ABB GENERAL PURPOSE DRIVES

ACS560 and ACQ80 drives
Recycling instructions and environmental information

Recycling instructions and environmental information

ACS560 and ACQ80 drives

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Further information

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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 includes environmental information of following drives:
- ACS560
- ACQ80

Target audience

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

Contents of the manual

This manual contains the following chapters:
- *Introduction to the manual (page 7)*
- *Product materials (page 9)*
- *Manufacturing and use (page 27)*
- *Product disposal (page 29)*

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 hardware manual*.

Disclaimer

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Related documents

Drive hardware manuals and guides	Code (English)	Code (Hindi)
ACS560 (0.75 to 160 kW, 1.0 to 215 hp) hardware manual	3AXD50000044998	3AXD50000045888
ACQ80-04 (0.75 to 160 kW, 1.0 to 215 hp) hardware manual	3AXD50000170661	-

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.
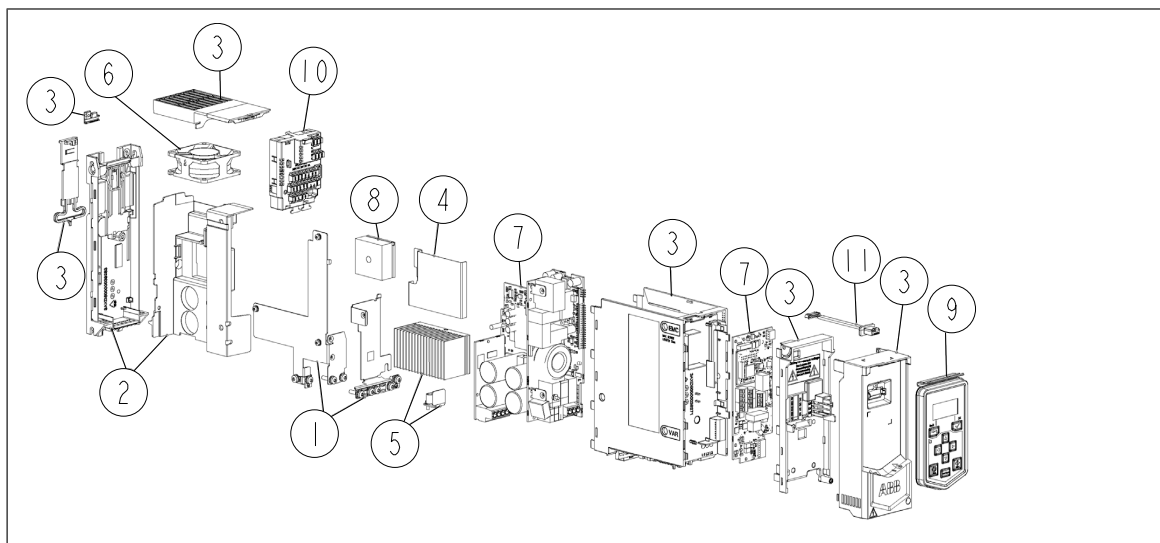
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Product materials

Contents of this chapter

This chapter describes the main components and product materials for the following drives: ACS560 and ACQ80.

Materials of frame R0

The main components are shown in the figure below.

Frame R0 product materials				Total weight (kg): ~1.8
Part	**Category**	**Qty**	**Materials**	**Weight (g)**
1	Sheet metal parts	5	Zn coated Fe	119
2	Reinforced plastic parts	2	Plastic: PC+10%GF	146
3	Housing/ cover parts	6	Plastic: ABS PC	401
4	Insulating sheets	1	Plastic: PC	2
5	Heat sink and other aluminum parts	2	Aluminum: AW-6060 [Al Mg Si]	167
6	Axial fan	1	Various materials, plastic parts: PBT, aluminum alloy	70
7	Printed circuit board	4	Various materials, electronic components	662
8	Semiconductors	1	Cu, Al oxide, Sn, silicone gel, PBT, GF	50
9	Control panel	1	See *Materials of the Basic control panel (page 25)*.	86
10	Option IO	1	See *Materials of the option IO (page 23)*.	110
11	Cable	1	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	4

