

ABB Drives

Recycling instructions and environmental information ACS400 product family



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List of related manuals

Drive hardware manuals and guides	Code (English)
<i>Recycling instructions and environmental information</i> <i>ACS400 product family</i>	3AFE64428900
<i>ACS400 Frequency Converter User's Manual</i>	3AFY64036947

You can find manuals and other product documents in PDF format on the Internet. See section [Document library on the Internet](#) on the inside of the back cover. For manuals not available in the Document library, contact your local ABB representative.

Recycling instructions and environmental information

ACS400 product family

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1

Introduction to the manual

What this chapter contains

This chapter describes the contents of the manual. It also contains information on the compatibility and intended audience.

Applicability

This document covers the environmental information of the following products:

- ACS400 modules of frame sizes R1 to R4
- accessories and option modules.

Target audience

This document is intended for ABB customers and for professional recyclers.

Contents of the manual

The document contains information for treatment facilities in accordance with the EU directive on waste electrical and electronic equipment (WEEE).

This manual contains the following chapters:

- [Product materials](#)
- [Manufacturing and use](#)
- [Product disposal](#)

The WEEE directive is implemented through national regulations and therefore requirements vary in each EU member state.

Drives are always parts of other machines or equipment and they are covered by the WEEE directive when the end product is covered. Inclusion or exclusion depends on the application of the drive.

The WEEE directive does not apply to drives which are used in large-scale fixed installations, large-scale stationary industrial tools, means of transport for persons and goods, or non-road mobile machinery made available exclusively for professional use.

We recommend to contact local environmental authorities for up-to-date information about national recycling requirements.

Frame size

This manual covers all different frame sizes of the product family. The frame size is marked on the type designation label of the drive. The frame size is also shown in the rating tables for each drive type. The rating tables are in the *drive user's manual*.

Disclaimer

The information presented in this publication does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequences of its use. Publication thereof does not convey nor imply any license under patent - or other industrial or intellectual - property rights.

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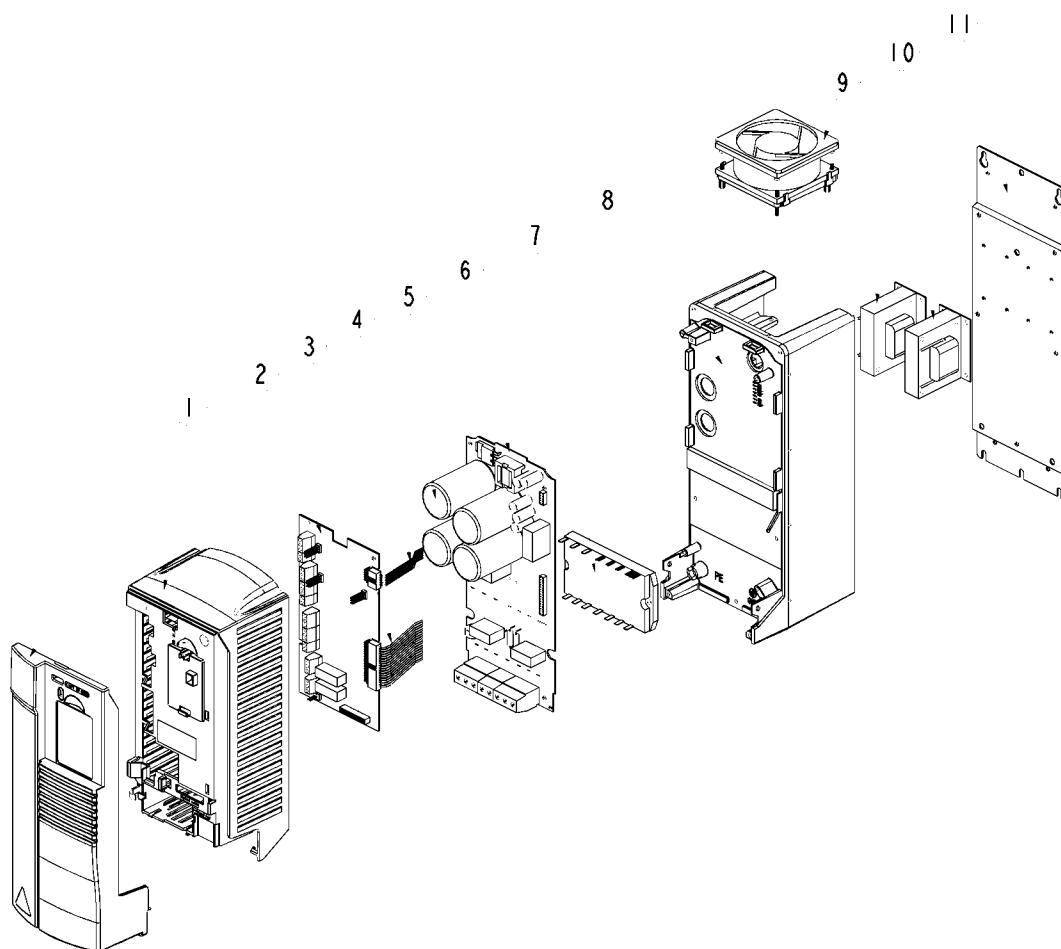
Product materials

