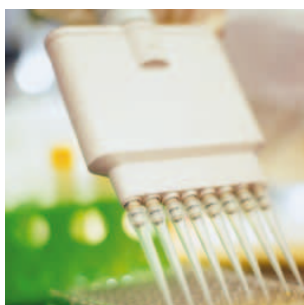


aerospace  
climate control  
**electromechanical**  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



## TWIN-N and SPD-N

Digital Servo Drives



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.

## Digital Servo Drives - TWIN-N & SPD-N

<b>Overview.....</b>	<b>5</b>
<b>Technical Characteristics.....</b>	<b>7</b>
General Characteristics.....	7
TWIN-N and SPD-N Features.....	7
Electrical Characteristics.....	8
Environmental Characteristics.....	8
Standards and Conformance.....	8
Dimensions.....	9
Connector Layout.....	9
<b>Accessories and Options.....</b>	<b>10</b>
Keypad.....	10
I/O Expansion Module.....	10
Cables.....	10
Network Bridge.....	10
Fieldbus.....	10
Software.....	11
<b>Order Code.....</b>	<b>12</b>
Digital Servo Drives - TWIN-N and SPD-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.

#### Worldwide Manufacturing Locations

##### Europe

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

##### Asia

Shanghai, China  
Chennai, India

##### North America

Rohnert Park, California  
Irwin, Pennsylvania  
Wadsworth, Ohio  
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.

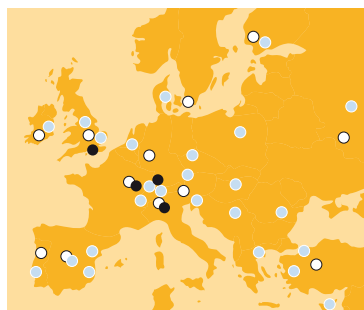
For contact information, please refer to the Sales Offices on the back cover of this document or visit [www.parker.com](http://www.parker.com)



Milan, Italy



Littlehampton, UK



- Manufacturing
- Parker Sales Offices
- Distributors



Dijon, France

# Digital Servo Drives - TWIN-N & SPD-N

## Overview

### Description

TWIN-N is a series of fully-digital, compact and highperformance servo drives for the simultaneous and independent control of two brushless motors. The TWIN-N series is suitable for multi-axis applications where compact size and reduced costs are priority factors.

The TWIN-N is complemented by the SPD-N, which adds a single axis option.

The TWIN-N comprises 3 different models which are able to supply, on a continuative basis, a nominal current from 2 A to 8 A (per axis) and a peak current of 4 A to 16 A (per axis).

The TWIN-N/SPD-N drives are designed for single phase/three phase 230 VAC supply or 380-480 VAC three-phase supply.

TWIN-N/SPD-N drives are designed for market sectors such as packaging, pick&place, tobacco machines, automatic stores, and automatic machinery in general, where rapid acceleration and deceleration are critical application factors.

### Features

- Current, torque and speed control
- Electronic cams, positioner
- Electric shaft
- Virtual master
- PLC integrated (256 steps)
- Configurable feedback
- Internal braking resistor
- Safety relay optional Cat. 3 EN954-1
- DC Bus connection to the terminal board possible



### Technical Characteristics - Overview

<b>Power supply</b>	200...277 VAC monophase (±10 %) 50-60 Hz (±5 %) 200...480 VAC three-phase (±10 %) 50-60 Hz (±5 %)
<b>Control supply</b>	24 VDC (0/+10 %)
<b>Operation temperature</b>	0...45 °C
<b>Operation humidity</b>	<85 % non condensing
<b>Altitude</b>	1000 m asl with 1,5 % derating every 100 m
<b>Protection Rating</b>	IP20
<b>International standard</b>	CE; UL, cUL, CSA (optional) not available for SPD16N

### Two axis Module TWIN-N

Model	Nominal current [A]	Peak current [A]	Peak current time [s]
TWIN2N	2	4	2
TWIN5N	5	10	
TWIN8N	8	16	

### Single axis Module SPD-N

Model	Nominal current [A]	Peak current [A]	Peak current time [s]
SPD2N	2	4	2
SPD5N	5	10	
SPD8N	8	16	
SPD16N	16	32	

## TWIN-N, SPD-N Digital Servo Drives Overview

### Overview

The parameter based TWIN-N/SPD-N operator interface makes it easy to configure the drive. Standard configurations of different kinds make it suitable for many applications. The TWIN-N can control two brushless motors by a single drive. This feature allows space savings within the electrical panel for multi-axis configurations. TWIN-N comprises two separate drives that can be used totally independently.

