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

AC650S Series

Compact Drive for Sensorless Servo Control

Parker

ENGINEERING YOUR SUCCESS.

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Compact Drive for Sensorless Servo Control - AC650S Series

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.

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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

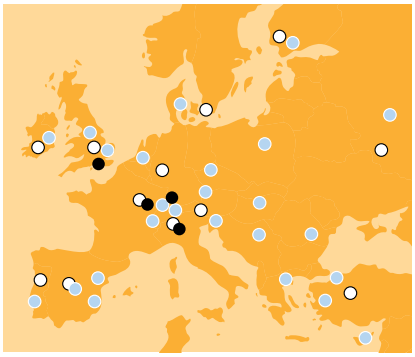
Local Manufacturing and Support in Europe

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

Milan, Italy

Littlehampton, UK



Manufacturing
Parker Sales Offices
Distributors

Dijon, France

Compact Drive for Sensorless Servo Control - AC650S Series

Overview

Description

The AC650S series is designed to save energy in general purpose applications where induction motors can be replaced by more efficient and compact permanent motors.
Easy to commission and maintain, the AC650S controls permanent-magnet motors without the need for a speed sensor.
It is available in power ratings up to 1.5 kW for 230 V single phase supplies and up to 7.5 kW for 400 V three-phase supplies.

Features

- **Side-by-side mounting reduces cabinet space**
- **Energy savings achieved when using a permanent-magnet motor in place of an induction motor can amount to up to 12 %, thanks to the higher efficiency of permanent magnet motors**
- **The AC650S comes with one PID controller. It can be set to control process parameters like pressure or flow rate**
- **A cloning module is available as an option for easy maintenance. It allows 10 drive configurations to be saved without a PC**
- **Sensorless motor control removes the need for a speed sensor, which improves the system reliability and reduces cost**
- **Easy commissioning thanks to built-in application macros for the most common applications and free setup wizard**
- **Built-in filter for EMC compliance to EN 61800-3**

Typical applications

Used in combination with AC650S drives, Parker permanent magnet motors are available as alternatives to induction motors in the following applications

- **Where energy savings are the driving factor: conveyors, fans, pumps, hydraulic systems, extruders...**
- **Where machine size is critical and compact drive solutions are required or where electrical enclosure space is limited: machine-tools, packaging machines, winders/unwinders, special-purpose machines …**

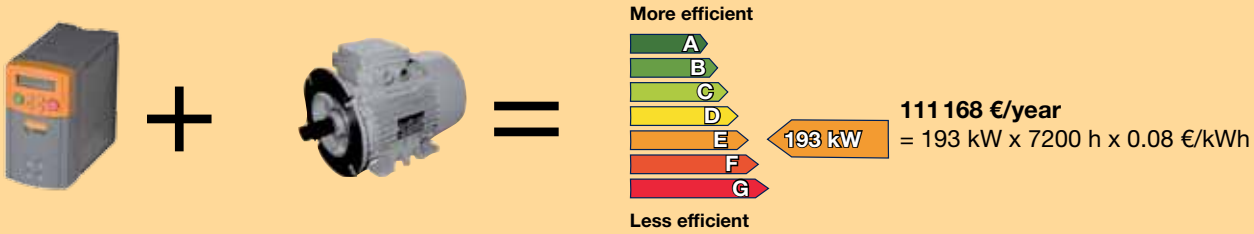
Technical Characteristics - Overview

Power supply	**Single Phase Units (0.75-1.5 kW)** 220-240 VAC ±10 % 50-60 Hz ±5 % **Three Phase Units (0.75-7.5 kW)** 380-460 VAC ±10 % 50-60 Hz ±5 %
Ambient	0-40 °C (derate to 50 °C) Up to 1000 m ASL (derate >1000 m) IP20 protected
Output Frequency	0-500 Hz
Inputs / Outputs	2 x 0-10 V, 0-10 V/4-20 mA (summing) AI 2 x 0-10 V, AO, 5 x DI, 2 x DI/O, 1 x RO
Communications Options	RS485/RS232 PROFIBUS DP, Modbus RTU
Standards	The AC650S series meets the following standards when installed in accordance with the relevant product manual. • CE Marked to EN50178 (Safety, Low Voltage Directive) • CE Marked to EN61800-3 (EMC Directive) • UL Listed to US standard UL508C • cUL Listed to Canadian standard C22.2 #14

Energy savings and compact size

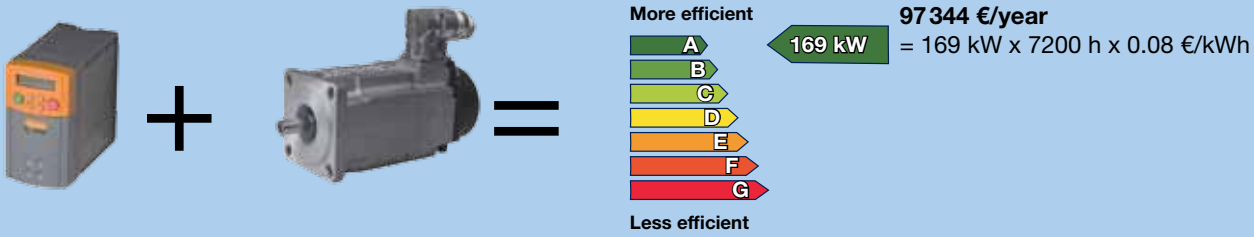
The AC650S compact sensorless servo drive series features an advanced sensorless control algorithm for controlling permanent-magnet motors.
When used with Parker's high efficiency permanent-magnet motors, the AC650S delivers impressive performance and high energy efficiency, which in turn leads to lower energy usage than with conventional induction motors.
The use of servo motors also enables machine builders to design smaller machines when compared to standard induction motors of the same size. In some cases servo motors can be as much as 75 % smaller than their induction motor equivalents.

