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AVK TROUBLE SHOOTING GUIDE FOR SPINWALL TECHNOLOGY ™ THREADED INSERTS

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AVK
Troubleshooting Guide
For
Spinwall Technology™ Threaded Inserts

When investigating a customer complaint by phone or in person please listen to the customer, understand their point of view, and then proceed to investigate the problem using this Troubleshooting Guide.

Statistical data shows that the most common source of problems with AVK can be attributed to the installation tool, air supply system, the customer's application and then the AVK product in that order. Please keep this in mind when investigating the problem.

The fastest way to determine if the tool is the problem is to try your demo tool or the customer's back up tool. If this works you're 90% sure the problem is the customer's tool. If this doesn't work use this Troubleshooting Guide.

Section I - *ARO Tool Installation Troubleshooting*

Issue	Probable Cause	Solution
1. Tool doesn't work.	1. Motor vane has "bridged" the forward and reverse inlet and will not allow air into the motor.	Lightly clamp the tool in a vise and rotate the tool mandrel with your fingers or with light grip on pliers. Try the tool again.
	2. Motor is "frozen" due to corrosion or lack of lubrication.	Apply a few drops of oil into the tool air inlet and rotate the tool mandrel with your fingers if possible. Cycle the tool under power. Lubricate the motor again and cycle under power.
	3. Motor vanes are damaged.	Disassemble the motor and replace vanes.
	4. Trigger assembly is damaged	Disassemble trigger replace damaged parts.
	5. Air supply restriction.	Check hoses, quick disconnect fittings and plumbing to be sure there is no restriction to the airflow to the tool. Install a blowgun onto the line to test free airflow.
	6. Airflow restriction in the tool.	Air must flow through the tool for proper motor operation. Inspect the air inlet and the outlet for debris and clean. Disassemble, inspect and clean the trigger assembly. Disassemble, inspect and clean the motor assembly. Replace any damaged motor vanes.

Section I - *ARO Tool Installation Troubleshooting*

Issue	Probable Cause	Solution
2. Tool works but mandrel doesn't spin.	1. Missing or damaged hex drive.	Check to be sure that the hex drive is present and not damaged in the TAK.
	2. Missing or damaged 10 NPT spring.	Replace spring.
	3. Mandrel internal hex drive is stripped.	Replace the mandrel, confirm air pressure is not too high.
3. AVK fastener will not thread onto the tool mandrel.	1. Wrong size mandrel/Wrong size part.	Check for proper thread size using thread gauge.
	2. Damaged lead thread on tool mandrel.	Replace tool mandrel. (use Unbrako or Holochrome brand)
4. AVK fastener doesn't fit hole.	1. Wrong hole size in the parent Material	Measure the hole size it is to be per the AVK catalog after all finishes are applied. Please do not force the AVK fastener into the hole. You may damage the AVK fastener. Do not use the AVK tool to force the fastener into the hole as you might damage the tool.
5. AVK fastener spins once threaded onto the tool mandrel and will not install.	1. Damaged thread on mandrel.	Thread AVK fastener onto the tool mandrel backwards until the tail of the AVK fastener touches the nose pilot. If an obstruction or a drag is felt replace the damaged mandrel with an Unbrako or Holochrome brand mandrel. The head of the AVK fastener must contact and be gripped by the tool's nose cone knurling to prevent the fastener from spinning during installation. A damaged thread on the mandrel may prevent the AVK fastener's threads from threading on far enough up the mandrel to allow the head of the AVK fastener to contact the nose knurling.
	2. AVK fastener has damaged or incomplete thread.	Check AVK thread with thread gauge or a new mandrel.
	3. AVK fastener may be of a thread locking design and have an intentional deformed thread.	Thread mating screw or thread gauge into AVK part. If it stops before threading all the way through this may be an AVK thread locking part that has its last two threads deformed. Change to Spin pull or Spin pull to pressure tooling.
	4. If AVK fastener is closed end version the mandrel may be "bottoming out."	Check to be sure that the mandrel is of the right length. If it is too long it will bottom out in the closed end of the insert preventing it from installing.