Materials of frame R1

The main components are shown in the figure below.
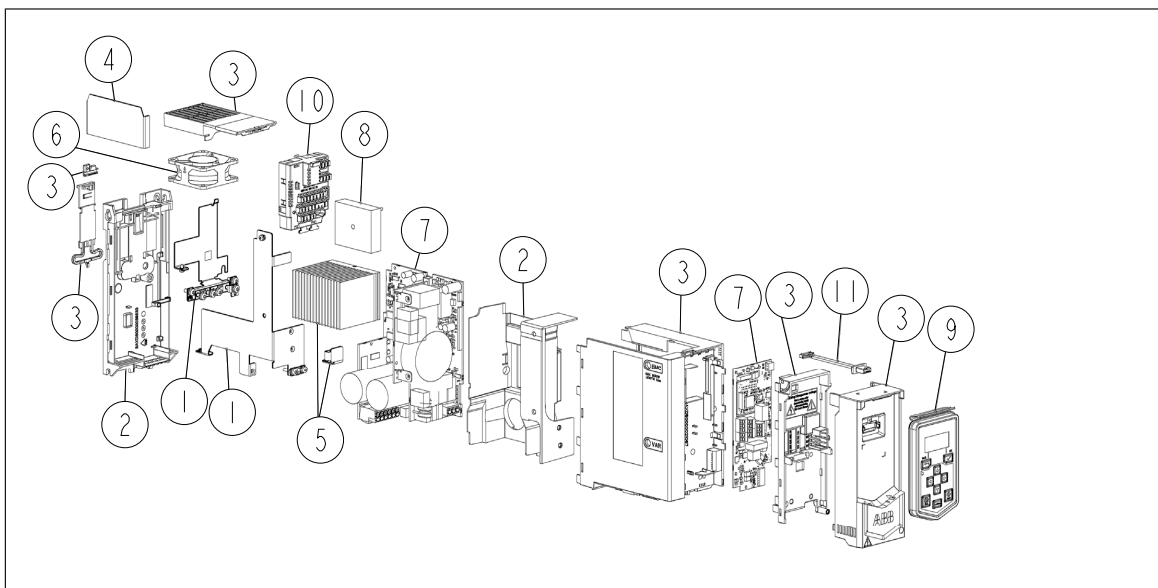
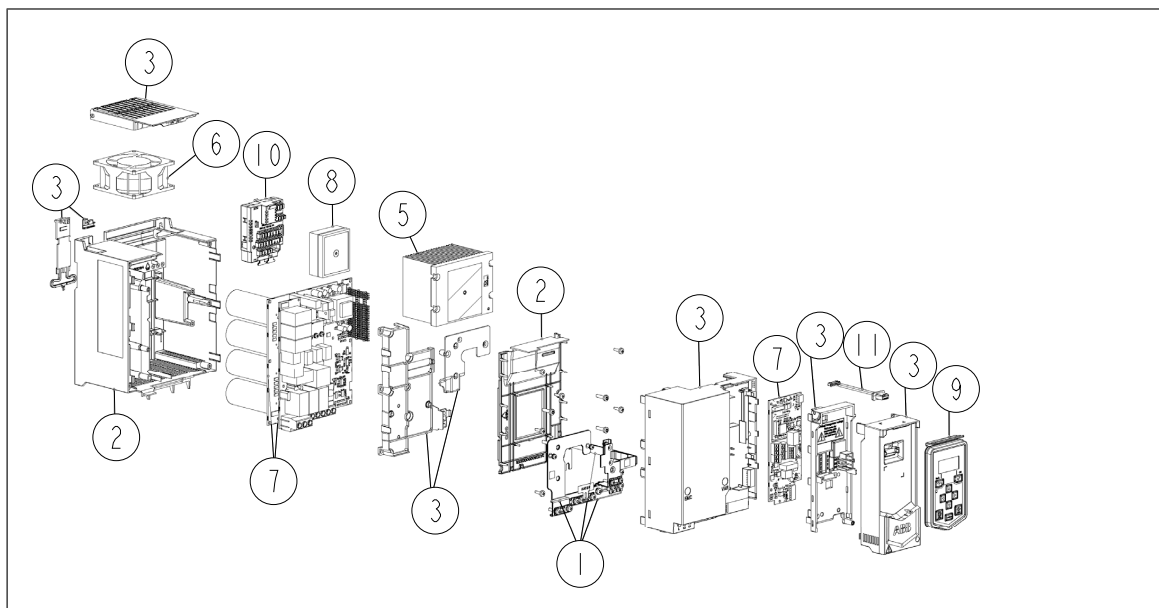| Frame R1 product materials				Total weight (kg): ~2.3
Part	**Category**	**Qty**	**Materials**	**Weight (g)**
1	Sheet metal parts	6	Zn coated Fe	136
2	Reinforced plastic parts	2	Plastic: PC+10%GF	146
3	Housing/ cover parts	6	Plastic: ABS PC	401
4	Insulating sheets	1	Plastic: PC	2
5	Heat sink and other aluminum parts	2	Aluminum: AW-6060 [Al Mg Si]	252
6	Axial fan	1	Various materials, plastic parts: PBT, aluminum alloy	70
7	Printed circuit board	4	Various materials, electronic components	863
8	Semiconductors	1	Cu, Al oxide, Sn, silicone gel, PBT, GF	99
9	Control panel	1	See *Materials of the Basic control panel (page 25)*.	86
10	Option IO	1	See *Materials of the option IO (page 23)*.	110
11	Cable	1	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermo-plastic polyester, glass-filled nylon	4

Materials of frame R2

The main components are shown in the figure below.

Frame R2 product materials				Total weight (kg): ~3.5
Part	Category	Qty	Materials	Weight (g)
1	Sheet metal parts	8	Zn coated Fe	113
2	Reinforced plastic parts	2	Plastic: PC+10%GF	493
3	Housing/cover parts	8	Plastic: ABS PC	519
4	Insulating sheets	N/A	Plastic: PC	N/A
5	Heat sink and other aluminium parts	1	Aluminum: AW-6060/6063 [Al Mg Si]	554
6	Axial fan	1	Various materials, plastic parts: PBT, aluminum alloy	200
7	Printed circuit board	3	Various materials, electronic components	1365
8	Semiconductor	1	Cu, Al oxide, Sn, silicone gel, PBT, GF	99
9	Control panel	1	See *Materials of the Basic control panel (page 25)*.	86
10	Option IO	1	*Materials of the option IO (page 23)*	110
-	Cable	1	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	4

Materials of frame R3
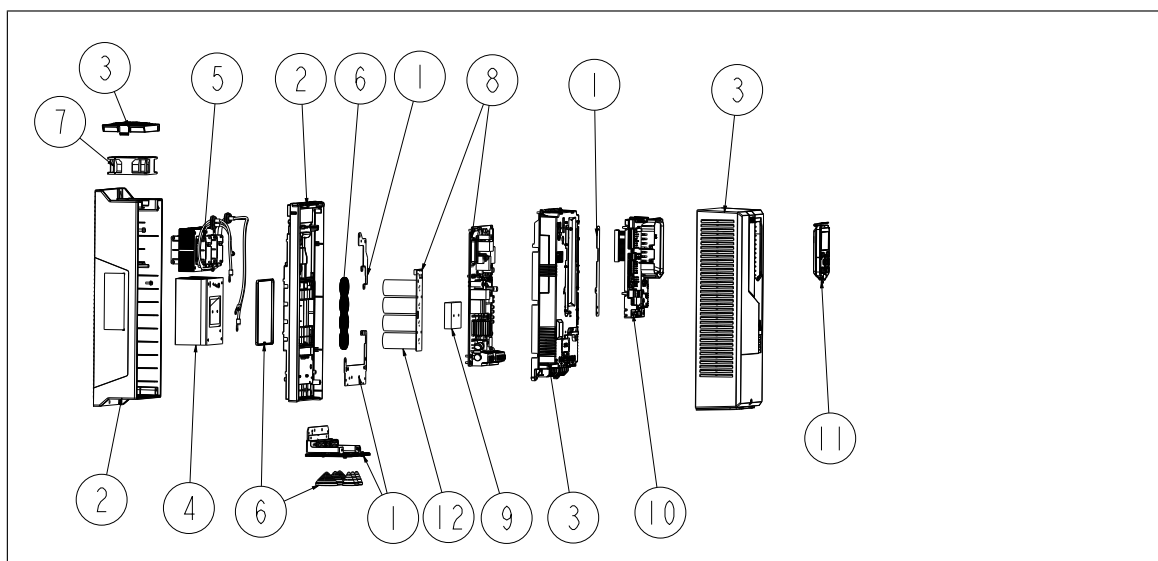
The main components are shown in the figure below.

