ErP 2016

The ErP Directive
New values for fans



BVN®
VENTILATION SYSTEMS & ELECTRICAL MOTORS

THE ErP DIRECTIVE AND BAHCIVAN FANS

Review the Regulations of 640/2009 (IEC motors) and 327/2011 (Fans) and the new directive 1253/1254 (Air Handling Units)



With the adoption of the Kyoto protocol, the European Union committed itself to a reduction of at least 20 per cent in C02 emissions by 2020. In order to achieve this target, in 2005 the EU ratified the ErP Directive (Energy using Products Directive). In 2009, this was renamed the ErP Directive (Energy related Products Directive). It is often simply referred to as the eco-design directive. In specific terms, this concerns Directive 2009/125/EC. We come across this in everyday life, for example with the phasing out of traditional light bulbs or the energy efficiency label-ling on fridges, washing machines and so on.

Who is affected by the Directive?

The Directive is mandatory within the states of the EU. This requirement affects not only manufacturers of ventilation and air conditioning products, but also plant manufacturers and system operators. The ErP Regulation covers products which are produced in the European Economic Area as well as those imported from other countries. Products for export outside the EU are not covered by the Regulation. However it is likely that other countries will concern them-selves with the subject as well.

An overview of all the requirements of the Ecodesign Directive.

Confusion often arises because two independent regulations must be fulfilled in parallel.
A simple summary can be found in the following table:

Ecodesign Directive („ErP Directive“) 2009/125/EG

	IEC-motors	Fans	Ventilation systems
	Regulation 640/2009	Consideration of nozzle + impeller + motor + any control electronics Regulation 327/2011	from 01.01.2016 Regulation 1253/2014 (Ventilation units) Regulation 1254/2014 (labeling residential units)
2018			Increased demands for ventilation units at all. Cancellation of the two lowest energy classes F, G on the labels.
2017	**IEC-motors** 0.75 - 375 kW Efficiency class: IE3 or IE2 + FU *		
2016			Minimum requirements for ventilation systems (> 30 W), equipment for residential ventilation with energy labelling
2015	**IEC-motors** 7.5 - 375 kW Efficiency class: IE3 or IE2 + FU *	**Fans** ≥ 125 W Minimum efficiency Stage 2 **	
2013		**Fans** ≥ 125 W Minimum efficiency Stage 1 **	
2011	**IEC-motors** ≥ 0.75 kW Efficiency class: IE2		

* Frequency converterr
** Calculated according to a defi ned formula

EU-Regulation 327/2011 for Fans

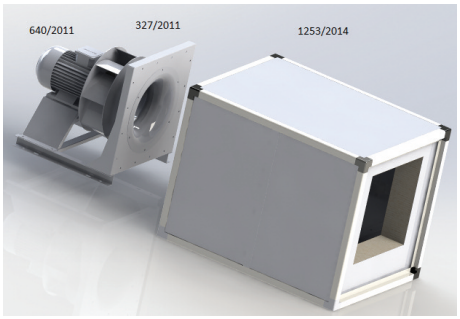
Thanks to the ErP Directive, the energy-saving potential of numerous energy-related products is being investigated and minimum requirements specified with regard to their energy-efficiency. Eventually, in June 2010, mandatory limit values for fans were specified. The directive defines a fan to be the unit consisting of nozzle, impeller and motor, as well as any control electronics present (see Fig. 1). The aim is to categorise products brought onto the European market with a general minimum efficiency specification for fans. The first stage of the minimum efficiency specifications for fans became effective on 01.01.2013



Fig.1

More stringent requirements from 01.01.2015

The second stage of Regulation 327/2011 came into effect on 01.01.2015. Then the minimum efficiency requirements will be increased again, compared with the limits from 2013. This means that affected products which do not meet the minimum efficiency requirements can no longer be brought on to the European market from 01.01.2015. That only applies to so called motorized impellers.



Introduction of the Regulation 1253/2014 and 1254/2014

At the 1st of January 2016 ErP directive comes into force. It rules ventilation units at all which are intended to to replace utilised air by outdoor air in a building or a part of a building. Included are roof fans, duct fans, residential ventilation units and modular air handling units. These Ventilation units has to fulfil a minimum efficiency and need to have at least a multi speed control which is under the response of the installer. BVN supports all customers with a wide range of controls.

