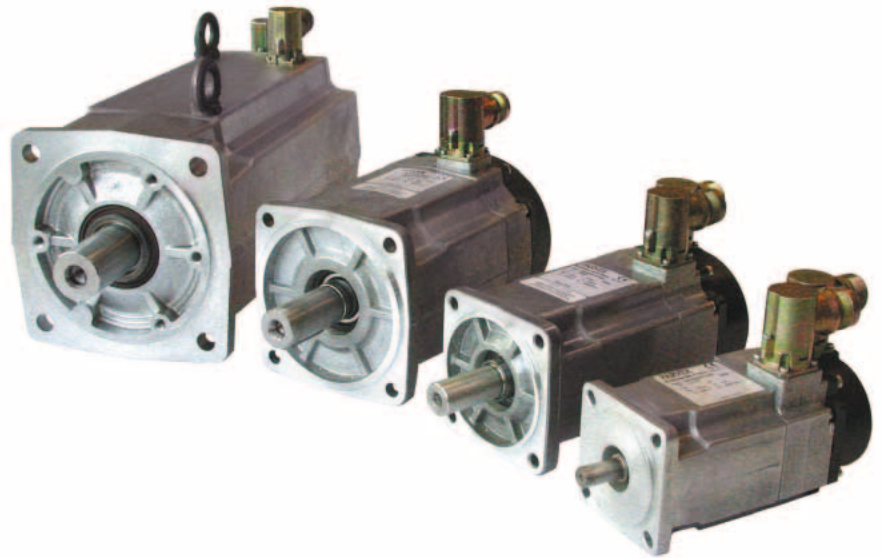
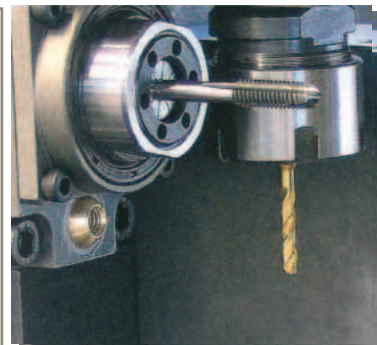


aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



## NV Series

High Speed Servo Motor



**PRIMERA**  
Technological **PRODUCT AND SERVICE** Solutions  
**Parker** Tecnologias de Movimento,  
DISTRIBUTOR Controle e Refrigeração  
Your local authorized Parker distributor  
**ENGINEERING YOUR SUCCESS**



**WARNING – USER RESPONSIBILITY**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.
- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.



## High Speed Servo Motor - NV Series

|                                |          |
|--------------------------------|----------|
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| Feedback Cable.....            | 10       |

# Parker Hannifin

## The global leader in motion and control technologies

### A world class player on a local stage

#### Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

#### Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

#### Manufacturing to Meet Our Customers' Needs

Parker is committed to meeting the increasing service demands that our customers require to succeed in the global industrial market. Parker's manufacturing teams seek continuous improvement through the implementation of lean manufacturing methods throughout the process. We measure ourselves on meeting our customers' expectations of quality and delivery, not just our own. In order to meet these expectations, Parker operates and continues to invest in our manufacturing facilities in Europe, North America and Asia.

#### Electromechanical Worldwide Manufacturing Locations

##### Europe

Littlehampton, United Kingdom  
Dijon, France  
Offenburg, Germany  
Filderstadt, Germany  
Milan, Italy

##### Asia

Wuxi, China  
Chennai, India

##### North America

Rohnert Park, California  
Irwin, Pennsylvania  
Charlotte, North Carolina  
New Ulm, Minnesota



Offenburg, Germany

#### Local Manufacturing and Support in Europe

Parker provides sales assistance and local technical support through a network of dedicated sales teams and authorized technical distributors throughout Europe.