Section I - *ARO Tool Installation Troubleshooting*

Issue	Probable Cause	Solution
6. Tool operates but AVK part will not install to the correct IL dimension.	1. Insufficient dynamic air pressure.	Adjust dynamic air pressure (air pressure with tool running) per the AVK catalog spec.
	2. Incorrect hose or diameter and length or incorrect quick disconnect fittings.	Inspect the hose or fitting inside diameters per the AVK catalog spec. If hose diameter is too small this will reduce air volume needed to operate tool efficiently. The hose should not exceed 10ft in length and should not be spiraled. Spiraled hoses affect the air volume. Note: The larger the thread size the more sensitive the application will be to spiral hoses
	3. Motor needs lubrication. 4. Air supply restriction. 5. Air flow restriction in tool. 6. Damaged mandrel.	See issue 1.2 above. See issue 1.5 above. See issue 1.6 above See issue 3.2 above.
	7. Mandrel is too short.	Be sure that the mandrel engages each AVK thread before the AVK part begins upsetting. See the AVK catalog for proper length mandrels. If the AVK part is a special length part a longer than standard mandrel may be needed. Contact AVK with fastener part number for details of appropriate length mandrel.
	8. Thrust bearing or washers might be missing or not lubricated.	Check to be sure the TAK thrust bearing and appropriate washers are present and well lubricated. These components must be kept in a wet lubricated condition to assure proper performance and longevity.
	9. Improper tool RPM.	Check to be sure that the correct RPM tool is being used per the AVK catalog. Confirm the tool's RPM by checking the engraved RPM designation on the casting of the tool near the black gear housing.
	10. Improper material thickness for AVK part/Wrong AVK fastener for grip of parent material.	Check the thickness of the parent material and the grip range of the AVK fastener to be sure they match.

Section I - *ARO Tool Installation Troubleshooting*

Issue	Probable Cause	Solution
6. Tool operates but AVK part will not install to the correct IL dimension. - CONTINUED -	11. Excessive drill burr on parent material.	The drill burrs may put the parent material out of grip. Change the drill it's probably dull and creating the burr.
	12. Sheet separation of multiple parent materials.	If multiple parent materials are being used a separation of the sheets may cause an out of grip condition. Suggest Kleco pins in nearby holes to take up sheet separation gaps.
	13. Wrong gear set in tool.	See air tool catalog to be sure that the appropriate planetary gear set has been installed into the tool. Gear sets are identified by counting the number of teeth in the gears.
	14. AVK fastener not waxed.	Lubricate the mandrel with your wax block and try to install another part. If the part installs it may not have been waxed properly. Confirm this by trying another lot number. If confirmed write a Quality concern call report and send samples to AVK for testing. Note: You can place your hand into a box of parts and squeeze a handful of parts. They should feel slightly wet to slightly sticky if they have been waxed.
	15. AVK fastener not annealed or annealed properly.	Try a different lot. If another lot is not available install the AVK fastener with a hand tool and compare the amount of "squeeze" required to known "good" parts. If the subject parts install "hard" or cannot be installed with the hand tool, return parts with lot numbers indicated to AVK for confirmation of annealing.

Section I - *ARO Tool Installation Troubleshooting*

Issue	Probable Cause	Solution
7. Parent material is damaged during AVK part installation.	1. Parent material is soft plastic.	The parent material must be dense enough to support the head, hole fill and radial expansion and backside flange formation of the AVK fastener. Confirm the grip of the parent material and the AVK part. If the parent material is too soft to support the installation of the AVK part try another AVK fastener design or longer grip range. The A-K Series with its small head profile is not recommended for use in soft plastics. Switch to the A-L Series. The A-R Series is the best AVK threaded insert for soft plastic.
	2. The hole may be too close to the edge of the parent material.	The hole fill and radial expansion of the AVK fastener may cause a bulge and fracture the parent material if the AVK part is installed too close to the edge of the parent material. Repositioning the hole away from the edge would be the best solution.
	3. The parent material is too thick.	The AVK fastener's backside flange might be forming within the parent material and damaging it. Check the parent materials thickness and the grip range of the AVK part. Try a longer grip part.
	4. Dynamic air pressure is too high.	Lower the dynamic air pressure enough to achieve the proper IL dimension.
	5. Parent material is not flat.	The parent material must be flat at the installation location of the AVK part. It may deform or crack under the clamp load of the AVK fastener. This is especially important with plastic parent materials.
8. The AVK part installs but there is no backside flange formed behind the parent material.	1. The parent material is too thick.	Measure the thickness to be sure it is within the grip range of the AVK part.
	2. The AVK part does not have enough "grip" for the thickness of parent material that you are working with.	Measure the parent material and confirm the appropriate grip AVK fastener.

