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The Culture of Automation

Designing advanced automation solutions means thinking about the industry in a new way, developing new scenarios, designing innovative products and creating ways to streamline production processes. It requires more than technical competence; it requires a team of professionals whose vision is rooted in a culture of excellence. It also requires a combination of talent, passion and experience that unite to define new trends in automation.

Here at Comau, our passion for our work reflects who we are.

Meet the Comau robot team

All our robots are characterized by high performance in terms of speed, repeatability, accuracy and flexibility. Product range extends from small payload robots to the massive capacity of 650 kg. Each robot model is designed with a reduced footprint, large work envelope, highly precise movements and positioning, great reliability and low maintenance costs.

robotics.comau.com
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<th>REPEATABILITY (mm)</th>
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*For Pick&Place 6 kg with a limited stroke of the 5th axis
** Allwable with payload limitations

For more information, visit: robotics.comau.com
### STANDARD ROBOTS

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**STANDARD ROBOTS**
## Comau Robotics Product Range

### SPECIAL ROBOTS

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**PRESS**

| NJ 100 - 3.2 PRESS | 6    | 100       | 0 - 17             | 3209       | 1250        | Floor             | IP65 / IP65 Wrist |
| NJ 100 - 3.7 SH PRESS | 6    | 100       | 0 - 20             | 3700       | 1515        | Shelf             | IP65 / IP65 Wrist |
| NJ 150 - 3.4 SH PRESS | 6    | 150       | 0 - 10             | 3400       | 1430        | Shelf             | IP65 / IP65 Foundry Version |
| NJ 210 - 3.1 SH PRESS | 6    | 210       | 0 - 10             | 3188       | 1470        | Shelf             | IP65            |

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### Comau Robotics Product Range

#### HOLLOW WRIST

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**Comau Robotics Product Range**

HOLLOW WRIST

[robotics.comau.com](http://robotics.comau.com)
## Comau Robotics Product Range

### Innovative Modular & Scalable SCARA

### Rebel-S6-0.45

- **Robot type**: SCARA
- **Payload**: 6 kg
- **Horizontal reach (radius)**: 450 mm
- **Vertical reach (Z-stroke)**: 200 mm
- **Repeatability (X-Y)**: 0.02 mm
- **Mounting position**: Floor / Wall
- **Internal user wiring / piping**: 25 pin-to-pin
- **Available protection classes**: IP10 (IP54 Optional)
- **Outer diameter of ball-screw-spline**: 20 mm
- **Inner diameter of ball-screw-spline**: 14 mm
- **Z axis down force (long-time)**: 160 N
- **Robot Weight**: 16 Kg
- **Environmental conditions**: +5° - +45° C, 5 - 95% relative humidity
- **Electrical**: R1C-4
- **Pneumatical**: R1C-4

### Rebel-S6-0.60

- **Robot type**: SCARA
- **Payload**: 6 kg
- **Horizontal reach (radius)**: 600 mm
- **Vertical reach (Z-stroke)**: 200 mm
- **Repeatability (X-Y)**: 0.02 mm
- **Mounting position**: Floor / Wall
- **Internal user wiring / piping**: 25 pin-to-pin
- **Available protection classes**: IP10 (IP54 Optional)
- **Outer diameter of ball-screw-spline**: 20 mm
- **Inner diameter of ball-screw-spline**: 14 mm
- **Z axis down force (long-time)**: 160 N
- **Robot Weight**: 16 Kg
- **Environmental conditions**: +5° - +45° C, 5 - 95% relative humidity
- **Electrical**: R1C-4
- **Pneumatical**: R1C-4

### Rebel-S6-0.75

- **Robot type**: SCARA
- **Payload**: 6 kg
- **Horizontal reach (radius)**: 750 mm
- **Vertical reach (Z-stroke)**: 200 mm
- **Repeatability (X-Y)**: 0.03 mm
- **Mounting position**: Floor / Wall
- **Internal user wiring / piping**: 25 pin-to-pin
- **Available protection classes**: IP10 (IP54 Optional)
- **Outer diameter of ball-screw-spline**: 20 mm
- **Inner diameter of ball-screw-spline**: 14 mm
- **Z axis down force (long-time)**: 160 N
- **Robot Weight**: 16 Kg
- **Environmental conditions**: +5° - +45° C, 5 - 95% relative humidity
- **Electrical**: R1C-4
- **Pneumatical**: R1C-4

### Suggested applications
- Assembly
- Handling
- Machine Tending

### Technical Specifications

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<td>+5° - +45° C, 5 - 95% relative humidity</td>
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### Comau Robotics Product Range

#### Innovative Modular & Scalable SCARA

**Rebel-S6-0.60c**

- **Robot type**: SCARA
- **Payload**: 6 kg
- **Horizontal reach (radius)**: 580 mm
- **Vertical reach (Z-stroke)**: 260 mm
- **Repeatability (X-Y)**: 0.02 mm
- **Mounting position**: Ceiling / Wall
- **Interface**: 25 pin-to-pin
- **Electrical**: 1 x 4 mm & 2 x 6 mm
- **Pneumatical**: 14 mm
- **ISO class**: 600 mm
- **IP class**: IP10 (IP54 Option)
- **ISO class**: ISO 6
- **Z axis down force (long-time)**: 160 N
- **Robot Weight**: 20 Kg
- **Applicable controller**: +5° - +45° C
- **Relative humidity**: 5 - 95%*
- **Environmental conditions**: R1C-4
- **Available protection classes**: Without condensation

#### Rebel-S6-0.75c

- **Robot type**: SCARA
- **Payload**: 4 kg
- **Horizontal reach (radius)**: 750 mm
- **Vertical reach (Z-stroke)**: 306 mm
- **Repeatability (X-Y)**: 0.02 mm
- **Mounting position**: Ceiling / Wall
- **Interface**: 25 pin-to-pin
- **Electrical**: 1 x 4 mm & 2 x 6 mm
- **Pneumatical**: 14 mm
- **ISO class**: 600 mm
- **IP class**: IP10 (IP54 Option)
- **ISO class**: ISO 6
- **Z axis down force (long-time)**: 160 N
- **Robot Weight**: 20 Kg
- **Applicable controller**: +5° - +45° C
- **Relative humidity**: 5 - 95%*
- **Environmental conditions**: R1C-4
- **Available protection classes**: Without condensation

#### Suggested applications

- Assembly
- Handling
- Machine Tending
## TECHNICAL SPECIFICATIONS

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### Suggested applications
- Assembly
- Cosmetic Sealing
- Handling / Packaging
- Machine Tending
- Measuring / Testing
- Polishing / Deburring

### Model Descriptions
- **Racer3**
  - 6 kg
  - Maximum horizontal reach: 630 mm
- **Racer5-0.63**
  - 5 kg
  - Maximum horizontal reach: 650 mm
- **Racer5-0.80**
  - 5 kg
  - Maximum horizontal reach: 800 mm

### Application Areas
- **A**: 1581 mm
- **B**: 650 mm
- **C**: 27 mm
- **D**: 50 mm
- **E**: 136 mm

---

* The F003/Racer 6 cp with selected axes of the 511 axes.

** All applicable with payload limitations.
Racer7-1.0
Racer7-1.4

Precision and speed meet beauty and passion

Racer7-1.0
Racer7-1.4

Model
Racer7-1.0
Racer7-1.4

Suggested applications
- Assembly
- Cosmetic Sealing
- Handling / Packaging
- Machine Tending
- Measuring / Testing
- Polishing / Deburring

Number of axes
6
6

Maximum wrist payload
7 kg
7 kg

Additional load on forearm
12 kg
12 kg

Maximum horizontal reach
660 mm
660 mm

Torque on axis 4
13 Nm
13 Nm

Torque on axis 5
13 Nm
13 Nm

Torque on axis 6
7.5 Nm
7.5 Nm

Additional load on forearm
801 mm
801 mm

Stroke (Speed)
+/- 180° (220°/s)
+/- 165° (200°/s)

+/- 180° (220°/s)
+/- 165° (200°/s)

+/- 180° (220°/s)
+/- 165° (200°/s)

+/- 180° (220°/s)
+/- 165° (200°/s)

+/- 180° (220°/s)
+/- 165° (200°/s)

Repeatability
0.03 mm
0.02 mm

Tool coupling flange
ISO 9409 - 1 - A 80
ISO 9409 - 1 - A 80

Robot weight
173 kg
180 kg

Protection class
IP65
IP65

Mounting position
Floor / Ceiling / Sloping / Wall
Floor / Ceiling / Sloping / Wall

Operating Areas

A
1270 mm
1716 mm

B
658 mm
1698 mm

C
654 mm
412 mm

D
584 mm
1158 mm

E
365 mm
801 mm

*For Pick&Place 10 kg with a limited stroke of the 5th
axis.
Comau Robotics Product Range

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### Technical Specifications

#### SIX 6 - 1.4

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## TECHNICAL SPECIFICATIONS

### Model

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### Robust and versatile small payload robots

**NS 12 - 1.85**

- 12 kg maximum wrist payload
- 16 kg additional load on forearm
- 1850 mm maximum horizontal reach
- 26 Nm torque on axis 4
- +/- 180° (155°/s) stroke
- ISO 9409 - 1 - A63 protection class
- Floor / Ceiling / Sloping (45° max) mounting position

**NS 16 - 1.65**

- 14 kg maximum wrist payload
- 16 kg additional load on forearm
- 1650 mm maximum horizontal reach
- 41 Nm torque on axis 4
- +/- 180° (155°/s) stroke
- ISO 9409 - 1 - A63 protection class
- Floor / Ceiling / Sloping (45° max) mounting position

### Operating Areas

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### Suggested applications

- Arc Welding
- Assembly
- Cosmetic Sealing
- Dispensing
- Foundry
- Handling / Packaging
- Laser Welding / Cutting
- Machine Tending
- Measuring / Testing
- Plasma Cutting / Water Jet
- Polishing / Deburring
- Press Brake Bending
- Process Machining
- Wood / Glass Machining
### TECHNICAL SPECIFICATIONS

