



MINISTERIO
DE INDUSTRIA, COMERCIO Y
TURISMO

DIRECCIÓN GENERAL DE INDUSTRIA Y
DE LA PEQUEÑA Y MEDIANA EMPRESA

SUBDIRECCIÓN GENERAL DE
CALIDAD Y SEGURIDAD INDUSTRIAL



E9*7R02/27*23098*01 REV. 01

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**REVISIONES ACEPTADAS EN EL EXPEDIENTE DE HOMOLOGACIÓN /
REVISIONS APPROVED FOR THE HOMOLOGATION**

E9*7R02/27*23098*01

REV. 01

A la vista de lo expuesto en el informe nº /
Regarding the test report No:

PC20020151

Del servicio técnico /
Of the technical service:

IDIADA

En lo que se refiere a la homologación cuya contraseña es /
Concerning the homologation under approval number:

E9*7R02/27*23098*00
E9*7R02/27*23098*01

Fecha / *Date:*

24/09/2019

Concedida al dispositivo / *Granted to device:*

Marca / *Make:*

FRISTOM

Tipo / *Type:*

FT-270 LED

Fabricante / *Manufacturer:*

FRISTOM SPÓLKA Z OGRANICZONA
ODPOWIEDZIALNOSCIA SPÓLKA
KOMANDYTOWA
UL. PRZEMYSŁOWA 5, 86-014
85416 SICIENKO
SICIENKO (POLONIA)

Esta Subdirección acepta para su ~~inclusión~~ / sustitución ⁽¹⁾ en el correspondiente expediente de homologación, la siguiente documentación / *This Subdirection accepts the following documentation for ~~inclusion~~ / replacement ⁽¹⁾ in the homologation package:*

- a) Comunicación / *Communication:* Sin cambios / *No changes*
- b) Informe de ensayo / *Test report:* Sin cambios / *No changes*
- c) Documentación técnica / *Technical documentation:* Actualización de la documentación / *Documentation updated*

Firma / *Signature:*

EL SUBDIRECTOR GENERAL DE CALIDAD Y SEGURIDAD INDUSTRIAL
Resolución P.D. del DIRECTOR GENERAL DE INDUSTRIA Y DE LA PYME de 25-10-2012

⁽¹⁾ Táchese lo que no proceda / *Delete as appropriate*



INFORME N° / REPORT No. PC20020151

RELATIVO A LA EXTENSIÓN DE HOMOLOGACIÓN DE LAS LUCES DE POSICIÓN DELANTERAS Y TRASERAS, DE LAS LUCES DE PARE Y DE LAS LUCES DE GÁLIBO PARA LOS VEHÍCULOS A MOTOR Y SUS REMOLQUES SEGÚN EL REGLAMENTO 7.02 ECE / *CONCERNING THE APPROVAL EXTENDED OF FRONT AND REAR POSITION LAMPS, STOP-LAMPS AND END-OUTLINE MARKER LAMPS FOR MOTOR VEHICLES AND THEIR TRAILERS ACCORDING TO REGULATION 7.02 ECE*

REV. 01

Nombre y dirección del fabricante /
Manufacturer's name and address : FRISTOM SPÓLKA Z OGRANICZONA
ODPOWIEDZIALNOSCIA SPÓLKA
KOMANDYTOWA
UL. PRZEMYSŁOWA 5, 86-014
85416 SICIENKO
SICIENKO (POLONIA)

Marca comercial / *Trade mark* : FRISTOM

Tipo / *Type* : FT-270 LED

Lugar y fecha de emisión del informe /
Place and date of test report issue : L'Albornar, Santa Oliva (Tarragona)
13/02/2020

CONCLUSIONES / *CONCLUSIONS*: Analizado el motivo de la modificación que se detalla en el Anexo a este informe, el dispositivo presentado **CUMPLE** las prescripciones relativas a la homologación de luces de pare y posición traseras de categoría R1-S1 para automóviles y sus remolques, correspondientes al Reglamento 7.02 ECE y se acepta para su sustitución en los expedientes N° PC19060172, PC19090219. / *Taking into account the reason of the modification as detailed in the Annex attached to this report, this device **FULFILLS** the prescriptions with regard to the stop and rear position lamp category R1-S1 for motor vehicles and their trailers approval in application of Regulation No. 7.02 ECE, and it accepts for replacement in the reports N° PC19060172, PC19090219.*

Realizado/ *Performed by*



Joan Fonts Sala
INGENIERO DE ENSAYOS
TEST ENGINEER

V. B°./ *Revised by:*



Ramon Santafè Guiu
JEFE DE DEPARTAMENTO
DEPARTMENT MANAGER

* LOS RESULTADOS PRESENTADOS SE REFIEREN ÚNICAMENTE A LA MUESTRA ENSAYADA.
THE PRESENTED RESULTS REFER ONLY TO THE TESTED SAMPLE

* QUEDA TERMINANTEMENTE PROHIBIDA LA REPRODUCCIÓN PARCIAL DE ESTE INFORME SIN PERMISO EXPRESO DE IDIADA.
THE PARTIAL REPRODUCTION OF THIS REPORT WITHOUT THE PERMISSION OF IDIADA IS COMPLETELY FORBIDDEN



Se acepta para su sustitución en el correspondiente expediente de homologación N° PC19060172, PC19090219, la siguiente información / *It accepts the following information for replacement in the homologation information package N° PC19060172, PC19090219:*

- a) Comunicación / *Communication*: Sin cambios / *No changes*
- b) Informe de ensayo / *Test report*: Sin cambios / *No changes*
- c) Documentación técnica / *Technical documentation*: Actualización de la documentación / *Documentation updated*

Lugar / *place*: L'Albornar, E-43710 Santa Oliva (Tarragona)
Fecha / *date*: 13/02/2020



Joan Fonts Sala
INGENIERO DE ENSAYOS
TEST ENGINEER

* LOS RESULTADOS PRESENTADOS SE REFIEREN UNICAMENTE A LA MUESTRA ENSAYADA.
THE PRESENTED RESULTS REFER ONLY TO THE TESTED SAMPLE

* QUEDA TERMINANTEMENTE PROHIBIDA LA REPRODUCCION PARCIAL DE ESTE INFORME SIN PERMISO EXPRESO DE IDIADA.
THE PARTIAL REPRODUCTION OF THIS REPORT WITHOUT THE PERMISSION OF IDIADA IS COMPLETELY FORBIDDEN

DOCUMENTACIÓN TÉCNICA /
TECHNICAL DOCUMENTATION

INFORMATION FOLDER:

FRISTOM FIRST APPLICATION
DATE: 02.08.2019
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
reprezentowana przez FRISTOM sp. z o.o.

