SLVD-N
Compact Servo Drive

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

Parker

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.
Compact Servo Drive - SLVD-N

Overview................................................................. 5
Technical Characteristics............................................. 7
  Technical Data.......................................................... 7
  SLVD-N Features......................................................... 7
  Electrical Characteristics.......................................... 8
  Environmental Characteristics.................................... 8
  Standards and Conformance....................................... 8
  Dimensions............................................................. 9
  Connector Layout...................................................... 9
Accessories and Options............................................... 10
  Keypad................................................................. 10
  I/O Expansion Module............................................... 10
  Cables................................................................. 10
  Network Bridge....................................................... 10
  Safety Option........................................................ 10
  EtherCAT Fieldbus.................................................... 10
  Software.............................................................. 11
Order Code.............................................................. 12
  Compact Servo Drive - SLVD-N.................................. 12
  Accessories......................................................... 12
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
Jangan, Korea
Chennai, India

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

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
Compact Servo Drive - SLVD-N

Overview

Description
SLVD-N is the family of compact digital servo drives for brushless motors which, in addition to positioning applications with trapezoidal profile, electrical shaft, electronic cam, spindle orientation, simulator of stepper motor and torque control, holds a PLC inside able to talk to the most common industrial programming systems, giving a great freedom of use of the inputs and outputs. It also allows the development of additional configurations to the basis features of the drive, such as gains adjustment of the loop in relation to speed or space, torque monitoring used for tools etc.
The SLVD-N range is equipped with a serial interface RS422/RS485 allowing the operator to configure, monitoring, give commands to up to 32 units simultaneously. A CANbus interface is available both in communication mode and in real time mode with SBCCAN, CANopen, DS402 protocols.

Typical applications:
- Packaging machines
- Pick & place systems
- General purpose machines

Features
- Torque/current/speed control
- Advanced manager of torque limits
- Management of speed windows
- Positioner
- Electric shaft
- Electronic cam
- Controls the motor torque with the addition of speed control
- Virtual master
- Internal PLC - programming according to IEC61131 (option)
- Configurable feedback
- Standard interface: RS422/485, CANopen
- Optional interface: EtherCAT / PROFINET
- Internal braking resistor
- Internal EMC filter for three phase power supply
- Safety: STO function optional

Technical Characteristics - Overview

| Power supply                  | 200...230 VAC single/three phase (±10 %) 50-60 Hz (±5 %) - only TT/TN networks |
| Control supply                | 24 VDC (-0/+10 %) |
| Overload                      | 200 % for 2 s |
| Operating temperature         | 0...45 °C |
| Operating humidity            | <85 % non condensing |
| Altitude                      | 1000 m asl with 1.5 % derating every 100 m, up to 2000 m |
| Protections                   | IP20 |
| International standards       | CE, cUL |

<table>
<thead>
<tr>
<th>Model</th>
<th>Continuous current [A]</th>
<th>Peak current [A]</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLVD1N</td>
<td>1.25</td>
<td>2.5</td>
<td>1</td>
</tr>
<tr>
<td>SLVD2N</td>
<td>2.5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>SLVD5N</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>SLVD7N</td>
<td>7</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>SLVD10N</td>
<td>10</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>SLVD15N</td>
<td>15</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>SLVD17N</td>
<td>17</td>
<td>34</td>
<td></td>
</tr>
</tbody>
</table>
Typical Applications

Industry: Robotics
Application: Painting robot
6/7 axes painting robot controlled by the SLVD-N servo drive. Full control of the machine is done with a dedicated motion controller and the remote I/O is managed over CANopen.

Industry: Glass Industry
Application: Machining Centre
A 4 axis machine (x, y, z, mandrel) executing the following operations: drilling, threading and linear milling on materials of different types. The system comprises of 4 SLVD-N and 4 SMB motors. The control of the machine is via a dedicated motion controller. The remote I/O is controlled with CANopen protocol.