Induction motor and Parker AC650V inverter



111 168 €/year
= 193 kW x 7200 h x 0.08 €/kWh

Permanent-magnet motor and Parker AC650S drive



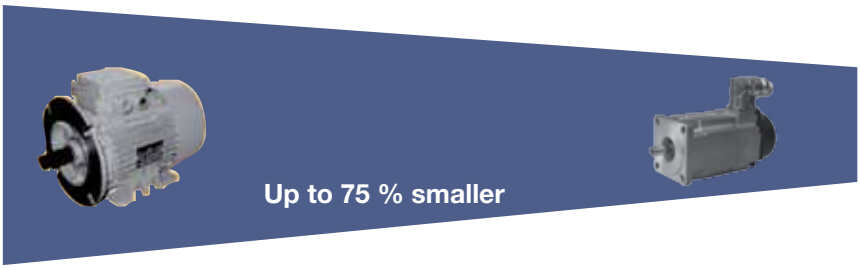
97 344 €/year
= 169 kW x 7200 h x 0.08 €/kWh

Typical annual savings **13 824 €/year**

assuming 100 x 1.5 kW motors

Extremely compact solution for smaller machines

Parker PM motors are up to 75 % smaller than the same power induction motors, which enables you make ultra-compact machines. Furthermore, the motors are available with a very economical brake option and have no need for force ventilation.

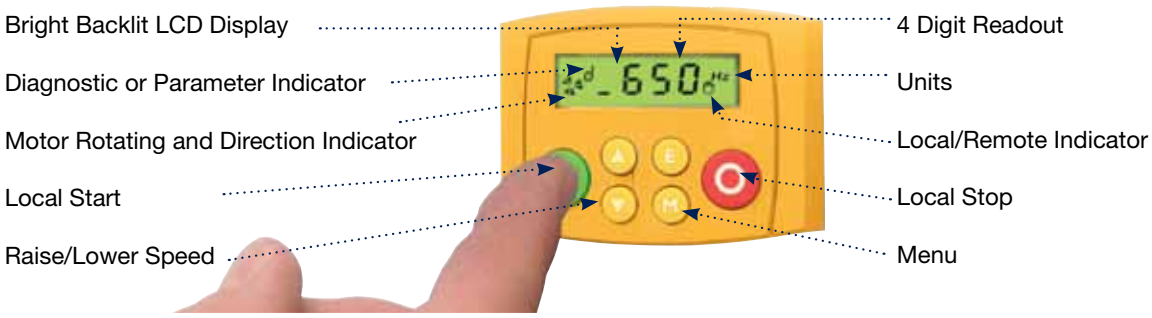


Minimum electrical enclosure space requirements

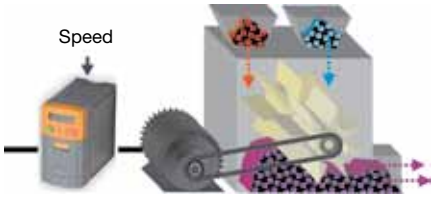
The AC650S is one of the smallest drives of its kind on the market today. Leading thermal design and management enables the AC650S to be mounted side-by-side with other AC650 series drives in the electrical cabinet. This in turn reduces the size and cost of the enclosure and helps to improve the overall envelope of the machine, making more compact designs possible.

