RENAULT
Passion for life

Renault Store - Technical specifications

The diamonds

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Technical requirements

General technical requirements

1.1 Preamble

RENAULT expects all those involved in the "Renault Store" programme to meet their obligations in terms of results as per the requirements of the Technical Specifications. The general rules and specificities set out below are to be considered as the minimum necessary that has to be done to achieve the expected result.

1.2. Safety of persons and property

The supplier shall be able to provide proof that it has analysed the risks related to the services it is to provide and that its personnel and any sub-contractors have undergone sufficient training. Strict compliance with legislation in terms of safety and protection of workers is required.

1.3. Respect for the environment

Materials and methods which make it possible to reduce harm to the environment shall be used wherever possible (recyclable materials, energy-saving technologies, toxicity of materials and products used, etc.).

The supplier shall be able to provide proof that it has the various administrative permits (operating permit, environmental permit) necessary to manufacture the various items of equipment and that it complies with the operating conditions required by the legislation in force or by the specific operating conditions in the countries concerned.

A global approach such as the ISO 14001 standard is recommended. e.

1.4. Quality

The supplier shall be able to provide proof that it works in accordance with ISO 9000 quality assurance standards, formal certification being particularly recommended in this regard. The signwriter shall attach a specific Quality Plan to its offer to assure RENAULT of its capacity to supply finished products and spare parts that are compliant with the contractual requirements, within the set time periods. It shall request its sub-contractors to do likewise.

The procedures applied must make it possible to:

- Be sure that the parts and products purchased, manufactured and supplied shall neither be used nor delivered before they have been checked and be recognized as compliant.
- Procedures shall be set out for identifying causes of non-compliance, which make it possible to provide sustainable solutions that can be applied more widely to resolve the non-compliance and prevent it reoccurring.

These operations shall be recorded in the appropriate documents and be approved by RENAULT prior to being applied more widely.

- Track changes in the quality of products and assembly and removal services using inspection and audit indicators (incidents, complaints, etc.).

This tracking shall result in preventive or corrective actions; they shall be approved by RENAULT before being applied.

General technical requirements

1.5. Compliance of messages and colours

Visuals must comply with the official images contained in this document.

All shades have a 40% satin finish unless specified otherwise. Particular attention should be paid to complying with the colour code.

Compliance with the tolerances for the L.a.b. is required.

2.1. General technical standards

The reference base to be followed for design and manufacturing shall, at the very least, be that required by Eurocode standards.

The regulations relating to the dimensioning of structures in force in each of the countries concerned shall be complied with taking climatic conditions into account.

The following obligations in terms of results must be met:

- Supported under their own weight, the equipment must appear perfectly horizontal and vertical.
- The parallel alignment of separate elements must be observed.
- Under normal wind conditions (Cf. NV65 and NF EN1991-1-4 (Eurocode 1)), the permissible bend between the fastening and the point most distant from the fastening (dimension "d") shall not exceed d/100.

2.1.1. CLIMATIC CONDITIONS

Wind loads to be considered for the design of structures shall be taken from the Eurocode 1 rules (EN 1991-1-3): zones 4 (28 m/s), roughness IIIb, force coefficient equal to 1.80.Any structure situated in an unfavorable geographical area with regard to this load case shall be subject to a special design basis in order to meet the applicable standards.

2.1.2. DESIGN RULES

2.1.2.1 Aluminium structures

Design rules for aluminium structures - most recent edition of DTU rules (currently, July 1976).

Applicable standard for the execution of structures: NF EN 1090-2 and Eurocode 9.

2.1.2.2 Steel structures

Design rules for steel structures CM 66 » - most recent edition.

Applicable standard for the execution of structures: EN 1093 and Eurocode 3.

2.1.2.3 Concrete blocks

Concrete blocks shall be of "weight" type with minimum reinforcement.

The concrete to be used shall have an ordinary Portland cement (OPC) content of 400 kg/m3 (s' 28=300 bars - s28=25 bars).

General technical requirements

2.1.2.4 Design calculations for plastic elements

Adapt the CM 66 rules using a safety coefficient of 2 for the stresses.

2.1.3. MATERIALS

2.1.3.1 General remarks

The materials used shall all be first-choice materials suitable for their envisaged use and they shall be used in accordance with the rules of best industry practice for the profession and in compliance with the standards and regulations in force in France and in the Countries in which they are intended to be used.

The materials used shall not have any defect that is likely to compromise the durability of the structures. The equipment shall be easy to clean, maintain and service.

The materials shall be capable of withstanding harsh climatic conditions such as rain, snow, hail, condensation, dust and salt spray.

Operation must be guaranteed between - 20 and + 80 ° C.

2.1.3.2 Steels

Steels shall be either "hot finished" as per NF EN 10210 or "cold finished" as per NF EN 10219-1 and 2. The quality of the steels shall be stated on the production drawings and it goes without saying that the mechanical properties of the different types of steels must be taken into account for stability calculations.

All elements shall be manufactured in a covered, sheltered location.

After machining, welding, drilling, notching, etc. the elements shall be prepared prior to anti-corrosion treatment: brushing of welds, careful deburring, cleaning, shot peening and sand blasting.

The anti-corrosion treatment shall be performed by hot galvanization of a minimum of 80 µm and shall provide fault-free protection for at least the period of the ten-year guarantee.

