



**PW2 150 000 12 (12V)**  
**PW2 150 000 13 (24V)**

**Fischio Pneumatico Omologato**  
(Trombe per imbarcazioni da 12m a 20m)

**Approved Pneumatic Whistle**  
(Marine Horns for vessels between 12m to 20m in length)





## Fischio Pneumatico 12V/24V

Tromba Nautica per imbarcazioni da 12m a 20m

Codice  
150 000 12 (12V)  
150 000 13 (24V)

### DESCRIZIONE DEL PRODOTTO

Avvisatore sonoro omologato completo di tromba  $\varnothing$ 200mm verniciata bianca, compressore elettrico e accessori di montaggio. Omologazione RINA, LLOYD'S REGISTER MCA e BUREAU VERITAS in accordo alle norme internazionali COLREG 1972 IMO classe IV.

### DATI TECNICI

TIPO	CODICE	V	A	dB (1/3 OCT.)(1m)	Hz	DIMENSIONI (mm)	PEZZI PER CARTONE
PW2	150 000 12	12	20	123	630	460x200	1
PW2	150 000 13	24	10	123	630	460x200	1

### ISTRUZIONI PER L'INSTALLAZIONE DEL FISCHIO

- 1. Montare la tromba inclinandola leggermente verso il basso (5°) per evitare il ristagno d'acqua all'interno del cono.**
- Collegare il gruppo altoparlante al compressore attraverso il tubo rilsan ed utilizzando gli accessori del kit come da schema allegato.
- Montare il lubrificatore come da sequenza fotografica.
- Fissare il compressore ad un piano con delle viti M5. Utilizzare gli appositi antivibranti in gomma in modo da evitare le vibrazioni durante il funzionamento.
- Collegare il pulsante di azionamento in serie al cavo rosso. Sul medesimo cavo è stato montato un fusibile lamellare.
- Collegare l'estremo del cavo rosso al polo positivo della batteria (+) e l'estremo del cavo nero al polo negativo della batteria (-).

### DATI TECNICI ELETTRICI

Fusibile lamellare (40A a 12V e 30A a 24V)

Pulsante di azionamento fornito

#### Sezione dei cavi:

Per collegamenti alla batteria fino a 5 metri: 2,5 mmq per 24V  
4,0 mmq per 12V

Per collegamenti alla batteria fino a 10 metri: 4,0 mmq per 24V  
6,0 mmq per 12V

### RISOLUZIONE DI PROBLEMI

Nel caso di mancato funzionamento del sistema procedere come segue :

1. Verificare la continuità del fusibile ed eventualmente sostituirlo.
2. Verificare che il lubrificatore sia regolato correttamente. Una eccessiva lubrificazione può far arrivare l'olio con le sue impurità alla membrana bloccandone il funzionamento. In tal caso bisogna smontare la tromba, pulire le membrane, e rimontare il tutto.
3. Piccoli corpi solidi come ad esempio limatura di metallo possono causare lo stesso inconveniente. In tal caso procedere alla pulizia come detto precedentemente.
4. Una eccessiva lubrificazione comporta un intasamento del compressore e del tubo di collegamento compressore-tromba. In tale caso scollegare il tubo dalla tromba e far girare a vuoto il compressore in modo da eliminare l'olio in eccesso.

