

IB-K Interface Board & EEV Package

Sales Catalog



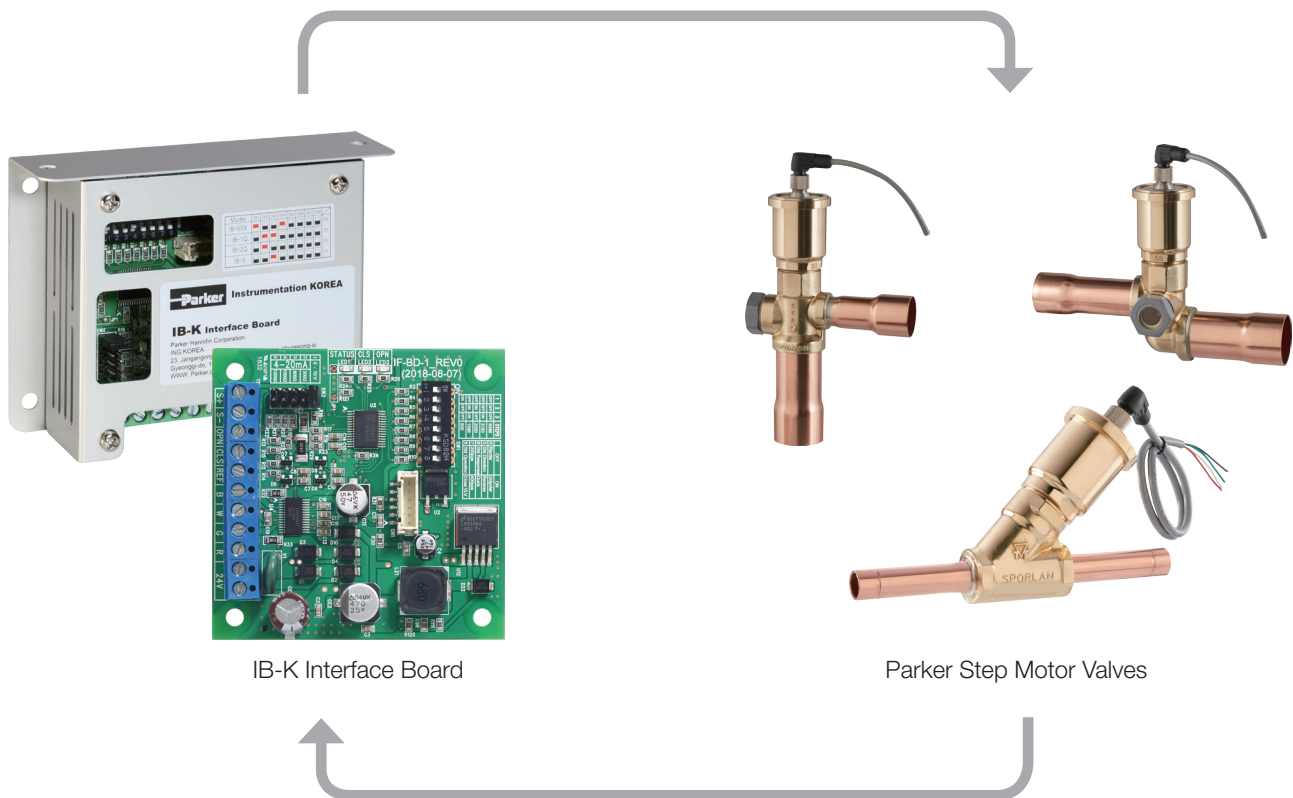
ENGINEERING YOUR SUCCESS.

Introduction

The IB-K is developed to be applicable in Korea and various markets. It is also applicable to Parker Sporlan products and all step motor valves manufactured in Korea and China.

The IB-K is a small electronic circuit board that extends the functionality of an external system controller to drive step motor valves.

The external controller must provide an analog 0-10VDC or 4-20mA signal to the IB-K.



