Troubleshooting

Q: My Aerotech Hydro / Aerotech Hydro Plus always has a small amount of dust on it, even if I have just cleaned it and used it for one panel or part. Is there a problem with my tool? Will this dust affect the tools performance?
A1: It is normal for your Aerotech to have a thin layer of dust on it. While the tool is performing at 14,000 RPM+, no dust will accumulate; however, as the tool slows down, a small amount of remaining dust accumulates along the Fan Inlets, Fan Outlets and Faceplate / Abscheider.
Q: I have noticed my tool is getting louder, is this normal?
A1: It is not normal for the performance of your Aerotech Hydro/ Aerotech Hydro Plus to change in anyway. Once set-up with a cutting tool and tightened there are no moving parts. Please clean and inspect your Aerotech for debris that may have become lodged within. If this does not solve the problem, please contact your Wirutex service representative.
A2: Depending on the abrasive characteristics of the material you are cutting, your Aerotech may become worn on the Fan Intake,Fan Outlet and/or Faceplate / Abscheider, this is due to the continuous erosion that occurs during operation. Although the Aerotech is case harden to 58HRC, particularly abrasive materials such as Glass Reinforced Plastic (GRP) can cause premature wear, thus changing the airflow and sound created by your Aerotech.
Q: Why do I appear to have inadequate dust extraction from my Aerotech Hydro / Aerotech Hydro Plus?
A1: Ensure that the Floating Height between the surface of the material and the Aerotech is > 2.0mm. (Wirutex has not set a maximum floating height, although up to 6mm generally gives good to adequate extraction. The capability of the Aerotech to remove dust above a 6mm Floating Height will vary according to the characteristics of the panel/material being cut, the design of the cutter, the design of the CNC machine's extraction hood, and the capacity of the centralized dust evacuation system.)
A2: Check the air velocity of the machines extraction system, if it is less than 28 m/sec. it may not be sufficient to remove the dust sent in to the extraction hood by the Aerotech. Also check that the dust evacuation hose above the machine does not have any acute bends that may interfere with the air velocity of the centralized dust evacuation system.
A3: Increase the RPM by increments of 1.000 until an acceptable level of dust extraction is achieved or until the maximum RPM of 24.000 is reached.
Q: I occasionally get circular burn or sanding marks on the surface of my board, why does this happen?
A1: Ensure the Floating Height between the material's surface and the Aerotech Hydro / Aerotech Hydro Plus is ≥ 2mm.
A2: It may happen that when you are Nesting (especially in the case of MFC/particleboard) off-cuts break away from the board and become trapped between the Aerotech and the face of the board. To help prevent this, ensure that you program a distance between the components within your nest to approximately 2.0mm greater than the diameter of the tool. Avoid leaving thin strips of material between odd size components, these can disintegrate and become the cause of this problem.
Q: Can I reduce the sound produced by my Aerotech Hydro/ Aerotech Hydro Plus?
A1: Avoid free-spinning the Aerotech and lower the extraction hood as soon possible. Once the Aerotech enters the panel/material the sound level is noticeably reduced as the material alters the acoustics and air flow of the Aerotech.
A2: Reduce the operating RPM by increments of 1,000 until the sound level is acceptable.
A3: The Aerotech Hydro Plus range emits ~10db less noise than the equivalent versions without the Faceplate/Abscheider.
Q: Dust is escaping through the brushes of the extraction hood, how can I stop this?
A1: The Aerotech Hydro / Aerotech Hydro Plus is extremely efficient at evacuating dust from the point of cut and accelerating it into the machine's extraction hood. Make sure your extraction hood is completely lowered and is not worn or damaged.
A2: Ensure that your CNC machine's extraction hood is up-to-date. Legislations passed in 2008 have improved the performance, protection and safety features of dust extraction hoods. Contact your Wirutex representative or machine supplier for consultation.
Q: My parts have a thin layer of very fine dust on their surface!
A1: This can be caused by the static electricity generated during cutting operations. It can be improved, or in some cases resolved, by ensuring that your machine is correctly earthed.

