Cutting oil collecting unit Model HK-400A

Improve the environment around Machine Tools with HK-400A

Compatible with both oil-based cutting oils and water-soluble cutting oils

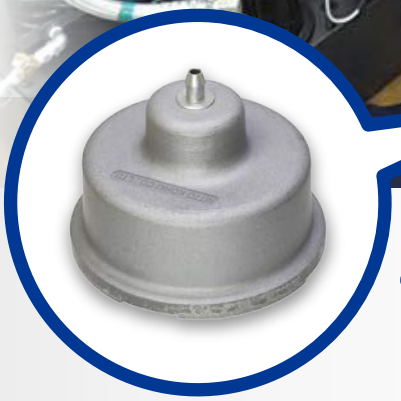
*For details, carefully read "Cutting oil collecting capability" and "Precautions for use" in this catalog before use.

- Install on the side of machines with a magnet.
- No air piping required. Save energy by switching from vacuum ejectors.
- Comes with a strainer to prevent suction of cutting chips.
- Capable of suction of gas & liquid mixture, no worry of motor burns even when idling.
- 24 V DC driven.

Main Body

Installation example

The HK-400A collects small amounts of cutting oil that spill from machine tools.



Strainer Unit

CE

Proposal for improvement 1

Save labor and power by eliminating collection jobs using shovels and cloth.

Advantage

Eliminate unnecessary jobs such as using shovels or cloth by using **HK-400A**.
Collects cutting oils automatically by just installing **HK-400A**.
The cutting chips are separated.

Proposal for improvement 2

Downsize by switching from air vacuum cleaners.

Advantage

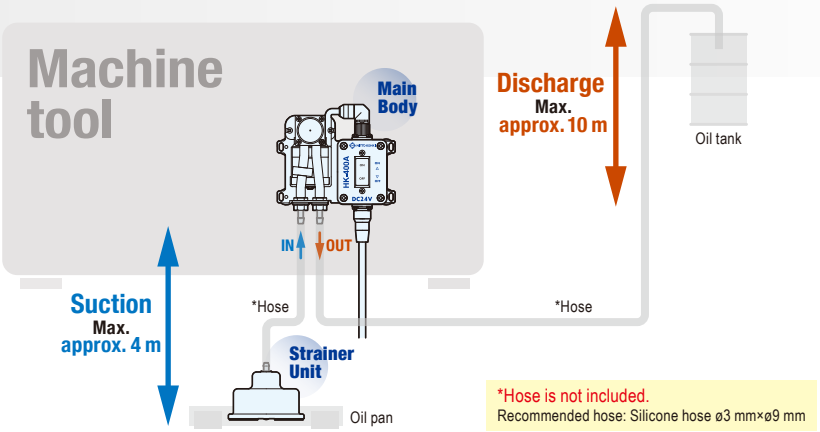
Also saves space by switching to **HK-400A**.

Proposal for improvement 3

Save energy by switching from process pumps and ejectors.

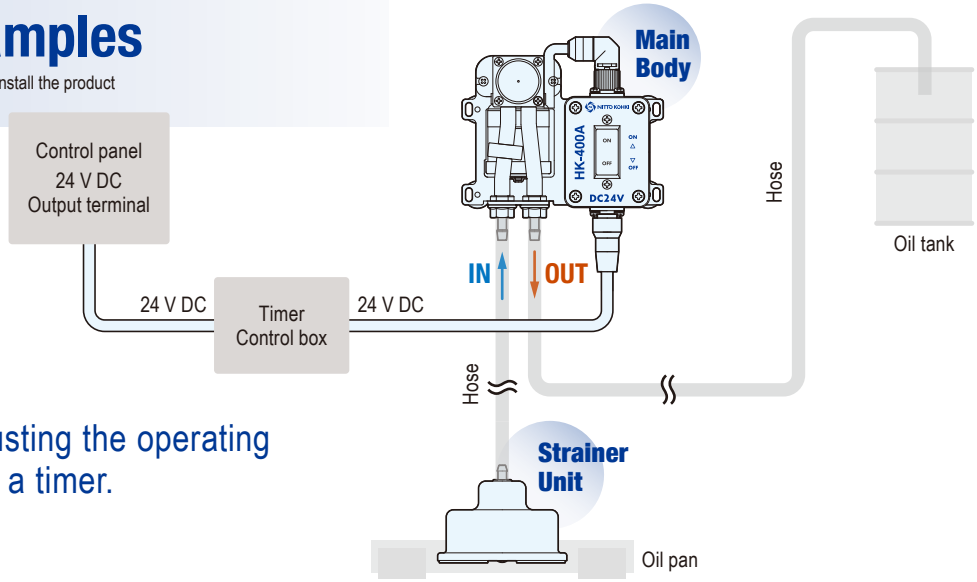
Advantage

No compressed air is required.



