

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.



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



Installation example

- 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.

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.

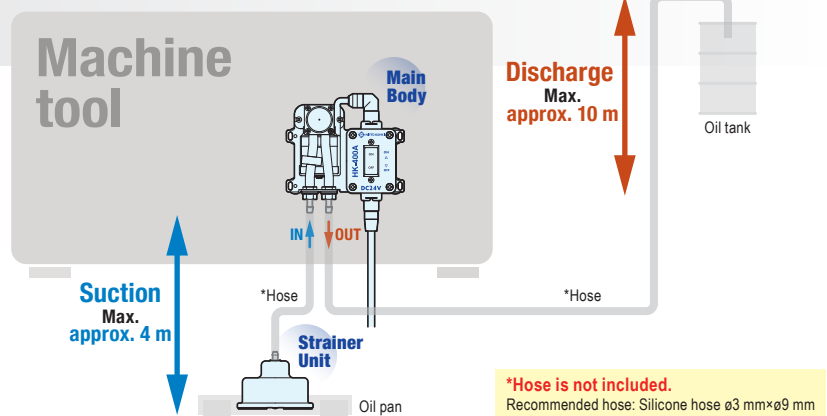


Proposal for improvement 3

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.

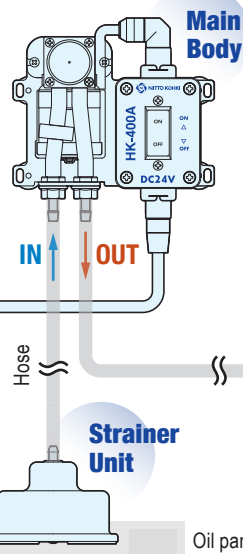
1 When adjusting the operating time using a timer.