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Issue	Probable Cause	Solution
9. The AVK part implodes upon installation.	1. Parent material is too thin or too thick.	Measure the parent material and confirm the appropriate grip AVK fastener.
	2. Parent material is too soft.	It must be able to support the hole-fill and the radial expansion of the AVK fastener. Try another AVK fastener design.
	3. Heavy burr on the backside of the hole.	This will restrict the proper expansion of the AVK backside flange and could result in implosion. Use a new sharper drill or change to a Hougan Rotabroach hole-cutting tool. If the drilling process is automatic slow down the advance of the drill motor so it doesn't push through the parent material.
	4. Punch tab on the backside of the hole.	This will also restrict the expansion of the AVK backside flange and will most likely cause implosion. The punch tab should be flexible enough to be pushed back by the forming of the AVK backside flange. The punch tab should also be bent back away from the hole by the punch if possible. This will allow it to be pushed back more easily by the forming of the AVK backside flange. Alternative special "key hole" round or hex punches could be used to locate the punch tab away from the AVK backside flange. Contact AVK for details.
10. The AVK fastener does not install concentrically.	1. No concentricity pilot on tool nose cone.	Nosecone must contain a pilot to assure concentric installation. The pilot assures concentric installation for the A-K, A-L, A-H and A-S Series Product.
	2. Bent tool mandrel.	Remove the mandrel from the tool and roll its threaded shank on a flat surface. If the mandrel wobbles replace it.

Section I - *ARO Tool Installation Troubleshooting*

Issue	Probable Cause	Solution
11. The AVK fastener does not install perpendicular to the parent material.	1. The tool is not being held perpendicular during installation.	Observe operator and offer suggestions for improvement.
	2. There is an obstruction preventing the installation tool from being held perpendicular during installation	Measure the obstruction and its distance from the hole and write a call report outlining the design parameters and request a special thread adaption kit to be designed to clear the obstruction.
	3. The hole has been drilled at an angle.	Check to be sure the hole is perpendicular to the surface of the parent material by inserting the AVK fastener into the hole and check to be sure that the underside of the head sits flat on the parent material surface.
	4. Part being installed too tightly.	Confirm proper tool and tool RPM.
12. The AVK fastener strips upon installation.	1. The dynamic air pressure is set too high.	Check the AVK catalog specification for the recommended dynamic (tool running) air pressure.
	2. The tool mandrel is undersized.	Check the thread fit of the tool mandrel to be sure the mandrel is not worn undersized.
	3. The mandrel is not of the correct size.	Check the mandrel size with a thread ring gauge.
	4. The AVK fastener threads are the wrong size	Check the threads with a thread gauge Note: A 10-32 male thread will thread into an M5 female thread by hand but under "power" it may strip.
	5. Mandrel is too short.	Confirm proper length mandrel.

Issue	Probable Cause	Solution
13. The tool mandrel wears or fails prior to 3500 installations.	1. Too much dynamic air pressure.	Adjust air pressure per the AVK catalog. Try setting the dynamic air pressure on the low side of the specification. To determine a proper "set" measure the installed fastener's "IL" dimension.
	2. The tool is not being held perpendicular to the parent material due to an application obstruction.	Take measurements write a call report and request a special thread adaption kit to avoid the obstruction.
	3. The operator is pulling the tool on an angle from the installed part. This will cause an excess side load and wear on the mandrel.	Offer suggestions to improve this.
	4. A drill burr or punch tab is inducing an excess side load on the mandrel causing premature wear.	Change the drill bit or reconfigure the punched hole shape to locate the punch tab away from the backside flange of the AVK part allowing it to expand freely.
	5. The burr or punch tab may also cause the AVK insert wall within the hole to implode "biting down" on the mandrel causing it to wear.	Removal or prevention of the burr and the punch tab will help prevent mandrel wear.
	6. If the AVK product is out of grip in the application implosion may also occur and wear the mandrel prematurely.	Measure the parent material thickness and assure the right grip AVK fastener is being used.
	7. Implosion may also be caused by a parent material that is too soft.	Suggest the A-R Series as it is designed for soft materials and will not implode when used in them.
	8. The customer is not waxing the mandrel.	Explain that the heat and friction of installing the AVK fastener wears the mandrel. Lubricating the mandrel with a wax block or some other type of lubricant will extend the mandrel's life. Cable tie the wax block to the work bench or assembly line and wipe the mandrel against it after every 6 installations.

Section I - *ARO Tool Installation Troubleshooting*

Issue	Probable Cause	Solution
13. The tool mandrel wears or fails prior to 3500 installations. -CONTINUED -	9. Insufficient wax on the AVK product.	Put your hand into a box of product. If the parts feel slightly wet or slightly sticky they have been waxed. If they feel dry obtain samples and lot numbers and return to AVK for evaluation. Try another lot or suggest that the customer begin waxing the mandrel until new parts can be supplied.
	10. The wrong nose cone is being used.	Spinwall Technology product requires a centering pilot on the nose cone. A nose cone that doesn't have the pilot will allow the insert to set to one side causing a side load on the mandrel that will cause premature wear. See the catalog for the proper nose cone specification.
14. The tool mandrel breaks during installation.	1. The wrong RPM tool is being used.	Check the AVK catalog for the proper AVK fastener and tool RPM requirement.
	2. Too much dynamic air pressure.	Check the pressure setting requirement in the AVK catalog.
	3. Inferior mandrels being used.	Replace the mandrel with an Unbrako or Holochrome brand mandrel.

