



CLASSIFICATION REPORT n°. EFR-20-000816 - Revision 1

In accordance with standard EN 13501-4: 2016

**Laboratory assessment
reference**

EFR-20-000816

Concerning

A range of single compartment smoke control dampers "VRE" type, installed within a horizontal smoke extraction duct:

- Commercial reference of the duct:
Steel circular horizontal single compartment smoke extraction duct (LINDAB)
- Commercial reference of the smoke control damper: VRE
- Dimensions: Ø 100 mm to Ø 630 mm
- Nominal pressure: - 500 / - 150 Pa
- Initiation regime: AA
- Waiting position: closed position

Applicant

RF TECHNOLOGIES
Lange Ambachtstraat 40
B - 9860 OOSTERZELE

This classification report cancels and replaces the classification report EFR-20-000816

LIST OF REVISIONS

Revision index	Date	Modification	Author
0	10/06/2020	Creation of the document	CSC
1	12/01/2021	§ 8.2. : in the column "Hod", Hod replace Ved	CSC

1. INTRODUCTION

The classification report defines the classification assigned to the VRE type smoke control damper in accordance with the operating procedure given in standard EN 13501-4: 2016 "Fire classification of construction products and building elements - Part 4: Classifications from the fire resistance test data on the products used in the smoke extraction systems: ducts and smoke control dampers".

2. ORGANISATION

EFFECTIS France
 Voie Romaine
 F - 57280 MAIZIERES-LES-METZ

Notified body: 1812

3. APPLICANT

RF TECHNOLOGIES
 Lange Ambachtstraat 40
 B - 9860 OOSTERZELE

4. TESTS REFERENCE

Test Nr	Duct	Damper size	Time for criteria			
			Isolation « I »	integrity « E »	Maintenance of opening	Smoke « S »
EFR-19-H-002863	Steel circular horizontal single compartment smoke extraction duct (LINDAB)	VRE60 Ø 630 mm	/	134 min	134 min	134 min
EFR-19-H-002934	Steel circular horizontal single compartment smoke extraction duct (LINDAB)	VRE Ø 630 mm	/	132 min	132 min	132 min
EFR-20-T-001185	/	VRE Ø 100 mm	/	Satisfying	/	Satisfying

5. REFERENCE AND ORIGIN OF THE ELEMENTS EXAMINED

Reference: VRE

Source: RF TECHNOLOGIES
 Lange Ambachtstraat 40
 B – 9860 OOSTERZELE

6. PRINCIPLE OF ASSEMBLY

6.1. TYPE OF FUNCTION

VRE type single compartment dampers are defined as "smoke control dampers".

Their function is to resist fire, as specified by the fire resistance performance characteristics given in section 5 of standard EN 13501-4: 2016.

6.2. GENERAL

The studied elements are a range of single compartment smoke control dampers installed within a horizontal single compartment smoke extraction duct.

Each smoke control damper is constructed as a circular duct with an uninsulated housing, an insulated single blade and an electrically opened and closed smoke control damper actuating mechanism.

Each smoke control damper has flush-mount measurements of between Ø 100 mm and Ø 630 mm.

Free passage for VRE:

Ø Dn (mm)	100	125	160	200	250	315	400	500	630
Sn (m ²)	0.0061	0.0101	0.0174	0.0281	0.0450	0.0728	0.1184	0.1875	0.3002

The single compartment smoke extraction duct is as described in the test report n° FIRES-FR-060-07-AUNE with steel circular "spiro" horizontal duct units of thickness 0.7 mm, except the cross-section which is adapted to the section of the damper. Connection of the elements together is made with coupling NP (LINDAB) of thickness 0.7 mm and self-drilling screws Ø 4 x 15 mm (with 250 mm spacing) and high temperature mastic (SUDAL). The duct system fulfills the requirements of tightness class D as well as for durability according EN 12237.

The duct passes through opening within supporting construction which is sealed by mineral wool with thickness 50 mm and bulk density 50 kg/m³. The duct is hanged by suspension devices made from threaded rods Ø 8 mm with 1000 mm spacing.