1. Specification data

| | | |
|-----------------------|--|--|
| Type | FT-270 LED <i>EXTA</i> | |
| Trade name or mark | Fristom | |
| Variants | - | |
| Function | Rear 7 function LED lamp (2a;R1;S1;L;F1;AR;IIIA) | |
| Color | Red light color , amber light color ,White light color | |
| Rated | Voltage | 12V |
| | Wattage | R1=0,6;R1+L=2,4W;S1=1,5W;2a=2,4W;F1=2,4W;AR=2,4W |
| Applicable Regulation | | R03 ; R04; R06; R07; R23; R38 |
| Location of marking | Light Source | -rear position light : 4 LED`s serial connected in 2 parallel sections - registration plate light : 3 LED`s serial connected in one section -stop light : 4 LED`s serial connected in 2 parallel sections -direction indicator : 3 LED`s serial connected in 2 parallel sections - rear fog light : 4 LED`s serial connected in 2 sections - reversing light : 3 LED`s serial connected in 2 sections |
| | Trade mark | Fristom |
| | Marked on the visible area of reflex reflector under the lampshade | |

2. Construction and material

| Construction | Material | Remarks |
|--------------|----------------------------------|---------|
| Lenses | Defined on the technical drawing | -- |
| Reflectors | Defined on the technical drawing | -- |
| Bases | Defined on the technical drawing | -- |

3. Name and address of manufacturer:

FRISTOM Spółka z ograniczoną odpowiedzialnością Spółka komandytowa

86-014 Sicienko / Polska

ul. Przemysłowa 5

NIP: 5542926937, KRS: 0000529238

Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41

4. REASON OF THE APPROVAL EXTENSION:

- a) new lens design for R1 rear position light and less LED`s for the function
- b) new function has been added to lamp – registration plate light

NOTE : APPROVAL MARKINGS ARE SHOWN IN THE ATTACHED DRAWING.
THIS INFORMATION FOLDER CONSISTS OF 1 PAGES

FRISTOM
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
reprezentowana przez FRISTOM sp. z o.o.

PC20020151

2.08.2019

Manufacturer

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.
86-014 Ścieienko / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



Drawn by:

Michał Dybicz

Date:

1-08-2019

sheet Nr.

1/5

Type

FT- 270 LED - rear multifunction lamp

Material used in

manufacturing :

- lampshade PC transparent clear
- collimator AR PMMA transparent clear
- collimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- IIIA reflector and R1 lens PMMA transparent red
- registration plate reflector ABS black vacuum metalized
- PCB FR4
- AR - 6 LED's - white light color
- F1 - 8 LED's - red light color
- R1 - 16 LED's - red light color
- S1 - 8 LED's - red light color
- 2a - 6 LED's - amber light color
- potting compound epoxy resin

sheet description

general drawing / lamp functions / assembly on vehicle

This drawing is a part of the application for approval

light source

LIGHT SOURCE : LED CHIP SMD chip mounted

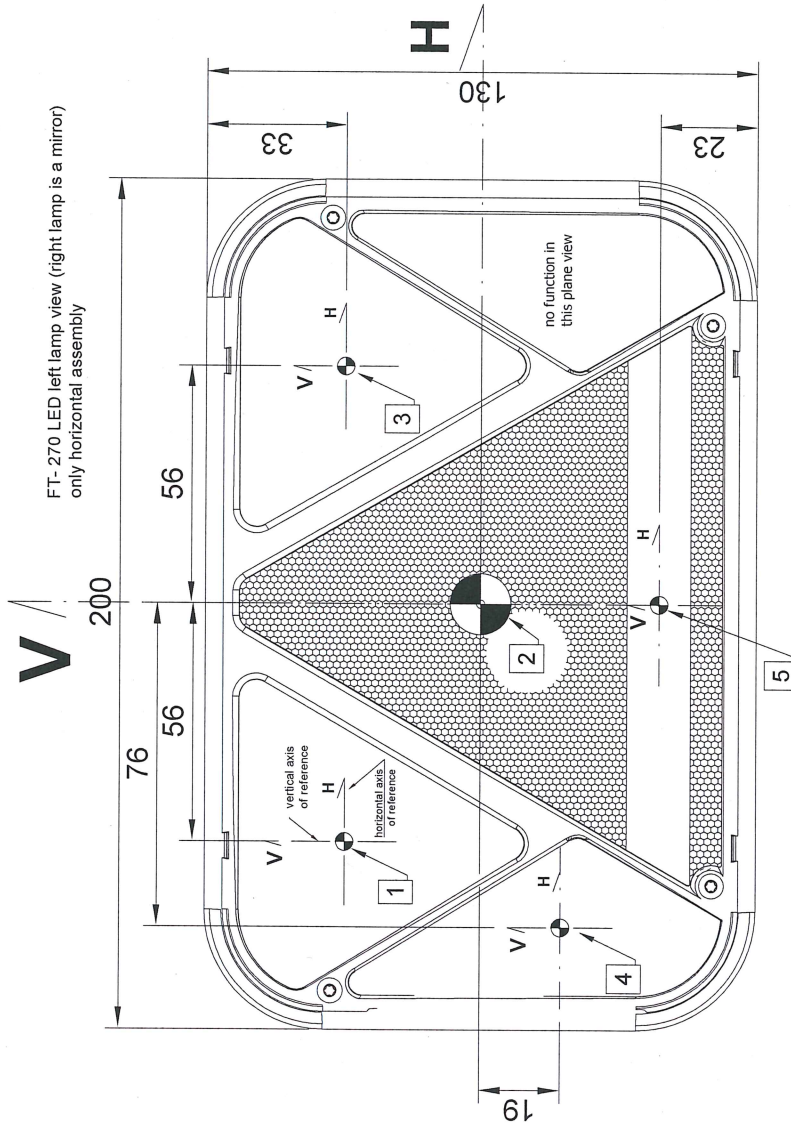
AR - 6 LED's - white light color

F1 - 8 LED's - red light color

R1 - 16 LED's - red light color

S1 - 8 LED's - red light color

2a - 6 LED's - amber light color



FT- 270 LED left lamp view (right lamp is a mirror)
only horizontal assembly

- 1 - center of reference direction indicator 2a
- 2 - center of reference reflex reflector cat IIIA
- 3 - center of reference rear fog or reversing light (F1 or AR)
- 4 - center of reference stop light cat S1
- 5 - center of reference rear position light cat R1

FRISTOM
spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Ścieienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 34164507
reprezentowana przez FRISTOM sp. z o.o.

İDİADA PC20020151

Manufacturer

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.
86-014 Sicienka / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



Drawn by:

Michał Dybicz

Date:

1-08-2019

sheet Nr.

