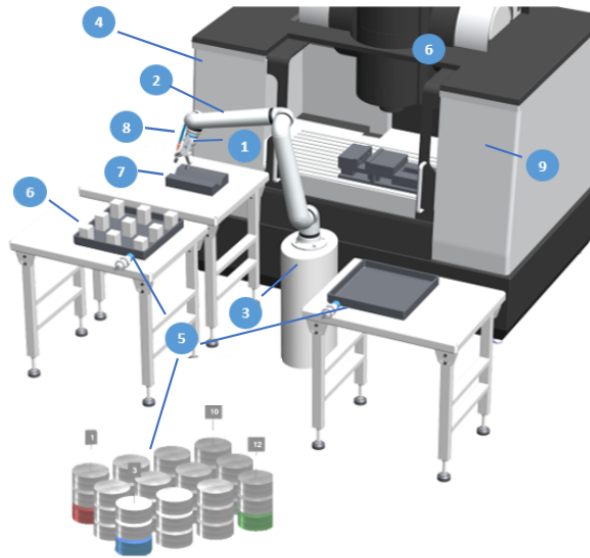


DATASHEET

D:PLOY - CNC MACHINE TENDING APPLICATION

v1.0.600

CNC Machine Tending Application



| | | | | | | | |
|----------|-----------------------|---|-----------|---|--|---|--|
| 1/ a. | Grippers | 2FG7 | 2FG14 | 3FG15 | RG2 | RG6 | VGC10 |
| 1/ b. | Tool mounting | Quick Changer or Dual Quick Changer | | | Angle Bracket 45° | | Angle Bracket 90° |
| 2. | Robot brands | ABB | | Denso | | Doosan | FANUC |
| | | Techman | | UR | Jaka | Omron TM | Kawasaki |
| 3. | Robot mounting | Can be mounted at any height, can be tilted 0°, 30°, 45° or 90° | | | | | |
| 4. | CNC machine types | CNC Milling | CNC Lathe | Communicating via Digital I/O or EtherNet/IP fieldbus | | Only Automatic door is supported (robot cannot be used to open/close door) | |
| 5. | In/Outfeed options | Grid (set row and/or column) or Honeycomb (for cylindrical parts), and can be stacked (parts on top of each other) | | | Fixed - only one part at the in/outfeed (requires conveyor belt or turn table) | | Pattern and Fixed can be combined (Pattern as infeed and Fixed as outfeed or the other way around) |
| 6. | Part size/weight/type | Any size (the gripper/machine can handle) | | | Any weight (the gripper/machine can handle) | | Cuboid or Cylindrical (both may not available on a given gripper) |
| 7. | Re-alignment | Optional steps before load and/or after unload | | | It can be used either to make sure the part is gripped properly (aligned) or to change the gripping (re-grip at a different angle, as picking angle can be defined or change the orientation before placed) | | |

| | | | | |
|--------------------|--|--|---|---|
| 8. Cleaning | Optional step before load (to make sure the workholding is clean) | And/or optionally before unload (make sure part is clean) | Both support: Fixed point (waiting time) or movement (via multiple waypoints) | Robot (mounted) Machine Cleaning output device needs to be added to the cell setup |
|--------------------|--|--|---|---|

Additional Information

1/a. Grippers

Only OnRobot tools are supported, but can be customized with any OnRobot accessory, or custom fingertip/vacuum accessory.

| | | Finger grippers | | | | | Vacuum grippers |
|---------------------------|--------------------|-----------------|-------|-------|-----|-----|-----------------|
| | | 2FG7 | 2FG14 | 3FG15 | RG2 | RG6 | VGC10** |
| Can grip | Cuboid | ✓ | ✓ | ✗ | ✓ | ✓ | ✓ |
| | Cylindrical | ✓ * | ✓ | ✓ | ✓ * | ✓ * | ✓ |
| Pick with an angle | | ✓ | ✓ | ✗ | ✓ | ✓ | ✗ |

* With special fingertips.

** Do not use vacuum grippers in wet or damp conditions, particularly in CNC applications with moisture or cutting fluids. It can damage the gripper.

1/b. Tool mounting

HEX-E/H QC is not supported.

