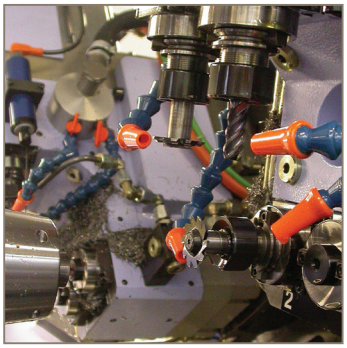
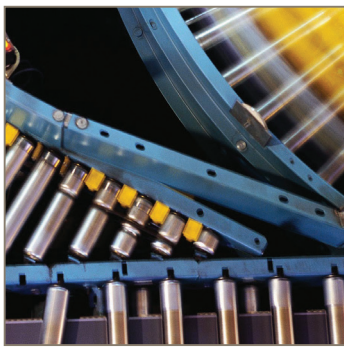


aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

AC10P Variable Speed Drive

IP20 Compact Drive for Simple, Reliable Motor Control for OEM Applications

Control Mode - v/f. sensorless vector, closed loop vector
Power Range - 0.2 to 180 kW



ENGINEERING YOUR SUCCESS.

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- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifi cations provided by the user, the user is responsible for determining that such data and specifi cations are suitable and suffi cient for all applications and reasonably foreseeable uses of the components or systems.

Variable Speed Drive - AC10P Series

Parker Hannifin

The global leader in motion and control technologies

Global Product Design

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

Local Application Expertise

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

Manufacturing to Meet Our Customers' Needs

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

Electromechanical Worldwide Manufacturing Locations

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

Asia
Wuxi, China
Chennai, India

North America
Rohnert Park, California
Irwin, Pennsylvania
Charlotte, NorthCarolina
NewUlm, Minnesota

Wuxi, China

Chennai, India

Littlehampton, UK

Charlotte NC, USA

Jangan, Korea

Variable Speed Drive - AC10P Series

Overview

Description

The AC10P is a simple, reliable and economic solution for general process application specifically targeting OEM requirements. The drive is capable to control induction motors using simple V/f, Sensorless, Closed Loop and Open Loop PMAC modes. It is available in 230V and 400V versions with 150% overload for 60 seconds and in 12 frame sizes. Serial communication Modbus build in as Standard, Profibus DP & EtherCAT Optional, CanOpen (Future Development).

Features

Simplicity

AC10P is designed to reduce time and effort required to install, setup and commission through the keypad. Wiring requirements are simple which makes the setup time minimal. Autotuning for closed loop and sensorless vector controls (both for induction and PMAC) makes the drive very responsive to dynamic changes in speed or load. With a speed accuracy of 0.02% in closed loop vector and 0.5% in sensorless vector modes respectively, the AC10P can be used for a host of applications that require precise speed and torque controls.

Reliability

Following all Parker products high standards, the AC10P is engineered and built to deliver outstanding levels of performance consistently. With the PCBs coated to withstand 3C3 class environment, the AC10P can be used in most of the demanding conditions reliably so as to maximise the production uptime.

Applications

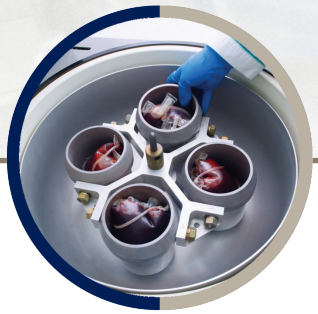
AC10P is designed to support most general purpose applications that require V/f, sensorless vector (for induction and PMAC motors), and closed loop for induction motors. Having serial communication options it can also be used in conjunction with most PLCs to meet process line applications.

Because of its versatility, the AC10P can be used in most of the general purpose applications like conveyer, centrifuge, fans and pumps, mixers, textile machines, machine tool spindles.