Contents of this chapter

This chapter describes the main components, materials and weights of the ACS400 module of frame sizes R1 to R4.

Materials of frames R1 and R2

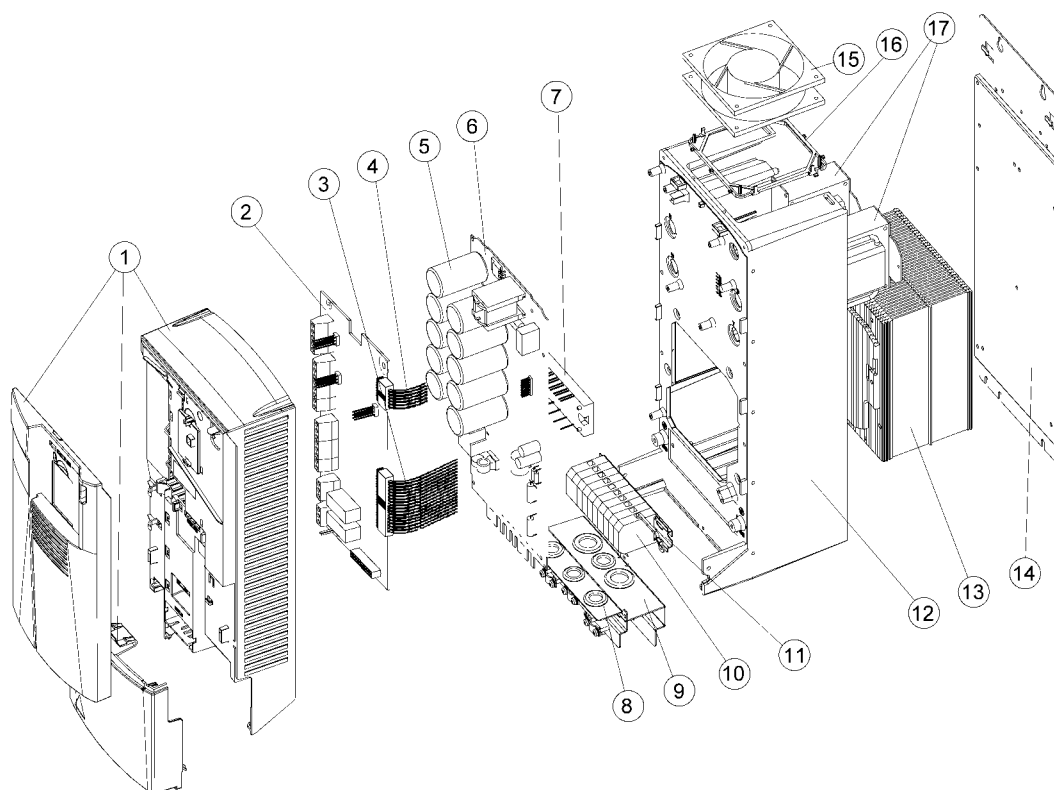
The main components are shown in the figure below.



Part No.	Name	Qty	Materials	Weight / g
1	Cover parts	2	PC+ABS = Cycoloy®	370...490
2	Printed circuit board	1	Various	150
3	Cable (34 pole)	1	PVC, Cu, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	35
4	Cable (10 pole)	1	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	15
5	Electrolytic capacitor	2...6	Various	125...375
6	Printed circuit board	1	Various	320...400
7	Power module (IGBT)	1	Various	60...120
8	Heatsink	1	Aluminum alloy, G-AlSi8Cu3Fe	2800...4000
9	Fan	1	Various, plastic parts PBT+PA	150
10	Chokes	2...4	Fe 68 weight-%, Cu 28%, various 4%	1200...2400
11	Back plate	1	Zn-coated steel	440...570
Total weight				5665...8705 g

Materials of frames R3 and R4

The main components are shown in the figure below.

