

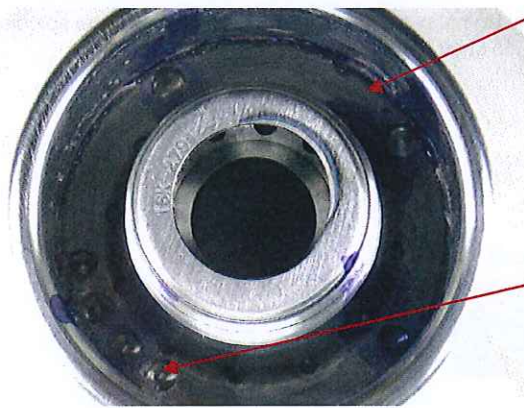
SERVICE INSTRUCTION

RMA-303 Spindle Service Guide

This service guide is written to assist the operator on maximum uptime using the A11081 spindle motor in the RMA-303 series applicators. Listed below are (11) fundamental requirements that must be reviewed and followed to assure long life of the spindle motor.

11 – Important Technical Requirements

#1 Bell Cup Cleaning & Maintenance



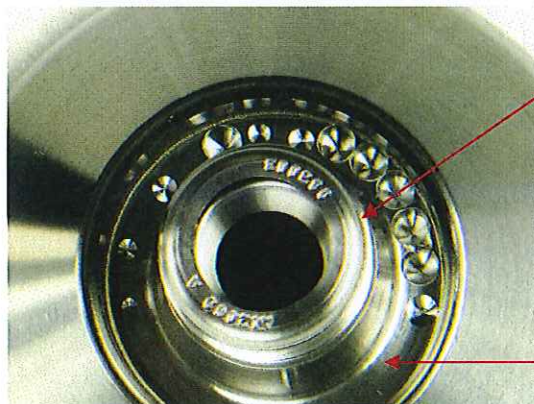
The bell cup well area must be kept cleaned after each working shift. Dried paint must be removed from the well area of the bell cup to assure maximum spindle life.

These correction holes must also be kept cleaned of dried paint. Soak bell cups in solvent loosen and remove the dried paint from holes.

Figure 1-1 Bell Cup Well Area

Maintaining a clean bell cup will assure maximum service up time. Please exercise caution when cleaning the bell cup to assure not to scratch the bell cup taper only use non-metallic picks or wood toothpicks.

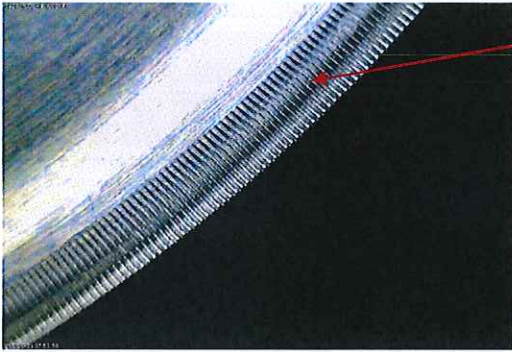
Figure 1-2 shows typical clean bell cup in the bell cup well area.



Inspect taper for scratches paint build up and or nicks. A damaged taper will cause premature spindle motor failure.

Typical clean bell cup well area.

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Visually inspect bell cup serrations for damage or wear. Damaged serrations can reduce paint transfer efficiency yielding in defects. Establish routine maintenance schedule to inspect serrations.

Figure 1-2A typical good bell cup serrations

Visually inspect bell cup for damage from impact, spinning off and or dirty taper. Do not put a damage bell cup back onto the spindle motor it will destroy or significantly reduce spindle motor life. Torque bell cup onto shaft 50-70 in-lb.

#2 Splash plate Inspection

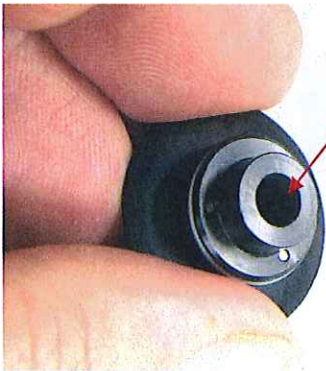
Periodic inspection of the splash plate is required to assure good paint delivery and or solvent flush capabilities. See photos below noting critical areas to inspect.



All four Solvent holes must clean and not plugged.

Inspect preset gap between splash plates top an insert if collapsed replace splash plate. Clean gap with soft bristle brush or tooth pick removing paint debris.

If seal is worn replace with new seal A11085-00



Inspect inside diameter of insert make sure all dried paint is removed. If damaged on inside diameter replace with new splash plate.