Section II - Mating Part/Mating Fastener Installation Troubleshooting

Issue	Probable Cause	Solution
1. Mating fastener cross threads into the AVK fastener.	1. The mating component may be miss-aligned preventing perpendicular entry of the mating screw into the AVK fastener.	Correct alignment problem.
	2. The mating fastener is being started too fast with a power tool.	For best results start the mating fastener by hand. AVK suggests the use of a dog point or other anti-cross thread mating screw to prevent cross threading.
2. The AVK fastener spins upon the thread start of the mating fastener	1. Mating part is miss-aligned causing the mating fastener to be cross-threaded.	Correct alignment to assure perpendicular entry of the mating fastener.
	2. Mating fastener is being started with power driver.	Slow driver down or hand start for best results.
3. The AVK fastener spins during mating fastener rundown.	1. If the mating fastener has a prevailing torque thread locking element such as a nylon patch or deformed thread the interference fit (prevailing torque) between the mating threads may exceed the max spin out capability of the AVK fastener	If this type of mating fastener is required AVK suggests the use of its A-H Series hex body part in a hex punched hole. The A-H will resist the prevailing torque of a locking patch mating fastener. If the hole cannot be punched in the hex shape and must be drilled the A-L Series wedge head could be tried in the application. The spin out of the AVK fastener should exceed the prevailing torque of the mating fastener to assure a proper design. Another method of solving this problem is to suggest the use of a free spinning Whiz-Lock type-mating fastener. This type of fastener locks by digging its under-head serration's into the surface of the mating component and prevents loosening from shock load or vibration.

Section II - Mating Part/Mating Fastener Installation Troubleshooting

Issue	Probable Cause	Solution
3. The AVK fastener spins during mating fastener rundown. -CONTINUED-	2. The mating fastener may have an unthreaded shank.	Assure that the unthreaded shank portion does not engage the threads of the AVK fastener by suggesting the proper length fastener.
	3. The plating thickness or coating on the mating fastener may be too thick.	Measure the thread fit of the mating fastener to assure that its plating or coating thickness it is not creating a prevailing torque/spin out problem.
	4. The AVK fastener's threads may be clogged by a finish that is applied after the AVK part is installed.	Check the AVK threads with a thread gauge. If they are clogged suggest that the AVK part can be installed after the finish is applied. You can also suggest that the customer could install a removable rubber thread plug or other masking device into the threads of the AVK part. Another option would be to try another AVK fastener that will provide additional spin out resistance such as the wedge head in a round hole or the A-H Series in a hex hole.
	5. The mating fastener may have a damaged thread.	Check the mating fastener with a thread gauge.
	6. If the AVK fastener is a closed end design check to be sure that the mating screw is not too long and "bottoming out" in the closed end part	Determine the appropriate length screw and advise the customer.
4. The AVK part spins during the tightening of the mating fastener.	1. The AVK fastener may not be in contact with the underside surface of the mating component.	Assure that the mating component is contacting the head of the AVK fastener. Check the fit and the hole size of the mating component against the head of the AVK fastener. The hole size in the mating component should be at least .040 (1,0) smaller that the head diameter of the AVK fastener. The closer the hole size in the mating part is to the size of the mating screw the better. This will assure greater contact between the mating part and the head of the AVK part. If the mating component is in contact with the head of the AVK fastener the AVK fastener will withstand the maximum torque capability of a grade 5 or metric class 9.8 mating fastener without spinning in the parent material.

Section II - Mating Part/Mating Fastener Installation Troubleshooting

Issue	Probable Cause	Solution
4. The AVK part spins during the tightening of the mating fastener. -CONTINUED-	2. The mating fastener may have a damaged thread.	Check the threads of the mating fastener using a thread gauge.
	3. The AVK fastener may not be installed to its proper installed length dimension.	Check the AVK catalog for the proper IL dimension. If the measured IL is longer refer to the item 6 above.
	4. If the mating fastener is a shoulder screw or a fastener with a secondary sleeve that "sits" on the head of the AVK fastener when it is tightened the torque being applied to this fastener will be directly applied to the head of the AVK fastener and spin it out.	If this type of mating fastener is being used the spin out of the AVK fastener must exceed the tightening torque of the mating fastener. AVK suggests the use of the A-H Series in a hex punched hole for use with a shoulder screw or fastener with a secondary sleeve.
	5. If the application has a gasket between the parent material and the mating part the gasket may be preventing contact between the mating part and the head of the AVK part.	Suggest the use of the A-H Series in a hex punched hole to prevent spin out under the torque load of the mating bolt.
5. The AVK fastener's threads strip upon the tightening of the mating screw.	1. Too much torque being applied to the mating fastener.	Apply torque per the AVK catalog. Be sure that the mating fastener is a grade 5 or metric class 9.8 or lower per the AVK catalog.
	2. The mating fastener or the AVK part may be of the wrong thread size.	Check for proper thread size using a thread gauge.
	3. The mating fastener may be too short and not engaging enough of the AVK threads.	Be sure that the mating fastener's threads engage all of the AVK fastener's threads before the torque load of the mating fastener is applied.
	4. The mating fastener or the AVK fastener's threads may be undersized.	Check them with a thread gauge.