6.3. DETAILED DESCRIPTION OF ELEMENTS

6.3.1. VRE smoke control dampers

6.3.1.1. Housing

The damper housing consists of a shell made of a galvanized profiled steel sheet of dimensions 0.8 x (Ø - 1) x 345 mm (th x Ø x L).

6.3.1.2. Blade

The smoke control damper blade is made by a 12.5 mm thick gypsum board of reference PREGYPLAC STD BA13 (SINIAT), density 700 kg/m³ and diameter (Ø - 22) mm.

On each side of the gypsum board is a 0.8 mm thick sheet of galvanized steel.

6.3.1.3. Sealing

Between the gypsum board and the metal plate is a silico seal of reference kSil GP60 / Trans (SILICON ENGINEERING), diameter ($\varnothing + 6$) mm and thickness 1 mm.

Along the whole periphery of the damper blade, there is an uninterrupted intumescent graphite strip of reference BLAZESEAL (RECTORSEAL) and section 12 x 3 mm (w x th).

6.3.1.4. Mechanism

The damper is equipped with a mechanism of reference:

- BEN24 or BEN230 (BELIMO) for a C10000 classification without load,
- BEE24 or BEE230 (BELIMO) for a C10000 classification with load,
- BEE24 SR (BELIMO) for a Cmod classification with load.

The damper actuating mechanism is placed in line with the axis of the damper. The actuator is fixed on the baseplate of the damper by means of 2 steel bolts $\varnothing 6$ mm.

7. INSTALLATION OF THE ELEMENTS EXAMINED

For the installation of the damper, the horizontal single compartment smoke exhaust duct is equipped with a derivation of diameter \varnothing mm and length 70 mm, located either on the side or on the top of the duct.

The smoke control damper is fixed within the duct derivation by means of 4 steel self-drilling screws $\varnothing 3.5 \times 13$ mm. The tightness between the derivation and the damper is ensured by adhesive aluminium tape of width 50 mm.

The damper is self-supported by the smoke exhaust duct.

The electric cables connected to the damper are protected by mineral wool of thickness 13 mm and density 64 kg/m³.

8. FIRE RESISTANCE CLASSIFICATIONS

8.1. CLASSIFICATION REFERENCES

This classification procedure was performed in accordance with Section 7.3.5.2. of Standard EN 13501-4: 2016.

8.2. CLASSIFICATIONS

The elements are classified according to the following combinations of performance and class parameters.

No other classification is permitted.

For dampers type VRE $\varnothing 100$ mm to $\varnothing 630$ mm equipped with actuators BEN24 not loaded, BEN230 not loaded, BEE24 loaded or BEE230 loaded and installed within a steel circular horizontal single compartment smoke extraction duct (LINDAB):

E	I	-	t	S	Ved	Hod	i	<->	o	Operating pressure	C _{yy}	Single/multi	AA/MA
E ₆₀₀			120	S	Ved	Hod	i	<->	o	-500/+500 Pa	C ₁₀₀₀₀	single	AA

For dampers type VRE Ø 100 mm to Ø 630 mm equipped with actuators BEE24 SR loaded and installed within a steel circular horizontal single compartment smoke extraction duct (LINDAB):

E	I	-	t	S	Ved	Hod	i	<->	o	Operating pressure	C _{yy}	Single/multi	AA/MA
E ₆₀₀			120	S	Ved	Hod	i	<->	o	-500/+500 Pa	C _{mod}	single	AA

9. DIRECT FIELD OF APPLICATION OF THE RESULTS

9.1. GENERAL

The requirements relating to the field of application of all fire-resistant dampers submitted for testing in accordance with EN 1366-2 apply, as well as the following elements.

9.2. DIMENSIONS OF SMOKE CONTROL DAMPERS

Smoke control dampers with the following dimensions may be used: Ø 100 mm to Ø 630 mm.

These dampers may be installed into ducts of all dimensions authorised in the scope of application stated in EN 1366-9 and in reports quoted in the document.