Spec chart	Interface	D1 (ID)	D2 (OD)	L1 (clamping length)	L2 (OAL without cutter)	L3	Nm (actution force required to clamp tool)	Admissible torque
Aerotech Hydro 95	HSK 63 F	Ø16 mm	Ø95 mm	40-50 (min. clamp 40)	97 mm	5 mm	10	185 Nm
Aerotech Hydro 105	HSK 63 F	Ø25 mm	Ø105 mm	48-58 (min. clamp 40)	106 mm	7 mm	10	250 Nm
Aerotech Hydro 95	SK 30	Ø20 mm	Ø95 mm	42-52 (min. clamp 42)	95 mm	5 mm	10	150 Nm
Aerotech Hydro 95 Plus	HSK 63 F	Ø16 mm	Ø95 mm	40-50 (min. clamp 40)	102 mm	10 mm	10-12	185 Nm
Aerotech Hydro 105 Plus	HSK 63 F	Ø25 mm	Ø105 mm	48-58 (min. clamp 40)	110 mm	12 mm	10	250 Nm
Aerotech Hydro 95 Plus	SK 30	Ø20 mm	Ø95 mm	42-52 (min. clamp 42)	95 mm	5 mm	10	150 Nm

Recommended operating temperature range : 20 C°- 50 C° | Runout accuracy: < 0.003 at 2.5xD | Balancing grade: G 2.5 at 25.000 1/min

EN

Aerotech®

Dust Free Nesting and Routing
Hydro
Hydro Plus

Instructions and information

Aerotech EP1940585
Faceplate EP10173827

wirutex
hi-tech tools

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Aerotech® Hydro is designed to evacuate dust and fine pieces of debris, small enough to escape through the Fan Outlets ❶.

Models optimized for use with **PCD** tools:

C05146 Ø95mm - clamps d16 - HSK63F
C05145 Ø105mm - clamps d25 - HSK63F
C05314 Ø95mm - clamps d20 - SK30

Models optimized for use with **solid carbide** tools:

C05337 Ø95mm - clamps d16 - HSK63F
C05338 Ø105mm - clamps d25 - HSK63F
C05339 Ø95mm - clamps d20 - SK30

See FIG. A and refer to Spec chart

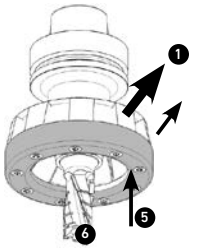

FIG. A

Aerotech® Hydro Plus is designed to evacuate dust and fine pieces of debris, while deflecting larger pieces of debris and off-cuts ❷.
See FIG. B and refer to Spec chart

FIG. B

The 'Plus' range:
Faceplate & Faceplate Semi-Fan

These Aerotechs are all equipped with a specifically designed grill available in two versions, known by their product names as:
I) Faceplate ❸
II) Faceplate Semi-Fan ❹
Choosing between the two Aerotech Plus versions will depend solely on whether you are using **PCD** cutters or **solid carbide** cutters. Both Aerotech Plus models are factory fitted with either the Faceplate or Faceplate Semi-Fan.
See FIG. C and refer to Spec chart.

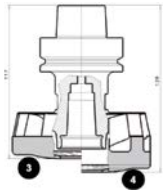

FIG. C

The 'Faceplate' ❸ models optimized for use with **PCD** tools are:

C05200 Ø95mm - clamps d16 - HSK63F
C05199 Ø105mm - clamps d25 - HSK63F
C05320 Ø95mm - clamps d20 - SK30

The 'Faceplate Semi-Fan' ❹ models optimized for use with **solid carbide** tools are:

C05340 Ø95mm - clamps d16 - HSK63F
C05341 Ø105mm - clamps d25 - HSK63F
C05342 Ø95mm - clamps d20 - SK30

Reduction sleeves are available for all Aerotech versions.
We recommend Ø95mm for Nesting and Ø105mm for Routing.

Components
Aerotech Hydro/Aerotech Hydro Plus

All the parts of your Wirutex Aerotech Hydro/Aerotech Hydro Plus have article codes. Only use parts from Wirutex or your authorized Wirutex dealer. The use of non authentic parts could damage the Aerotech and/or your machine, and will void any and all warranty.