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<thead>
<tr>
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<th>NJ 60 - 2.2</th>
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<td>E 2650 mm</td>
<td>A 3100 mm</td>
<td>C 1625 mm</td>
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### Suggested applications
- Arc Welding
- Assembly
- Cosmetic Sealing
- Dispensing
- Handling / Packaging
- Laser Welding / Cutting
- Machine Tending
- Measuring / Texting
- Plasma Cutting / Water Jet
- Polishing / Deburring
- Press Brake Benting
- Press to Press
- Process Machining
- Wood / Glass Machining

A perfect solution for medium payload applications

**NJ 16 - 3.1**
**NJ 40 - 2.5**
**NJ 60 - 2.2**
**NJ 110 - 3.0**

- Number of axes: 6
- Maximum wrist payload: 112 kg
- Additional load on forearm: 50 kg
- Maximum horizontal reach: 3080 mm
- Torque on axis 4: 628 Nm
- Torque on axis 5: 638 Nm
- Torque on axis 6: 638 Nm
- Stroke (Speed): +/- 180° (110°/s)
- +/- 180° (110°/s)
- +/- 180° (110°/s)
- +/- 280° (190°/s)
- +/- 120° (190°/s)
- +/- 270° (230°/s)
- Repeatability: +/- 0.07 mm
- Tool coupling flange: ISO 9409 - 1 - A 125
- Robot weight: 1070 kg
- Protection class: IP65 / IP67
- Mounting position: Floor / Ceiling
- Operating Areas: A, B, C, D, E

**NJ 130 - 2.0**

- Number of axes: 6
- Maximum wrist payload: 90 kg
- Additional load on forearm: 50 kg
- Maximum horizontal reach: 2980 mm
- Torque on axis 4: 638 Nm
- Torque on axis 5: 638 Nm
- Torque on axis 6: 638 Nm
- Stroke (Speed): +/- 180° (155°/s)
- -60° / +125° (105°/s)
- 0° / -165° (150°/s)
- +/- 280° (200°/s)
- +/- 120° (190°/s)
- +/- 270° (230°/s)
- Repeatability: +/- 0.07 mm
- Tool coupling flange: ISO 9409 - 1 - A 125
- Robot weight: 746 kg
- Protection class: IP65 / IP67
- Mounting position: Floor / Ceiling
- Operating Areas: A, B, C, D, E

**NJ 130 - 2.6**

- Number of axes: 6
- Maximum wrist payload: 90 kg
- Additional load on forearm: 50 kg
- Maximum horizontal reach: 2980 mm
- Torque on axis 4: 314 Nm
- Torque on axis 5: 314 Nm
- Torque on axis 6: 314 Nm
- Stroke (Speed): +/- 180° (110°/s)
- -75° / +95° (110°/s)
- -10° / -256° (110°/s)
- +/- 280° (190°/s)
- +/- 120° (190°/s)
- +/- 270° (230°/s)
- Repeatability: +/- 0.07 mm
- Tool coupling flange: ISO 9409 - 1 - A 125
- Robot weight: 1568 kg
- Protection class: IP65 / IP67
- Mounting position: Floor / Ceiling
- Operating Areas: A, B, C, D, E

**Suggested applications**

- Assembly
- Dispensing
- Handling / Packaging
- Laser Welding Cutting
- Machine Tending
- Measuring / Testing
- Plasma Cutting / Water Jet
- Polishing / Deburring
- Press Brake Bending
- Press to Press
- Process / Machining
- Spot Welding
- Wood / Glass Machining

A light kinematic structure for better performance
### TECHNICAL SPECIFICATIONS

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<th>NJ 220 - 2.7</th>
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<td>Stroke (Speed)</td>
<td>Axis 1 +/-60° (90°/s)</td>
<td>+/-180° (90°/s)</td>
<td>+/-180° (90°/s)</td>
</tr>
<tr>
<td></td>
<td>Axis 2 +/-30° (90°/s)</td>
<td>+/-120° (90°/s)</td>
<td>+/-120° (90°/s)</td>
</tr>
<tr>
<td></td>
<td>Axis 3 +/-30° (90°/s)</td>
<td>+/-120° (90°/s)</td>
<td>+/-120° (90°/s)</td>
</tr>
<tr>
<td></td>
<td>Axis 4 +/-120° (90°/s)</td>
<td>+/-240° (90°/s)</td>
<td>+/-240° (90°/s)</td>
</tr>
<tr>
<td></td>
<td>Axis 5 +/-300° (90°/s)</td>
<td>+/-900° (90°/s)</td>
<td>+/-900° (90°/s)</td>
</tr>
<tr>
<td></td>
<td>Axis 6 +/-900° (90°/s)</td>
<td>+/-1800° (90°/s)</td>
<td>+/-1800° (90°/s)</td>
</tr>
<tr>
<td>Stroke (Speed)</td>
<td>Axis 1 +/-60° (90°/s)</td>
<td>+/-180° (90°/s)</td>
<td>+/-180° (90°/s)</td>
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<td></td>
<td>Axis 2 +/-30° (90°/s)</td>
<td>+/-120° (90°/s)</td>
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<td>Axis 3 +/-30° (90°/s)</td>
<td>+/-120° (90°/s)</td>
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<tr>
<td></td>
<td>Axis 4 +/-120° (90°/s)</td>
<td>+/-240° (90°/s)</td>
<td>+/-240° (90°/s)</td>
</tr>
<tr>
<td></td>
<td>Axis 5 +/-300° (90°/s)</td>
<td>+/-900° (90°/s)</td>
<td>+/-900° (90°/s)</td>
</tr>
<tr>
<td></td>
<td>Axis 6 +/-900° (90°/s)</td>
<td>+/-1800° (90°/s)</td>
<td>+/-1800° (90°/s)</td>
</tr>
<tr>
<td>Repeatability</td>
<td>+/-3° (95%)</td>
<td>+/-3° (95%)</td>
<td>+/-3° (95%)</td>
</tr>
<tr>
<td>Tool coupling flange</td>
<td>ISO 9409-1 - 200 - 6 - M10</td>
<td>ISO 9409-1 - 200 - 6 - M10</td>
<td>ISO 9409-1 - 200 - 6 - M10</td>
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<tr>
<td>Robot weight</td>
<td>2150 kg</td>
<td>2100 kg</td>
<td>2450 kg</td>
</tr>
<tr>
<td>Protection class</td>
<td>IRC5 - IP67 Foundry Version</td>
<td>IRC5 - IP67 Foundry Version</td>
<td>IRC5 - IP67 Foundry Version</td>
</tr>
<tr>
<td>Mounting position</td>
<td>Floor</td>
<td>Floor</td>
<td>Floor</td>
</tr>
<tr>
<td>Operating Areas</td>
<td>A: 2680 mm</td>
<td>2660 mm</td>
<td>3660 mm</td>
</tr>
<tr>
<td></td>
<td>B: 2660 mm</td>
<td>2640 mm</td>
<td>3580 mm</td>
</tr>
<tr>
<td></td>
<td>C: 2010 mm</td>
<td>1990 mm</td>
<td>3160 mm</td>
</tr>
<tr>
<td></td>
<td>D: 630 mm</td>
<td>610 mm</td>
<td>430 mm</td>
</tr>
<tr>
<td></td>
<td>E: -118 mm</td>
<td>-118 mm</td>
<td>-118 mm</td>
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</table>

**Model Suggested applications**
- Assembly
- Foundry
- Handling / Packaging
- Machine Tending
- Measuring / Testing
- Plasma Cutting / Water Jet
- Polishing / Deburring
- Press Brake Bending
- Process Machining
- Spot Welding
- Weld / Glass Machining

**Robust mechanics and the best-in-class payload / reach ratio**

**NJ 290 - 3.0**
**NJ 370 - 2.7**
**NJ 370 - 3.0**
## Technical Specifications

### NJ 420 - 3.0

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of axes</th>
<th>Maximum wrist payload</th>
<th>Additional load on forearm</th>
<th>Maximum horizontal reach</th>
<th>Torque on axis 4</th>
<th>Torque on axis 5</th>
<th>Torque on axis 6</th>
<th>Stroke (Speed)</th>
<th>Repeatability</th>
<th>Tool coupling flange</th>
<th>Robot weight</th>
<th>Protection class</th>
<th>Mounting position</th>
<th>Operating Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ 420 - 3.0</td>
<td>6</td>
<td>420 kg</td>
<td>50 kg</td>
<td>2997 mm</td>
<td>2550 Nm</td>
<td>2550 Nm</td>
<td>1569 Nm</td>
<td>+/- 180° (85°/s)</td>
<td>0.15 mm</td>
<td>ISO 9409 - 1 - 200 - 6 - M12</td>
<td>2400 kg</td>
<td>IP65 / IP67 Foundry Version</td>
<td>Floor</td>
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### NJ 450 - 2.7

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of axes</th>
<th>Maximum wrist payload</th>
<th>Additional load on forearm</th>
<th>Maximum horizontal reach</th>
<th>Torque on axis 4</th>
<th>Torque on axis 5</th>
<th>Torque on axis 6</th>
<th>Stroke (Speed)</th>
<th>Repeatability</th>
<th>Tool coupling flange</th>
<th>Robot weight</th>
<th>Protection class</th>
<th>Mounting position</th>
<th>Operating Areas</th>
</tr>
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<tbody>
<tr>
<td>NJ 450 - 2.7</td>
<td>6</td>
<td>450 kg</td>
<td>50 kg</td>
<td>3054 mm</td>
<td>2550 Nm</td>
<td>2550 Nm</td>
<td>1569 Nm</td>
<td>+/- 180° (85°/s)</td>
<td>0.15 mm</td>
<td>ISO 9409 - 1 - 200 - 6 - M12</td>
<td>2450 kg</td>
<td>IP65 / IP67 Foundry Version</td>
<td>Floor</td>
<td>A: 3680 mm</td>
</tr>
</tbody>
</table>