Diagnostic and control through the operator keypad

Easy-to-use Operator/Programming Controls



Simplified operation throught the use of pre-programmed macros

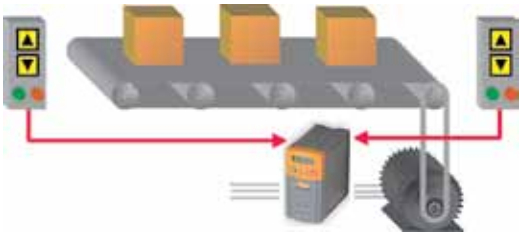


Simple speed control

set speed and voltage or current with start / stop direction control

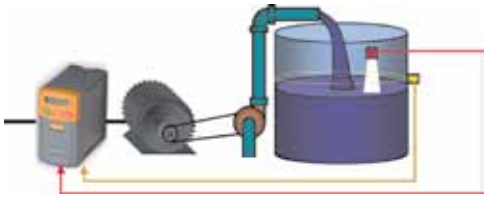
Manual / Automatic control

set to run with local speed setting or external reference



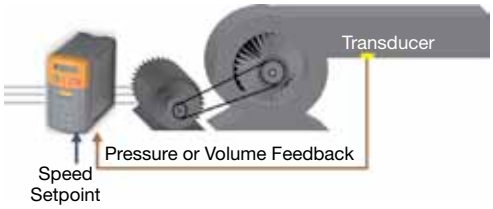
Preset speed control

select up to 8 pre-programmed speeds using digital inputs



Increase / Decrease

Increase or reduce speed using digital inputs



PID Control

Control the pressure, flow, temperature or any process variable

Technical Characteristics

General Characteristics

Power Supply	**Single Phase Units (0.75-1.5 kW)** 220-240 VAC ±10 %, 50-60 Hz ±5 % **Three Phase Units (0.75-7.5 kW)** 380-460 VAC ±10 %, 50-60 Hz ±5 %
Environment	0-40 °C (derate to 50 °C) Up to 1000 m ASL (derate >1000 m)
Protection	IP20
Overload	150 % for 30 s
Output Frequency	0-500 Hz
Analogue Inputs	2; 0-10 V, 0-10 V/4-20 mA
Analogue Outputs	2; 0-10 V, load <10 mA
Digital Inputs	5; User configurable 15 V-24 VDC
Digital Relay Outputs	1; Relay output 4 A @240 V
Motor Thermistor Input	1
Communications Options	PROFIBUS-DP, Modbus RTU
Cloning Option	Up to 10 drive configurations can be saved without the need for a PC
Application Macros	**User Selectable pre-programmed application macros** • Basic speed control voltage or current source speed demand with digital start/stop and direction • Manual/auto control switch between a local or remote speed demand signal • Preset speeds select up to 8 pre-programmed speeds selected by digital inputs • Raise/lower control increase and decrease speed from raise/lower digital inputs • PID control control pressure, flow, temperature or other variable by monitoring transducer feedback

Electrical Characteristics

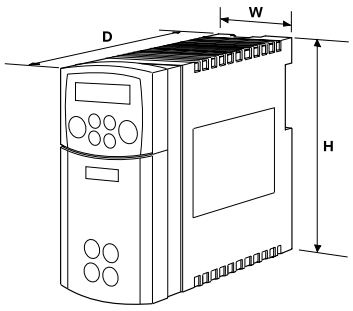
Product code	Supply voltage	Nominal power [kW / HP]	Output current [A]	Frame	Overload
650S-21115010-0■1P00-A1	230 V 1 ph	0.25/0.3	1.5	1	150 % x 30 s
650S-21122010-0■1P00-A1		0.37/0.5	2.2	1	
650S-21130010-0■1P00-A1		0.55/0.75	3	1	
650S-21140010-0■1P00-A1		0.75/1	4	1	
650S-21155020-0■1P00-A1		1.1/1.5	5.5	2	
650S-21170020-0■1P00-A1		1.5/2	7	2	
650S-43115020-B■1P00-A1	400 V 3 ph	0.37/0.5	1.5	2	
650S-43120020-B■1P00-A1		0.55/0.75	2	2	
650S-43125020-B■1P00-A1		0.75/1	2.5	2	
650S-43135020-B■1P00-A1		1.1/1.5	3.5	2	
650S-43145020-B■1P00-A1		1.5/2	4.5	2	
650S-43155020-B■1P00-A1		2.2/3	5.5	2	
650S-43168030-B■1P00-A1		3/4	6.8	3	
650S-43190030-B■1P00-A1		4/5	9	3	
650S-43212030-B■1P00-A1		5.5/7.5	12	3	
650S-43216030-B■1P00-A1		7.5/10	16	3	

■ = 0. drives with no EMC filter; ■ = F. for drives with built-in EMC filter

Dimensions

Dimensions and Weights

Frame	Overall Dimensions			
	Height (H) [mm]	Width (W) [mm]	Depth (D) [mm]	Weight [kg]
1	132	73	142	0.85
2	188	73	173	1.4
3	242	96	200	2.7



Frame 1, 2, 3

Associated Sensorless Motors - NX Series

0.2 - 7.5 kW, 0.45 - 41 Nm

Overview

Description

The sensorless version of NX Series motors has been designed to offer a cost effective brushless solution when used in conjunction with AC650S drives. Controlled without feedback sensor, NX Series servomotors are innovative, compact, high performance and extremely efficient alternative to traditional induction motors.

Features and Benefits

- **Cost effective brushless solution**
- **Sensorless control with AC650S drives**
- **More compact and efficient than induction motors**
- **More robust design due to the lack of feedback sensor**
- **No need for cooling fan**

Technical Characteristics - Overview

Motor type	Permanent magnet synchronous servomotors	
Rotor design	Rotor with concentrated-flux rare earth magnets	
Number of poles	10	
Power range	0.21 ... 7.5 kW	
Torque range	0.45 - 41 Nm	
Speed range	6000 min^{-1}	
Protection level (IEC60034-5)	• IP64 (standard) • IP65 (option)	
Marking	CE	UL
Voltage supply	230 / 400 VAC	230 / 480 VAC
Temperature class (IEC60034-1)	• Class F	• Class A (NX1 – 2) • Class F (NX3 – 8)
Connections	• Connectors (option) • Terminal box (standard)	• Connectors (NX1 – 8)

Technical Characteristics and Association with Parker NX servo motors

230 VAC power supply

Rated speed Nn [min^{-1}]	Rated power Pn [kW]	Power @ 1500 min^{-1} [kW]	Power @ 3000 min^{-1} [kW]	M_0* [Nm]	I_0* [A_{rms}]	Inertia J [kgmm^2]	Motor code	Drive Code
6000	0.21	0.07	0.13	0.45	1.14	21	NX205EYUR6000	650S-21115010-001P00-A1
5000	0.37	0.15	0.27	1	1.99	38	NX210EYPR6000	650S-21122010-001P00-A1
2000	0.38	0.29	-	2	1.39	79	NX310EYPR6000	650S-21115010-001P00-A1
3500	0.62	0.29	0.55	2	2.43	79	NX310EYKR6000	650S-21130010-001P00-A1
1900	0.72	0.58	-	4	2.71	290	NX420EYPR6000	650S-21130010-001P00-A1
3350	1.16	0.58	1.06	4	4.43	290	NX420EYKR6000	650S-21155020-001P00-A1
1750	0.95	0.83	-	5.5	3.43	426	NX430EYMR6000	650S-21155010-001P00-A1
2700	1.38	0.83	-	5.5	5.24	426	NX430EYJR6000	650S-21155020-001P00-A1
3500	1.67	0.83	1.5	5.5	6.64	426	NX430EYFR6000	650S-21170020-001P00-A1
1850	1.47	1.21	-	8	5.31	980	NX620EYRR6000	650S-21155020-001P00-A1
1650	1.82	1.8	-	12	6.74	1470	NX630EYWR6000	650S-21170020-001P00-A1
850	1.38	-	-	16	5.16	3200	NX820EYXR6000	650S-21155020-001P00-A1