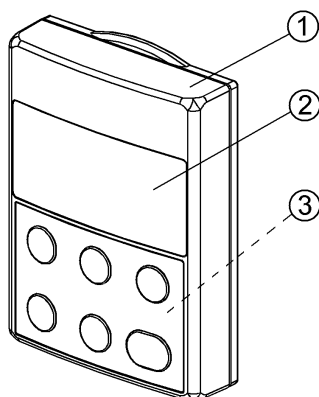


Part No.	Name	Qty	Materials	Weight / g
1	Cover parts	3	PC+ABS = Cycoloy®	785...940
2	Printed circuit board	1	Various	150
3	Cable (34 pole)	1	PVC, Cu, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	35
4	Cable (10 pole)	1	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	15
5	Electrolytic capacitor	8...18	Various	400...900
6	Printed circuit board	1	Various	1250...2000
7	Power module (IGBT)	1	Various	180...300
8	Sealing ring	6	Rubber	18
9	Gland plate set	1	Zinc-coated steel	200
10	Connector set	1	Various	255...520
11	DIN rail	1	Zinc-coated and chromated steel	52...58
12	Frame	1	Aluminum alloy	4400...7150
13	Heatsink	1	Aluminum alloy	5700...8050
14	Back plate	1	Zinc-coated steel	1230...1520
15	Fan	1	Various	290...620
	Fan finger guard	1	R3 - ABS/PC, R4 - Cr-coated steel	26...75
16	Fixing clip for fan	1	ABS/PC	15...25
17	Chokes	2	Fe 68 weight-%, Cu 28%, various 4%	4400...6100
Total weight				19500...28600 g

Materials of the accessories and option modules

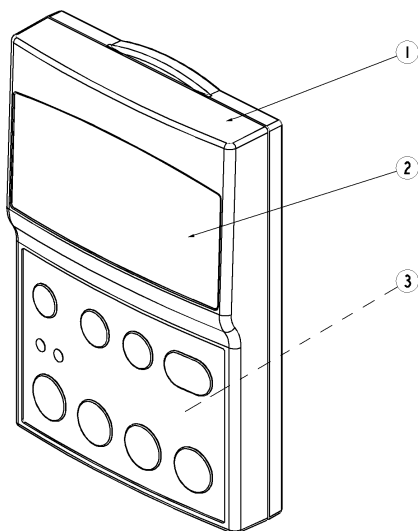
■ Control panel

The main components are shown in the figure below.



ACS100-PAN (dimensions 67 mm x 50 mm):

Part No.	Name	Qty	Materials
1	Cover	1	PC+ABS = (Bayblend [®])
2	LCD display	1	Various
3	Printed circuit board	1	Various
			Total weight: 36 g

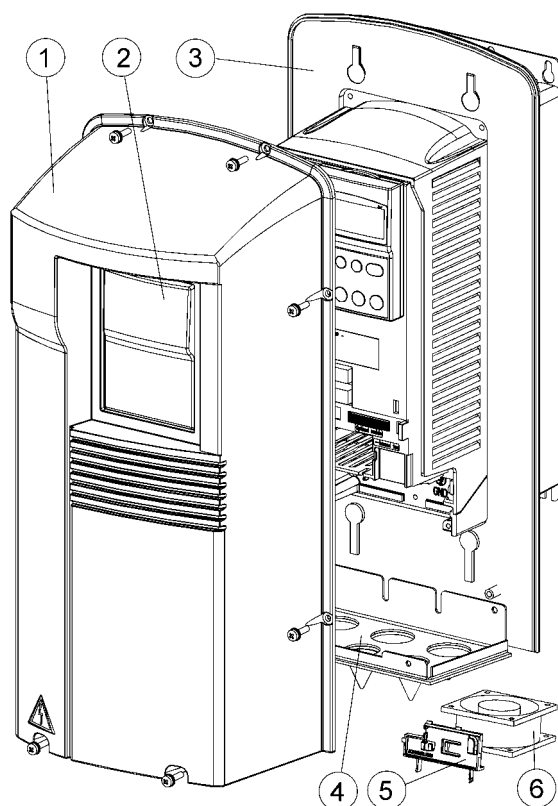


ACS-PAN (dimensions 100 mm x 70 mm):