Industry: Beverage Industry
Application: Multi-head bottle capper
A multi-head machine able to cap bottles of different format. Each head, in order to reduce setup time, installs 2 SLVD-Ns, one dedicated to the vertical movement of the head depending on the carousel position and the other dedicated to the capping with preset torque. The machine is made of up to 16 heads with 2 SLVD-Ns each. The control of the machine based to a motion controller. The remoted I/O is controlled with CANopen protocol.

Multi-head bottle capper
A multi-head machine to cap bottles of different formats. Each head has 1 SLVD-N dedicated to cap fastening with torque control. The machine is made of up to 32 heads with 1 SLVD-N per head. The control of the machine based on a motion controller. The remote I/O is controlled with CANopen protocol.
## Technical Characteristics

### Technical Data

<table>
<thead>
<tr>
<th>Model</th>
<th>SLVD1N</th>
<th>SLVD2N</th>
<th>SLVD5N</th>
<th>SLVD7N</th>
<th>SLVD10N</th>
<th>SLVD15N</th>
<th>SLVD17N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Input and output characteristic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated input current (FLA)</td>
<td>[Aeff]</td>
<td>1.5</td>
<td>2.99</td>
<td>5.99</td>
<td>8.38</td>
<td>11.97</td>
<td>17.96</td>
</tr>
<tr>
<td>Rated output current</td>
<td>[Aeff]</td>
<td>1.25</td>
<td>2.5</td>
<td>5</td>
<td>7</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Peak output current (2 s)</td>
<td>[A]</td>
<td>2.5</td>
<td>5</td>
<td>10</td>
<td>14</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Shaft power</td>
<td>[kW]</td>
<td>0.345</td>
<td>0.7</td>
<td>1.5</td>
<td>2.2</td>
<td>3</td>
<td>4.5</td>
</tr>
<tr>
<td>Continuous service installed load (power derating)</td>
<td>[kVA]</td>
<td>0.85</td>
<td>1.5</td>
<td>1.5</td>
<td>1.8</td>
<td>3</td>
<td>3.3</td>
</tr>
<tr>
<td>Continuous service current (power derating)</td>
<td>[Aeff]</td>
<td>3.8</td>
<td>6.5</td>
<td>6.5</td>
<td>7.8</td>
<td>14.3</td>
<td>14.3</td>
</tr>
<tr>
<td>Power stage dissipation</td>
<td>[W]</td>
<td>9.3</td>
<td>19.2</td>
<td>52.0</td>
<td>75.1</td>
<td>100.3</td>
<td>158.3</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>[kHz]</td>
<td>4...8</td>
<td>4...8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output frequency</td>
<td>[Hz]</td>
<td>0...450</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dynamic braking and intermediate DC circuit

| Internal DC capacitors (±20 %) | [µF] | 680 | 820 | 1800 |
| Braking resistor internal      | [Ω]  | 40  | 16  |      |
| Peak internal braking power to 415 VDC | [kW] | 4.3 | 10.7 |
| Max continuous external braking power | [kW] | 1  | 2  |
| Max duty cycle (internal resistance) | [%] | 1.20 | 1.10 |

### SLVD-N Features

#### Feedback
- Resolver (SLVD-N)
- Encoder (SLVD-NE)
- Encoder+Hall (SLVD-NH)

#### Auxiliary encoder input
- In quadrature

#### Max frequency encoder input
- 400 kHz

#### RS422 encoder simulation output
- 4...65 000 steps/rev

#### Max frequency
- 160 kHz

#### Serial link
- RS422 / RS485

#### Fieldbus
- CAN ISO/DIS11898

#### Inputs / outputs
- 4 digital inputs 0...24 V
- 2 digital outputs
- 1 differential analog reference ±10 V
- 1 differential auxiliary analog input ±10 V
- 1 analogue output single ended ±4 V

#### Safety technology
- STO function optional - category 3 performance level in compliance with UNI EN ISO 13849-1 - SIL capability 3 in compliance with CEI EN 61800-5-2, PL=e
### Electrical Characteristics