No machining may be carried out once the parts have undergone anti-corrosion treatment.

All fasteners and hardware (including hinges) shall be made of 18/10 stainless steel (NFE 25.033).

2.1.3.3. Aluminium

The reference standard is NF EN 573-1. Parts used in a supporting structure shall be chosen from the "6000" series. For parts which are not used in a supporting structure, the "1000" series shall be acceptable.

The alloys are to be weldable.

The parts shall be carefully deburred and the welds shall be brushed before any protective treatment.

The visible parts of equipment shall be treated by the application of paintwork performed according to a "Qualicoat"-type procedure.

General technical requirements

2.1.3.4. PMMA

The PMMA shall meet at least the following characteristics:

	Flat parts machined "cast" PMMA	Flat parts unmachined "extruded" PMMA
• Opal white (values for a test piece of 3mm thick)		
• Tensile strength	> 75 MPa	> 70 MPa
• Bending strength	> 130 MPa	> 120 MPa
• Bending modulus	> 3,250 MPa	> 3,000 MPa
• Unnotched CHARPY impact test strength	> 12 MPa	>10 MPa
• Expansion	< 1 mm / 1 m / 10°C	<1 mm / 1 m / 10°C
• Light transmittance	> 50 %	>33 %

The thermoformed panels shall be made of white, light diffusing, extruded PMMA in compliance with the sheet manufacturer's heating parameters.

Where parts made of PMMA are more than 100 cm high, they shall be hung from the top by an adhesive PMMA cleat.

The thickness of the sheets shall be calculated in compliance with the tensile strength standards set out above.

2.1.3.5. Polycarbonate

The polycarbonate sheet shall meet at least the following characteristics:

- Uncoloured appearance
- Density > 1.2 g/cm3
- Tensile strength: 60 Mpa
- Expansion < 0.7 mm / 1 m / 10°C
- Light transmittance > 90%

2.1.3.6. Expanded foam

These following characteristics must be met:

- Material 9010 white PVC
- Density > 50 g/cm3
- UV-stabilized: 14 MPa
- Shore hardness D > 75
- Expansion < 1 mm / 1 m / 10°C

2.1.3.7. Paint

Painted parts must have an even appearance across their entire surface.

Defects such as pores, fissures, grains of dust, runs or waves of paint shall not be tolerated.

General technical requirements

Samples of painted rough parts shall be tested and accepted by RENAULT, after having undergone the following tests performed by a certified body:

- Colour based on a LAB test with a MINOLTA 508 D colorimeter with D65 illuminant and the observer at 10° and specular component included (the tolerances in the CIELAB colour space are L +/- 1, a +/-1.5, b +/- 1.5).
- Gloss at 40 °: based on a test according to NF T 30064 standard.
- Gloss at 60 °: based on a test according to NF T 30064 standard
- Adhesion: resistance to peeling based on grid test.

  Class 1, as per P UW 150 1. NF T 30038 standard
- Colourfastness:

  QUV as per NF T 30036 after 200 hours of exposure.

Samples of each of the elements shall be supplied, upon request, to RENAULT for inspection.

2.1.4. ELECTRICAL EQUIPMENT

Assemblies with electrical equipment shall comply with the essential safety requirements of the European Union. Within this framework, the supplier shall obtain a certificate (for each type of equipment) which must clearly state the compliance of the assemblies, and thus of the components, with:

- requirements relating to the safety and protection of users and all other persons (directive 73/23/EEC without any lower voltage threshold)
- requirements relating to electromagnetic compatibility (directive 89/336/EEC).

The rating plate on each item of equipment shall display the CE mark indicating compliance with these requirements.

The regulations relating to low-voltage signage in force in each of the countries concerned shall be complied with taking climatic conditions into account.

In addition, the following requirements shall be met:

Electrical equipment shall be compliant with the standards in force from the series NFC 15-100, NFC 20-010 and NFC 20-030, NFC 71, NFC 32 for France and the IEC 60364 international standard.

This concerns the following in particular:

- Category one electrical installations and low-voltage illuminated signage installations.
- The fire behaviour of electrical equipment and the degree of protection of enclosures,
- Flexible and rigid low-voltage cables.

In addition, the equipment shall comply regulations relating to the suppression of interference in inhabited areas and shall thus be delivered with interference suppression.

General technical requirements

2.1.4.1 IP rating

All the electrical equipment shall have a protection rating of at least IP 44-D.

2.1.4.2 Protection against electric shock

All equipment shall be "class 1".

2.1.4.3 Fasteners

The converters shall be placed in areas not subject to standing water.

The cables and sheaths shall be fastened to structures at 50 cm intervals.

2.1.4.4 Cable routing

Every cable or sheath passing through a metal part shall be routed through a cable gland.

Connection boxes.

An IP 44 sealed plastic connection box shall be provided at the inlet to each assembly. This box shall be equipped with a 5-input connection pin for 4 mm wiring.

All the connection boxes shall have the markings P1+P2+P3+T+N.

2.1.4.5 LEDs

The white LEDs used shall have the following characteristics:

- Lifetime: 50,000 hours for a loss of initial luminous flux of 50 % at the end of the period
- 5 year guarantee for operation 10 hours per day with a maximum loss of luminous flux of 20 %
- Operating temperature of LEDs: between - 20° C and +50 °C.
- Minimum protection index: IP 67
- The LEDs used must comply with the following international standards: IEC 62504 TS Ed. 1, IEC 61231, IEC 62560 Ed 1, IEC 62031 LED module safety, IEC 61347-2-13 LED control gear.