Section II - Mating Part/Mating Fastener Installation Troubleshooting

Issue	Probable Cause	Solution
5. The AVK fastener's threads strip upon the tightening of the mating screw. -CONTINUED-	6. The AVK threads may have been damaged upon installation	Check the installed AVK part with a thread gauge to assure the threads are not damaged. Assure that the proper IL dimension is achieved.
	7. Too much lubrication on the mating fastener.	The AVK part is supplied lubricated with wax. If the mating fastener is also being lubricated there may be too much lubrication for the joint. Reduce the amount of lubrication to the mating screw.
6. The AVK fastener is pulled from the parent material when the mating fastener is tightened.	1. This failure mode is called Jack Out. Jack Out can occur when the mating component is not in contact with the head of the AVK fastener and a torque load is being applied. This is because the torque being applied to the mating fastener can induce a pull out load on the mating part.	The hole size in the mating part it should be a minimum of .040 (1.0) smaller than the head diameter of the AVK part. The customer's design should assure that head contact is made between the AVK part and the mating component to prevent Jack out.
	2. Another cause of Jack-Out might be due to the use of a soft gasket material placed between the mating component and the parent material. If the torque and clamp load of the mating fastener exceeds the pull-out capability of the AVK fastener Jack-Out may occur.	Suggest a lower torque specification and the use of a prevailing torque or epoxy patch thread locking screw. This will also require a change to the AVK A-H Series part in a hex hole.
	3. The mating material that is too soft might also cause the AVK part to be drawn into it when the mating bolt is being tightened.	Use of a prevailing torque bolt and a lower torque requirement can help prevent this. If a prevailing torque bolt is used AVK recommends the use of the A-H Series hex product in a hex hole.

Section II - Mating Part/Mating Fastener Installation Troubleshooting

Issue	Probable Cause	Solution
7. The threaded portion of the AVK part is being pulled through the backside flange as the mating screw is being tightened.	1. Too much torque is being applied to the mating fastener.	Check the AVK suggested torque specifications in the catalog.
	2. A higher grade or class of mating fastener is being used and exerting too much clamp load on the AVK backside flange.	Use grade 5 or class 9.8 metric or lower mating fasteners with AVK.
8. The mating fastener fails when being tightened into the AVK part.	1. Too much torque is being applied to the mating fastener.	Refer to the AVK catalog for suggested tightening torque and use a torque wrench to test.
	2. The mating screw is defective and too brittle.	This may be caused by hydrogen embrittlement which may occur when the mating screw is not baked after plating. If you suspect this have the customer contact the screw manufacturer to determine if hydrogen embrittlement is the cause.
9. The backside flange of the AVK part is being pulled into the parent material when tightening the mating fastener.	1. Too much torque is being applied to the mating fastener.	Check the AVK catalog for suggested assembly torque.
	2. The wrong grade or class of mating fastener is being used.	Use Grade 5 or metric class 9.8 or lower mating fasteners.
	3. The parent material is too soft to support the clamp load of the joint.	If the parent material is plastic switch to the AVK A-R Series. It is designed for soft parent materials. If the A-R can't be used add a back-up washer behind the parent material if access is available. Another solution would be to thicken the parent material and use the appropriate grip AVK part.

Section III - Application Troubleshooting

Please note that AVK recommends that the customer fully test the application to prove reliability of the application and the components.