9.3. PRESSURE DIFFERENCES

In accordance with standard EN 1366-10: 2011 + A1: 2017 - section 9.3, the performance levels specified in section 8.2 of this classification report are valid for any smoke extraction duct operating with a an underpressure up to 500 Pa or overpressure up to 500 Pa.

9.4. ELEVATED TEMPERATURES

The single compartment smoke control dampers tested to elevated temperatures are applicable to all temperatures below the temperature tested (either 600°C) for the same time period and other application data.

9.5. CYCLING TESTS

In accordance with standard EN 1366-10: 2011 + A1: 2017 - section 9.5.1, the performances specified in section 8.2 of this classification report that are valid for a smoke control damper meeting the cycling requirements for modulating applications, are also applicable to:

- Systems for use with combined smoke control and general HVAC applications,
- Systems with smoke control dampers that are cycle checked every day,
- Systems where the smoke control dampers are operated only in the case of emergency.

9.6. INITIATION METHOD

Smoke control dampers submitted for testing for automatic activation (AA) systems are not suitable for use in manual activation (MA) systems.

9.7. APPLICATION TO DUCT CONSTRUCTIONS OTHER THAN THOSE SUBMITTED TO TEST

Single compartment smoke control dampers may be applied to ducts that have been tested to EN 1366-9, constructed from materials of the same density as those tested or of the same material with a greater density or thickness, as long as the service pressure authorised in the classification document for the intended smoke extraction duct is compatible.

Such use may not be made if there has been any change in the surface protection materials. Any paint finish must be identical to that of the duct when it is tested or evaluated.

Maizières-lès-Metz, 12th January 2021

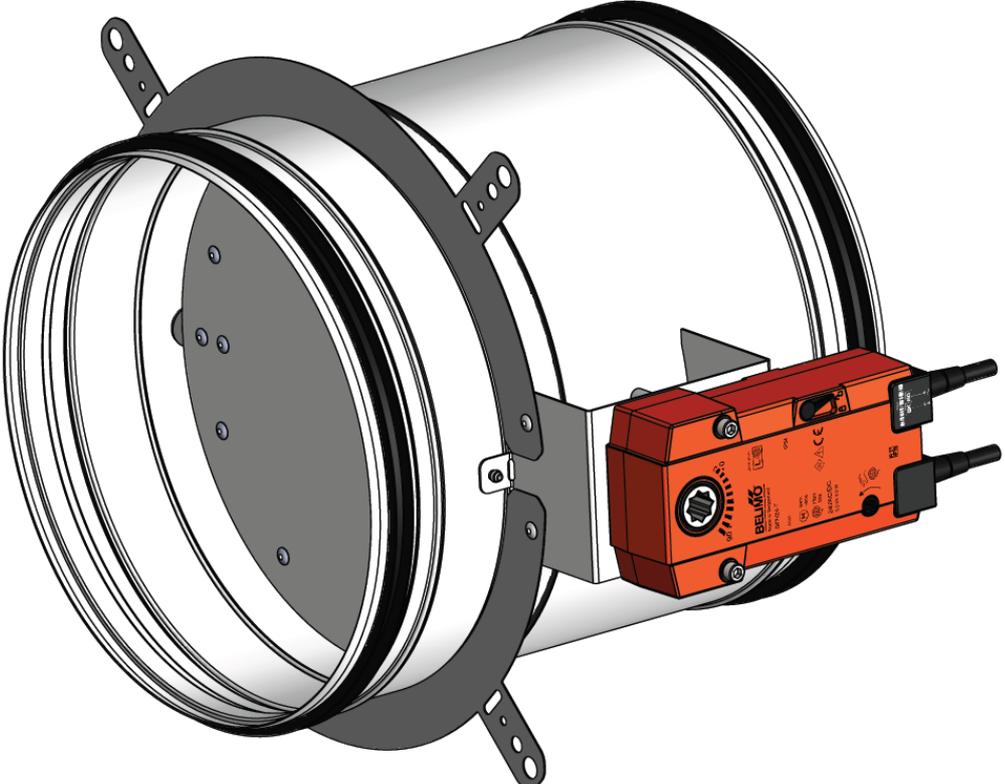
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Charlotte SCHNELLER