2.1.4.6 Converters

The power supply converters for the LEDs shall have the following characteristics:

- Wide power supply voltage range (100 to 300 volts)
- Reversible protection against increase in temperature and overload
- Protection against short-circuits with automatic restart
- Minimum protection index: IP 67
- Operation compliant with: EN 55015, EN 61000-3-2, EN 61547, EN 61558-2-17

General technical requirements

2.1.5. FASTENERS AND HARDWARE

All fasteners and hardware used shall be made of stainless steel (non-magnetizable).

Aluminium "pop" rivets are accepted as long as the steel rods are systematically removed.

For welding, the wires and electrodes are to be compliant with NF 81.830.

2.1.6. ANCHORING SYSTEMS AND FASTENINGS

The plinths for all equipments shall be completely removable without having to remove another element of the assembly. The plinths shall cover the attachment plates or fastenings. The attachment plates shall be easily accessible once the plinths have been removed.

For each of the assemblies which require a foundation block or fastening to a separate structure, the signwriter shall provide the elements necessary, as well as the conditions to be used to make design calculations for these elements (wind conditions and design calculation methods).

2.1.7. IDENTIFICATION PLATE

Each finished product shall be marked with a metal identification plate on the structure which shall show at least the following information:

- Name of the signwriter
- Product code and batch
- Month and year of manufacturing
- The CE Marking if it is illuminated.

2.1.8. STORAGE

The finished products shall be stored in a dry and well-ventilated location.

RENAULT inspectors shall be able to have access to them at any time.

2.2. Guarantees

The suppliers undertake to offer the guarantee conditions below for their products:

- 2 year guarantee on the installation against defects and faulty workmanship,
- 5 year guarantee on the electrical equipment including the LEDs and converters,
- 5 year guarantee on the adhesive elements,
- 5 year guarantee on digital printing (anti UV treatment),
- 5 year guarantee on workshop-lacquered sheet metal,
- 5 year guarantee on the chrome-plated diamonds,
- 7 year guarantee on sheet metal and profiles pre-lacquered by the aluminium manufacturer,
- 10 year guarantee on the internal structures,
- 10 year guarantee on the PMMA acrylic panels.

2
General remarks

Overview

The 3D diamonds are one of the key markers in identifying and highlighting the Renault brand.

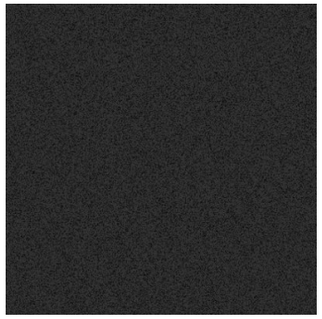
At commercial dealerships, it is featured on off-site elements (totems and signs) and on the main façades, in conjunction with the word Renault.

NOTA. Considering the expected quality and the needed investment in equipment, Renault may consider the possibility of approving only one or 2 suppliers to cover the worldwide networks.

Colours and materials

Gloss chrome

- Vacuum metallized light-diffusing polycarbonate with gloss varnish protection certified according to tests ISO 4892-2:2013 cycle 1 and ISO 9227:2012



Metallic dark grey

- Post-lacquered aluminium sheeting, 20/10 mm thick
- Satin finish with 40% gloss
- Metallic finish

3
Technical principles

General presentation

Description

The 3D diamonds are injection-moulded to guarantee the accurate reproduction of shapes and an even light output.

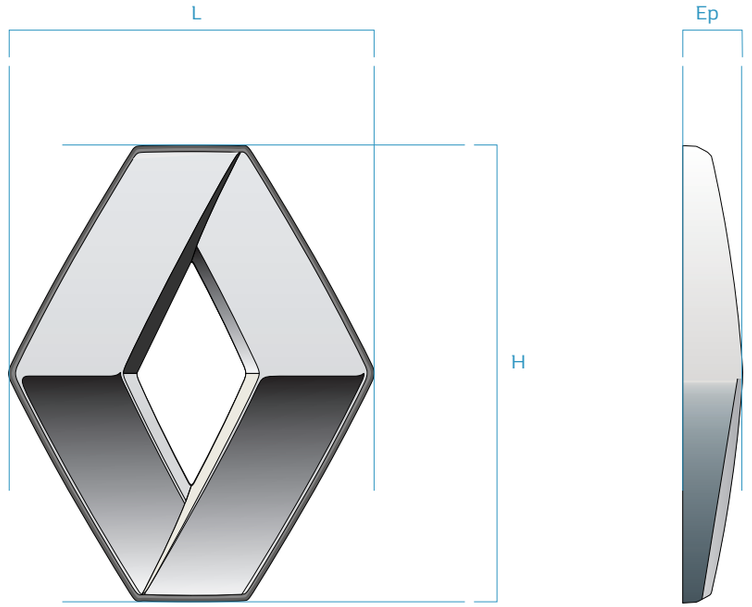
The assembly is finished in vacuum-metallized gloss chrome with gloss varnish protection certified according to tests ISO 4892-2:2013 cycle 1 and ISO 9227:2012

The front panels are light-diffusing, with the edges rendered opaque.