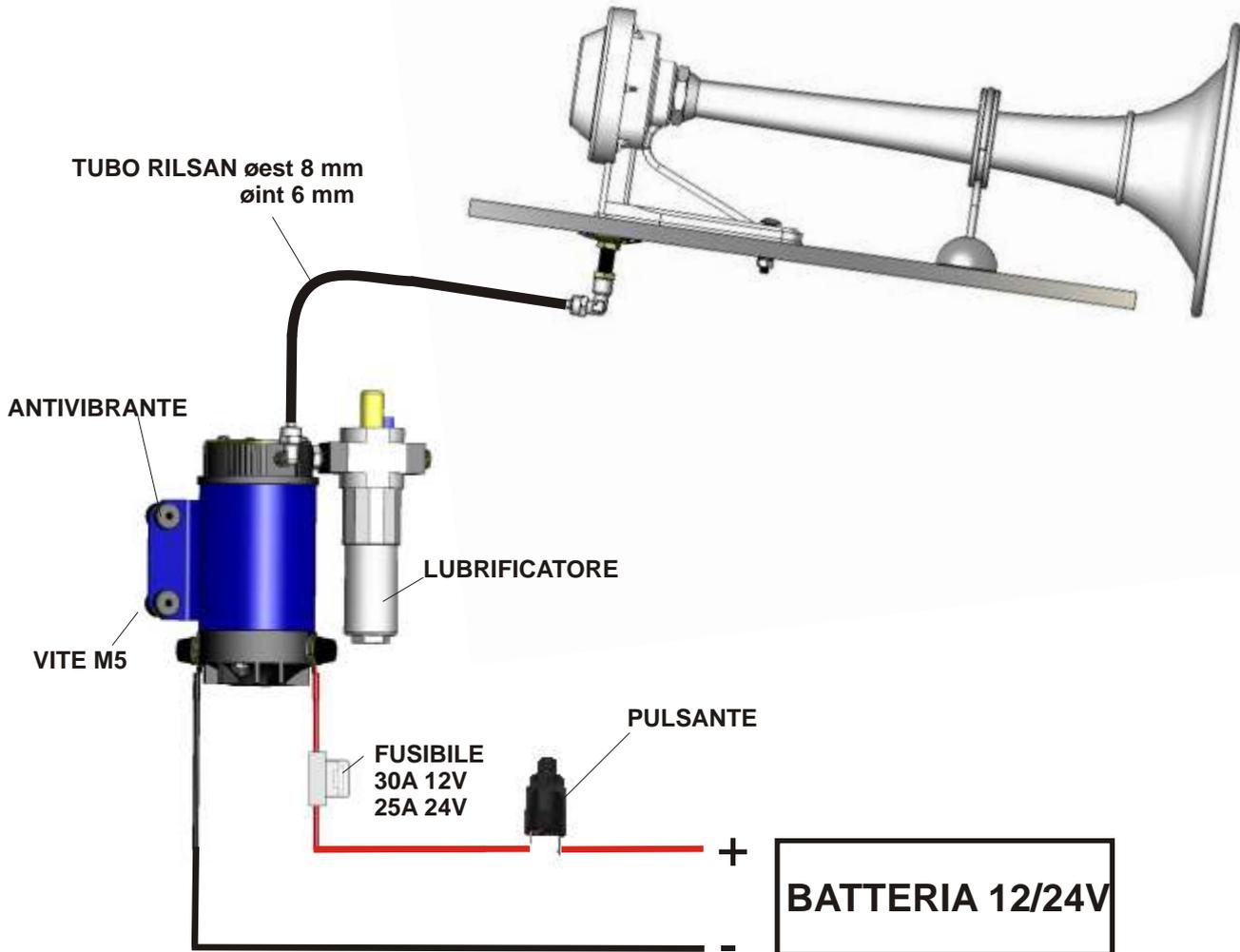
## ATTENZIONE

All' interno della tromba sono montate due membrane in sequenza ordinata. In caso di apertura, e successiva manutenzione, rimontare le stesse rispettando l'ordine come segue da esploso.

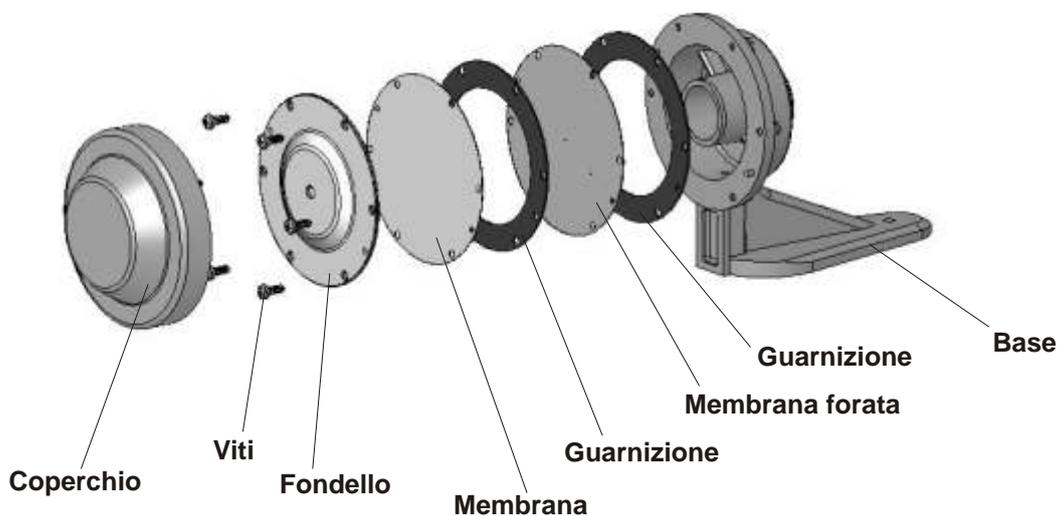
Il coperchio posteriore è applicato a pressione.