Excluded from this regulation are still Ventilation units used for security functions (Ex- and smoke extract) as well as units for processes like extract of agressive or high temperature mediums.

Which fans are affected?

Fans of all types of construction with an electrical input power at 30 W are affected by the Directive.

Which fans are not affected?

Fans with the purpose of providing protection and which are outside certain temperature ranges are not affected.

This includes:

- Single stage smoke extraction fans, as long as these are not used for daily ventilation on demand
- Explosion-protected fans
- Fans for the extraction of aggressive media
- Fans for transported media temperatures above 100 °C
- Fans for ambient temperatures above 65 °C

During the course of the introduction of the Directives, many manufacturers will also improve these motors without being legally required to do so.

Non-residential ventilation (NRVU) > 250[m³/h].

What does it mean?

For BVU's: AHU's used in a balanced ventilation system in a building (fans in supply-air and fans in extract-air) have to be equipped with a heat recovery system (HRS) and to contain filters in supply and extract-air. On top the electrical power consumption of the fans regarding these demands is restricted.

For UVU's: AHU's which are part of a hybrid ventilation system (fans combined with natural supply or exhaust), have to meet minimum static fan efficiency, a F7 filter in supply air and a maximum power demand of the fan related to the 'supply-filter'.

Exceptions

This Regulation shall not apply to ventilation units which:

- When electric power input is less than 30W (per air stream)
- Axial or centrifugal fans, which are only equipped with a housing.
- Explosion-protected fans
- Single stage smoke extraction fans, as long as these are not used for daily ventilation on demand
- Fans for transported media temperatures above 100 °C
- Fans for ambient temperatures above 65 °C
- Temperature of air stream or motor-surrounding under 40°C
  Supply voltage exceeds 1.000 V AC or 1.500 V DC
- Fans for the extraction of aggressive media
- AHU includes a heat exchanger and a heat pump for heat recovery.
- When applied for kitchen range hoods;

Specific ecodesign requirements for non residential ventilation units from 01.01.2016 (intensification 2018)

- All fans suitable for multi-speed-drive (min. 3 steps plus 0) or variable-speed-drive. Controller can be external.
- All bidirectional ventilation units (BVU) have to be equipped with a heat-recovery-system (HRS).
- All HRS shall have a thermal bypass facility (as bypass or control-function).
- Minimum thermal efficiency HRS:
  - »» run-around = 63 % (2018 = 68 %) for higher efficiency bonus for higher efficiency calculation formula:
    E = (ηt_NWLA - 0.63) * 3000
  - »» all other recovery systems = 67 % (2018 = 73 %).
    bonus for higher efficiency; calculation formula:
    E = (ηt_nwla - 0.67) * 3000
- Minimum fan efficiency for UVU (ηvu) amounts
  - »» 6.2 % * ln(P) + 35.0 %, when P ≤ 30 kW and
  - »» 56.1 %, when P > 30kW.
- Maximum internal specific fan power of ventilation components (SVL_{int_limit}) in W/(m³/s) for a BVU with run-around HRS:
  1700 + E–300 * $_{qnom}$/2–F, when q_{nom} < 2 m³/s
  and 1400 + E–F, when q_{nom} ≥ 2 m³/s;
  - »» for a BVU with other HRS:
    1200 + E – 300 * q_{nom}/2 – F, when q_{nom} < 2 m³/s
    and 900 + E – F, when q_{nom} ≥ 2 m³/s;
  - »» 250 for an UVU intended to be used with a filter.

Important terms and abbreviations:

Air handling units (AHU)
consisting at least of impeller, motor und casing

Residential ventilation unit (RVU)
at air-flows up to 250 resp. 1.000 m³/h

Non-residential ventilation unit (NRVU)
at air-flows above 1.000 resp. 250 m³/h. Absatz: -> At air-flows between 250 and 1000m³/h the manufacturer has to declare, if it is a RVU or a NRVU.