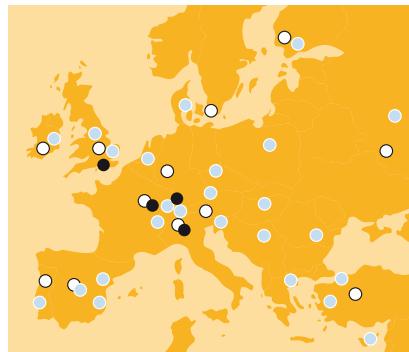
For contact information, please refer to the Sales Offices on the back cover of this document or visit [www.parker.com](http://www.parker.com)



Milan, Italy



Littlehampton, UK



- Electromechanical Manufacturing
- Parker Sales Offices
- Distributors



Dijon, France

# High Speed Servo Motor - NV Series

## Overview

### Description

The NV series is a range of compact servomotors specially designed for high speed operation. NV motors are balanced with high accuracy to minimize the level of vibration and to increase their service life, making them particularly suitable for auxiliary spindle applications on machine tools. NV motors feature high dynamic performance and torque densities, while taking advantage of a large variety of options and customization possibilities. Available in kit version on request

### Advantages

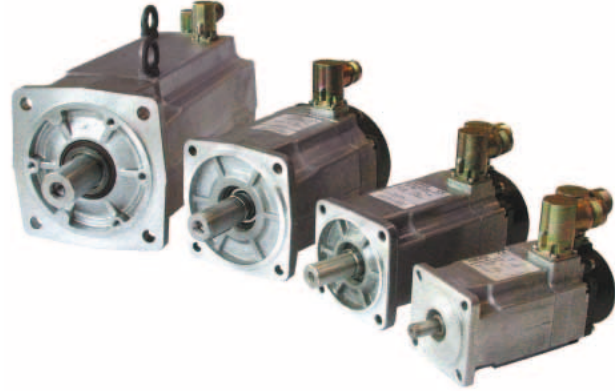
- High-Speed capabilities, precise and accurate positioning, high dynamic performance
- Compact and robust
- Design flexibility

### Application

- Tooling Machines

### Features

- **Mounting**
  - Flange with clearance holes
- **Mechanical interface**
  - Solid smooth shaft
- **Feedback sensor**
  - 2 pole resolver (standard)
  - Absolute encoders: EnDat, Hiperface, Posivex (options)
  - Without sensor (on request)
- **Connections**
  - Connectors
  - Terminal box (fan cooled motors)
- **Options**
  - Thermal protection (PTC, Thermo Switch or KTY)



### Technical Characteristics - Overview

|  |  |
|--|--|
| <b>Motor type</b>                            | Synchronous permanent magnet servomotors   |
| <b>Poles number</b>                          | 10   |
| <b>Voltage supply</b>                        | 230 VAC or 400 VAC   |
| <b>Power range</b>                           | 0.7...12 kW  |
| <b>Torque range</b>                          | 0.4...11.5 Nm  |
| <b>Speed range</b>                           | 7000...17 000 min <sup>-1</sup>  |
| <b>Ingress protection level (IEC60034-5)</b> | <ul style="list-style-type: none"> <li>• IP64 (standard)</li> <li>• IP65 (option)</li> </ul>                       |
| <b>Cooling method</b>                        | <ul style="list-style-type: none"> <li>• Natural ventilation (standard)</li> <li>• Fan cooling (NV860V)</li> </ul> |
| <b>Temperature class (IEC60034-1)</b>        | Class F  |