Lighting is provided by white chain LEDs powered by a converter built into each diamond. The electrical equipment is installed on the white PVC rear panel of the diamond.

A white light-diffusing printed adhesive film is affixed to the internal surface of the diamond to reproduce the 3D effect when the diamond is lit up.

A 3D surface file is available on the Brand Stores website to ensure consistent production with Numerically-Controlled injection tools.



Dimension	Diamond 380	Diamond 670	Diamond 860	Diamond 980	Diamond 1200	Diamond 1800
L	304	536	688	784	960	1440
H	380	670	860	980	1200	1800
Ep	50	88	112	128	157	236

Use of thermoforming to produce the 3D diamonds is prohibited. This technology does not make it possible to achieve proper evenness of surfaces and a uniform lighting effect.

Use of 3D diamonds

Principle

The table opposite shows the scope of use of 3D diamonds on identification items in Renault Stores.

	Diamond 380 mm	Diamond 670 mm	Diamond 860 mm	Diamond 980 mm	Diamond 1200 mm	Diamond 1800 mm
Flag insignia	●	●	●			
Totems		●		●	●	●
Signatures on dealership façades	●	●	●	●	●	●
Signatures on secondary network façades	●	●	●			
Brand wall (interior)	●					

Back plate on woven-metal mesh

Principle

When the 3D diamonds are installed on the woven-metal mesh of the main façades of dealerships, they are equipped with a rear plate to neutralize the background and maintain a high degree of visibility.

Key

1. 3D diamond
2. Back plate
3. Woven-metal mesh

Dimensions of the back plate

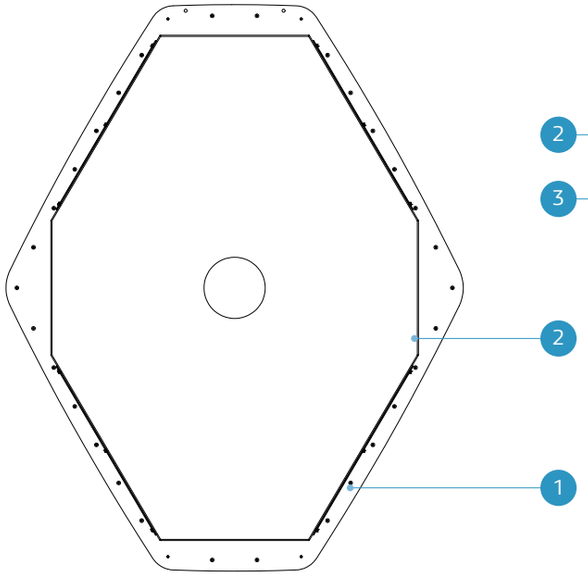
Principle

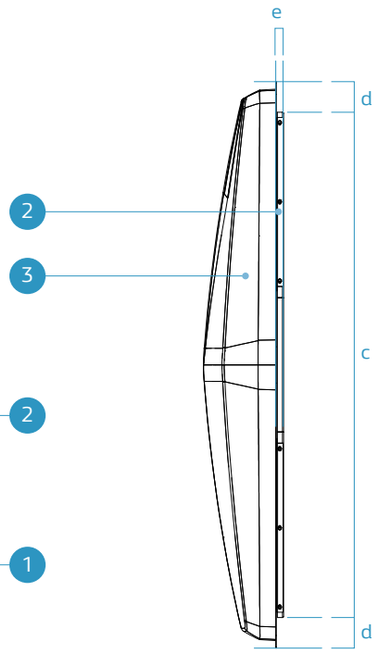
The dimensions of the back plate are proportional to that of the diamonds. They extend slightly beyond the edges of the diamonds.

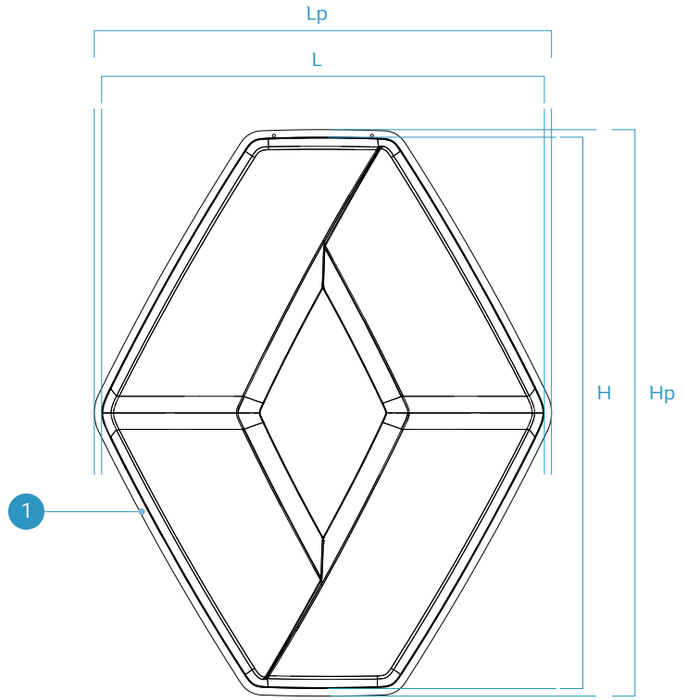
The diamond / back plate assembled is attached using a metal sheet with raised edges comprising four 90° cutaways which allow the fastenings to be concealed behind the diamond whilst allowing access from the side with bolting tools.