Heat recovery system (HRS)
as part of a bidirectional ventilation unit

Unidirectional ventilation unit (UVU)
Ventilation unit with only one air-flow (supply or exhaust). Balanced by natural air supply or exhaust (over- or underpressure).

Bidirectional ventilation unit
ventilation unit with supply and exhaust air-flow (with both supply and exhaust fans).

Multi-speed-drive
(Multi-stage operation)
min. 3 steps or more plus zero (off)

Speed controllable
stepless via integrated or external control unit

Residential ventilation(RVU) unit EU 1253/2014 and 1254/2014 (Labeling) <1000[m³/h].

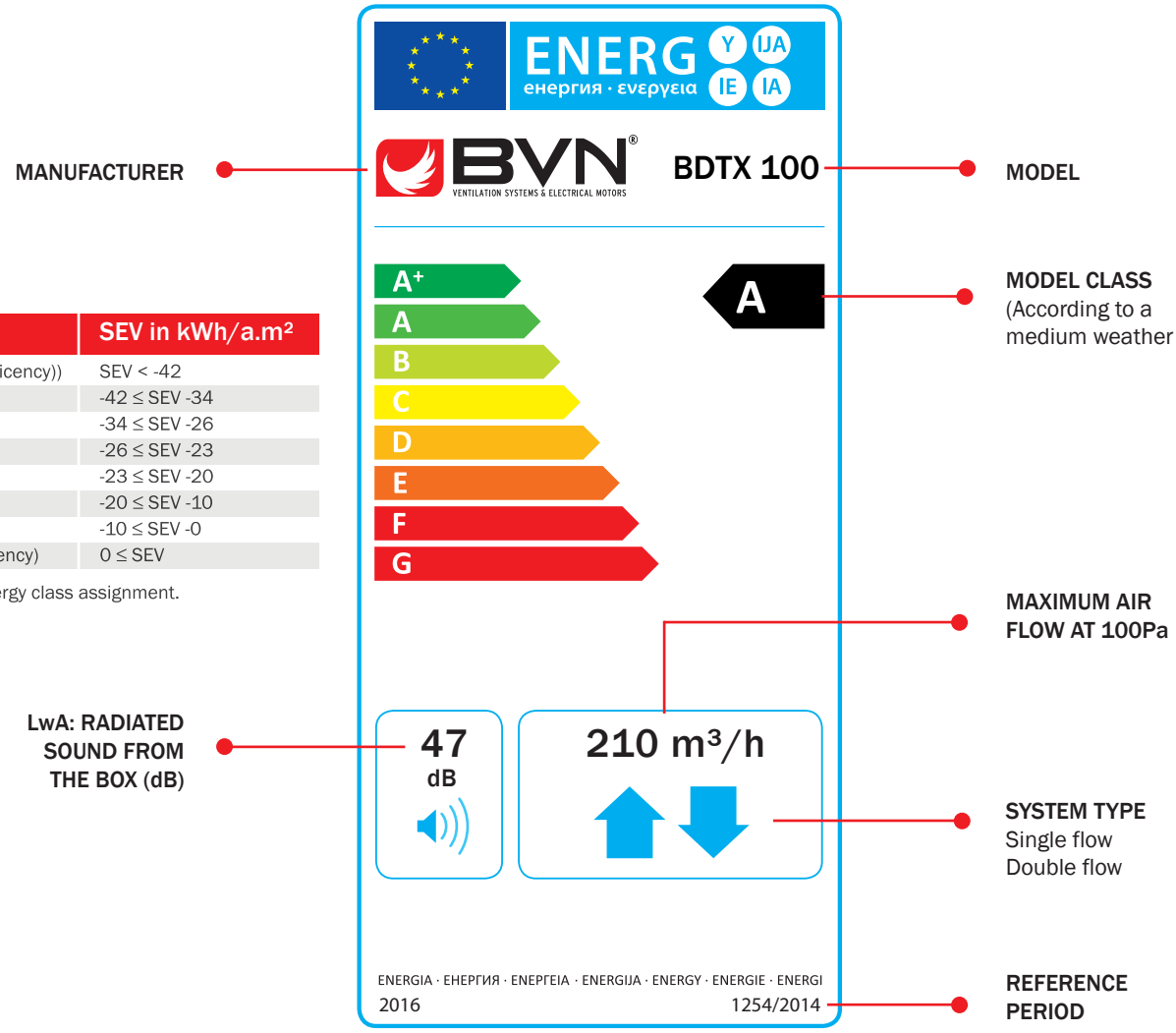
- Minimum requirements from January 1, 2016: The units must save at least as much primary energy (electricity and heat) as they use (electricity)
- Minimum requirements from January 1, 2018: The units must save significantly more primary energy than they use – the ventilation heat requirement of the residential building will be approximately halved
- Energy efficiency label from A+ to G (see Fig. 2)

