37
Nautical Equipment

Signal Bells

Campanas de Señales　号鐘　船钟

Made of cast brass with a highly polished finish. The size is determined by measuring the bell mouth opening. The required size is over 300 mm diameter for the vessels of length greater than 20 mtr.

37 01 01	Bell, signal, cast brass	200 mm	Pc.
02	"	300 mm	"
03	"	400 mm	"

Air Horns

Bocinas de Aire (Niebla)
エアーホーン　汽笛

Required installation under the international regulations for preventing collisions at sea,1972 (COLREGs). The fundamental frequency of the horns shall be between 130 – 350 Hz for a vessel greater than 75 mtrs but less than 200 mtrs in length, and 70 – 200 Hz for a vessel 200 mtrs or more in length.

Manually operated and electromagnetic types are available.

How to order: CODE

Air horn, for vessels of 75 – 200 mtr in length, LENGTH of VESSEL, TYPE of OPERATION

Unit Per Set

CODE	Fundamental Frequency	Sound Level	Power Source	Size mm		Weight kg
				Length	Horn Dia	
Hull Length: from 75 mtr to 200 mtr						
37 01 85 **86** **87**	135 Hz	138 dB	AC 100V 1P AC 220V 1P DC 24V	1,127	580	32.0
37 01 88 **89** **90**	165 Hz	138 dB	AC 100V 1P AC 220V 1P DC 24V	963	580	31.0
37 01 91 **92** **93**	200 Hz	138 dB	AC 100V 1P AC 220V 1P DC 24V	655	240	19.5
Hull Length: more than 200 mtr						
37 01 95 **96** **97**	128 Hz	143 dB	AC 100V 1P AC 220V 1P DC 24V	1,215	580	40.0

Handheld Marine Radios

Radios Portátiles Marinos
携帯型双方向無線電話装置　船用对讲机

A compact, lightweight, handheld marine transceiver providing full communications capabilities aboard large commercial vessels. For use in the pilothouse, on deck during operations, or at the head of the tow.

Unit Per Set

CODE	37 01 34	37 01 31
Model	DT844 (VHF)	DT885FF (UHF)
Frequency Range	156-163 MHz	450 - 470 MHz
Channels	INT/USA/CAN mode plus private	Marine UHF
Channel Spacing	25 kHz	6.25 KHz /12.5 kHz / 25 kHz
Battery Type	1,800 mAh Li-ion battery pack	
Power Supply Voltage	7.4 VDC	
Duty Cycle (5/5/90)	10 hours (Analogue)	14 hours (Analogue) 17 hours (DMR)
Approval	ATEX II 2G Ex ib IIB T4 Gb	
Water Ingress	IP68 2 metres, 4 hours submersible	
Size (W × H × D)	60 x 138 x 38 mm	
Weight	435 grm with battery and aerial	
Transmitter:		
Power Output	High - 3.9W, Low - 1W	2W
Modulation Limiting	±5.0 KHz	±5.0 KHz /±2.5 KHz
Receiver:		
Digital Sensitivity	-	-116 dBm (0.2 uV) for 5% BER
Analogue Sensitivity	-120 dBm (0.2 uV) for 12dB SINAD	-116 dBm (0.2 uV) for 12dB SINAD
Audio Output	1W	
Standard Accessories	*Li-ion battery pack *Drop in charger *Spring loaded belt clip *High efficiency antenna *Quick start user guide	

Battery Chargers for Handheld Marine Radio

Cargadores de Batería para Radio Portátil Marino
無線電話用充電機　对讲机备用电池

Battery charger operates between 110-230V, charge time is approximately 3 hours. Please specify the manufacturer and model when ordering.

37 01 19	Battery chargers for Handheld Marine Radio	Pc.

Two-way VHF Radiotelephone Apparatus

Aparaatos de Radiotelefonía VHF, de Doble-vía
双方向 VHF 無線電話装置　双向 VHF 无线电话装置

According to the 1983 amendment to the SOLAS regulations 1974 in Chapter III Regulation 6, at least 3 two-way radiotelephones shall be provided on every cargo ship of 500 gross tons or more. The two-way radiotelephone enables communication between the survival craft, the ship, and the rescue boat.

Precautions shall be taken to prevent the inadvertent selection of VHF channel 16 on equipment capable of being operated on that frequency. A watertight model is required for satisfying GMDSS requirements (1988 amendment).

Specifications for Reference

Frequency Range	VHF 156.750 - 156.850 MHz
Size & Weight	165 × 64 × 45.5 mm, 600 grm

37 01 33	Two-way VHF radiotelephone conforms to GMDSS	Pc.