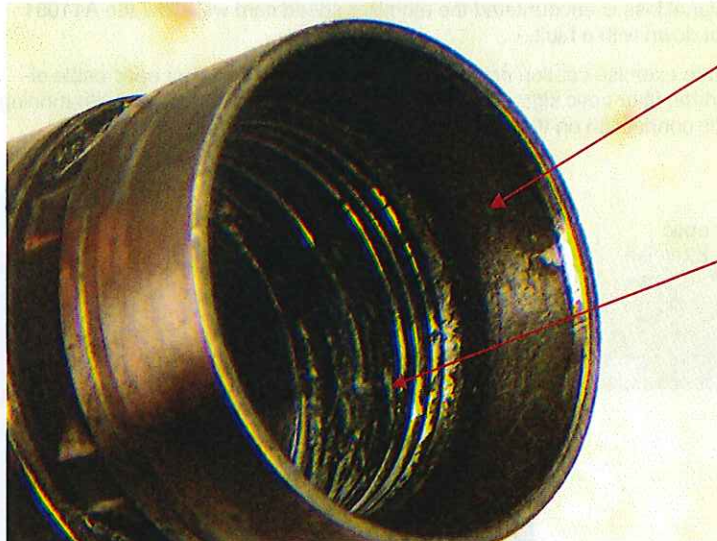
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When removing splash plate from bell cup use supplied splash plate removal tool, place bell cup onto surface that will not damage bell cup serrations. Carefully press our splash plate with removal tool.

When inserting splash plate into bell cup use insertion tool or thumb press splash with even force into bell cup until seated. Do not over press splash plate into bell cup or the "gapped" distance can collapsed requiring splash plate to be replaced with new unit.

#3 Spindle Motor Taper Inspection

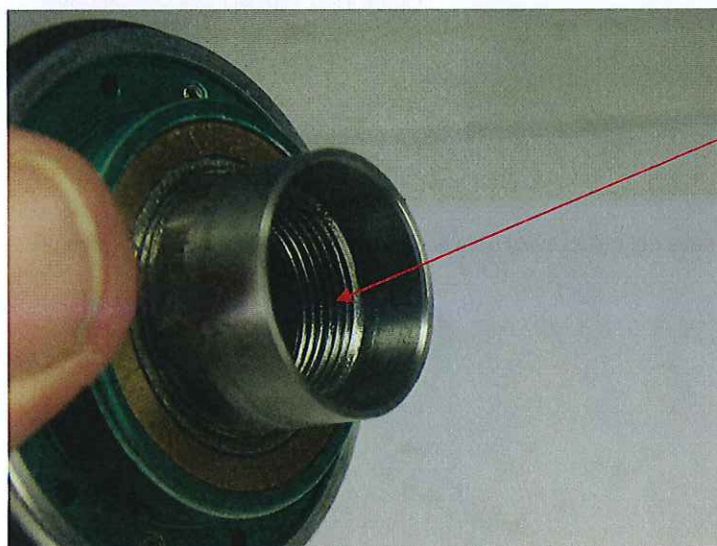
See figure 1-3 on spindle taper visual inspection process.



Taper has paint film build up, this will cause bell cup to seat improperly reducing spindle life drastically.

Notice the buildup of paint material in threads. The threads must be clean to assure proper bell cup seating.

Figure 1-3 Dirty Spindle taper



Typical clean taper and threads.

Figure 1-4 Typical clean taper

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When cleaning the taper exercise caution not to scratch it. Use only non metallic pick, soft bristle brush or wood toothpick to remove material from threads. Use a soft cloth to clean the bell cup taper with appropriate solvent. If cleaning the taper while the spindle is mounted to the applicator on the robot arm avoid letting solvent go down into inside diameter of the shaft. Fluid entering this path will end up in the drive air line of the spindle causing loss of bearing air. If cleaning the taper while the spindle motor is affixed to robot always have bearing air operational (80 PSI nominal) to reduce the risk of solvent exposure into the bearing air path.

#4 Fiber Optic Cables

At time of installation or repair there can be no more than three (3) fiber optic connections including the connection at the quick disconnect of the applicator to the robot arm. If more than three connections exist then signal loss can result. No more than 100' foot of fiber optic is permissible for use on the A11081 spindle. If signal loss is encountered the atomizer speed card will allow the A11081 spindle to ramp up to maximum speed quickly and then shut down with a fault.