Frame R3 product materials				Total weight: ~13.0 or 13.1 kgs
Part	Category	Qty	Materials	Weight (g)
1	Sheet metal parts	5	Zn coated Fe	766
2	Reinforced plastic parts	2	Plastic: PC+10%GF	1450
3	Housing/cover parts	3	Plastic: ABS PC	1000 or 1050
4	Heat sink + other aluminum part	1	Aluminum: AW-6060/6063 [Al Mg Si]	1800
5	Choke	1	Fe, Cu, PET+30%GF, silicone, thermoplastic polyester, glass-filled nylon	4500
6	Gaskets	9 or 10	Rubber: TPE	93 or 98
7	Axial fan	1 or 2	Various materials, plastic parts: PBT	350 or 420
8	Printed circuit board	2	Various materials, electronic components	1184
9	Semiconductor	1	Cu, Al oxide, Sn, silicone gel, PBT, GF	95
10	Control unit	1	See *Materials of the control unit CCU-23 (page 21)*.	307
11	Control panel	1	See *Materials of the Basic control panel (page 25)*.	143
12	Electrolytic capacitor	4	Al, electrolytic solute	300
-	Cables/wires	N/A	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	20

Materials of frame R4

The main components are shown in the figure below.
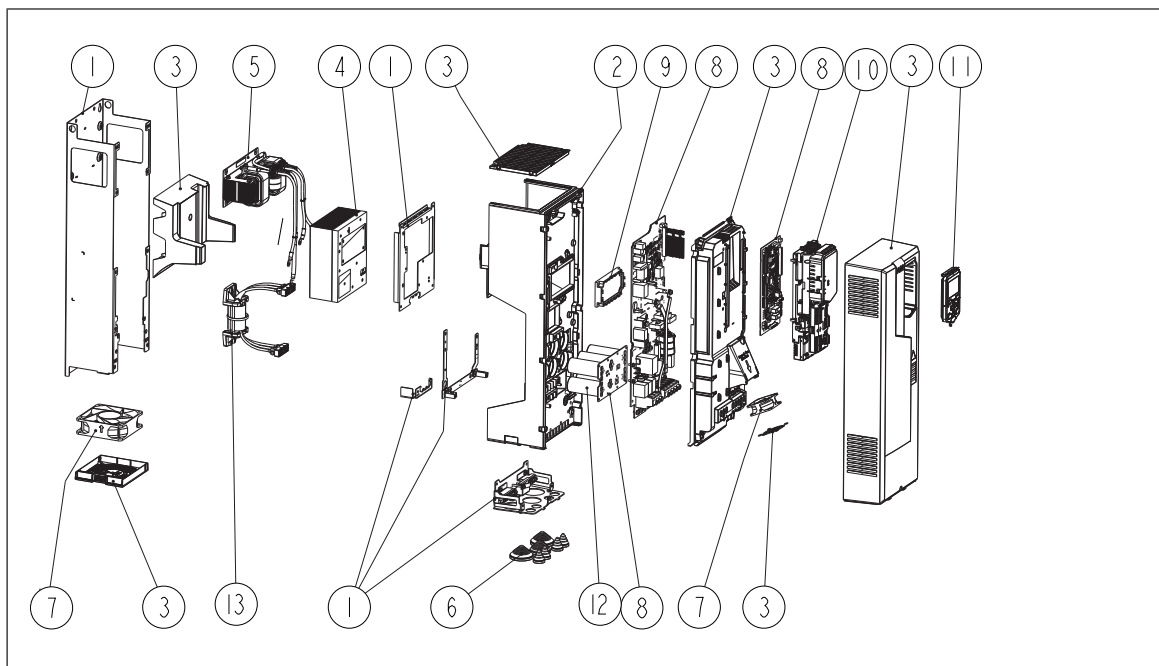
Frame R4 product materials				Total weight (kg): ~19.3
Part	Category	Qty	Materials	Weight (g)
1	Sheet metal parts	7	Zn coated Fe	4072
2	Reinforced plastic parts	1	Plastic: PC+10%GF	1168
3	Housing part	3	Plastic: ABS PC, PUR	1864
4	Heat sink + other aluminum parts	5	Aluminum: AW-6060 [Al Mg Si]	2534
5	Choke	1	Fe, Cu, PET+30%GF, silicone, thermoplastic polyester, glass-filled nylon	5688
6	Gaskets	9	Rubber: TPE	110
7	Axial fan	2	Various materials, plastic parts: PBT, aluminum alloy	428
8	Printed circuit board	2	Various materials, electronic components	1528
9	Semiconductors	1	Cu, Al oxide, Sn, silicone gel, PBT, GF	300
10	Control unit	1	See *Materials of the control unit CCU-23 (page 21)*.	310
11	Control panel	1	See *Materials of the Basic control panel (page 25)*.	130
12	Electrolytic capacitor	6	Al, electrolytic solute	732
13	Ferrite rings (optional)	4	Ferrite iron	400
-	Cables/wires	N/A	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	20