#### Power supply

<table>
<thead>
<tr>
<th>Model</th>
<th>SLVD-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>Control stage</td>
</tr>
<tr>
<td>Supply voltage [VDC]</td>
<td>24 V (-0...+10 %)</td>
</tr>
<tr>
<td>Max. ripple [V_peak]</td>
<td>Do not go over the range</td>
</tr>
<tr>
<td>Current rating of the external power supply [A]</td>
<td>1</td>
</tr>
<tr>
<td>Control electronics dissipation [W]</td>
<td>15</td>
</tr>
<tr>
<td>EMC filter</td>
<td>- internal</td>
</tr>
</tbody>
</table>

#### Shock and vibration

<table>
<thead>
<tr>
<th>IEC60068-2-6</th>
<th>Frequency [Hz]</th>
<th>Width [mm]</th>
<th>Acceleration [m/s²]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 ≤ f ≤ 57</td>
<td>0.075</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>57 &lt; f ≤ 150</td>
<td>-</td>
<td>9.81</td>
</tr>
</tbody>
</table>

#### Environmental Characteristics

##### Temperature range

- Operating temperature: 3K3 class, 0...+45 °C (+32...+113 °F)
- Storage temperature: 1K4 class, -25 ...+55 °C (-4...+131 °F)
- Transportation temperature: 2K3 class, -25 ...+70 °C (-13...+158 °F)

##### Humidity

- Operating humidity: 3K3 class, 5...85 % without ice and condensation
- Storage humidity: 1K3 class, 5...95 % without ice and condensation
- Transportation humidity: 2K3 class, 95 % a 40 °C

##### Altitude (*)

≤1000 m asl (≤3281 feet asl)

##### Protection degree

IP20 (only in close electric cabinet), UL open type equipment

##### Pollution degree

2 or lower (no conductive dust allowed)

* For higher installation altitude, derate the output current by 1.5 % each 100 m up to 2000 m maximum

#### Standards and Conformance

##### Safety standards

- 2006/95/EC: Low voltage directive
- EN 61800-5-1: Adjustable speed electrical power drive systems - part 5-1: safety requirements, electrical, thermal and energy

##### Certification

- UL: UL508C (USA) Power Conversion Equipment
- CSA: CSA22.2 Nr. 14-5 (Canada) Power Conversion Equipment

##### Electromagnetic compatibility

- 2004/108/EC: EMC directive
- EN 61800-3: Adjustable speed electrical power drive systems - part 3: EMC requirement and specific test methods
### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Height [mm]</th>
<th>Width [mm]</th>
<th>Depth [mm]</th>
<th>Weight [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLVD-N 1-2-5-7</td>
<td>154</td>
<td>86</td>
<td>115</td>
<td>1.1</td>
</tr>
<tr>
<td>SLVD-N 10-15-17</td>
<td>337</td>
<td>87</td>
<td>146</td>
<td>3.1</td>
</tr>
</tbody>
</table>

### Connector Layout

- **X1**: RS422/485 - CAN interface
- **X2**: Encoder input/output
- **X3**: Resolver/encoder configurable input
- **X4**: 4 digital inputs 0-24 V  
  2 digital outputs  
  1 differential analogue reference ±10 V  
  1 differential aux analog input ±10 V  
  1 analogue output single ended ±4 V
- **X5**: Optional board connector (behind the keypad)
- **X6**: Power terminal block
- **X7**: DC bus terminal block
Accessories and Options

Keypad
SK158/L ¹
Easy to use to program the functional data, control the status of the converter and send commands.

I/O Expansion Module
SK135/S
• 16 in + 8 out
• SBCCAN interface

Cables
• Power and signal cables for resolver, incremental and absolute encoder and SinCos feedback
• Cable to connect a Bridge with several SLVD-N drives

Safety Option
Option “Safe Torque off” (STO) for all SLVD-N drives available

Fieldbus
Applying industrial standard fieldbus systems enables the SLVD-N to be very versatile.

