

ENVIRONMENTAL PRODUCT DECLARATION

BTS 75 V AND RTS 87 SERIES CONCEALED DOOR CLOSERS



A concealed floor spring and transom door closer with adjustable closing force for single leaf doors in single or double action application.



*Registered under the scope
of mutual recognition between
UL Environment and
Institut Bauen und Umwelt e.V.*



DORMA IS THE TRUSTED GLOBAL PARTNER FOR PREMIUM ACCESS SOLUTIONS & SERVICES ENABLING BETTER BUILDINGS

With over 100 years of experience, the company offers comprehensive solutions covering all facets of your opening – from locks, closers, and floor springs to automatic door systems and access control components. DORMA also supplies horizontal sliding wall systems, revolving doors and glass wall systems.

DORMA maintains major production plants in Europe, Singapore, Malaysia, China, and North and South America.

Our commitment to a sustainable future

We are committed to sustainable development as one of our key business objectives. DORMA's aim is to ensure energy-saving and resource-conserving production, to maintain a high recycled content ratio and to provide products with a long service life. With expert advice, innovative products and international service coverage we are able to make significant contributions to energy efficiency and to drive cost savings derived from sustainable building concepts. Through our involvement in national organizations around the world, we at DORMA support the idea of the World Green Building Council.

For more information visit:

www.dorma.com



ENVIRONMENTAL PRODUCT DECLARATION



DORMA Deutschland GmbH
 BTS 75 V and RTS 87 Series
 Concealed Door Closers

According to EN 15804 and ISO 14025

Dual Recognition by UL Environment and Institut Bauen und Umwelt e.V.

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. **Exclusions:** EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. **Accuracy of Results:** EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. **Comparability:** EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



By using this EPD, the user agrees to the UL ENVIRONMENT SUSTAINABLE PRODUCT GUIDE TERMS OF USE (<http://productguide.ulenvironment.com/TermsandConditions.aspx>), where this EPD is listed.

PROGRAM OPERATOR	UL Environment
DECLARATION HOLDER	DORMA Deutschland GmbH
ULE DECLARATION NUMBER	4786548204.104.1
IBU DECLARATION NUMBER	EPD-DOR-20140191-CBD1-EN
DECLARED PRODUCT	BTS 75 V and RTS 87 Series Concealed Door Closers
REFERENCE PCR	Product Category Rules Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report, 2013-04 Product Category Rules Part B: Locks and fittings, 2014-07

DATE OF ISSUE	October 28, 2014
PERIOD OF VALIDITY	5 years

CONTENTS OF THE DECLARATION	General information Product / Product description LCA calculation rules LCA scenarios and further technical information LCA results References
-----------------------------	---

The PCR review was conducted by:	IBU – Institut Bauen und Umwelt e.V.
	PCR was approved by the Independent Expert Committee (IEC) of IBU

The CEN Norm EN 15804 serves as the core PCR. This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	
	Wade Stout




This life cycle assessment was independently verified in accordance with EN 15804 and the reference PCR by:	IBU – Institut Bauen und Umwelt e.V.
---	--------------------------------------



Disclaimer

This declaration is an environmental product declaration (EPD) in accordance with /ISO 14025/ and /EN 15804/. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences. By using this EPD, the user agrees to the UL ENVIRONMENT SUSTAINABLE PRODUCT GUIDE TERMS OF USE (<http://productguide.ulenvironment.com/TermsandConditions.aspx>), where this EPD is listed.

General Information

DORMA	BTS 75 V and RTS 87 Series Concealed Door Closers
Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	Owner of the Declaration DORMA Deutschland GmbH DORMA Platz 1 58256 Ennepetal Germany
Declaration number EPD-DOR-20140191-CBD1-EN	Declared product / Declared unit The declaration represents one concealed door closer unit.
This Declaration is based on the Product Category Rules: Locks and fittings , 07.2014 (PCR tested and approved by the independent expert committee (IEC))	Scope: The declaration and the background LCA represent DORMA's BTS 75 V and RTS 87 Series concealed door closers. Raw materials and components are provided by suppliers and shipped to DORMA, where the closers are manufactured and assembled at DORMA facilities in Singapore. The BTS 75 V and RTS 87 differ in how they are mounted to the door (floor versus frame), but are otherwise identical products.
Issue date 28.10.2014	Verification The CEN Norm EN 15804 serves as the core PCR Independent verification of the declaration according to ISO 14025 <input type="checkbox"/> internally <input checked="" type="checkbox"/> externally
Valid to 27.10.2019	 Dr.-Ing. Wolfram Trinius (Independent verifier appointed by IEC)
 Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)	
 Dr. Burkhard Lehmann (Managing Director IBU)	