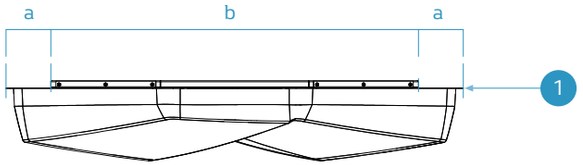
Key

1. Concealing back plate in pre-lacquered aluminium sheeting, 20/10 mm thick, dark grey metallic as per woven-metal mesh
2. Diamond attachment sheet in pre-lacquered aluminium sheeting, 20/10 mm thick, dark grey metallic as per woven-metal mesh
3. 3D diamond in injected PMMA









Dim.	Diamond 380	Diamond 670	Diamond 860	Diamond 980	Diamond 1200	Diamond 1800
L	304	536	688	784	960	1440
H	380	670	860	980	1200	1800
Lp	314	555	712	811	994	1490
Hp	390	688	884	1007	1234	1850
a	31	54,5	70	80	97	146,5
b	252	579	572	651	800	1200
c	348	495	788	898	1100	1650
d	21	30	48	54,5	67	100
e	10	20	20	20	20	20

Fastenings on totems and flag insignia

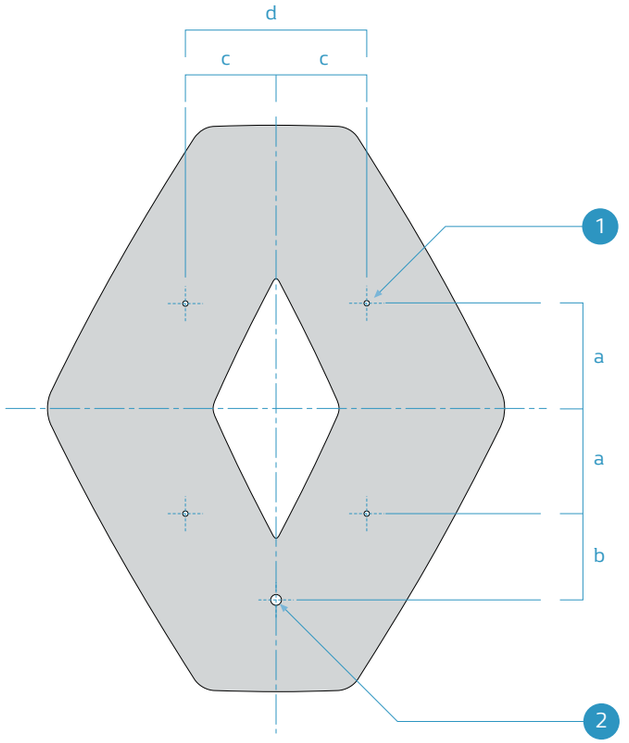
Principle

The PVC bottom comprises 6.5 mm dia. drilled holes for attachment to the faces of totems and flag insignia and for routing the power supply wiring.

Proper compliance with these dimensions will provide for interchangeability between 3D diamonds that may be from different manufacturing sources.

Key

1. Drilled holes for attachment to faces
2. Power supply routing



Dimension	Diamond 380	Diamond 670	Diamond 860	Diamond 980	Diamond 1200	Diamond 1800
a	71	125	161,25	184	225	337,5
b	53	94	120	136	167	250
c	60	107	137,5	156	246	369
d	120	214	275	312	492	738

Printed adhesive for 3D effect

Principle

A white light-diffusing printed adhesive film is affixed to the internal surface of the diamond to reproduce the 3D effect when the diamond is lit up.

The basic gradients provide indications as to the nature of the desired effect.

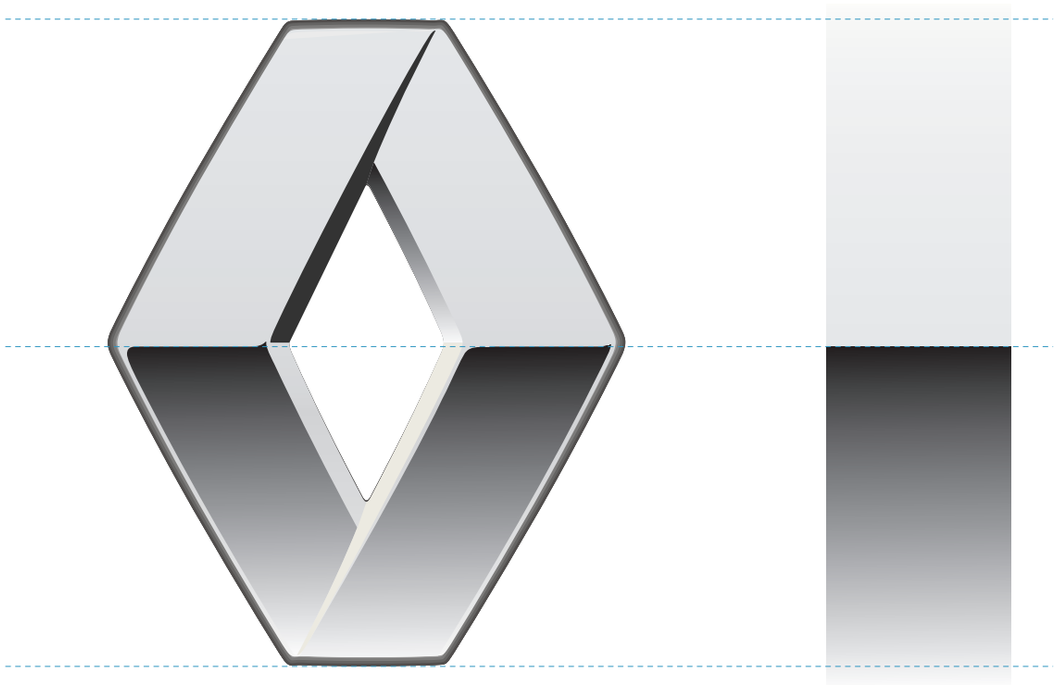
The gradients must be adapted to:

- the metallic finish and varnish used,
- the Polycarbonate and its thickness,
- the type of adhesive,
- the type of ink used and the number of passes made in printing of the adhesive.

Desired rendition

The objective is to:

- create gradual, uninterrupted gradients,
- to reproduce a similar effect for all sizes of diamond,
- to meet objectives in terms of luminescence.



Simulation of the rendered light effect

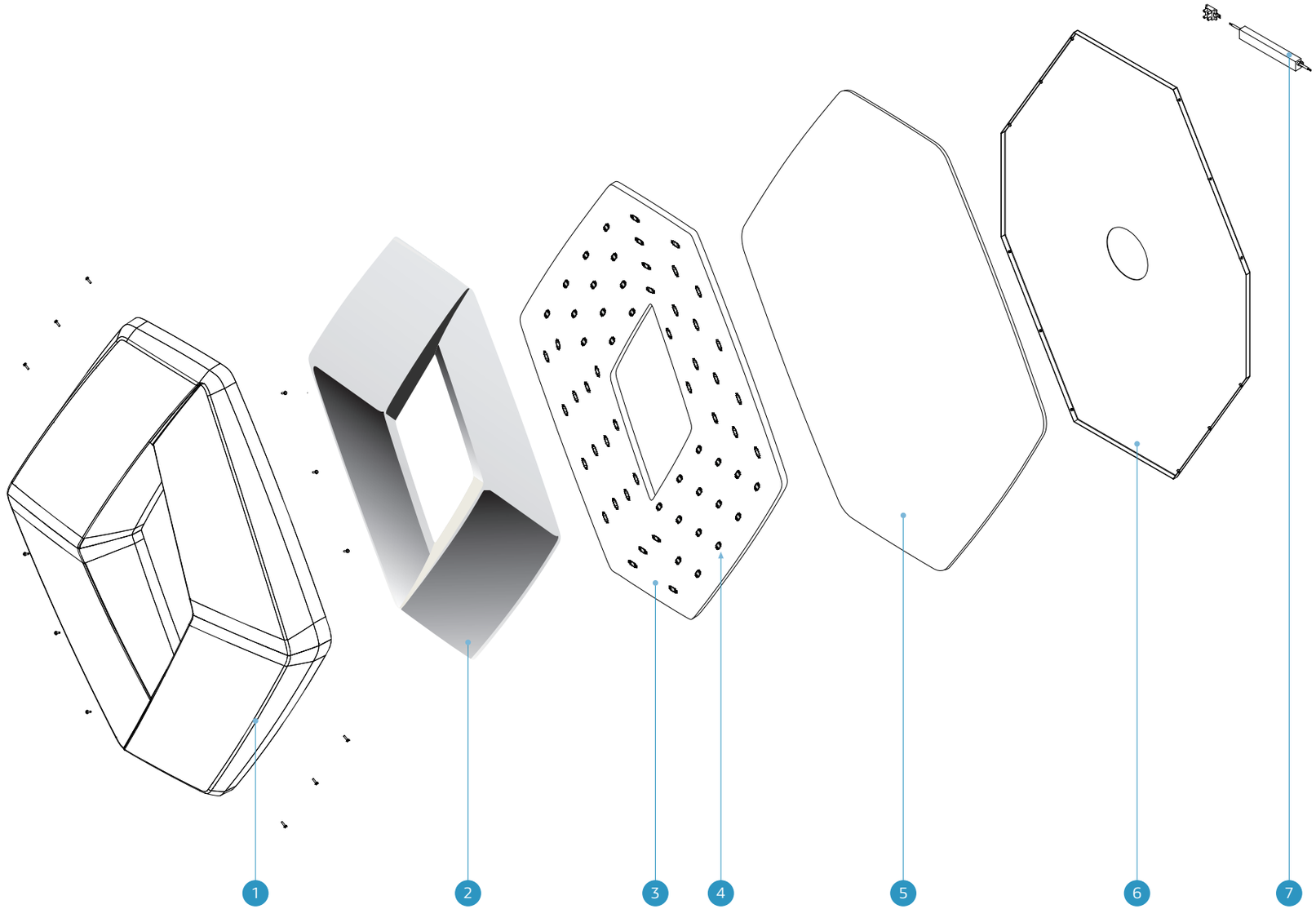
Basic gradients

A vectorial file containing these gradients is available on the Brand Stores web site. This one must be adapted according to the peculiar characteristics to every printer and for every diamond.