⚠ Failure to properly follow these instructions may result in serious injury or death. Before using your Aerotech, visually inspect it and make sure it is perfectly clean. When rotating at operational RPM, the Aerotech Hydro/Aerotech Hydro Plus are devices that can draw air at a velocity of >80 m/sec. into the Fan Intake.

⚠ Do not place your hand or an object near the Fan Intake ❺, Fan Outlet ❶ or cutter ❻ while the Aerotech is in operation. Adequate ear protection is advised if necessary. Sound levels will depend on the work environment, position of your CNC machine and sound insulation offered by the CNC machine. The use of Aerotech Hydro/Aerotech Hydro Plus should be done by technically competent and trained personnel only, and in compliance with your national Health and Safety regulations.

⚠ Before you begin

Always inspect your Aerotech Hydro/Aerotech Hydro Plus and cutting tool for dust, debris and rust. Pay special attention to the clamping bore of your Aerotech. Should dust, debris or rust be found it is critical that it is completely removed prior to any further use of the Aerotech or cutter. Failure to do so may result in serious injury or even death!

Clamping and un-clamping

All versions of the Aerotech Hydro/ Aerotech Hydro Plus have a closed hydraulic clamping system. Do not actuate (pressurise) the hydraulic system without first introducing a cutter, as this could damage the expansion chamber and/or provoke loss of concentricity. The vent screw ❼ of the hydraulic system is protected with resin. **Do not remove it**. If the vent screw is opened your Aerotech will lose it's hydraulic function.
See FIG. D

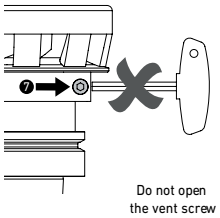

FIG. D

⚠ Your cutter

Your cutter should be manufactured according to **EN-847-2** regulations, or the equivalent of within your country. The use of cutters manufactured outside of EN-847-2 regulations may determine problems such as tool slippage, or difficulty in introducing the cutter into the clamping bore. In both cases you risk damaging your Aerotech Hydro/Aerotech Hydro Plus.
See FIG. E

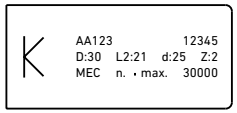

FIG. E

⚠ Installing your cutter

To avoid accidentally dropping your Aerotech Hydro/Aerotech Hydro Plus or cutter, we recommend that this operation is done on a tool pre-setter, where the desired cutter length can also be measured. The use of gloves is also recommended to avoid cutting your fingers on the cutter and to protect the Aerotech/ cutter from eventual corrosion due to moisture on your hands. Ensure that the hexagonal actuation screw ❽ of your Aerotech is fully open so there is **no hydraulic pressure**.
See FIG. F

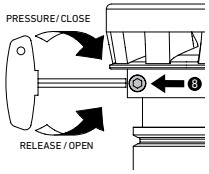

FIG. F

Introduce your cutter completely into the clamping bore. At the base of the clamping bore is a length adjustment screw ❾, your cutter should always make contact with this adjustment screw. When necessary the adjustment screw can be used to modify the position of your cutter, either to compensate for variations in material thickness, regrinding of the 'end-cut', or to gain more cutter reach. Do not operate the Aerotech without the length adjustment screw installed. The amount of adjustment available can vary according to the version of Aerotech Hydro/Aerotech Hydro Plus you are using.
See fig. G and Spec chart

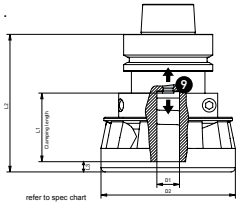

FIG. G

You should note that any adjustments of this nature should not exceed the **'Minimum Clamping Length'** symbol (⊼) ❿ engraved on the shank of your cutter. It is best practice to always clamp your cutter over the full 360° circumference of your cutter shank; **do not clamp over the flute.**
See FIG. H

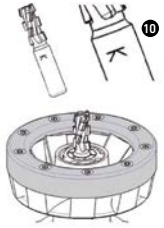

FIG. H

To clamp your tool turn the hexagonal actuation screw clockwise up to the maximum torque setting. This can vary according to the version of Aerotech Hydro/Aerotech Hydro Plus you are using.
See FIG. I and Spec chart

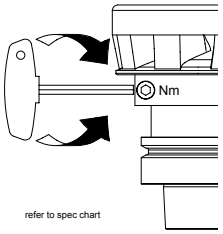

FIG. I

The hydraulic system is set to stop at the maximum torque setting, any additional force used to tighten this socket will not increase the clamping force, but may risk damaging your Aerotech. Once clamped remove the hexagon key. Only use manual tools for this operation, do not use a power screwdriver. Your Aerotech is now ready for use.