### Suggested applications

- Assembly
- Foundry
- Handling / Packaging
- Machine Tending
- Measuring / Testing
- Plasma Cutting / Water Jet
- Polishing / Deburring
- Press Brake Bending
- Process Machining
- Spot Welding
- Wood / Glass Machining

### High Payload Models for the Most Demanding Applications

- NJ 420 - 3.0
- NJ 450 - 2.7
Comau Robotics Product Range

**Suggested applications**

- Assembly
- Foundry
- Handling / Packaging
- Machine Tending
- Measuring / Testing
- Plasma Cutting / Water Jet
- Polishing / Deburring
- Press Brake Bending
- Process Machining
- Spot Welding
- Wood / Glass Machining

---

**TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of axes</th>
<th>Maximum wrist payload</th>
<th>Additional load on forearm</th>
<th>Maximum horizontal reach</th>
<th>Torque on axis 4</th>
<th>Torque on axis 5</th>
<th>Torque on axis 6</th>
<th>Stroke (Speed)</th>
<th>Repeatability</th>
<th>Tool coupling flange</th>
<th>Robot weight</th>
<th>Protection class</th>
<th>Mounting position</th>
<th>Operating Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NJ 500 - 2.7</strong></td>
<td>6</td>
<td>500 kg</td>
<td>50 kg</td>
<td>2700 mm</td>
<td>2550 Nm</td>
<td>3360 Nm</td>
<td>-100 Nm</td>
<td>+/- 180°</td>
<td>+/- 15°</td>
<td>ISO 9409 - 1 - 200 - 4 - M12</td>
<td>260 kg</td>
<td>IP65 - Safe / IP67</td>
<td>Floor</td>
<td>A: 2060 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>75°/s</td>
<td>0.15 mm</td>
<td>ISO 9409 - 1 - 300 - 4 - M12</td>
<td>265 kg</td>
<td></td>
<td>Floor</td>
<td>B: 2700 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>120°/s</td>
<td>0.15 mm</td>
<td>ISO 9409 - 1 - 300 - 4 - M12</td>
<td>265 kg</td>
<td></td>
<td>Floor</td>
<td>C: 466 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>181 mm</td>
<td>0.15 mm</td>
<td>ISO 9409 - 1 - 300 - 4 - M12</td>
<td>265 kg</td>
<td></td>
<td></td>
<td>D: 181 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NJ 650 - 2.7</strong></td>
<td>6</td>
<td>650 kg</td>
<td>50 kg</td>
<td>2700 mm</td>
<td>3060 Nm</td>
<td>3960 Nm</td>
<td>-100 Nm</td>
<td>+/- 180°</td>
<td>+/- 15°</td>
<td>ISO 9409 - 1 - 200 - 4 - M12</td>
<td>265 kg</td>
<td>IP65 / IP67 Wrist</td>
<td>Floor</td>
<td>A: 2060 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>75°/s</td>
<td>0.15 mm</td>
<td>ISO 9409 - 1 - 300 - 4 - M12</td>
<td>265 kg</td>
<td></td>
<td>Floor</td>
<td>B: 2700 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>120°/s</td>
<td>0.15 mm</td>
<td>ISO 9409 - 1 - 300 - 4 - M12</td>
<td>265 kg</td>
<td></td>
<td>Floor</td>
<td>C: 466 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>181 mm</td>
<td>0.15 mm</td>
<td>ISO 9409 - 1 - 300 - 4 - M12</td>
<td>265 kg</td>
<td></td>
<td></td>
<td>D: 181 mm</td>
</tr>
</tbody>
</table>

---

**Comau Robotics Product Range**

Strongest models for the most demanding applications

NJ 500 - 2.7

NJ 650 - 2.7
Fast and robust palletizing robots

PAL 180 - 3.1
PAL 260 - 3.1
PAL 470 - 3.1

Suggested applications
- Palletizing
- Handling

Technical Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>PAL 180 - 3.1</th>
<th>PAL 260 - 3.1</th>
<th>PAL 470 - 3.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of axes</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Maximum wrist payload</td>
<td>180 kg</td>
<td>240 kg</td>
<td>470 kg</td>
</tr>
<tr>
<td>Additional load on forearm</td>
<td>25 kg</td>
<td>30 kg</td>
<td>25 kg</td>
</tr>
<tr>
<td>Maximum horizontal reach</td>
<td>3100 mm</td>
<td>3100 mm</td>
<td>3100 mm</td>
</tr>
<tr>
<td>Stroke (Speed)</td>
<td>+/− 180° (120°/s)</td>
<td>+/− 180° (120°/s)</td>
<td>+/− 180° (120°/s)</td>
</tr>
<tr>
<td>Axis 1</td>
<td>−49° / + 95° (100°/s)</td>
<td>−49° / + 95° (100°/s)</td>
<td>−49° / + 95° (120°/s)</td>
</tr>
<tr>
<td>Axis 2</td>
<td>−49° / + 95° (100°/s)</td>
<td>−49° / + 95° (100°/s)</td>
<td>−49° / + 95° (120°/s)</td>
</tr>
<tr>
<td>Axis 3</td>
<td>−68° / − 208° (110°/s)</td>
<td>−68° / − 208° (110°/s)</td>
<td>−49° / + 95° (120°/s)</td>
</tr>
<tr>
<td>Axis 4</td>
<td>+/− 2700° (280°/s)</td>
<td>+/− 2700° (280°/s)</td>
<td>+/− 2700° (280°/s)</td>
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<tr>
<td>Repeatability</td>
<td>0.10 mm</td>
<td>0.10 mm</td>
<td>0.15 mm</td>
</tr>
<tr>
<td>Tool coupling range</td>
<td>ISO 9409 - 2 - 200 - 6 - M12</td>
<td>ISO 9409 - 2 - 200 - 6 - M12</td>
<td>ISO 9409 - 1 - A 200</td>
</tr>
<tr>
<td>Robot weight</td>
<td>1373 kg</td>
<td>1373 kg</td>
<td>2310 kg</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP65</td>
<td>IP65</td>
<td>IP65</td>
</tr>
<tr>
<td>Mounting position</td>
<td>Floor / Wall</td>
<td>Floor / Wall</td>
<td>Floor / Wall</td>
</tr>
<tr>
<td>Operating Areas</td>
<td>A: 1474 mm</td>
<td>2080 mm</td>
<td>2820 mm</td>
</tr>
<tr>
<td></td>
<td>B: 3600 mm</td>
<td>3600 mm</td>
<td>3600 mm</td>
</tr>
<tr>
<td></td>
<td>C: 1474 mm</td>
<td>1474 mm</td>
<td>1474 mm</td>
</tr>
<tr>
<td></td>
<td>D: 1424 mm</td>
<td>1424 mm</td>
<td>1424 mm</td>
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</table>
Comau Robotics Product Range

Suggested applications
- Handling / Packaging
- Press to Press

Dedicated press-shop automation machines

<table>
<thead>
<tr>
<th>Model</th>
<th>NJ 100 - 3.2 PRESS</th>
<th>NJ 130 - 3.7 SH PRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of axes</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Maximum wrist payload</td>
<td>150 kg</td>
<td>150 kg</td>
</tr>
<tr>
<td>Additional load on forearm</td>
<td>40 kg</td>
<td>40 kg</td>
</tr>
<tr>
<td>Maximum horizontal reach</td>
<td>- (3890 mm)</td>
<td>- (4080 mm)</td>
</tr>
<tr>
<td>Torque on axis 4</td>
<td>626 Nm</td>
<td>1235 Nm</td>
</tr>
<tr>
<td>Torque on axis 5</td>
<td>626 Nm</td>
<td>1235 Nm</td>
</tr>
<tr>
<td>Torque on axis 6</td>
<td>283 Nm</td>
<td>646 Nm</td>
</tr>
</tbody>
</table>

| Axis 1 | +/- 180° (120°/s) |
| Axis 2 | -45° / +45° (150°/s) |
| Axis 3 | +/- 180° (120°/s) |
| Axis 4 | +/- 180° (120°/s) |
| Axis 5 | +/- 130° (130°/s) |
| Axis 6 | +/- 120° (175°/s) |

| Stroke (Speed) | 0.17 mm |
| Repeatability | 0.17 mm |

| Tool coupling flange | ISO 9409 - 1 - A 160 |
| Robotic weight | 100 kg |
| Protection class | ISO 9409 - 1 - A 160 |
| Mounting position | Shelf |

Operating Areas
- A
- B
- C
- D
- E
- F

<p>| Maximum horizontal reach | 3391 mm |</p>
<table>
<thead>
<tr>
<th>Torque on axis 6</th>
<th>642 mm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Operating Areas</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum horizontal reach</td>
<td>3289 mm</td>
<td>3741 mm</td>
<td>680 mm</td>
<td>712 mm</td>
</tr>
<tr>
<td>Torque on axis 6</td>
<td>2780 mm</td>
<td>3391 mm</td>
<td>680 mm</td>
<td>712 mm</td>
</tr>
<tr>
<td>Model</td>
<td>Number of axes</td>
<td>Maximum wrist payload</td>
<td>Additional load on forearm</td>
<td>Maximum horizontal reach</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
<td>------------------------</td>
<td>-----------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td><strong>NJ 165 - 3.4 SH</strong></td>
<td>6</td>
<td>165 kg</td>
<td>25 kg</td>
<td>3450 mm</td>
</tr>
<tr>
<td><strong>NJ 210 - 3.1 SH</strong></td>
<td>6</td>
<td>210 kg</td>
<td>25 kg</td>
<td>3151 mm</td>
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<table>
<thead>
<tr>
<th>Suggested Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembly</td>
</tr>
<tr>
<td>Cosmetic Sealing</td>
</tr>
<tr>
<td>Dispensing</td>
</tr>
<tr>
<td>Handling / Packaging</td>
</tr>
<tr>
<td>Laser Welding / Cutting</td>
</tr>
<tr>
<td>Machine Tending</td>
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<tr>
<td>Measuring / Testing</td>
</tr>
<tr>
<td>Plasma Cutting / Water Jet</td>
</tr>
<tr>
<td>Polishing / Deburring</td>
</tr>
<tr>
<td>Press Brake Bending</td>
</tr>
<tr>
<td>Press to Press</td>
</tr>
<tr>
<td>Process Machining</td>
</tr>
<tr>
<td>Spot Welding</td>
</tr>
<tr>
<td>Wood / Glass Machining</td>
</tr>
</tbody>
</table>