Per il fissaggio della tromba vengono forniti due tubi filettati in due diverse misure. Nella necessità di utilizzare un tubo ancora più corto, tagliare l'asta filettata e pulire accuratamente in modo da eliminare qualsiasi residuo di metallo prima di avvitare sul gruppo altoparlante.

## SCHEMA DI COLLEGAMENTO



## SEQUENZA DI MONTAGGIO MEMBRANE



## SEQUENZA DI MONTAGGIO DEL LUBRIFICATORE



## REGOLAZIONE LUBRIFICATORE



La regolazione della lubrificazione avviene agendo su questa piccola vite. Svitando la vite in ottone con un cacciavite a taglio, aumenta il flusso di olio ed aumenta di conseguenza la lubrificazione delle membrane.

Avvitando la vite diminuisce il flusso di olio e diminuisce conseguentemente la lubrificazione delle membrane.

Per il riempimento utilizzare l'olio in dotazione. Gli altri riempimenti dovranno essere effettuati utilizzando olio specifico per lubrificatori o, in alternativa, olio tipo ISO VS32, oppure olio automobilistico SAE 30.

## GARANZIA

- 1) Il periodo di garanzia è di 2 anni dalla data d'acquisto come risulta dalla relativa fattura.
- 2) Nel caso la fattura non fosse disponibile il periodo di garanzia di 2 anni, sarà calcolato dalla data di fabbricazione.
- 3) La garanzia decade e s'intende nulla in caso d'utilizzazione non corretta o nel caso venissero ignorate le istruzioni contenute nel presente manuale.
- 4) La garanzia copre solamente i difetti di fabbricazione.
- 5) La garanzia non copre i costi connessi di installazione e smontaggio.
- 6) I costi di trasporto sono rimborsabili solo nel caso in cui la garanzia è stata debitamente riconosciuta e accettata da Marco S.p.A. Questi costi saranno limitati ai costi di spedizione tra il magazzino di Marco S.p.A. e la sede del cliente.
- 7) Nessuna nota di credito o reso sarà emessa prima di un test eseguito dal controllo di qualità di Marco S.p.A. che dichiari difettoso il prodotto.



## Pneumatic Whistle 12V/24V

Marine Horns for vessels between  
12m to 20m in length

Code

150 000 12 (12V)  
150 000 13 (24V)

### PRODUCT DESCRIPTION

Approved signalling whistle complete with white painted horn  $\varnothing$ 200 mm, with electric compressor and mounting accessories. Meets COLREG 1972 IMO class IV regulations. Approvals. RINA, LLOYD'S REGISTER MCA and BUREAU VERITAS.

### TECHNICAL DATA

TYPE	PART NUMBER	V	A	dB (1/3 OCT.)(1m)	Hz	DIMENSIONS (mm)	PCS. X CARTON
PW2	150 000 12	12	20	123	630	460x200	1
PW2	150 000 13	24	10	123	630	460x200	1

### INSTALLING INSTRUCTION OF THE WHISTLE

1. **Install the horn angled slightly downward (5°) in order to avoid the water stagnation within the cone.**
2. Connect the loudspeaker to the compressor through the Rilsan pipe utilizing the accessories of the kit, see the layout attached.
3. Install the oil container as shown in the photographic sequence.
4. Fix the compressor to a flat surface using M5 screws. Use the rubber vibration-damping in order to avoid any vibrations during the execution.
5. Connect in series the service switch to the red cable. On the same cable a lamellar fuse has been installed.
6. Connect the extreme part of the red cable to the positive pole of the battery (+) and the extreme part of the black cable to the negative pole of the battery (-).

