



List of standard and options

|            |   | NTS10        | NTS20 | TTS10 | TTS20 |   |
|------------|---|--------------|-------|-------|-------|---|
| Robot arm  | Robot: single arm   | ●*2          | -     | ●*2   | -     |   |
|            | Robot: double arm   | -            | ●*2   | -     | ●*2   |   |
|            | Z-stroke (470mm)  | ●            | ●     | -     | -     |   |
|            | Z-stroke (740mm)  | -            | -     | ●     | ●     |   |
|            | Hand specification*1  | Edge gripper | ○     | ○     | ○     | ○ |
|            |   | Vacuum       | ○     | ○     | ○     | ○ |
|            | Mapping sensor  | ○            | ○     | ○     | ○     |   |
| Aligner    | Aligner   | ○            | ○     | ○     | ○     |   |
| Controller | D60 controller  | ●            | ●     | ●     | ●     |   |
|            | Jig for programming   | ○*3          | ○*3   | ○*3   | ○*3   |   |
|            | Teach pendant   | ○*3          | ○*3   | ○*3   | ○*3   |   |
|            | Robot harness (1, 2, 2.5, 3, 3.5, 4, 4.5, 5 meters)             | ●*4          | ●*4   | ●*4   | ●*4   |   |
| Software   | Standard software for operation                                 | ●            | ●     | ●     | ●     |   |
|            | KMTerm  | ●            | ●     | ●     | ●     |   |
|            | KSUtility Lite  | ●            | ●     | ●     | ●     |   |
|            | KRET  | ○            | ○     | ○     | ○     |   |
|            | KR3D  | ○            | ○     | ○     | ○     |   |
|            | KSUtility   | ○            | ○     | ○     | ○     |   |
| Manual     | Operation manual  | ●            | ●     | ●     | ●     |   |
|            | Communication command manual                                    | ●            | ●     | ●     | ●     |   |
|            | Introduction procedure for Integrated package software (K-Fast) | ●            | ●     | ●     | ●     |   |
| Training   | Programing, maintenance, troubleshooting                        | ○            | ○     | ○     | ○     |   |

●:Standard ○:Option -/:Not Selectable  
 \*1: The standard robot arm does not include a hand.  
 \*2: Either the edge grip or vacuum hand can be used.  
 \*3: When selecting a teach pendant, an operation box is also needed.  
 \*4: Select a robot harness with the length between 1 and 5 meters.  
 Contact Kawasaki representatives in your region.

# Kawasaki Robot Clean Robot NTS, TTS series



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\* Materials and specifications are subject to change without notice.

## Kawasaki Robot

**CAUTIONS TO BE TAKEN TO ENSURE SAFETY**

- For those persons involved with the operation / service of your system, including Kawasaki Robot, they must strictly observe all safety regulations at all times. They should carefully read the Manuals and other related safety documents.
- Products described in this catalogue are general industrial robots. Therefore, if a customer wishes to use the Robot for special purposes, which might endanger operators or if the Robot has any problems, please contact us. We will be pleased to help you.
- Be careful as Photographs illustrated in this catalogue are frequently taken after removing safety fences and other safety devices stipulated in the safety regulations from the Robot operation system.



ISO certified in Akashi Works.

# Horizontal Articulated Arm NTS series



## Features:

- A single robot can access 2 and 3 FOUPs of EFEM without a track.
- Smooth operation. The specially designed drive system enables the robot to move incredibly smoothly and deliver high precision.
- Compliant with SEMI-F47 standard.
- Compliant with SEMI-S2 standard. Sufficient considerations given to the environment and personal safety.

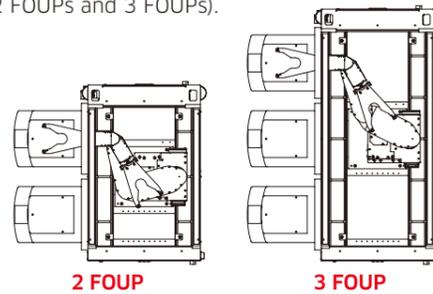
## Specifications

| Model                    | NTS10                              | NTS20 |
|--------------------------|------------------------------------|-------|
| Structure                | Horizontal articulated type        |       |
| Degree of freedom (axes) | 4                                  | 5     |
| Motion range             | $\theta 1$ axis (rotation JT2) (°) | 340   |
|                          | Z axis (up-down JT3) (mm)          | 470   |
|                          | $\theta 2$ axis (rotation JT4) (°) | 340   |
|                          | H1 axis (rotation JT6) (°)         | 340   |
|                          | H2 axis (rotation JT7) (°)         | —     |
| Maximum reach (mm)       | 1,066                              |       |
| Repeatability (mm)       | ±0.1 (Wafer Center)                |       |
| Cleanliness*1            | ISO Class 1                        |       |