Control panel
24 V DC
Output terminal

24 V DC

24 V DC

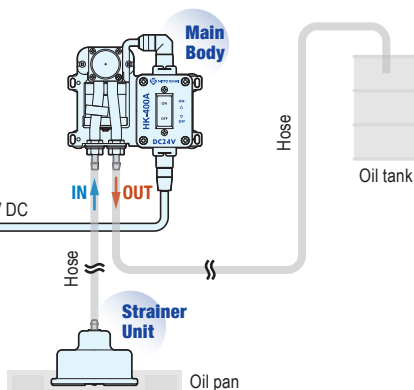
Timer
Control box



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

Control panel
24 V DC
Output terminal

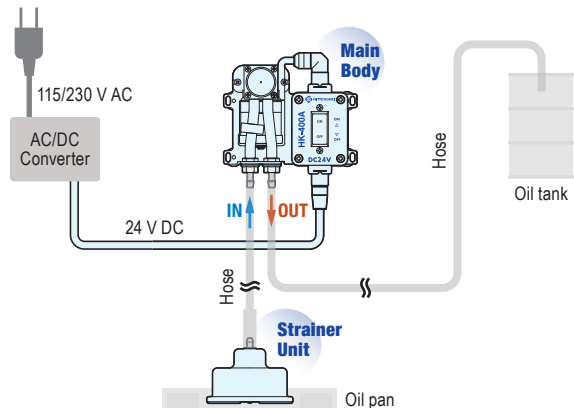
24 V DC



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

115/230 V AC

24 V DC

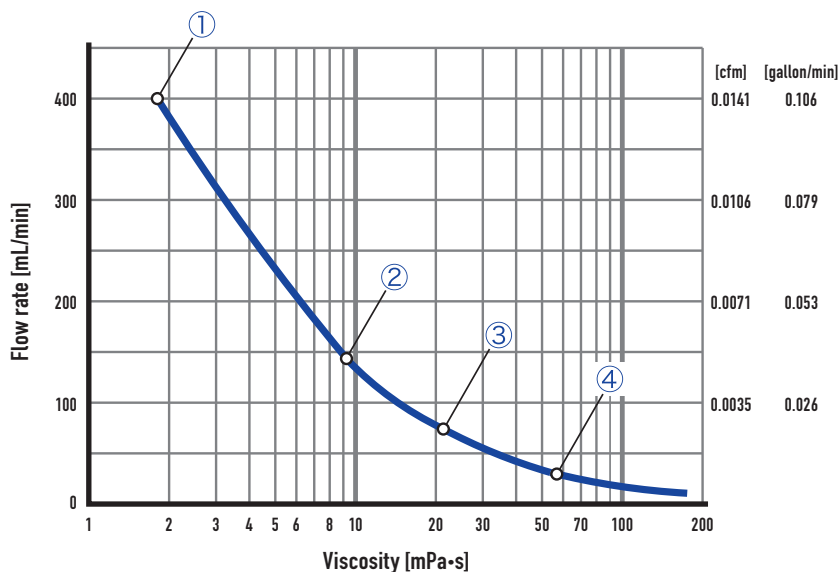


Cutting oil collecting capability

*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] [mm ² /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 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.

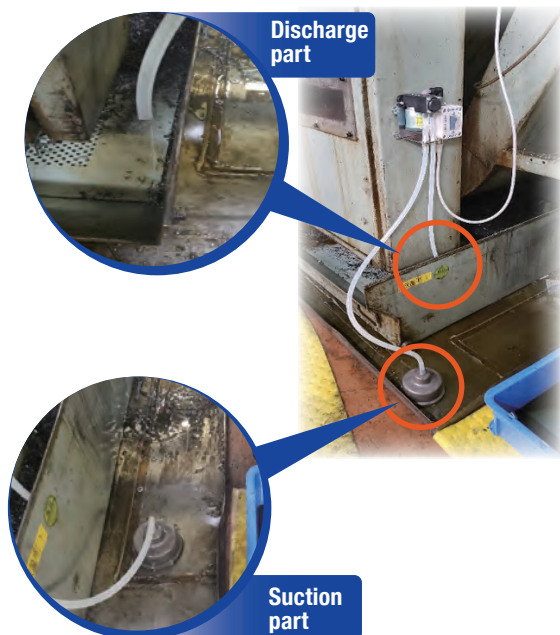
Viscosity conversion formula

$$\text{Viscosity [mPa}\cdot\text{s]} = \text{Kinematic viscosity [mm}^2\text{/s]} \times \text{Density [g/cm}^3\text{]}$$

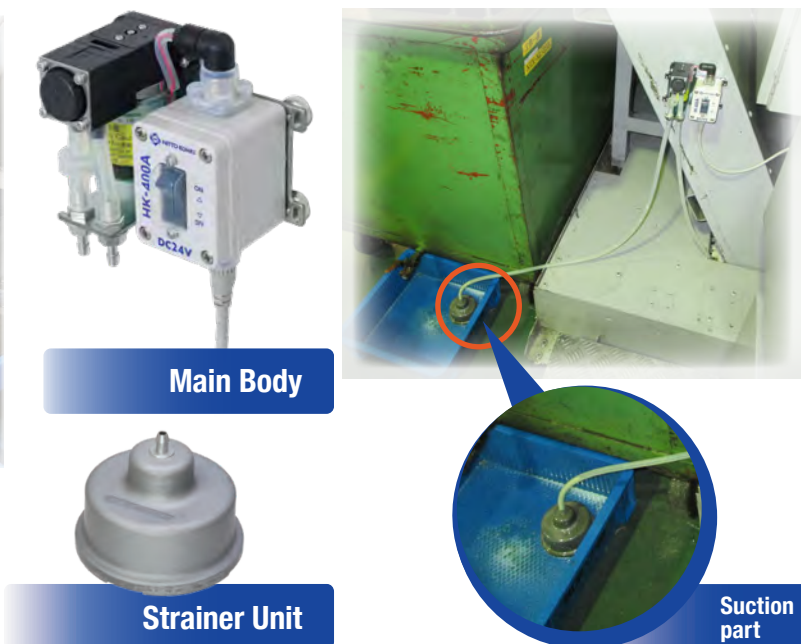
(Kinematic viscosity: 1 mm²/s = 1 cSt Viscosity: 1 mPa·s = 1 cP)