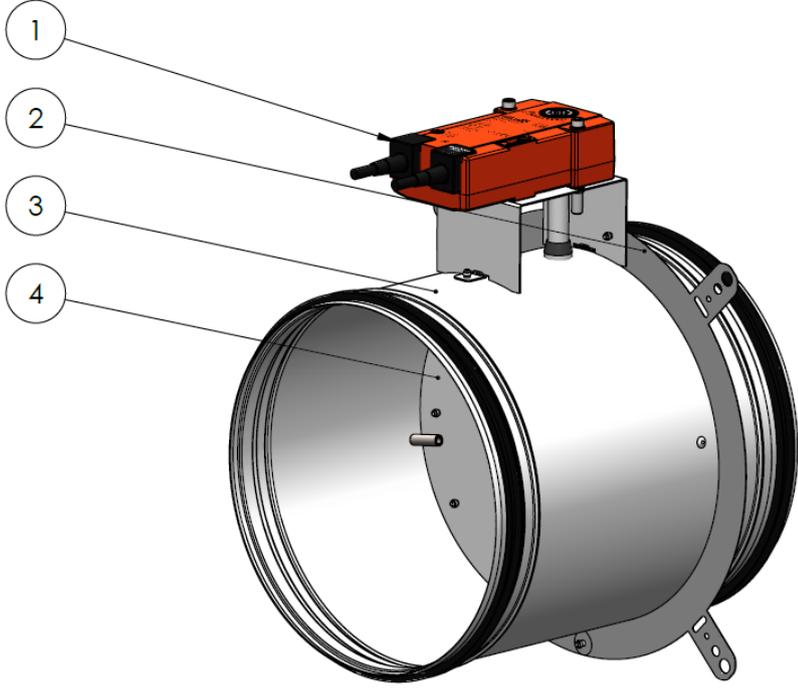
Chargé d'Affaires
Signé par : Charlotte SCHNELLER