2/5

Type

FT- 270 LED - rear multifunction lamp

Material used in manufacturing :

- lampshade PC transparent clear
- collimator AR PMMA transparent clear
- collimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- IIIA reflector and R1 lens PMMA transparent red
- registration plate reflector ABS black vacuum metalized
- PCB FR4
- AR - 6 LED's - white light color
- F1 - 8 LED's - red light color
- R1 - 16 LED's - red light color
- S1 - 8 LED's - red light color
- 2a - 6 LED's - amber light color
- potting compound epoxy resin

sheet description

assembly on vehicle and electrical circuits of functions

This drawing is a part of the application for approval

light source

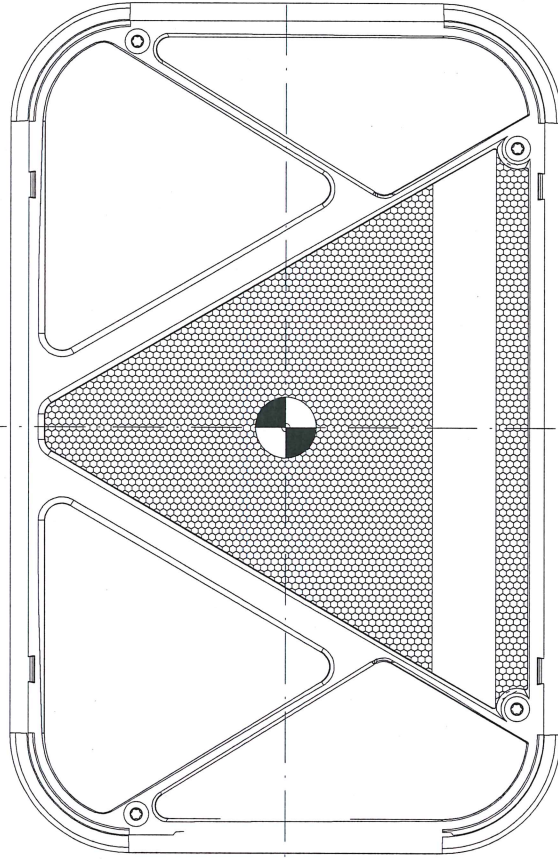
LIGHT SOURCE : LED CHIP SMD chip mounted

- AR - 6 LED's - white light color
- F1 - 8 LED's - red light color
- R1 - 16 LED's - red light color
- S1 - 8 LED's - red light color
- 2a - 6 LED's - amber light color

FT- 270 LED left lamp view (right lamp is a mirror)
only horizontal assembly

↑ top
of
vehicle

forward
driving
direction



connection of LED's in function circuits:

- R1 - 4 sections a 4 serial connected LED
- S1 - 2 sections a 4 serial connected LED
- 2a - 2 sections a 3 serial connected LED
- F1 - 2 sections a 4 serial connected LED
- AR - 2 sections a 3 serial connected LED

IDIADA PC20020151

FRISTOM

spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienka, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
zarejestrowana przez FRISTOM sp. z o.o.

Type

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.
86-014 Sicienko / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



| | | |
|-----------------------------------|---------------------------|-------------------------|
| Drawn by: Michał Dycicz | Date: 1-08-2019 | sheet Nr. 3/5 |
|-----------------------------------|---------------------------|-------------------------|

light source

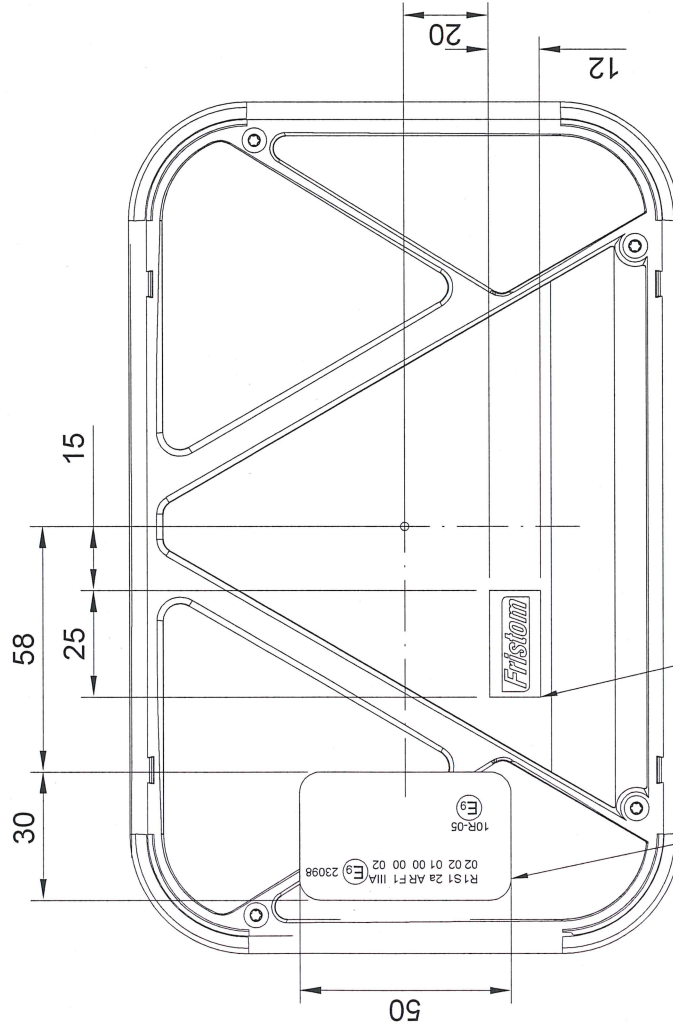
LIGHT SOURCE : LED CHIP SMD chip mounted
AR - 6 LED's - white light color
F1 - 8 LED's - red light color
R1 - 16 LED's - red light color
S1 - 8 LED's - red light color
2a - 6 LED's - amber light color

Material used in manufacturing :

