>WR-103 Wrench</b></p>  <p>Contains all necessary tip, hose and nut sizes used on or with gun.</p>   | <p><b>JGA-4005 Air Adjusting Valve</b></p>  <p>Allows air adjustment at the gun. Replaces JGA-132 plug.</p>  | <p><b>42884-214-K5 (3/8") &amp; 42884-215-K10 (5/8") Cleaning Brushes</b></p>  <p>These brushes are helpful in cleaning threads and recesses of gun body.</p>   | <p><b>P-H-5516 Air Adjusting Valve</b></p>  <p>Enables user to control and reduce air usage at the gun. Ideal for low pressure spraying.</p>  | <p><b>QMGZ SolventSaver™ Hose/Gun Cleaner</b></p>  <p>2 Gallon galvanized tank used to clean the inside of hose and material passages of the gun.</p>  | <p><b>MSA-4-K10 Fluid Needle Spring (replaces MBD-19)</b></p>  <p>Provides reduced spring force (4 lbs. versus 6 lbs.) for easier trigger pull.</p>              |
| <p><b>MSP-524 Twin Cartridge, Paint Spray Respirator</b></p>  <p>NIOSH-Certified (TC-84A-1623) for respiratory protection in atmospheres not immediately dangerous to life.</p> | <p><b>HAF-507 Whirlwind™ In-Line Air Filter</b></p>  <p>Removes water, oil, and debris from the air line.</p>  | <p><b>TGC-545 (Aluminum) TLC-555 (Teflon-Lined) TSC-595 S.S. 2 Qt. Drip-Free Suction Cup</b></p>  <p>Cup has a unique, two position valve which permits selection of either a drip-free or conventional open vent mode.</p> | <p><b>TLC-576 Aluminum Cup (Teflon Lined) &amp; TSC-591 Stainless Steel Cup</b></p>  <p>1 Qt. pressure feed cups. 3/8" NPS (F), cam lock lid. Requires KK-4980 air regulator kit.</p> | <p><b>Quick Disconnect Approved for HVLP Guns (Air)</b><br/>High Flow Ball and Ring Type</p>  <p>HC-4419 1/4" NPS(F)      HC-4699 1/4" NPT(M)<br/>HC-4700 1/4" NPT(M)      HC-1166 1/4" NPT(M)</p> |   |

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