Battery Chargers

for GMDSS VHF Two-way Radiotelephone

Cargadores de Batería para Radiotelefonía de Doble-vía GMDSS VHF

GMDSS 無線電話用充電機　电池充电器

37 01 35	Battery charger for two-way radiotelephone GMDSS AC 110V	Pc.
36	AC 220V	"

Guidance of Frequency Range

Frequency	Range
HF (High Frequency)	3 - 30 MHz
VHF (Very High Frequency)	30 - 300 MHz
UHF (Ultra High Frequency)	300 - 3,000 MHz

Handheld Marine Radios Intrinsically Safe – USTC Certified

Radios Marinos Portátiles Intrinsecamente Seguros

防爆型無線電話裝置

防爆型掌上無線通訊器 USTC 認證

Intrinsically safe radio conforms to all aspect of USTC (U.S. Testing Company) certification for portable used in hazardous locations. If further exceeds this by being fully submersible to 5 meters depth for up to one hour. Meeting MIL STD 810C/D/E rating for tough, enduring performance, the radio conforms to stringent standards, enabling it to withstand the everyday rigorous of shock, vibration and the corrosive action of dust and moisture, ensuring of many years of trouble-free use even in a salt water environment. Very simple to use, with the majority of its features accessed by a single key depression. Latest compandor noise reduction technology delivers loud and crisp audio no matter what environment you are in.

Unit Per Set

CODE	**37 01 15**	**37 01 16**
Model	DX544-IS VHF	DX585M-IS UHF
Protection	Intrinsically safe	
Frequency Range	156 – 163 MHz	450-470 MHz
Channels	INT/USA/CAN mode plus private	99 Channel
Channel Spacing	25 KHz	25 KHz /12.5 KHz
Battery Pack	CNB450E-IS 2,200 mAh Lithium-ion	
Water Ingress	IP68 2 metres, 4 hours submersible	
Size mm	H97 × W59.5 × D37	
Weight grm	269	269
Approval	Intrinsically Safe Certified to UL913 by SGS: - ANSI/UL913 5th Ed - Class I, II, III, Division 1, Groups C-G, T3 - Class I, Division 2, Groups A-D	

(to be continued)

Accessories	*Li-ion battery pack *Drop in charger *Spring loaded belt clip *High efficiency antenna *Quick start user guide
Name of Mfr.	Entel UK Ltd.

Intrinsically Safe Marine UHF Transceivers

400MHz 2W Waterproof

Transmisores navales UHF intrínsecamente seguros

本質安全防爆適合型舶用 UHF トランシーバー

本质安全防爆适用型船用 UHF 收发器

The Maritime Safety Committee (MSC) adopted the following amendment to SOLAS regulation II-2/10 regarding fire fighters' communication: "For ships constructed on or after 1 July 2014, a minimum of two two-way portable radiotelephone apparatus for each fire party for fire-fighter's communication shall be carried on board. Those two-way portable radiotelephone apparatus shall be of an explosion-proof type or intrinsically safe. Ships constructed before 1 July 2014 shall comply with the requirements of this paragraph not later than the first survey after 1 July 2018."

The JHS-431 is a 2 Watt UHF intrinsically safe transceiver designed for on-board communications in ship operations, loading/unloading, and mooring. The JHS-431's intrinsically safe structure meets ATEX Directive 94/9/EC for use when transporting flammable, dangerous materials by Tanker, LPG carrier, LNG carrier and/or LO carrier, and meets above SOLAS amendment by MSC.

3 more communication channels can be installed as a pre-set option.

Unit Per Pc.

CODE	**37 01 17**
Model	JHS-431
Frequencies	CH1 457.525MHz OP1 467.525MHz CH2 457.550MHz OP2 467.550MHz CH3 457.575MHz OP3 467.575MHz
Emission Type	F3E
Output Power	2W (Low : 0.2W)
Tone Squelch	Up to 2 frequencies
Battery	Li-ion battery (7.4V DC, 1,850 mAh)
Protection Rate	IP67
Intrinsically Safe	ATEX Directive 94/9/EC Gas: II2GD Ex ib IIA T3 Dust:II2GD Ex tD A21 T160°C
Antenna Impedance	50Ω unbalanced
Dimensions	Body: W62.5 x D36.4 x H97.7 mm Antenna: L 174 mm
Weight	285 grm
Standard Accessories	1 each Battery pack, Instruction manual and Inspection data

Name of Mfr.: Japan Radio Co., Ltd.

Communication Systems

Sistema de Comunicación a Manos Libres
ヘッドバンド式通信システム　頭帯式通訊系統

L'COM Communication

L'COM Comunicación
L'COM コミュニケーション
L' COM 通讯公司

Communication is getting difficult in a noisiness area

The MSA L'COM Communication system is a complete module with headband system for wearing without helmet.