The energy label should permit the end user to compare products easily, enabling them to select energy-efficient products. In contrast to other electrical equipment, the energy classes on the labels of residential ventilation
equipment are determined by a calculated parameter, the specific energy consumption, or SEC. This value should display the energy-saving potential of the equipment used in kilowatt hours per m² per year.

SEV-class	SEV in kWh/a.m²
A+ (highest efficency))	SEV < -42
A	-42 ≤ SEV -34
B	-34 ≤ SEV -26
C	-26 ≤ SEV -23
D	-23 ≤ SEV -20
E	-20 ≤ SEV -10
F	-10 ≤ SEV -0
G (lowest efficency)	0 ≤ SEV

SEC value and energy class assignment.

Fig.2





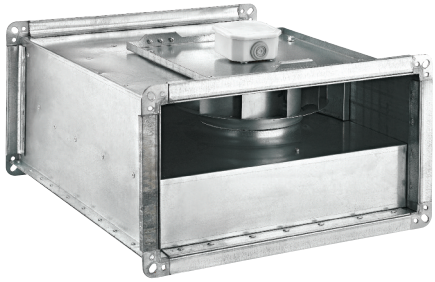
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BDTX 100	✓	RVU	UVU	F
BDTX 125	✓	RVU	UVU	F
BDTX 150-B	✓	NRVU	UVU	
BDTX 160-A	✓	NRVU	UVU	
BDTX 200-A	✓	NRVU	UVU	
BDTX 200-B	✓	NRVU	UVU	
BDTX 250-A	✓	NRVU	UVU	
BDTX 250-B	✓	NRVU	UVU	
BDTX 315-A	✓	NRVU	UVU	
BDTX 315-B	✓	NRVU	UVU	
BDTX 355	✓	NRVU	UVU	



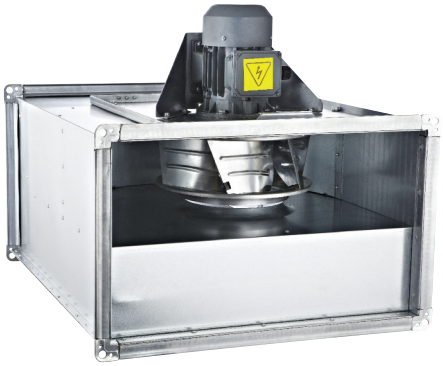
Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass
BMFX-100	✓	RVU	UVU	F
BMFX-125	✓	RVU	UVU	F
BMFX-150	✓	RVU	UVU	E
BMFX-200	✓	RVU	UVU	E
BMFX-250	✓	NRU	UVU	
BMFX-315	✓	NVU	UVU	



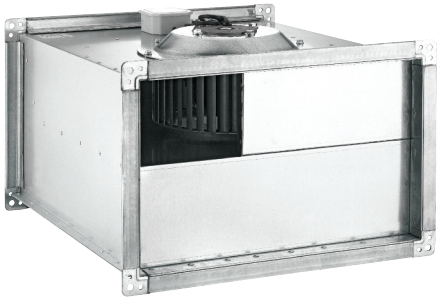
Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass
BFTX 100	✓	RVU	UVU	F
BFTX 150-B	✓	RVU	UVU	F
BFTX 200-A	✓	NRVU	UVU	
BFTX 200-B	✓	NRVU	UVU	
BFTX 250-A	✓	NRVU	UVU	
BFTX 250-B	✓	NRVU	UVU	
BFTX 315-A	✓	NRVU	UVU	
BFTX 315-B	✓	NRVU	UVU	