OEM specific applications include

- **Wire Drawing**
- **Load Sharing**
- **Extruder**
- **Speed Follower**

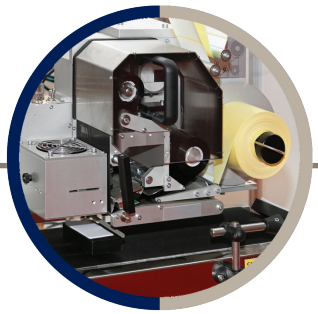
Conveyors



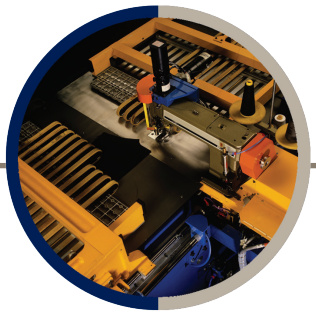
Centrifuges

Fans

Mixers



Packaging Machines



Textile Machines

Technical Characteristics

Technical data

Parker product Code	Rated voltage/Power	Frame Size	Current (A)
220V			
10P-11-0015-xx	1-phase 230V/0.2kw	1	1.5
10P-11-0025-xx	1-phase 230V/0.4kw	1	2.5
10P-11-0045-xx	1-phase 230V/0.75kw	1	4.5
10P-12-0070-xx	1-phase 230V/1.5kw	2	7.0
10P-12-0100-xx	1-phase 230V/2.2kw	2	10.0
10P-31-0045-xx	3-phase 220~240V/0.75kw	1	4.5
10P-32-0070-xx	3-phase 220~240V/1.5kw	2	7.0
10P-32-0100-xx	3-phase 220~240V/2.2kw	2	10
10P-32-0120-xx*	3-phase 220~240V/3.0kw	2*	12
10P-33-0170-xx	3-phase 220~240V/4.0kw	3	17
10P-34-0210-xx	3-phase 220~240V/5.5kw	4	21
10P-35-0300-xx	3-phase 220~240V/7.5kw	5	30
10P-35-0400-xx	3-phase 220~240V/11kw	5	40
10P-36-0550-xx	3-phase 220~240V/15kw	6	55
10P-36-0660-xx	3-phase 220~240V/18.5kw	6	66
10P-36-0760-xx	3-phase 220~240V/22kw	6	76
10P-37-1040-xx	3-phase 220~240V/30kw	7	104
10P-38-1300-xx	3-phase 220~240V/37kw	8	130
10P-38-1550-xx	3-phase 220~240V/45kw	8	155
10P-39-1900-xx	3-phase 220~240V/55kw	9	190
10P-310-2600-xx	3-phase 220~240V/75kw	10	260
400V			
10P-42-0020-xx	3-phase 400V/0.75kw	2	2.0
10P-42-0040-xx	3-phase 400V/1.5kw	2	4.0
10P-42-0065-xx	3-phase 400V/2.2kw	2	6.5
10P-42-0070-xx	3-phase 400V3.0kw	2	7.0
10P-43-0090-xx	3-phase 400V/4.0kw	3	9.0
10P-43-0120-xx	3-phase 400V/5.5kw	3	12.0
10P-44-0170-xx	3-phase 400V/7.5kw	4	17.0
10P-44-0230-xx	3-phase 400V/11kw	4	23.0
10P-45-0320-xx	3-phase 400V/15kw	5	32.0
10P-45-0380-xx	3-phase 400V/18.5kw	5	38.0
10P-45-0440-xx	3-phase 400V/22kw	5	44.0
10P-46-0600-xx	3-phase 400V/30kw	6	60.0
10P-47-0750-xx	3-phase 400V/37kw	7	75.0
10P-47-0900-xx	3-phase 400V/45kw	7	90.0
10P-48-1100-xx	3-phase 400V/55kw	8	110.0
10P-48-1500-xx	3-phase 400V/75kw	8	150.0
10P-49-1800-xx	3-phase 400V/90kw	9	180.0
10P-49-2200-xx	3-phase 400V/110kw	9	220.0
10P-410-2650-xx	3-phase 400V/132kw	10	265.0
10P-411-3200-xx	3-phase 400V/160kw	11	320.0
10P-411-3600-xx	3-phase 400V/180kw	11	360.0

Note: Any inquiry on higher power ratings, please contact Parker Hannifin sales.