Option EtherCAT (E5, E6):
Feature: 1 EtherCAT option for up to 3 SLVD-N (requirement SLVD-N with EtherCAT protocol)

Option PROFINET (P1, P2)

¹ Not in combination with option E5,E8
Software

MotionWiz and LogicLab

The free MotionWiz configuration software is available to configure the SLVD-N system with just a few clicks of the mouse. MotionWiz features an easy and “friendly” interface to speed up installation, optimisation and diagnostics procedures. To simplify configuration, MotionWiz shows a typical Windows® environment on the monitor with dialogue windows and toolbars. MotionWiz permits performing operations in both “on line” mode, directly in the mechanism, and in “off line” mode in remote on the PC. In this case, personalised configuration can be sent to the mechanism subsequently.

To simplify the configuration of systems with a large number of axis but with different cuts and the same operating mode, MotionWiz permits maintaining the same mechanism configuration and only changing the type of selected motor. Inside the MotionWiz configurator is a database containing the data of standard Parker motors.

MotionWiz incorporates “picoPLC”, a built-in PLC environment programmable with standard language. PicoPLC allows the external word to communicate with the drive and to execute function sequences. Should the custom application require additional computational resources, an option software environment can be used, programmable with PLC commands according to IEC61131-3.
## Order Code

### Compact Servo Drive - SLVD-N

<table>
<thead>
<tr>
<th>Order example</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Servo family</strong></td>
<td><strong>SLVD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Drive size (nominal current)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>7 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>10 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>15 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>17 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Version</strong></td>
<td></td>
<td><strong>New version</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Protocol</strong></td>
<td></td>
<td><strong>S</strong></td>
<td>SBCCAN protocol (standard)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>C</strong></td>
<td>CANopen protocol (DS301)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>D</strong></td>
<td>CANopen protocol (DS402)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>E5</strong></td>
<td>EtherCAT protocol (only with optional board E5 or E6 in the bus system)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>P1</strong></td>
<td>PROFINET (only with optional board P1 or P2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Encoder input</strong></td>
<td></td>
<td><strong>Empty field</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>E</strong></td>
<td>EnDat/incremental/SinCos encoder input (from motor feedback)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>H</strong></td>
<td>Incremental encoder input with Hall sensor (from motor feedback)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>F</strong></td>
<td>SinCos encoder input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Optional boards</strong></td>
<td></td>
<td><strong>Empty field</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>E5</strong></td>
<td>OP-ETCAT - EtherCAT option (for up to 3 SLVD-N, keypad SK158/L not possible)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>E6</strong></td>
<td>E5 + DB9 for keypad SK158/L (for up to 3 SLVD-N)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>P1</strong></td>
<td>PROFINET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>P2</strong></td>
<td>P1 + DB9 for keypad SK158/L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Safety</strong></td>
<td></td>
<td><strong>Empty field</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>R</strong></td>
<td>STO (Safe Torque Off function)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Firmware review</strong></td>
<td></td>
<td><strong>Empty field</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>without UL certification</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>UL</strong></td>
<td>UL certification (not for all drive sizes available, please contact your Parker partner)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability. We know more about technology need, Parker has ever the motion and control technologies. It means looking at many angles to find new customer applications from different disciplines. Our mission is to consistently deliver superior value and solutions that meet or exceed customer expectations. We're dedicated to the continuous development of innovative ideas and solutions that enhance productivity and efficiency. We believe in inspiring a culture of innovation and collaboration that encourages our employees to think creatively and strive for excellence. We are committed to delivering best-in-class solutions that are reliable, efficient, and meet the diverse needs of our customers. Parker's Motion & Control Technologies' approach is focused on providing high-quality products and services that exceed customer expectations. Our commitment to innovation, quality, and customer satisfaction is what sets us apart in the industry.