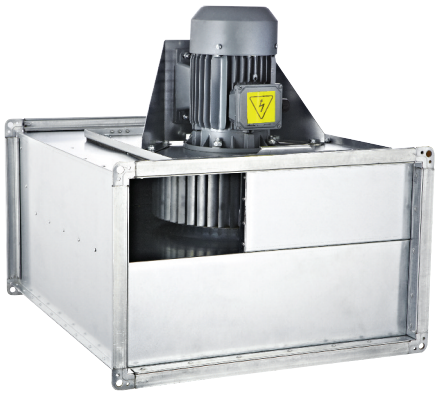
Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass
BDKF 30-15	✓	NRVU	UVU	
BDKF 40-20A	✓	NRVU	UVU	
BDKF 40-20B	✓	NRVU	UVU	
BDKF 50-25	✓	NRVU	UVU	
BDKF 60-30	✓	NRVU	UVU	
BDKF 60-35A	✓	NRVU	UVU	
BDKF 60-35B	✓	NRVU	UVU	
BDKF 70-40A	✓	NRVU	UVU	
BDKF 70-40B	✓	NRVU	UVU	
BDKF 80-50	✓	NRVU	UVU	
BDKF 100-50	✓	NRVU	UVU	



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Excluded Units
BDKF-R 315	✓	NRVU	UVU	T>100°C
BDKF-R 355	✓	NRVU	UVU	T>100°C
BDKF-R 400	✓	NRVU	UVU	T>100°C
BDKF-R 450	✓	NRVU	UVU	T>100°C
BDKF-R 500	✓	NRVU	UVU	T>100°C
BDKF-R 560	✓	NRVU	UVU	T>100°C



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass
BSKF 40-20	⊘	NRVU	UVU	
BSKF 50-25	⊘	NRVU	UVU	
BSKF 50-30	⊘	NRVU	UVU	
BSKF 60-30	⊘	NRVU	UVU	
BSKF 60-35	⊘	NRVU	UVU	



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Excluded Units
BSKF-R 200-4	✓	NRVU	UVU	T>100°C
BSKF-R 200-6	✓	NRVU	UVU	T>100°C
BSKF-R 225-4	✓	NRVU	UVU	T>100°C
BSKF-R 225-6	✓	NRVU	UVU	T>100°C
BSKF-R 250-4	✓	NRVU	UVU	T>100°C
BSKF-R 250-6	✓	NRVU	UVU	T>100°C
BSKF-R 280-4	✓	NRVU	UVU	T>100°C
BSKF-R 280-6	✓	NRVU	UVU	T>100°C
BSKF-R 315-4	✓	NRVU	UVU	T>100°C
BSKF-R 315-6	✓	NRVU	UVU	T>100°C
BSKF-R 355-4	✓	NRVU	UVU	T>100°C
BSKF-R 355-6	✓	NRVU	UVU	T>100°C
BSKF-R 400-6	✓	NRVU	UVU	T>100°C
BSKF-R 450-6	✓	NRVU	UVU	T>100°C



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Excluded Units
BKEF 315M	✓	NRVU	UVU	T>100°C
BKEF 355T	✓	NRVU	UVU	T>100°C
BKEF 400T	✓	NRVU	UVU	T>100°C
BKEF 450T	✓	NRVU	UVU	T>100°C



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Excluded Units
BKEF-T 160	✓	NRVU	UVU	T>100°C
BKEF-T 180	✓	NRVU	UVU	T>100°C
BKEF-T 200	✓	NRVU	UVU	T>100°C
BKEF-T 225	✓	NRVU	UVU	T>100°C
BKEF-T 280	✓	NRVU	UVU	T>100°C
BKEF-T 315	✓	NRVU	UVU	T>100°C
BKEF-T 355	✓	NRVU	UVU	T>100°C



