









# **AC15 Variable Speed Drive**

Compact AC Drive for Motor Control in General Purpose Applications 0.5 - 40 HP (0.37 - 30 kW) Catalog HA540115





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### **Parker Hannifin**

The global leader in motion and control technologies and systems

#### Global Partnerships Global Support

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# Electromechanical Technologies for High Dynamic Performance and Precision Motion

Parker electromechanical technologies form an important part of Parker's global motion and control offering. Electromechanical systems combine high performance speed and position control with the flexibility to adapt the systems to the rapidly changing needs of the industries we serve.







# Electronic Motion and Controls Division Manufacturing

Parker drive products are manufactured globally to provide our customers with quality products at a competitive price point. In addition to factory-direct support, Parker provides sales assistance and local technical support through a group of dedicated sales teams and a network of authorized systems integrators, field service engineers, and technical distributors across the globe. For contact information, please refer to the Sales Offices listed on the back cover of this document or visit www.parker.com/emc



Rohnert Park, CA

# **Variable Speed Drive - AC15 Series**

#### **Overview**

#### **Description**

The AC 15 Compact Drive is a simple to use, reliable and economical solution for every-day motor control applications that require speed or torque control in the power range of 0.37 kW to 30 kW (0.5 to 40 HP). With compact dimensions and features normally only associated with higher specification drives, including Safe Torque Off, Ethernet communications, sensorless vector mode for control of both Permanent Magnet (PMAC) and AC induction motors and a full 150 % overload for 1 minute, AC 15 provides an optimized solution for OEM machine builders looking for a compact, cost-effective drive without compromising on performance.

#### **Simplicity**

AC15 is designed to reduce the time and effort required to install, setup and commission through it's easy to use integrated keypad and application macros, or the powerful DSE Lite software tool and rich function block set. Minimal wiring requirements and easily accessed terminals make AC15 quick and easy to install. Auto-tuning sensorless vector mode takes AC15 beyond simple V/Hz control allowing users requiring greater dynamic speed or torque control for their application to benefit from the drive's enhanced speed and torque accuracy.

#### Reliability

Proven technology and manufacturing techniques ensure AC15 has been engineered and built to deliver consistently outstanding levels of performance day in, day out, ensuring maximum uptime and productivity.

Thanks to its conformally coated PC boards, AC15 is capable of withstanding class C3 environments, allowing you to operate AC15 with the utmost confidence in more applications.



#### **Technical Characteristics - Overview**

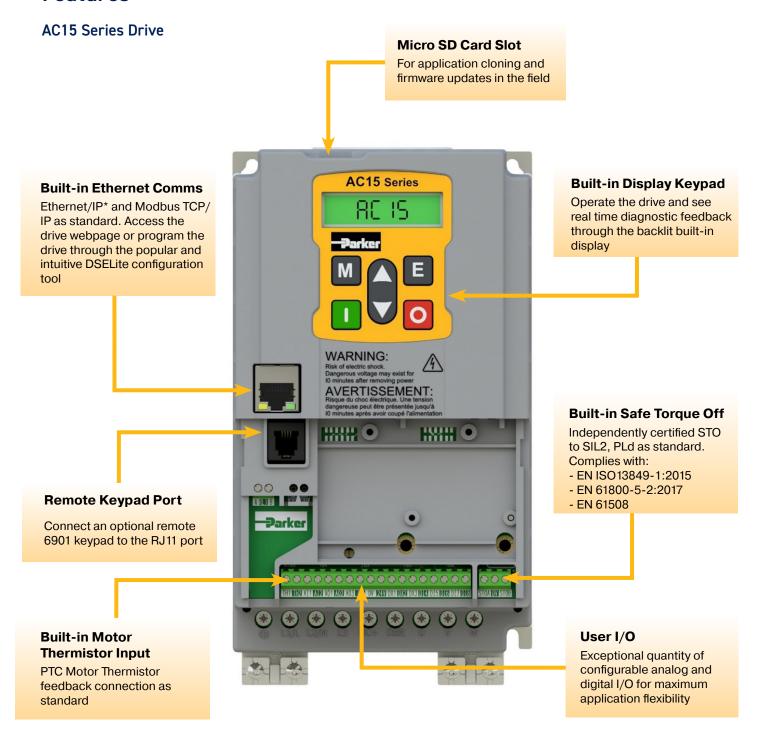
Power Supply	220 - 240 VAC ±10 % Single Phase 220 - 240 VAC ±10 % Three Phase 380 - 480 VAC ±10 % Three Phase
Input Frequency	50/60 Hz ±10 %
Power Range	0.37 - 30 kW (0.5 - 40 HP) HD
Overload	150% for 60 sec.
Output Frequency	0.5 - 590 Hz
Safe Torque Off (STO)	SIL2, PLd
Operating Temperature	0 - 40 °C (derate up to max 45°C)1
Altitude	0 -1000m (derate up to 2000m)

<sup>&</sup>lt;sup>1</sup>Temperature derate not available on .37kW 230V model.