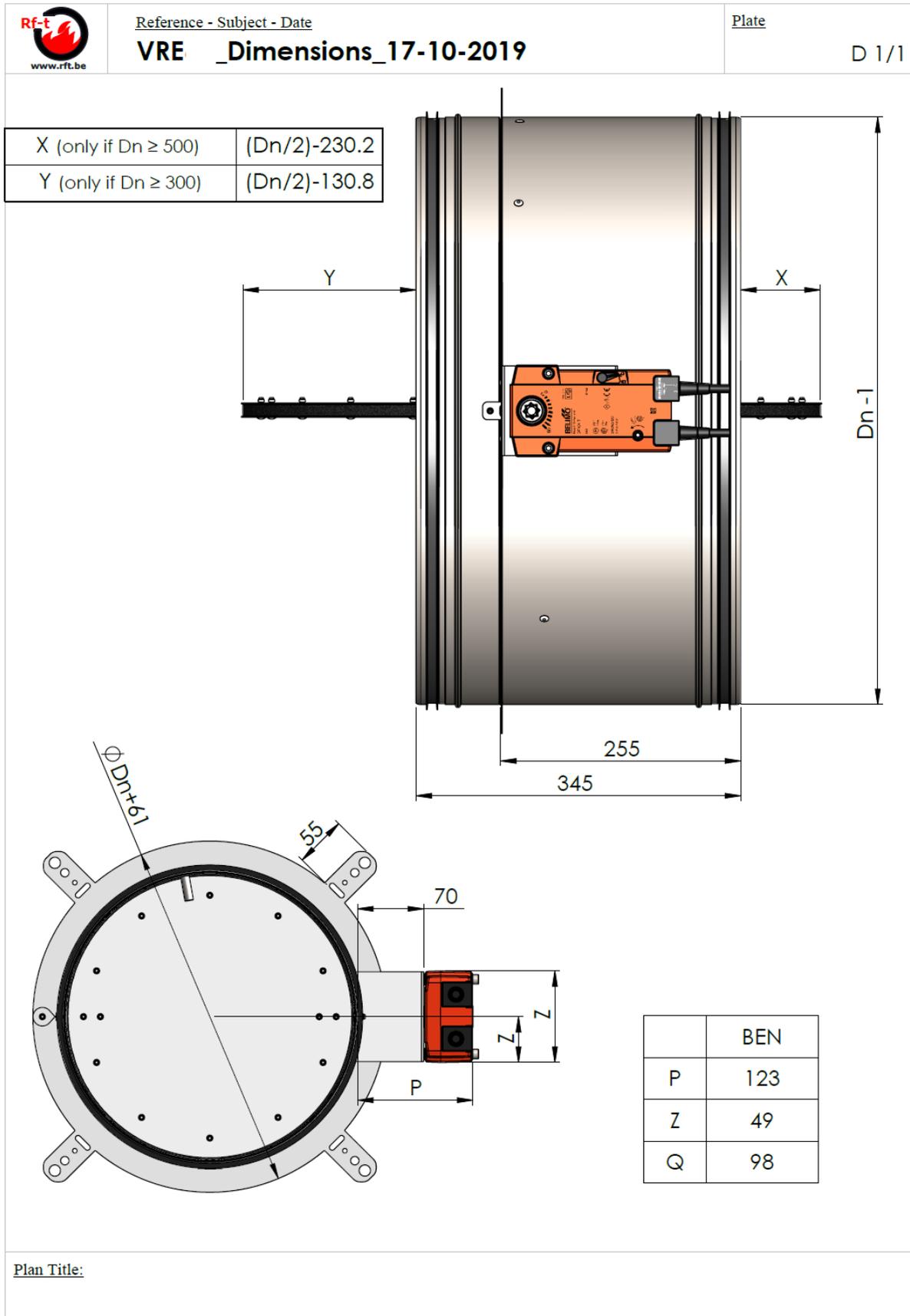
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Romain STOUVENOT