Materials of frame R5

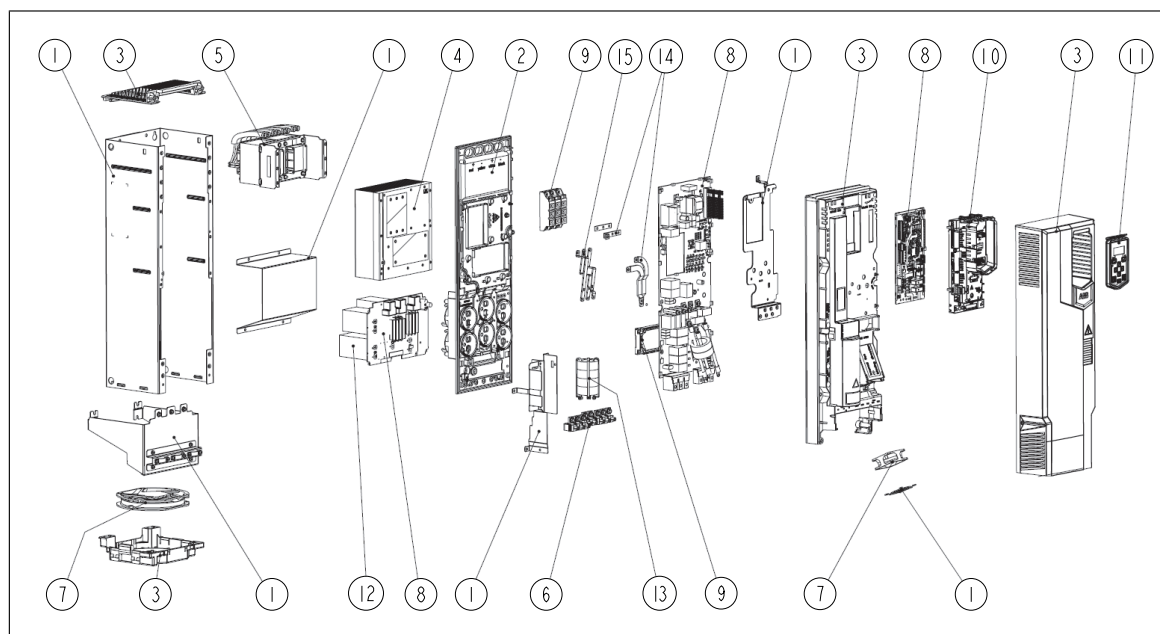The main components are shown in the figure below.

Frame R5 product materials				Total weight (kg): ~26.9
Part	**Category**	**Qty**	**Materials**	**Weight (g)**
1	Sheet metal parts	8	Zn coated Fe	6073
2	Reinforced plastic parts	1	Plastic: PC+10%GF	690
3	Housing/cover parts	6	Plastic: ABS PC	2504
4	Heat sink + other aluminium parts	1	Aluminum: AW-6060 [Al Mg Si]	4446
5	Choke	1	Fe, Cu, PET+30%GF, silicone, thermoplastic polyester, glass-filled nylon	7616
6	Terminal connectors	8	Stainless steel, Sn-plated Cu, Zn-plated steel	290
7	Axial fan	2	Various materials, plastic parts: PBT, aluminium alloy	504
8	Printed circuit board	2	Various materials, electronic components	1524
9	Semiconductors	2	Cu, Al oxide, Sn, silicone gel, PBT, GF	554
10	Control unit	1	See *Materials of the control unit CCU-23 (page 21)*.	310
11	Control panel	1	See *Materials of the Basic control panel (page 25)*.	130
12	Electrolytic capacitors	6	Al, electrolytic solute	1646
13	Ferrite rings (optional)	4	Ferrite iron	480
14	Bus bars	4	Sn-coated Cu	89
15	Bus bars	3	Al	27

Frame R5 product materials				Total weight (kg): ~26.9
Part	Category	Qty	Materials	Weight (g)
-	Cables/wires	N/A	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	30

Materials of frames R6 to R8

The main components are shown in the figure below (For example, frame R6 is used).
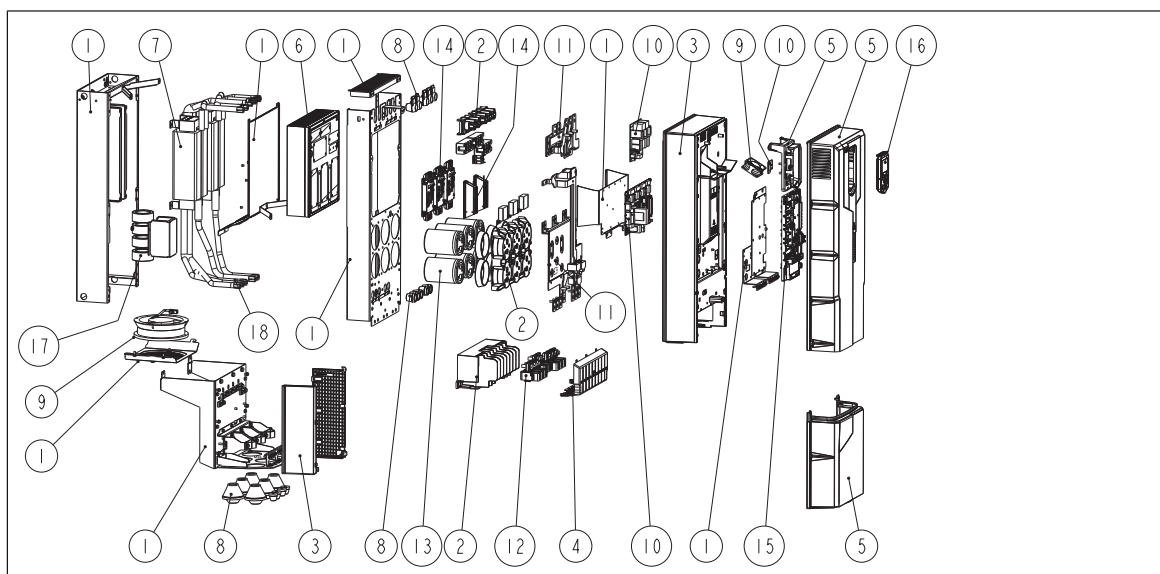
Frame R6 product materials				Total weight (kg): ~45.0
Part	Category	Qty	Materials	Weight (g)
1	Sheet metal parts	12-13	Zn coated Fe	12130 - 12290
2	Reinforced plastic parts	5	Plastic: PC+10%GF	800
3	Housing part	3	Plastic: ABS PC, PUR, brass	1140
4	Terminal cover/ insulating sheets	8-10	Plastic: PC	240 - 420
5	Housing/cover parts	4	Plastic: ABS PC	1500
6	Heat sink	1	Aluminum: AW-6060 [Al Mg Si]	5520
7	Choke	2	Fe, Cu, PET+30%GF, silicone, thermoplastic polyester, glass-filled nylon	9400
8	Gaskets	23	Rubber: TPE	280
9	Axial fan	2	Various materials, plastic parts: PBT, aluminum alloy	940
10	Printed circuit board	3	Various materials, electronic components	640
11	Bus bars	12-17	Cu, Sn	1240 - 1660
12	Terminal connectors	9	SS, SN coated Cu, Zn coated steel	980
13	Electrolytic capacitor	6	Al, electrolytic solute	1680
14	Semiconductors	7	Cu, Al oxide, Sn, silicone gel, PBT, GF	1380
15	Control unit	1	See *Materials of the control unit CCU-24 (page 22)*.	540
16	Control panel	1	See *Materials of the Basic control panel (page 25)*.	130
17	Ferrite rings (optional)	0 or 3	Ferrite iron	0 or 540
-	Cables/wires	N/A	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	1010