**Shelf robots for wider operation areas**

**NJ 165 - 3.4 SH**
**NJ 210 - 3.1 SH**
### TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Arc 4</th>
<th>Suggested applications</th>
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<tbody>
<tr>
<td>Number of axes</td>
<td>6</td>
<td>Arc Welding</td>
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<tr>
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<tr>
<td>Additional load on forearm</td>
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<tr>
<td>Maximum horizontal reach</td>
<td>1651 mm</td>
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<tr>
<td>Torque on axis 4</td>
<td>14 Nm</td>
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</tr>
<tr>
<td>Torque on axis 5</td>
<td>14 Nm</td>
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</tr>
<tr>
<td>Torque on axis 6</td>
<td>4.8 Nm</td>
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<tr>
<td>Stroke (Speed)</td>
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<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>+/- 180°</td>
<td></td>
</tr>
<tr>
<td>Axis 2</td>
<td>-60° / +155°</td>
<td></td>
</tr>
<tr>
<td>Axis 3</td>
<td>-170° / +120°</td>
<td></td>
</tr>
<tr>
<td>Axis 4</td>
<td>+/- 180°</td>
<td></td>
</tr>
<tr>
<td>Axis 5</td>
<td>+/- 150°</td>
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<tr>
<td>Axis 6</td>
<td>+/- 270°</td>
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</tr>
<tr>
<td>Repeatability</td>
<td>0.05 mm</td>
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</tr>
<tr>
<td>Tool coupling flange</td>
<td>ISO 9409 - 1 - 63 - 4 - M6</td>
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<tr>
<td>Robot weight</td>
<td>375 kg</td>
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<td>Protection class</td>
<td>IP65</td>
<td></td>
</tr>
<tr>
<td>Mounting position</td>
<td>Floor / Ceiling / Sloped (45° max)</td>
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</tr>
<tr>
<td>Operating Areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>2351 mm</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>1821 mm</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>48 mm</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>1307 mm</td>
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</tr>
<tr>
<td>E</td>
<td>966 mm</td>
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**Hollow Wrist arc welding robot**

**Suggested applications**

- Arc Welding
Best Hollow Wrist in the market

- 100% INTEGRATED DRESSING
- COMPACT DIMENSIONS: no need for external cables
- LOW MAINTENANCE COSTS: integrated dressing means the reduction of cable failures
- HIGHER PERFORMANCE: agile and light structure allows higher performance and efficiency

TRADITIONAL SOLUTION WITH EXTERNAL DRESSING
Unpredictable product life
- Unknown torsion, bending & stretching
- Friction, wear
HIGH RISK OF PRODUCTION STOPS

FULLY INTEGRATED DRESSING
Comau Hollow Wrist advantages:
- Lean and compact solution
- No offset flange - gun
- Easier access through tooling and framing gates
- No risk of snagging
- Simplified tooling design
- Best results from off-line programming
- Outstanding dressing-MTBF
### TECHNICAL SPECIFICATIONS

**Comau Robotics Product Range**

<table>
<thead>
<tr>
<th>Model</th>
<th>NJ4 90 - 2.2</th>
<th>NJ4 110 - 2.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of axes</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Maximum wrist payload</td>
<td>90 kg</td>
<td>110 kg</td>
</tr>
<tr>
<td>Additional load on forearm</td>
<td>10 kg</td>
<td>10 kg</td>
</tr>
<tr>
<td>Maximum horizontal reach</td>
<td>2210 mm</td>
<td>2210 mm</td>
</tr>
<tr>
<td>Torque on axis 4</td>
<td>577 Nm</td>
<td>736 Nm</td>
</tr>
<tr>
<td>Torque on axis 5</td>
<td>690 Nm</td>
<td>880 Nm</td>
</tr>
<tr>
<td>Torque on axis 6</td>
<td>284 Nm</td>
<td>344 Nm</td>
</tr>
<tr>
<td>Stroke (Speed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Axis 1</td>
<td>+/−180° (170°/s)</td>
<td>+/- 180° (170°/s)</td>
</tr>
<tr>
<td>Axis 2</td>
<td>0° / +/−180° (170°/s)</td>
<td>0° / +/−180° (170°/s)</td>
</tr>
<tr>
<td>Axis 3</td>
<td>0° / +/−180° (170°/s)</td>
<td>0° / +/−180° (170°/s)</td>
</tr>
<tr>
<td>Axis 4</td>
<td>+/−180° (170°/s)</td>
<td>+/- 180° (170°/s)</td>
</tr>
<tr>
<td>Axis 5</td>
<td>+/- 90° (120°/s)</td>
<td>+/- 180° (120°/s)</td>
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<tr>
<td>Axis 6</td>
<td>+/- 90° (120°/s)</td>
<td>+/- 180° (120°/s)</td>
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<tr>
<td>Repeatability</td>
<td>0.07 mm</td>
<td>0.07 mm</td>
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<tr>
<td>Tool coupling range</td>
<td>ISO 9403 - 1 - 125 - 6 - M10</td>
<td>ISO 9403 - 1 - 125 - 6 - M10</td>
</tr>
<tr>
<td>Robot weight</td>
<td>685 kg</td>
<td>685 kg</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP65</td>
<td>IP65</td>
</tr>
<tr>
<td>Mounting position</td>
<td>Floor / Ceiling</td>
<td>Floor / Ceiling</td>
</tr>
<tr>
<td>Operating Areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>2506 mm</td>
<td>2506 mm</td>
</tr>
<tr>
<td>B</td>
<td>2210 mm</td>
<td>2210 mm</td>
</tr>
<tr>
<td>C</td>
<td>1854 mm</td>
<td>1854 mm</td>
</tr>
<tr>
<td>D</td>
<td>712 mm</td>
<td>712 mm</td>
</tr>
<tr>
<td>E</td>
<td>893 mm</td>
<td>893 mm</td>
</tr>
</tbody>
</table>

**Suggested applications**
- Assembly
- Handling / Packaging
- Machine Tending
- Measuring / Testing
- Spot Welding

---

**NJ4 90 - 2.2**

**NJ4 110 - 2.2**

**The most compact Hollow Wrist robots**
## Robotic Applications

- **NJ4 175 - 2.2**
  - **Model**: Comau Robotics Product Range
  - **Number of axes**: 6
  - **Maximum wrist payload**: 170 kg
  - **Additional load on forearm**: 34 kg
  - **Maximum horizontal reach**: 2530 mm
  - **Torque on axis 4**: 1025 Nm
  - **Torque on axis 5**: 804 Nm
  - **Torque on axis 6**: 412 Nm
  - **Stroke (Speed)**:
    - **Axis 1**: +/- 180° (110°/s)
    - **Axis 2**: -75° / +95° (110°/s)
    - **Axis 3**: -10° / -230° (110°/s)
    - **Axis 4**: +/- 200° (180°/s)
    - **Axis 5**: +/- 200° (140°/s)
    - **Axis 6**: +/- 200° (190°/s)
  - **Repeatability**: 0.10 mm
  - **Tool coupling flange**: ISO 9409 - 1 - A 125
  - **Robot weight**: 108 kg
  - **Protection class**: IP65
  - **Mounting position**: Floor / Ceiling
  - **Operating Areas**
    - **A**
    - **B**
    - **C**
    - **D**
    - **E**
  - **Suggested applications**: - Assembly
    - Handling / Packaging
    - Machine Tending
    - Measuring / Testing
    - Spot Welding

## NJ4 170 - 2.9

- **Model**: Comau Robotics Product Range
  - **Number of axes**: 6
  - **Maximum wrist payload**: 150 kg
  - **Additional load on forearm**: 25 kg
  - **Maximum horizontal reach**: 2516 mm
  - **Torque on axis 4**: 1025 Nm
  - **Torque on axis 5**: 804 Nm
  - **Torque on axis 6**: 412 Nm
  - **Stroke (Speed)**:
    - **Axis 1**: +/- 180° (110°/s)
    - **Axis 2**: -75° / +95° (110°/s)
    - **Axis 3**: -10° / -230° (110°/s)
    - **Axis 4**: +/- 200° (180°/s)
    - **Axis 5**: +/- 200° (140°/s)
    - **Axis 6**: +/- 200° (190°/s)
  - **Repeatability**: 0.10 mm
  - **Tool coupling flange**: ISO 9409 - 1 - A 125
  - **Robot weight**: 108 kg
  - **Protection class**: IP65
  - **Mounting position**: Floor / Ceiling
  - **Operating Areas**
    - **A**
    - **B**
    - **C**
    - **D**
    - **E**
  - **Suggested applications**: - Assembly
    - Handling / Packaging
    - Machine Tending
    - Measuring / Testing
    - Spot Welding

## NJ4 170 - 2.5

- **Model**: Comau Robotics Product Range
  - **Number of axes**: 6
  - **Maximum wrist payload**: 150 kg
  - **Additional load on forearm**: 25 kg
  - **Maximum horizontal reach**: 2516 mm
  - **Torque on axis 4**: 1025 Nm
  - **Torque on axis 5**: 804 Nm
  - **Torque on axis 6**: 412 Nm
  - **Stroke (Speed)**:
    - **Axis 1**: +/- 180° (110°/s)
    - **Axis 2**: -75° / +95° (110°/s)
    - **Axis 3**: -10° / -230° (110°/s)
    - **Axis 4**: +/- 200° (180°/s)
    - **Axis 5**: +/- 200° (140°/s)
    - **Axis 6**: +/- 200° (190°/s)
  - **Repeatability**: 0.10 mm
  - **Tool coupling flange**: ISO 9409 - 1 - A 125
  - **Robot weight**: 108 kg
  - **Protection class**: IP65
  - **Mounting position**: Floor / Ceiling
  - **Operating Areas**
    - **A**
    - **B**
    - **C**
    - **D**
    - **E**
  - **Suggested applications**: - Assembly
    - Handling / Packaging
    - Machine Tending
    - Measuring / Testing
    - Spot Welding