### ELECTRICAL TECHNICAL DATA

Lamellar fuse (40A at 12V and 30A at 24V)

Service switch supplied

#### Section of cables:

For connections to the battery up to 5 meters : 2,5 mmq per 24V

4,0 mmq per 12V

For the connections to the battery up to 10 meters: 4,0 mmq per 24V

6,0 mmq per 12V

### PROBLEM RESOLUTIONS

In the case of a system malfunction proceed as follows :

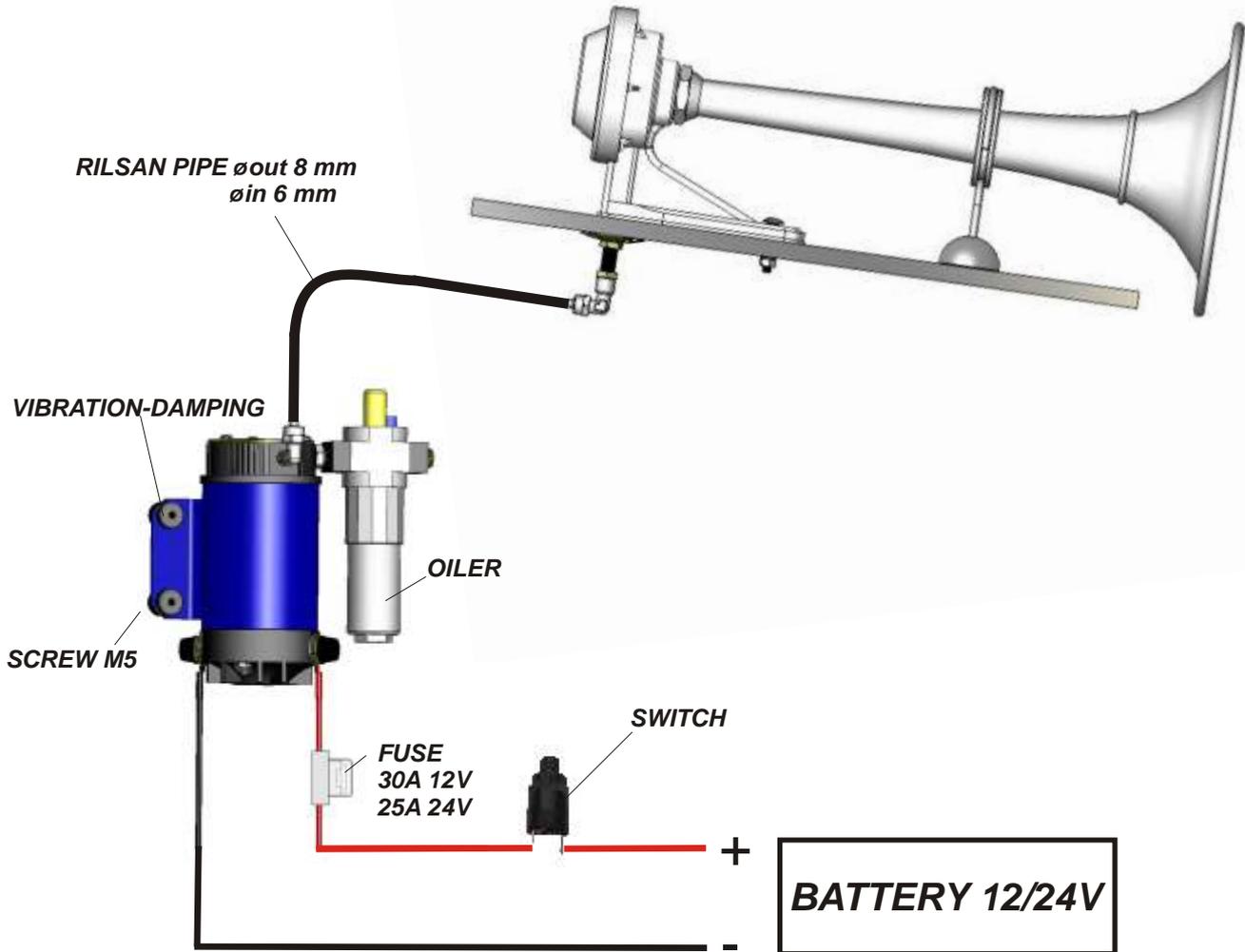
1. Check the continuity of the fuse and eventually change it.
2. Check that the oil container is set correctly. If there is an excessive amount of oil, its impurities can reach the membrane blocking the normal performance of the whistle. In this case dismantle the horn, clean the membranes and re-assemble.
3. Small solid bodies such as filings of metal can cause the same problem . In this case clean the membranes as said above.
4. Excessive lubrication causes a stoppage of the compressor and of the pipe which connects the compressor with the horn. In this case disconnect the pipe from the horn and run dry the compressor to dispose of the excess lubrication.