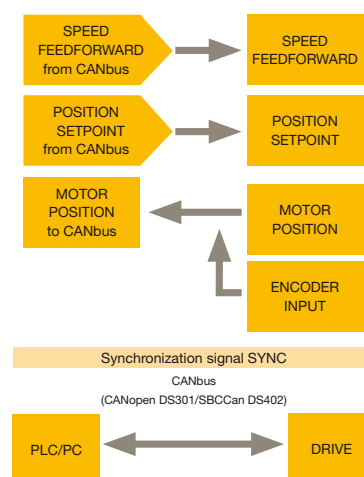
The SPD-N drive is the single drive, single axis version. The drive features a series of integrated auxiliary functions that allow reduced application programming, offering considerable cost saving.

It uses widely used industrial programming standards and guarantees a high degree of flexibility in selecting inputs and outputs. It is also possible to create custom functions within the drive, such as speed or position loop gain control, or active torque control for tool wear monitoring, etc. It can be configured through the serial keypad, serial comms or CANbus.

### Fieldbus

The TWIN-N/SPD-N series have CANbus built in as standard, and can therefore be integrated directly into a CAN network without further additional parts.

The CANbus port on board the drive can be programmed to dialogue with the CANopen DS301/DS402 profile or with propriety profile SBCCan (factory default), which is a propriety motion bus on the CANbus layer specifically optimised for motion control applications. The TWIN-N/SPD-N series can be integrated into networks with Profibus-DP and Devicenet protocol. This connection is via an external Bridge, using the CANbus port programmed with SBCCan protocol. EtherCAT bus, based on the industrial standard Ethernet, has been implemented within the TWIN-N option so to best exploit the industrial PC capabilities.





## Technical Characteristics

### General Characteristics

#### TWIN-N, SPD-N

Model		TWIN2N	TWIN5N	TWIN8N	-
		SPD2N	SPD5N	SPD8N	SPD16N
Power supply and current					
Rated output current *	[Aeff]	2	5	8	16
Peak output current (2 s)*	[A]	4	10	16	32 (24@8kHz)
Shaft power *	[kW]	1.0	2.6	4.2	7.5
Continuous service installed load*	[kVA]	1.4	3.5	5.6	11.2
Control electronics dissipation*	[W]	25	60	88	180
Internal fan capacity	[m³/h]	135			
Switching frequency	[kHz]	8			4
Output frequency	[Hz]	0...450			
Dynamic braking and intermediate DC circuit					
Internal DC capacitors	[µF]	470 ±20 %			680 ±20 %
Braking resistor internal/external	[Ω]	40			
Peak internal braking power	[kW]	16,2			
Continuous internal braking power	[W]	120			
Max duty cycle (internal resistance)	[%]	0.75			

\* the value for TWIN-N is for each of the two axis.

### TWIN-N and SPD-N Features

<b>Feedback</b>	
	<ul style="list-style-type: none"> <li>• Resolver (TWIN-N, SPD-N)</li> <li>• Encoder (TWIN-NE, SPD-NE)</li> </ul>
<b>Auxiliary encoder input</b>	
	in quadrature encoder (coupled)
<b>Max frequency</b>	
	400 kHz
<b>RS422 encoder simulation output</b>	
	4...65 000 steps/rev
<b>Max frequency</b>	
	160 kHz
<b>Serial link</b>	
	RS422 / RS485
<b>Fieldbus</b>	
	CAN ISO/DIS11898
<b>Inputs / outputs (each single axis)</b>	
	<ul style="list-style-type: none"> <li>• 4 digital inputs 0...24 V</li> <li>• 2 digital outputs</li> <li>• 1 differential analog reference ±10 V</li> <li>• 1 differential auxiliary analog input ±10 V</li> <li>• 1 analog output single ended ±10 V</li> </ul>
<b>Safety technology</b>	
	Built-in Safety relay cat.3 in compliance with EN954-1