Schematic exploded view

Key

1. Diamond in injected polycarbonate
2. Printed adhesive cut-out in line with edges of front panel of diamond
3. Back of diamond in white expanded PVC
4. Chain LED
5. Concealing back plate in pre-lacquered aluminium sheeting, 20/10 mm thick, dark grey metallic as per woven-metal mesh
6. Diamond attachment sheet in pre-lacquered aluminium sheeting, 20/10 mm thick, dark grey metallic as per woven-metal mesh
7. Converter (external to the diamond)



Lighting

Description

Illumination of the front panel by chain-LEDs mounted in the back of the diamond

The converter is mounted outside the diamond.

Performance characteristics

Chain LED protection IP65 mini.

Chain LED with minimum IP65 protection rating.

Temperature: 6,500° K Cool White.

Mean luminance: 250 cd/m2 with a maximum of 350 cd/m?.

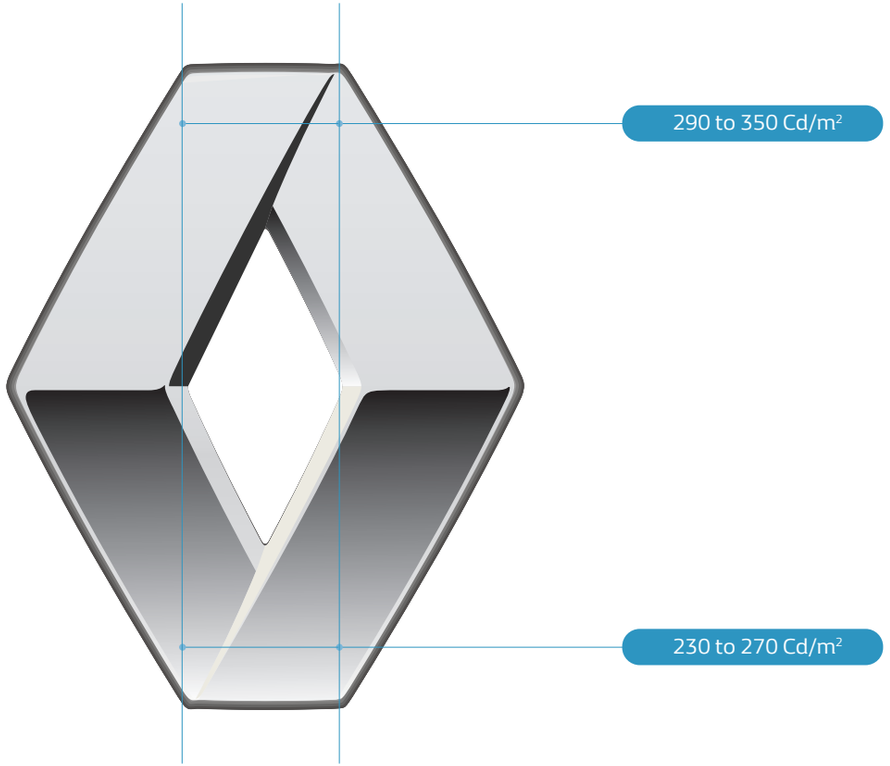
The warranty for all LED lighting systems and parts is 5 years, subject to compliance with conditions of use and maintenance.

Light output reduced by 50% after 50,000 hours operation.

Minimum guaranteed lifetime: 50,000 hours

Supply: 220 volts

12 volt converter with regulated voltage, IP 68 protection.



The dots are a schematic representation of the measurement points that should present similar light intensity values in order to obtain even lighting across each of the letters of the Renault word.
The readings, performed with a calibrated luminance meter, should ideally be performed without light interference and at a distance of between 1 and 2 m from the letter face.