Technical Specifications

	Items	Contents
Input	Rated Voltage Range	3-phase 380-480V (+10%, -15%)
		1 & 3-phase 220-240V ±15%
	Rated Frequency	50/60Hz
Output	Rated Voltage Range	3-phase 0-INPUT (V)
	Frequency Range	0.50～590.0Hz (In SVC control mode, the max frequency is 500Hz.)
Control Mode	Carrier Frequency	800~16000Hz; - please refer to your Parker Representative for carrier frequency limits according to power ranges
	Input Frequency Resolution	Digital setting: 0.01Hz, analog setting: max frequency X 0.1%
	Control Mode	For induction motor: SVC (open-loop vector control) control, V/F control, VC (Closed-loop vector control) control For PMAC: SVC (open-loop vector control) control
	Start Torque	0.5 Hz / 150% (SVC)， 0Hz/180% (VC), 5% of rated speed/100% of rated torque (PMAC SVC)
	Speed-control Scope	1:100 (SVC), 1:1000 (SV), 1:20 (in PMAC SVC)
	Steady Speed Precision	±0.5% (SVC), ±0.02% (VC)
	Torque Control Precision	±5%
	Overload Capacity	150% rated current, 60 seconds.
	Torque Elevating	Slip compensation, Manual Torque Promotion includes 1-20 curves.
	V/F Curve	3 kinds of modes: beeline type, square type and User-defined V/F curve.
	Startup mode	Direct startup, speed track startup (V/F control)
	DC Braking	DC braking frequency: 0.20-50.00 Hz, braking time: 0.00~30.00s
	Jogging Control	Jogging frequency range: min frequency~ max frequency, jogging acceleration/deceleration time: 0.1~3000s
	Auto Circulating Running and multi-stage speed running	Auto circulating running or terminals control can realize 15-stage speed running.
	Built-in PID adjusting	Easy to realize a system for process closed-loop control
	Auto voltage regulation (AVR)	When source voltage changes, the modulation rate can be adjusted automatically, so that the output voltage is unchanged.
Operation Function	Frequency Setting	External analog signal (0～5V, 0～10V, 0～20mA); keypad (terminal)▲ / ▼ keys, external control logic and automatic circulation setting.
	Start/Stop Control	Terminal control, keypad control or communication control.
	Running Command Channels	3 kinds of channels from keypad panel, control terminal and communication option
	Frequency Source	Frequency sources: given digit, given analog voltage, given analog current and communication option
	Accessorial frequency Source	7 kinds of accessorial frequency
Optional	Built-in EMI filter, built-in braking unit, communication options, encoder feedback	
Protection Function	Input phase loss, Output phase loss, input under-voltage, DC over-voltage, over-current, inverter over-load, motor over-load, current stall, over-heat, external disturbance, under-load, pressure control, analog line disconnected, encoder failure	
Display	LED nixie tube showing present output frequency, present rotate-speed (rpm), present output current, present output voltage, present linear-velocity, types of faults, and parameters for the system and operation; LED indicators showing the current working status of inverter.	

Technical Specifications (continued)