#### Extra power when it's needed!

 150% overload for 60 seconds to provide extra starting torque for high inertia loads

#### **Features**



#### **Standards & Compliance**

The product is certified to the latest international standards: Europe:

- Low Voltage Directive 2006/95/EC
- Electro-Magnetic Compatibility Directive 2004/108/EC
- EN61800-5-1:2007
- EN61800-3:2014+A1:2012
- IE 2 Compliant

North America & Canada:

- UL 61800-5-1
- CSA22.2 #14

\*Ethernet/IP provided on frame 2 and larger only

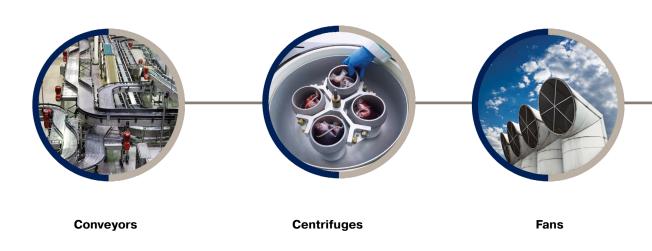
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# **Applications**

AC15 provides a straight-forward approach to general purpose industrial motor control applications across a wide range of industries, giving users the benefits of the inherent energy-saving properties of using a variable speed drive, as well as the improved reliability and extended service life benefits associated with smoother starting and stopping of regularly cycling loads.

#### Typical applications for AC15 include...

- Conveyor
- Centrifuge
- Fans
- Mixers
- Packaging Machines
- Textile Machines
- · Strapping Machines
- Labelling Machines
- Industrial Washing Machines
- · Machine Tool Spindles
- · Roller Doors





Mixers Packaging Machines Textile Machines

# **Technical Characteristics**

#### **Power Ratings**

230 VAC, Single Phase Supply Voltage				
HD Power Rating [HP]	Order Code	Input Current [A]	Output Current [A]	Frame Size
0.5	15G-11-0025-BF	4.1	2.5	
1	15G-11-0045-BF	8.2	4.5	1*
2	15G-11-0070-BF	14	7	
3	15G-12-0100-BF	18	10	2

HD = Heavy Duty. Provides 150% overload current for 60 seconds.

230 VAC, Three Phase Supply Voltage				
HD Power Rating [HP]	Order Code	Input Current [A]	Output Current [A]	Frame Size
0.5	15G-31-0025-BF	2.4	2.5	
1	15G-31-0045-BF	4.7	4.5	1*
2	15G-31-0070-BF	7.9	7	
3	15G-32-0100-BF	10	10	2
5	15G-33-0170-BF	17	17	3
7.5	15G-34-0210-BF	22	21	4
10	15G-35-0300-BF	28	30	-
15	15G-35-0400-BF	39	40	5

460 VAC, Three Phase Supply Voltage				
HD Power Rating [HP]	Order Code	Input Current [A]	Output Current [A]	Frame Size
0.5	15G-41-0012-BF	1.1	0.9	
1	15G-41-0020-BF	2.3	1.7	1*
2	15G-41-0040-BF	3.8	3.5	
3	15G-42-0065-BF	5.2	5.7	2
5	15G-42-0090-BF	8.1	7.8	2
7.5	15G-43-0120-BF	11.3	10	3
10	15G-43-0170-BF	13.3	15	S
15	15G-44-0230-BF	19	20	4
20	15G-44-0320-BF	25	28	4
25	15G-45-0380-BF	30	33	
30	15G-45-0440-BF	35	38	5
40	15G-45-0600-BF	46	52	