400 VAC power supply

Rated speed Nn [min^{-1}]	Rated power Pn [kW]	Power @ 1500 min^{-1} [kW]	Power @ 3000 min^{-1} [kW]	M_0* [Nm]	I_0* [A_{rms}]	Inertia J [kgmm^2]	Motor code	Drive Code
6000	0.21	0.07	0.13	0.45	1.14	21	NX205EYUR6000	650S-43115020-B01P00-A1
6000	0.39	0.15	0.27	1	1.99	38	NX210EYPR6000	650S-43120020-B01P00-A1
3700	0.65	0.29	0.55	2	1.39	79	NX310EYPR6000	650S-43115020-B01P00-A1
6000	0.92	0.29	0.55	2	2.43	79	NX310EYKR6000	650S-43125020-B01P00-A1
1750	0.67	0.58	-	4	1.36	290	NX420EYVR6000	650S-43115020-B01P00-A1
3500	1.19	0.58	1.06	4	2.71	290	NX420EYPR6000	650S-43135020-B01P00-A1
6000	1.65	0.58	1.06	4	4.43	290	NX420EYKR6000	650S-43145020-B01P00-A1
2250	1.19	0.83	-	5.5	2.45	426	NX430EYQR6000	650S-43125020-B01P00-A1
3150	1.55	0.83	1.5	5.5	3.43	426	NX430EYMR6000	650S-43135020-B01P00-A1
3500	1.67	0.83	1.5	5.5	3.78	426	NX430EYLR6000	650S-43145020-B01P00-A1
1500	1.21	1.21	-	8	2.42	980	NX620EYIR6000	650S-43125020-B01P00-A1
3350	2.33	1.21	2.17	8	5.31	980	NX620EYRR6000	650S-43155020-B01P00-A1
5800	2.41	1.21	2.17	8	8.88	980	NX620EYKR6000	650S-43190030-B01P00-A1
2350	2.4	1.8	-	12	5.25	1470	NX630EYRR6000	650S-43155020-B01P00-A1
3000	2.82	1.8	3.12	12	6.74	1470	NX630EYWR6000	650S-43168030-B01P00-A1
4000	3.18	1.8	3.12	12	8.98	1470	NX630EYLR6000	650S-43190030-B01P00-A1
1620	2.53	2.36	-	16	5.16	3200	NX820EYXR6000	650S-43155020-B01P00-A1
3500	4.89	2.36	4.33	16	11	3200	NX820EYRR6000	650S-43212030-B01P00-A1
5150	6.26	2.36	4.33	16	16	3200	NX820EYMR6000	650S-43216030-B01P00-A1
1650	4.22	3.9	-	28	8.9	6200	NX840EYRR6000	650S-43190030-B01P00-A1
3000	6.39	3.9	6.39	28	15.9	6200	NX840EYWR6000	650S-43216030-B01P00-A1
1900	6.53	5,3	-	41	15.6	9200	NX860EYWR6000	650S-43216030-B01P00-A1

* Mounting on aluminium flange: 280 x 280 x 8 mm (NX1-2), 400 x 400 x 12 mm (NX3-8) Temperature < 40°C near motor's flange