---

**Best-in-class Hollow Wrist**

- **NJ4 170 - 2.5**
- **NJ4 170 - 2.9**
- **NJ4 175 - 2.2**
**Model:**

<table>
<thead>
<tr>
<th>Number of axes</th>
<th>Maximum wrist payload</th>
<th>Additional load on forearms</th>
<th>Maximum horizontal reach</th>
<th>Torque on axis 4</th>
<th>Torque on axis 5</th>
<th>Torque on axis 6</th>
<th>Stroke (Speed)</th>
<th>Repeatability</th>
<th>Tool coupling flange</th>
<th>Robot weight</th>
<th>Protection class</th>
<th>Mounting position</th>
<th>Operating Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ4 220 - 2.4</td>
<td>6</td>
<td>250 kg</td>
<td>25 kg</td>
<td>2417 mm</td>
<td>1923 Nm</td>
<td>860 Nm</td>
<td>+/- 180° (100°/s)</td>
<td>+/- 0.15 mm</td>
<td>ISO 9409 - 1 - A 125</td>
<td>1260 kg</td>
<td>IP65</td>
<td>Floor / Ceiling</td>
<td>A, B, C, D, E</td>
</tr>
<tr>
<td>NJ4 220 - 2.7</td>
<td>6</td>
<td>350 kg</td>
<td>25 kg</td>
<td>2738 mm</td>
<td>1923 Nm</td>
<td>860 Nm</td>
<td>+/- 180° (100°/s)</td>
<td>+/- 0.15 mm</td>
<td>ISO 9409 - 1 - A 160</td>
<td>1350 kg</td>
<td>IP65</td>
<td>Floor / Ceiling</td>
<td>A, B, C, D, E</td>
</tr>
</tbody>
</table>

**Suggested applications:**

- Assembly
- Handling / Packaging
- Machine Tending
- Measuring / Testing
- Spot Welding

**A proven innovative solution for spot welding applications**

**NJ4 220 - 2.4**  
**NJ4 220 - 2.7**
TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of axes</th>
<th>Maximum wrist payload</th>
<th>Additional load on forearm</th>
<th>Maximum horizontal reach</th>
<th>Torque on axis 4</th>
<th>Torque on axis 5</th>
<th>Torque on axis 6</th>
<th>Stroke (Speed)</th>
<th>Repeatability</th>
<th>Tool coupling flange</th>
<th>Robot weight</th>
<th>Protection class</th>
<th>Mounting position</th>
<th>Operating Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ4 220 - 3.0</td>
<td>6</td>
<td>220 kg</td>
<td>25 kg</td>
<td>3850 mm</td>
<td>1350 Nm</td>
<td>165 Nm</td>
<td>855 Nm</td>
<td>+/- 180° (90°/s)</td>
<td>+/- 0.15 mm</td>
<td>ISO 9409-1 - A 160</td>
<td>2805 kg</td>
<td>IP65</td>
<td>Floor</td>
<td>A: 3685 mm</td>
</tr>
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<td></td>
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<td></td>
<td></td>
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<td>B: 3685 mm</td>
</tr>
<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ISO 9409-1 - A 160</td>
<td></td>
<td></td>
<td></td>
<td>C: 3703 mm</td>
</tr>
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<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D: 3703 mm</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ISO 9409-1 - A 200</td>
<td>1975 kg</td>
<td>IP65</td>
<td></td>
<td>E: 804 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>-181 mm</td>
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<tr>
<td>NJ4 270 - 2.7</td>
<td>6</td>
<td>270 kg</td>
<td>25 kg</td>
<td>3850 mm</td>
<td>1664 Nm</td>
<td>165 Nm</td>
<td>834 Nm</td>
<td>+/- 180° (90°/s)</td>
<td>+/- 0.15 mm</td>
<td>ISO 9409-1 - A 160</td>
<td>2805 kg</td>
<td>IP65</td>
<td>Floor</td>
<td>A: 3685 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>B: 3685 mm</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ISO 9409-1 - A 160</td>
<td></td>
<td></td>
<td></td>
<td>C: 3703 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D: 3703 mm</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ISO 9409-1 - A 200</td>
<td>1975 kg</td>
<td>IP65</td>
<td></td>
<td>E: 804 mm</td>
</tr>
</tbody>
</table>

Suggested applications:
- Assembly
- Handling / Packaging
- Machine Tending
- Measuring / Testing
- Spot Welding

Strong mechanical structure for Hollow Wrist high payload robots

(*) This dimension is negative because the wrist center can not reach positions below the floor level.
**Suggested applications**
- Assembly
- Handling / Packaging
- Machine Tending
- Measuring / Testing
- Spot Welding

### TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>NJ4 165 - 3.4 SH</th>
<th>NJ4 210 - 3.1 SH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of axes</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Maximum wrist payload</td>
<td>165 kg</td>
<td>210 kg</td>
</tr>
<tr>
<td>Additional load on forearm</td>
<td>55 kg</td>
<td>25 kg</td>
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<tr>
<td>Maximum horizontal reach</td>
<td>3277 mm</td>
<td>3168 mm</td>
</tr>
<tr>
<td>Torque on axis 4</td>
<td>108 Nm</td>
<td>151 Nm</td>
</tr>
<tr>
<td>Torque on axis 5</td>
<td>411 Nm</td>
<td>687 Nm</td>
</tr>
<tr>
<td>Torque on axis 6</td>
<td>637 Nm</td>
<td>687 Nm</td>
</tr>
<tr>
<td>Stroke (Speed)</td>
<td>+/- 180° (85°/s)</td>
<td>+/- 180° (85°/s)</td>
</tr>
<tr>
<td></td>
<td>+/- 180° (85°/s)</td>
<td>+/- 180° (85°/s)</td>
</tr>
<tr>
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<td>+/- 180° (85°/s)</td>
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<td>+/- 180° (85°/s)</td>
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<td>+/- 180° (85°/s)</td>
<td>+/- 180° (85°/s)</td>
</tr>
<tr>
<td>Repeatability</td>
<td>+/- 0.10 mm</td>
<td>+/- 0.10 mm</td>
</tr>
<tr>
<td>Tool coupling flange</td>
<td>ISO 9409 - 1 - A 160</td>
<td>ISO 9409 - 1 - A 160</td>
</tr>
<tr>
<td>Robot weight</td>
<td>1403 kg</td>
<td>1460 kg</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP65</td>
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<tr>
<td>Mounting position</td>
<td>Shelf</td>
<td>Shelf</td>
</tr>
<tr>
<td>Operating Areas</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NJ4 165 - 3.4 SH**

**NJ4 210 - 3.1 SH**

The Hollow Wrist shelf version
Enabling equipment for increased functionality

**Slides**
Fast and precise slides, perfectly managed with the C5G controller, ensure maximum flexibility by widening the operating area of the robot.

**External Axis**
A wide range of external axes, with motors from 0.75 Nm to 33 Nm that are seamlessly integrated with the C5G controller, allowing you to fully manage your automation needs.
Positioner modules

**MP 500 - MP 1000**
**MP 1250 - MP 2500 - MP 5000**

**Comau Robotics Product Range**

**Suggested applications**
- Positioning

**MP 5000 - MP 1000**
- **MP 1250 - MP 2500 - MP 5000**

**Technical Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>MP 500</th>
<th>MP 1000</th>
<th>MP 1250</th>
<th>MP 2500</th>
<th>MP 5000</th>
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<tbody>
<tr>
<td>Payload</td>
<td>500 kg</td>
<td>1000 kg</td>
<td>1500 kg</td>
<td>2500 kg</td>
<td>5000 kg</td>
</tr>
<tr>
<td>Max inertia</td>
<td>230 kgf m²</td>
<td>400 kgf m²</td>
<td>460 kgf m²</td>
<td>1120 kgf m²</td>
<td>2500 kgf m²</td>
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<tr>
<td>Static torque on main axis</td>
<td>900 Nm</td>
<td>1000 Nm</td>
<td>1050 Nm</td>
<td>1800 Nm</td>
<td>4000 Nm</td>
</tr>
<tr>
<td>Turnover moment (Max moment of flexure)</td>
<td>2000 Nm</td>
<td>3000 Nm</td>
<td>3500 Nm</td>
<td>7000 Nm</td>
<td>30000 Nm</td>
</tr>
<tr>
<td>Max axial thrust</td>
<td>1150 daN</td>
<td>1300 daN</td>
<td>1500 daN</td>
<td>3000 daN</td>
<td>1300 daN</td>
</tr>
<tr>
<td>Acceleration time</td>
<td>0.80 s</td>
<td>0.75 s</td>
<td>0.80 s</td>
<td>0.75 s</td>
<td>0.50 s</td>
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<tr>
<td>Output rotation speed</td>
<td>150 (°/s)</td>
<td>150 (°/s)</td>
<td>150 (°/s)</td>
<td>100 (°/s)</td>
<td>27 (°/s)</td>
</tr>
<tr>
<td>Repeatability at 500 mm</td>
<td>0.05 mm</td>
<td>0.06 mm</td>
<td>0.06 mm</td>
<td>0.06 mm</td>
<td>0.10 mm</td>
</tr>
<tr>
<td>Motors</td>
<td>AC brushless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection class</td>
<td>IP67</td>
<td></td>
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</tr>
<tr>
<td>Weight</td>
<td>53 kg</td>
<td>80 kg</td>
<td>90 kg</td>
<td>240 kg</td>
<td>3000 kg</td>
</tr>
<tr>
<td>Flange diameter - D</td>
<td>180 mm</td>
<td>270 mm</td>
<td>270 mm</td>
<td>600 mm</td>
<td>900 mm</td>
</tr>
</tbody>
</table>

