



Nicolas De Keijser, Product Manager, Small robots

# ABB's smallest robot - IRB 120

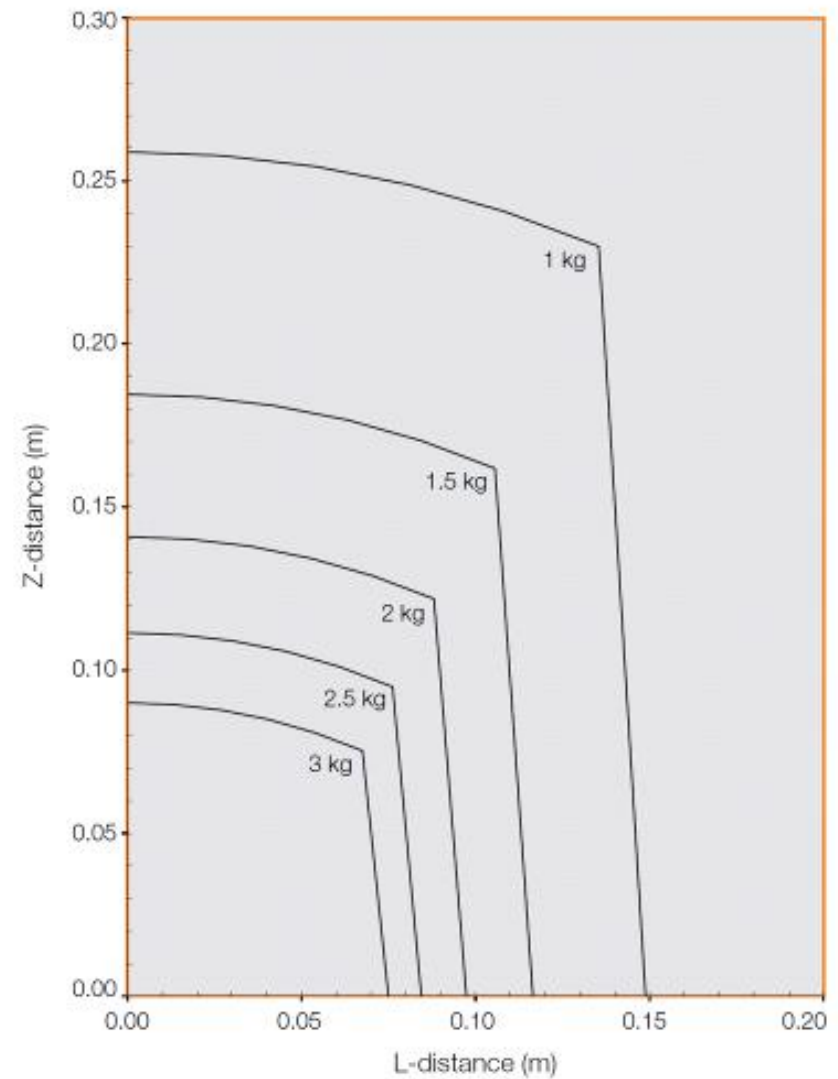
## For flexible & compact production

# Main Features



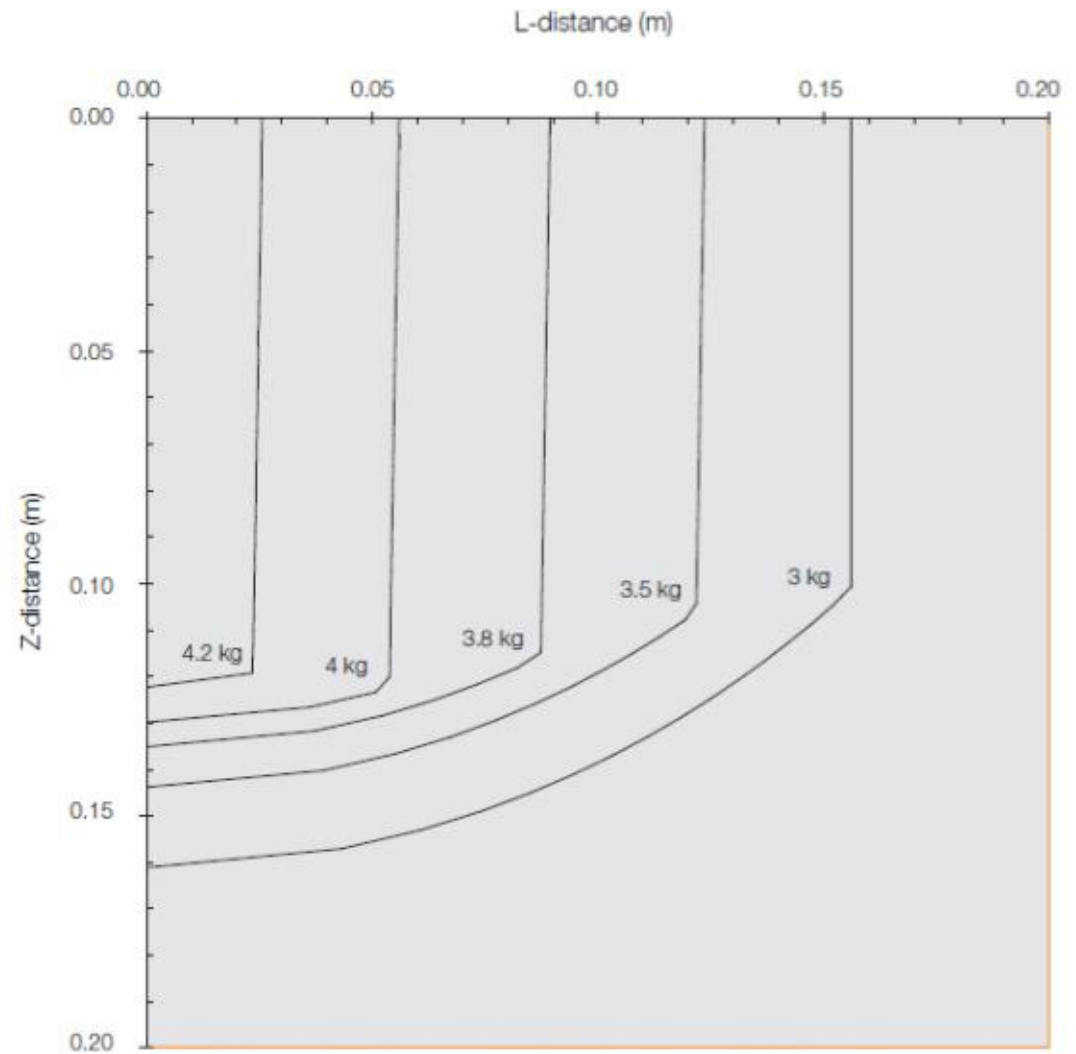
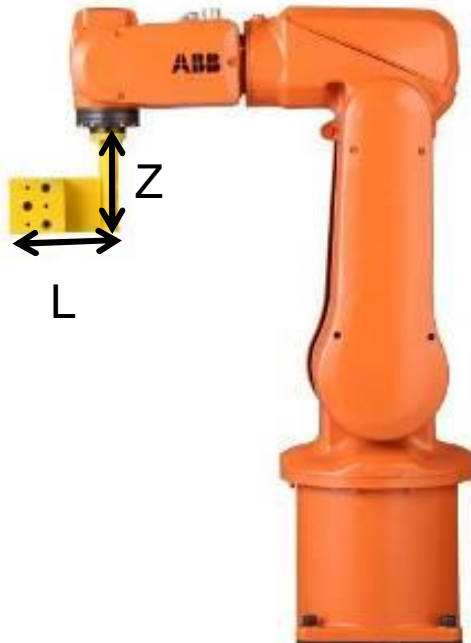
- Six axis manipulator
- Payload: 3 kg
- Reach: 580 mm
- Fastest 6-axis robot in ABB range
- Accuracy:  $\pm 0.01$  mm
- Foot print: 180 mm squared
- Weight: 25 kg
- All mounting positions
- IP 30 as standard
- All motors and cabling enclosed => easy to integrate
- Variant: IRB 120T
- Optional Clean Room ISO Class 5 (IPA certified)