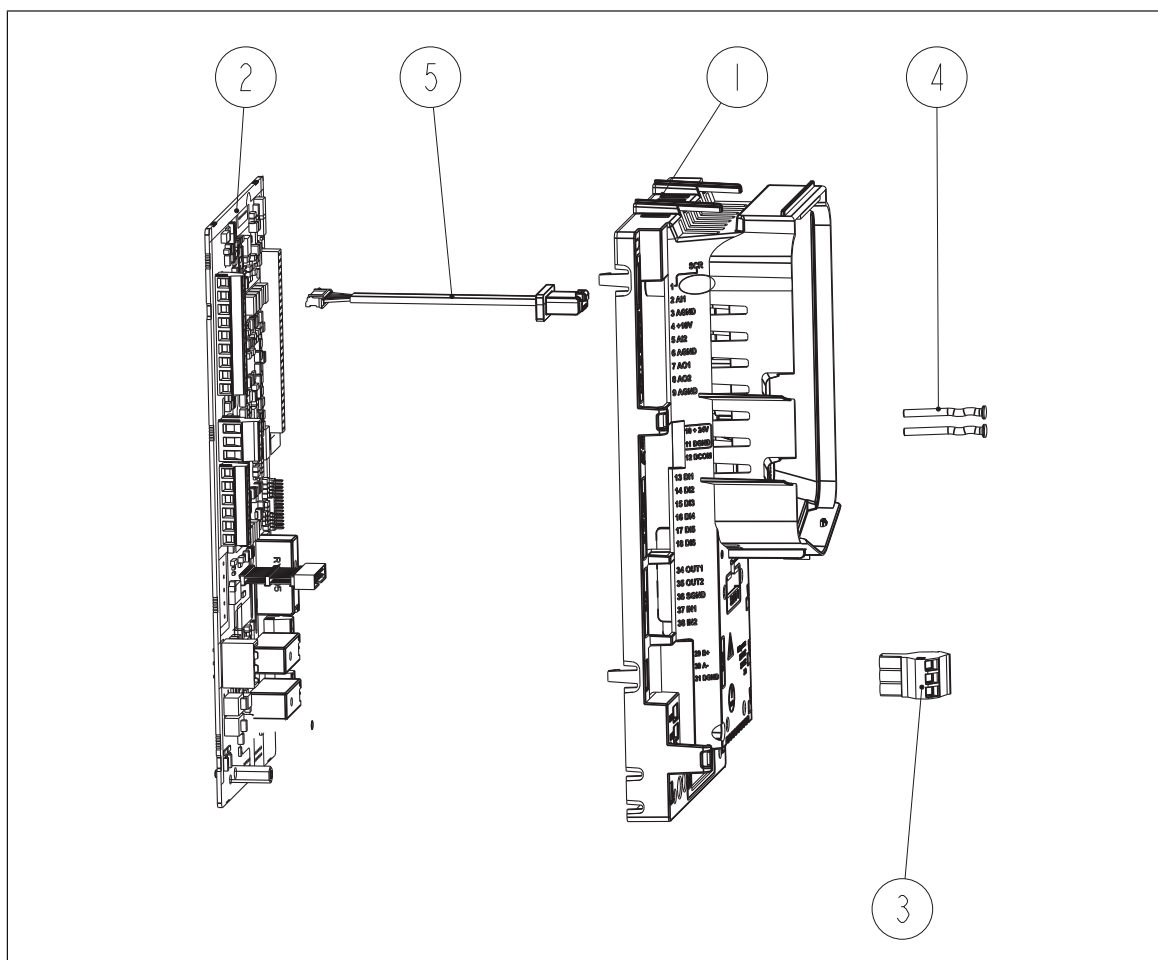| Frame R7 product materials				Total weight (kg): ~55.0
Part	Category	Qty	Materials	Weight (g)
1	Sheet metal parts	13-14	Zn coated Fe	13760 - 13920
2	Reinforced plastic parts	5	Plastic: PC+10%GF	910
3	Housing parts	3	Plastic: ABS PC, PUR, brass	1740
4	Terminal cover/ insulating sheets	8-12	Plastic: PC	430 - 530
5	Housing/cover parts	4	Plastic: ABS PC	1840
6	Heat sink	1	Aluminum: AW-6060 [Al Mg Si]	7350
7	Choke	2	Fe, Cu, PET+30%GF, silicone, thermoplastic polyester, glass-filled nylon	13800
8	Gaskets	24	Rubber: TPE	460
9	Axial fan	2	Various materials, plastic parts: PBT, aluminum alloy	940
10	Printed circuit board	3-4	Various materials, electronic components	650 - 740
11	Bus bars	15-20	Cu, Sn	1740 - 2550
12	Terminal connectors	9	SS, SN coated Cu, Zn coated steel	1110
13	Electrolytic capacitor	6	Al, electrolytic solute	2340
14	Semiconductors	9	Cu, Al oxide, Sn, silicone gel, PBT, GF	2040
15	Control unit	1	See *Materials of the control unit CCU-24 (page 22)*.	540
16	Control panel	1	See *Materials of the Basic control panel (page 25)*.	130
17	Ferrite rings (optional)	0 or 3	Ferrite iron	0 or 540
-	Cables/wires	N/A	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	1340