## Electrical Characteristics

### Power supply

Model		TWIN-N/SPD-N
	Unit	Control stage
Supply voltage	[VDC]	24 V (0...+10 %)
Current rating of the external power supply	[A]	2
Control electronics dissipation	[W]	25
EMC filter	-	internal
		Power stage
Mains frequency	[Hz]	50...60 ±5 %
Supply voltage	[VAC]	3-phase: 200...480 ±10 % 1-phase: 200...277 ±10 %
DC voltage range	[VDC]	282...678 ±10 %

## Environmental Characteristics

### Ambient conditions

Temperature range	<ul style="list-style-type: none"> <li>Operating temperature: 0...+45 °C (+32...+113 °F)</li> <li>Storage temperature: 1K4 class, -20 ...+55 °C (-4...+131 °F)</li> <li>Transportation temperature: 2K3 class, -25 ... +70 °C (-13...+158 °F)</li> </ul>
Humidity	Humidity: 3K3 class <ul style="list-style-type: none"> <li>Relative: &lt;85 % without ice and condensation</li> <li>Absolute: &lt;25 g/m<sup>3</sup></li> </ul>
Altitude (*)	≤1000 m asl (≤3281 feet asl)
Protection Rating	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

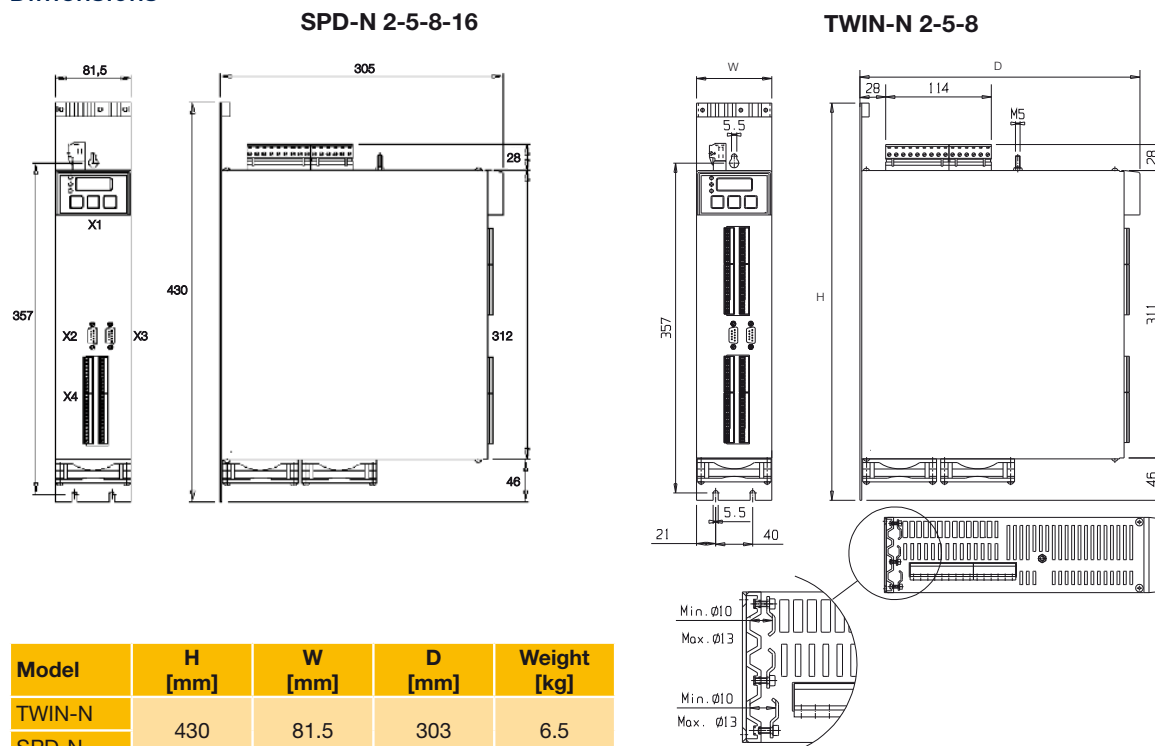
## Standards and Conformance

Safety standards	<ul style="list-style-type: none"> <li>2006/95/EC: Low voltage directive</li> <li>EN 61800-5-1: Adjustable speed electrical power drive systems - Part 5-1: Safety requirements, electrical, thermal and energy</li> </ul>
Certification	<ul style="list-style-type: none"> <li>UL: UL508C (USA) Power Conversion Equipment</li> <li>CSA: CSA22.2 Nr. 14-05 (Canada) Power Conversion Equipment</li> </ul>
Electromagnetic compatibility	<ul style="list-style-type: none"> <li>2004/108/EC: EMC directive</li> <li>EN 61800-3: Adjustable speed electrical power drive systems - Part 3: EMC requirement and specific test methods</li> </ul>



## TWIN-N, SPD-N Digital Servo Drives Technical Characteristics

### Dimensions



### Connector Layout



#### Power connection terminal box

- Line