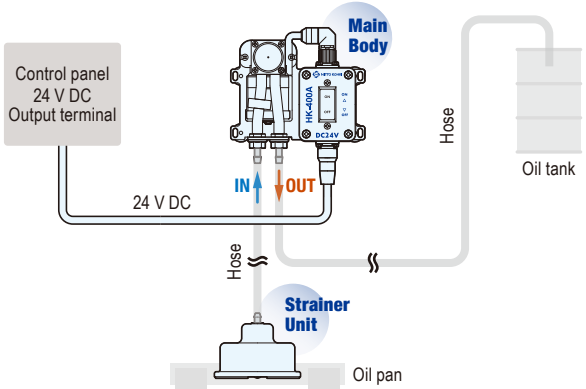
Installation examples

Before actual use, read the instruction manual and install the product under the guidance of a chief electrical engineer.

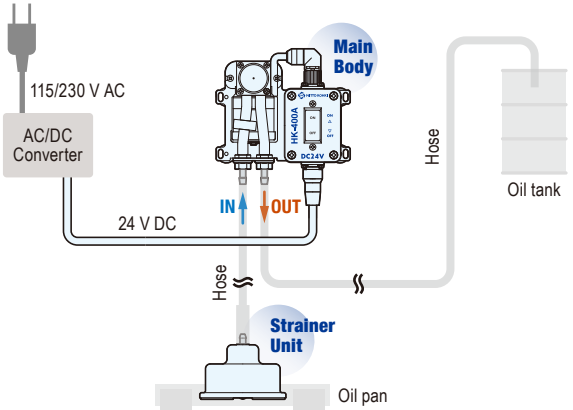


1 When adjusting the operating time using a timer.

2 When connecting with a direct current (DC) power supply and operating with an ON/OFF switch.



3 When connecting with an alternating current (AC) power supply and operating with an ON/OFF switch.

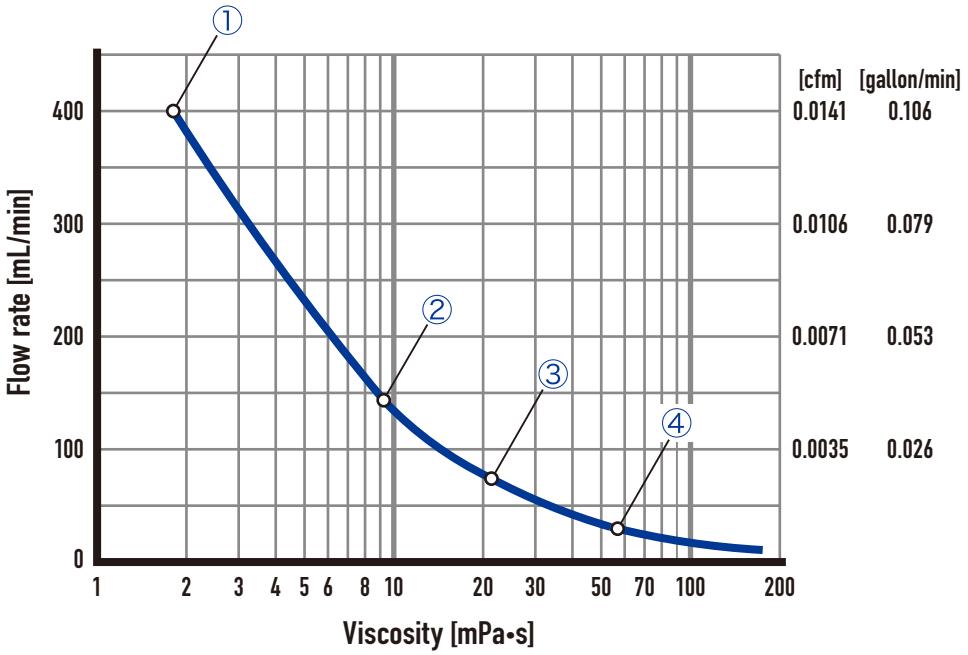


Cutting oil collecting capability

*Refer to the characteristic diagram and conversion formula below and consider whether the product can be used or not.