<sup>\*</sup>Ethernet/IP provided on frame 2 and larger only

#### **Electrical Characteristics**

Power Supply	220 - 240 VAC ±10 % Single Phase 220 - 240 VAC ±10 % Three Phase 380 - 480 VAC ±10 % Three Phase
Input Frequency	50/60 Hz ±5 %
Power Range	0.5 - 40 HP HD / 0.37 - 30 kW
Overload	150% for 60 sec
Output Frequency	0.5 - 590 Hz
Max. Switching Frequency	10 kHz
Control Modes	Volts/Hertz or Sensorless Vector (SV) Mode
<b>Supported Motors</b>	Induction & PMAC

#### **Environmental Characteristics**

Temperature range	0-40 °C (derate up to max. 45 °C)1
Humidity	Up to 90 % Relative Humidity, non-condensing
Vibration	< 0.5 g
Altitude	0-1000 m (derate 1% per 100m up to max. 2000m)
<b>Protection Degree</b>	IP20
<b>Pollution Degree</b>	Category 2
<b>Chemically Active Substances</b>	Compliance with EN60271-3-3: C3
	<sup>1</sup> Temperature derate not available .37kW 230V model.

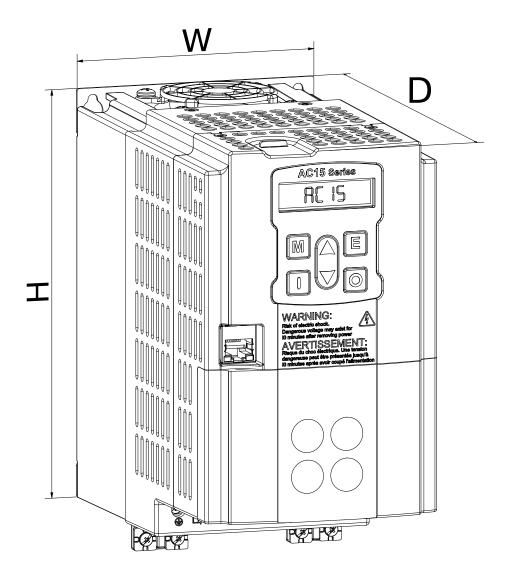
#### **Standards and Compliance**

Europe	This product conforms with: - Low Voltage Directive 2006/95/EC - Electro-Magnetic Compatability Directive 2004/108/EC - EN61800-5-1:2007 - EN61800-3:2014+A1:2012
North America / Canada	Certified to the following standards: - UL61800-5 - CSA22.2 #14 as an open-type drive
sто	Independently certified to: - EN ISO 13849-1:2015 - EN 61800-5-2:2017 - EN 61508
RoHS	This product complies with the RoHS substance restrictions in accordance with EC Directive 2011/65/EU
REACH	This product complies with the REACH regulations EC1907/2006

#### **Dimensions**

Dimensions [in/mm]

AC15 Seri	es			
Frame	Height (H)	Width (W)	Depth (D)	Weight [lb/kg]
1	5.43/138.0	3.21/81.5	5.68/144.3	2.5/1.1
2	7.09/180.0	4.27/108.4	7.28/185.0	4.4/2.0
3	9.35/237.5	5.57/141.6	7.24/184.0	7.3/3.3
4	10.43/265.0	6.34/161.0	7.72/196.0	9.7/4.4
5	13.39/340.0	8.27/210.0	8.67/220.2	17.7/8.0



#### **Power Connections**

#### Frame 1

Terminal	Description
L3/E	Supply Input phase L3 / Earth
L2/L	Supply Input phase L2 / Live
L1 / N	Supply Input phase L1 / Neutal
DC+	Dynamic Brake Resistor connection (+)
DBR	Dynamic Brake Resistor connection (-)
U	Motor Output phase U
V	Motor Output phase V
W	Motor Output phase W

#### Frame 2-4

Terminal	Description
E	Earth
L1 / L	Supply Input phase L1 / Live
L2/N	Supply Input phase L2 / Neutral
L3	Supply Input phase L3
DC+	Dynamic Brake Resistor connection (+)
DBR	Dynamic Brake Resistor connection (-)
U	Motor Output phase U
V	Motor Output phase V
W	Motor Output phase W

#### Frame 5

Terminal	Description
E	Earth
L1	Supply Input phase L1
L2	Supply Input phase L2
L3	Supply Input phase L3
DC+	DC+ / Dynamic Brake Resistor connection (+)
DC-	DC-
DBR	Dynamic Brake Resistor connection (-)
U	Motor Output phase U
V	Motor Output phase V
W	Motor Output phase W