## WARNING

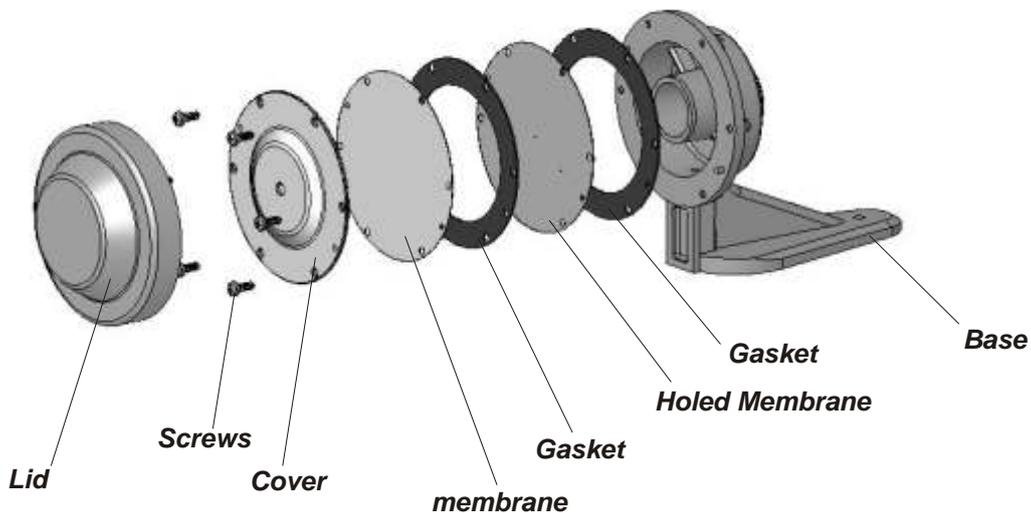
Within the horn, two membranes have been installed in sequence. Whenever the whistle has been opened to clean the membranes it has to be reassemble following the drawing quoted underneath. The lid, which closes the horn, is pressured.

To fix the horn two threaded pipes are supplied in two different measurements. Cut part of the pipe off if shorter piped is required. Make sure to clean the pipe properly afterwards in order to eliminate any metal remains. Thereafter tighten it to the base of the loudspeaker.

## CONNECTION LAYOUT



## MEMBRANE ASSEMBLING SEQUENCE



## OILER ASSEMBLING SEQUENCE



## OILER REGULATION



The lubrication is regulated by means of this small screw. Unscrewing the brass screw, using a screwdriver increases the oil flow and consequently the lubrication of the membranes. While screwing the brass screw, decreases the oil flow and therefore the lubrication of the membranes is reduced. For the first time filling use the oil supplied in the kit. For future refilling use lubricator specific oils or, alternately, ISO VS32 type oil or SAE 30 automotive oil.

## WARRANTY

- 1) The Warranty period is 2 years from date of purchase on production of the appropriate sales invoice.
- 2) Should the original sales invoice not be available, then the 2 year warranty period will be valid from date of production.
- 3) The Warranty becomes null and void in the case of incorrect utilization or disregard of the instructions contained herein.
- 4) The Warranty only covers original production defects.
- 5) The Warranty does not cover any related installation costs involved.
- 6) Transport costs are refundable only in the case where warranty has been duly recognized and accepted by Marco Spa. These costs will be limited to the actual shipment costs between Marco Spa warehouse and the client's delivery address.
- 7) No credit notes or replacement items will be issued prior to the receipt and proper testing of any Marco goods that are deemed faulty.