Issue	Probable Cause	Solution
1. The AVK part is being pulled out of the parent material during application use.	1. The AVK part is not fully installed.	Measure the installed length (IL) dimension per the AVK catalog. **Refer to Section II Issue 6**
	2. The AVK backside flange is being pulled into the parent material when the mating fastener is being tightened weakening its pull out strength.	Check the torque load being applied to the mating fastener and use the appropriate torque.
	3. The parent material is too soft or too thin.	Try the A-R Series which has the largest backside "footprint" of any AVK fastener or try an AVK fastener that has a minimum grip equal to the thickness of the parent material so that a maximum backside flange diameter is formed.
	4. The load being applied is too high.	The customer could consider adding additional fasteners or could change the thickness or density of the parent material. A backup washer could also be used to solve this problem if the parent material is too soft or too thin.
2. The AVK part is pushed through the parent material. This mode of failure is called Push-out.	1. Incorrect AVK fastener being used in the application.	If the application is for the leveling screw attachment in a heavy piece of equipment or one that is subject to drop or skid loads AVK recommends the use of the heavy duty R-N Series rivet nut. It has the highest push out capability of any AVK product.
	2. The hole size is too large.	Check for proper hole size.

Section III - Application Troubleshooting

Please note that AVK recommends that the customer fully test the application to prove reliability of the application and the components.

Issues	Probable Cause	Solution
3. The AVK part turns during removal of the mating fastener.	1. Corrosion may have built up on the mating screw's threads that protrude past the end of the AVK fastener.	Use a screw that will not protrude or use an AVK closed end part. Another solution would be to try the AVK A-H Series hex body part in a hex hole.
	2. Galvanic corrosion of the parent material from around the AVK part can be caused by using dissimilar materials.	Use of "like" materials or those closer to each other on the galvanic scale would be a possible solution that would require customer testing.
	3. The mating fastener is locked into the AVK part as the mating screw may have loctite or epoxy adhesive applied to it.	Consider using the A-H Series hex part in a hex hole or suggest the use of a free spinning type locking screw.
4. The AVK threads fail during a tensile load.	1. The thread strength of the AVK part may not be strong enough.	The way to solve this problem would be to suggest an AVK part with additional threads. The AVK closed end part has additional threads and could be suggested. AVK could also make an open-end special length part with additional threads.
	2. Mating fastener's threads are too short.	Assure that at least 6 threads of the AVK part are engaged with the mating screw.

Section III - Application Troubleshooting

Please note that AVK recommends that the customer fully test the application to prove reliability of the application and the components.

Issues	Probable Cause	Solution
5. The mating fastener comes loose during application use.	1. The AVK part may not have been installed properly to its IL dimension and when a tensile load was applied the AVK product would set further causing the mating fastener to be loose.	Check to be sure the proper tool and air pressure setting is being used and that the AVK part is set to its IL dimension before the mating screw is attached.
	2. The mating fastener may not have been tightened properly.	See the AVK catalog specs for suggested tightening torques.
	3. Excess vibration in the application could cause the mating fastener to come loose.	The customer may want to consider a locking type of mating fastener. AVK suggests the use of a free spinning Whiz-Lock serrated surface mating fastener with AVK products used in round holes. If a prevailing torque or adhesive locking fastener is needed AVK suggests the use of the A-H Series in a hex punched hole.
	4. The parent material or the mating part may be too soft to support the clamp load of the fasteners being used or the service load being put on the components in the application.	The parent material and the mating component must be of sufficient hardness to resist collapse or wear under the clamp load of the fasteners or the service load being applied. The customer will need to determine the appropriate materials to meet their needs.
	5. The mating part and the parent material may need to be in complete contact to prevent the parts from moving against each other and coming loose.	A recess on the bottom of the parent material or a recess in the parent material that will allow the AVK part to be installed flush will help this.
	6. Variation in temperature can be the cause of fasteners coming loose.	Use of prevailing torque or adhesive locking type mating fasteners can be used to keep the joint tight in applications where heat is a factor. Monel and Stainless steel fasteners from AVK are suggested for high heat type applications as they resist the expansion and contraction caused by heat variation.

Section III - Application Troubleshooting

Please note that AVK recommends that the customer fully test the application to prove reliability of the application and the components.

Issues	Probable Cause	Solution
6. Unwanted air, liquid or "weather" is leaking past the AVK fastener or the mating screw.	1. A sealed AVK part is needed.	Suggest an AVK closed end design or sealed head design based on the degree of seal that is needed. If the liquid is petroleum based AVK does not recommend the use of the AVK seal as it will fail if it comes into contact with these materials. If the liquid is flammable decline the application. It is AVK's policy not to sell product into flammable liquid applications.
	2. A seal on the mating screw threads is needed and the closed end part can't be used.	Suggest that the customer contact Loctite Corp for a seal material.
7. AVK seal being deteriorated.	1. Petroleum based liquids present in the application are attacking the seal.	Do not use AVK sealed product in applications where petroleum based liquids is being used.

