

## **Product Data Sheet** K2 Dual Turntable System

**The K2 Dual Turntable System improves efficiency by reducing overall processing time. It perfectly complements production thermal spray systems.**

The K2 is a turntable system consisting of two turntables that allow the thermal spray operator to safely load and unload parts from one of the turntables while the other turntable is inside the spray cabin with parts being sprayed. A rotating wall isolates the operator from thermal spray operations and

requires that both the thermal spray operation is complete and that the operator commence the new cycle start before changeover can occur.

Thus, the time required to fully process parts in a thermal spray system is significantly reduced.

The K2 system is designed to be a factory-installed handling component of a Surface One™ or MultiCoat™ Pro system.



K2 Dual Indexing Turntable  
(shown installed in a Surface One Coating Machine)

## 1 General Description

### 1.1 Construction and Operation

The K2 Dual Turntable System consists of the following main components:

1. Two workpiece turntables
2. Rotating wall with inflatable seal
3. Indexing turntable for rotating wall
4. Main sliding doors
5. Servo and drive motors

Two workpiece turntables are utilized to allow for loading and unloading of parts on one of the turntables while parts are being sprayed on the other turntable. The wall rotates 180° when the parts in the booth are finished processing while the main sliding doors remain closed. Operation of the K2 system is controlled by a numeric control system. The spray gun, robot, air jets and air flow management are located in the spray cabin.

Workpiece turntables are based on Oerlikon Metco's Robax 1000 technology. They can rotate in either a clockwise or counterclockwise motion using direct drive with fast dynamic positioning.<sup>a</sup> The workpiece turntables can handle parts up to 600 mm (23.5 in) in diameter and height of 600 mm (23.5 in) with a maximum weight of 500 kg (1100 lb). The maximum rotation speed is 300 rpm for workpieces below 250 mm (9.8 in) diameter and approximately 130 rpm for workpieces up to 600 mm (23.5 in) in diameter.

The standard face plate is made of precision-manufactured aluminum with four DIN T-slots for easy integration of workpiece holders.