**Diagram:** Payload – P (kg) / Distance X (mm) from center of gravity related to flange plane.

**Diagram:** Payload – P (kg) / Distance Y (mm) from center of gravity related to rotation axis.

Comau Robotics Product Range
## Suggested applications

- Positioning

<table>
<thead>
<tr>
<th>Model</th>
<th>PTS ORB 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload</td>
<td>1000 kg</td>
</tr>
<tr>
<td>Max inertia</td>
<td>400 kgf2</td>
</tr>
<tr>
<td>Static torque on main axis</td>
<td>1000 Nm</td>
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<tr>
<td>Turnover moment</td>
<td>2500 Nm</td>
</tr>
<tr>
<td>Max axial thrust</td>
<td>1150 daN</td>
</tr>
<tr>
<td>Acceleration time</td>
<td>0.75 s</td>
</tr>
<tr>
<td>Output max rotation speed</td>
<td>150 °/s</td>
</tr>
<tr>
<td>Output max rotation speed 2</td>
<td>90 °/s</td>
</tr>
<tr>
<td>Repeatability at 500 mm</td>
<td>0.06 mm</td>
</tr>
<tr>
<td>Motors</td>
<td>AC brushless</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP65</td>
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<tr>
<td>Weight</td>
<td>630 kg</td>
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<tr>
<td>Flange diameter - D</td>
<td>288 mm</td>
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</table>

### Technical Specifications

**PTS ORB1000**

- Orbital single lathe positioner

![Diagram: Payload - P (kg) / Limit position of center of gravity related Axis X](image)

![Diagram: Payload - P (kg) / Limit position of center of gravity related Axis Y](image)
## Suggested applications

- **Positioning**

<table>
<thead>
<tr>
<th>Model</th>
<th>PTDO 750 - 1.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload</td>
<td>2x750 kg</td>
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<tr>
<td>Static torque on main axis</td>
<td>1000 Nm</td>
</tr>
<tr>
<td>Approx. time for 180° changeover</td>
<td>3.7 s</td>
</tr>
<tr>
<td>Max load difference between stations</td>
<td>350 kg</td>
</tr>
<tr>
<td>Max inertia</td>
<td>270 kgm²</td>
</tr>
<tr>
<td>Main axis rotation angle</td>
<td>from -90° to +90°</td>
</tr>
<tr>
<td>Secondary axis rotation angle</td>
<td>from -180° to +180°</td>
</tr>
<tr>
<td>Repeatability at 500 mm</td>
<td>0.15 mm</td>
</tr>
</tbody>
</table>

| L1  | 2720 mm |
| L   | 1430 mm |
| H   | 1200 mm |
| L1  | 1405 mm |
| L   | 1200 mm |
| H   | 1400 mm |
| L1  | 1430 mm |

### TECHNICAL SPECIFICATIONS

- **Payload**: 2x750 kg
- **Static torque on main axis**: 1000 Nm
- **Approx. time for 180° changeover**: 3.7 s
- **Max load difference between stations**: 350 kg
- **Max inertia**: 270 kgm²
- **Main axis rotation angle**: from -90° to +90°
- **Secondary axis rotation angle**: from -180° to +180°
- **Repeatability at 500 mm**: 0.15 mm

---

**Diagram**: Payload x (kg) Distance y (mm) from center of gravity system’s rotation axis
Comau Robotics Product Range

Double action vertical positioners

PTDV 250 - 500 - 750 - 850

Suggested applications

• Positioning
  PTDV 250: 1.1 - 1.6
  PTDV 500: 1.2 - 2.0 / 1.2 - 2.5
  PTDV 750: 1.2 - 2.5
  PTDV 850: 1.2 - 2.5

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>250</th>
<th>500</th>
<th>750</th>
<th>850</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload</td>
<td>50/35 kg</td>
<td>50/35 kg</td>
<td>50/35 kg</td>
<td>50/35 kg</td>
</tr>
<tr>
<td>Static torque on main axis</td>
<td>250/300 Nm</td>
<td>250/300 Nm</td>
<td>250/300 Nm</td>
<td>250/300 Nm</td>
</tr>
<tr>
<td>Approx. time for 180° changeover</td>
<td>5.5 s</td>
<td>4.9 s</td>
<td>5.3 s</td>
<td>4.7 s</td>
</tr>
<tr>
<td>Max load difference between stations</td>
<td>250 kg</td>
<td>500 kg</td>
<td>500 kg</td>
<td>750 kg</td>
</tr>
<tr>
<td>Main inertia</td>
<td>356 kgm²</td>
<td>356 kgm²</td>
<td>356 kgm²</td>
<td>356 kgm²</td>
</tr>
<tr>
<td>Main axis rotation angle</td>
<td>from -90° to +90°</td>
<td>from -90° to +90°</td>
<td>from -90° to +90°</td>
<td>from -90° to +90°</td>
</tr>
<tr>
<td>Secondary axis rotation angle</td>
<td>0.15 mm</td>
<td>0.18 mm</td>
<td>0.20 mm</td>
<td>0.15 mm</td>
</tr>
<tr>
<td>Repeatability at 500 mm</td>
<td>0.15 mm</td>
<td>0.18 mm</td>
<td>0.20 mm</td>
<td>0.15 mm</td>
</tr>
</tbody>
</table>

Diagram: Payload - P (kg) / Distance Y (mm) from center of gravity related to rotation axis.

Model PTDV 250 - 500 - 750 - 850
## Rotary tables

### Comau Robotics Product Range

### Technical Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>TR 1000</th>
<th>TR 3000</th>
<th>TR 4500</th>
<th>TR 6000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload</td>
<td>1000 kg</td>
<td>3000 kg</td>
<td>4500 kg</td>
<td>6000 kg</td>
</tr>
<tr>
<td>Max inertia</td>
<td>1400 kgm²</td>
<td>3500 kgm²</td>
<td>7350 kgm²</td>
<td>10800 kgm²</td>
</tr>
<tr>
<td>Static torque on main axis</td>
<td>565 Nm</td>
<td>1500 Nm</td>
<td>4500 Nm</td>
<td>5600 Nm</td>
</tr>
<tr>
<td>Turnover moment (Max moment of flexure)</td>
<td>10000 Nm</td>
<td>11000 Nm</td>
<td>45000 Nm</td>
<td>75000 Nm</td>
</tr>
<tr>
<td>Approx. time for 180° changeover</td>
<td>3.5 s</td>
<td>3.8 s</td>
<td>4.3 s</td>
<td>5.0 s</td>
</tr>
<tr>
<td>Main axis rotation angle</td>
<td>60°/r</td>
<td>60°/r</td>
<td>55°/r</td>
<td>30°/r</td>
</tr>
<tr>
<td>Repeatability at 500 mm</td>
<td>0.1 mm</td>
<td>0.15 mm</td>
<td>0.15 mm</td>
<td>0.3 mm</td>
</tr>
<tr>
<td>Tilting angle up to 10°</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Availability in single-turn/multi-turn</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

### Suggested applications

- Positioning
  - TR 1000
  - TR 3000
  - TR 4500
  - TR 6000

### Diagram: Payload – P (kg) / Distance X (mm) from center of gravity related to rotation axis.

- Diagram: Payload – P (kg) / Distance X (mm) from center of gravity related to rotation axis.
As simple as a touch
Enhanced ergonomics, wrist fatigue reduction, ease of use, reduced overall weight, increased manageability. The power is in your hands.

Style and design
- Intensive design study and attention to detail to guarantee enhanced ergonomics
- Enabling keys on the back reduce wrist fatigue and ensure easier use of the central keyboard area
- It can be handled in multiple ways to reduce operator fatigue at work
- Lightweight and high manoeuvrability
- The practical upper handle enables the TP to be hung and used even when far from the controller
- The ease of use allows quick learning by the operator via a “natural evolution”

Hardware and software architecture
- Improved graphics for more intuitive use
- Faster USB port

Display and keyboard
- 7” touch screen provides simplified and faster interaction
- Optimized operations, even when using only the keyboard, for enhanced use in hard production environments
- Simplified keyboard designed to locate keys more easily during the programming phase thanks to special tactile marks on the membrane
- Improved keyboard feedback when buttons are pressed

Corax Robotics Product Range
TEACH PENDANT
All your needs are under control

Fast processing, modular system for drive units, I/O and fieldbus, free and ergonomic space to integrate application functions, compact dimensions. Everything you need is under control.

C5G - C5Compact - R1C - R1C-4

High processing power
The controller uses the latest generation of industrial PC board with a CPU that is capable of obtaining high performance with low energetic consumption.

Energy saving
- Lowest consumption in stand-by, low consumption during operations
- Cooling system is proportional to control unit’s operations
- Energy network recover system with a high dynamic content program

Flexibility and reliability
The new generation of field bus, based on Hilscher technology and integrated by B&R in their remote I/O X20 family, guarantees a flexible and reliable interface in every customer application. Modular interfaces are available, such as digital I/O, analog I/O as well as the position transducer encoder, resolver, etc.

RobotSAFE
Safe robot controller models allow a safety-rated management of the robot motion (joint or cartesian mode) and speed, offering advantages in terms of smaller layouts and the absence of physical fences. Using sensors, we ensure the safety of your automatic cell without affecting your productivity.