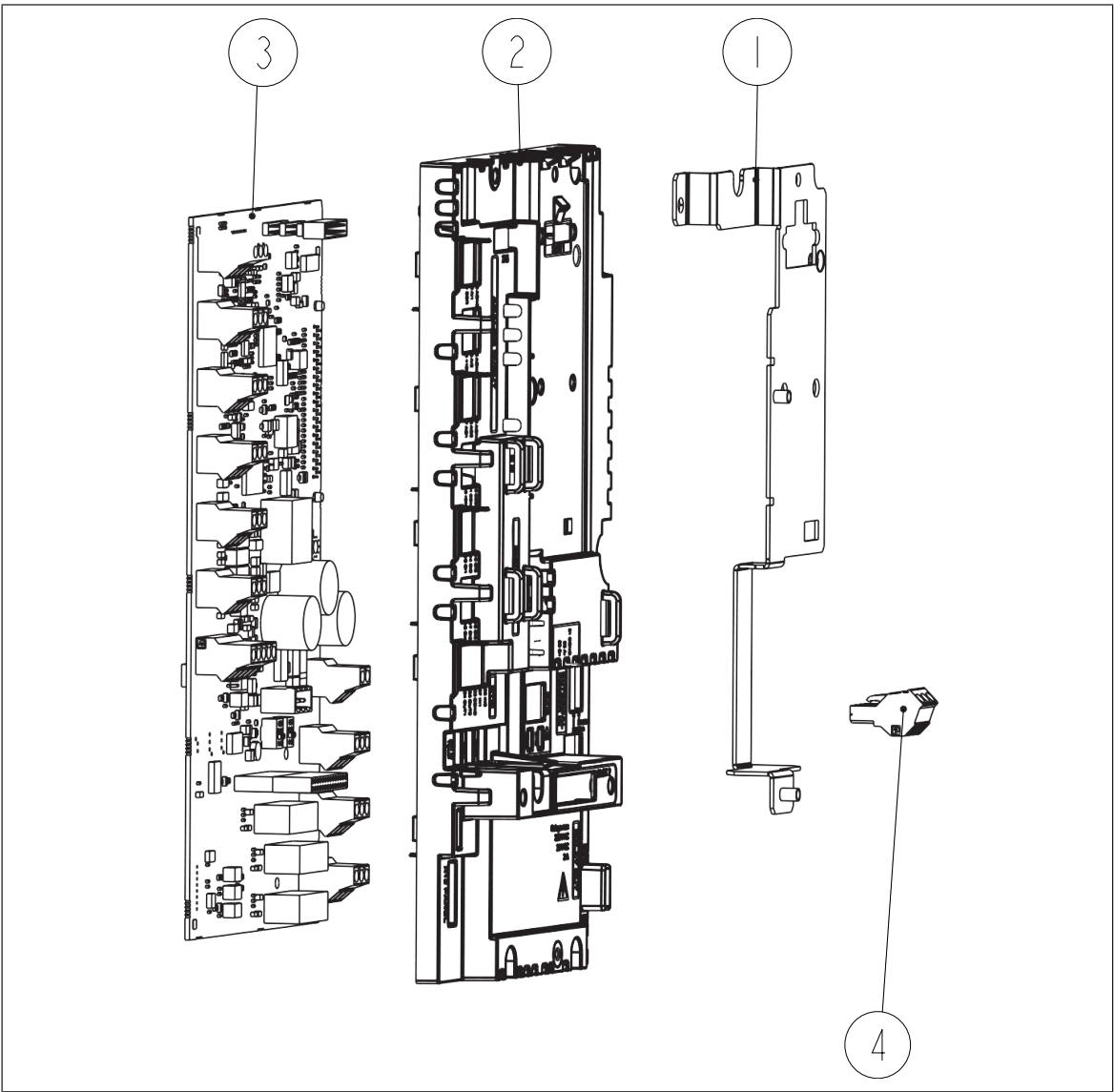| Frame R8 product materials				Total weight (kg): ~70.0
Part	Category	Qty	Materials	Weight (g)
1	Sheet metal parts	16-18	Zn coated Fe	15760 - 16290
2	Reinforced plastic parts	9	Plastic: PC+10%GF	1160
3	Housing parts	3	Plastic: ABS PC, PUR, brass	2120
4	Terminal cover/ insulating sheets	11-17	Plastic: PC	400 - 520
5	Housing/cover parts	4	Plastic: ABS PC	1960
6	Heat sink	1	Aluminum: AW-6060 [Al Mg Si]	7710
7	Choke	2	Fe, Cu, PET+30%GF, silicone, thermoplastic polyester, glass-filled nylon	17650
8	Gaskets	27	Rubber: TPE	640
9	Axial fan	2	Various materials, plastic parts: PBT, aluminum alloy	980
10	Printed circuit board	3-4	Various materials, electronic components	650 - 740
11	Bus bars	13-18	Cu, Sn	2770 - 3900
12	Terminal connectors	9	SS, SN coated Cu, Zn coated steel	2090
13	Electrolytic capacitor	6	Al, electrolytic solute	3410
14	Semiconductors	9 - 10	Cu, Al oxide, Sn, silicone gel, PBT, GF	1850 - 2220
15	Control unit	1	See *Materials of the control unit CCU-24 (page 22)*.	540
16	Control panel	1	See *Materials of the Basic control panel (page 25)*.	130
17	Ferrite rings (optional)	0 or 4	Ferrite iron	0 or 720
-	Cables/wires	N/A	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	1920

Materials of the control unit CCU-23

The main components are shown in the figure below.

| Control unit CCU-23 product materials				Total weight (g): ~307
Part	**Category**	**Qty**	**Materials**	**Weight (g)**
1	Housing parts	1	Plastic: ABS PC	112
2	Printed circuit board	1	Various materials, electronic component	174
3	Connector	1	PA, Fe	10
4	Photoconductor	2	Plastic: PC	1
5	Cables / wires	1	PVC, Cu, GF, Sn, Au, Ni, phosphor bronze, thermoplastic polyester, glass-filled nylon	10

Materials of the control unit CCU-24

The main components are shown in the figure below.