#### **Control Connections**

Terminal	Label	Description		
X1.1	RLY1A	RelayOutput 1 (Contact A)		
X1.2	RLY1B	RelayOutput 1 (Contact B)		
X2.1	TH1	Motor Thermistor Input		
X2.2	TH2	Motor Thermistor Input		
X3.1	AIN1	Analog Input 1 (±10V*, 0-10V, 0-20mA, 4-20mA)		
X3.2	AIN2	Analog Input 2 (±10V*, 0-10V, 0-20mA, 4-20mA)		
X3.3	AOUT1	Analog Output 1 (0-10V, 0-20mA)		
X3.4	AOUT2	Analog Output 2 (0-10V, 0-20mA)		
X3.5	AOUT3*	Analog Output 3 (±10V, 0-10V)		
X3.6	0V	0V reference for analogue & digital I/O		
X4.1	0V	0V reference for analogue & digital I/O		
X4.2	24V	24V user supply		
X5.1	DIO1	Digital Input / Output 1 (24V configurable)		
X5.2	DIO2	Digital Input / Output 2 (24V configurable)		
X5.3	DIN3	Digital Input 3		
X5.4	DIN4	Digital Input 4 (High speed capable)		
X5.5	DIN5	Digital Input 5 (High speed capable)		
X5.6	DIN6	Digital Input 6		
X5.7	DIN7*	Digital Input 7		
X5.8	DIN8*	Digital Input 8		
X6.1	STO1	STO input channel A		
X6.2	STO0V	STO 0V reference		
X6.3	STO2	STO input channel B		

<sup>\* =</sup> Frames 2-5 only



#### Software

#### Parker Drive System Explorer (DSE Lite)

Parker drive configuration software Drive System Explorer (DSE) Lite is an easy to use drive configuration software package, designed to make programming your application as simple as possible without compromising on functionality.

DSE Lite is based around straightforward block programming and an intuitive user interface which supports user-defined configurations and offers real- time monitoring and charting. DSE Lite allows the user to create, parameterize and configure user defined applications as well as parameterize and connect fixed Motor Control blocks with up to 100 'links'

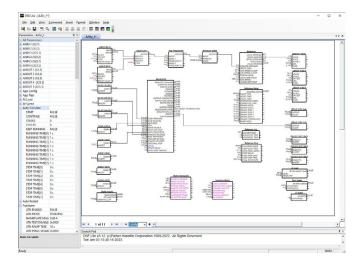
Thanks to the on-line help and pre-configured macro templates, users can achieve the optimum drive configuration without the need to navigate through complicated parameter menus.

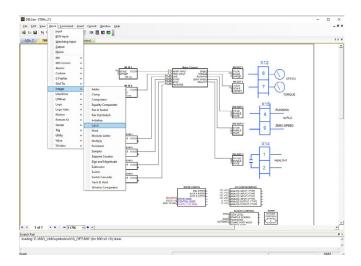
DSELite for AC15 uses a standard Ethernet connection between PC and inverter, so no special cable is required.

DSELite is available free of charge to download here: <a href="mailto:discover.parker.com/DSELite\_software">discover.parker.com/DSELite\_software</a>

Enhanced features of the AC15 include:

- High speed Ethernet connectivity
- Network scan feature
- Drive network identification
- · Firmware installs over Ethernet
- Save a project to on-board Flash memory





## **Accessories and Options**

#### 6901 Remote Mounting Keypad

The popular 6901 remote mounting keypad can be mounted away from the drive, such as on the door of an electrical enclosure. This interface allows users to configure, operate and monitor the drive without having to access the drive directly.

The remote keypad provides an alternative to the drive mounted keypad, offering a clear English language display and greater functionality. The remote mounting kit provides a mounting bezel and a 1.5 m cable that is plugged into the RJ11 port on the drive.

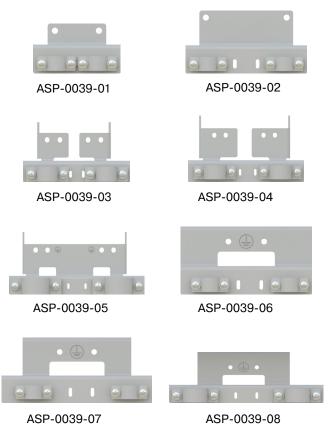
Order Code	Description
6901-00-G	6901 DisplayKeypad
6052-00-G	6901 remote mounting kit



#### Cable Screening Bracket

Cable Screening Brackets are available for the AC15. These brackets offer a means of grounding the power cable screen connections, as well as supporting the power cables when connected to the drive.