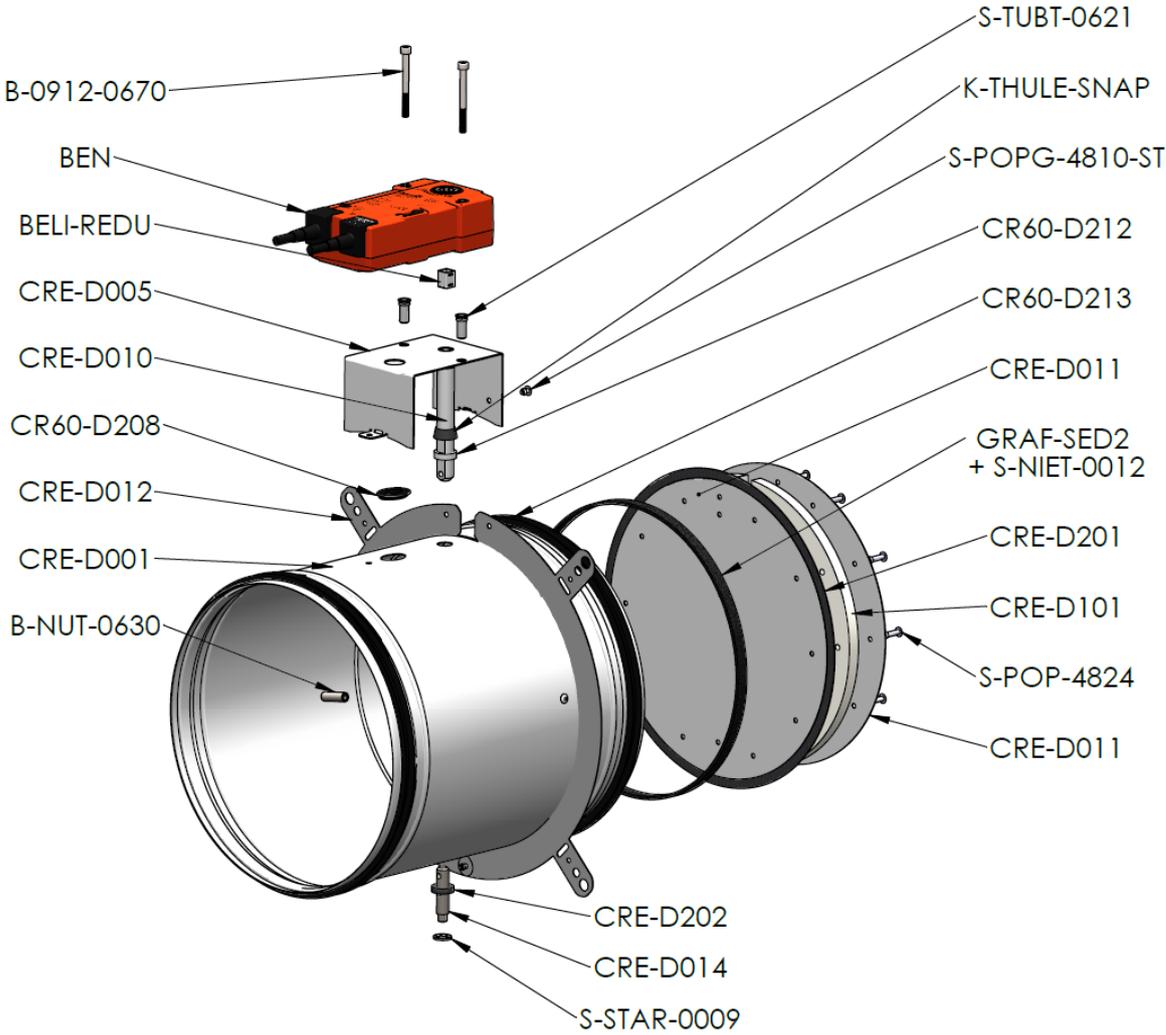
Superviseur
Signé par : Romain STOUVENOT

ILLUSTRATIONS APPENDIX

 www.rf-t.be	Reference - Subject - Date VRE60_Commercial_17-10-2019	Plate A 1/2
 <p data-bbox="699 1706 981 1787" style="font-size: 2em; color: red; font-weight: bold; margin-top: 20px;">VRE60</p>		
<p><u>Plan Title:</u></p>		

 <small>www.rf-t.be</small>	<u>Reference - Subject - Date</u> VRE _Commercial_17-10-2019	<u>Plate</u> A 2/2																				
																						
<p><u>MAIN PARTS</u></p> <ul style="list-style-type: none"> 1. MEC 2. Reinforcement ring 3. Tunnel 4. Damper blade 																						
<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th colspan="10">PRODUCT RANGE</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Dn(mm)</td> <td style="text-align: center;">100</td> <td style="text-align: center;">125</td> <td style="text-align: center;">160</td> <td style="text-align: center;">200</td> <td style="text-align: center;">250</td> <td style="text-align: center;">315</td> <td style="text-align: center;">400</td> <td style="text-align: center;">500</td> <td style="text-align: center;">630</td> </tr> </tbody> </table>			PRODUCT RANGE										Dn(mm)	100	125	160	200	250	315	400	500	630
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<p><u>Plan Title:</u></p>																						



 www.rf-t.be	Reference - Subject - Date VRE _Parts_Fastners_17_10_2019	Plate B 1/1
 <p> B-0912-0670 BEN BELI-REDU CRE-D005 CRE-D010 CR60-D208 CRE-D012 CRE-D001 B-NUT-0630 S-TUBT-0621 K-THULE-SNAP S-POPG-4810-ST CR60-D212 CR60-D213 CRE-D011 GRAF-SED2 + S-NIET-0012 CRE-D201 CRE-D101 S-POP-4824 CRE-D011 CRE-D202 CRE-D014 S-STAR-0009 </p>		
<p><u>Plan Title:</u></p>		