Part No.	Name	Qty	Materials
1	Cover	1	PC+ABS = (Cocoloy [®])
2	LCD display	1	Various
3	Printed circuit board	1	Various
			Total weight: 85 g

■ ACS400 IP54 parts, all frame sizes

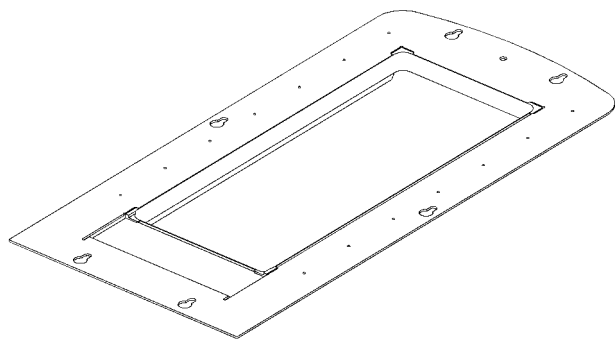
The main components are shown in the figure below.



Part No.	Name	Qty	Materials	Weight / g			
				R1	R2	R3	R4
1	Cover	3	PC+ABS = Cylcoloy®	990	1250	1410	1920
2	Cover sheeting	1	Polyester/PC	3	3	3	3
3	Back plate	1	Zinc-coated steel + rubber	855	1280	1795	1980
4	Feedtrough plate	1	Zinc-coated steel + EPDM rubber	235	235	310	310
5	Fixing clip for fan	1	PC+ABS = Cylcoloy®	4	4	4	4
6	Fan	1	Various	60	60	60	60

■ Flange mounting plate

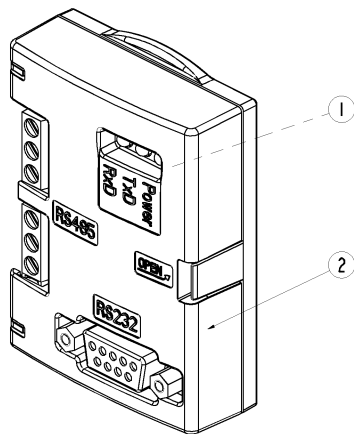
The main component is shown in the figure below.



Materials	Weight / g			
	R1	R2	R3	R4
Zinc-coated steel	780	1225	1130	1225

■ RS 232/485 adapter

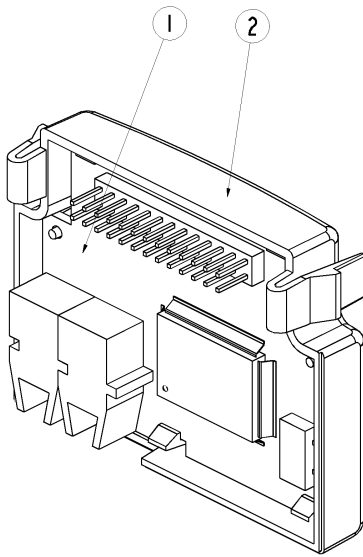
The main components are shown in the figure below.



Part No.	Name	Qty	Materials
1	Printed circuit board	1	Various
2	Plastic cover	1	PC+ABS = (Bayblend®)
			Total weight: 41 g

■ DDCS module

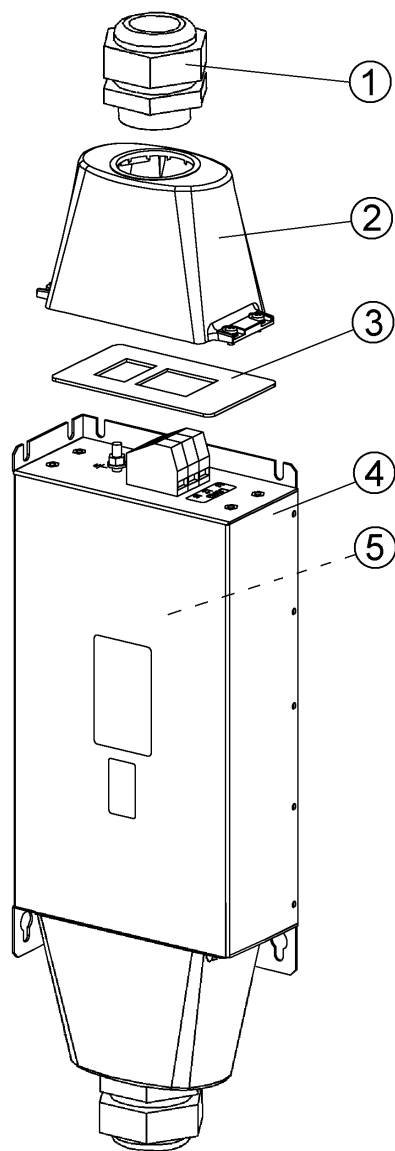
The main components are shown in the figure below.