Technical Characteristics and Association with Parker NX servo motors

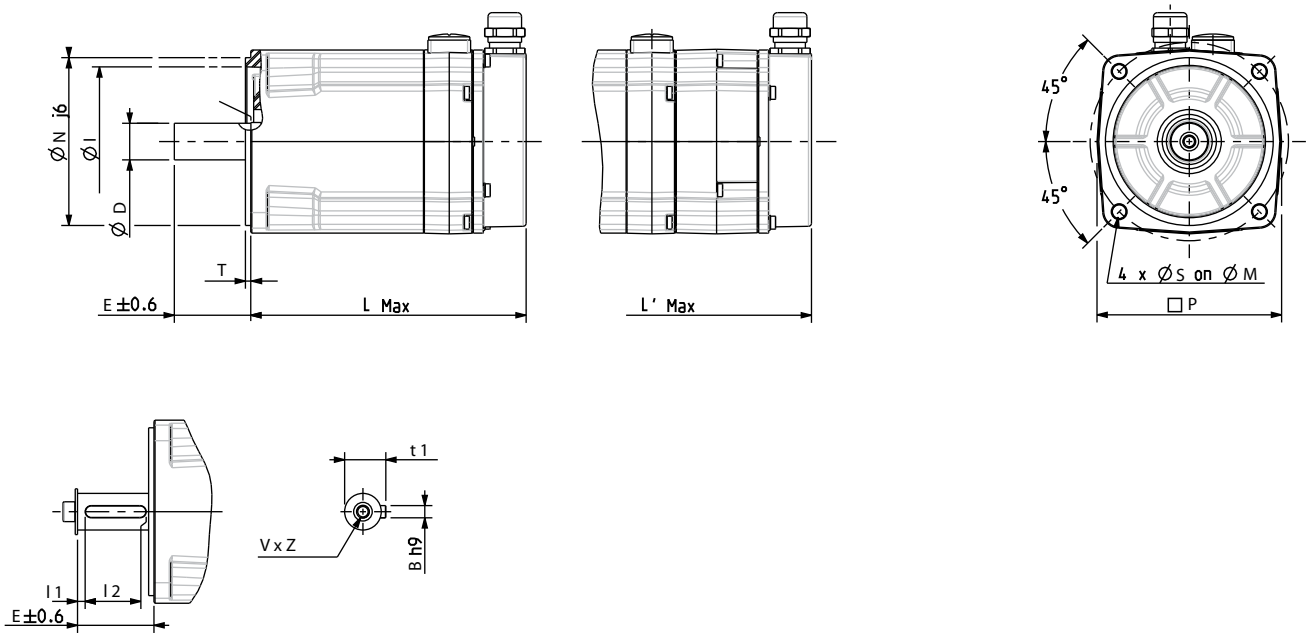
460 VAC power supply

Rated speed Nn [min^{-1}]	Rated power Pn [kW]	Power @ 1500 min^{-1} [kW]	Power @ 3000 min^{-1} [kW]	M_0* [Nm]	I_0* [A_{rms}]	Inertia J [$kgmm^2$]	Motor code	Drive Code
6000	0.24	0.08	0.16	0.45	1.14	21	NX205EYUR6000	650S-43115020-B01P00-A1
6000	0.45	0.18	0.32	1	1.99	38	NX210EYPR6000	650S-43120020-B01P00-A1
4200	0.75	0.35	0.66	2	1.39	79	NX310EYPR6000	650S-43115020-B01P00-A1
6000	1.01	0.35	0.66	2	2.43	79	NX310EYKR6000	650S-43125020-B01P00-A1
2000	0.77	0.7	-	4	1.36	290	NX420EYVR6000	650S-43115020-B01P00-A1
4000	1.37	0.7	1.27	4	2.71	290	NX420EYPR6000	650S-43135020-B01P00-A1
6000	1.9	0.7	1.27	4	4.43	290	NX420EYKR6000	650S-43145020-B01P00-A1
2500	1.37	1	-	5.5	2.45	426	NX430EYQR6000	650S-43125020-B01P00-A1
3600	1.78	1	1.8	5.5	3.43	426	NX430EYMR6000	650S-43135020-B01P00-A1
4000	1.92	1.00	1.8	5.5	3.78	426	NX430EYLR6000	650S-43145020-B01P00-A1
1700	1.39	1.45	-	8	2.42	980	NX620EYIR6000	650S-43125020-B01P00-A1
3800	2.68	1.45	2.6	8	5.31	980	NX620EYRR6000	650S-43155020-B01P00-A1
6000	2.77	1.45	2.6	8	8.88	980	NX620EYKR6000	650S-43190030-B01P00-A1
2700	2.76	2.16	-	12	5.25	1470	NX630EYRR6000	650S-43155020-B01P00-A1
3400	3.24	2.16	3.38	12	6.74	1470	NX630EYWR6000	650S-43168030-B01P00-A1
4600	3.66	2.16	3.38	12	8.98	1470	NX630EYLR6000	650S-43190030-B01P00-A1
1800	2.83	2.83	-	16	5.16	3200	NX820EYXR6000	650S-43155020-B01P00-A1
4000	5.62	2.83	5.2	16	11	3200	NX820EYRR6000	650S-43212030-B01P00-A1
5900	7.2	2.83	5.2	16	16	3200	NX820EYMR6000	650S-43216030-B01P00-A1
1900	4.85	4.68	-	28	8.9	6200	NX840EYRR6000	650S-43190030-B01P00-A1
3400	7.35	4.68	7.67	28	15.9	6200	NX840EYWR6000	650S-43216030-B01P00-A1
1600	5.53	4.68	-	41	15.6	9200	NX860EYWR6000	650S-43216030-B01P00-A1

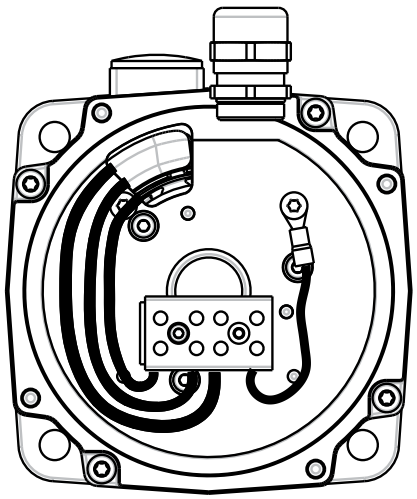
* Mounting on aluminium flange: 280 x 280 x 8 mm (NX1-2), 400 x 400 x 12 mm (NX3-8) Temperature < 40°C near motor's flange

Dimensions

NX sensorless dimensions [mm]																
Moteur	**L_{maxi}**	**L'_{maxi}**	**P**	**N**	**I**	**D**	**T**	**S**	**M**	**E**	**I1**	**I2**	**V**	**Z**	**B**	**t1**
NX205	100	137	56.5	40 j6	-	11 j6	2.5	5.5	63	25	4	16	M4	10	4	12.5
NX210	120	157	56.5	40 j6	-	11 j6	2.5	5.5	63	25	4	16	M5	10	4	12.5
NX310	147	195	71	60 j6	-	11 j6	2.5	5.5	75 to 80	23	3.5	16	M6	10	4	12.5
NX420	175	226	91.5	80 j6	74	19 j6	3	7	100	40	4	32	M6	10	6	21.5
NX430	200	251	91.5	80 j6	74	19 j6	3	7	100	40	4	32	M6	16	6	21.5
NX620	181	236	121	110 j6	98	24 j6	3,5	9	130	50	5	40	M8	20	8	27
NX630	210	265	121	110 j6	98	24 j6	3,5	9	130	50	5	40	M8	20	8	27
NX820	200	266	158	130j6	118	32k6	3,5	12	165	58	4	50	M12	28	10	35