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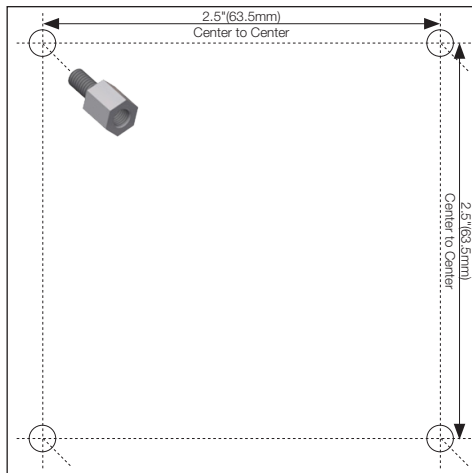
The products described herein, including without limitation, product features, specifications, designs, availability and pricing are subject to change by Parker Hannifin Corp and its subsidiaries at any time without notice.

Proposition 65 Warning: This product contains chemicals known to the state of California to cause cancer or birth defects or other reproductive harm.

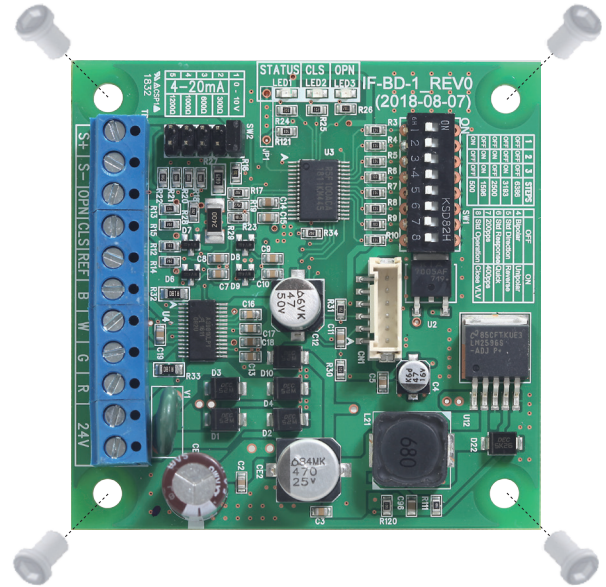
Installation

Mounting Instructions

- Non metallic standoffs (Not included with IB-K)



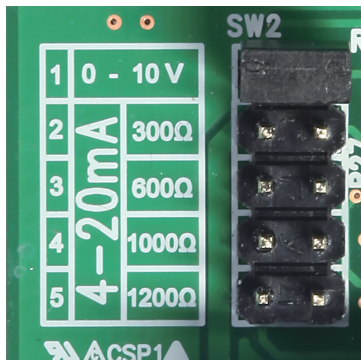
Screw standoffs in place (8-32 thread or smaller)



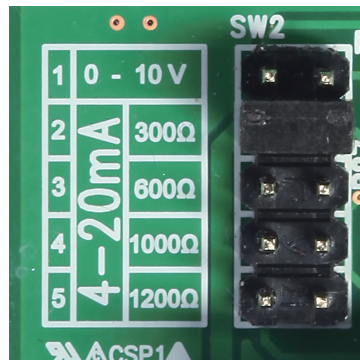
Screw IB-K standoffs. (Screws Not included)