## Technical Data

| Rated Speed<br>$N_N$<br>[min <sup>-1</sup> ]           | Stall Torque<br>$M_0^{(1)}$<br>[Nm] | Rated Torque<br>$M_N$<br>[Nm] | Stall Current <sup>(1)</sup><br>$I_0$<br>[A <sub>RMS</sub> ] | Rated Current<br>$I_N$<br>[A <sub>RMS</sub> ] | Rated power<br>$P_N$<br>[kW] | Moment of Inertia<br>$J$<br>[kgmm <sup>2</sup> ] | Product Code |   |   |   |   |   |   |   |   |   |   |  |
|--|-------------------------------------|-------------------------------|--|---|------------------------------|--|--------------|---|---|---|---|---|---|---|---|---|---|--|
| <b>230 VAC supply voltage - single or three-phased</b> |                                     |                               |  |   |                              |  |              |   |   |   |   |   |   |   |   |   |   |  |
| 17000  | 0.9                                 | 0.41                          | 5.13   | 2.78  | 0.7                          | 73.4   | NV310E       | ■ | W | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 0 |  |
| <b>400 VAC supply voltage - three-phased</b>           |                                     |                               |  |   |                              |  |              |   |   |   |   |   |   |   |   |   |   |  |
| 14000  | 1.9                                 | 0.95                          | 5.25   | 2.87  | 1.39                         | 290  | NV420E       | ■ | I | ■ | ■ | ■ | ■ | ■ | ■ | 0 |   |  |
| 11000  | 2.5                                 | 1.3                           | 5.63   | 3.48  | 1.5                          | 426  | NV430E       | ■ | H | ■ | ■ | ■ | ■ | ■ | ■ | 0 |   |  |
| 11000  | 3.5                                 | 1.6                           | 9.86   | 5.02  | 1.8                          | 900  | NV620E       | ■ | J | ■ | ■ | ■ | ■ | ■ | ■ | 0 |   |  |
| 10000  | 5.5                                 | 1.9                           | 11.1   | 4.34  | 2                            | 1300   | NV630E       | ■ | I | ■ | ■ | ■ | ■ | ■ | ■ | 0 |   |  |
| 9000   | 7.6                                 | 3.35                          | 14.7   | 7.73  | 3.2                          | 3100   | NV820E       | ■ | N | ■ | ■ | ■ | ■ | ■ | ■ | 0 |   |  |
| 8000   | 13.5                                | 6.6                           | 19.4   | 10.51   | 5.5                          | 5700   | NV840E       | ■ | J | ■ | ■ | ■ | ■ | ■ | ■ | 0 |   |  |
| 7000   | 18.5                                | 9.9                           | 28.3   | 16.33   | 7.3                          | 8400   | NV860E       | ■ | E | ■ | ■ | ■ | ■ | ■ | ■ | 0 |   |  |
| 9000   | 30                                  | 11.5                          | 57   | 23.75   | 10.8                         | 8400   | NV860V       | ■ | C | ■ | ■ | ■ | ■ | ■ | ■ | 0 |   |  |

## Associated Drives

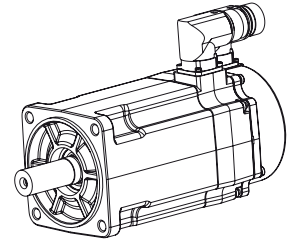
| Motor  | Rated Speed<br>$N_N$<br>[min <sup>-1</sup> ] | Stall Current <sup>(1)</sup><br>$I_0$<br>[A <sub>RMS</sub> ] | Rated Current<br>$I_N$<br>[A <sub>RMS</sub> ] | Drives sizes (DRIVE > I0) |                                    |        |                                    |
|--|--|--|---|---------------------------|------------------------------------|--------|------------------------------------|
|  |  |  |   | Compax3                   |                                    | SLVD-N |                                    |
|  |  |  |   | Compax3                   | Max. Speed<br>[min <sup>-1</sup> ] | SLVD-N | Max. Speed<br>[min <sup>-1</sup> ] |
| <b>230 VAC supply voltage - single or three-phased</b> |  |  |   |                           |                                    |        |                                    |
| NV310EAWR7000  | 17000  | 5.13   | 2.78  | C3S100V2...               | 12000                              | -      | -                                  |
| <b>400 VAC supply voltage - three-phased</b>           |  |  |   |                           |                                    |        |                                    |
| NV420EAIR7000  | 14000  | 5.25   | 2.87  | C3S075V4...               | 12000                              | -      | -                                  |
| NV430EAHR7000  | 11000  | 5.63   | 3.48  | C3S075V4...               | 11000                              | -      | -                                  |
| NV620EAJR7000  | 11000  | 9.86   | 5.02  | C3S150V4...               | 11000                              | -      | -                                  |
| NV630EAIR7000  | 10000  | 11.1   | 4.34  | C3S150V4...               | 10000                              | -      | -                                  |
| NV820EANR7000  | 9000   | 14.7   | 7.73  | C3S150V4...               | 9000                               | -      | -                                  |
| NV840EAJR7000  | 8000   | 19.4   | 10.51   | C3S300V4...               | 7330                               | -      | -                                  |
| NV860EAER7000  | 7000   | 28.3   | 16.33   | C3S300V4...               | 7000                               | -      | -                                  |
| NV860VACR8000  | 9000   | 57   | 23.75   | C3H090V4...               | 9000                               | -      | -                                  |

<sup>(1)</sup> Mounting on aluminium flange: 400 x 400 x 12 mm (NV3-8)  
 Temperature <40 °C near motor's flange