### 1.2 Safety Features

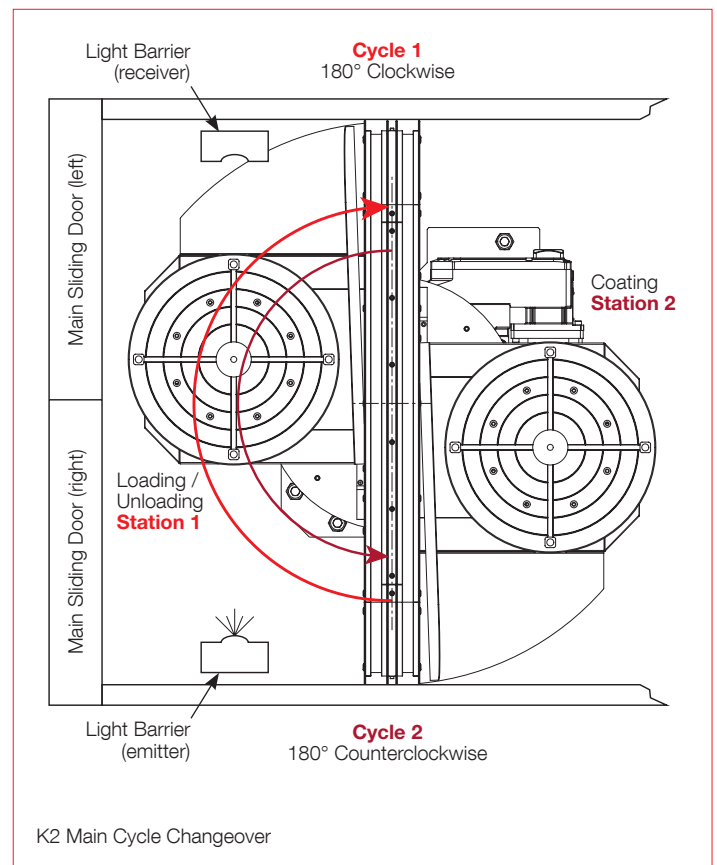
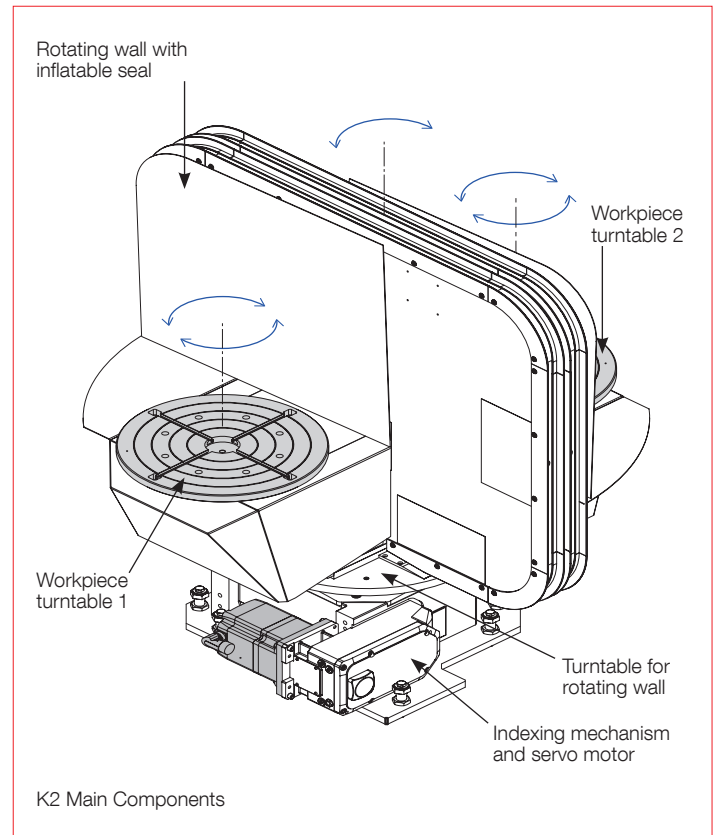
The entire system has been designed with safety in mind. The rotating wall remains stationary while parts are being sprayed. The main sliding doors are designed to protect the operator and must be closed for the rotating wall to move.

While the thermal spray gun can remain running, it is safely parked in a dedicated position during this operation thus preventing collision of the gun and the rotating door or the workpiece while ensuring efficient processing as the gun does not have to be constantly turned off at the end of a coating cycle and on for the next coating cycle.

Once the main sliding doors are closed, safety contacts on the doors allow initiation of the process cycle. This ensures that the operator has finished unloading / loading parts for the next cycle before the operation can start.

The service door to the spray cabin is actively locked and cannot be opened during processing. The main sliding doors can be opened during spray processing to load/unload parts.

<sup>a</sup> Fast dynamic positioning is limited by workpiece inertia. Maximum inertia is 45 kg·m<sup>2</sup> (1068 lb·ft<sup>2</sup>).



An additional light barrier inside the loading bay will detect the presence of personnel or objects to prevent movement of the rotating wall.

In manual (teaching) mode, the robot can be moved at reduced speed with an operator in the spray cabin. In addition, the rotating wall can be moved to a 90° position during maintenance or service modes to allow free access.

## 2 Features and Benefits

### Effective

- Processing time is reduced as gun ramp up and ramp down is eliminated
- Stable rotational part handling for thermal spray systems
- Allows clockwise or counterclockwise rotation
- Dynamic positioning allows rapid change of rotation direction or speed with maximum inertia of 45 kg·m<sup>2</sup> (1068 lb·ft<sup>2</sup>).
- Handles relatively small to midsize parts up to 300 mm (23.5 in) diameter and height

### Efficient

- Accepts parts with a maximum weight of 500 kg (1100 lb)
- Positioning accuracy within ± 0.1°
- Standard aluminum face plate comes with four DIN T-slots
- Spray gun can continue to run during changeover by moving the gun to a dedicated parked position, further improving cycle efficiency

### Economical

- Long life parts require little to no maintenance

### Environment and Safety

- Highly effective design protects personnel from noise and dust from the thermal spray process or mechanical harm
  - Rotating wall must be in 0° or 180° position
  - Main sliding doors must be closed and light barrier unobstructed for the rotating wall to move
  - Interlocking doors prevent entry into the spray cabin during a spray cycle
  - Full integration into the E-stop circuit of the thermal spray system immediately shuts down the entire system and thermal spray process as well as disables electromechanical door locks

## 3 Options and Accessories

### Manual chuck attachment

The manual chuck attaches to the faceplate for easy mounting and coating of small, rotationally symmetrical workpieces.