Connection power terminal block

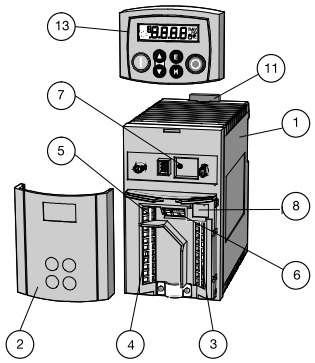


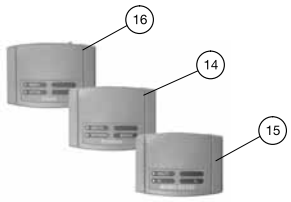
Power
Black: phase U
White: phase V
Red: phase W
Yellow/Green: ground wire

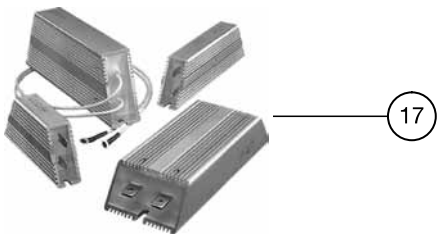
Accessories and Options

AC650S Series AC Drive

Options		Frame	Fitting	Reference
AC Inverters				
1	Inverter housing	1-3	Standard	See order code
2	Terminal Cover (simplified wiring diagram)			
3	Control wiring terminals			
4	Power wiring terminals			
5	Volt-free relay contact			
6	Encoder / Digital Inputs			
7	Power On LED			
8	RS232 P3 port for remote mounting of operator keypad			
11	DIN Rail mounting clip			
Operator keypad				
13	TTL keypad (local mounting only)	1-3	Standard	6511-TTL-00
	RS232 keypad (remote mountable)	1-3	Option	6511-RS232-00
Communication				
14	Profibus communications card	1-3	Factory Option	6513-PROF-00
15	RS232/RS485 communication card (Modbus RTU, EI Bisync F1/3)	1-3	Factory Option	6513-EI00-00
Other options				
16	Cloning module for the storage and transfer of up to 10 drive configurations	1-3	Option	6514-00
Accessories				
17	Brake resistor	See corresponding section		







Frames 1 - 3 up to 7.5 kW

Options

Cloning Module

Description

The cloning module can be used with the complete range of the AC650/AC650V/AC650S series of AC drives.
It allows the user to store up to 10 separate drive configurations which can then be transferred between different drives. The configurations can be mapped between different drive sizes. This is an invaluable tool for commissioning or plant maintenance personnel allowing drives to be backed up and reconfigured simply and easily.

Product Codes

Order Code	Description	Suitable for
6514-00	Cloning Module	AC650/AC650V/AC650S

RS485 Modbus Interface

Description

The RS485/RS232 communications interface provides serial data communication, allowing an AC650V/AC650S drive to connect to a Modbus RTU network as a slave station.

Features

- Protocols: ModBus RTU or EI-6ASCII
- Compatible with AC650/650V/AC650S version 4.x and above
- Connection by shielded twisted pair cable (RS485)
- Connection by shielded 3 core cable (RS232)
- Configuration of input function blocks
- Baud rate configurable by software
- Slave address configurable by software
- Direct access to all drive parameters

Product Codes

Order Code	Description	Suitable for
6513-E100-00	RS485/RS232 Communications Interface	AC650V/AC650S Frames 1-3

Operator Keypads

6511-xxxx-00

6521-00-G

Product Codes

Order Code	Description	Suitable for
6511-TTL-00	TTL keypad (local mounting)	AC650/AC650V/AC650S Frames 1-3
6511-RS232-00	RS232 keypad (remote mountable)	AC650/AC650V/AC650S Frames 1-3

Options

PROFIBUS-DP Interface

PROFIBUS Module 6513-PROF-00
(AC650V/AC650S Frames 1, 2, 3)

Description

The PROFIBUS option supports the PROFIBUS-DP PROFIBUS protocol, designed specifically for communication between a PLC system and remote I/O.
The PROFIBUS interface enables the drive to connect to a PROFIBUS-DP as a slave station.

Features

- PROFIBUS-DP network
- Connection by shielded twisted pair
- Baud rate configurable by software up to 12M Baud
- LED indication of card and communication status
- Compatible with AC inverters AC650V vers 4.9+

Product Codes

Order Code	Description	Suitable for
6513-PROF-00	PROFIBUS-DP communications interface	AC650/AC650V Frames 1-3

Braking Resistors

for AC Drives

Description

Brake resistors are used with AC650S drives equipped with a braking option modules. They are designed to allow the drive to stop a motor at full load during deceleration or an overhauling load.

Brake resistor selection
Brake resistor assemblies must be rated to absorb both peak braking power during deceleration and the average power over the complete cycle.