- Motor 1
- Motor 2
- DC Bus

#### Connection terminal box Axis 1

- 2 opto isolated digital inputs 24 VDC (shared with axis 1 and axis 2)
- 2 opto isolated digital outputs (axis 1)
- 1 differential analog reference  $\pm 10$  V (axis 1)
- 1 differential auxiliary analog input  $\pm 10$  V (axis 1)
- 1 analog output  $\pm 10$  V single ended (axis 1)
- 1 Resolver or encoder SinCos or digital input + Hall probe
- 1 configurable encoder input
- 1 configurable encoder output

#### Connection terminal box Axis 2 (only TWIN-N)

- 4 opto isolated digital inputs 24 VDC (axis 2)
- 2 opto isolated digital outputs (axis 2)
- 1 differential analog reference  $\pm 10$  V (axis 2)
- 1 differential auxiliary analog input  $\pm 10$  V (axis 2)
- 1 analog output  $\pm 10$  V single ended (axis 2)
- 1 Resolver input
- 1 configurable encoder input
- 1 configurable encoder output
- Configurable CAN interface
- RS422/485 interface

## Accessories and Options

### Keypad

SK158/S

Display Module for SPD-N series

SK158/T

Display Module for TWIN-N series



### 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 TWIN-N/SPD-N



### Network Bridge

Interface protocol:

- DeviceNet
- Profibus DP



### Fieldbus

- SBCCan (standard)
- CANopen (DS301, DS402)
- EtherCAT

## Software

### MotionWiz

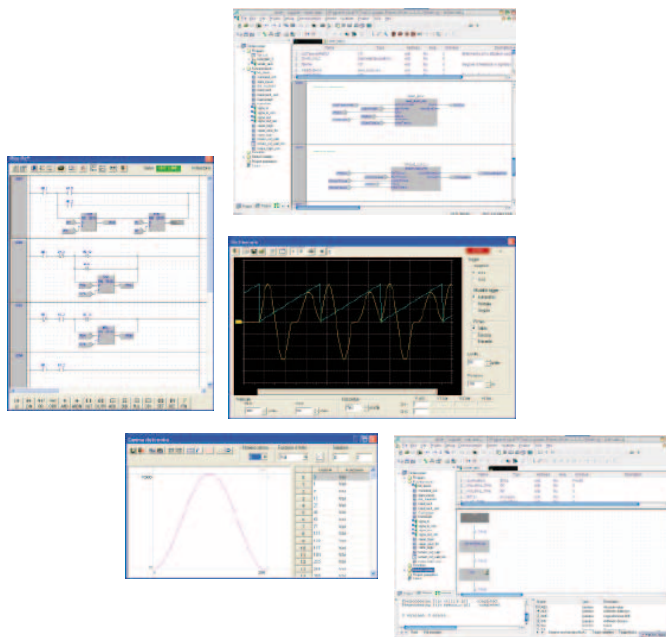
The free MotionWiz configuration software is available to configure the TWIN system with just a few clicks of the mouse. MotionWiz features an easy and "friendly" interface to speed up installation, optimisation and diagnostics procedures. To simplify configuration, MotionWiz shows a typical Windows® 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 axes 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.