- 2 x 32 Ω speakers in parallel, max power 100 mW.
- 100Hz-10 kHz electro-dynamic microphone.
- Omnidirectionnal microphone.
- Position of speaker and microphone close to ear, ear remain free.
- Loud and clear communication is possible.

Connection with a wide range of brand and types of radios is possible.

37 01 45	Communication system, headband type, L'com communication (specify brand and type of radio in use)	Set

Name of Mfr.: MSA The Safety Company

Micro Communication

Microcomunicación　マイクロ・コミュニケーション　微型通信

The MSA Micro Communication system is a complete module with clip in system for wearing with helmet in combination with or without full face mask.

<Basic Specifications>
- 32 Ω speaker [one speaker], max power 100 mW.
- Connection in the helmet close to ear [Left or right].
- Possibility to adapt a pouch for use without helmet.

MICRO Built-in Microphone

MICRO Micrófono incorporado
MICRO 内蔵マイク　内置麦克风

- Module integrating both Loudspeaker and electret Microphone.
- 50 Hz-12 kHz electro-dynamic microphone.
- Omnidirectional microphone.

MICRO External Microphone

MICRO Micrófono externo
MICRO 外部マイク　MICRO 外置麦克风

- Module integrating Loudspeaker and external microphone [with flexible arm].
- 50 Hz-12 kHz canceling noise boom microphone.

Connection with a wide range of brand and types of radios is possible.

37 01 49	Communication System, helmet mounted type, Micro built-in microphone (specify brand and type of radio in use)	Set

(to be continued)

37 01 50	Communication System, helmet mounted type, Micro external microphone (specify brand and type of radio in use)	Set

Name of Mfr.: MSA The Safety Company

Osteo Communication

Osteo Comunicación
オステオ・コミュニケーション　Osteo 通信

By simultaneous use of a SCBA and a radio, communication is getting difficult in a noisiness area.
The MSA Osteo Communication system is a complete module with headband system for wearing with helmet in combination with or without full face mask.

- Module integrating loudspeaker.
- 32 Ω speaker (one speaker), max power 100 mW.
- Bone conductive microphone, accelerometer 1 mV/mG.
- Bandwidth 20 Hz to 20 kHz.
- Voice transmission by skull vibration.
- Connection in the helmet close to ear (Left or right) for the speaker module and attachment to the cradle net for the Bone microphone.
- Possibility to adapt a pouch for use without helmet.
- Loud and clear communication is possible.

Connection with a wide range of brand and types of radios is possible.

37 01 46	Communication System: helmet mounted type, Osteo communication (specify brand and type of radio in use)	Set

Name of Mfr.: MSA The Safety Company

Ear Muffs with Communication

Casco Auricular para la Comunicacón
通信機能付きイアーマフ　附通訊功能耳機

Highly efficient ear muffs for protection of loud noises of all pitches in factories and areas where air compressors and turbines are used. The challenge is to balance personal attenuation devices with comfort and the ability of communication, so that workers will wear their hearing protectors all the time.

MSA Sordin's Connected by Cable is a comfortable hearing protection line equipped with a noise cancelling microphone and a down lead for connection to a two-way radio.

Product features:
- Can be connected to mobile phones in combination with a separate adapter. Supplied with a 2.5 mm stereo plug.
- Also available for direct connection to communication radios such as Motorola, Kenwood, Icom, etc. and DECT phones.
- Noise cancelling boom microphone permits two-way communication with minimal interference from background noise.
- All electronic features are controlled using three distinct push buttons.
- Certified to EN 352-1 (headband version).
- Certified to EN 352-3 (helm mounted version).
- SNR 28dBA (headband version), 27dBA (helm mounted version).

Unit Per Pr.

CODE	Description	Colour	Part No.
37 01 47	Headset, model CC with headband SNR 28 - H/M/L 32/26/18	Blue	SOR41000
48	Headset , model CC, Helm mounted version SNR 27 - H/M/L 30/24/17	Blue	SOR41502

Name of Mfr.: MSA The Safety Company

Ship Borne Telephones

Teléfonos Comunicaciones para Buque　船舶用電話機　船用電話機

As a wide range of multi-purpose telephone sets for the marine communication fields are available from different manufacturers, the most common types are listed below.

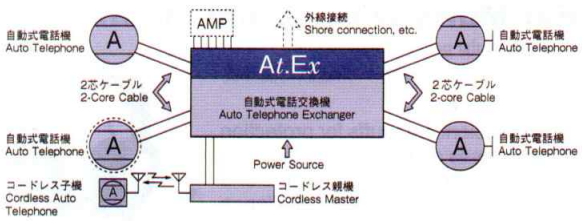
A. Marine Auto Telephones

Teléfonos Automáticos para Buque
船用自動式電話機 船用自動式電話機

These sets are built sturdy based on the design to achieve high reliability while also meeting all the requirements for the marine telephone sets to be connected with the marine electronic telephone exchange.