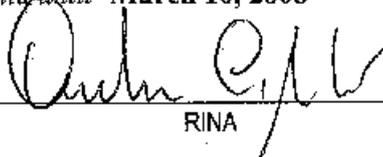
**TYPE APPROVAL CERTIFICATE**  
No. ELE87903CS/2



**This is to certify** that the product below is found to be in compliance with the applicable requirement of the RINA type approval system.

<i>Description</i>	<b>SHIP'S WHISTLE</b>
<i>Type</i>	<b>5.412/S</b>
<i>Applicant</i>	<b>MARCO SPA VIA MAMELI 28 25014 CASTENEDOLO (BS) ITALIA</b>
<i>Manufacturer</i>	<b>MARCO SPA</b>
<i>Place of manufacture</i>	<b>VIA MAMELI 28 25014 CASTENEDOLO (BS) ITALIA</b>
<i>Reference standards</i>	<b>International Regulations for preventing collisions at sea, 1972 referred to Italian Law 27th December 1977 no. 1085.</b>

*Issued in* **Genova** on **March 10, 2003**. *This Certificate is valid until* **March 10, 2008**

  
\_\_\_\_\_  
RINA

**Andrea Cogliolo**

This certificate consists of this page and 1 enclosure





**TYPE APPROVAL CERTIFICATE**

No. **ELE87903CS/2**

Enclosure - Page 1 of 1  
**5.412/S**

**Reference documents**

Drawing no. 5.412/S stamped by RINA on 13 April 1988.

**Field of application**

Vessels L < 20 metres in length.

**Feeder**

Compressed air.

Air pressure supply : from 0,152 to 0,304 MPa.

**Remarks**

The present certificate annuls and supersedes the previous no. ELE/35398/2 dated 03 April 1998.

Genova March 10, 2003



**DESIGN APPRAISAL DOCUMENT**

Date 11 April 2003	Quote this reference on all future communications MSG/STAT/TA/SCM
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**ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. MCA 0300010**

The undernoted documents have been appraised for compliance with the relevant International Conventions and UK legislation for the Type Approval of Marine Equipment for use on Merchant Ships Registered in the United Kingdom.

This Design Appraisal Document forms part of the Certificate that is issued under the authority given in the MCA Merchant Shipping Notice No M 1645.

**APPROVAL DOCUMENTATION**

Marco SpA Drawing:-

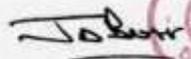
<u>Drawing No.</u>	<u>Title</u>
5.412/S ® Assembly	Fischio®

**TEST REPORTS**

City University of London, Department of Mechanical Engineering Report dated 22 August 1989.

**CONDITIONS OF CERTIFICATION**

1. A quality control system shall be maintained to ensure compliance with SOLAS Regulation III/5.
2. Production tests are to be conducted by the manufacturer to the requirements of IMO and/or the National Administration if specified, if not to LR requirements which shall be identical to those of the UK MCA in force at the time.
3. Should the requirements to the specified standard be amended during the validity of this certificate, the equipment is to be re-approved prior to it being supplied to vessels to which the amended requirements apply.
4. Positioning and installation is to comply with the requirements of sub-paragraph (e) of the specified standards on page 1 of this certificate.
5. For compliance with the performance requirements of the specified standard, the whistle is to be connected to an air supply capable of maintaining at least 1.5 bar and let not more than 3.0 bar.
6. The 5.412-S type whistle is approved for use only on vessels with an overall length of less than 20 metres.