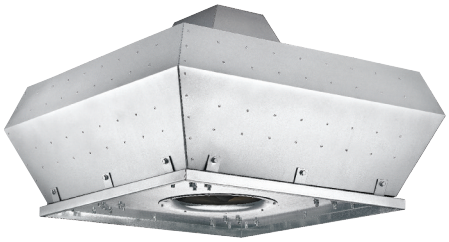
Product Name	ErP Compliance 2016	Unit Category	Unit Type	Excluded Units
BKEF-R 400	✓	NRVU	UVU	T>100°C
BKEF-R 450	✓	NRVU	UVU	T>100°C
BKEF-R 500	✓	NRVU	UVU	T>100°C
BKEF-R 560	✓	NRVU	UVU	T>100°C



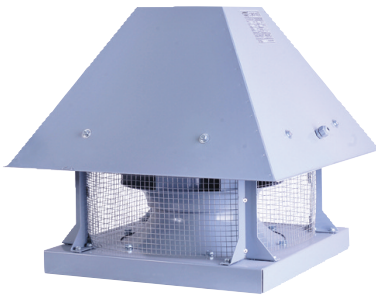
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BRF 160	✓	RVU	UVU	F
BRF 180	✓	RVU	UVU	F
BRF 225	✓	RVU	UVU	E
BRF 250	✓	NRVU	UVU	
BRF 315	✓	NRVU	UVU	
BRF 355	✓	NRVU	UVU	
BRF 400	✓	NRVU	UVU	
BRF 450	✓	NRVU	UVU	
BRF 500	✓	NRVU	UVU	
BRF 560	✓	NRVU	UVU	



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass
BRF-V 225	✓	RVU	UVU	E
BRF-V 315	✓	RVU	UVU	E
BRF-V 355	⊘	NRVU	UVU	
BRF-V 400	✓	NRVU	UVU	
BRF-V 450	✓	NRVU	UVU	
BRF-V 500	✓	NRVU	UVU	
BRF-V 560	✓	NRVU	UVU	



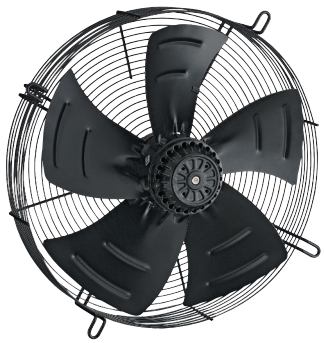
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BRDV 315	✓	NRVU	UVU	T>100°C
BRDV 355	✓	NRVU	UVU	T>100°C
BRDV 400	✓	NRVU	UVU	T>100°C
BRDV 450	✓	NRVU	UVU	T>100°C
BRDV 500	✓	NRVU	UVU	T>100°C
BRDV 560	✓	NRVU	UVU	T>100°C



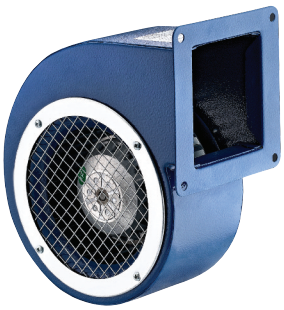
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BRCF 280	✓	NRVU	UVU	T>100°C
BRCF 315	✓	NRVU	UVU	T>100°C
BRCF 355	✓	NRVU	UVU	T>100°C
BRCF 400	✓	NRVU	UVU	T>100°C
BRCF 450	✓	NRVU	UVU	T>100°C
BRCF 500	✓	NRVU	UVU	T>100°C
BRCF 560	✓	NRVU	UVU	T>100°C
BRCF 630	✓	NRVU	UVU	T>100°C
BRCF 710	✓	NRVU	UVU	T>100°C
BRCF 800	✓	NRVU	UVU	T>100°C



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass
BDRAX 200-2K	✓	NRVU	UVU	
BDRAX 200-4K	✓	NRVU	UVU	
BDRAX 250-2K	✓	NRVU	UVU	
BDRAX 250-4K	✓	NRVU	UVU	
BDRAX 300-2K	✓	NRVU	UVU	
BDRAX 300-4K	✓	NRVU	UVU	
BDRAX 350-2K	✓	NRVU	UVU	
BDRAX 350-4K	✓	NRVU	UVU	