# Load diagram with 0.3 kg armload Up to 3 kg

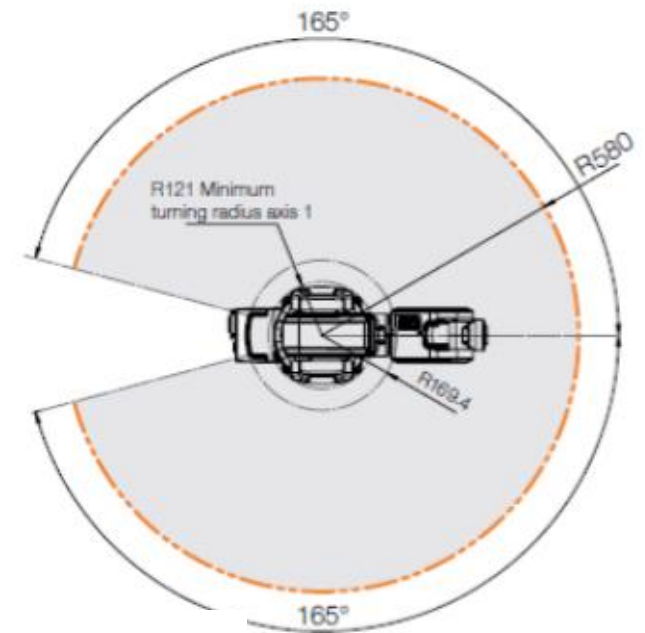
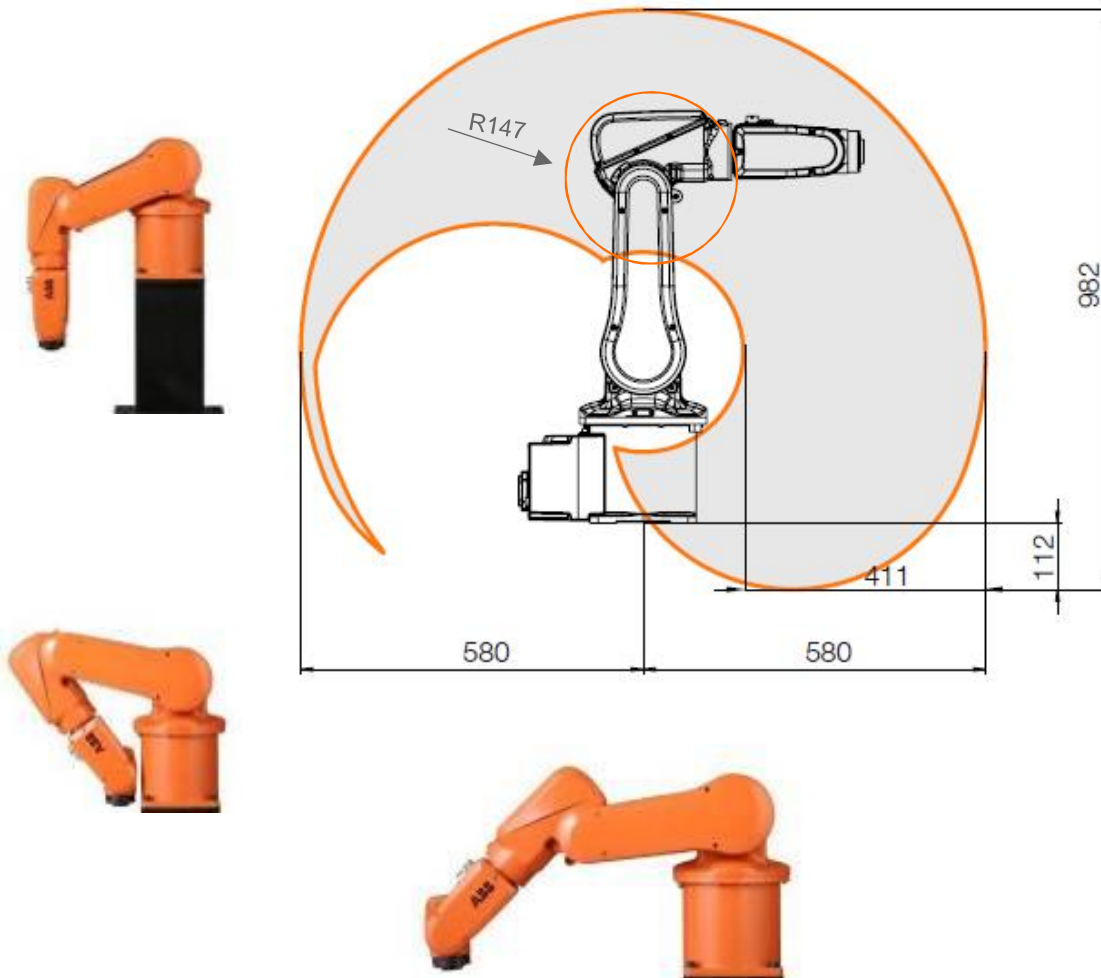