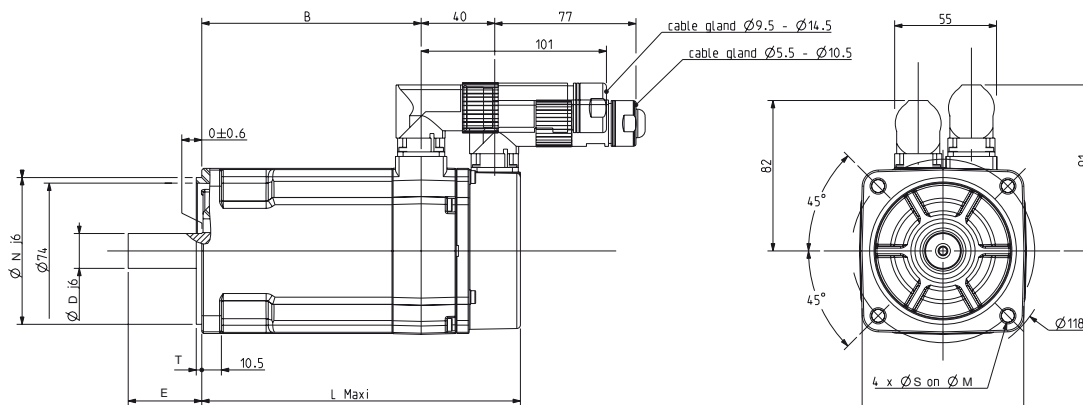
# Dimensions

## Resolver Version

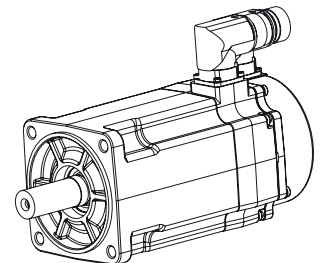
| NV3, NV4, NV6 |        |        |        |        |        |        |        |             |        |                         |                         |
|---------------|--------|--------|--------|--------|--------|--------|--------|-------------|--------|-------------------------|-------------------------|
| Motor         | N [mm] | M [mm] | D [mm] | E [mm] | T [mm] | P [mm] | S [mm] | Weight [kg] | L [mm] | Fr <sup>(1)</sup> [daN] | Fa <sup>(1)</sup> [daN] |
| NV310         | 60     | 75-80  | 11     | 23     | 2.5    | 71     | 5.5    | 2           | 147    | 36                      | 20                      |
| NV420         | 80     | 100    | 19     | 40     | 3      | 91.5   | 7      | 3.7         | 175    | 72                      | 24                      |
| NV430         | 80     | 100    | 19     | 40     | 3      | 91.5   | 7      | 4.6         | 200    | 82                      | 24                      |
| NV620         | 110    | 130    | 24     | 50     | 3.5    | 121    | 9      | 6.9         | 181    | 82                      | 52                      |
| NV630         | 110    | 130    | 24     | 50     | 3.5    | 121    | 9      | 8.8         | 210    | 86                      | 54                      |



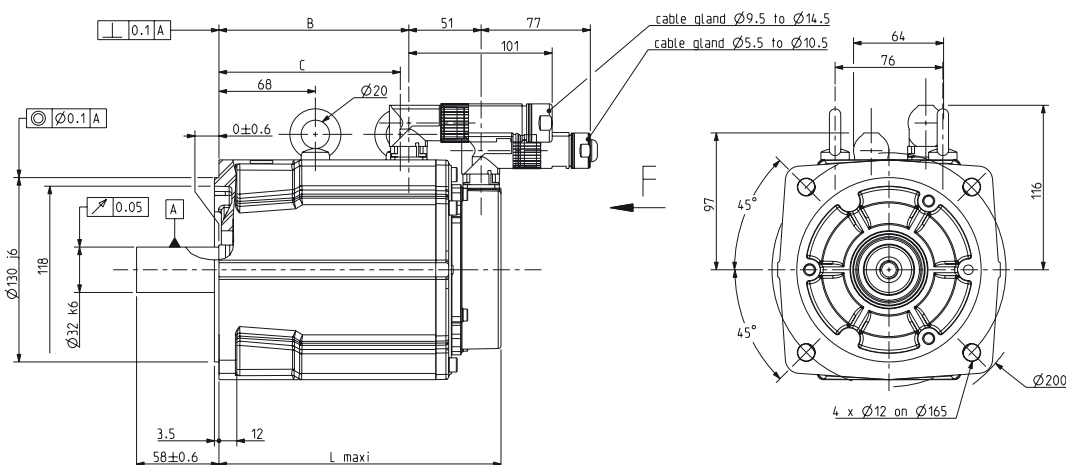
<sup>(1)</sup> Fr and Fa not cumulative: At 1500 min<sup>-1</sup> for a bearing service life of 20 000 hours