#### Manual chuck

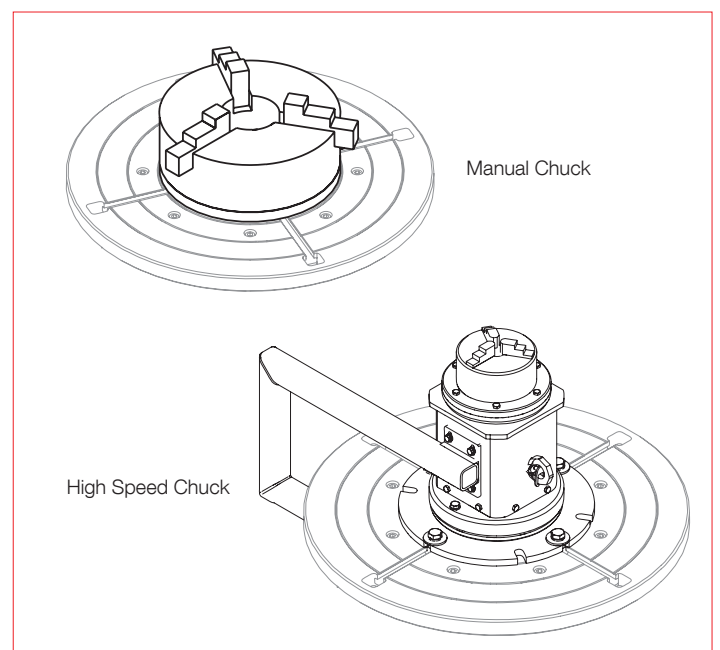
Chuck capacity	5 to 250 mm	0.19 to 9.84 in
max. workpiece mass	50 kg	110.23 lb
max. mass moment of inertia	0.75 kg·m <sup>2</sup>	17.8 lb·ft <sup>2</sup>

### High-speed chuck attachment

The high-speed chuck attachment allows workpieces to be coated at higher rotational speeds.

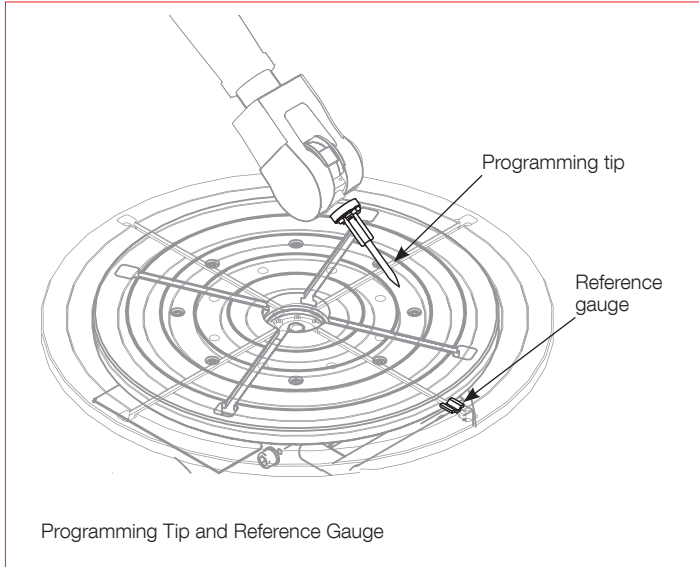
#### High speed chuck attachment

Rotational speed	35 to 2100 rpm	
Chuck capacity	3 to 125 mm	0.12 to 4.92 in
max. load (depending on rpm)	25 kg	55.12 lb
max. mass moment of inertia	0.075 kg·m <sup>2</sup>	1.78 lb·ft <sup>2</sup>