Control unit CCU-24 product materials				Total weight (g): ~536
Part	Category	Qty	Materials	Weight (g)
1	Housing parts	1	Plastic: ABS PC, PUR	120
2	Sheet metal parts	1	Zn-coated Fe	86
3	Printed circuit board	2	Various materials, electronic components	320
4	Connector	1	PA, Fe	10

Materials of the option IO

The main components are shown in the figure below.
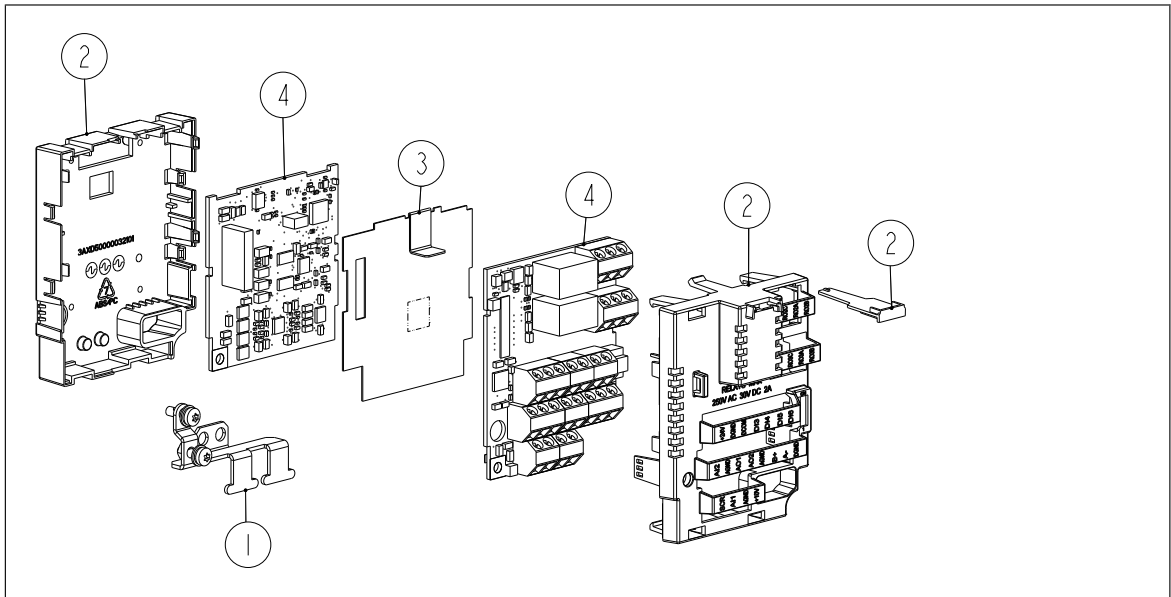
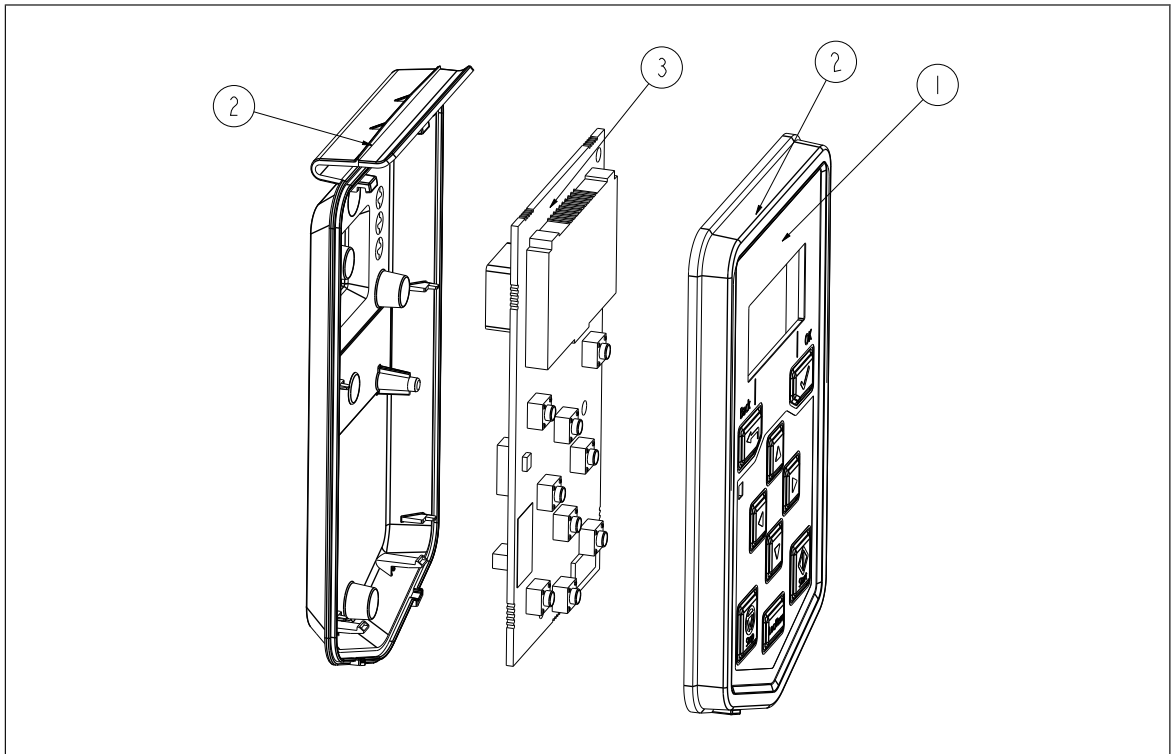| Option IO product materials				Total weight: ~110 g
Part	Category	Qty	Materials	Weight (g)
1	Sheet metal parts	1	Zn-coated Fe	7.3
2	Housing/cover parts	3	Plastic: ABS PC	26
3	Insulating sheets	1	Plastic: PC	1.5
4	Printed circuit board	2	Various materials, electronic components	72.5