# Load diagram with vertical wrist & no arm-load

## Up to 4.2 kg



# Working Range at center of 5<sup>th</sup> axis Reaching 580 mm



# Working range / Velocity



- **Axis 1 Rotation**

**+165° to -165 °**

**250 °/s**

- **Axis 2 Arm**

**+110° to -110 °**

**250 °/s**

- **Axis 3 Arm**

**+70° to -110 °**

**250 °/s**

- **Axis 4 Wrist**

**+160° to -160 °**

**320 °/s (420 °/s)**

- **Axis 5 Bend**

**+120° to -120 °**

**320 °/s (590 °/s)**

- **Axis 6 Turn**

**+400° to -400 °**

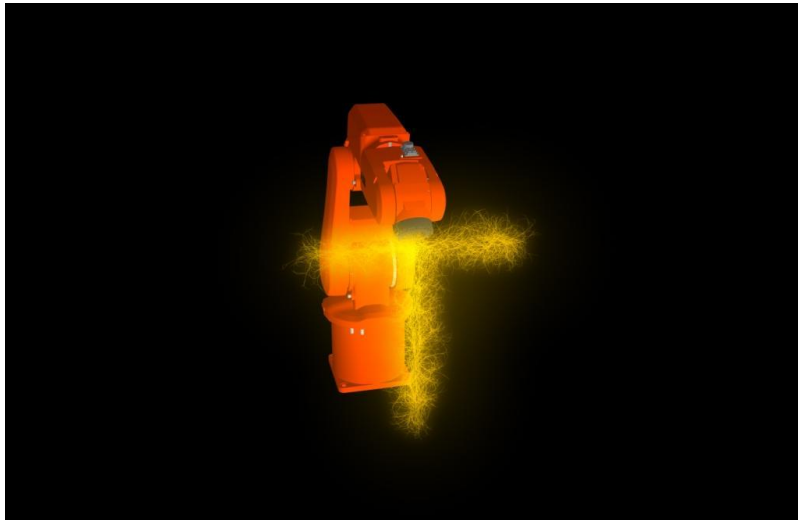
**420 °/s (600 °/s)**

# Performance & Accuracy



- 1 kg picking cycle 25 x 300 x 25 mm
  - IRB 120: 0.58 s
  - IRB 120T = 0.52s
- Max TCP velocity: **6.2 m/s** (calculated)
- Max TCP acceleration: **28 m/s<sup>2</sup>** (calculated)
- Acceleration time 0-1 m/s: **0.07 s** (calculated)
- Accuracy: **0.01 mm** (repeatability)