Key Products:
- Key Markets:
  - Fluid & Gas Handling
  - Transportation
  - Renewable energy
  - Mobile
  - Mining
  - Marine
  - Life sciences
  - Industrial machinery
  - Bulk chemical handling
  - Agriculture

Parker's Motion & Control Technologies
- Key Products:
  - Power take-offs
  - Integrated hydraulic circuits
  - Hydraulic systems
  - Hydraulic motors & pumps
  - Hydraulic cylinders
  - Hybrid drives
  - Electrohydraulic actuators
  - Cartridge valves

Key Markets:
- Key Products:
  - Turf equipment
  - Truck hydraulics
  - Renewable energy
  - Refuse vehicles
  - Mining
  - Material handling
  - Marine
  - Construction machinery
  - Alternative energy
  - Agriculture

Parker's Motion & Control Technologies
- Key Products:
  - Wheels & brakes
  - Thermal management
  - Hydraulic systems
  - Fuel tank inerting systems
  - Fuel systems & components
  - & atomization devices
  - Fluid conveyance systems
  - & components
  - Engine systems
  - Control systems &

Parker's Motion & Control Technologies
- Key Products:
  - Missiles
  - Military aircraft
  - Launch vehicles
  - Helicopters
  - General & business aviation
  - Engines
  - Commercial transports
  - Aftermarket services

Parker's Motion & Control Technologies
- Key Products:
  - Thermostatic expansion valves
  - Solenoid valves
  - Refrigerant distributors
  - Pressure regulating valves
  - Heat exchangers
  - Hand shut-off valves
  - Filter driers
  - Electronic controllers

Parker's Motion & Control Technologies
- Key Products:
  - Vacuum generators, cups & sensors
  - Thermoplastic tubing & fittings
  - Structural extrusions
  - Rubber & thermoplastic hose
  - Rotary actuators
  - Pneumatic valves & controls
  - Manifolds
  - Air preparation

Parker's Motion & Control Technologies
- Key Products:
  - Transportation & automotive
  - Packaging machinery
  - Machine tools
  - Life science & medical
  - Conveyor & material handling
  - Aerospace

Parker's Motion & Control Technologies
- Key Products:
  - Transportation
  - Refrigeration
  - Process
  - Precision cooling
  - Oil & gas
  - Life sciences
  - Industrial machinery
  - Food & beverage
  - Construction Machinery
  - Air conditioning

Parker's Motion & Control Technologies
- Key Products:
  - Process control fittings, valves, regulators & manifold valves
  - Process control double & flow controllers
  - Precision industrial regulators
  - Permanent no-weld tube fittings
  - Controllers
  - Industrial mass flow meters/

Parker's Motion & Control Technologies
- Key Products:
  - Stepper motors, servo motors, Linear motors
  - Human machine interface & slides
  - Key Products
  - Semiconductor & electronics
  - Primary metals
  - Paper machinery
  - Machine tools
  - Aerospace

Parker's Motion & Control Technologies
- Key Products:
  - Water Purification
  - Transportation
  - Process
  - renewable energy
  - Power generation &

Parker's Motion & Control Technologies
- Key Products:
  - Vibration dampening
  - Thermal management
  - Silicone tubing & extrusions
  - composite seals
  - Metal & plastic retained & assembly
  - Medical device fabrication
  - elastomeric shapes
  - Homogeneous & inserted & assembly
  - High temperature metal seals
  - EMI shielding
  - Elastomeric o-rings
  - Dynamic seals

Parker's Motion & Control Technologies
- Key Products:
  - Sealing & Shielding
  - Analytical Instruments
  - Steel
  - Power generation
  - Pharmaceuticals
  - Oil & gas
  - Offshore oil exploration
  - Nuclear Power
  - Microelectronics
  - Medical & dental
  - Food & beverage
  - Chemical & refining
  - Alternative fuels

Parker's Motion & Control Technologies
- Key Products:
  - Fluid power
  - Aerospace

Parker's Motion & Control Technologies
- Key Products:
  - Water Purification
  - Transportation
  - Process
  - renewable energy
  - Power generation &

Parker's Motion & Control Technologies
- Key Products:
  - Vacuum generators, cups & sensors
  - Thermoplastic tubing & fittings
  - Structural extrusions
  - Rubber & thermoplastic hose
  - Rotary actuators
  - Pneumatic valves & controls
  - Manifolds
  - Air preparation