- lampshade PC transparent clear
- colimator AR PMMA transparent clear
- colimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- IIIA reflector and R1 lens PMMA transparent red
- registration plate reflector ABS black vacuum metalized
- PCB FR4
- AR - 6 LED 's - white light color
- R1 - 8 LED 's - red light color
- R1 - 16 LED 's - red light color
- S1 - 8 LED 's - red light color
- 2a - 6 LED 's - amber light color
- potting compound epoxy resin

sheet description

marking of trademark , approvals and electrical parameters
This drawing is a part of the application for approval



place for trademark

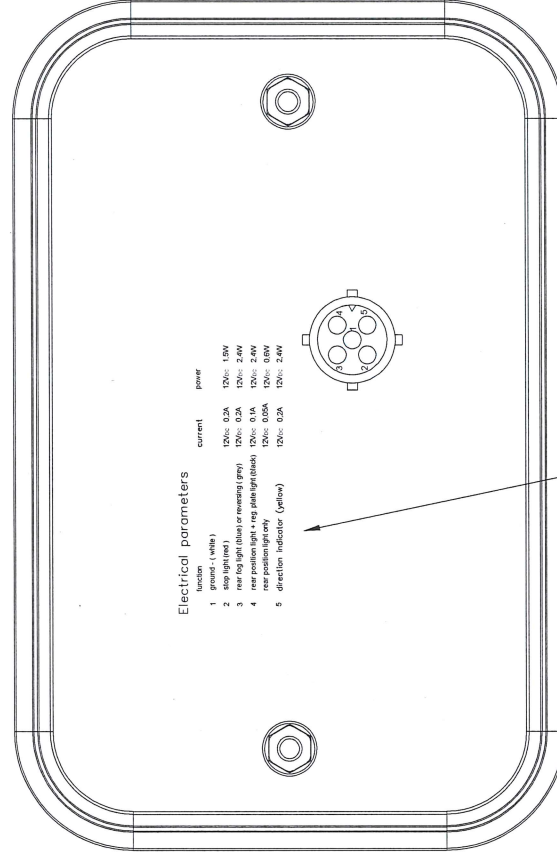
place for approval markings

approval marking dimensions:

spółka z ograniczoną odpowiedzialnością
86-014 Siedlenko, ul. Przemysłowa 5
NIP: 542016937 REGON 34149907

PC20020151

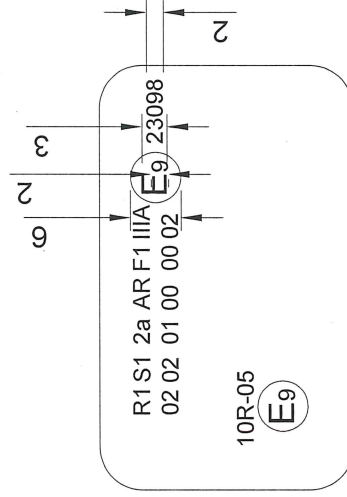
FT-270 LED left lamp rear housing (right lamp is a mirror)
baionet version



electrical parameters
on housing rear side

Electrical parameters

| | function | current | power |
|---|--|-------------|------------|
| 1 | ground - (white) | | |
| 2 | stop light (red) | 12Voc 0.2A | 12Voc 1.5W |
| 3 | rear fog light (blue) or reversing (grey) | 12Voc 0.2A | 12Voc 2.4W |
| 4 | rear position light + reg. plate light (black) | 12Voc 0.1A | 12Voc 2.4W |
| | rear position light only | 12Voc 0.05A | 12Voc 0.6W |
| 5 | direction indicator (yellow) | 12Voc 0.2A | 12Voc 2.4W |



Manufacturer

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.
86-014 Sicienka / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



Drawn by: Michał Dybicz
Date: 1-08-2019
sheet Nr.: 4/5

Type

FT- 270 LED – rear multifunction lamp

Material used in manufacturing :

- lampshade PC transparent clear
- collimator AR PMMA transparent clear
- collimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- registration plate reflector ABS black vacuum metalized
- PCB FR4
- AR - 6 LED` s - white light color
- F1 - 8 LED` s - red light color
- R1 - 16 LED` s - red light color
- S1 - 8 LED` s - red light color
- 2a - 6 LED` s - amber light color
- potting compound epoxy resin

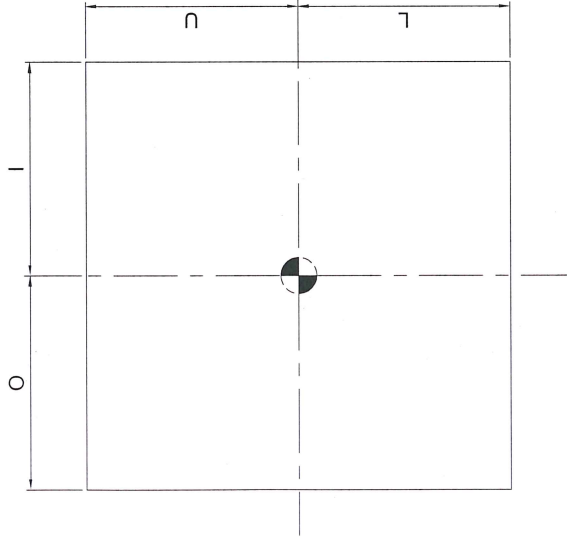
light source

LIGHT SOURCE : LED CHIP SMD chip mounted
AR - 6 LED` s - white light color
F1 - 8 LED` s - red light color
R1 - 16 LED` s - red light color
S1 - 8 LED` s - red light color
2a - 6 LED` s - amber light color

sheet description

lighting surface

This drawing is a part of the application for approval



lighting surface

| function | U _{upper limit} (mm) | L _{lower limit} (mm) | O _{outer limit} (mm) | I _{inner limit} (mm) |
|------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| reversing AR | 23 | 23 | 25 | 25 |
| rear fog F1 | 23 | 23 | 25 | 25 |
| rear position R1 | 7,5 | 7,5 | 66 | 66 |
| stop S1 | 44 | 44 | 18,5 | 18,5 |
| direction indicator 2a | 33 | 33 | 36 | 36 |
| reflex reflector IIIA | 58 | 58 | 70 | 70 |

Determining the lower , upper and lateral limits of the illumination surface of the lamp device.

According to European Directive 91/663/EEC , Annex I "Installation of lighting and light-signalling devices" clause 1.9.2.

According to ECE regulation 48/01 "Installation of light and light-signalling devices" clause 2.9.2.

FRISTOM

spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienka, ul. Przemysłowa 5
NIP: 5542926937 REGON 341640307
reprezentowana przez FRISTOM sp. z o.o.

Manufacturer

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Ścieńko / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



Drawn by: Date: 1-08-2019
Michał Dybicz sheet Nr. 5/5

Type

FT- 270 LED - rear multifunction lamp

light source

LIGHT SOURCE : LED CHIP SMD chip mounted
AR - 6 LED` s - white light color
F1 - 8 LED` s - red light color
R1 - 16 LED` s - red light color
S1 - 8 LED` s - red light color
2a - 6 LED` s - amber light color

sheet description

variant tradenames

This drawing is a part of the application for approval

Material used in manufacturing :