Product

Product description

DORMA's BTS 75 V and RTS 87 Series concealed door closers are dependable and versatile for almost any application. Their compact bodies enable them to be used in applications where larger closers would be prohibitive. They can be installed a number of different configurations, including in standard, narrow or wide

door frames, as well as with left-hand or right-hand single- or double-action mounting. The closers are designed for all types of doors and allow the necessary spring adjustments for both barrier-free and non-barrier free openings. A comprehensive selection of accessories ensures that they can be used



successfully with a wide variety of door constructions and floor coverings. Product benefits include:

- *For the trade:* Reduced stock requirements because of adjustable closing force and separate, interchangeable spindles (BTS 75 V only), and slim product range offering all key functions.
- *For the installer:* Suitable for installation with left-hand or right-hand single and double action doors. Interchangeable spindles, as well as adjustable closing force, enable easy adaption to structural conditions—even when retrofitted (BTS 75 V only).
- *For the architect:* Concealed installation for maximum visual elegance. A wide range of applications allow architects a reliable and durable solution without compromising the aesthetics of an opening.
- *For the user:* A temperature-independent closing cycle and highly efficient mechanism gives maximum user convenience.

Application

The BTS 75 V and RTS 87 Series offer aesthetically pleasing solutions for both interior and exterior applications. The closers can be used in a variety of applications, including as closers for fire and smoke doors for the non hold-open versions.

Technical Data

The concealed door closers employ a cam and roller mechanism, and are capable of controlling interior or

exterior doors weighing up to 120 kg. They have an adjustable closing force from EN 1 to EN 4 and a mechanical backcheck at approximately 70°. Dual valve adjustment provides controlled closing speed from approximately 175° opening range, even in cold temperature conditions.

Certifications include /ISO 9001/, /ANSI A156.4/ for Grade 1, and /EN 1154/ (CE for non hold-open versions only).

Name	Value	Unit
Length	285	mm
Width	82	mm
Height	50	mm
Weight	2.9	kg
Test standards and methods	/EN 1154/	

Base materials / Ancillary materials

Name	Value	Unit
Steel	44	%
Aluminum	44	%
Zinc	6	%
Oil	5	%
Coatings	1	%

Reference service life

No use stage modules are reported; as such, declaration of the reference service life (RSL) is voluntary. The RSL is not reported for the BTS 75 V or RTS 87 Series closers.

LCA: Calculation rules

Declared Unit

The declared unit of this analysis is one concealed door closer.

Declared unit

Name	Value	Unit
Declared unit (1 closer)	1	1 piece/product
Mass of system (without packaging)	2.9	kg
Conversion factor to 1 kg	0.34	-

System boundary

Type of EPD: cradle-to-gate - with options. The following modules were considered in the analysis:

Product stage:

- Raw material supply (A1)
- Inbound transport (A2)
- Manufacturing (A3)

Construction process stage:

- Distribution (A4)
- Installation (A5)

End-of-life stage:

- Disposal (C4)

Beyond system boundaries:

- Reuse, recovery, recycling potential (D)

Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

LCA: Scenarios and additional technical information

Additional information is provided for declared modules, including A4, A5, C4, and D. In order to represent DORMA's global distribution network, a sales-weighted average is used to model transport to

the building site. The table for Module A4 shows both weighted average transportation distance (given regional concealed closer sales), which is used in the analysis, along with the variation in that distance.