Installation example

1 Collecting oil accumulated in the oil pan.



2 Collecting oil accumulated in the cutting chip hopper.



24-hour operation

| | |
|------------------------------|-----------------------------------|
| Cutting oil | Suncut 16Sk * |
| Kinematic viscosity | 19.2 mm ² /s (at 40°C) |
| Materials to be cut | Steel, alloy, stainless steel |
| Lifting height for suction | 50 cm |
| Lifting height for discharge | 10 cm |

**Suncut* is a trademark or registered trademark of NIPPON GREASE Co.,Ltd.

Operation when needed

| | |
|------------------------------|-----------------------------------|
| Cutting oil | Daicutol GIA-26 * |
| Kinematic viscosity | 13.2 mm ² /s (at 40°C) |
| Materials to be cut | Iron, aluminum |
| Lifting height for suction | 60 cm |
| Lifting height for discharge | 20 cm |

**Daicutol* is a trademark or registered trademark of Daido Chemical Co., Ltd.

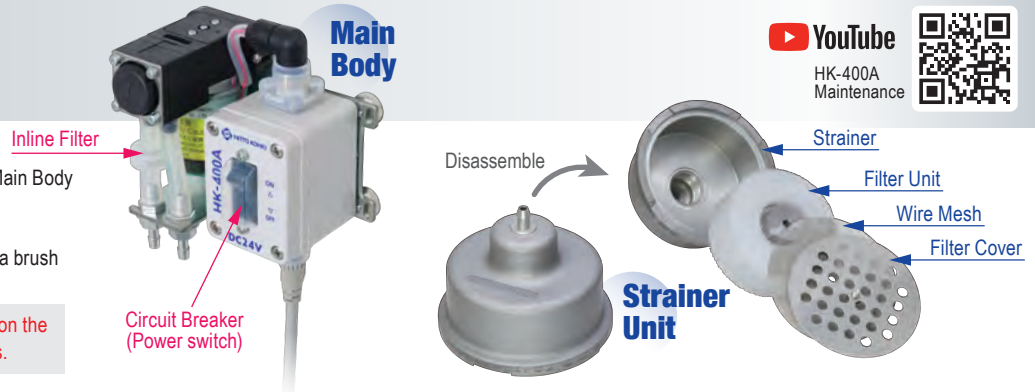
Maintenance Procedures

YouTube
HK-400A
Maintenance

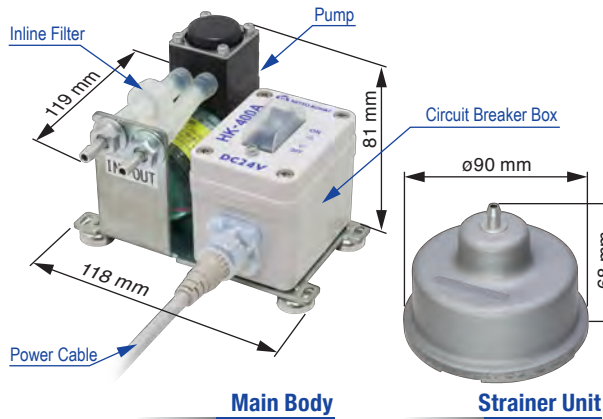


- ① Turn off the power of the HK-400A Main Body
- ② Disassemble the Strainer Unit
- ③ Clean the Filter Unit and Wire Mesh
- ④ Clean the inside of the Strainer with a brush
- ⑤ Reassemble the Strainer Unit

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



Components **HK-400A**



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 |

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. | | Part Name | Part No. | | Part Name | Part No. | |
|-------------------|----------|--|--|----------|--|---------------------------------------|----------|--|
| Pump Unit | LB09133 | | Strainer Unit [Components] Strainer, Filter Unit, Screw Wire Mesh, Filter Cover | LB09134 | | Circuit Breaker Box | LB09608 | |
| Filter Unit | LB09141 | | Inline Filter | LB09137 | | Wire Mesh | LB09138 | |
| Power Cable (5 m) | LB09140 | | Filter Cover [Components] Filter Cover, Screw | LB09139 | | Connector Cover (1 set : 2 pieces) | LB09994 | |

Optional accessory

| Part Name | Part No. | |
|---|----------|--|
| Silicone Hose ($\phi 3 \times \phi 9 \times 4000$ mm) | LB09135 | |

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



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