Part No.	Name	Qty	Materials
1	Printed circuit board	1	Various
2	Cover	1	PC+ABS = (Cocoloy®)
			Total weight: 15 g

■ ACS400 RFI filters

The main components are shown in the figure below.

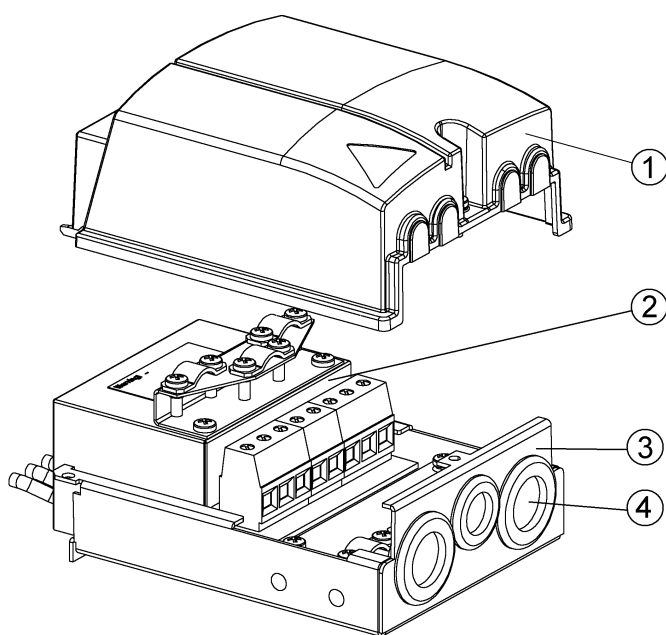


3 Circuitry
Capacitors
Ferrites
Insulation materilas
Wiring

Part No.	Name	Qty	Materials	Weight / g			
				IF11-3	IF21-3	IF31-3	IF41-3
1	Lead through	2	PA	45-90	45-90	90-180	90-180
2	IP54 shield	2	ABS/PC	100	100	270	270
3	Gasket	2	Cellular rubber	3	3	5	5
4	Case	1	Tin-plated or zinc-coated steel	1650	2100	2200	2800
5	Circuitry	1	Various	3700	4300	3550	3750
Total weight				4700	6150	6200	7000

■ ACS400-IF22-3 integrated filter for frame sizes R1 and R2

The main components are shown in the figure below.