Order Code	Description
ASP-0039-01	AC15 Bracket Kit - Frame 1
ASP-0039-02	AC15/20 Bracket Kit - Frame 2
ASP-0039-03	AC15/20 Bracket Kit - Frame 3, 400V
ASP-0039-04	AC15/20 Bracket Kit - Frame 4, 400V
ASP-0039-05	AC15/20 Bracket Kit - Frame 5, 400V
ASP-0039-06	AC15/20 Bracket Kit - Frame 3, 230V
ASP-0039-07	AC15/20 Bracket Kit - Frame 4, 230V
ASP-0039-08	AC15/20 Bracket Kit - Frame 5, 230V



# **Accessories and Options**

#### **Line Protection**

Line fuses and reactors offer drive protection from short circuits and supply transients. When used with the fuses mentioned here, a short circuit rating of 50,000 amps can be achieved.

230 V, Single Phase Supply Voltage							
AC15 [HP]	Frame Size	Catalog Number	Line Fuses part number	Line Reactor part number			
0.5		15G-11-0025-BF	CS470407U010	CO540100U006			
1	1	15G-11-0045-BF	CS470407U015	CO540100U012			
2		15G-11-0070-BF	CS470407U025	CO540100U019			
3	2	15G-12-0100-BF	CS470407U025	CO540100U019			

230 V, Three Phase Supply Voltage							
AC15 [HP]	Frame Size	Catalog Number	Line Fuses part number	Line Reactor part number			
0.5		15G-31-0025-BF	CS470407U005	CO540100U005			
1	1	15G-31-0045-BF	CS470407U010	CO540100U006			
2		15G-31-0070-BF	CS470407U010	CO540100U010			
3	2	15G-32-0100-BF	CS470407U020	CO540100U012			
5	3	15G-33-0170-BF	CS470407U025	CO540100U019			
7.5	4	15G-34-0210-BF	CS470407U030	CO540100U025			
10	5	15G-35-0300-BF	CS470408U050	CO540100U034			
15		15G-35-0400-BF	CS470408U050	CO540100U048			

460 V, Three Phase Supply Voltage							
AC15 [HP]	Frame Size	Catalog Number	Line Fuses part number	Line Reactor part number			
0.5		15G-41-0012-BF	CS470407U005	CO540101U002			
1	1	15G-41-0020-BF	CS470407U005	CO540101U003			
2		15G-41-0040-BF	CS470407U005	CO540101U004			
3	2	15G-42-0065-BF	CS470407U010	CO540101U005			
5		15G-42-0090-BF	CS470407U020	CO540101U008			
7.5	3	15G-43-0120-BF	CS470407U020	CO540101U011			
10	3	15G-43-0170-BF	CS470407U030	CO540101U014			
15	4	15G-44-0230-BF	CS470407U030	CO540101U030			
20	4	15G-44-0320-BF	CS470407U040	CO540101U030			
25		15G-45-0380-BF	CS470408U050	CO540101U030			
30	5	15G-45-0440-BF	CS470408U050	CO540101U045			
40		15G-45-0600-BF	CS470408U080	CO540101U055			

Line fuses are mandatory on all sizes

Line reactors are mandatory on all sizes

# **Accessories and Options**

#### **Braking Resistor**

During deceleration, or with an over-hauling load, the motor acts as a generator. Energy flows back from the motor into the DC link capacitors within the drive, causing their voltage to rise. If this voltage exceeds a maximum value, the drive will trip to protect the capacitors and internal power devices. The amount of energy that can be absorbed by the capacitors can vary between different applications causing the drive to trip on overvolts. To utilize the drive's onboard dynamic braking capability, high power resistor(s), connected across the DC link, allow the dissipation of this excess energy for fast stops or load braking.