Materials of the BIO-01 I/O extension module

The main components are shown in the figure below.
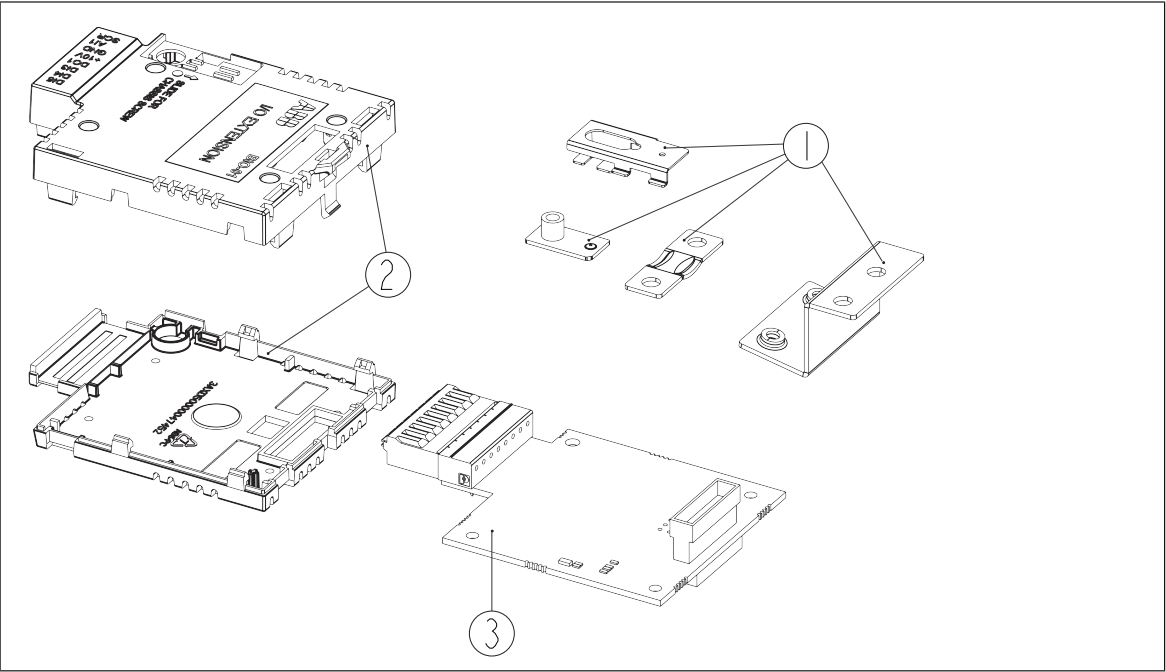
BIO-01 I/O extension module product materials				Total weight: ~68 g
Part	**Category**	**Qty**	**Materials**	**Weight (g)**
1	Sheet metal parts	4	Stainless steel and Zn-coated Fee	24
2	Housing/cover parts	2	Plastic: ABS PC TPE PET	20
3	Printed circuit board	1	Various materials, electronic components	24

Materials of the Basic control panel

The main components are shown in the figure below.

Basic control panel product materials				Total weight (g): ~ 87
Part	**Category**	**Qty**	**Materials**	**Weight (g)**
1	Adhesive label	1	Plastic: Autotex PET	-
2	Housing parts	2	Plastic: ABS PC	47
3	Printed circuit board	1	Various materials, electronic components	40

Abbreviations

Plastics and rubber	
ABS	Acrylonitrile-butadiene-styrene
GF	Glass fiber
PA	Polyamide
PBT	Polybutylene terephthalate
PC	Polycarbonate
PET	Polyethylene terephthalate
PUR	Polyurethane
PVC	Polyvinyl chloride
TPE	Thermoplastic elastomer

Package and product manuals

■ Package

The product package is made of corrugated cardboard. Depending on the product type, the package materials may also contain:

- birch plywood
- pressed woodchip
- glue
- nails.

You can recycle all materials used in the package.

To avoid pollution caused by unnecessary transportation, the factory does not take back used packages. The local ABB companies give instructions on the package recycling when necessary.

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 Drives 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 and ISO 14001.

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.

For more information on ABB Policy on Health, Safety, Environment, Security and Sustainability, see
new.abb.com/sustainability/abb-policy-on-health-safety-environment-security-and-sustainability.

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

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.

For more information on ABB end of life services, see new.abb.com/service/end-of-lifeservices.

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
- 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 chemical 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.

For more information on ABB list of prohibited and restricted substances, see new.abb.com/sustainability/environment.

◼ Refence 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).

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 capasitors	Recycled as WEEE
Cables	Recycled as material
Ceramics	Landfilled
Other materials	Energy recovery (incineration)

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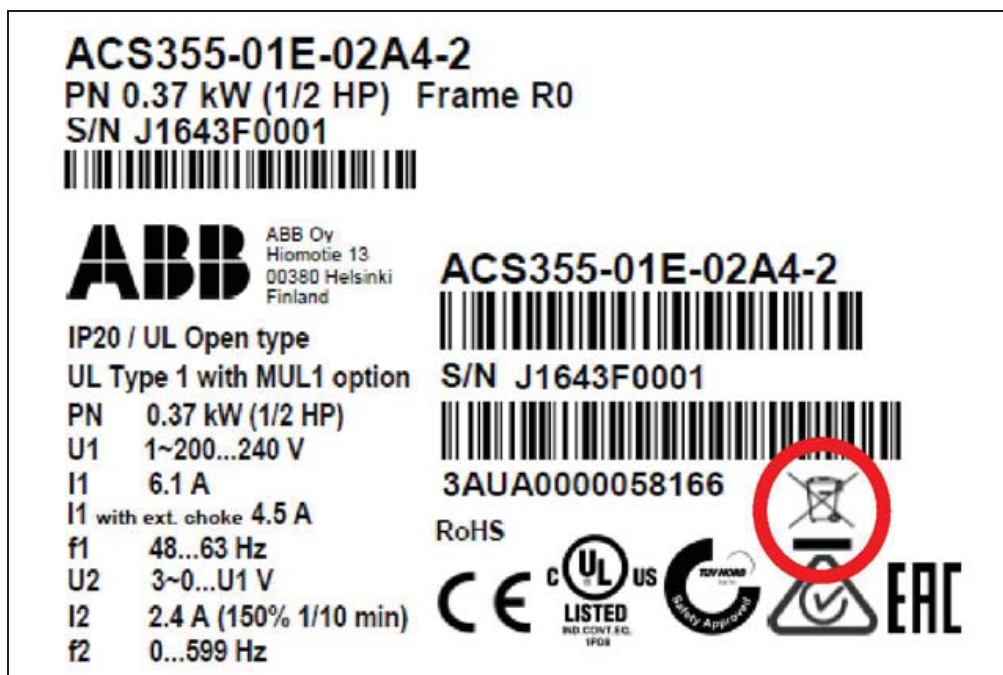
The manual contains information for treatment facilities in accordance with the EU directive on waste electrical and electronic equipment (WEEE).

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.

— 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

www.abb.com/drives