These telephone sets are designed to be compatible with the DP (Dial Pulse) /PB (Push Button) dials to meet the requirements of the various telephone lines. The received indication (Tone-ring & Lamp) is furnished on all models.

These telephone sets have been granted the approval of the JATE (Japan Approvals Institute for Telecommunication Equipment) standards to allow access, via the marine electronics telephone exchange, to the land line including the via-INMARSAT, cellular marine telephone and shore telephone sets.




Non-water-proof Desk/Wall type


Drip-proof Wall Type


Deck-watertight (IP56) Wall Type


Non-water-proof Built-in Type


Non-water-proof Built-in Type (on Wall)


Drip-proof Portable Type


Deck-watertight (IP55) Flush Type

How to order: CODE

Marine auto telephone, TYPE of TELEPHONE, MODEL

Non-water-proof Desk/Wall Type

No Impermeable Tipo Sobremesa/pPared
非防水卓上 / 壁掛形　不防水台式 / 壁挂式

Unit Per Set

CODE	Model	Noisy Place Use	Round Termi-nal	2-wire (for Independent Line)	Wgt kg
37 21 01	ODA1185-1	-	-	o	0.7
02	ODA1185-1N	o	-	o	0.7

Colour: Ivory White for all models.

Drip-proof Wall Type

Tipo de Pared Antigoteo　防滴壁掛形　防滴水墙型

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Sub Re-ceiver	Head-set	Wgt kg
37 21 05	ODA1310-1	o	-	-	-	1.5
06	ODA1310-1N	o	o	-	-	1.5
07	ODA1310-1SR	o	-	o	-	1.6
08	ODA1310-1SN	o	o	o	-	1.6
09	ODA1310-1H	o	-	-	o	1.5
10	ODA1310-1HN	o	o	-	o	1.5

Colour: N7 for all models.

Deck-watertight (IP56) Wall Type

Hermético a la cubierta (IP56) Tipo de pared
防水壁掛形　地面防水 (IP56) 壁挂式

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg	Remarks
37 21 11	ODA-1385-1N	o	o	3.8	Colour: N3

Non-water-proof Built-in Type

Tipo Empotrado no Estanco
非防水埋込形　非防水内置式

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Illumination with Dial	Wgt kg
37 21 12	ODA-1780-1K	o	-	-	1.4
13	ODA-1780-1NK	o	o	-	1.4
14	ODA-1780-2K	o	-	o	1.5
15	ODA-1780-2NK	o	o	o	1.5

Colour: N3 for all models.

Non-water-proof Built-in Type (on Wall)

No Estanco Tipo Empotrado (en Pared)
非防水埋込形　非防水嵌入式（壁挂式）

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg	Remarks
37 21 16	ODA-1781-1K	o	-	2.3	Colour: N3
17	ODA-1781-1NK	o	o	2.3	

Drip-proof Portable Type

Tipo Portátil Antigoteo　防滴携帯形　防滴手提式

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Headset	Wgt kg
37 21 18	ODA-1980-1K	o	-	-	4.3
19	ODA-1980-1NK	o	o	-	4.3
20	ODA-1980-1HK	o	o	o	4.3

Colour: N3 for all models.

Deck-watertight (IP55) Flush Type

Hermético a la cubierta (IP55) Tipo empotrado

防水埋込形　地面防水（IP55）嵌入式

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kgs	Remarks
37 21 75	ODA-1782-1N	o	o	2.2	Colour: N3

B. Marine Common Battery Telephones

Teléfono Marítimo con Batería Común

船用共電式電話機　船舶用共电式電話

This equipment utilizes the ship's power supply of 24 volts DC to activate the voice communication circuits. With a press of the quick access button, you can communicate with the opposite party.

1. Marine Common Battery Telephones (Direct)

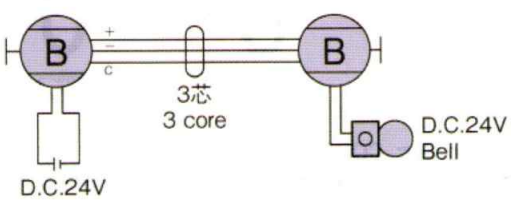
Teléfonos para Buques con Batería

船用共電直通式電話機　船用共电直通式电话机

1) 1:1 Communication system

Sistema de Comunicación　直通電話式　直通電話式

This system is used for the limited communicating purposes between two units. Automatic connection is made when one handset is picked up, and causing the second unit to ring. The received indication (Tone-ring & Lamp) is furnished on all models.