SETUP IB-K

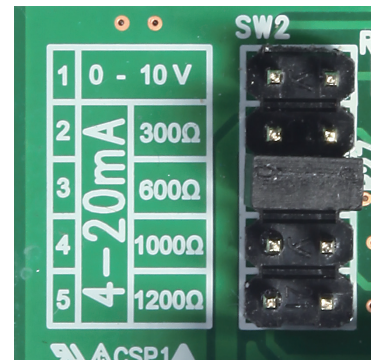
Install jumper to see control signal



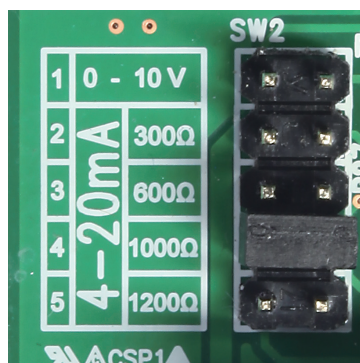
0-10V



4~20mA 300Ω



4~20mA 600Ω



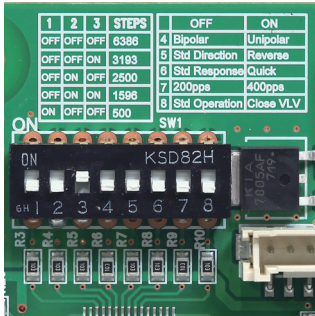
4~20mA 1,000Ω



4~20mA 1,200Ω

A. SET-UP FOR IB-K

Set dip switches for valve type and operation



3193 steps/Bipolar



2000 steps/Unipolar



2000 steps/Bipolar



2500 steps/Bipolar



6386 steps/Bipolar



500 steps/Unipolar



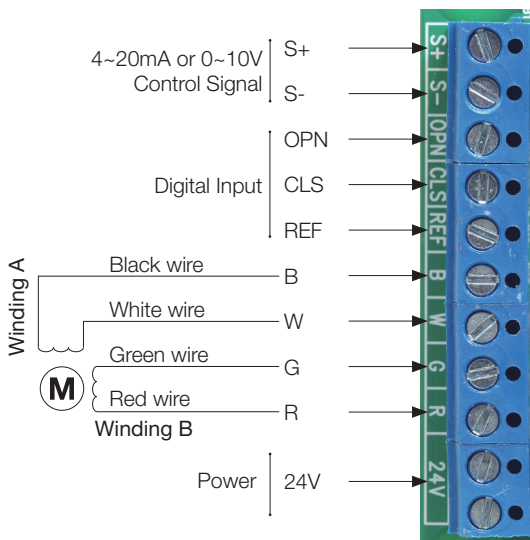
1596 steps/Unipolar



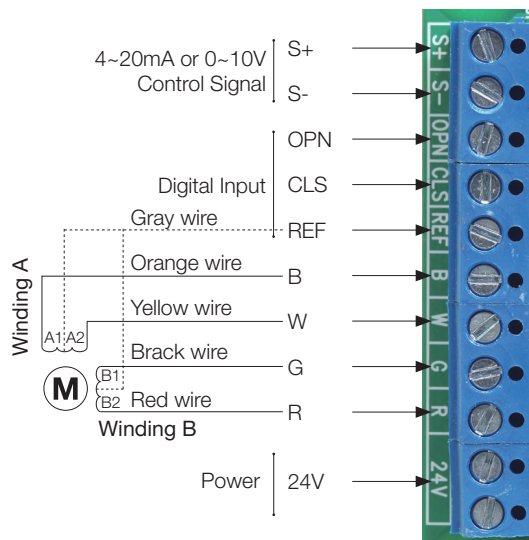
1596 steps/Bipolar

WIRE IB-K

Bipolar Valve



Unipolar Valve



Notes

Transformer requirements: One stepper motor valve per IB-K (30VA per IB-K Board)

Two stepper motor valves per IB-K (40VA per IB-K board). Only one unipolar valve can driven per IB-K.

Power supply requirements: The 24V power supply is non-polar and has no +, - distinction.

3.5 in.-lbs. maximum torque on all screw terminals.

B-1. CEV Series (Electronic Expansion Valve)



EEV Features & Benefits

- Highly reliable direct drive step motor
- Precise 500 step flow resolution
- Tight shutoff for high efficiency systems
- Efficient low power design; no holding current required
- Rapid response; less than 6 seconds full stroke
- Bi-flow capable for heat pump applications
- Compatible with various HCFC and HFC refrigerants (R-410A, R-134a, R-407C, R-22...)