- lamshade PC transparent clear
- collimator AR PMMA transparent clear
- collimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- IIIA reflector and R1 lens PMMA transparent red
- registration plate reflector ABS black vacuum metalized
- PCB FR4
- AR - 6 LED` s - white light color
- F1 - 8 LED` s - red light color
- R1 - 16 LED` s - red light color
- S1 - 8 LED` s - red light color
- 2a - 6 LED` s - amber light color
- potting compound epoxy resin

| tradename of variant | description |
|-------------------------------|--|
| FT-270 L NT LED | FT-270 L NT LED Lampa tylna uniwersalna lewa z trójkątek odblaskowym LED 12V, 4-funkcyjna STOP/POZYCJA/KIERUNKOWSKAZ/PRZECIWMGŁOWE, bez oświetlenia tablicy rej., przewód o długości 1m.<ang>FT-170 L NT LED Universal LED rear lamp 12-36V, 6-functional, left without number plate light, 1 m cable.<ang> |
| FT-270 P NT LED | FT-270 P NT LED Lampa tylna uniwersalna prawa z trójkątek odblaskowym LED 12V, 4-funkcyjna STOP/POZYCJA/KIERUNKOWSKAZ/COFANIA, bez oświetlenia tablicy rej., przewód o długości 1m.<ang>FT-170 L NT LED Universal LED rear lamp 12-36V, 6-functional, left without number plate light, 1 m cable.<ang> |
| FT-270 L NT LED BAJONET 5 PIN | FT-270 L NT LED BAJONET 5 PIN Lampa tylna uniwersalna lewa z trójkątek odblaskowym LED 12V, 4-funkcyjna STOP/POZYCJA/KIERUNKOWSKAZ/PRZECIWMGŁOWE, bez oświetlenia tablicy rej., złącze BAJONET 5 PIN.<ang>FT-170 L NT LED Universal LED rear lamp 12-36V, 6-functional, left without number plate light, 1 m cable.<ang> |
| FT-270 P NT LED BAJONET 5 PIN | FT-270 P NT LED BAJONET 5 PIN Lampa tylna uniwersalna prawa z trójkątek odblaskowym LED 12V, 4-funkcyjna STOP/POZYCJA/KIERUNKOWSKAZ/COFANIA, bez oświetlenia tablicy rej., złącze BAJONET 5 PIN.<ang>FT-170 L NT LED Universal LED rear lamp 12-36V, 6-functional, left without number plate light, 1 m cable.<ang> |
| FT-270 L TB LED | FT-270 L TB LED Lampa tylna uniwersalna lewa z trójkątek odblaskowym LED 12V, 4-funkcyjna STOP/POZYCJA/KIERUNKOWSKAZ/PRZECIWMGŁOWE, z oświetleniem tablicy rej., przewód o długości 1m.<ang>FT-170 L NT LED Universal LED rear lamp 12-36V, 6-functional, left without number plate light, 1 m cable.<ang> |
| FT-270 P TB LED | FT-270 P TB LED Lampa tylna uniwersalna prawa z trójkątek odblaskowym LED 12V, 4-funkcyjna STOP/POZYCJA/KIERUNKOWSKAZ/COFANIA, z oświetleniem tablicy rej., przewód o długości 1m.<ang>FT-170 L NT LED Universal LED rear lamp 12-36V, 6-functional, left without number plate light, 1 m cable.<ang> |
| FT-270 L TB LED BAJONET 5 PIN | FT-270 L TB LED BAJONET 5 PIN Lampa tylna uniwersalna lewa z trójkątek odblaskowym LED 12V, 4-funkcyjna STOP/POZYCJA/KIERUNKOWSKAZ/PRZECIWMGŁOWE, z oświetleniem tablicy rej., złącze BAJONET 5 PIN.<ang>FT-170 L NT LED Universal LED rear lamp 12-36V, 6-functional, left without number plate light, 1 m cable.<ang> |
| FT-270 P TB LED BAJONET 5 PIN | FT-270 P TB LED BAJONET 5 PIN Lampa tylna uniwersalna prawa z trójkątek odblaskowym LED 12V, 4-funkcyjna STOP/POZYCJA/KIERUNKOWSKAZ/COFANIA, z oświetleniem tablicy rej., złącze BAJONET 5 PIN.<ang>FT-170 L NT LED Universal LED rear lamp 12-36V, 6-functional, left without number plate light, 1 m cable.<ang> |

FRISTOM

spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Ścieńko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341642007
reprezentowane przez FRISTOM sp. z o.o.

IDIADA PC20020151

Manufacturer

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp. z o.o.
86-014 Ścieienko / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



Drawn by: **Date:**

Michał Dybicz 9-09-2019

sheet Nr.

1/6

Type

FT- 270 LED - rear multifunction lamp EXT1

Material used in manufacturing :

- lampshade PC transparent clear
- collimator AR PMMA transparent clear
- collimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- registration plate reflector ABS black vacuum metalized
- PCB FR4
- AR - 6 LED's - white light color
- F1 - 8 LED's - red light color
- R1 - 8 LED's - red light color
- S1 - 8 LED's - red light color
- 2a - 6 LED's - amber light color
- L - 3 LED's - white light color
- potting compound epoxy resin