\*1: Measured in our clean booth

## Layout Example

The NTS and TTS series can be used for 2 to 3 FOUPs of EFEM without a track. (The same arm can be used for 2 FOUPs and 3 FOUPs).



# Horizontal Articulated Arm TTS series



## Features:

- All the features of the NTS series have been carried over to the TTS series, including the ability to access up to 3 FOUPs.
- Kawasaki's unique and highly rigid telescopic mechanism delivers high-speed handling in high and low positions.
- Compliant with SEMI-F47 standard.
- Compliant with SEMI-S2 standard. Sufficient consideration given to the environment and personal safety.

## Specifications

| Model                    | TTS10                                  | TTS20 |
|--------------------------|--|-------|
| Structure                | Telescopic horizontal articulated type |       |
| Degree of freedom (axes) | 4                                      | 5     |
| Motion range             | $\theta 1$ axis (rotation JT2) (°)     | 340   |
|                          | Z axis (up-down JT3) (mm)              | 740   |
|                          | $\theta 2$ axis (rotation JT4) (°)     | 340   |
|                          | H1 axis (rotation JT6) (°)             | 340   |
|                          | H2 axis (rotation JT7) (°)             | —     |
| Maximum reach (mm)       | 1,066                                  |       |
| Repeatability (mm)       | ±0.1 (Wafer Center)                    |       |
| Cleanliness*1            | ISO Class 1                            |       |

\*1: Measured in our clean booth

## Software

### Standard software

The standard software best suits robot operations for wafer handling and allows monitoring of operating conditions.

#### KMTerm

By connecting with the robot controller, the KMTerm allows parameter setting, information display and data backup.

#### KSUtility Lite

The KSUtility Lite enables the robot to be operated from the host PC.

### Optional Software

Optional software allows the user to perform layout studies and simulation for tact time on their own PC.

#### KRET

Designing of layout inside the equipment and operational paths can be done with ease.

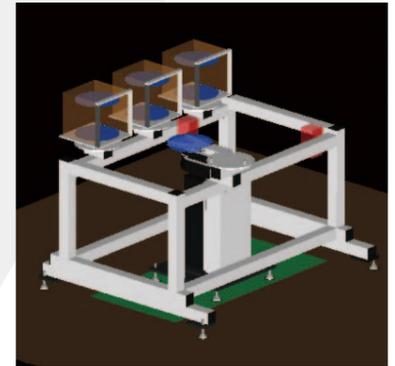
#### KSUtility

Enables the robot to be operated from the host PC.

#### KR3D

Robot operations can be performed off-line with ease.

\*For details of the software, see relevant manuals.



## Hand (Option)



Edge gripper hand



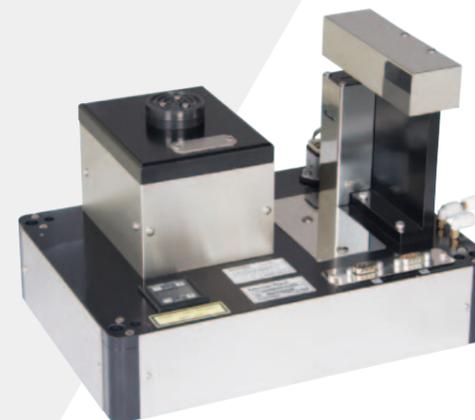
Vacuum hand

\*For details of the software, see relevant manuals.

## Aligner (Option)

### Features:

- High-speed alignment (time for alignment per se is 2.5 seconds only).



\*For details of the software, see relevant manuals.

## Controller

### Features:

- Compact package. Compliant with SEMI-F47 standard.
- Ethernet communication port installed as standard enables high-speed communications.
- Allows flexible processing of various kinds of software.



D60 Controller

\*For detail specifications, contact Kawasaki representatives in your region.