Additionally, estimated global average recycling rates are used to represent product disposal.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel (truck)	31	l/100km
Transport distance	2400 - 22800	km
Average transport distance (SI)	13300	km
Capacity utilisation (including empty runs)	85	%

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (packaging)	0.41	kg

End of life (C1-C4)

Name	Value	Unit
Recycling	2.2	kg
Landfilling	0.7	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Name	Value	Unit
Recycling rate, aluminum	60	%
Recycling rate, brass	52	%
Recycling rate, paper	90	%
Recycling rate, plastics	14	%
Recycling rate, steel	88	%
Recycling rate, zinc	52	%

LCA: Results

The table below summarizes which modules are declared (as indicated by an "X"), and which are not declared (as indicated with "MND"). Environmental performance results are shown for one (1) surface door closer.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE								END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 closer (2.9kg)*

CML-IA version 4.2, released april 2013						
Parameter	Unit	A1 - A3	A4	A5	C4	D
Global warming potential	[kg CO ₂ -Eq.]	2.024E+1	7.610E-1	1.570E-1	3.010E-2	-3.870E+0
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.952E-8	3.390E-12	1.540E-13	7.990E-14	6.600E-8
Acidification potential of land and water	[kg SO ₂ -Eq.]	1.106E-1	1.810E-2	2.060E-5	4.440E-5	-1.600E-2
Eutrophication potential	[kg (PO ₄)*-Eq.]	6.961E-3	1.940E-3	2.930E-5	6.870E-6	-6.170E-4
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	8.108E-3	7.420E-4	2.130E-5	1.060E-5	-1.620E-3
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	1.280E-3	2.260E-8	8.070E-10	2.690E-9	-7.990E-6
Abiotic depletion potential for fossil resources	[MJ]	2.351E+2	9.490E+0	5.750E-2	9.250E-2	-3.860E+1
TRACI 2.1						
Parameter	Unit	A1 - A3	A4	A5	C4	D
Global warming potential	[kg CO ₂ -Eq.]	2.02E+01	7.61E-01	1.57E-01	3.01E-02	-3.87E+00
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	2.12E-08	3.60E-12	1.64E-13	8.49E-14	7.19E-08
Acidification potential of land and water	[kg SO ₂ -Eq.]	1.08E-01	1.93E-02	4.13E-05	4.88E-05	-1.57E-02
Eutrophication potential	[kg N-Eq.]	6.11E-03	6.79E-04	1.32E-05	4.82E-06	5.74E-05
Ground-level smog formation potential	[kg O ₃ -Eq.]	1.15E+00	3.56E-01	6.03E-04	9.70E-04	-1.31E-01

RESULTS OF THE LCA - RESOURCE USE: 1 closer (2.9kg)*

Parameter	Unit	A1 - A3	A4	A5	C4	D
Renewable primary energy as energy carrier	[MJ]	6.235E+1	1.180E-1	3.040E-3	7.860E-3	-6.510E+0
Renewable primary energy resources as material utilization	[MJ]	0.000E+0	0.000E+0	0.000E+0	0.000E+0	0.000E+0
Total use of renewable primary energy resources	[MJ]	6.235E+1	1.180E-1	3.040E-3	7.860E-3	-6.510E+0
Non renewable primary energy as energy carrier	[MJ]	2.803E+2	1.020E+1	6.560E-2	1.040E-1	-4.160E+1
Non renewable primary energy as material utilization	[MJ]	0.000E+0	0.000E+0	0.000E+0	0.000E+0	0.000E+0
Total use of non renewable primary energy resources	[MJ]	2.803E+2	1.020E+1	6.560E-2	1.040E-1	-4.160E+1
Use of secondary material	[kg]	0.000E+0	0.000E+0	0.000E+0	0.000E+0	0.000E+0
Use of renewable secondary fuels	[MJ]	2.174E-3	6.100E-5	4.470E-5	1.770E-4	-6.590E-4
Use of non renewable secondary fuels	[MJ]	1.751E-2	6.410E-4	9.940E-5	3.820E-4	-6.230E-3
Use of net fresh water	[m ³]	1.221E+2	1.210E-1	-4.440E-2	-2.860E-1	-1.670E+1