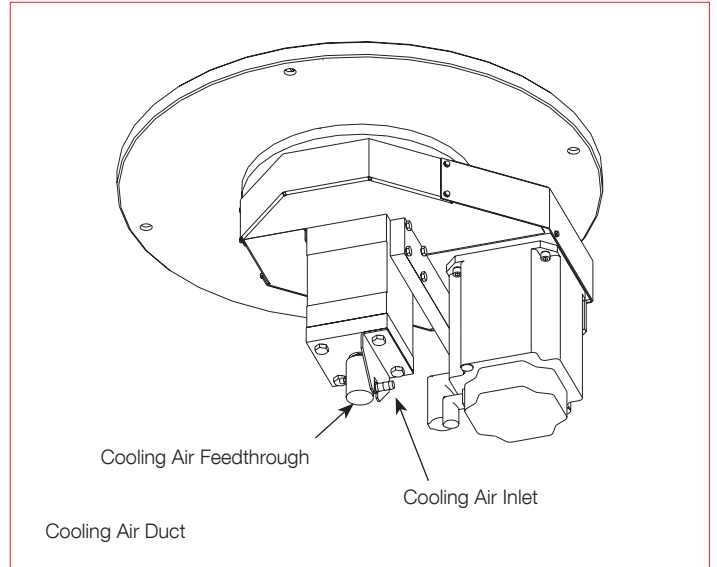
### Programming Tip and Reference Gauge

The programming tip and reference gauge locate the position of the turntable face plate within the coordinate system of the robot.



### Cooling Air Duct

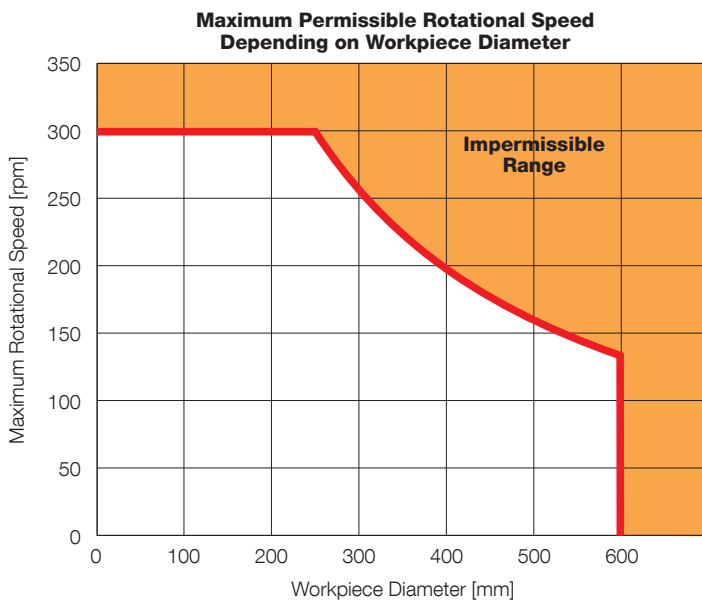
The optionally available cooling air duct provides inner workpiece cooling.



