

The solution to efficient, in-process waste extraction

VFEX[®]

- + A cost-effective, retrofittable solution to dust and particle removal for new and existing machining centres
- + Significantly reduces damage and wear caused by abrasive waste materials
- + Suitable for both wet and dry cutting applications
- + Addresses health risks posed by dust inhalation
- + Promotes a smooth cutting operation by removing waste from the cutting zone
- + Requires only an air supply, and can be coupled to many existing extraction systems

+ For more information or a live product demo, please contact our NIKKEN Innovation Centre Europe (NICe) team on:
info@nikken-world.com
or call **01709 366 306**

NIKKEN

NIKKEN Innovation Centre Europe
Advanced Manufacturing Park, Brindley Way,
Catcliffe, Rotherham S60 5FS UK

T: +44 (0) 1709 366306
F: +44 (0) 1709 376683
E: info@nikken-world.com

NIKKEN

www.nikken-world.com



NIKKEN

The design is compatible with a wide range of NIKKEN tooling solutions, and can be fitted to a huge selection of machining centres with only minor additional requirements.



Suction power is provided by a single 6-bar air feed - something already present in the majority of machining centres available on the market.

The absence of any moving parts or electronics means that the V-Ex is highly resistant to blockages, and can be used in both wet and dry cutting applications.

V-EX®

In-Cut Waste Extraction

Machining of many new and emerging materials, more specifically but not limited to composites, plastics, and foams, often results in the creation of fine waste products and dusts.

These by-products of the machining process serve no useful process, and are commonly detrimental to the machining process and life of the machining centre. Most notably, abrasive dusts can result in rapid wear of ball-screw, spindle, and guideway components which are usually costly to rectify. In addition to machine damage, inhalation of such materials can pose significant health risks if left to collect in the air.

Current extraction solutions are a costly addition, and often require a bespoke machining centre. This can add in excess of 10% to the final purchase of such a solution, and are a necessity given 'The Control of Substances Hazardous to Health Regulations 2002' and the 'Provision and use of Work Equipment Regulations 1998 (PUWER)'



This high cost and H&S obligation can often prevent endeavours in machining of new, emerging materials for many - specifically those which can produce dust in large volumes. NIKKEN Kosakusho Europe Ltd have, therefore, developed a low cost, retrofittable solution to on-machine particulate removal. This ultimately enables you to widen the range of capabilities available in your portfolio. (Patent WO 2018/141972)

CONCEPT

The patented design has no moving parts, and requires nothing but a 6bar air supply. Using nothing but an air feed, the extractor multiplies the air flow from inlet to outlet, removing dust and particles from around the cutting tool and ejecting these at high speed.

The outlet can be coupled to a filter bag, filtration system, further vacuum pump, or simply a vent hose, depending upon application and material properties. The lack of moving parts and electronics means that the device can be used in both wet and dry applications, with a range of particle sizes, and has no problem dealing with conductive dusts.

The design is such that it is compatible with a huge range of machining centres, and can be retrofit with minor modifications. Similarly, if tool changing is required, NIKKEN can offer bespoke solutions to automatically remove the housing from the area needed to enable full ATC functionality.

PERFORMANCE

Performance tests have been conducted with a 6 bar input pressure and 6mm diameter pneumatic pipe, providing an input flow rate of 2.5cmm. The outlet velocity was measured as 21.9m/s and a flow rate of 5.8cmm, with the suction flow representing 3.3cmm of this.

This indicates an air-flow multiplication of **2.32 (232%)** times the input flow rate measured at the output, and an extraction rate of **3.3cmm or 55 litres/second**.

V-Ex Box Set

The V-Ex unit is supplied as a box-set to ensure that everything required to fit straight to a machining centre is included.



Parts List

Qty	Part Number	Description
1	VEX-SK16	V-Ex assembly, containing air pump, 8mm air fitting, O-rings and housing to suit SK16 chuck.
1	VEX-B1	V-Ex high performance sealed bearing.
2	VEX-CIRCLIP	V-Ex circlip for retaining unit with no support (requires chuck modification).
3	VEX-N40	V-Ex nozzles.
1	VEX-INST	V-Ex instruction document.
1	HSK63A-SK16-120	SK16 Slim Chuck - can be replaced with BT40 taper if required.
1	SK16-8	8mm collet to fit SK16 Slim Chuck.
1	SK16-10	10mm collet to fit SK16 Slim Chuck.
1	9HC16	Spanner to suit SK16 Slim Chuck.
1	CASE-BLK-ID290	Black, protective, foam-filled case.

ADDITIONAL PARTS

The V-Ex system is built around the NIKKEN SK16 Slim Chuck, with varying nozzle sizes and formats available. The modular unit design means that parts can be produced for bespoke applications, without the need to replace the entire assembly.

Replacement Parts

O-rings
Internal pump insert
Pump housing with air fitting
Nozzle (various options)
Tool cowl
Hose connector (to suit 35-40mm hose)
High speed, sealed bearing