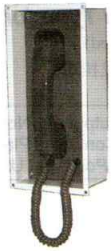


Non-water-proof Desk/Wall type

Drip-proof Wall Type

Non-water-proof Wall Type

Non-water-proof Built-in Type



Non-water-proof Built-in Type (on Wall)

Drip-proof Portable Type

How to order: CODE

Marine community battery telephone, direct, TYPE of TELEPHONE, MODEL

Non-water-proof Desk/Wall Type

No Impermeable Tipo Sobremesa/pPared

非防水卓上 / 壁掛形　不防水台式 / 壁挂式

Unit Per Set

CODE	Model	Output to Contact Point	Noisy Place Use	Wgt kg	Remarks
37 21 21	ODC-2180-1	-	-	0.9	-
22	ODC-2180-1N	-	o	0.9	
23	ODC-2180-1A	o	-	0.9	Wall-mount
24	ODC-2180-1AN	o	o	0.9	

Colour: Ivory white for all models.

Drip-proof Wall Type

Tipo de Pared Antigoteo　防滴壁掛形　防滴水墙型

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Sub Re-ceiver	Head-set	Wgt kg
37 21 25	ODC2310-1	o	-	-	-	1.3
26	ODC2310-1N	o	o	-	-	1.3
27	ODC2310-1SR	o	-	o	-	1.3
28	ODC2310-1SN	o	o	o	-	1.3
29	ODC2310-1H	o	-	-	o	1.3
30	ODC2310-1HN	o	o	-	o	1.3

Colour: N7 for all models.

Non-water-proof Wall Type

No Impermeable Tipo de Pared　非防水壁掛形　非防水壁式

Unit Per Set

CODE	Model	Noisy Place Use	Wgt kg	Remarks
37 21 31	ODC-2381-1	-	0.7	-
32	ODC-2381-1N	o	0.7	
33	ODC-2381-3	-	1.3	With Terminal
34	ODC-2381-3N	o	1.3	

Colour: Ivory white for all models.

Non-water-proof Built-in Type

Tipo Empotrado no Estanco　非防水埋込形　非防水内置式

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg
37 21 35	ODC-2780-1K	o	-	1.4
36	ODC-2780-1NK	o	o	1.4

Colour: N3 for all models.

Non-water-proof Built-in Type (on Wall)

No Estanco Tipo Empotrado (en Pared)
非防水埋込形　非防水嵌入式（壁挂式）

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg	Remarks
37 21 37	ODC-2783-1K	o	-	2.3	Colour:N3
38	ODC-2783-1NK	o	o	2.3	

Drip-proof Portable Type

Tipo Portátil Antigoteo　防滴携帯形　防滴手提式

Unit Per Set

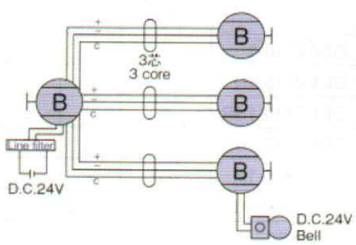
CODE	Model	Output of Contact Point	Noisy Place Use	Headset	Wgt Kg
37 21 39	ODC-2980-1K	o	-	-	4.6
40	ODC-2980-1NK	o	o	-	4.6
41	ODC-2980-1HK	o	-	o	4.6
42	ODC-2980-1HNK	o	o	o	4.6

Colour: N3 for all models.

2) 1:2 and 1:3 Communication systems

Teléfono de Marcación Directa para Padres e Hijos
直通親子式電話機　直拨式亲子电话

Two or three extensions can be connected to a main telephone set. The extension set can be contacted by pressing the push button at the main telephone set. The main set can be contacted by simply lifting the extension handset.



1:2 Master Telephones

Teléfonos Principales　親電話機　主电话


Drip-proof Wall Type


Non-water-proof Built-in Type


Non-water-proof Built-in Type (on Wall)

How to order: CODE

Marine community battery telephone, direct, 1:2, TYPE of TELEPHONE, MODEL

Drip-proof Wall Type

Tipo de Pared Antigoteo　防滴壁掛形　防滴水墙型

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg
37 21 43	ODC2312-1	o	-	1.3
44	ODC2312-1N	o	o	2.6

Colour: N7 for all models

Non-water-proof Built-in Type

Tipo Empotrado no Estanco
非防水埋込形　非防水内置式

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg
37 21 45	ODC-2781-1K	o	-	1.4
46	ODC-2781-1NK	o	o	1.4

Colour: N3 for all models.

Non-water-proof Built-in Type (on Wall)

No Estanco Tipo Empotrado (en Pared)
非防水埋込形　非防水嵌入式（壁挂式）

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg
37 21 47	ODC-2784-1K	o	-	2.3
48	ODC-2784-1NK	o	o	2.3

Colour: N3 for all models.