Viscosity vs. Flow Rate Characteristics

- Input power... 24 V DC Brown wire: +24 V Blue wire: GND
- Piping conditions... Silicone hose Inner diameter: ø3 mm, length: 4 m No lifting load



	Liquid type	Kinematic viscosity [cSt] [mm²/s] (40˚C)	Viscosity [mPa•s] (24±1˚C)	Flow rate [mL/min] (24±1˚C)
①	Water	–	1.9	400
②	Sample A	7.0	9.4	145
③	Sample B	15.0	21.9	74
④	Sample C	32.5	56.8	27

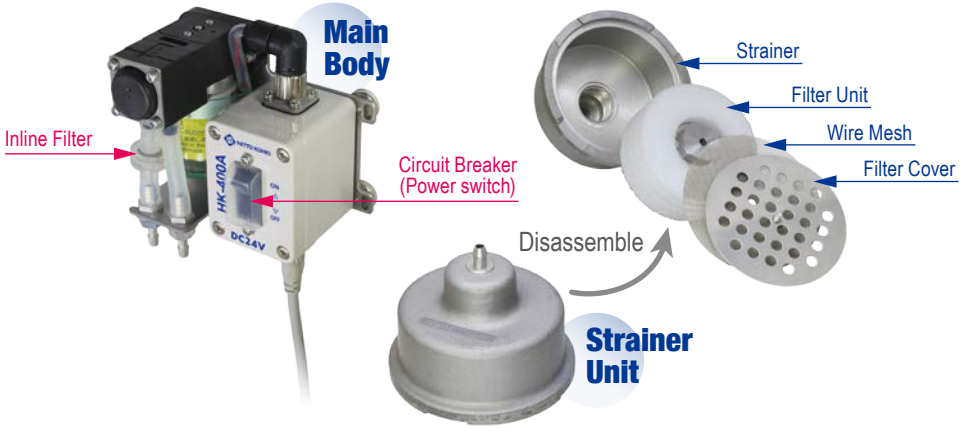
Viscosity conversion formula

Viscosity [mPa•s] = Kinematic viscosity [mm²/s] × Density [g/cm³]
(Kinematic viscosity: 1 mm²/s = 1 cSt Viscosity: 1 mPa•s = 1 cP)

- Viscosity is measured with the digital viscometer VISCO Low Viscosity Sample Adapter (ULA) manufactured by Atago Co., Ltd.
- Refer to the above formula for conversion from kinematic viscosity to viscosity. For the kinematic viscosity and density of the cutting oil used, contact the cutting oil manufacturer.
- Characteristic diagrams are for reference only and are not guaranteed values.
- The above performance may not be attained depending on the operating conditions (operating environment, liquid type, piping material). Especially when using water-insoluble cutting oil, the fluid viscosity fluctuates significantly depending on the temperature change, so please judge whether the pump can be used or not under actual operating conditions.

Maintenance Procedures

① Turn off the power of the HK-400A Main Body
② Disassemble the Strainer Unit
③ Clean the Filter Unit and Wire Mesh
④ Clean the inside of the Strainer with a brush
⑤ Reassemble the Strainer Unit



*Maintenance cycle differs depending on the viscosity of the oil and size of the chips.