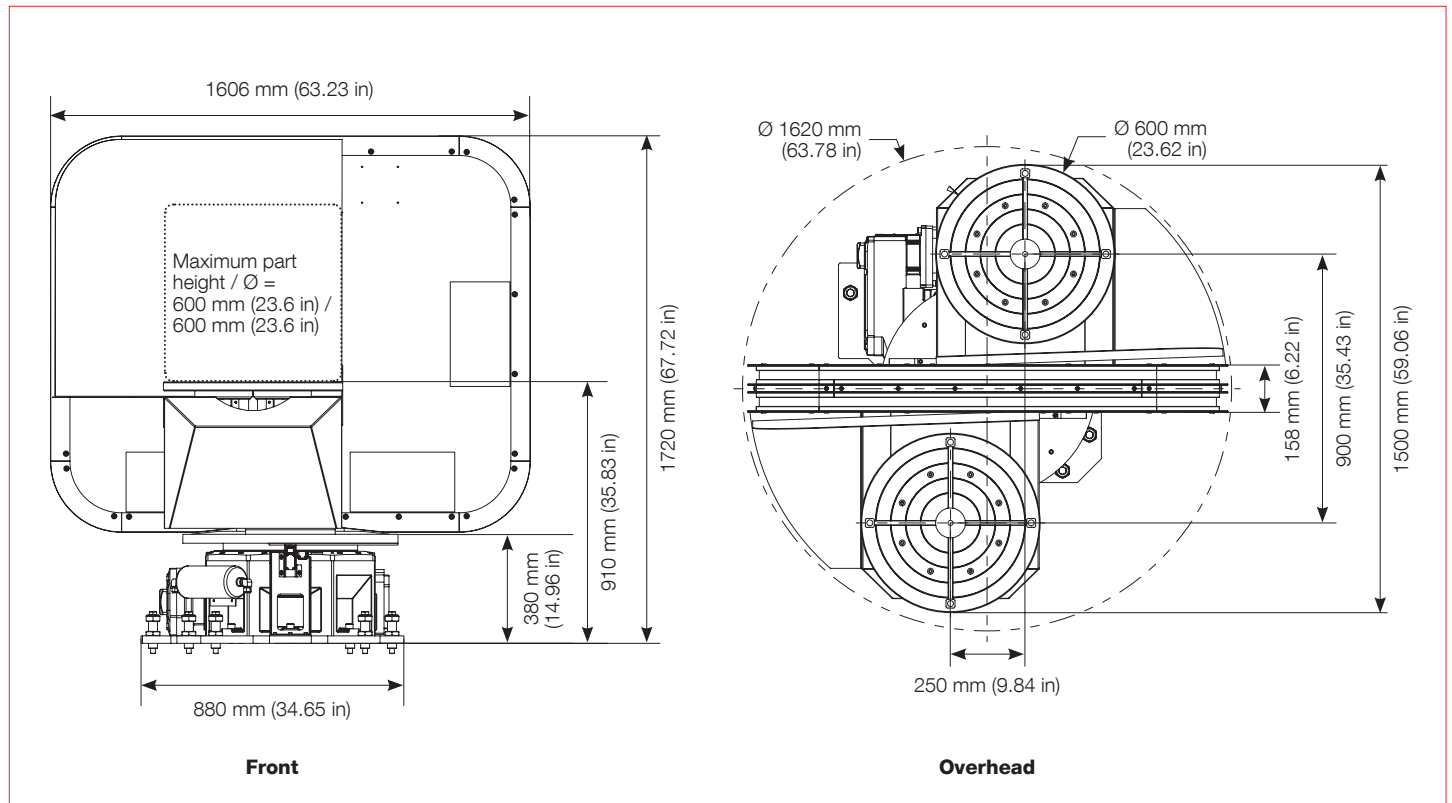
## 4 Technical Data

### 4.1 Operating Regions

These diagrams indicate maximum permissible operating conditions.



## 4.2 Dimensions



## 4.3 Specifications

### Rotating Wall with Turntables

Rotational range		180 ° clockwise / counterclockwise	
Indexing Time		≈ 9 s	
Indexing Repeatability		± 25"	
Operating Pressure - Inflatable Gasket	absolute	150 to 200 kPa	21.75 to 29.0 psi

### Workpiece Turntables (each unit)

Face Plate Diameter		600 mm	23.6 in
Face Plate Configuration		aluminum with 4 DIN T-slots	
Rotational Speed	max	300 rpm	
Rotational Speed Precision		± 1 rpm	
Acceleration	max	38 rpm/s	
Acceleration Time to Max Rotational Speed		8 s	
Position Accuracy		± 0.1°	

### Workpiece Dimensions

Height	max	600 mm	23.6 in
Diameter	max	600 mm	23.6 in
Load	max	500 kg	1100 lb
Moment of Inertia about Rotational Axis	max	45 kg·m <sup>2</sup>	1068 lb·ft <sup>2</sup>

### System Compatibility

Surface One™, MultiCoat™ Pro

Information is subject to change without prior notice