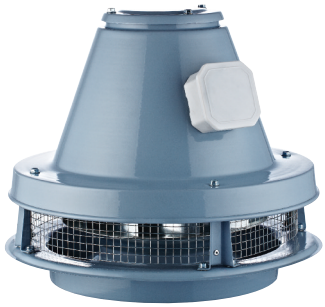
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4M 300B/S	✓	NRVU	UVU	
4M 350B/S	✓	NRVU	UVU	
4M 400B/S	✓	NRVU	UVU	
4M450B/S	✓	NRVU	UVU	
4M 500B/S	✓	NRVU	UVU	



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass
BDRS 125-50	⊘	NRVU	UVU	
BDRS 120-60	⊘	NRVU	UVU	
BDRS 140-60	⊘	NRVU	UVU	
BDRS 160-60	⊘	NRVU	UVU	



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass
BDRAS 120-60	⊘	NRVU	UVU	
BDRAS 140-60	⊘	NRVU	UVU	
BDRAS 160-60	⊘	NRVU	UVU	



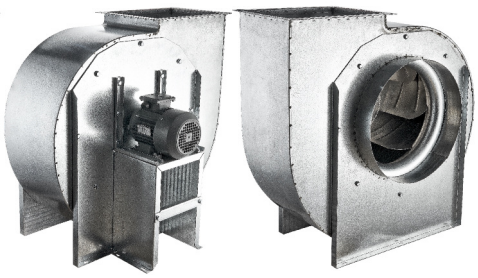
Product Name	ErP Compliance 2016	Unit Category	Unit Type	Excluded Units
BRCF-M	✓	NRVU	UVU	T>100°C



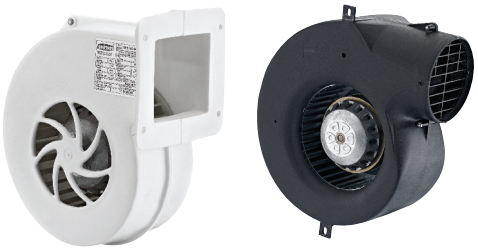
Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass
BSMS / BSTS 250	⊘	NRVU	UVU	
BSMS / BSTS 300	⊘	NRVU	UVU	
BSMS / BSTS 350	⊘	NRVU	UVU	
BSMS / BSTS 400	⊘	NRVU	UVU	
BSMS / BSTS 450	✓	NRVU	UVU	
BSMS / BSTS 500	✓	NRVU	UVU	
BSMS / BSTS 550	✓	NRVU	UVU	
BSMS / BSTS 600	✓	NRVU	UVU	



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Sec Cass	Excluded Units
EF 1009	✓	RVU	UVU	E	P<30 W
EF 1219	✓	RVU	UVU	E	P<30 W
EF 1530	✓	RVU	UVU	E	P<30 W
EA 1010	✓	RVU	UVU	E	P<30 W
EA 1219	✓	RVU	UVU	E	P<30 W
EA 1530	✓	RVU	UVU	E	P<30 W
EC 1010E	✓	RVU	UVU	E	P<30 W
EC 1219E	✓	RVU	UVU	E	P<30 W
EC 1530E	✓	RVU	UVU	E	P<30 W
BPP 15	✓	RVU	UVU	E	P<30 W
BPP 20	✓	RVU	UVU	E	
BPP 25	✓	RVU	UVU	E	
BPP 30	✓	RVU	UVU	E	



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Excluded Units
ALÇ 315 A	✓	NRVU	UVU	T>100°C
ALÇ 315 B	✓	NRVU	UVU	T>100°C
ALÇ 355	✓	NRVU	UVU	T>100°C
ALÇ 400	✓	NRVU	UVU	T>100°C
ALÇ 500	✓	NRVU	UVU	T>100°C
ALÇ 560	✓	NRVU	UVU	T>100°C



Product Name	ErP Compliance 2016	Unit Category	Unit Type	Excluded Units
BPS-B 150-100	✓	NRVU	UVU	in highly corrosive environment
BPS 140-60	✓	NRVU	UVU	
BPS-B 140-60	✓	NRVU	UVU	

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BAHCIVAN ELECTRICAL MOTORS & VENTILATION FANS
Ömerli Köyü Kurtini Mevkii No:5 Zip C 34555
Hadımköy | Istanbul | TURKEY
T. +90 212 771 48 48 (pbx) **F.** +90 212 771 48 42