1:3 Master Telephones

Teléfonos principales　親電話機　主电话


Drip-proof Wall Type


Non-water-proof Built-in Type


Non-water-proof Built-in Type (on Wall)

How to order: CODE

Marine community battery telephone, direct, 1:3, TYPE of TELEPHONE, MODEL

Drip-proof Wall Type

Tipo de Pared Antigoteo　防滴壁掛形　防滴水墙型

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg
37 21 49	ODC2313-1	o	-	1.3
50	ODC2313-1N	o	o	1.3

Colour: N7 for all models

Non-water-proof Built-in Type

Tipo Empotrado no Estanco

非防水埋込形　非防水内置式

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg
37 21 51	ODC-2782-1K	o	-	1.5
52	ODC-2782-1NK	o	o	1.5

Colour: N3 for all models.

Non-water-proof Built-in Type (on Wall)

No Estanco Tipo Empotrado (en Pared)

非防水埋込形　非防水嵌入式（壁挂式）

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Wgt kg
37 21 53	ODC-2785-1K	o	-	2.4
54	ODC-2785-1NK	o	o	2.4

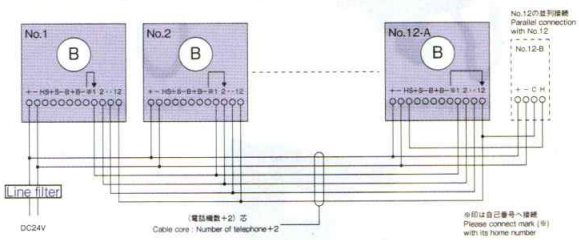
Colour: N3 for all models.

2. Marine Common Battery Telephones (Multi-link)

Teléfonos de Batería con 12 Extensiones de Línea

船用共電選択式電話機　船用共电选择式电话机

This equipment allows up to 12 telephone extension sets. These extension sets can be contacted by turning the rotary switch and pressing push button at this unit. Even if one extension set is busy, remaining five sets can be contacted at the same time. In addition, the following special functions are provided : With two common battery telephone (or multi-link type) sets connected in parallel, both telephone sets can be contacted from outside telephone set at the same time.



Non-water-proof Desk/Wall Type

Drip-proof Wall Type

Non-water-proof Wall Type

Non-water-proof Built-in type

Drip-proof Portable Type

Deck-watertight (IP55) Flush Type

How to order: CODE

Battery telephone, multi-link TYPE of TELEPHONE, MODEL

Non-water-proof Desk/Wall Type

No Impermeable Tipo Sobremesa/pPared

非防水卓上 / 壁掛形

Unit Per Set

CODE	Model	Noisy Place Use	Sub Receiver	Wgt kg	Remarks
37 21 55	ODC-3180-1	-	-	1.0	-
56	ODC-3180-1N	o	-	1.0	
57	ODC-3180-1A	-	-	1.0	Wall-mount
58	ODC-3180-1AN	o	-	1.0	

Colour: Ivory white for all models.

Drip-proof Wall Type

Tipo de Pared Antigoteo

防滴壁掛形　防滴水墙型

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Sub Re-ceiver	Head-set	Wgt kg
37 21 59	ODC3310-1	o	-	-	-	1.3
60	ODC3310-1N	o	o	-	-	1.3
61	ODC3310-1SR	o	-	o	-	1.4
62	ODC3310-1SN	o	o	o	-	1.4
63	ODC3310-1H	o	-	-	o	1.3
64	ODC3310-1HN	o	o	-	o	1.3

Colour: N7 for all models.

Non-water-proof Wall Type

No Impermeable Tipo de Pared

非防水壁掛形　非防水壁式

Unit Per Set

CODE	Model	Noisy Place Use	Wgt kg	Remarks
37 21 65	ODC-3381-1	-	0.9	-
66	ODC-3381-1N	o	0.9	
67	ODC-3381-3	-	1.4	With Terminal
68	ODC-3381-3N	o	1.4	

Colour: Ivory white for all models.

Non-water-proof Built-in Type

Tipo Empotrado no Estanco

非防水埋込形　非防水内置式

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Illumination with Dial	Wgt kg
37 21 69	ODC-3780-1K	o	-	-	1.5
70	ODC-3780-1NK	o	o	-	1.5
71	ODC-3780-2K	o	-	o	1.7
72	ODC-3780-2NK	o	o	o	1.7

Colour: N3 for all models.