2. Robot brands

Supported robot models and controllers

| Robot Type | ABB | Denso | Doosan | FANUC | FANUC CRX |
|-------------------------|--|---|---|---|---|
| Robot Model | CRB 1100 -4/0.58 CRB 15000 -5/0.95 CRB 15000 -10/1.52 CRB 15000 -12/1.27 IRB 1100 -4/0.58 IRB 1100 -4/0.47 IRB 120 IRB 1200 -5/0.9 IRB 1200 -7/0.7 IRB 1300 -7/1.4 IRB 1300 -10/1.15 IRB 1300 -11/0.9 IRB 1300 -12/1.4 IRB 1600 -6/1.2 IRB 1600 -6/1.45 IRB 1600 -10/1.2 IRB 1600- 10/1.45 | VM-6083 VM-60B1 VP-6242 VS050A3 VS087A4 VP-5243 VS-050-S2 VS-087A4 VS-6577 VS-6556 VS-087 | A0509 A0509s A0912 A0912s H2017 H2515 M0609 M0617 M1013 M1509 E0509 | CR-7iA CR-7iA/L CR-14iA/L CR-15iA CR-35iB LR Mate 200iD LR Mate 200iD/4S LR Mate 200iD/7L LR Mate 200iD/14L | CRX-5iA CRX-10iA CRX-10iA/L CRX-20iA/L CRX-25iA |
| Robot Controller | IRC5 OmniCore | RC8 | CS-03 CS-04 | R-30iB R-30iB Plus R-30iB Mini Plus | R-30iB Mini Plus |

| Robot Type | JAKA | Techman | UR | Omron TM | Kawasaki | Yaskawa |
|--------------------|---|--|--|--|--|---|
| Robot Model | Zu3 Zu3S Zu5 Zu5S Zu7 Zu7S Zu12 Zu12S Zu18 Zu18S Pro5 Pro12 Pro16 | TM5-700 TM5X-700 TM5-900 TM5X-900 TM5S TM5S-X TM7S TM7S-X TM12 TM12X TM12S TM12S-X TM14 TMX14 TM14S TM14S-X TM16 TM16X TM20 TM20X TM25S TM25S-X | UR3 UR3e UR5 UR5e UR10 UR10e UR16e UR20 UR30 | TM5-700 TM5X-700 TM5-900 TM5X-900 TM5S TM5S-X TM7S TM7S-X TM12 TM12X TM12S TM12S-X TM14 TMX14 TM14S TM14S-X TM16 TM16X TM20 TM20X TM25S TM25S-X | RS003N RS005L RS005N RS006L RS007N RS007L RS010L RS010N RS013N RS015X RS020N RS025N RS030N RS050N RS080N | GP4, GP4FGG GP7, GP7FGG GP8, GP8FGG, GP8FGG HS GP8L GP12, GP12FGG GP20 GP20HL GP25, GP25FGG GP25-12 GP35L HC10 HC10DT HC10DTP, HC10DTFP, HC10DTP Classic HC20 HC20DT HC20DTP HC30PL |

| Robot Type | JAKA | Techman | UR | Omron TM | Kawasaki | Yaskawa |
|-------------------------|--------------------|---------|--------------|----------|---------------------------------|--------------------------|
| Robot Controller | Electrical cabinet | TM | CB3 e-Series | TM | E01 E02 F01 F02 F60 | YRC1000 YRC1000 Micro |

3. Robot mounting

The robot cannot be facing downward (ceiling mounted).

4. CNC machine types

Supported communication protocols between D:PLOY and the CNC machine

- Digital Inputs and Outputs
- EtherNet/IP

Using the OR:MACHINE module (with relays) the front panel push buttons can be used to operate it.

5. In/Outfeed options

Pattern requires in/outfeed container, **Fixed** requires in/outfeed sensor. Both can be ultrasonic, laser/infra or any other type 24V digital sensor.

6. Part type/size/weight

Part parameter can be changed at unloading. For complex shapes use a bounding box.

7. Re-alignment

Two or more side machining is not supported (but can be done by having a complete run finished on one side and then do the rest).

8. Cleaning

Integrator needs to take care of nozzle, air supply and a 24V controllable valve to activate the air pressure. After-unload cleaning is not supported.

Layout configuration

- Using CNC Milling or Lathe machine
- Without or with 1 or 2 cleaning steps
- Without or with 1 or 2 re-alignment steps
- Using Single or Dual QC
- Pattern as infeed and Pattern as outfeed
- Fixed as infeed and Pattern as outfeed
- Pattern as infeed and Fixed as outfeed
- Fixed as infeed and Fixed as outfeed

Examples