When dismantling the applicator from the robot manifold plate exercise caution not to allow solvent to haze the fiber optic cable either on applicator or robot plate. If allowed to become hazed the fiber optic signal strength can be reduced causing issue with running spindle motor. See figure 1-5 for typical location of fiber optic connection on the robot manifold plate.

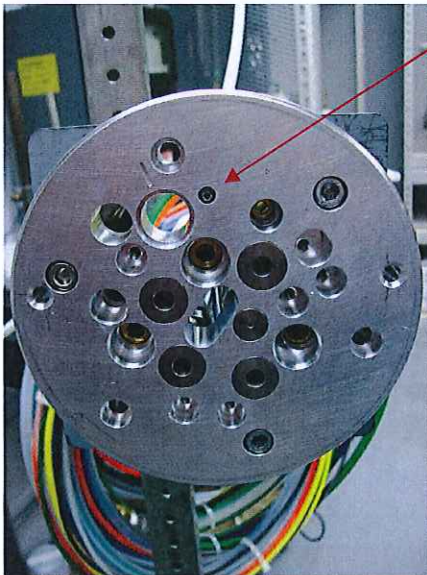


Figure 1-5A Robot Manifold

Typical fiber optic connection. Exercise caution not to expose cable end to solvent or it will haze reducing signal strength.



Figure 1-5B Typical Fiber Optical Cable

Visually inspect cable with light source. The light transmitted through the line should be bright if no light passes the cable is bad. The brighter the light observed the stronger the signal.

Periodically inspect cable junctions to assure connections have not pulled away from each other further reducing signal strength.

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#5 Bearing Air Supply

The supply line of the bearing air must constant and not interrupted. The air line must have an air filter installed capable of removing .3 to .6 micron see specifications noted below:

Specifications for Bearing Requirements:

Coalescing Type filter, 19 SCFM, 99.95% efficiency particulate removal .3 to .6 microns, max aerosol passed .6 micron max., solid passed .2 micron. NOTE: ONE FILTER PER APPLICATOR (RPM-418)

Maintain filter establish periodic maintenance schedule to replace element (RPM-32) assure uptime of applicator. Please note: The return bearing air line from spindle motor must be plumbed into the atomizer speed card to assure feedback is coming from spindle motor, do not bypass or hook up an external line to fool the atomizer speed card it will result in spindle motor failure.

#6 Turbine Drive Air Supply

The supply line of the Turbine Drive Air must constant and not interrupted. The air line must have the following air filter installed.

Specifications for Turbine Drive Air Requirements:

Pre-Filter, Coalescing Type filter, 136 SCFM, 98.5% efficiency particulate removal .3 to .6 micron, max aerosol passed 1.0 micron max., max. solid passed .4 micron. NOTE: Up to three RMA-303 can be placed on one filter (RPM-417)

Maintain filter establish periodic maintenance schedule to replace element (RPM-33) to assure uptime of applicator.

#7 Air Heater (RMA/MMA-303 Applicators must have heated drive air)

The RMA/MMA-303 applicator series must have heated turbine drive air to assure spindle motor will not freeze-lock up during use or allowed to sweat.

If not using Ransburg air heater A11065-05 make sure the other supplied air heater has capability to preset air temperature and maintain temperature without interruption. Adjust heated air between 85 to 100 degrees Fahrenheit.

Establish a maintenance schedule to periodically inspect the air heater to assure unit is functioning properly.

#8 Paint Interlocks

No paint should be able to loaded (delivered) into bell cup without the bell cup spinning above 20K RPM. If paint enters the bell cup without spinning at recommended speed the spindle motor can become flooded with paint leading to spindle motor failure.

Develop periodic maintenance plan to inspect the paint interlocks to assure they have not been by passed resulting in flooded spindle motor failure.

#9 Fluid Flow Rates (Solvent Flush or Paint)

Do not exceed 700 cc/min fluid flow rate either paint or solvent flush. Exceeding flow rates will cause spindle motor to flood and destroy motor.

When running 700 cc/min bell cup speed should be greater than 20K RPM to assure optimal performance of motor and delivery of paint/ solvent flush.

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#10 Robot Paint Speed (Paint Path)

Recommended robot speed with all RMA/MMA-303 applicators -- Maximum speed recommended 200-225 degrees angular velocity.

#11 Bearing Air Interlock

Turbine drive air and bearing air must be interlocked. The turbine must not be allowed to rotate unless bearing air is present or at the required pressure. The bearing air pressure is 90 psi. 80 psi minimum/100 psi maximum.