Specifications

Drive Type	Permanent Step Motor Direct Drive	Media Temp.	-30°C ~ 70°C
Pulsing Type	Unipolar	Ambient Temp.	-30°C ~ 70°C
Flow Path	Bi-flow Capable	Moisture / Humidity	≤ 95%RH
Resolution	500 ± 20 PPS	Inter. Leakage(Max)	≤ 250cc/min @ 10Bar
Open Step	32 ± 20 PPS	Exter. Leakage(Max)	Helium, ≤ 1.0x10 ⁻⁶ mbarL/sec
Line Travel / Pulse	0.00625mm	Rated Voltage	12VDC ± 10%
Operating Stroke	3.125mm	Rated Current	Max. 500mA/Phase
Step Rate	30 ~ 80 PPS	Phase Resistance	40±4Ohms
Full Motion Transit Time	6.25Sec(@80PPS)/16.67Sec(@30PPS)	Dielectric Strength	600VAC, 1 Sec, no breakdown
MOPD (Side Inlet)	CEV14~26 493PSI (34Bar) CEV30~32 363PSI (25Bar)	Insulation Resistance	> 100MΩ @ 500VDC
MOPD (Bottom Inlet)	CEV14~24: >305PSI (21Bar) CEV26~30: >218PSI (15Bar) CEV32: >189PSI (13Bar)	Insulation Class	Class E
Max. Working Pressure	624PSI (43Bar)	Compatible Refrigerant	R22, R134a, R410a, R407c etc.


B-2. Unipolar Electric Expansion Valves for Air Conditioning / Heat Pump Applications



Features

- Unipolar stepper motor
- High resolution actuator
- Superior corrosion resistance
- Removable M12 cable
- No mounting orientation restrictions
- Bi-flow performance
- ODF or Chatleff fitting

Specifications

Motor Type	Permanent magnet Unipolar wet motor	
Approved Refrigerants	R-22, R-134a, R-407A, R-407C, R-407F, R-410A, R-422D	
Compatible Oil	All common mineral, polyester and alkylbenzene oils	
Supply Voltage	12 volts DC +/-10%	
Cable	Type M12x1 (A-coding, 5 conductor)	
Phase Resistance	100 ohms +/- 10%	
Stepping Current	120 mA / winding	
Number of Steps	1600 half steps	
Step Rate	200 half steps per second	
Initialization	2500 steps closing	
Overdriving	Recommend one 10% overdrive closed per day maximum(overdriving open not permitted)	
MRP / MAP / MWP	700 psig (48 bar)	
Ultimate Strength	2900 psi (200 bar)	
MOPD	SER-B-U, SER-C-U, SER-D-U 580 psid (40 bar)	SER-E-U 400 psid (27.6 bar)
Max Internal Leakage@ 100 psid (6.9 bar) using dry air	SER-B-U, SER-C-U 300 cc/min	SER-D-U, SER-E-U 500 cc/min
Max External Leakage	.10 oz/yr at 300 psig (2.8 gram/yr @ 20 bar)	
Liquid Temperature Range	50°F to 130°F (10°C to 54.4°C)	
Evaporator Temperature Range	20°F to 60°F (-6.7°C to 15.6°C)	
Ambient Temperature Range	-22°F to 140°F (-30°C to 60°C)	
Installation Maximum Temperature	230°F (110°C) for 15 minutes (wet rag required for brazing)	
Relative Humidity	0-100% (Condensing)	
Mounting Orientation	No restrictions	
Flow Direction	Bi-flow (side inlet for normal flow direction)	
Design Cycles w/ 10% Overdrive	500k	
Certifications (SA5460)	c  (SA5460), CE, RoHS, REACH	

C-1. Electric Expansion Valves

SER, SERI, SEHI



Features And Benefits

- Step motor operated for precise control
- High resolution drive assembly
- Solenoid tight seating
- Corrosion resistant materials used throughout
- Field proven reliability
- Low power consumption (less than 4 watts)
- Unique built-in sightglass - indicates valve operation, moisture levels and refrigerant quality (SERI & SEHI only)
- Compatible with HCFC and HFC refrigerants and oils, in addition to subcritical CO₂
- Self lubricating materials used for long life
- High linear force output