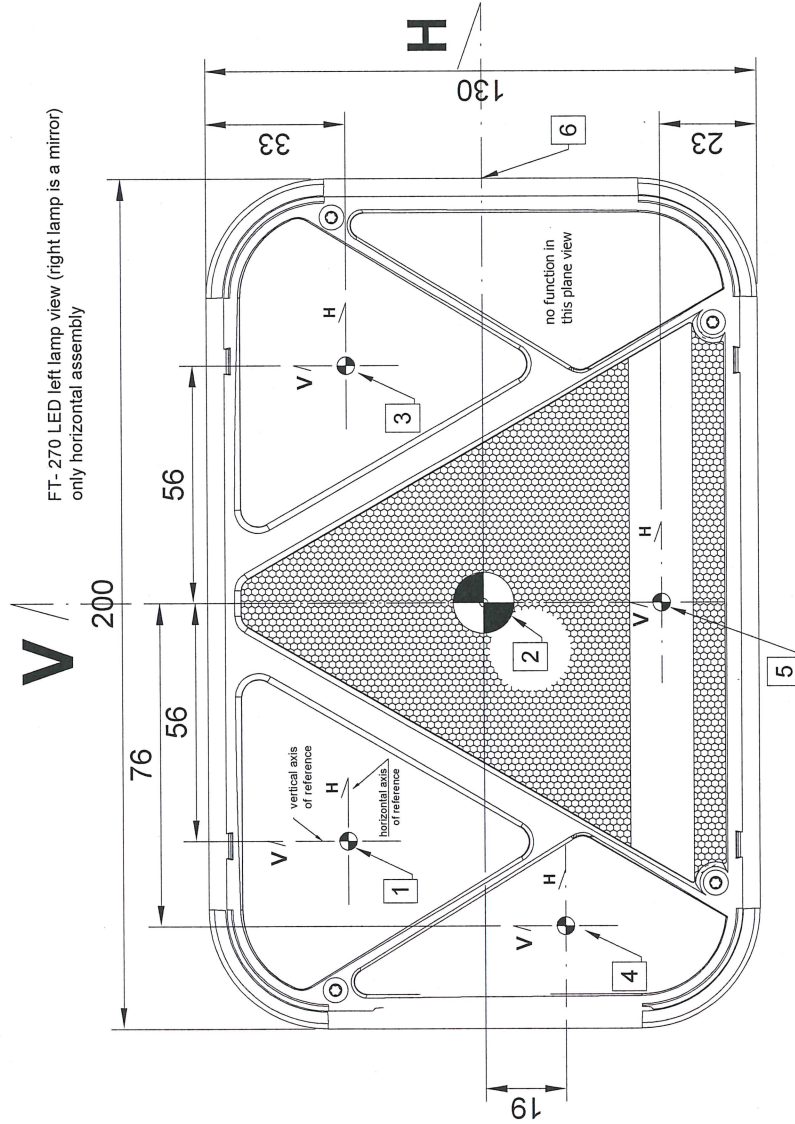
sheet description

general drawing / lamp functions / assembly on vehicle

This drawing is a part of the application for approval

light source

LIGHT SOURCE : LED CHIP SMD chip mounted
AR - 6 LED's - white light color
F1 - 8 LED's - red light color
R1 - 8 LED's - red light color
S1 - 8 LED's - red light color
2a - 6 LED's - amber light color
L - 3 LED's - white light color



FT- 270 LED left lamp view (right lamp is a mirror)
only horizontal assembly

- 1 - center of reference direction indicator 2a
- 2 - center of reference reflex reflector cat IIIA
- 3 - center of reference rear fog or reversing light (F1 or AR)
- 4 - center of reference stop light cat S1
- 5 - center of reference rear position light cat R1
- 6 - registration plate light

FRISTOM

spółka z ograniczoną odpowiedzialnością Sp. z o.o.
86-014 Ścieienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341642307
reprezentowany przez FRISTOM sp. z o.o.

PC20020151

Manufacturer

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.
86-014 Ścieienko / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



Drawn by: **Date:** 9-09-2019 **sheet Nr.** 2/6

Michał Dybicz

Type

FT- 270 LED - rear multifunction lamp EXT1

light source

LIGHT SOURCE : LED CHIP SMD chip mounted

AR - 6 LED's - white light color
F1 - 8 LED's - red light color
R1 - 8 LED's - red light color
S1 - 8 LED's - red light color
2a - 6 LED's - amber light color
L - 3 LED's - white light color

sheet description

assembly on vehicle and electrical circuits of functions

This drawing is a part of the application for approval

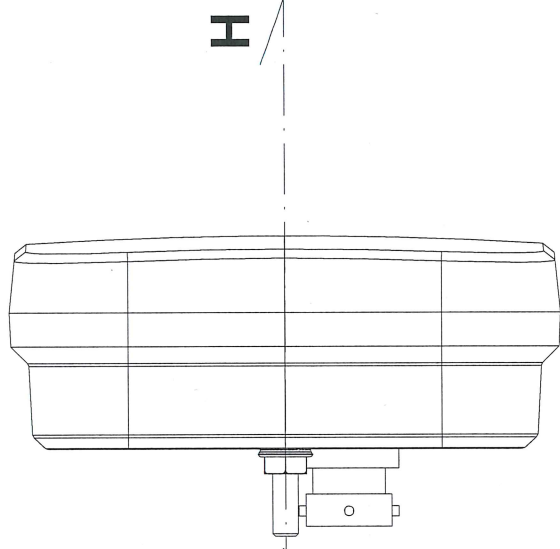
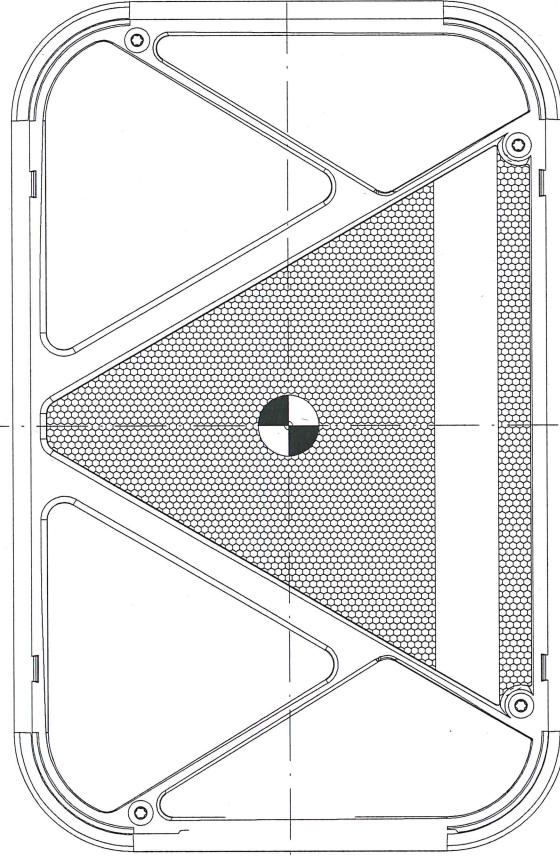
Material used in manufacturing :

- lampshade PC transparent clear
- collimator AR PMMA transparent clear
- collimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- IIIA reflector and R1 lens PMMA transparent red
- registration plate reflector ABS black vacuum metalized
- PCB FR4
- AR - 6 LED's - white light color
- F1 - 8 LED's - red light color
- R1 - 8 LED's - red light color
- S1 - 8 LED's - red light color
- 2a - 6 LED's - amber light color
- L - 3 LED's - white light color
- potting compound epoxy resin

FT- 270 LED left lamp view (right lamp is a mirror)
only horizontal assembly

↑ top
of
vehicle

forward
driving
direction
→



connection of LED's in function circuits:

- R1 - 2 sections a 4 serial connected LED
- S1 - 2 sections a 4 serial connected LED
- 2a - 2 sections a 3 serial connected LED
- F1 - 2 sections a 4 serial connected LED
- AR - 2 sections a 3 serial connected LED

LED section a 3 serial connected LED

IDIADA PC20020151

FRISTOM

spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Ścieienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341640907
reprezentant i dystrybutor FRISTOM sp. z o.o.