Reference data


Image of chips

For cutting chips (0.1 mm or greater)
About once a week


Inline Filter replacement timing (guideline)

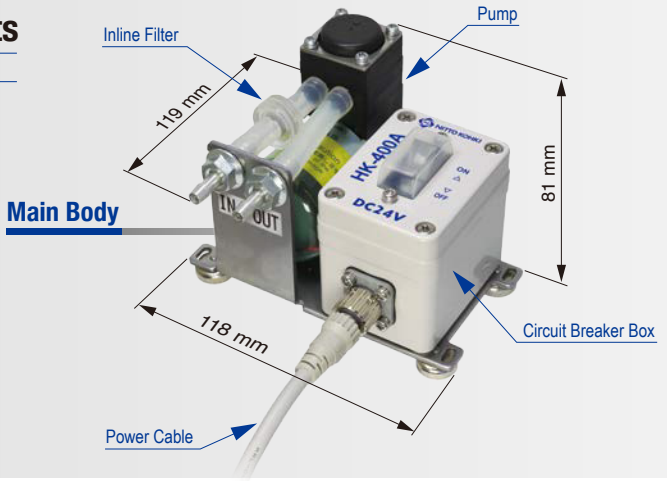
When the wire mesh inside is dirty

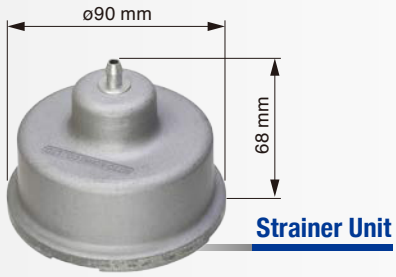

Filter cleaning timing (guideline)

For sludge (mud water)
More than once a day
(because particles are fine and easily clogged)

Components

HK-400A





List of replacement parts (*replacement parts and optional parts are the same as HK-400 except for the Circuit Breaker Box)

Part Name	Part No.	
Pump Unit	LB09133	
Filter Unit	LB09141	
Power Cable (5 m)	LB09140	

Part Name	Part No.	
Strainer Unit [Components] Strainer, Filter Unit, Screw Wire Mesh, Filter Cover	LB09134	
Inline Filter	LB09137	
Filter Cover [Components] Filter Cover, Screw	LB09139	

Part Name	Part No.	
Circuit Breaker Box	LB09608	
Wire Mesh	LB09138	

Optional accessory

Part Name	Part No.	
Silicone Hose (ø3×ø9×4000 mm)	LB09135	

Specification

Rated voltage		24 V DC
Maximum current (*1, Operating pressure range, Fluid: Water 25°C)		450 mA
Flow rate (*1, *3, *4, open discharge (0 kPa), Fluid: Water 25°C)		400 mL/min
Operating pressure range (*1, *2, Fluid: Water 25°C)		0 to 100 kPa
Self-priming pressure (*1, *3, Fluid: Air 20°C)		40 kPa
Duty cycle (Fluid: Water 25°C)		Continuous
Rated performance (*5)		6000 hours (MTTF)
Circuit breaker rated current		1 A
Circuit Breaker Box protection grade		IP65
Applicable fluid		Cutting oil (water-soluble and water-insoluble)
Recommended fluid viscosity (*4, *6)		30 mPa•s or less
Place of use		Indoors
External dimensions		119 mm (L)×118 mm (W)×81 mm (H)
Weight	Main Body (Pump Unit, Circuit Breaker Box)	0.6 kg
	Power Cable	0.3 kg
	Strainer Unit	0.3 kg

⚠ Precautions for use

*1: Conditions are for rated voltage, cool unit, and initial operation.
*2: The product cannot be restarted from the closed pressure state or used beyond the working pressure range.
*3: When the fluid reaches a low temperature, the check valve hardens and the flow rate and self-suction power will decrease.
*4: When highly viscous cutting oil (2 mPa•s or more) is collected, the flow rate decreases. Especially when using with water-insoluble cutting oil, the fluid viscosity fluctuates significantly according to temperature change, so check whether the pump can be used under actual operating conditions.
*5: Rated performance (MTTF: Mean Time to Failure) is the mean value of the accumulated operating time at the rated voltage, open discharge (0 kPa) and water temperature of 25°C and when the flow rate becomes 80% (320 mL/min) or less of the specified value.
The rated performance varies depending on the operating conditions (operating pressure, operating fluid temperature, operating fluid viscosity, operating environment, etc.).
*6: Refer to the following formula for conversion from kinematic viscosity [mm^2/s] to viscosity [mPa•s].
Viscosity [mPa•s] = Kinematic viscosity [mm^2/s] × Density [g/cm^3]
(Kinematic viscosity: 1 mm^2/s = 1 cSt Viscosity: 1 mPa•s=1 cP)

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