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 closer (2.9kg)*

Parameter	Unit	A1 - A3	A4	A5	C4	D
Hazardous waste disposed	[kg]	2.254E-2	1.550E-5	2.000E-6	4.250E-6	-2.330E-3
Non hazardous waste disposed	[kg]	1.911E+0	3.610E-4	3.910E-2	5.240E-1	-2.520E-1
Radioactive waste disposed	[kg]	1.082E-2	1.380E-5	1.060E-6	1.630E-6	-7.500E-4
Components for re-use	[kg]	0.000E+0	0.000E+0	0.000E+0	0.000E+0	0.000E+0
Materials for recycling	[kg]	0.000E+0	0.000E+0	0.000E+0	0.000E+0	0.000E+0
Materials for energy recovery	[kg]	0.000E+0	0.000E+0	0.000E+0	0.000E+0	0.000E+0
Exported electrical energy	[MJ]	0.000E+0	0.000E+0	0.000E+0	0.000E+0	0.000E+0
Exported thermal energy	[MJ]	0.000E+0	0.000E+0	0.000E+0	0.000E+0	0.000E+0

* 1kg = 2.204 lbs.

Concealed closer environmental impacts are dominated by the product stage (A1-A3) for all impact categories. The production of raw materials such as aluminum, steel and zinc, in particular, are key drivers of environmental performance. The one exception is ozone depletion potential, for which Module D accounts for a significant portion of environmental impact. This is due to differences in primary versus secondary steel production routes, the latter typically leading to higher ozone-depleting emissions from electricity use in electric arc furnaces.

Distribution also accounts for a relevant contribution in a few impact categories. Compared to the product stage, however, distribution is a smaller fraction of closer environmental impact. Distribution is modeled assuming a sales-weighted average based on the countries and regions in which closers are sold. Finished products are



shipped from DORMA's facility in Singapore to various locations in Europe, Asia, and the Americas. While the results represent DORMA's specific situation as of 2013, they can be reevaluated for a specific country or region.

At the end-of-life, DORMA's closers are modeled as being recycled. A portion of each material type is recovered and the remainder landfilled. In this case, proxy data are used as often, global average or even regional specific data are not available. Waste disposal (Module C4) is consistently a minor contributor to environmental impact so dataset choice is not anticipated to affect conclusions.

References

ISO 14025

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804

EN 15804:2012-04+A1 2013: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

ANSI A156.4

ANSI/BHMA A156.4 - 2013, Door controls — Closers

EN 1154

EN 1154:1997, Building hardware — Controlled door closing devices

GaBi 6

PE INTERNATIONAL; GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Echterdingen, 1992-2013.

GaBi 6 Documentation

GaBi 6: Documentation of GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Echterdingen, 1992-2013.
<http://documentation.gabi-software.com/>

ISO 9001

EN ISO 9001:2008, Certification — Quality Management Systems

ISO 14040

EN ISO 14040:2006, Environmental management — Life cycle assessment — Principles and framework

ISO 14044

EN ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines

PCR Part A

Institut Bauen und Umwelt e.V. (Ed.): PCR Guidance-Texts for Building-Related Products and Services. Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. 2013.
www.bau-umwelt.com

PCR Part B

Institut Bauen und Umwelt e.V. (Ed.): PCR Guidance-Texts for Building-Related Products and Services. Part B: Requirements on the EPD for Locks and fittings. 07-2014. www.bau-umwelt.com



Institut Bauen
und Umwelt e.V.

Programme holder

Institut Bauen und Umwelt e.V.
Panoramastr 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 – 3087748 - 29
e-Mail info@bau-umwelt.com
Web www.bau-umwelt.com



PE INTERNATIONAL
SUSTAINABILITY PERFORMANCE

Author of the Life Cycle Assessment

PE INTERNATIONAL, Inc.
Milk St. 170
02109 Boston, MA
USA

Tel +1 617-247-4477
Fax +1 303-447-0909
e-Mail consulting@pe-international.com
Web www.pe-international.com



Owner of the Declaration

DORMA Deutschland GmbH
DORMA Platz 1
58256 Ennepetal
Germany

Tel +49 (0)2333 793-0
Fax +49 (0)2333 793-4950
e-Mail dorma-deutschland@dorma.com
Web www.dorma.com