Parker's Motion & Control Technologies
- Key Products:
  - Transportation & automotive
  - Packaging machinery
  - Machine tools
  - Life science & medical
  - Conveyor & material handling
  - Aerospace

Parker's Motion & Control Technologies
- Key Products:
  - Transmission
  - Refrigeration
  - Process
  - Precision cooling
  - Oil & gas
  - Life sciences
  - Industrial machinery
  - Food & beverage
  - Construction Machinery
  - Air conditioning

Parker's Motion & Control Technologies
- Key Products:
  - Sealing & Shielding
  - Analytical Instruments
  - Steel
  - Power generation
  - Pharmaceuticals
  - Oil & gas
  - Offshore oil exploration
  - Nuclear Power
  - Microelectronics
  - Medical & dental
  - Food & beverage
  - Chemical & refining
  - Alternative fuels

Parker's Motion & Control Technologies
- Key Products:
  - Water Purification
  - Transportation
  - Process
  - renewable energy
  - Power generation &
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**
- Aftermarket services
- Aerospace
- Engines
- General aviation
- Helicopters
- Launch vehicles
- Military aircraft
- Missiles
- Power generation
- Regional transports
- Unmanned aerial vehicles

**Climate Control**

**Key Markets**
- Agriculture
- Construction
- Construction Machinery
- Food & beverage
- Industrial machinery
- Life sciences
- Oil & gas
- Precison cooling
- Process
- Refrigeration
- Transportation

**Electromechanical**

**Key Markets**
- Aerospace
- Factory automation
- Life science & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastics machinery & converting
- Primary metals
- Semiconductors & electronics
- Tools
- Wire & cable

**Filtration**

**Key Markets**
- Aerospace
- Food & beverage
- Industrial plant & equipment
- Life sciences
- Marine
- Mobile equipment
- Oil & gas
- Power generation & renewable energy
- Process
- Transportation
- Water purification

**Fluid & Gas Handling**

**Key Markets**
- Aerial lift
- Agriculture
- Bulk chemical handling
- Construction machinery
- Food & beverage
- Fuel & gas delivery
- Industrial machinery
- Life sciences
- Marine
- Mining
- Mobile
- Oil & gas
- Renewable energy
- Transportation

**Hydraulics**

**Key Markets**
- Aerial lift
- Agriculture
- Alternative energy
- Construction machinery
- Forestry
- Industrial machinery
- Machine tools
- Marine
- Material handling
- Mining
- Oil & gas
- Power generation
- Refiner vehicles
- Renewable energy
- Tractor hydraulic
- Turb equipment

**Pneumatics**

**Key Markets**
- Aerospace
- Construction machinery
- Food & beverage
- Industrial machinery
- Life sciences
- Oil & gas
- Power generation
- Renewable energy
- Transportation

**Process Control**

**Key Markets**
- Alternative fuels
- Biopharmaceuticals
- Chemical & refining
- Food & beverage
- Maritime & shipbuilding
- Medical & dental
- Microelectronics
- Nuclear Power
- Offshore oil exploitation
- Oil & gas
- Pharmaceuticals
- Power generation
- Publications
- Steel
- Water/wastewater

**Sealing & Shielding**

**Key Markets**
- Aerospace
- Chemical processing
- Compressor
- Fluid power
- General industrial
- Information technology
- Life sciences
- Microelectronics
- Military
- Oil & gas
- Power generation
- Renewable energy
- Telecommunications
- Transportation

**Analytical**

**Key Products**
- Analytical gas generators
- Compressed air filters & dryers
- Engine air, coolant, fuel & oil filtration systems
- Fluid condition monitoring systems
- Hydraulic & lubrication filters
- Hydrogen, nitrogen & zero air generators
- Instrumentation filters
- Membrane & resin filters
- Microfiltration
- Sterile air filtration
- Water desalination & purification filters & systems