This environment consists of an editor with instruction list and ladder functions that also permits online debug. comments can also be entered to the code in the editor and the programme made as application documentation can be printed in report form.



TWIN-N, SPD-N Digital Servo Drives  
Order Code

## Order Code

### Digital Servo Drives - TWIN-N and SPD-N

	1	2	3	4	5	6	7	8	9	10	11
Order example	<b>TWIN</b>	<b>2</b>	<b>N</b>	<b>S</b>	<b>E</b>	<b>E5</b>	<b>R</b>	<b>T</b>	<b>B</b>	<b>UL</b>	<b>Z</b>

<b>1 Servo family</b>											
<b>SPD</b>	Digital servo drives										
<b>TWIN</b>	Double axis digital servo drives										
<b>2 Drive size (nominal current)</b>											
<b>2</b>	2 A										
<b>5</b>	5 A										
<b>8</b>	8 A										
<b>16</b>	16 A (only SPD-N)										
<b>3 Series</b>											
<b>N</b>	New Series										
<b>4 Protocol</b>											
<b>S</b>	Protocol SBCCan (standard)										
<b>C</b>	Protocol CANopen (DS301)										
<b>D</b>	Protocol CANopen (DS402)										
<b>5 Encoder input</b>											
<b>empty field</b>	Resolver										
<b>E</b>	EnDat/incremental/SinCos Encoder Input (from motor feedback)										
<b>H</b>	Incremental Encoder input with Hall probe (from motor feedback)										
<b>F</b>	SinCos Encoder Input one sin polar step or turn										
<b>6 Optional board</b>											
<b>E5</b>	EtherCAT										
<b>7 Safety relay</b>											
<b>R</b>	Built-in Safety relay cat.3 in compliance with EN954-1										
<b>8 Toroid and Options</b>											
<b>T</b>	Inductance core on cables motor inside the drive										
<b>S</b>	Panel short cable installation										
<b>L</b>	Panel long cable installation										
<b>9 Bracket to fix the cable</b>											
<b>B</b>	Without brackets to fix the cables										
<b>10 UL Certification</b>											
<b>UL</b>	(not available for SPD16N)										
<b>11 Firmware revision</b>											
<b>Z</b>	Number of firmware revision (optional only for special version up to 3 figures)										

## Accessories

### Communication interface

	1	2
Order example	<b>BRIDGEN</b>	<b>PS</b>

<b>1 Bridge (communication interface)</b>	
<b>BRIDGEN</b>	Bridge N (communication interface)
<b>2 Interface</b>	
<b>PS</b>	with PROFIBUS DP
<b>DS</b>	with DeviceNet
<b>D1S</b>	with DeviceNet "compact"
<b>U</b>	with Encoder Input - SBCCAN







# 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<sub>2</sub> 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 fluids
- 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