Specifications

VALVE	SER-B,-C	SER-D	SERI-G, -J, -K, -L	SEHI-175	SEHI-400
Motor type	2 phase, bipolar wet motor				
Compatible refrigerant	All common HCFC and HFC refrigerants including R-410A and subcritical R-744				All common HCFC and HFC refrigerants
Compatible oils	All common Mineral, Polyolester and Alkybenzene oils				
Supply voltage (L/R)	12 volt DC, -5%, +10% measured at the valve leads				
Cable type	IP67 Removable Quad-Position		IP67 Removable Quad-Position	Hermetic	Hermetic
Phase resistance	100 ohms +- 10%		100 ohms +-10%	75 ohms +-10%	75 ohms +-10%
Chopping current*	Evaluate to avoid step loss or damage to the valve*				
Maximum power input (L/R)	2.8 watts		2.8 watts	3.8 watts	3.8 watts
Recommended step rate	200/second (L/R), up to 400/second (current limited)				
Number of steps	2500		2500	6386	6386
Resolution	.00009" (.0023 mm) / step		.00012" (.003 mm) / step	.00008" (.002 mm) / step	.00008" (.002 mm) / step
Stroke	0.23" (5.8 mm)		.297" (7.5 mm)	.500" (12.7mm)	.500" (12.7mm)
MOPD	580 psid (40 bar)		500 psid (34 bar)	500 psid (34 bar)	300 psid (21 bar)
MRP	1015 psig (70 bar)	700 psig (48 bar)	700 psig (48 bar)	620 psig (43 bar)	500 psig (34 bar)
Max. internal leakage	100 cc/min @ 100 psid (6.9 bar), dry air				
Max. external leakage	.10 oz./yr at 300 psig (2.8 gram/yr @ 20 bar)				
Operating temp range	-50°F to 155°F (-45°C to 68°C)				
Materials of construction	Brass, copper, synthetic seals, stainless steel				

C-2. SDR Electric Discharge Bypass Valve



Features And Benefits

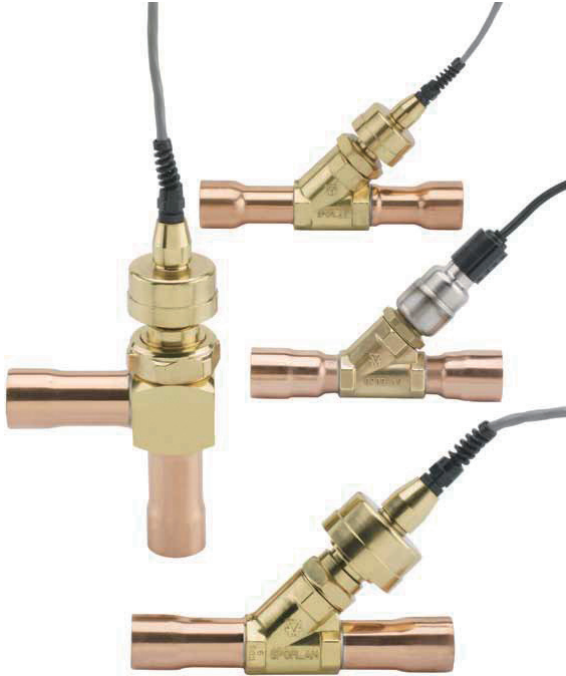
- Direct temperature control
- Tight shutoff when closed
- Can be interfaced with direct digital controls or other building management systems
- Functions as a standalone temperature control when used with a Sporlan TCB
- Capacities up to 25 tons
- Suitable for use with CFC, HCFC and HFC refrigerants
- Proven reliable step motor design
- High force output for unparalleled reliability
- Corrosion resistant materials used throughout
- Low power consumption- 4 watts