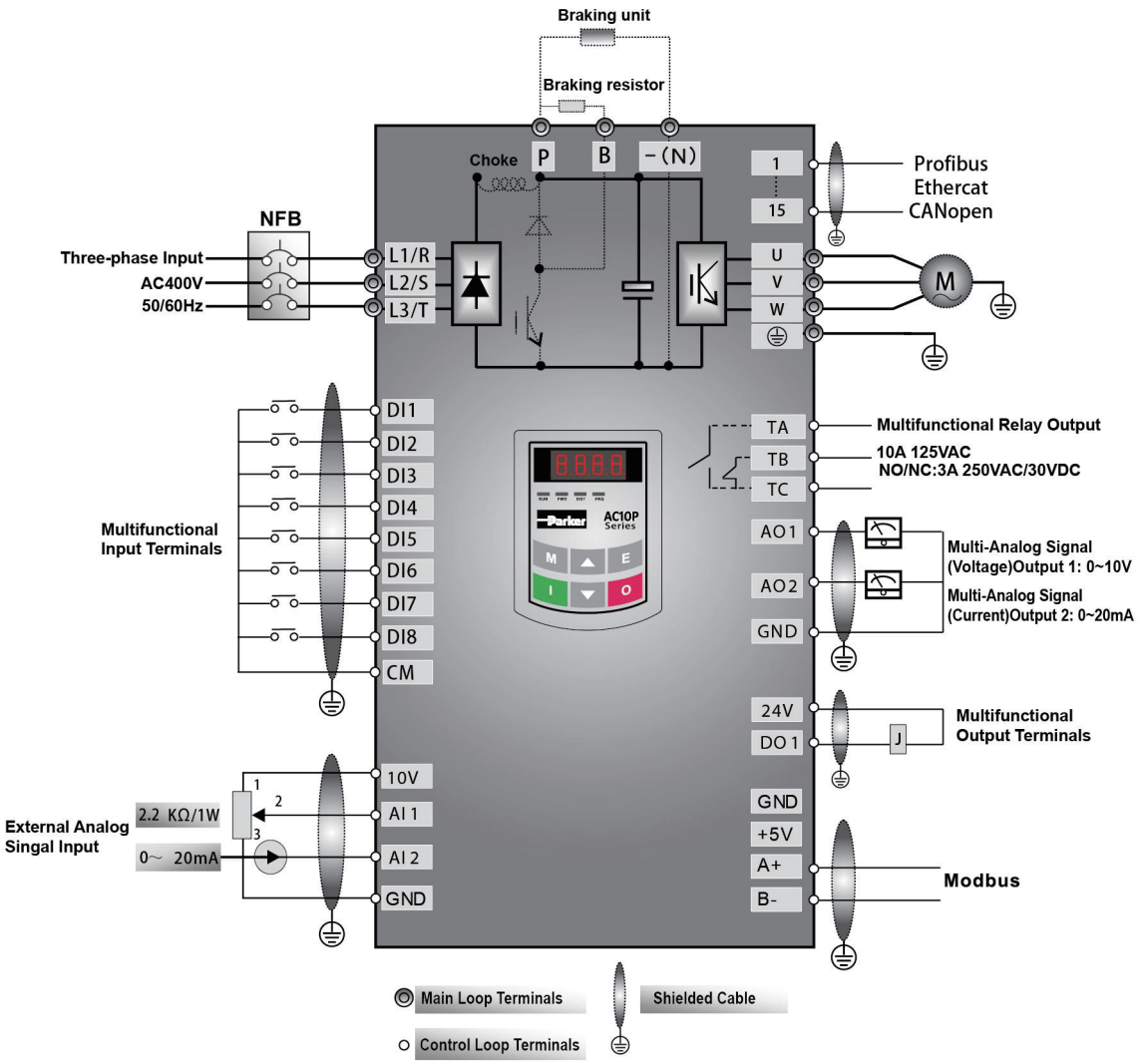
	Items	Contents
Environment Conditions	Equipment Location	In an indoor location, Prevent exposure from direct sunlight, Free from dust, caustic gases, flammable gases, steam or the salt-contented, etc.
	Environment Temperature	-10˚C ~ +40˚C (upto 50˚C with deration)
	Environment Humidity	Below 90% (no water-bead coagulation)
	Vibration Strength	Below 0.5g (acceleration)
	Height above sea level	1000m or below
Protection level	IP20	
Applicable Motor	0.2 to 180kW	
Communication Options	Modbus standard. Profibus DP & EtherCat optional, CanOpen (Future Development)	
Encoder feedback Options	Differential Encoder, Non Differential encoder, Maximum 80 kHz, Encoder repeat available	
I/O optional card	4 DI + 2 Relay O/p	
DI	6 x 24V DC– upto Frame 5 8 x 24V DC– Frame 6 onwards	
DO	1x 24V DC (upto Frame 5) 2 x 24V DC (Frame 6 and above) 1-relay output	
AI	1x (-10 to +10V, 0 to 10V) 1x (0 to 10V, 0-20mA, 4-20mA)	
AO	1x (0 to +10V, 4-20mA, 0 – 20mA) 1x (0-20mA, 4-20mA)	
DC Choke	From 30kw onwards build in as standard. The 220 - 240V does not have DC choke for all ratings.	

Optional Cards

Product Code	Description
10P-0001	Diff Encoder Card for Frame 4 and above
10P-0001A	Differential encoder card for Frames 2 to 3(with Plastic Casing)
10P-0002	Non Diff Encoder card for Frame 4 and above
10P-0002A	Non-differential encoder card for Frames 2 to 3 (with Plastic Casing)
10P-0003	Diff enc + I/O Card for Frame 4 and above
10P-0003A	Differential encoder PG card + I/O expansion card for Frames 2 to 3 (with Plastic Casing)
10P-0004	Non Diff Enc + I/O Card for Frame 4 and above
10P-0004A	Non-differential encoder PG card + I/O expansion card for Frames 2 to 3 (with Plastic Casing)
10P-0005	Digital I/O card for Frame 2 to 3
10P-0005A	I/O Expansion card for Frames 2 to 3 (with Plastic Casing)
10P-0006	EtherCat Card
10P-0007	CanOpen (Future Development)
10P-0008	Profibus Card
10P-000C	40cm Cable for PG Card
10P-000S	30cm cable for Comms Card
10P-000M	1.8m cable for Comms Card
10P-000L	3m Cable for Comms Card