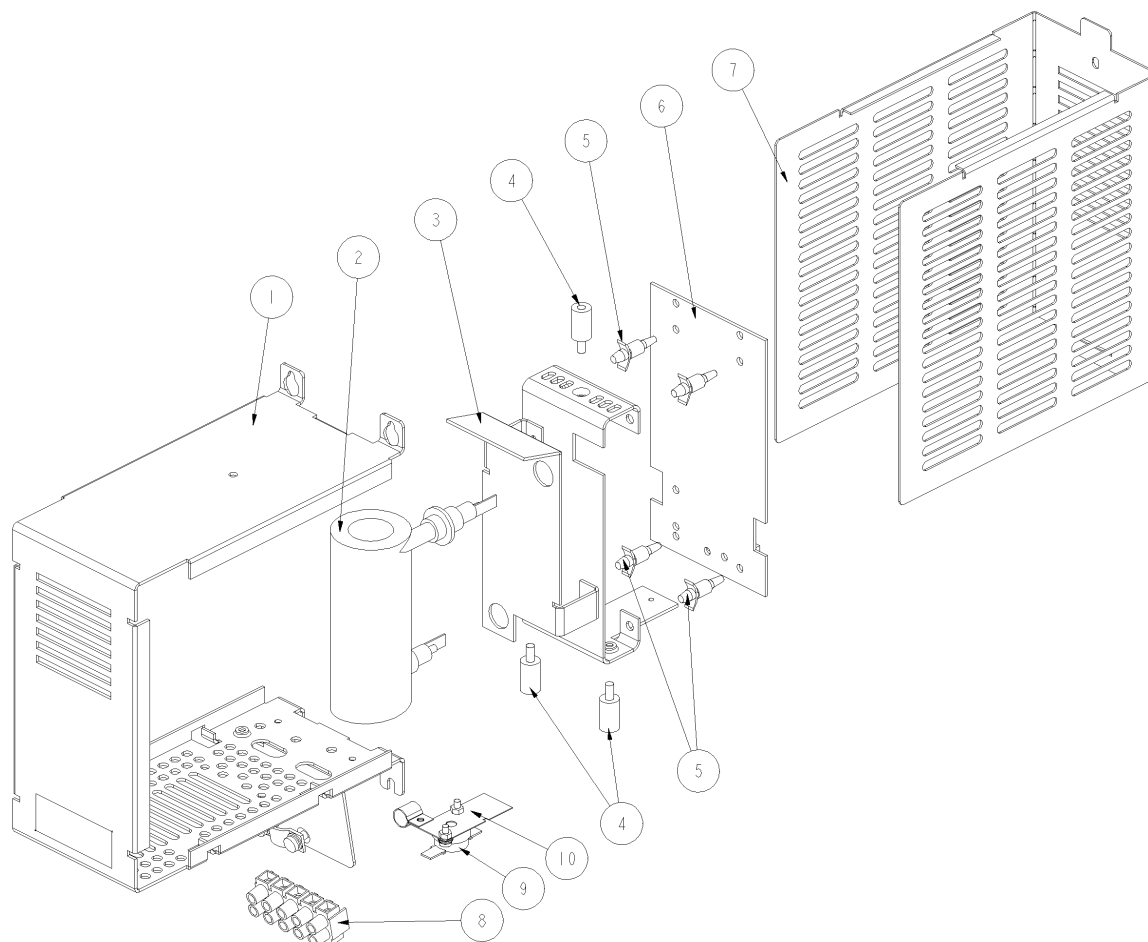


Part No.	Name	Qty	Materials	Weight / g
1	Cover	1	PC/ABS	85
2	Filter box + electronics	1	Various	480
3	Frame	1	Zinc-coated steel	325
4	Sealing ring	3	Rubber	10
Total weight				900 g

■ Brake chopper unit

The main components are shown in the figure below.