Specifications

Motor Type	2 phase permanent magnet, 2 coil bipolar
Supply Voltage	12 VDC, -5% + 10%, measured at the valve leads
Connections	4 lead, 18 AWG, PVC insulation jacketed cable
Phase Resistance	75 ohms per winding \pm 10%
Current Range	.131 to .215 amps/winding; .262 to .439 amps with 2 windings energized
Maximum Power	4 watts
Inductance Per Winding	62 \pm 20% mH
Required Step Rate	200 steps per second, other rates must be tested and approved
Number of Steps	SDR-3 & 3x - 3193 SDR-4 - 6386
Resolution	.0000783 inches/step (.02 mm/step)
Total Stroke	SDR - 3 & 3x .250 inches (64mm) SDR-4 - .500 inches (12.7 mm)
Maximum Allowable Internal Leakage	less than 50 cc/min at 100 psi
Maximum Allowable External Leakage	less than .10 oz./year at 300 psig (.2 gr/yr at 20 bar)
Maximum Rated Pressure (MRP)	620
Operating Temperature Range	-40°F to 155°F (-40°C to 70°C)
Maximum Dehydration Temperature	250°F (120°C)
Compatibility	all common CFC, HCFC and HFC refrigerants except ammonia; all common Mineral, Polyolester and Alkylbenzene oils
Materials of Construction	copper - fittings; brass - valve body, motor housing, and adaptors; synthetic materials - seating and seals

C-3. Electric Pressure Regulating Valves

CDS Series



Features And Benefits

- Step motor operated for precise control
- High resolution drive assembly
- Solenoid tight seating
- Corrosion resistant materials used throughout
- Field proven reliability
- Low power consumption (4 watts or less)
- Balanced port designs
- Compatible with most HCFC and HFC refrigerants and oils, in addition to subcritical CO₂
- Self lubricating materials used for long life
- High linear force output

Specifications

	Valves CDS -2, -4, -7	Valves CDS -9, -16, -17
Motor Type	2 phase, bipolar wet motor	
Compatible Refrigerant	All common HCFC and HFC refrigerants including R-410A and subcritical R-744	
Compatible Oils	All common Mineral, Polyolester and Alkybenzene oils	
Supply Voltage*	12 VDC-5% +10% (measured at the valve leads)	
Cable Type	IP66 Removable	Hermetic
Phase Resistance	100 ohms ± 10%	75 ohms ± 10%
Phase Inductance	43 MHz ± 20%	62 MHz ± 20%
Nominal Current*	120 ma / winding	160 ma / winding
Holding Current	Not recommended	Not recommended
Power Input*	2.8 watts	3.8 watts
Recommended Step Rate	200 / second (L/R), up to 400 / second (properly configured current chopper)	
Number of Steps	2500	6386
Full Motor Transit Time*	12.5 seconds	32 seconds
Resolution	.00012 inches (.003 mm) / step	.000078 inches (.002 mm) / step
Total Stroke	0.297 inches	0.500 inches
MRP	700 psig (48 bar)	680 psig (47 bar)
Max. Internal Leakage	400 cc/min at 100 psid (6.9 bar), dry air	
Max. External Leakage	.10 oz/yr @ 300 psig (2.8 grams/yr @ 20 bar)	
Ambient Temp. Range	-50°F to 140°F (-45°C to 60°C)	
Refrigerant Temp. Range	-50°F to 240°F (-45°C to 116°C)	
Materials of Construction	Brass, copper, stainless steel, synthetic seals	

C-4. Modulating Electronic 3-Way Valve

Types MTW-9 and MTW-17



Features And Benefits

- Improved performance from modulated control
- Reduction in number of modulation valves required per system
 - Simplified system piping enables piping material cost reduction
 - Reduced install time enables labor cost reduction
 - Single actuator reduces control and wiring complexity
- Utilizes standard 42mm stepper motor
 - 6,386 steps of resolution
 - 75 Ω bipolar stepper motor
 - 160 mA per winding
- Bi-sealing piston assembly