Lighting with 20-lumens LED modules

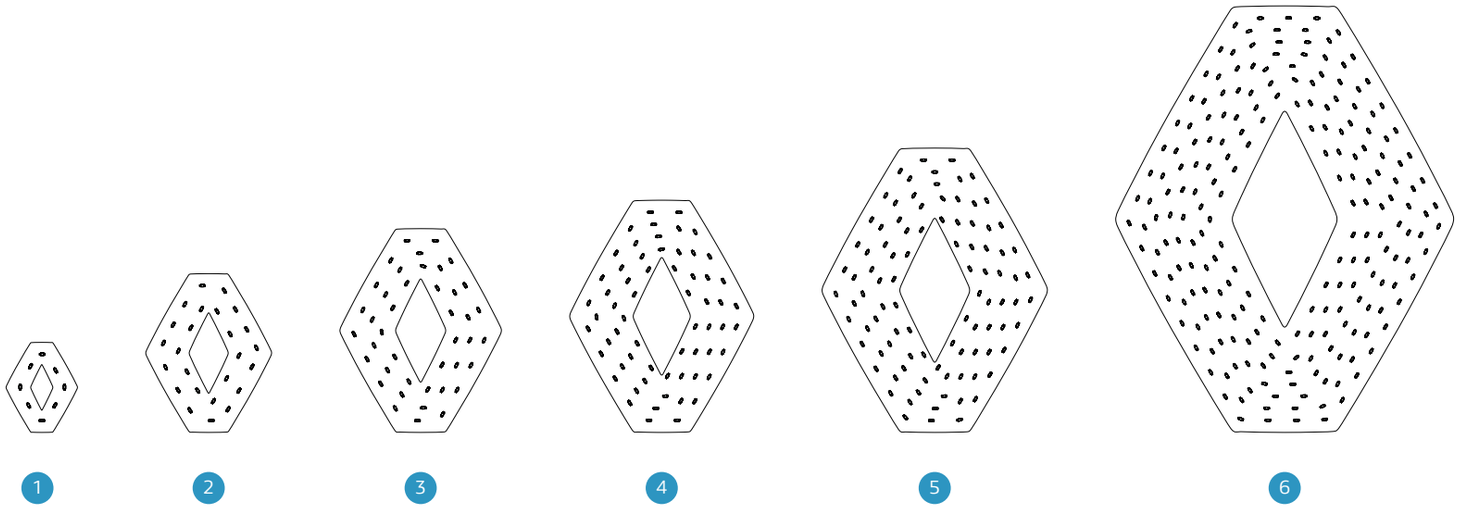
Principle

This recommendation is made on the basis of a 20 lumens module with a luminous efficacy of 90 to 100 lumens/watts.

The instruction remains indicative and shall require, for each letter, a validation and a test for compliance with the performance targets indicated in this document.

Description

- Temperature: 6,500° K Cool White
- Supply: 220 volts
- Converter: 12 volts, constant current



	Diamond 380	Diamond 670	Diamond 860	Diamond	Diamond 1200	Diamond 1800
Number of modules	8	25	42	980	96	210
Consumption	2 w	6 w	10 w	62	23 w	50 w
Converter	10 vA	10 vA	15 vA	15 w	35 vA	60 vA

Key

1. Diamond 380 mm
2. Diamond 670 mm
3. Diamond 860 mm
4. Diamond 980 mm
5. Diamond 1200 mm
6. Diamond 1800 mm

The supplier may choose, based on its experience and its conditions of procurement, to provide a uniform solution for all diamonds avoiding any variation between the power of modules in order to facilitate their maintenance.

Lighting with 30-lumens LED modules

Principle

This recommendation is made on the basis of a 30 lumens module with a luminous efficacy of 90 to 100 lumens/watts.

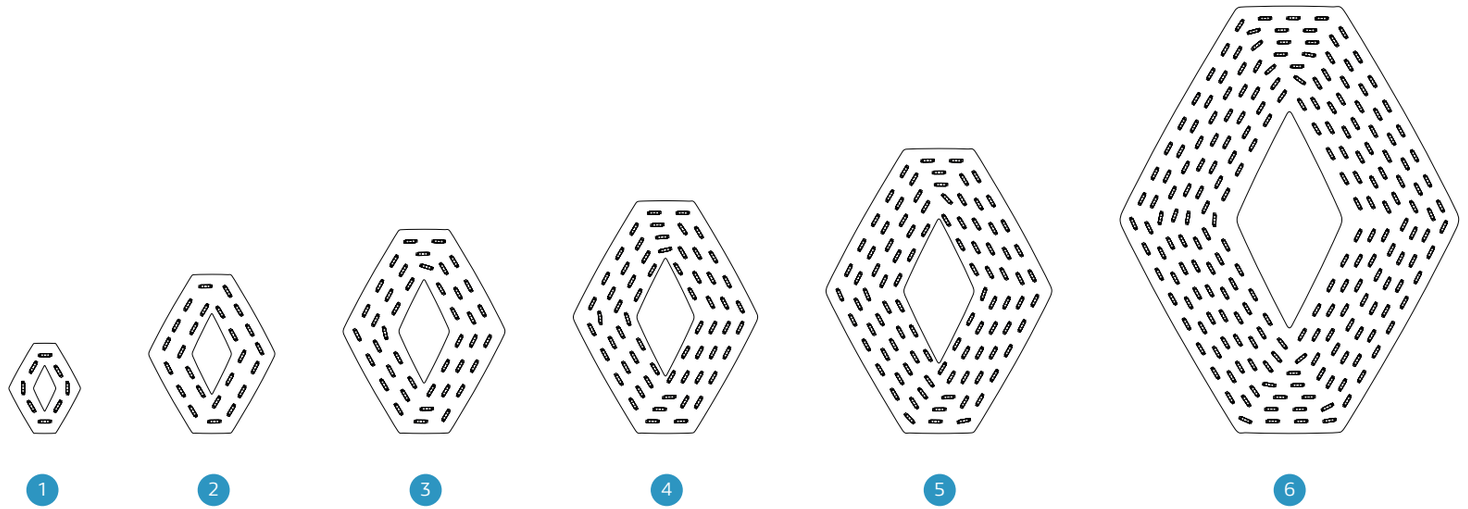
The instruction remains indicative and shall require, for each letter, a validation and a test for compliance with the performance targets indicated in this document.

Description

- Temperature: 6,500° K Cool White
- Supply: 220 volts
- Converter: 12 volts, constant current

Key

1. Diamond 380 mm
2. Diamond 670 mm
3. Diamond 860 mm
4. Diamond 980 mm
5. Diamond 1200 mm
6. Diamond 1800 mm



	Diamond 380	Diamond 670	Diamond	Diamond	Diamond 1200	Diamond 1800
Number of modules	8	25	860	980	96	210
Consumption	2,4 w	7,5 w	42	62	28,8 w	63 w
Converter	10 vA	10 vA	12,6 w	18,6 w	35 vA	100 vA

The supplier may choose, based on its experience and its conditions of procurement, to provide a uniform solution for all diamonds avoiding any variation between the power of modules in order to facilitate their maintenance.