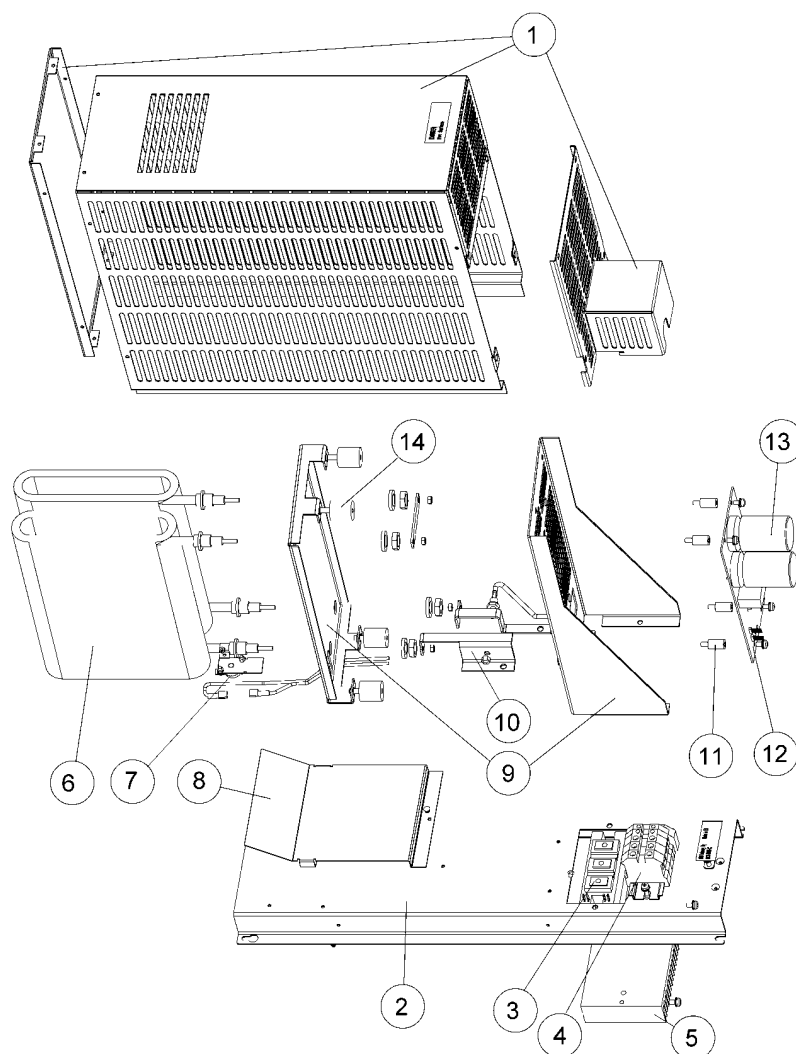
Brake units A, B, F



Part No.	Name	Qty	Materials	Weight / g
1	Frame	1	Zinc-coated steel	590...860
2	Resistor	1	Stainless steel, Core: MgO, Ni80+Cr20	245...465
3	Resistor plate	1	Zinc-coated steel	215...285
4	Insulating pillar	3	PA (Nylon 6)	9
5	Spacer stud	4	PA (Nylon 6)	4
6	Printed circuit board	1	Various	65
7	Cover	1	Zinc-coated steel	385...725
8	Connector	1	Various	13
9	Thermostat	1	Various	5
10	Thermostat fixture clip	1	Stainless steel	5
Total weight				1540...2440 g

■ Brake chopper unit

Brake units C, D, E



Part No.	Name	Qty	Materials	Weight / g		
				Unit C	Unit D	Unit E
1	Cover parts	3	Zinc-coated steel	2400	4600	4600
2	Frame	1	Zinc-coated steel	1100	3000	3000
3	Power module (IGBT)	1	Various	170	430	430
4	Connector set	1	Various	100	200	200
	DIN rail	1	Zinc-coated and chromated steel	30	35	35
5	Heatsink	1	Aluminum alloy AlMgSi	300	750	750
6	Resistor	2...6	Stainless steel, Core: MgO, Ni80+Cr20	2100	6300	4200
7	Thermostat	1	Various	5	5	5
8	Heat shield	1	Zinc-coated steel	145	650	650
9	Inner frame parts	2...4	Zinc-coated steel	1130	2500	2500
10	Busbars	2...6	Aluminum	25	250	250
11	Spacer stud	4	PA /(Nylon 6)	15	15	15
12	Printed circuit board	1	Various	140	140	140
13	Electrolytic capacitor	2	Various	100	100	100
14	Insulating pillar	4	PA (Nylon 6)	40	40	40
Total weight				7800	19000	17000

All screws in ACS400: carbon steel, Pozidrivs or Torx recess, zinc plating

Plastics:	
ABS	Acrylonitrile-butadiene-styrene
EPS	Expanded polystyrene foam (PS-E)
GF	Glass fiber
PA	Polyamide
PBT	Polybutylene terephthalate
PC	Polycarbonate
PVC	Polyvinyl chloride

All plastic parts (weight > 25 g) are marked according to ISO 1043 and DIN 54840.

Package

The product package is made of corrugated board and EPS (expanded polystyrene).

You can recycle all materials used in the package.

To avoid pollution caused by unnecessary transportation, the factory does not take back used packages. Contact your local ABB office for package recycling instructions if needed.

ABB recommends package recycling as it preserves raw materials and reduces waste being landfilled.

Product manuals and sales brochures

To save natural resources and reduce paper waste, all product manuals are available in ABB Library and on the Internet.

3

Manufacturing and use

Manufacturing

ABB Oy (Finland) has a company-wide integrated quality, environmental and occupational health & safety management system. The system is certified in accordance with requirements of the international standards ISO 9001:2015 and ISO 14001:2015.

The Integrated Management System applies to all units of the company.

Use

The use of a drive has several positive environmental impacts, such as:

- Substantial energy savings and reduced operating costs can be reached using a drive. Rather than have an electric motor running continuously at full speed, an electric drive allows the user to slow down or speed up the motor.
 - Process control is optimized. An electric drive enables a process to achieve the right speed and torque while maintaining its accuracy.
 - Need for maintenance is reduced. Being able to vary the speed and torque of an electric motor means there is less wear and tear on the motor and the driven machine.
-

4

Product disposal

Contents of this chapter

This chapter contains product disposal instructions.

Disposal

The main parts of the drive can be recycled to preserve natural resources and energy. Product parts and materials should be dismantled and separated.

Generally all metals, such as steel, aluminum, copper and its alloys, and precious metals can be recycled as material. Plastics, rubber, cardboard and other packaging material can be used in energy recovery.

Printed circuit boards and DC capacitors need selective treatment according to IEC 62635 guidelines.

To aid recycling, plastic parts are marked with an appropriate identification code.