Specifications

Motor Type	Permanent magnet bipolar internal (wet) motor
Compatible Refrigerant	All common HCFC & HFC refrigerants, including R-410A
Compatible Oil	All common mineral, polyolester and alkylbenzene oils
Supply Voltage (unless current limited)	12 volts DC \pm 10%
Cable	Hermetic (20' standard)
Phase Resistance	75 ohms \pm 10%
Stepping Current	160 mA/winding
Holding Current	Not recommended
Number of Full Steps	6,386 full steps
Step Rate	200 steps / second (PPS)
Initialization	7,500 steps closing
Overdriving	Recommended one 10% overdrive closed per day maximum
MRP/MAP/MWP	700 psig (48.3 bar)
MOPD	700 psid (48.3 bar)
Max Internal Leakage	400 cc/min. at 100 psid (6.9 bar) dry air
Max External Leakage	0.10 oz./yr. at 300 psig (2.8 gram/yr. at 20 bar)
Max Fluid Temperature Range	-40°F to 240°F (-40°C to 116°C)
Ambient Temperature Range	-40°F to 140°F (-40°C to 60°C)
Installation Maximum Temperature	240°F (116°C) for 15 minutes (wet rag required for brazing)
Relative Humidity	0-100% (condensing)
Mounting Orientation	Motor assembly above horizontal
Flow Direction	Forward flow only
Certification	UL File: SA5460; CCN: SFJQ2/SFJQ8

Price List

Classification		Part No.	Model	Capacities in Tons(R-22 Standard)	STEP (Resolution)	Price (Won)	
BOARD	A	IB-K	IB-K	Used as			
Unipolar	B-1	CEV-14	CEV-14 (w/COIL)	2.1	500	15,000	
		CEV-16	CEV-16 (w/COIL)	2.7	500	15,000	
		CEV-18	CEV-18 (w/COIL)	3.4	500	15,000	
		CEV-24	CEV-24 (w/COIL)	5.7	500	16,000	
		CEV-26	CEV-26 (w/COIL)	6.3	500	17,000	
		CEV-30	CEV-30 (w/COIL)	8	500	18,000	
		CEV-32	CEV-32 (w/COIL)	8.7	500	18,000	
		CEC42Y5	CEC42Y5_COIL			5,000	
	B-2	953320	SER-B-U	3.5	2,500		
		953326	SER-C-U	6.2	2,500		
		805350	SER-D-U	13	2,500		
		805357	SER-E-U	18.2	2,500		
	Bipolar	C-1	805216	SER-AA	0.6	2,500	
			805232	SER-A	1.3	2,500	
805145			SER-B	2.5	2,500		
805130			SER-C	6.8	2,500		
805160			SER-D	13.8	2,500		
805347			SERI-F (WITH INDICATOR)	20.4	2,500		
805285			SERI-G (WITH INDICATOR)	26.6	2,500		
805284			SERI-J (WITH INDICATOR)	47.8	2,500		
805348			SERI-K (WITH INDICATOR)	86.7	2,500		
805560			SERI-L (WITH INDICATOR)	118	2,500		
953002			SEHI-175 (WITH INDICATOR)	205	6,386		
953298			SEH-P (Y TYPE)	333	6,386		
953101			SEHI-400 (WITH INDICATOR)	434	6,386		
C-2		953475	SDR-1X	0.6	1,596		
		953479	SDR-2	1.8	1,596		
		953483	SDR-2X	3.7	1,596		
		930003	SDR-3	7	3,193		
		930022	SDR-3X	12.6	3,193		
		930000	SDR-4	25	6,386		
		930035	SDR-5	64.3	6,386		
C-3		805581	CDS-2	1.3	2,500		
		805584	CDS-4	2.6	2,500		
		805587	CDS-7	7.2	2,500		
		940033	CDS-9	10.9	6,386		
		940013	CDS-16	18.8	6,386		
		940039	CDS-17	19.5	6,386		
C-4	183907	MTW-9	12.1	6,386			
	183911	MTW-17	22.3	6,386			

Memo

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Motion & Control Technologies...

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Aerospace

Key Markets

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Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes



Climate Control

Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO₂ controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves



Electromechanical

Key Markets

Aerospace
Factory automation
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, gantry robots & slides
Electrohydraulic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions



Filtration

Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

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 & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems



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

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings



Hydraulics

Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors



Pneumatics

Key Markets

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

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors



Process Control

Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves



Sealing & Shielding

Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

Parker Asia Pacific

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