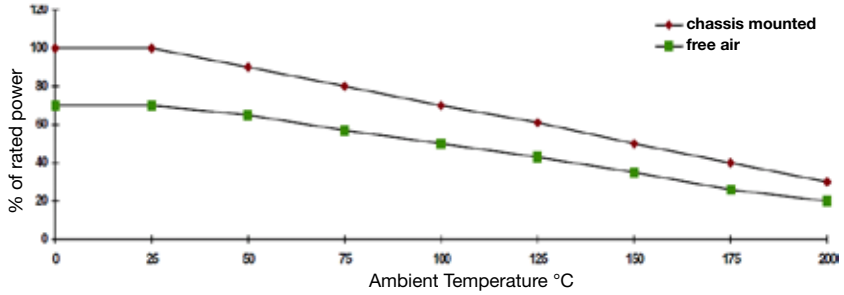
Resistors above 500 W
Resistors above 500 W are available upon request:

- IP20 protection up to 3 kW
- IP13 protection between 4.2 and 9.8 kW

$$\text{Peak braking power} = \frac{0.0055J \times (n_1^2 - n_2^2)\ (W)}{tb}$$

$$\text{Average braking power } P_{av} = \frac{P_{pk} \times t_b}{t_c}$$

J - total inertia in kgm^2
n_1 - initial speed in min^{-1}
n_2 - final speed min^{-1}
t_b - braking time in s
t_c - cycle time in s

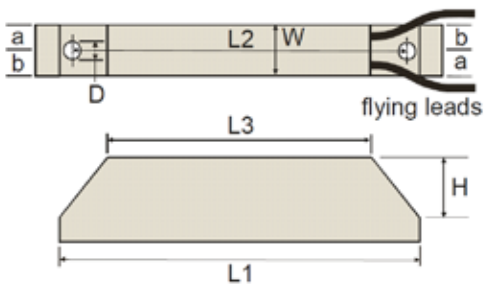


Dimensions

Nominal Power [kW]	Dimensions		
	L [mm]	H [mm]	P [mm]
1.0	137	450	140
1.6	182	450	140
2.0	182	450	140
2.5	227	450	140
3.0	227	450	140
4.2	450	440	540
5.6	530	440	540
7.0	530	440	540
8.4	610	440	540
9.8	610	440	540

Model	Impedance [Ω]	Nom. Power [W]	Dimensions							
			L1	L2	L3	W	H	D	a	b
CZ467715	500	60	100	87	60	22	41	4.3	10	12
CZ467714	200	100	165	152	125	22	41	4.3	10	12
CZ389853	100	100	165	152	125	22	41	4.3	10	12
CZ467717	100	200	165	146	125	30	60	4.3	13	17
CZ463068	56	200	165	146	125	30	60	4.3	13	17
CZ388397	56	200	165	146	125	30	60	4.3	13	17
CZ388396	36	500	335	316	295	30	60	4.3	13	17
CZ467716	28x2	500	335	316	295	30	60	4.3	13	17

Overload 5 s : 500 %
Overload 3 s : 833 %
Overload 1 s : 2500 %



EMC Filters

for AC Drives

Description

A range of custom designed optional EMC (Electromagnetic Compatibility) filters are available for use with Parker SSD Drives product range.

They are used to help achieve conformance with the EMC directive BS EN 61800-3:2004 - "Adjustable speed electrical power drive systems - Part 3".

Installation of the drive must be in accordance with the installation guidelines in the product manual. The filters comply with the relevant standards as outlined in the following table.

1st Environment: Drives directly connected without intermediate transformers to a low voltage (<100 Vrms) supply network that is part of a network that also supplies buildings used for domestic purposes.
2nd Environment : Establishments where there is no direct connection to a low voltage supply network that also supplies buildings used for domestic purpose.
TN Earthing = Grounded neutral AC supply <460 VAC
IT Earthing = Ungrounded neutral AC supply <500 VAC
Ext. Filter = External filter
Ext. Filter FP = Footprint external filter

EMC Filters

AC Drives	2nd Environment (Industrial)	1st Environment (Domestic)
650/650V/AC650S		
Frame 1-3	Indicated by an F in the product code	Indicated by an F in the product code

Three Phase Line Reactors

for AC Drives

Description

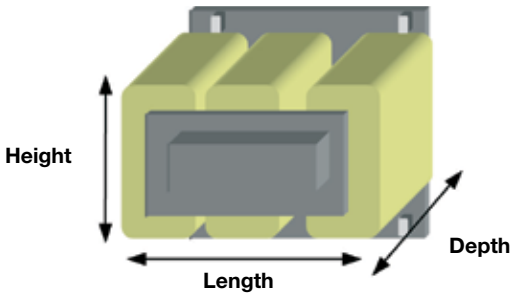
Parker's range of line reactors have been especially selected to match the requirements of the Parker AC drive range and can be used on both the input and output sides of the drive. They are used to reduce the harmonic content of the supply current. A choke fitted in the drive output limits the capacitive current when motor cable runs in excess of 50 m are used. It prevents overcurrent trips and temperature rise of the motor.
As well as helping with compliance with IEEE 519 there are other benefits to using line/load reactors including:

- Increased drive system reliability
- Reduced harmonics / surge currents
- Reduced motor noise and temperature
- Improved true power factor

Dimensions

Order Reference	Inductance	In [A]	Height [mm]	Length [mm]	Depth [mm]	Fixing Centres [mm]	Weight (approx.) [kg]
CO389936U401	75 µH	315	215	330	320	175 x 225	70
CO389936U402	50 µH	480	215	330	320	175 x 225	95
CO466448U040	50 µH	36	70	155	127	48 x 140	2.5
CO466448U165	50 µH	148.5	115	190	155	93 x 170	12
CO466709U038	30 µH	342	370	350	226	240 x 320	38
CO466709U050	25 µH	450	431	420	226	290 x 381	53
CO466709U073	20 µH	653	431	420	226	290 x 381	60
CO466709U083	15 µH	747	431	420	226	290 x 381	69
CO468314U650	5 µH	650	30	300	325*	100 x 250	35
CO468325U006	1.749 mH	12.7	83	157	160*	60 x 80	6
CO468325U037	0.416 mH	54	110	240	250*	80 x 200	13
CO468325U110	0.137 mH	165	140	300	310*	110 x 240	30
CO468326U006	2.917 mH	12.8	170	240	260*	80 x 140	17
CO468326U037	0.693 mH	54	240	360	380*	120 x 200	50
CO468326U110	0.227 mH	165	320	390	490*	280 x 260	130
CO468325U055	0.282 mH	79	130	240	250*	100 x 200	19
CO466448U015	50 µH	13.5	60	80	67	64 x 40	1
CO466448U110	50 µH	100	100	190	155	170 x 75	7.5
CO468326U006	2.917 mH	12.8	170	240	260	80 x 140	17
CO466448U070	50 µH	63	85	155	127	140 x 63	4.5
CO466250U012	15 µH	1080	400	420	450	300 x 140	170