Captain J. D. Burr  
Principal Surveyor  
Dry Cargo Ship  
Statutory Marine Support Group



**MARINE DIVISION**  
17 Bis Place des Reflets - La Défense 2  
92400 Courbevoie - France  
Tel. 33 1 42 91 53 48  
Fax 33 1 42 91 28 94



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Certificate N°:

14450/A0 BV

The attached Schedule forms part of the certificate

File Number : NAV 39/1469/02

Product Code : 4005D

**BUREAU  
VERITAS**

## CERTIFICATE OF TYPE APPROVAL

*This is to certify that the product identified below was found to be in compliance with the relevant hereunder stated Regulations & standards*

### SHIP'S SOUND SIGNALS (WHISTLES)

5412/S Whistle and 5413 Whistle

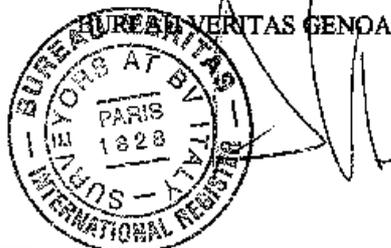
MANUFACTURED BY:

**MARCO SpA**  
Brescia - ITALY

SPECIFIED REGULATIONS & STANDARDS :

COLREG 1972, as amended by IMO Resolution A.910(22), IMO Resolution A.694(17) - IEC 60945 (1996).

**The Approval is valid until : 31/01/2010**



At Paris la Défense, on : 31/01/2005

**J. BENOIT**  
For the Secretary

This Certificate remains valid until the date stated on, hereunder, unless cancelled or revoked, provided the conditions in the attached schedule are complied with and the equipment remains satisfactory into service.

This Certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested.

This Certificate is not valid without the stamp of the above mentioned BUREAU VERITAS Inspection Center.

The manufacturer should notify BUREAU VERITAS of any modification or changes to the equipment in order to obtain a valid Certificate.

The latest published Regulations or Standards referred to, above, and the Marine Division General Conditions are applicable.



**BUREAU  
VERITAS**  
MARINE DIVISION

File Number : NAV 39/1469/02

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION :

SHIP's Sound Signals (Whistles)

#### Specifications:

Types	Frequency	Sound pressure level (1 m)	Lenght of vessels
Air whistle type 5412/S	630 Hz	123dB	< 20 m
Air whistle type 5413	630 Hz	132dB	20 = < L < 75 mm

### 2. DESIGN DRAWINGS and/or SPECIFICATIONS

- According to Manufacturer's specifications filed in NAV 39/1469/02.

### 3. TYPE TEST REPORTS / LABORATORY RECOGNITION STATUS

#### Items 5412/S

- Department of Trade Marine Directorate Certificate of Inspection and Tests.
- EMIT Vibration test report RP 712 FIA 86.
- City University London report on measurement sound output.

#### Items 5413

- Department of Trade Marine Directorate Certificate of Inspection and Tests.
- City University London report on measurement sound output.

### 4. MATERIALS and/or COMPONENTS REQUIRED TO BE TYPE APPROVED

Nil.

### 5. OTHER MATERIALS and/or COMPONENTS

Nil.

### 6. APPLICATION / LIMITATION OF USE

Air whistle type 5412/S vessels < 20 m in lenght  
Air whistle type 5412 vessels 20 = < L < 75 m in lenght

### 7. PRODUCTION SURVEY REQUIREMENTS

7.1 - Arrangements shall be made for a Society's Surveyor to carry out, on a periodic basis, visits of the Manufacturer's premises and product audits.

7.2 - Each equipment is to be supplied with manual(s) for installation, use and maintenance.

### 8. ON BOARD INSTALLATION & MAINTENANCE REQUIREMENTS

According to the specified regulations and standard stated on the front page of the certificate.



**9. MARKING FOR IDENTIFICATION**

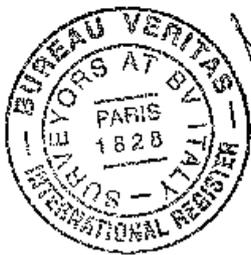
- Maker's name or trade mark,
- Serial number of the units,
- Equipment type number or model identification under which it was type-tested.

**10. OTHERS**

This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the Whistles at any time and that **MARCO SpA, 25014 Castenedolo (BS) - Italia**, will accept full responsibility for informing shipbuilders, shipowners or their sub-contractors of the proper methods of use and general maintenance of the units and the conditions of this approval.

**\*\*\* Last page (End of Document) \*\*\***

BUREAU VERITAS GENOVA



*[Handwritten signature]*

Per ulteriori informazioni vedere sito internet - [www.marco.it](http://www.marco.it)  
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For further information visit the web site - [www.marco.it](http://www.marco.it)  
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