Drip-proof Portable Type

Tipo Portátil Antigoteo

防滴携帯形　防滴手提式

Unit Per Set

CODE	Model	Output of Contact Point	Wgt kg	Remarks
37 21 73	ODC-3980-1K	-	5.3	Colour: N3 for all models
74	ODC-3980-1NK	-	5.3	

Deck-watertight (IP55) Flush Type

Hermético a la cubierta (IP55) Tipo empotrado
防水埋込形　地面防水（IP55）嵌入式

Unit Per Set

CODE	Model	Output of Contact Point	Noisy Place Use	Illumination with Dial	Wgt kg
37 21 76	ODC3782-1N	o	o	-	2.3

Colour: N3

Intrinsically Safe Auto Telephones

Teléfono automático intrínsecamente seguro
本質安全防爆自動式電話　本质安全型防爆自动电话

This telephone system is composed of telephones and safety maintaining unit. This telephone set located in explosive hazardous area can be connected to the telephone lines of marine telephone exchange, PABX (Private Automatic Branch Exchange) or analog telecom network via Buffer Unit.

With its safe security system, the equipment can be operated for a long period of time in a dangerous environment such as oil carrier ships, LNG/LPG carrier ships, chemical carrier ships. Specified to the intrinsically safe explosion proof construction grade that satisfies the ia standard, assuming two accidents, in compliance with the IEC specification, meets the requirement of the Ex ia IIBT4 class of equipment in terms of explosion proof and inflammable nature. The authentication of the IECEx has acquired.

Ex. Protection:
ODA-1371-1A & 1AH-B (Ex ia II BT4 Ga Ta= −20°C~+55°C
ODZ-9441-1A ([Ex ia] II B Ta= −20°C~+60°C)

Intrinsically Safe Auto telephone ODA-1371-1A-B

Intrinsically Safe Auto telephone Buffer Unit ODZ 9641-1A

Head Set ODZ 9210-1

Specifications
Power Supply: 24V DC/48V DC 0.5A, Colour: N3.5,
Analogue Telephone Line, Dial: PB/DP,
Relay Contact Output: Dry contact: 250VAC 5A/30VDC 5A,
Continue C Contact,
Flicker C Contact

Unit Per Set

CODE	Model	Dimensions mm	Wgt kg	Remarks
37 21 77	ODA-1371-1A-B	W240 × H265 × D132	2.8	Without Head Set
78	ODA-1371-1AH-B			With Head Set
79	ODZ-9441-1A	W300 × H400 × D155	8.3	-
80	ODZ-9210-2	Head Set	-	-

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Marine Battery-less Telephones

Teléfonos navales sin pilas
船用バッテリーレス電話機　船用无电池电话机

These telephones do not require a source of electric power for calling and communication. Rotating handle will generate electric power to ring the other station, and accumulated power is used to amplify acoustic sounds to make conversation loud and clear.

They are roughly classified into two systems; Direct Telephone and Selective Telephone. The latter allows maximum 12/24 telephones to configure (one conversation link). And they are possible to connect to Intrinsically Safe Types, shown in the layout drawing below. Each telephone has relay inside terminal so that optional devices such as bells can be equipped.

Desk Type

Wall Type

Wall type w/receptacle

Flush Type

Portable Type

Direct Telephones

Teléfonos directos　直通電話機　直拨电话

Unit Per Set

CODE	Type	Model No.	Dimensions W × H × D mm	Weight kg	Colour
37 21 81	Desk type	ODS4181-1	130 × 280 × 130	2.4	N3
82	Wall type	ODS4381-1	230 × 246 × 119	1.9	N7
83	Wall type w/ receptacle for head set	ODS4381-1H	230 × 246 × 119	1.9	N7
84	Flush type	ODS4781-1	125 × 280 × 148	1.7	N4
85	Portable type	ODS4981-1	290 × 162 × 168	3.8	N4

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Selective Telephones 12 Stations

Teléfonos Selectivos 12 Estaciones
選択式電話 12 ステーション　选择性电话 12 台

Unit Per Set

CODE	Type	Model No.	Dimensions W × H × D mm	Weight kg	Colour
37 21 86	Desk type	ODS5181-1	130 × 280 × 130	2.4	N3
87	Wall type	ODS5381-1	230 × 246 × 119	1.9	N7
88	Wall type w/ receptacle for head set	ODS5381-1H	230 × 246 × 119	1.9	N7
89	Flush type	ODS5781-1	125 × 280 × 148	1.8	N3
90	Flush type w/dial illumination	ODS5781-1D			
91	Portable type	ODS5981-1	290 × 162 × 168	3.8	N3

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Selective Telephones 24 Stations