Modular and expandable
Modular system for drives with up to 13 axes in the C5G cabinet

Simultaneous management of several robots and or additional axes
Hardware architecture designed to manage up to 16 axes in “multi-arm” configuration with application box

*Depending on the robot model

Functional diagram (CSG case)
Main technical data
- Dimensions: 550x500x550 mm
- Weight: 100 kg
- Working temperature: 5 to 45°C
- Humidity: from 5% to 95%, without condensation
- Extended line power range: 400 to 500V
- Available for: Racer7, NS

Fast processing with dual core architecture
• Modular system for drives unit, I/O and fieldbus
• Free and ergonomic space for application function integration
• Energy saving system
- Also available in safe version
- Also available in open controller version
- Runs up to 8 axes with application box

C5G

Main technical data
- Dimensions: 800x500x1100 mm
- Weight: 125 kg
- Working temperature: 5 to 45°C (5 to 55°C with cooler)
- Humidity: from 5% to 95%, without condensation
- Extended line power range: 400 to 500V
- Available for: Racer7, NS, NJ, NJ4 and PAL (all models)

• 65% smaller than the standard version, lighter and easier to integrate
• Power saving, 50% less installed power than the standard version
• Runs up to 8 axes depending on the robot model
- Also available in safe version
- Also available in open controller version

C5Compact

R1C - R1C-4

• 6 axes (R1C) or 4 axes (R1C-4), equipped with brushless synchronous motors and high resolution encoder
• Interfaces with the most common field bus and communication protocols
• Can become an Ethernet network node to facilitate remote updates and diagnostics
• Programmable via software and by the Comau Teach Pendant

Main technical data
- Dimensions: 286x427x498 mm
- Weight: 23 kg
- Working temperature: 5 to 45°C
- Humidity: from 5% to 95%, without condensation
- Extended line power range: 230V ±10%
- R1C available for: Racer3, Racer5 / R1C-4 available for: Rebel-S
Software functionalities

Cooperative Motion: geometrically coordinated motion management for two robots, or for a robot and a positioner, in which the trajectory and speed of the worker robot are defined referring to the moving positioner (for C5G only)

Collision Detection: emergency stop of the robot in case of a collision protects the mechanical equipment

Automatic Payload Identification: automatic identification of payload optimizes the robot movements

Joint Soft Servo: enables individual robot joints to yield to external forces as required by each specific application (for C5G only)

Synchronized Arms: synchronized movement management between two robots or between a robot and other axes groups like the positioner. This means that all the axes start and stop at the same time (for C5G only)

Sensor Tracking: applies a real time correction of the Cartesian trajectory based on information from an external sensor

Conveyor Tracking: tracks workpieces on linear and circular conveyors (reading the position from an external transducer)

Weaving Motion: weaving is an oscillating motion superimposed on a Cartesian trajectory used to distribute material in gaps with large cross sections relative to the material bead. It is used for arc-welding applications (for C5G only)

Robot Absolute Accuracy: an algorithm that enables the adaptation of the actual kinematics to a theoretical model that has been programmed off-line (for C5G only)

Speed Control for Arm: an alternative way to control the motion of an axis under speed control (for C5G only)

Multipass: a trajectory can be executed several times keeping a certain distance in relation to the programmed trajectory in arc-welding applications (for C5G only)

Palletizing Motion: this optional feature allows any anthropomorphic or parallelgram robot with a 6-axis, spherical wrist to be used as a palletizer. The robot will always keep the flange parallel, in a downward position to the floor, unless it is not used

Interference Regions: limits the robot working space by dynamically defining regions of various shapes (for C5G only)

Advanced Interference Regions: automatic handling of inter-blocks

RoboSAFE Cartesian: the RoboSAFE Cartesian SW primarily controls that all the monitoring points of the Robot kinematics are confined or external to a 3D area defined by the user. This option is suitable only Safe version of Comau the control unit (for C5G only)

Quick Stop: the robot decreases the stopping distance 50% in case of emergency (for C5G only)

PDL2 Read/Write on TCP/IP: enables communication from external devices to the internal PDL2 program

VP2.Builder: VP2.Builder helps the programmer, who developing a user interface with the VP2 language, to easily create VP2 objects and edit their properties (for example, the position on a pane, the color, the text, etc.)

Axes Pursuit: makes it possible to move one or more axes belonging to one arm while allowing one or more axes of a different arm to pursue it, and works the same Automatic and Programming mode (for C5G only)

Low Resolution Euler’s Angles: lower the precision in the orientation angles on axes X and Y. It is useful to manipulate points such as POSITION type

Wrist Singularity Management: an optional function for spherical wrist SMART family robots that helps programming in cases where there could be motion through the wrist singularity. It enables the trajectory planner to evaluate whether or not to automatically modify the “W” attitude flag and evaluation modality
Application software

SmartGlue: the SmartGlue application package provides full support for material delivering, gluing and sealing processes.

SmartHand: this application package provides full management for tools such as grippers that are used for material handling and attach to the end of the robot arm.

SmartArc: SmartArc incorporates a dedicated application software that allows the operator to set welding parameters and manage the complete system from the Teach Pendant, by means of a dedicated user interface.

SmartTool Change: this software allows you to easily manage your Tool Change Systems. Simply select the devices to manage and the software application does the rest with no need for integration or additional programming code.

SmartStud: the SmartStud software application features a set of ready-to-use technical instructions to manage your stud welding systems and the most common types of fieldbuses, with no need for process integration or additional programming code.

SmartIP Interpress: SmartIP software handles the complete interpress process and in particular, features a smart and user-friendly interface for managing process cycles including:

- Interpress transfer cycles
- Line unloading cycles from the centering table
- Hand-over cycles with part overturning
- Cycles with part transfer onto intermediate table
- Double pick-up and double deposit cycles

SmartRivet: The SmartRivet software library supplies a set of ready-to-use technical instructions to manage your rivet system processes, with no need for process integration or code programming.

SmartSense: VP2 interface for sensor tracking application.

SmartSpot: The SmartSpot application package provides a full support and management of resistance welding technological process.

PC software

Comau Robosim PRO: 3D simulation software for offline programming. It gives you the possibility to simulate the behavior of our robots with other equipment and also to extract the pd2 programs.

Smart Payload: this tool can be used for checking that the self-determined values fit in the (static and dynamic) loading bend of the robot.

VP2, Frames: VP2, Frames is an application program to be executed on a PC allowing, when connected to a Controller, to display VP2 pages on the screen of the PC as they would be shown on the Teach Pendant device. VP2, Frames is particularly useful during the development of a program written in VP2 (see also VP2, Builder).

WinC5G Full and WinR1C Full: they are an extension of the standard PC interface (belonging to the default software version) to the robot controller.
PRESS automation

Complete turn-key solutions for press lines
The PRESS Excellence Center

The know-how of Comau Robotics results from a long and well-established experience gained in the automation of the press lines in traditional cold stamping and modern hot forming methods.

Since 1984, Comau has been developing highly efficient solutions with its dedicated PRESSbooster robot family and Smart IP Interpress software. During these years, Comau has improved its skills and gained experience in automatic press lines, making Comau a global leader in its sector.

With different levels of automation and customized products, Comau's turnkey solutions grant high production flexibility and a quick return on investment.

### PRESS automation benefits

<table>
<thead>
<tr>
<th>Increased production rate</th>
<th>Complete robot range and accessories</th>
<th>Faster start of production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible and modular</td>
<td>Higher line reliability: over 97% for complete line</td>
<td>Easily switch to manual mode</td>
</tr>
<tr>
<td>Short return on investment</td>
<td>Upgrade of manual press line with robots</td>
<td></td>
</tr>
</tbody>
</table>

With diff erent levels of automation and customized products, Comau’s turnkey solutions grant high production fl exibility and a quick return on investment.
Comau Robotics provides different levels of automation, performance and investment, from a portion of the line to the automation of the entire press line, according to instantaneous press speed, automation production rate increases, depending on the robot type and management software.

Tandem press lines classification

- **Basic solution**
  - Performance with standard handling robots (lower investment)

- **Performance solution**
  - Top performance with dedicated robots and sync software

- **High performance solution**
  - Higher performance with dedicated machines and sync software

<table>
<thead>
<tr>
<th>PRESS SIZE (T)</th>
<th>PRESS DISTANCE (m)</th>
<th>COMAU ROBOT TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1: 1800 T XL and XXL</td>
<td>7.8 to 8.8</td>
<td>NJ100-3.2 P</td>
</tr>
<tr>
<td>G1: 1800 T XL and XXL</td>
<td>5.0 to 7.0</td>
<td>NJ100-3.2 P</td>
</tr>
<tr>
<td>G1: 1800 T L</td>
<td>4.0 to 6.0</td>
<td>NJ100-3.2 P</td>
</tr>
</tbody>
</table>

Destacking station – Front of Line (FOL)
Robots handle blanks from pallet to leading press.
Station can be equipped with optional cleaning system.
Comau can provide a destacking station that is fully integrated in existing lines.

Automatic Tool Changer (ATC)
Sliding carts, rotating tables, stationary tables.
For high speed die change and ergonomics.

EOL station with manual or automatic racking station
Station behind last press with 1 or 2 robots handling parts from die to conveyor.
Parts can be handled into containers:
- Manually by operators
- Automatically by additional racking robots
Comau also offers automatic racking stations as a modular upgrade to existing lines.

Press-to-press handling stations with:
- Part TURNOVER option with 2 robots
- INTERPRESS with 1 robot
Fitting to single or double action press.
Our Customer Services

Our business is taking care of your business

Customer satisfaction is always a top priority of the Comau Robotics strategy. We provide prompt and flexible service close to customers throughout the life cycle of their equipment. We offer a complete range of services to maximize the performance of Comau’s solutions.

Training at either Comau Training Center or customer’s sites with multi-language sessions.

On-line support with remote diagnostics and aids through Comau new robot control connection capacity.

Activities developed by experienced technicians at customer’s site, delivery of spare parts, repairs and re-conditioning services and worldwide maintenance plans.
Offered Services

Spare parts and logistics
Professional consultancy and flexible solutions for your spare parts logistics and stock.
Support and management of parts, exchange units and repairs with a reliable response time in order to assure continuous production.

Training
Education and training with learning paths ranging from «basic» to «advanced» levels supplied at our Training Center, at the customer premises and with our new web-base interactive platform.
A complete training catalogue including basic use and programming, advanced programming, diagnostics and maintenance, application packages and more.