Floating Height (distance between the face of the panel/material and the front/opening of the Aerotech)

It is recommended not to operate the Aerotech Hydro/Aerotech Hydro Plus at a Floating Height of less than 2mm as this may cause the Aerotech to come into contact with the panel/material due to tension, deformations or part movement during cutting operations. A Floating Height of less than 2mm will also reduce the airflow created by the Aerotech's Fan Intake and limit its ability to perform dust extraction.
See FIG. J

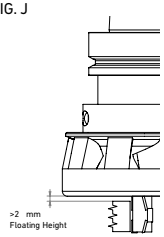

FIG. J

⚠ Do not remove

Removal of the Fixed End Flange ⓫ of the Aerotech Hydro for either repair, maintenance or replacement, should only be carried out by Wirutex, or an authorised *Wirutex dealer**. This is to avoid subsequent imbalance. Improper repair, maintenance or replacement of parts will void any and all warranty.
See FIG. K
Info for authorized persons only: The Fixed End Flange is fitted to the Aerotech using: Torx TX20 M4x20** UNI 7688 Stainless S. screws tightened to a torque setting of 2.8 Nm.*

FIG. K

⚠ Removal of the Faceplate ⓬ and/or Faceplate Semi-Fan for either repair, maintenance or replacement, should only be carried out by Wirutex, or an authorised *Wirutex dealer**. This is to avoid subsequent imbalance. Improper repair, maintenance or replacement of parts will void any and all warranty.
See FIG. L
**Info for authorized persons only: The Faceplate / Faceplate Semi-Fan are fixed to the Aerotech using:*
*I) Faceplate: Torx TX20 M4x**16** UNI 7688 Stainless S. screws.*
*II) Faceplate Semi Fan: Torx TX20 M4x**20** UNI 7688 Stainless S. screws.*
In both cases these screws are tightened to a torque setting of 2.8 Nm

FIG. L

Maintenance, cleaning and storage

It is critical that your Aerotech Hydro/Aerotech Hydro Plus are kept clean and clear of debris at all times. Lodged debris in the Fan Intake and Outlets, or on the Faceplate/ Faceplate Semi-Fan can substantially reduce the effectiveness of your Aerotech. Visually inspect each of your Aerotech's at the end of each shift. Remove any pieces of debris that may have become lodged in the Aerotech. Try doing this without using a pneumatic hose (airline), taking care not to touch the cutting edges of the tool.
See FIG. M

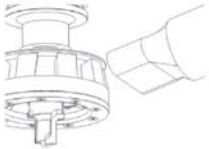

FIG. M

Only use the pneumatic hose (airline), if necessary, at the end of your cleaning and maintenance once the majority of dust has been removed. This will reduce the amount of dust sent into the environment through cleaning. While inspecting your Aerotech check for signs of precocious wear on the Fan Intake, Fan Outlets and Faceplate /Faceplate Semi-Fan, especially if processing particularly abrasive materials such as Glass Reinforced Plastic (GRP). Should you find signs of wear please contact your Wirutex service representative.

Depending on your work environment it may become necessary to lubricate the hexagonal actuation screw ❽.