| NV8   |             |        |                         |                         |
|-------|-------------|--------|-------------------------|-------------------------|
| Motor | Weight [kg] | L [mm] | Fr <sup>(1)</sup> [daN] | Fa <sup>(1)</sup> [daN] |
| NV820 | 13          | 200    | 151                     | 28                      |
| NV840 | 20          | 260    | 165                     | 33                      |
| NV860 | 27          | 320    | 172                     | 37                      |



<sup>(1)</sup> Fr and Fa not cumulative: At 1500 min<sup>-1</sup> for a bearing service life of 20 000 hours



## Options

### Feedback Sensors

#### 2 poles resolver - option A

- Accuracy:  $\pm 10'$  max
- Transformation ratio:  $0.5 \pm 5 \%$
- Max. operating speed:  $17\,000 \text{ min}^{-1}$
- Working temperature range:  $-55\dots+155 \text{ }^\circ\text{C}$
- Compatibility: NV3 to NV8

#### Single turn / Multiturn absolute encoder HIPERFACE SKS/SKM 36 - option R/S

- Number of sine/cosine periods per revolution: 128
- Absolute position per revolution: 4096 (12 bits)
- Number of absolutely encodable revolutions: 4096 (SKM36)
- Max. operating speed SKS36:  $12\,000 \text{ min}^{-1}$
- Max. operating speed SKM36:  $9\,000 \text{ min}^{-1}$
- Working temperature range:  $-20\dots+110 \text{ }^\circ\text{C}$
- Compatibility: NV3 to NV8

#### Single turn / Multiturn absolute encoder EnDat ECN1113/EQN1125 - option V/W

- Number of sine/cosine periods per revolution: 512
- Absolute position per revolution: 8192 (13 bits)
- Number of absolutely encodable revolutions: 4096
- Accuracy:  $\pm 60''$
- Absolute position value EnDat 2.2
- Max. operating speed:  $12\,000 \text{ min}^{-1}$
- Working temperature range:  $-40\dots+115 \text{ }^\circ\text{C}$
- Compatibility: NV3 to NV8

#### Single turn / Multiturn absolute encoder HIPERFACE SRS/SRM 50 - option T/U (on request)

- Number of sine/cosine periods per revolution: 1024
- Number of absolutely encodable revolutions: 4096 (SRM50)
- Absolute position per revolution: 32768 (15 bits)
- Working speed up to which the absolute position can be reliably determined:  $6\,000 \text{ min}^{-1}$
- Max. operating speed:  $12\,000 \text{ min}^{-1}$
- Working temperature range:  $-20\dots+115 \text{ }^\circ\text{C}$
- Compatibility: NV3 to NV8



# Order Code

## NV Series

|               | 1             | 2        | 3        | 4        | 5        | 6        | 7        |
|---------------|---------------|----------|----------|----------|----------|----------|----------|
| Order example | <b>NV310E</b> | <b>A</b> | <b>R</b> | <b>7</b> | <b>0</b> | <b>0</b> | <b>0</b> |