Type

FRISTON Spółka z ograniczoną odpowiedzialnością Sp.K.
86-014 Ścienko / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41

FT-270 LED - rear multifunction lamp EXT1

Material used in
manufacturing :

- lampshade PC transparent clear
- colimator AR PMMA transparent clear
- colimator F1 PMMA transparent red
- housing ABS black
- frame ABS black
- lens 2a PMMA transparent amber
- IIIA reflector and F1 lens PMMA transparent red
- registration plate reflector ABS black vacuum metallized
- PCB FR4
- AR - 6 LED's - white light color
- F1 - 8 LED's - red light color
- R1 - 8 LED's - red light color
- S1 - 8 LED's - red light color
- 2a - 6 LED's - amber light color
- L - 3 LED's - white light color
- potting compound epoxy resin

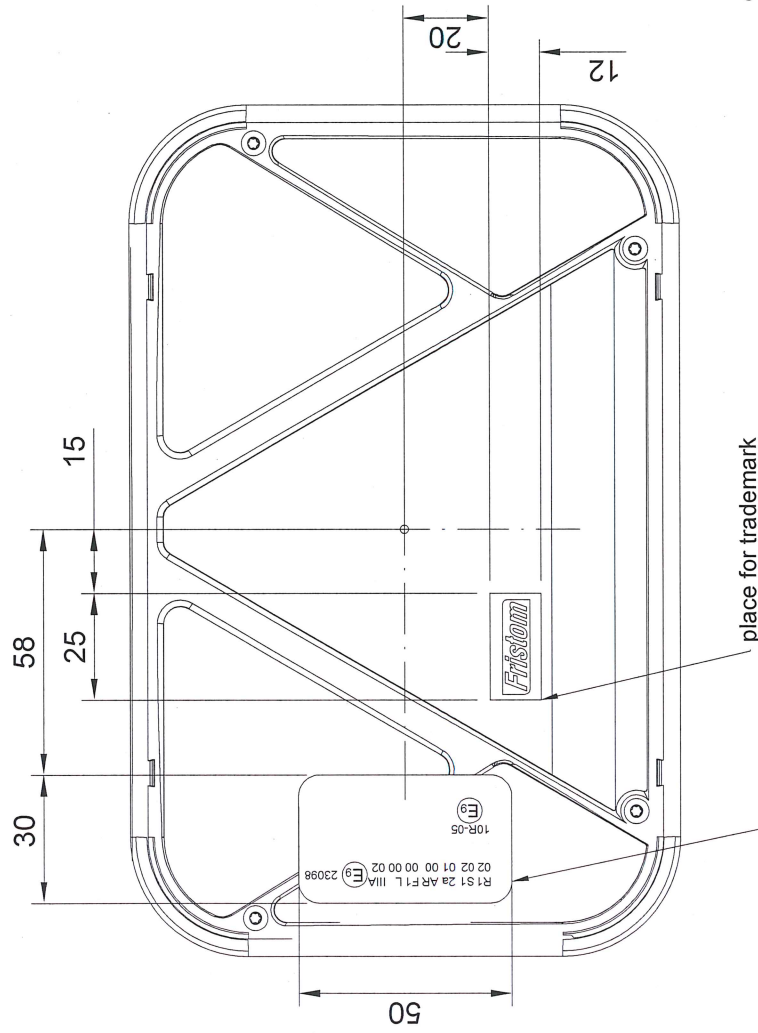
light source

LIGHT SOURCE : LED CHIP SMD chip mounted
 AR - 6 LED's - white light color
 F1 - 8 LED's - red light color
 R1 - 8 LED's - red light color
 S1 - 8 LED's - red light color
 2a - 6 LED's - amber light color
 L - 3 LED's - white light color

| | | |
|-----------------------------------|---------------------------|--------------------------|
| Drawn by: Michał Dybicz | Date: 9-09-2019 | sheet Nr.: 3/6 |
|-----------------------------------|---------------------------|--------------------------|

sheet description

marking of trademark , approvals and electrical parameters
This drawing is a part of the application for approval



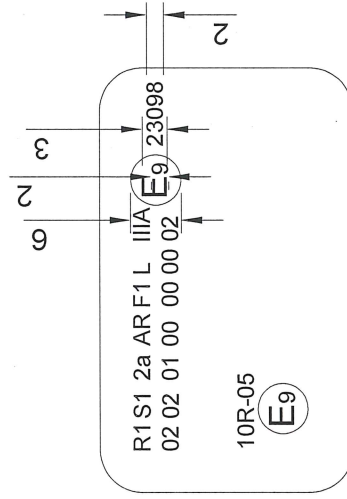
FT-270 LED left lamp rear housing (right lamp is a mirror)
 baionet version

| Electrical parameters | | |
|---|-------------|------------|
| function | current | power |
| 1 ground - (white) | | 12Vdc 1.5W |
| 2 stop light (red) | 12Vdc 0.2A | 12Vdc 2.4W |
| 3 rear fog light (blue or reversing (gray) | 12Vdc 0.2A | 12Vdc 2.4W |
| 4 rear position light + reg plate light (black) | 12Vdc 0.1A | 12Vdc 0.6W |
| 5 rear position light only | 12Vdc 0.05A | 12Vdc 0.6W |
| direction indicator (yellow) | 12Vdc 0.2A | 12Vdc 2.4W |

electrical parameters
on housing rear side

Electrical parameters

| | function | current | power |
|---|--|-------------|------------|
| 1 | ground - (white) | | |
| 2 | stop light (red) | 12Vdc 0.2A | 12Vdc 1.5W |
| 3 | rear fog light (blue) or reversing (grey) | 12Vdc 0.2A | 12Vdc 2.4W |
| 4 | rear position light + reg. plate light (black) | 12Vdc 0.1A | 12Vdc 2.4W |
| | rear position light only | 12Vdc 0.05A | 12Vdc 0.6W |
| 5 | direction indicator (yellow) | 12Vdc 0.2A | 12Vdc 2.4W |



approval marking dimensions:

3 OF 4

approval marking d

Przeznaczona przez KSIĘMIĘ z 2010, PC20020151

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.
86-014 Ścienko / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel : +48 52 340 90 51, Fax: +48 52 327 75 41



| | | |
|-----------------------------------|---------------------------|-------------------------|
| Drawn by: Michał Dybicz | Date: 9-09-2019 | sheet Nr. 4/6 |
|-----------------------------------|---------------------------|-------------------------|

| | |
|-----------------------------------|---------------------------|
| Drawn by: Michał Dybicz | Date: 9-09-2019 |
|-----------------------------------|---------------------------|

4/6
sheet Nr.