230 V, Single Phase Supply Voltage							
AC15 [HP]	Frame Size	Catalog Number	Braking Kit	Min ohms	Braking kit ohms	Braking kits Watts	
0.5		15G-11-0025-BF	LA471356	80	100	100	
1	1	15G-11-0045-BF	LA471356	80	100	100	
2		15G-11-0070-BF	LA471356	80	100	100	
3	2	15G-12-0100-BF	LA471356	80	100	100	

230 V, Three Phase Supply Voltage							
AC15 [HP]	Frame Size	Catalog Number	Braking Kit	Min ohms	Braking kit ohms	Braking kit Watts	
0.5		15G-31-0025-BF	LA471356	80	100	100	
1	1	15G-31-0045-BF	LA471356	80	100	100	
2		15G-31-0070-BF	LA471356	80	100	100	
3	2	15G-32-0100-BF	LA471356	80	100	100	
5	3	15G-33-0170-BF	LA471359	30	56	500	
7.5	4	15G-34-0210-BF	LA471359	30	56	500	
10	5	15G-35-0300-BF	LA471362	15	25	756	
15	5	15G-35-0400-BF	LA471362	15	25	756	

460 V, Three Phase Supply Voltage							
AC15 [HP]	Frame Size	Catalog Number	Braking Kit	Min ohms	Braking kit ohms	Braking kit Watts	
0.5		15G-41-0012-BF	LA471355	145	200	100	
1	1	15G-41-0020-BF	LA471355	145	200	100	
2		15G-41-0040-BF	LA471355	95	200	100	
3	2	15G-42-0065-BF	LA471357	90	100	200	
5	2	15G-42-0090-BF	LA471357	90	100	200	
7.5	3	15G-43-0120-BF	LA471357	90	100	200	
10	3	15G-43-0170-BF	LA471357	90	100	200	
15	4	15G-44-0230-BF	LA471359	50	56	500	
20	4	15G-44-0320-BF	LA471361	30	30	750	
25		15G-45-0380-BF	LA471361	30	30	750	
30	5	15G-45-0440-BF	LA471361	30	30	750	
40		15G-45-0600-BF	LA471362	25	25	756	

All braking kits include a thermal overload with auxiliary contact.

All braking kits are rated for occasional stopping duty, not more than 6 stops per hour.

For continuous power absorption or intermittent duty braking, consult factory.

#### **EMC Filter**

AC15 are supplied as standard with an EMC filter that meets the requirements of a class C3 environment. For class C2 or C1 environments, an additional external filter may be required. An internal wire link may be easily removed to disconnect the Y capacitors for those installations where earth currents are undesirable.

# **Order Code**

#### AC15

	1		2	3		4		5	6
Order example	15 <b>G</b>	_	1	1	_	0025	-	В	F

1	Device Family					
	15	_	AC15 Series, General Purpose AC Drive			
2		ltage	000 // 0:			
	1		230 V Single Phase			
	3		230 V Three Phase			
	4		480 V Three Phase			
3&4	Frame Size & Current Rating (Heavy Duty)					
			gle Phase Supply Voltage			
	1	0025	Frame 1 - 2.5A (0.5HP)			
	1	0045	Frame 1 - 4.5A (1HP)			
	1	0070	Frame 1 - 7A (2HP)			
	2	0100	Frame 2 - 10A (3HP)			
	23	0Vac, The	ree Phase Supply Voltage			
	1	0025	Frame 1 - 2.5A (0.5HP)			
	1	0045	Frame 1 - 4.5A (1HP)			
	1	0070	Frame 1 - 7A (2HP)			
	2	0100	Frame 2 - 10A (3HP)			
	3	0170	Frame 3 - 17A (5HP)			
	4	0210	Frame 4 - 21A (7.5HP)			
	5	0300	Frame 5 - 30A (10HP)			
	6	0400	Frame 5 - 40A (15HP)			
	48	0Vac, Thi	ree Phase Supply Voltage			
	1	0012	Frame 1 - 0.9A (.05HP)			
	1	0020	Frame 1 - 1.7A (1HP)			
	1	0040	Frame 1 - 3.5A (2HP)			
	2	0065	Frame 2 - 5.7A (3HP)			
	2	0090	Frame 2 - 7.8A (5HP)			
	3	0120	Frame 3 - 10A (7.5HP)			
	3	0170	Frame 3 - 15A (10HP)			
	4	0230	Frame 4 - 20A (15HP)			
	4	0320	Frame 4 - 28A (20HP)			
	5	1380	Frame 5 - 33A (25HP)			
	5 1440 Frame 5 - 38A (20HP)					
	5	1600	Frame 5 - 52A (40HP)			
5	Br	ake Swit				
	В		Brake Switch Fitted			
6	EN	//C Filter				
	F		Category C3 Filtered			

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