|                                    |  |
|------------------------------------|--|
| <b>1 Motor type</b>                | NV310E<br>NV420E<br>NV430E see table "Technical Data"<br>...<br>NV860V   |
| <b>2 Feedback sensor</b>           | <b>A</b> 2 pole resolver (standard)<br>Max. speed 17 000 min <sup>-1</sup><br><b>R</b> HIPERFACE encoder 128 ppr SKS36<br>Max. speed 12 000 min <sup>-1</sup><br><b>S</b> Absolute multi-turn HIPERFACE<br>encoder 128 ppr SKM36<br>Max. speed 9 000 min <sup>-1</sup><br><b>T</b> Absolute single-turn HIPERFACE<br>encoder 1024 ppt SRS50<br>Max. speed 12 000 min <sup>-1</sup><br>(on request)<br><b>U</b> Absolute multi-turn HIPERFACE<br>encoder 1024 ppt SRM50<br>Max. speed 12 000 min <sup>-1</sup><br>(on request)<br><b>V</b> Absolute single-turn EnDat encoder<br>ECN 1113<br>Max. speed 12 000 min <sup>-1</sup><br><b>W</b> Absolute multi-turn EnDat encoder<br>EQN 1125<br>Max. speed 12 000 min <sup>-1</sup> |
| <b>3 Painting</b>                  | <b>R</b> Unpainted (standard)<br><b>B</b> Black mat (on request)   |
| <b>4 Connections / Ventilation</b> | <b>1</b> Shielded cables / No<br><b>7</b> Connectors (standard) / No<br><b>9</b> Terminal boxes / Yes  |
| <b>5 Thermal protection</b>        | <b>0</b> Without protection (standard)<br><b>1</b> PTC on power connector<br><b>2</b> Thermo switch on power connector<br><b>A</b> PTC on sensor connector<br><b>B</b> Thermo switch on sensor connector<br><b>C</b> KTY on sensor connector   |
| <b>6 Protection degree</b>         | <b>0</b> IP64 (standard)<br><b>1</b> IP65  |
| <b>7 Fix code</b>                  | <b>0</b>   |

### Motor Power Cable

|              | 1 | 2  | 3 | 4  | 5  | 6 | 7 | 8   |
|--------------|---|----|---|----|----|---|---|-----|
| Code example | C | C3 | U | P1 | F1 | R | 0 | 005 |

|                          |                               |
|--------------------------|-------------------------------|
| <b>1 Type</b>            |                               |
| C                        | Cable                         |
| P                        | Extension cable               |
| <b>2 Drive type</b>      |                               |
| C3                       | Compax3                       |
| D1                       | Digivex                       |
| S2                       | 638                           |
| S4                       | AC890                         |
| S5                       | SLVD                          |
| <b>3 Characteristic</b>  |                               |
| U                        | PUR jacket class 6 (standard) |
| <b>4 Power cable</b>     |                               |
| P1                       | For NV <15 A <sub>rms</sub>   |
| P2                       | For NV <21 A <sub>rms</sub>   |
| <b>5 Motor connector</b> |                               |
| F1                       | For NV3-NV8 motors            |
| R                        | Fixed                         |
| <b>7 Fixed field</b>     |                               |
| 0                        |                               |
| <b>8 Cable length *</b>  |                               |
| 001                      | 1 m                           |
| ...                      |                               |
| 050                      | 50 m                          |

### Feedback Cable

|              | 1 | 2  | 3 | 4  | 5  | 6 | 7 | 8   |
|--------------|---|----|---|----|----|---|---|-----|
| Code example | C | C3 | U | A1 | F1 | R | 0 | 005 |

|                          |                                      |
|--------------------------|--------------------------------------|
| <b>1 Type</b>            |                                      |
| C                        | Cable                                |
| P                        | Extension cable                      |
| <b>2 Drive type</b>      |                                      |
| C3                       | Compax3                              |
| D1                       | Digivex                              |
| S2                       | 638                                  |
| S4                       | AC890                                |
| S5                       | SLVD                                 |
| <b>3 Characteristic</b>  |                                      |
| U                        | PUR jacket class 6 (standard)        |
| <b>4 Feedback cable</b>  |                                      |
| A1                       | Resolver                             |
| V1                       | EnDat encoder                        |
| R1                       | Hiperface encoder                    |
| <b>5 Motor connector</b> |                                      |
| F1                       | For motor with resolver or Hiperface |
| F3                       | For motor with EnDat                 |
| <b>6 Section</b>         |                                      |
| R                        | Fixed                                |
| <b>7 Fixed field</b>     |                                      |
| 0                        |                                      |
| <b>8 Cable length *</b>  |                                      |
| 001                      | 1 m                                  |
| ...                      |                                      |
| 050                      | 50 m                                 |

(\*) The 3 last digits indicate cable length in meters ±5 % max  
For non-standard length cable with length different from: 1/2/3/4/5/10/15/20/25/30/40/50m please contact us.  
Example CC3UP1F1R0015: power cable, length = 15 m.



# Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374.