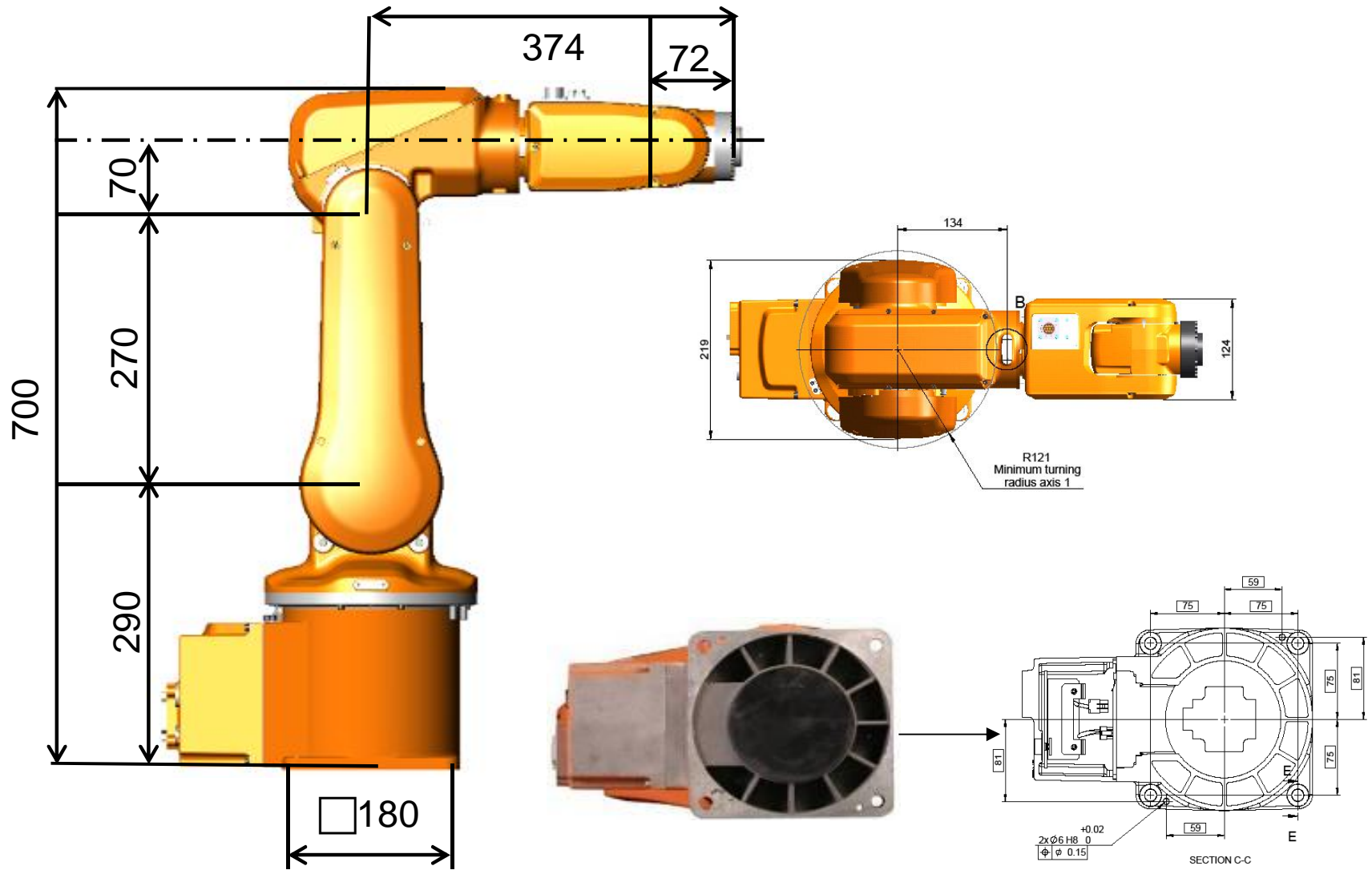
# IRB 120 T



- Up to 25% improvement in cycle time
- Ideal for pick & place application with extensive re-orientation of the product
- Well suited for pick and packing applications and guided operations with PickMaster 3™
- Very high wrist axis speed
  - Axis 4: 420°/s
  - Axis 5: 590°/s
  - Axis 6: 600°/s



# Main Dimensions

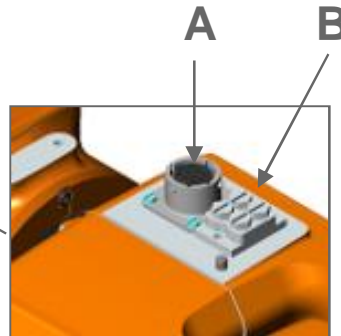
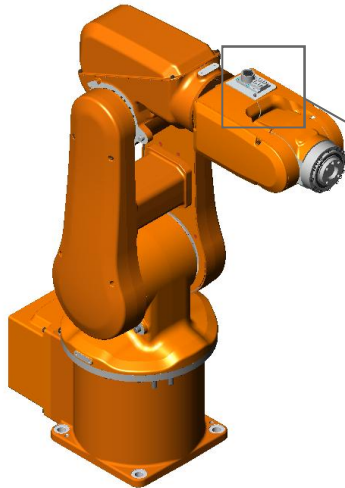


# Flexible mounting

## All angles



# Easy to integrate Customer interfaces

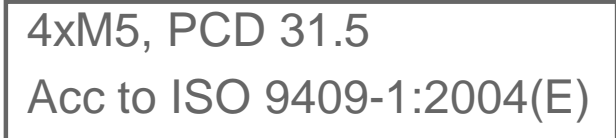


**A** 10 x customer signals  
49V, 500mA

**B** 4 x air  
max diameter 4mm  
5 bar



•Customer cable to be  
done by customer  
•No brake release on  
arm but on controller



# IRB 120 Clean Room ISO Class 5

## Certified by IPA



- Clean room ISO Class 5 certified by IPA according to ISO 14644-1
  - ISO Class 5 at 50% speed
  - ISO Class 4 at 100% speed
- Special 4-layer paint including a varnish clear coat
- Easy to wipe clean
- Unpainted mounting holes
- Unpainted stainless steel mechanical stops
- Special glue-seals to avoid particles generation in sensible area's
- No external cabling
- Robot entirely wrapped in 2 layers of protective plastic

# Segments & application requirements

## Summary

- Compact & light weight arm
- Compact & light weight controller
- Best-in class pose & path accuracy
- Flexible mounting – all angles
- Integrated cabling for minimal integration work
- Shortest cycle time
- Optimized payload & reach for small part handling & assembly
- Very compact turning radius
- Smooth surfaces for easy cleaning
- Optional Clean Room ISO class 5
- IRB 120 T variant

Power and productivity  
for a better world™