Connections

Refer to next figure for overall connection sketch for AC10P series inverters. Wiring mode is available for various terminals whereas not every terminal needs connection when applied.

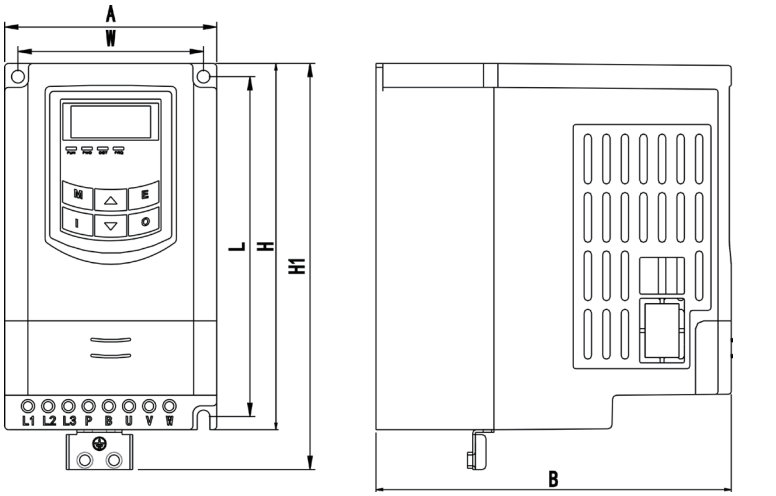


Basic Wiring Diagram for Three-phase AC drives(NPN type)

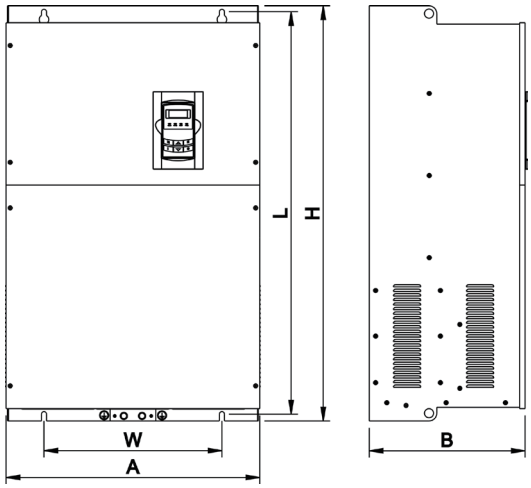
Dimensions

Dimensions [mm]

Frame	External Dimension [A×B×H (H1)]	Mounting Size (W×L)	Mounting Bolt
1	80×135×138 (153)	70×128	M4
2	106×150×180 (195)	94×170	M4
2*	106×170×180 (195)	94×170	M4
3	138×152 ×235 (250)	126×225	M5
4	156×170×265 (280)	146×255	M5
5	205×196 ×340 (355)	194×330	M5
6	265×235×435	235×412	M6
7	315×234×480	274×465	M6
8	360×265×555	320×530	M8
9	410×300×630	370×600	M10
10	516×326×765	360×740	M10
11	560×342×910	390×882	M10



Plastic Profile (F1 - F5)



Metal Profile (F6 - F11)

Order Code

example: 10P – 411 – 3200 – nn

10P	–	4	11	–	3200	–	n	n
Model		**Incoming Volts**	**Frame Size**		**Rated current (A)**		**Brake Option**	**Filter Option**
		1 - 220V to 240V 1 phase 3 - 240V to 240V 3 phase 4 - 380V to 480V 3 phase			XXXX * 000.0		n – No Brake Option (common DC bus for Frames 1, 2, 3, 4) B – With Brake Option	n – No Filter Option F – With Filter Option

Notes

Notes

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

Aftermarket services
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
CO_2 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
Electrohydrostatic 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

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August 2015

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