## AEROSPACE

### Key Markets

- Aircraft engines
- Business & general aviation
- Commercial transports
- Land-based weapons systems
- Military aircraft
- Missiles & launch vehicles
- Regional transports
- Unmanned aerial vehicles

### Key Products

- Flight control systems & components
- Fluid conveyance systems
- Fluid metering delivery & atomization devices
- Fuel systems & components
- Hydraulic systems & components
- Inert nitrogen generating systems
- Pneumatic systems & components
- Wheels & brakes



## CLIMATE CONTROL

### Key Markets

- Agriculture
- Air conditioning
- Food, beverage & dairy
- Life sciences & medical
- Precision cooling
- Processing
- Transportation

### Key Products

- CO<sup>2</sup> controls
- Electronic controllers
- Filter driers
- Hand shut-off valves
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Solenoid valves
- Thermostatic expansion valves



## ELECTROMECHANICAL

### Key Markets

- Aerospace
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastics machinery & converting
- Primary metals
- Semiconductor & electronics
- Textile
- Wire & cable

### Key Products

- AC/DC drives & systems
- Electric actuators
- Controllers
- Gantry robots
- Gearheads
- Human machine interfaces
- Industrial PCs
- Inverters
- Linear motors, slides and stages
- Precision stages
- Stepper motors
- Servo motors, drives & controls
- Structural extrusions



## FILTRATION

### Key Markets

- Food & beverage
- Industrial machinery
- Life sciences
- Marine
- Mobile equipment
- Oil & gas
- Power generation
- Process
- Transportation

### Key Products

- Analytical gas generators
- Compressed air & gas filters
- Condition monitoring
- Engine air, fuel & oil filtration & systems
- Hydraulic, lubrication & coolant filters
- Process, chemical, water & microfiltration filters
- Nitrogen, hydrogen & zero air generators



## FLUID & GAS HANDLING

### Key Markets

- Aerospace
- Agriculture
- Bulk chemical handling
- Construction machinery
- Food & beverage
- Fuel & gas delivery
- Industrial machinery
- Mobile
- Oil & gas
- Transportation
- Welding

### Key Products

- Brass fittings & valves
- Diagnostic equipment
- Fluid conveyance systems
- Industrial hose
- PTFE & PFA hose, tubing & plastic fittings
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects



## HYDRAULICS

### Key Markets

- Aerospace
- Aerial lift
- Agriculture
- Construction machinery
- Forestry
- Industrial machinery
- Mining
- Oil & gas
- Power generation & energy
- Truck hydraulics

### Key Products

- Diagnostic equipment
- Hydraulic cylinders & accumulators
- Hydraulic motors & pumps
- Hydraulic systems
- Hydraulic valves & controls
- Power take-offs
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects



## PNEUMATICS

### Key Markets

- Aerospace
- Conveyor & material handling
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Transportation & automotive

### Key Products

- Air preparation
- Compact cylinders
- Field bus valve systems
- Grippers
- Guided cylinders
- Manifolds
- Miniature fluidics
- Pneumatic accessories
- Pneumatic actuators & grippers
- Pneumatic valves and controls
- Rodless cylinders
- Rotary actuators
- Tie rod cylinders
- Vacuum generators, cups & sensors



## PROCESS CONTROL

### Key Markets

- Chemical & refining
- Food, beverage & dairy
- Medical & dental
- Microelectronics
- Oil & gas
- Power generation

### Key Products

- Analytical sample conditioning products & systems
- Fluoropolymer chemical delivery fittings, valves & pumps
- High purity gas delivery fittings, valves & regulators
- Instrumentation fittings, valves & regulators
- Medium pressure fittings & valves
- Process control manifolds



## SEALING & SHIELDING

### Key Markets

- Aerospace
- Chemical processing
- Consumer
- Energy, oil & gas
- Fluid power
- General industrial
- Information technology
- Life sciences
- Military
- Semiconductor
- Telecommunications
- Transportation

### Key Products

- Dynamic seals
- Elastomeric o-rings
- EMI shielding
- Extruded & precision-cut, fabricated elastomeric seals
- Homogeneous & inserted elastomeric shapes
- High temperature metal seals
- Metal & plastic retained composite seals
- Thermal management

# Parker Worldwide

## Europe, Middle East, Africa

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