* Include Earth Stud



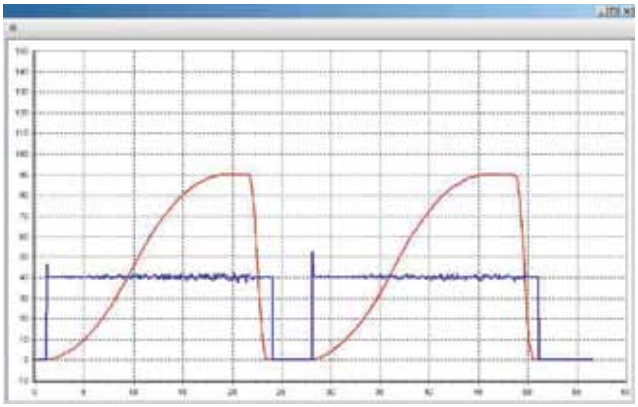
Accessories for all AC Drives

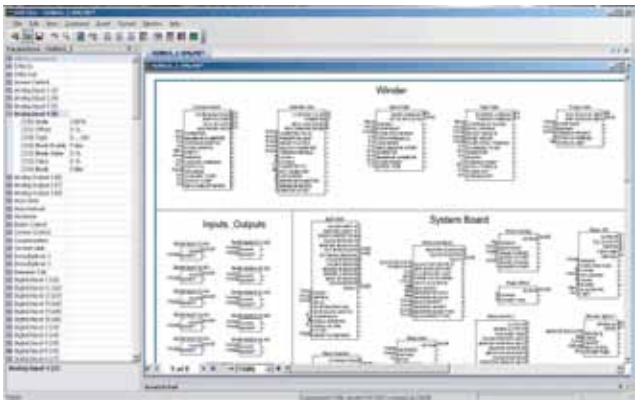
Drive System Explorer Lite (DSE Lite) Software

Description

DSE LITE software is an easy to use configuration, commissioning and monitoring tool with graphical interface for the Parker SSD Drives range of AC and DC drives.
While the drive is in running mode the oscilloscope function allows “on-line” monitoring of selected parameters and the recording of trends.

DSE LITE, allows the user to create, parameterize and configure user defined applications thanks to function blocks dedicated to speed control, Winder, PID, Diameter calculator, Shaftless...
DSE LITE is downloadable from our website.
www.parker.com





Order Code

AC650S Series

	1		2	3	4	5		6	7	8	9	10		11	12
Order example	**650S**	**-**	**21**	**1150**	**1**	**0**	**-**	**0**	**0**	**1**	**P**	**00**	**-**	**A**	**1**

1	**Product family**	
	650S	AC650S compact drive for sensorless servo control
2	**Supply voltage**	
	21	230 VAC 1phase
	43	400/460 VAC 3phase
3	**Output Current**	
	1150	1.5 A
	1200	2 A
	1220	2.2 A
	1250	2.5 A
	1300	3 A
	1350	3.5 A
	1400	4 A
	1450	4.5 A
	1550	5.5 A
	1680	6.8 A
	1700	7 A
	1900	9 A
	2120	12 A
	2160	16 A
4	**Frame**	
	1	
	2	
	3	
5	**Auxiliary supply**	
	0	Not required
6	**Brake switch**	
	0	Not fitted (not available on frame 1 and 2 230 V products)
	B	Brake switch fitted (must be fitted on frame 2 400/460 V products and all frame 3 products)
7	**Filter**	
	0	Not fitted (Optional on frames 1-3)
	F	Filter fitted (Optional on frames 1-3)
8	**Comms**	
	1	RS232 port fitted
9	**Mechanical style**	
	P	Panel mount
10	**Special option**	
	00	None
		Documented special options (01-99)
11	**Destination**	
	A	English (50 Hz)
12	**Keypad**	
	1	6511 TTL fitted (standard)

NX Series - Sensorless Motors

	1	2	3	4	5	6
Order example	**NX205EYU**	**R**	**6**	**0**	**0**	**0**

1	**Motor type**	
	NX250EYU **NX210EYP** **NX310EYP** **...**	see table "Technical Characteristics and Association with Parker NX servo motors"
2	**Painting**	
	R	Unpainted (standard)
	B	Black mat (on demand)
3	**Connection**	
	6	Terminal Box (standard)
	7	Connectors
4	**Brake/Thermal Protection**	
	0	without brake/no thermal protection (standard)
	1	without brake/PTC
	2	without brake/thermo switch
	3	with brake/no thermal protection
	4	with brake/PTC
	5	with brake/thermo switch
5	**Protection degree**	
	0	IP64 (standard)
	1	IP65
6	**Shaft end**	
	0	Smooth shaft
	1	Keyed shaft (standard)

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^2 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

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US Product Information Centre
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www.parker.com

Your local authorized Parker distributor