**AE – United Arab Emirates,**  
Dubai

Tel: +971 4 8127100  
parker.me@parker.com

**AT – Austria,** Wiener Neustadt

Tel: +43 (0)2622 23501-0  
parker.austria@parker.com

**AT – Eastern Europe,** Wiener  
Neustadt

Tel: +43 (0)2622 23501 900  
parker.easteurope@parker.com

**AZ – Azerbaijan,** Baku

Tel: +994 50 2233 458  
parker.azerbaijan@parker.com

**BE/LU – Belgium,** Nivelles

Tel: +32 (0)67 280 900  
parker.belgium@parker.com

**BY – Belarus,** Minsk

Tel: +375 17 209 9399  
parker.belarus@parker.com

**CH – Switzerland,** Ettoy

Tel: +41 (0)21 821 87 00  
parker.switzerland@parker.com

**CZ – Czech Republic,** Klecany

Tel: +420 284 083 111  
parker.czechrepublic@parker.com

**DE – Germany,** Kaarst

Tel: +49 (0)2131 4016 0  
parker.germany@parker.com

**DK – Denmark,** Ballerup

Tel: +45 43 56 04 00  
parker.denmark@parker.com

**ES – Spain,** Madrid

Tel: +34 902 330 001  
parker.spain@parker.com

**FI – Finland,** Vantaa

Tel: +358 (0)20 753 2500  
parker.finland@parker.com

**FR – France,** Contamine s/Arve

Tel: +33 (0)4 50 25 80 25  
parker.france@parker.com

**GR – Greece,** Athens

Tel: +30 210 933 6450  
parker.greece@parker.com

**HU – Hungary,** Budapest

Tel: +36 1 220 4155  
parker.hungary@parker.com

**IE – Ireland,** Dublin

Tel: +353 (0)1 466 6370  
parker.ireland@parker.com

**IT – Italy,** Corsico (MI)

Tel: +39 02 45 19 21  
parker.italy@parker.com

**KZ – Kazakhstan,** Almaty

Tel: +7 7272 505 800  
parker.easteurope@parker.com

**NL – The Netherlands,** Oldenzaal

Tel: +31 (0)541 585 000  
parker.nl@parker.com

**NO – Norway,** Asker

Tel: +47 66 75 34 00  
parker.norway@parker.com

**PL – Poland,** Warsaw

Tel: +48 (0)22 573 24 00  
parker.poland@parker.com

**PT – Portugal,** Leca da Palmeira

Tel: +351 22 999 7360  
parker.portugal@parker.com

**RO – Romania,** Bucharest

Tel: +40 21 252 1382  
parker.romania@parker.com

**RU – Russia,** Moscow

Tel: +7 495 645-2156  
parker.russia@parker.com

**SE – Sweden,** Spånga

Tel: +46 (0)8 59 79 50 00  
parker.sweden@parker.com

**SK – Slovakia,** Banská Bystrica

Tel: +421 484 162 252  
parker.slovakia@parker.com

**SL – Slovenia,** Novo Mesto

Tel: +386 7 337 6650  
parker.slovenia@parker.com

**TR – Turkey,** Istanbul

Tel: +90 216 4997081  
parker.turkey@parker.com

**UA – Ukraine,** Kiev

Tel: +380 44 494 2731  
parker.ukraine@parker.com

**UK – United Kingdom,** Warwick

Tel: +44 (0)1926 317 878  
parker.uk@parker.com

**ZA – South Africa,** Kempton Park

Tel: +27 (0)11 961 0700  
parker.southafrica@parker.com

### North America

**CA – Canada,** Milton, Ontario

Tel: +1 905 693 3000

**US – USA,** Cleveland

Tel: +1 216 896 3000

### Asia Pacific

**AU – Australia,** Castle Hill

Tel: +61 (0)2-9634 7777

**CN – China,** Shanghai

Tel: +86 21 2899 5000

**HK – Hong Kong**

Tel: +852 2428 8008

**IN – India,** Mumbai

Tel: +91 22 6513 7081-85

**JP – Japan,** Tokyo

Tel: +81 (0)3 6408 3901

**KR – South Korea,** Seoul

Tel: +82 2 559 0400

**MY – Malaysia,** Shah Alam

Tel: +60 3 7849 0800

**NZ – New Zealand,** Mt Wellington

Tel: +64 9 574 1744

**SG – Singapore**

Tel: +65 6887 6300

**TH – Thailand,** Bangkok

Tel: +662 186 7000-99

**TW – Taiwan,** Taipei

Tel: +886 2 2298 8987

### South America

**AR – Argentina,** Buenos Aires

Tel: +54 3327 44 4129

**BR – Brazil,** Sao Jose dos Campos

Tel: +55 800 727 5374

**CL – Chile,** Santiago

Tel: +56 2 623 1216

**MX – Mexico,** Apodaca

Tel: +52 81 8156 6000

We reserve the right to make technical changes. The data correspond to the technical state at the time of printing.  
© 2012 Parker Hannifin Corporation.  
All rights reserved.

192-141300N3

April 2012



### EMEA Product Information Centre

Free phone: 00 800 27 27 5374

(from AT, BE, CH, CZ, DE, DK, EE, ES, FI, FR, IE, IL,  
IS, IT, LU, MT, NL, NO, PL, PT, RU, SE, SK, UK, ZA)

### US Product Information Centre

Toll-free number: 1-800-27 27 537

www.parker.com

Your local authorized Parker distributor