Before doing so dirt should be removed from the actuation screw, using a non-corrosive solvent based cleaning agent. For optimum lubrication of the actuation screw we recommend you use a copper paste MOLYKOTE CO 7439. Do not remove the hexagonal actuation screw for this procedure. When your Aerotech Hydro/Aerotech Hydro Plus are not in use make sure that the hexagonal actuation screw is fully open so there is no hydraulic pressure. Store your Aerotech and all components in a safe dry place. Make sure that you also apply a light coating of protective oil against corrosion.
The clamping force of your Aerotech Hydro/Aerotech Hydro Plus should be checked after approximately 100 tool changes or every 3 months at the latest. For this purpose a corresponding test shaft (accessory) ⓭ should be used. Only use test shafts provided by Wirutex or your authorised Wirutex dealer (the test shafts have a specific tolerance that is essential for checking the clamping force).
See FIG. N and Spec chart
Wirutex recommends pressurization check and oil change every 500 opening cycles. **Wirutex recommends pressurization check and oil change every 500 opening/closing cycles.**

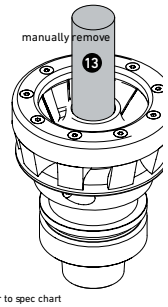

FIG. N

Making sure that the hexagonal actuation screw is fully open, introduce the test shaft completely into the clamping bore. Once introduced, clamp the test shaft by turning the hexagonal actuation screw clockwise up to the maximum torque setting of your Aerotech. Once clamped, if the test shaft can be manually removed from your Aerotech, without any effort, the clamping force is not sufficient and your Aerotech should not be used. Should this happen, please contact your Wirutex service representative to organise a service and maintenance cycle for your Aerotech. This test should be conducted within an ambient temperature between 20°C to 25°C.

First run set-up

Begin with the recommended set-up indicated. If required, adjust your operating parameters in small increments until the desired performance is obtained. Save these parameters for future reference.

⚠ Maximum RPM

Do not exceed the n-max limit of 24.000 RPM. If you notice any change in the sound produced by your Aerotech Hydro/Aerotech Hydro Plus, immediately stop and thoroughly inspect it for any lodged debris or excess amounts of dust. If dust or debris is found, carefully remove all dust and debris before continuing use of your Aerotech.

Minimum RPM: 14.000 (less than 14.000 may cause insufficient airflow for complete dust evacuation).

Maximum RPM: 24.000 (n-max 24.000) Recommended minimum extraction system air velocity: 28 m/sec.

Note: It is standard practice when using any cutting tool with a large diameter to set the acceleration time of the CNC machine's electro spindle to not less than 4 seconds.

Compressed air nozzles:

If your machine is equipped with nozzles to blow compressed air towards the tool during operation, these should be deactivated as they may reduce the effectiveness of the Aerotech Hydro/Aerotech Hydro Plus. They may however be activated and utilized to clean your Aerotech between machining cycles; spin your Aerotech in the opposite direction at a low RPM while blowing compressed air towards the Aerotech.

Recommended operating parameters

The efficiency of the Aerotech Hydro /Aerotech Hydro Plus is dictated by several key factors including RPM and feed speeds. The CNC machine center's dust hood and air velocity from the plant's centralized extraction system also have a determining role in the amount of dust removed. Recommended 'start-up' parameters to achieve total dust extraction are:

Nesting with Ø95 (air velocity ≥28m/sec)
18.000 RPM at ~14m/min feed
20.000 RPM at ~16m/min feed
22.000 RPM at ~18m/min feed
*24.000 RPM at ~20m/min feed

Routing with Ø105 (air velocity ≥28m/sec)
16.000 RPM at ~12m/min feed
18.000 RPM at ~14m/min feed
*20.000 RPM at ~16m/min feed
*22.000 RPM at ~18m/min feed

* Beware of noise levels at the RPMs indicated!

These parameters are based on an Aerotech Hydro/Aerotech Hydro Plus with a HSK63F interface, cutting 19mm panel/material thickness with a Wirutex cutter. These parameters are to be used as a guideline ONLY. Your OPTIMAL operating parameters will likely differ due to a number of factors, such as: CNC machine center, available air velocity from your centralized extraction system, etc...

Programming

Aerotech Hydro is designed to evacuate dust. Avoid Nesting and Routing patterns that create pieces of debris that can become lodged in the Fan Intake ❺. Aerotech Hydro Plus is designed to evacuate dust and fine pieces of debris, and to stop larger pieces of debris and off-cuts from entering the Aerotech, although it is still recommended to avoid programming patterns that create pieces of debris, especially for Nesting operations.
See FIG. P

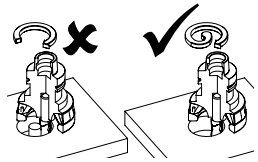

FIG. P