AVK TROUBLE SHOOOTING GUIDE 1999

TROUBLE SHOOTING GUIDE FOR AS SERIES STUD SUPPLEMENT

SYMPTOM	PROBABLE CAUSE	NO.	SOLUTION
STUD WILL NOT INSTALL	DAMAGED THREAD DRIVE	1	CHECK THREAD DRIVE INTERNAL THREADS SHOULD BE CLEAR ALL THE WAY THROUGH
STUD BREAKS UPON INSTALLATION	TOO MUCH AIR PRESSURE	2	ADJUST PER CATALOG PAGE 44
STEM BACKS OUT OF BODY UPON INSTALLATION	DAMAGED THREAD DRIVE	3	SEE ITEM 1
	INCORRECT STUD ASSEMBLY BY AVK	4	RETURN LOT SAMPLE TO AVK OR INSPECTION

JB9/96.ASTS

TROUBLE SHOOTING GUIDE FOR AT AND AW SERIES

SYMPTOM	PROBABLE CAUSE	NO.	SOLUTION
TOOL DOESN'T WORK	AIR SUPPLY RESTRICTION	1	CHECK AIR SUPPLY SYSTEM. AVK REQUIRES 90-110 PSI AT 17 S.C.F.M.
	AIR FLOW PATH RESTRICTED IN TOOL	2	REMOVE EXHAUST MUFFLER CHECK FOR DEBRIS.
	MOTOR IS FROZEN	3	APPLY AIR TOOL OIL TO INLET AND CYCLE
	DAMAGED MOTOR VANES	4	REMOVE MOTOR FROM TOOL INSPECT AND REPAIR
TOOL WORKS BUT AVK PART DOESN'T FIT TOOL MANDREL	WRONG SIZE MANDREL	5	USE CORRECT SIZE PER CATALOG
	DAMAGED MANDREL	6	REPLACE MANDREL
TOOL WORKS BUT AVK PRODUCT SPINS ON TOOL MANDREL AND WILL NOT INSTALL	DAMAGED MANDREL	7	PRODUCT HEAD MUST CONTACT TOOL NOSE KNURLING FOR PROPER INSTALLATION THREAD PRODUCT ONTO MANDREL BACKWARDS BY HAND ALL THE WAY UP. IF DRAG IS FELT REPLACE MANDREL
	AVK PART THREADS ARE INCOMPLETE OR DAMAGED	8	TURN STANDARD BOLT INTO AVK PART. NOTE: AT AND AW SERIES THREADS ARE MFG. OVERSIZED. DO NOT CHECK WITH THREAD GAUGE
TOOL WORKS BUT AVK PART DOES NOT FULLY SET TO I.L. DIMENSION	DAMAGED THREAD ADAPTATION KIT BEARING SET	9	REMOVE TAK INSPECT BEARING SET PER AVK CATALOG PAGE 43.
	BEARING SET NOT LUBRICATED	10	REMOVE TAK AND LUBRICATE BEARING SET WITH HIGH TEMPERATURE GREASE AVK PART # 930AA
	AIR SUPPLY RESTRICTION	11	SEE ITEM 1
	AIR FLOW RESTRICTION IN TOOL	12	SEE ITEM 2, TRY ANOTHER TOOL
	IMPROPER TOOL RPM	13	CHECK TOOL RPM PER CATALOG PAGE 43
	INSUFFICIENT AIR PRESSURE	14	TURN TOOL ON SET AIR PRESSURE PER CATALOG.
	INSUFFICIENT AIR VOLUME	15	TURN TOOL ON ADJUST PRESSURE PER AVK CATALOG, PAGE 43. IF PRESSURE REQUIREMENT CANNOT BE MET A SURGE TANK MAY BE REQUIRED.
	HOLE SIZE IN PARENT MATERIAL IS TOO SMALL	16	REFER TO CATALOG PAGE 32 & 33. HOLE SIZE MUST BE PER CATALOG SPEC BASED ON ACTUAL PARENT MATERIAL THICKNESS
	INCORRECT NOSE CONE	17	REFER TO CATALOG PAGE 43 FOR PROPER NOSE CONE DESIGN. SHOULD BE SERRATED WITH NO PILOT.

