

ENVIRONMENTAL PRODUCT DECLARATION

RTS 85, RTS 88 AND BTS 84 SERIES CONCEALED DOOR CLOSERS



A concealed transom door closer and floor spring for double action single leaf doors.



*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
RTS 85, RTS 88, and BTS 84 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	4786548204.105.1
IBU DECLARATION NUMBER	EPD-DOR-20140192-CBD1-EN
DECLARED PRODUCT	RTS 85, RTS 88, and BTS 84 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	RTS 85, RTS 88, and BTS 84 Series 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-20140192-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)	Scope: The declaration and the background LCA represent DORMA's RTS 85, RTS 88, and BTS 84 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 Suzhou, China. The RTS and BTS 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. Burkhardt Lehmann (Managing Director IBU)	

Product

Product description

DORMA's RTS 85, RTS 88, and BTS 84 Series concealed door closers offer a solution for installations where door control must be provided without disturbing aesthetic appearance or compromising durability. 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 a wide variety of doors and represent an excellent alternative to surface-mounted closers. 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:* Just one body for all types of fixing. Low inventory and minimal stocking requirements thanks to unit packs for closer bodies and accessories. Reliability and a dependable design provide long lasting performance without the visual obtrusiveness of a surface mounted closer.
- *For the installer:* Easy installation allows installers to be more productive with their time, especially because the majority of the preparation can be done prior to the installation of the unit. No floor preparation is necessary in the case of frame-mounted closers. Additionally, the "zero" position for double action doors is easy to adjust and closers are available with a comprehensive range of accessories.
- *For the architect:* Provides an aesthetically pleasing solution, especially for toughened glass doors, and is ideal for shop fitting applications.
- *For the user:* Avoids cluttering of door appearance, and backcheck prevents door contact with the frame. Closing mechanism allows for smooth performance with adjustable speed and is adjustable to accommodate traffic and weather changes.

Application

The RTS 85, RTS 88, and BTS 84 Series offer an aesthetically pleasing solution and are well-suited for use in moveable partitions and toughened glass doors, along with aluminum, wood, and hollow metal frames.

The closers can be used for retrofit applications to replace surface-mounted closers. They are not intended for use in fire or smoke doors.

Technical Data

The concealed door closers employ a cam and roller mechanism, and are capable of controlling interior and exterior doors. They are non-handed, with a single closer for both single and double-acting doors. Users can adjust closing speed and optionally take advantage of mechanical hold-open points.

Certifications include /ISO 9001/.

Name	Value	Unit
Length	323	mm
Width	90	mm
Height	38	mm
Weight	4.4	kg
Test standards and methods	/EN 1154/	

Base materials / Ancillary materials

Name	Value	Unit
Iron	53	%
Steel	38	%
Oil	6	%
Aluminum	3	%

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 RTS 85, RTS 88, or BTS 84 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)	4.4	kg
Conversion factor to 1 kg	0.23	-

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)	15600	km
Capacity utilisation (including empty runs)	85	%

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (packaging)	0.51	kg

End of life (C1-C4)

Name	Value	Unit
Recycling	3.9	kg
Landfilling	0.5	kg

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

Name	Value	Unit
Recycling rate, aluminum	60	%
Recycling rate, paper	90	%
Recycling rate, plastics	14	%
Recycling rate, steel and iron	88	%



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) concealed 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 (4.4kg)*

CML-IA version 4.2, released april 2013						
Parameter	Unit	A1 - A3	A4	A5	C4	D
Global warming potential	[kg CO ₂ -Eq.]	1.437E+1	1.060E+0	1.460E-1	7.200E-3	-3.540E+0
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	3.580E-8	4.210E-12	1.430E-13	9.790E-14	1.000E-7
Acidification potential of land and water	[kg SO ₂ -Eq.]	5.042E-2	2.910E-2	1.890E-5	4.580E-5	-9.990E-3
Eutrophication potential	[kg (PO ₄) ⁻³ -Eq.]	4.911E-3	3.010E-3	2.730E-5	6.280E-6	-3.170E-4
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	5.682E-3	1.510E-3	1.980E-5	4.300E-6	-1.790E-3
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	7.987E-5	2.900E-8	7.340E-10	2.710E-9	-3.820E-5
Abiotic depletion potential for fossil resources	[MJ]	1.571E+2	1.300E+1	5.300E-2	9.460E-2	-3.690E+1

TRACI 2.1						
Parameter	Unit	A1 - A3	A4	A5	C4	D
Global warming potential	[kg CO ₂ -Eq.]	1.44E+01	1.06E+00	1.46E-01	7.20E-03	-3.54E+00
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	3.90E-08	4.47E-12	1.52E-13	1.04E-13	1.09E-07
Acidification potential of land and water	[kg SO ₂ -Eq.]	5.20E-02	3.08E-02	3.83E-05	5.03E-05	-1.00E-02
Eutrophication potential	[kg N-Eq.]	3.60E-03	1.04E-03	1.23E-05	4.38E-06	-9.26E-05
Ground-level smog formation potential	[kg O ₃ -Eq.]	8.22E-01	5.65E-01	5.56E-04	1.00E-03	-9.26E-02

RESULTS OF THE LCA - RESOURCE USE: 1 closer (4.4kg)*

Parameter	Unit	A1 - A3	A4	A5	C4	D
Renewable primary energy as energy carrier	[MJ]	1.650E+1	9.020E-2	2.780E-3	8.160E-3	6.110E-2
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]	1.650E+1	9.020E-2	2.780E-3	8.160E-3	6.110E-2
Non renewable primary energy as energy carrier	[MJ]	1.755E+2	1.400E+1	6.050E-2	1.070E-1	-3.520E+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]	1.755E+2	1.400E+1	6.050E-2	1.070E-1	-3.520E+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]	-1.135E-2	8.080E-5	4.050E-5	1.770E-4	-1.330E-4
Use of non renewable secondary fuels	[MJ]	-1.214E-1	8.500E-4	9.000E-5	3.830E-4	-1.250E-3
Use of net fresh water	[m ³]	3.702E+1	1.200E-1	-3.930E-2	-3.780E-1	-2.770E+0

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 closer (4.4kg)*

Parameter	Unit	A1 - A3	A4	A5	C4	D
Hazardous waste disposed	[kg]	6.594E-3	1.790E-5	1.840E-6	4.440E-6	-5.050E-4
Non hazardous waste disposed	[kg]	7.394E-1	2.620E-4	3.250E-2	5.320E-1	-5.300E-2
Radioactive waste disposed	[kg]	3.887E-3	1.750E-5	9.810E-7	1.730E-6	7.340E-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 iron and steel, 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. 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 China to various locations in Europe and Asia. 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

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