Type

FT-270 LED - rear multifunction lamp EXT1

Material used in
manufacturing :

- lampshade PC transparent clear
- collimator AR PMMA transparent clear
- collimator F1 PMMA transparent red
- housing, ABS black
- frame ABS black
- lens Za PMMA transparent amber
- lens Za PMMA transparent red
- IIIA reflector and I lens PMMA transparent red
- registration plate reflector ABS black vacuum metallized
- PCB FR4
- AR - 6 LED's - white light color
- F1 - 8 LED's - red light color
- R1 - 8 LED's - red light color
- S1 - 8 LED's - red light color
- Za - 6 LED's - amber light color
- L - 3 LED's - white light color
- potting compound epoxy resin

sheet description

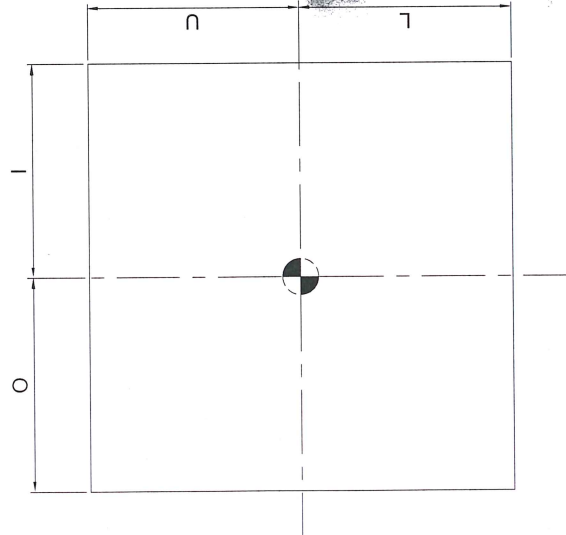
lighting surface

This drawing is a part of the application for approval

light source

LIGHT SOURCE : LED CHIP SMD chip mounted

- AR - 6 LED's - white light color
F1 - 8 LED's - red light color
R1 - 8 LED's - red light color
S1 - 8 LED's - red light color
2a - 6 LED's - amber light color
- 3 LED's - white light color



lighting surface

| lighting surface | | | | |
|------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| function | U (upper limit) [mm] | L (lower limit) [mm] | O (outer limit) [mm] | I (inner limit) [mm] |
| reversing AR | 23 | 23 | 25 | 25 |
| rear fog F1 | 23 | 23 | 25 | 25 |
| rear position R1 | 7,5 | 7,5 | 66 | 66 |
| stop S1 | 44 | 44 | 18,5 | 18,5 |
| direction indicator 2a | 33 | 33 | 36 | 36 |
| reflex reflector IIIA | 58 | 58 | 70 | 70 |

Determining the lower , upper and lateral limits of the illumination surface of the lamp device.

According to European Directive 91/663/EEC , Annex I "Installation of lighting and light-signalling devices" clause 1.9.2.

According to ECE regulation 48/01 "Installation of light and light-signalling devices" clause 2.9.2.

2019

spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Świdnik, ul. Przemysłowa 5
NIP: 554292323 REGON 141664307
reprezentant: [signature]

PC20020151

Manufacturer

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.
86-014 Sicienko / Polska
ul. Przemysłowa 5
NIP: 5542926937, KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



Drawn by: sheet Nr.

Date: 9-09-2019

5/6

Michał Dybicz

Type

FT- 270 LED - rear multifunction lamp EXT1

light source

LIGHT SOURCE : LED CHIP SMD chip mounted
AR - 6 LED 's - white light color
F1 - 8 LED 's - red light color
R1 - 8 LED 's - red light color
S1 - 8 LED 's - red light color
2a - 6 LED 's - amber light color
L - 3 LED 's - white light color

sheet description

variant tradenames

This drawing is a part of the application for approval

Material used in manufacturing :

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- L - 3 LED 's - white light color
- potting compound epoxy resin

| description |
|-----------------------------------|
| FT-270 L NT LED PM |
| FT-270 P NT LED COF |
| FT-270 L NT LED PM Mxx |
| FT-270 P NT LED COF Mxx |
| FT-270 L NT LED PM BAJONET 5 PIN |
| FT-270 P NT LED COF BAJONET 5 PIN |
| FT-270 L TB LED PM |
| FT-270 P TB LED COF |
| FT-270 L TB LED PM Mxx |
| FT-270 P TB LED COF Mxx |
| FT-270 L TB LED PM BAJONET 5 PIN |
| FT-270 P TB LED COF BAJONET 5 PIN |
| FT-270 L NT LED COF |
| FT-270 P NT LED PM |
| FT-270 L NT LED COF Mxx |
| FT-270 P NT LED PM Mxx |
| FT-270 L NT LED COF BAJONET 5 PIN |
| FT-270 P NT LED PM BAJONET 5 PIN |
| FT-270 L TB LED COF |
| FT-270 P TB LED PM |
| FT-270 L TB LED COF Mxx |
| FT-270 P TB LED PM Mxx |
| FT-270 L TB LED COF BAJONET 5 PIN |
| FT-270 P TB LED PM BAJONET 5 PIN |

where x is a digit between 0 and 9

FRISTOM

spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937, REGON 341646907
reprezentowana przez FRISTOM sp. z o.o.

IDIADA

PC20020151

Manufacturer

FRISTOM Spółka z ograniczoną odpowiedzialnością Sp.K.
86-014 Sicienko / Polska
ul. Przemysłowa 5
NIP: 5542926937 KRS: 0000529238
Tel.: +48 52 360 90 51, Fax: +48 52 327 75 41



Drawn by: Michał Dybicz

Date: 9-09-2019

sheet Nr. 6/6

Type

FT- 270 LED - rear multifunction lamp EXT1

light source

LIGHT SOURCE : LED CHIP SMD chip mounted
AR - 6 LED's - white light color
F1 - 8 LED's - red light color
R1 - 8 LED's - red light color
S1 - 8 LED's - red light color
2a - 6 LED's - amber light color
L - 3 LED's - white light color

sheet description

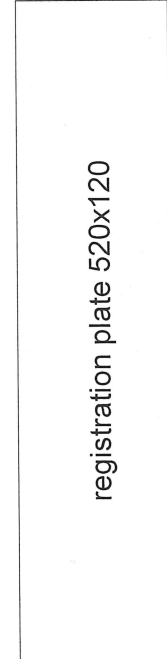
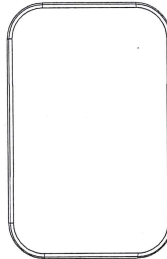
positioning of registration plate light

This drawing is a part of the application for approval

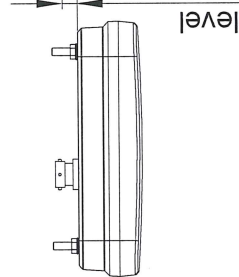
Material used in manufacturing :

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- L - 3 LED's - white light color
- potting compound epoxy resin

distance



registration plate 520x120



level

| lamp level [mm] | distance [mm] |
|-----------------|---------------|
| 4 | 26 |
| 8 | 50 |
| 14 | 100 |
| 28 | 200 |

FRISTOM

spółka z ograniczoną odpowiedzialnością Sp.k.
86-014 Sicienko, ul. Przemysłowa 5
NIP: 5542926937 REGON 341643907
reprezentowana przez FRISTOM sp. z o.o.

DIADA

PC20020151