SYMPTOM	PROBABLE CAUSE	NO.	SOLUTION
AVK PART INSTALLS BUT DAMAGES PARENT MATERIAL	HOLE SIZE IN PARENT MATERIAL IS TOO SMALL	18	SEE ITEM 16
	TOO MUCH AIR PRESSURE	19	ADJUST AIR PRESSURE WITH TOOL RUNNING PER AVK CATALOG PAGE 43
AVK PART INSTALLS BUT TOOL STRIPS THREADS IN PRODUCT	TOO MUCH AIR PRESSURE	20	TURN TOOL ON, ADJUST PRESSURE PER CATALOG PAGE 42
	IMPROPER TOOL RPM	21	CHECK TOOL RPM PER CATALOG PAGE 43
	WORN MANDREL	22	MANDREL THREADS MAY BE WORN. REPLACE MANDREL CHECK AIR PRESSURE.
	WRONG SIZE MANDREL	23	CHECK TO BE SURE MANDREL IS THE CORRECT SIZE
MANDREL WEARS PRIOR TO 3,000 CYCLES	TOO MUCH AIR PRESSURE	24	TURN TOOL ON ADJUST AIR PRESSURE PER CATALOG PAGE 42.
	TOOL ACCESS PROBLEM	25	MAKE SURE TOOL IS NOT BEING OBSTRUCTED FROM PERPENDICULAR INSTALLATION. IF ACCESS PROBLEM EXISTS CONTACT AVK FOR ASSISTANCE.
	OPERATOR, RESTRICTING TOOL PERPENDICULARLY TO WORK PIECE	26	CHECK OPERATOR ACCESS/REACH.
	MANDREL NOT BEING LUBRICATED	27	LUBRICATE MANDREL WITH PARAFFIN WAX AVK# AVK2530 AFTER EVERY 10TH INSTALLATION.
INSTALLED AVK PARTS SPINS BEFORE INSTALLATION OF THE MATING SCREW IS COMPLETE	MATING PART ALIGNMENT PROBLEM	28	LOCATE MATING PART. CHECK TO BE SURE ALIGNMENT IS CORRECT ALLOWING PERPENDICULAR MATING FASTENER ACCESS TO THE AVK PART. USE DOG POINT SCREW.
	MATING SCREW BEING DRIVEN AT FULL RPM	29	START MATING SCREW SLOWLY INTO AVK PART. USE DOG POINT SCREW.
	MATING SCREW THREADS ARE DAMAGED. PLATED OVERSIZED, OR WRONG SIZE.	30	INSPECT MATING SCREW THREADS
	HOLE SIZE IN PARENT MATERIAL IS TOO LARGE	31	SEE PGS. 32 & 33 OF CATALOG FOR CORRECT HOLE SIZE
	MATING SCREW HAS THREAD LOCK ELEMENT	32	TEST AVK PART SPIN OUT RESISTANCE IN PARENT MATERIAL. IT MUST BE GREATER THAN THE PREVAILING TORQUE PROVIDED BY THE SCREW. CHANGE TO AVK HEX AH SERIES IN HEX HOLE.
	MATING SCREW BEING CROSS THREADED	33	SEE ITEM 34. USE DOG POINT SCREW.

SYMPTOM	PROBABLE CAUSE	NO.	SOLUTION
AVK PART SPINS IN PARENT MATERIAL UPON TORQUING OF MATING SCREW	MATING PART NOT IN CONTACT WITH AVK HEAD	34	CHECK MATING PART FIT AND HOLE SIZE TO ASSURE CONTACT WITH AVK PART HEAD.
	MATING PART HOLE SIZE IS TOO LARGE	35	MATING PART HOLE SIZE SHOULD BE .040 SMALLER THAN CATALOG H.D. DIMENSION.
	TOO MUCH TORQUE BEING APPLIED TO MATING FASTENER.	36	CHECK AMOUNT OF TORQUE BEING APPLIED TO THE MATING FASTENER. SEE AVK CATALOG FOR SUGGESTED ASSEMBLY TORQUE VALUES.
	INCORRECT INSTALLATION HOLE SIZE	37	REFER TO CATALOG PAGE 32 & 33. HOLE SIZE MUST BE PER CATALOG SPECS. AND BE BASED ON ACTUAL PARENT MATERIAL THICKNESS
AVK PARTS SPIN UPON REMOVAL OF MATING SCREW.	CORROSION ON MATING SCREW	38	INSPECT PROTRUDING MATING SCREW TRY AVK CLOSED END VERSION
	LOCTITE ADHESIVE ON MATING SCREW	39	IF LOCTITE IS BEING USED TRY AVK AH SERIES HEX PRODUCT IN HEX HOLE
AVK PART BEING PULLED THROUGH PARENT MATERIAL UPON TORQUING OF MATING FASTENER.	MATING PART NOT IN CONTACT WITH AVK HEAD	40	SEE ITEM 39 AND 40
AVK PART BEING PULLED FROM PARENT MATERIAL DURING OPERATIONAL USE	INSUFFICIENT PARENT MATERIAL THICKNESS OR STRENGTH	41	RECONSIDER APPLICATION CONTACT AVK SALES ENGINEER.
	OVERSIZED HOLE IN PARENT MATERIAL	42	CONFIRM PROPER HOLE SIZE PER AVK CATALOG.