Contact your local ABB distributor for further information on environmental aspects. End of life treatment must follow international and national regulations.

Dismantling

You can dismantle the drive manually or in a shredding machine. The chapter is divided in two sections on basis of the dismantling method.

■ **Manual dismantling**

Sort the parts of the product according to their material contents as follows:

- ferrous metals (plates, screws)
- aluminum (heatsink)
- plastics
- printed circuit boards
- electrolytic capacitors (mounted on the main circuit board)
- other.

You can recycle metal parts (iron and aluminum) and most of the other materials according to local regulations.

For information on harmful materials, see subsection [ABB list of prohibited and restricted substances](#).

■ **Mechanical shredding**

In this method, a whole product is mechanically shredded into small pieces and materials are sorted using dedicated sorting processes.

Remove the harmful material before shredding the drive in the shredding machine. See subsection [ABB list of prohibited and restricted substances](#).

ABB list of prohibited and restricted substances

The purpose of this list is to comply with legislation to avoid substances that may present hazards to the environment or the health.

This document provides information about “Prohibited substances”, substances that must not be used, and “Restricted substances”, substances whose use should be limited within ABB.

Definitions and regulations of hazardous materials differ from country to country and are likely to change when knowledge of materials increases. The materials used in the product are materials typically used in electrical and electronic equipment.

■ **Reference list**

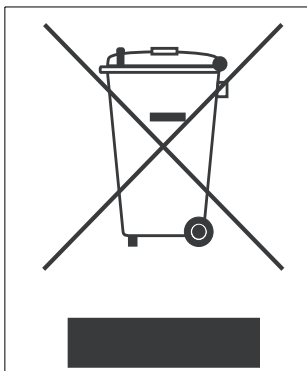
1. Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS II).
 2. Regulation No 1907/2006/EC of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH):
 - Annex XIV: List of substances subject to authorization
 - Annex XVII: Restrictions on use of substances in articles
 - SVHC: Candidate list of substances of very high concern for authorization.
 3. Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE).
-

Recycling information in accordance with the WEEE

The product is marked with the wheelie bin symbol. It indicates that at the end of life the product should enter the recycling system.

You should dispose of it separately at an appropriate collection point and not place it in the normal waste stream.

The figure below shows the wheelie bin symbol indicating separate collection for electrical and electronic equipment (EEE).



The horizontal bar underneath the crossed-out wheelie bin indicates that the equipment has been manufactured after the Directive came into force in 2005.

The wheelie bin symbol is added to the type designation label of the product since 2017.

The figure below shows an example.

ACS355-01E-02A4-2
PN 0.37 kW (1/2 HP) Frame R0
S/N J1643F0001






ABB ABB Oy
 Hiomotie 13
 00380 Helsinki
 Finland

IP20 / UL Open type
UL Type 1 with MUL1 option
PN 0.37 kW (1/2 HP)
U1 1~200...240 V
I1 6.1 A
I1 with ext. choke 4.5 A
f1 48...63 Hz
U2 3~0...U1 V
I2 2.4 A (150% 1/10 min)
f2 0...599 Hz

ACS355-01E-02A4-2









S/N J1643F0001



3AUA0000058166

RoHS

A recycling example

This example complies with typical national regulations valid at the time of publishing this manual.

Materials	Recycling method
Steel	Recycled as material
Aluminum	Recycled as material
Plastics	Energy recovery (incineration)
Printed circuit boards	Recycled as WEEE
Electrolytic capacitors	Recycled as WEEE
Cables	Recycled as material
Ceramics	Landfilled
Other materials	Energy recovery (incineration)

Further information

Product and service inquiries

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to www.abb.com/searchchannels.

Product training

For information on ABB product training, navigate to new.abb.com/service/training.

Providing feedback on ABB manuals

Your comments on our manuals are welcome. Navigate to new.abb.com/drives/manuals-feedback-form.

Document library on the Internet

You can find manuals and other product documents in PDF format on the Internet at www.abb.com/drives/documents.

ABB environment policy

You can find ABB's environmental policy on the Internet at new.abb.com/sustainability/environment-policy.

ABB group sustainability objectives

For information on ABB group sustainability objectives, navigate to new.abb.com/sustainability/creating-value/objectives

ABB list of prohibited and restricted substances

You can find the ABB list of prohibited and restricted substances at new.abb.com/sustainability/environment.

Contact us

www.abb.com/drives

www.abb.com/drivespartners

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