

# High Cleanliness Coolant System



JTEKT has developed a high cleanliness coolant system that dramatically improves the cleanliness of coolant used within grinders. The development of this system was achieved through a secondary filtering unit using a magnet separator with high magnetic force and a cyclone with high collecting ability. A tertiary filtering unit was necessary to obtain the same level of cleanliness of 5 ppm as the conventional system. Additionally, the filtering unit employs adsorption using magnetic force as well as a centrifugal separation system. This eliminates the need for periodic filter replacement due to performance degradation, reduces running cost, and lessens the environmental burden.

Grinding with high cleanliness coolant improves roundness and surface quality by reducing scratches.

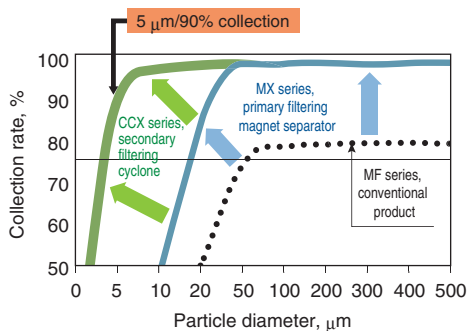
## 1. Features

- (1) Coolant system with 5 ppm cleanliness through secondary filtering
- (2) Simple structure that saves 52% more space
- (3) Maintenance-free structure enabling lower running cost

## 2. Filtering performance/cleanliness

### 2.1

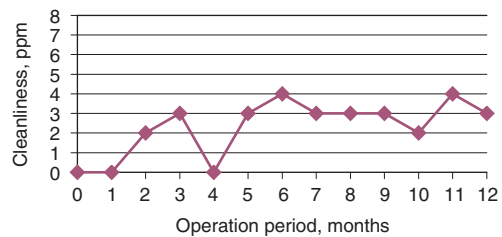
The two newly developed types of filtering units enable the collection of fine chips and abrasive grains. The performance of these units exceeds 90% in capturing fine chips with a particle diameter of  $\phi 5 \mu\text{m}$  or greater.



Filtering performance

### 2.2

The system is able to maintain cleanliness of 5 ppm over long periods without the need for maintenance.

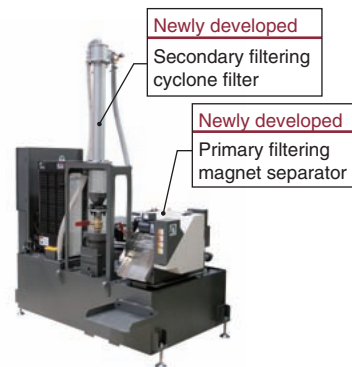


Transition in cleanliness

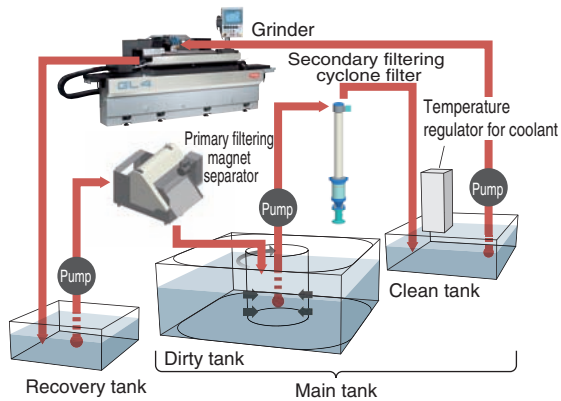
## 3. Structure

### 3.1

The structure is a simple secondary filtering system with a compact appearance.



Coolant unit

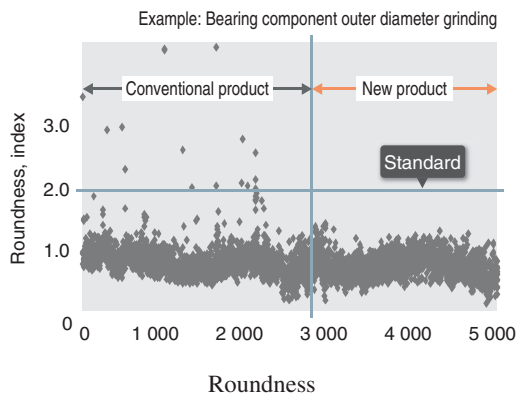


Filtration flow

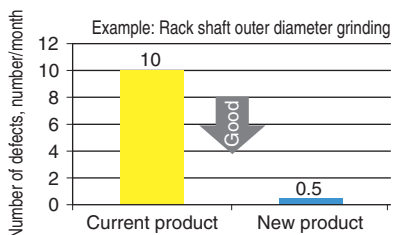
## 4. Results

### 4.1 Improved accuracy

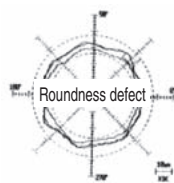
- ◆ Resolves roundness defects by preventing chip biting



- ◆ Resolves roundness defects due to wheel surface clogging

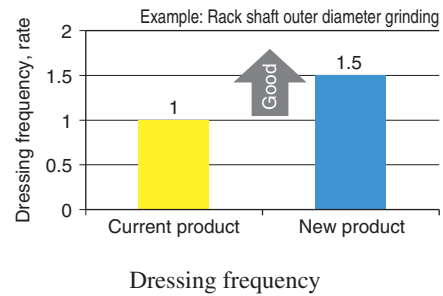


Roundness defect



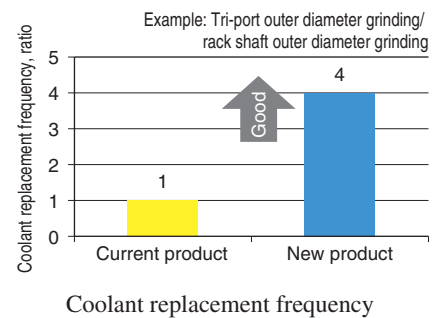
### 4.2 Reduction of running cost

- ◆ Reduces the amount of chips adhered to the wheel surface, maintains wheel cutting quality over long periods, and extends wheel service life



Dressing frequency

- ◆ The high level of cleanliness prevents coolant decay and lengthens the period between each coolant replacement



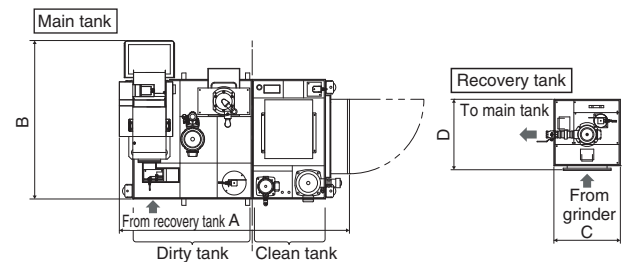
Coolant replacement frequency

## 5. Specifications/Dimension diagram

### 5.1 Specifications

Model	Maximum treatment amount [L/min]	Magnet separator	Cyclone	Reservoir capacity [L]
K100	100	MX-120A	CCX-100 1 pc.	370 L
K200	200	MX-240A	CCX-100 2 pcs.	700 L
Model	A [mm]	B [mm]	C [mm]	D [mm]
K100	1 775	1 192	500	530
K200	2 145	1 392	650	680

### 5.2 Dimension diagram



(Machine Tools Development Dept., Machine Tools & Mechatronics Operations Headquarters)

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