Technical assistance and agreements
Local teams to support customers, provide process reliability, improve product performances and maintain investment value.
Help Desk support, remote diagnostics and fault analysis by highly skilled engineers to support troubleshooting and address critical emergency situations.
A range of service agreement solutions to cover any specific need.

Advanced services, refurbishment and upgrades
Analysis of customer needs and process improvement packages that combine experience and knowledge with new technologies to enhance system performance or reconfigure existing applications.
Industrial engineering support, upgrades, new software versions and hardware renewal and reconditioning.
Spare Parts and Logistics

Introduction
- Spare parts and Repair services available for at least 10 years following the discontinuation of production
- HQ warehouse with 20,000 available items
- Special packages of recommended spare parts and/or consignment stock based on installed robot c/o the customers
- Full one year warranty on all spare parts
- Fast repairs via an exchange service

Robot arm spare parts
- Immediate availability of wrist, reduction gears and balancing groups
- Wrist repair and revision
- Reduction gear repair and revision
- Motor repair and revision
- Test benches for measurements and lost motion/backlash check

Electronic spare parts
- Electronic boards repair and complete revision
- Servo drive modules repair and complete revision
- Teach pendant repair and complete revision
- Software upgrades

Logistics
- Urgent delivery (within 24 hours in most Countries)
- Spare parts available directly in 12 Countries through local COMAU sites
- HUB Logistic Centers in Italy, Brazil, US and China

Electronic boards repair and complete revision
Reduction gear repair and complete revision
Motor repair and revision
Teach pendant repair and complete revision
Software upgrades

SPARE PARTS AND LOGISTICS

Meet the Team
A robot for any challenge

Motor behind imagination

Spare parts and logistics

Robot arm spare parts

Electronic spare parts

Logistics

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Teach pendant repair and complete revision
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Urgent delivery (within 24 hours in most Countries)
Spare parts available directly in 12 Countries through local COMAU sites
HUB Logistic Centers in Italy, Brazil, US and China
Personalized solutions for efficient results

Our courses mix in a coherent way:
• Challenging practical activities
• Tools
• Theoretical content

We adopt an innovative learning methodology, combining classroom training, business experience and multimedia tools.

Solution 1: e-learning + in-person training

E-learning - to explore processes and behaviours, practice, reflect and receive feedback
• Theoretical content (videos, animations, texts)
• Practical content (exercises and simulations)
• In-depth analysis
• Test + feedback

In-person training - to share knowledge and practice on robotic systems
• Hands-on activities and real exercises in Comau offices
• Reflection and sharing with Comau experts

Solution 2: in-person training with multimedia

During the classroom training, teacher and participants can share content, exercises and tests through multimedia tools (smart whiteboard, tablet and PC).

Multimedia classroom - content shared with multimedia tools
• Theoretical content (videos, animations, texts)
• Practical content (exercises and simulations)
• In-depth analysis
• Test + feedback

In-person training - to share knowledge and practice on robotic systems
• Hands-on activities and real exercises in Comau offices
• Reflection and sharing with Comau experts

Comau Web Academy

The Comau Web Academy manages the Comau on-line training offer. The courses are accessible from PC and tablet.

The participants can access their registered courses whenever they wish and can pause and resume their use of content according to their needs. Each course consists of a training part and an evaluation part (test) to verify the progressive learning of the content.

At the end of an on-line course a final test is scheduled and a certificate of attendance will be issued.

After completion, the content of each on-line course remains available on the Comau Web Academy platform. Materials for in-depth analysis are also available.

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In-person training - to share knowledge and practice on robotic systems
• Hands-on activities and real exercises in Comau offices
• Reflection and sharing with Comau experts
Comau has developed a mobile cell for training which is easily transportable and compatible with retractable robot. This helps minimize its size from 1140×940×1700 to 1140×940×970, which is optimal for transport.

The Mobile Training Cell performs basic and advanced programming exercises and processes management applications. Racer3, a six axis robot and the smallest of the Comau family, is optimal and comprehensive for learning the robotics basics from both a theoretical and practical point of view.

It is equipped with a camera mounted on the structure to permit the screening of the work area on the external monitor. This enables the teacher to manage the training of large groups and ensure an equal learning experience for all.

The perforated work surface makes it possible to assemble various options developed by Comau, thanks to an anchoring system with quick release pins which are available on the market. Therefore users will also be able to develop specific equipment (tools) based on their own needs, which can be easily installed on the Comau Mobile Training Cell.

An excellent tool for schools, universities and training and research centers.

You can’t come to us? The Mobile Training Cell will come to you!

The perfect solution for teaching the basics of robotics and industrial automation, wherever you want.

Features

‣ Transportable on euro pallet ISO2 size 1200x1000 mm
‣ Height of the Cell transport box 1110 mm
‣ Total weight 250 kg
‣ Compactible with retractable robot
‣ Equipped with small size Racer3 robot
‣ Height of the open Cell in working position 1700 mm
‣ Height of the collapsed Cell 970 mm
‣ Forkliftable
‣ Easy movement due to the wheels
‣ The work surface can be fitted with accessories to do programming exercises
‣ Transportable on commercial vehicles such as small vans
‣ Cell and robot power supply 230 Vac ± 10% 50-60 Hz (±2 Hz) 3 kW main switch rated current 16 A @ 250 Vac

TRAINING

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An excellent tool for schools, universities and training and research centers.
Technical Assistance and Agreements

Technical assistance is committed to support customers throughout the entire product life cycle of a robot by providing:

• Installation, commissioning and programming support
• Preventive maintenance, auditing and consultancy services to extend the Mean Time Between Failure (MTBF)
• Help Desk support, Remote Monitoring and Response Time services to reduce downtime (MTTR)

A complete Agreement Portfolio to meet the specific requirements of each single customer

Available agreement options

• Help desk from 8:00 to 17:00
• Intervention within 24 hours (8-12 optional), Italy restricted availability, one solar year
• Prepaid technical assistance hours packages (16 or 48) within one solar year
• Special discount 20% for maintenance during February-May and October-November
• Special discount: 10% off spare parts and 5% off repairs
• Optional refurbished spare parts (around 50% less expensive) depending on availability
• Shipping spare parts within the same day if order is made before 13:00
• Battery/Fan/Oil replacement packages: replacement advised every 2-3 years
• Warranty extension on Robot 1-3 years
• Warranty extension on Spare Part 12-18 months on service intervention (standard 6 months)
• “Slim” Warranty option (50% discount on spare parts during service intervention) - 1 year coverage
• IoT (Internet of Things) Remote monitoring - tool & service

A global team to serve local needs
Preventive Maintenance

Preventive maintenance

The purpose of preventive maintenance is to maintain the efficiency of the robot over time by retaining its original integrity. This helps to eliminate production stops caused by the failure to execute controls and calibrations that together form the basis for efficient operation.

To achieve this objective, Comau offers a set of maintenance agreements, tailored for the entire robot family, including the careful control of mechanics and electronics. A planned and scheduled preventive maintenance enables the identification of malfunctions and critical parts in need of replacement, which could compromise the reliability of the entire production line.

Preventive maintenance

- Check calibration position
- Check backlash and lost motion
- Visual check of lubricant leaks
- Check wiring harness
- Clean calibration references
- Clean robot
- Reset recovery position
- Specific intervention (depending on the Robot model)
- Fill out the maintenance card with relevant observations

Controls and activities (every 3 years)

- Replace gearbox lubricants
- Replace thrust bearing lubricant
- Grease bearings
- Specific intervention (depending on the Robot model)

ROBOT CONTROLLER C5G/C4G

Annual controls and activities

- Save user programs on USB
- Check fans and clean cooling system
- Control emergency button on the TP / on the Control (C4G)
- UPS & APC battery check (C5G) / CU battery (C4G)
- Check grounding strips
- Control connections, clamping connectors and screws
- Control main voltage (380/500 V +/- 15%)
- Control SDM voltage (C5G) / APS and FIA board voltage (C4G)
- Control NET filters voltages
- Check dial functionality of the TP
- Check selector functionality on TP
- Check general integrity of the system (C5G or C4G)
- Fill out the maintenance card with relevant observations
Comau Services is always by the Customer’s side to identify and implement innovative upgrades and refurbishment solutions to improve efficiency throughout the product lifecycle.

A refurbished robot is a used robot that has undergone an overhaul to return it to its original condition. This procedure prolongs its operational lifetime. After careful inspection, each robot is load tested for twenty-four hours. Refurbished robots are guaranteed 12 months after shipping date.

- Process improvement projects (in terms of Performance Efficiency and Cycle time)
- HW and SW upgrade
- Robot configuration upgrade
- Consultancy services
- Relocations and end-of-life services (Refurbishment)
- Total cost of ownership reduction
- Used Robot sale
Comau Robotics Product Range

Refurbishment Services

Components to be refurbished

- Application
- Loom and wiring harness replacement
- Axes 4-5-6 gearboxes replacement
- Wrist revision
- Spring bearings replacement
- Axis 2 motor revision
- Axis 2 gearbox replacement
- Axis 1 thrust bearing replacement
- Axis 3 motor revision
- Axis 3 gearbox replacement
- Axis 1 thrust bearing replacement
- Axis 2 thrust bearing replacement
- Axis 1 thrust bearing replacement
- Axis 1 thrust bearing replacement
- Visual inspection of all parts
- Lubrication & backlash check

Components to be refurbished

- Axes 4-5-6 gearboxes replacement
- Wrist revision
- Spring bearings replacement
- Axis 2 motor revision
- Axis 2 gearbox replacement
- Axis 1 thrust bearing replacement
- Axis 1 thrust bearing replacement
- Axis 1 thrust bearing replacement
- Visual inspection of all parts
- Lubrication & backlash check

Always

As necessary
Long term experience is engraved into Comau’s history; experience is continuously driving Comau to widen its offer, to meet Customers’ improvement targets by anticipating Smart Factory requirements and accomplishing World Class Manufacturing standards.
Made in Comau