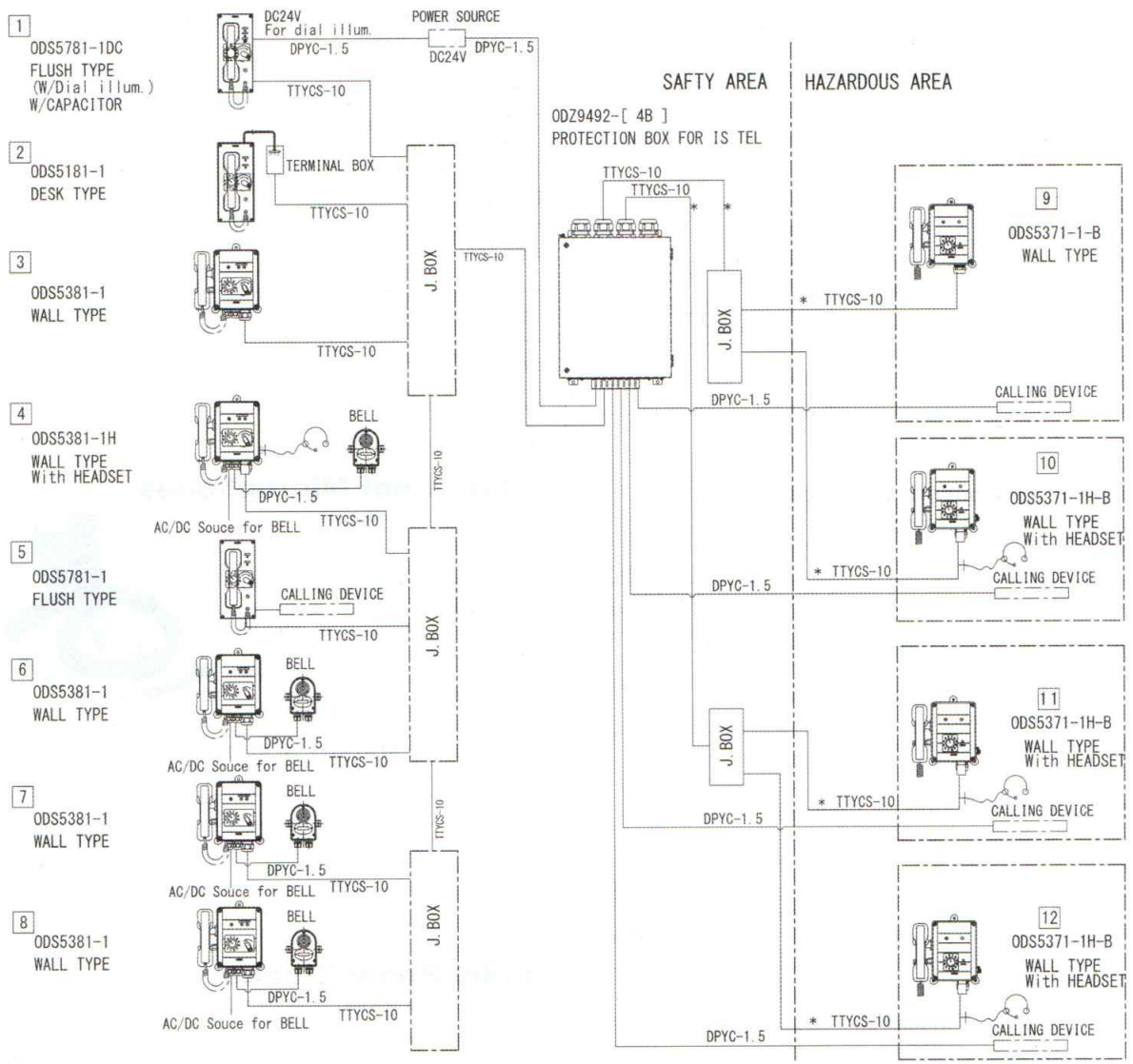
Teléfonos Selectivos 24 Estaciones
選択式電話 24 ステーション　选择性电话 24 台

Unit Per Set

CODE	Type	Model No.	Dimensions W × H × D mm	Weight kg	Colour
37 21 92	Desk type	ODS5181-2	130 × 280 × 130	2.4	N3
93	Wall type	ODS5381-2	230 × 246 × 119	1.9	N7
94	Wall type w/ receptacle for head set	ODS5381-2H	230 × 246 × 119	1.9	N7
95	Flush type	ODS5781-2	125 × 280 × 148	1.8	N3
96	Flush type w/dial illumination	ODS5781-2D			
97	Portable type	ODS5981-2	290 × 162 × 168	3.8	N3

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

INTRINSICALY SAFE BATTERY LESS TELEPHONE SYSTEM (Example) (12stations)



Marine Intrinsically Safe Construction Battery-less Telephones

Marine Intrinsically Safe Construction Teléfonos sin batería
舶用本質安全防爆構造バッテリーレス電話機
海洋本质安全建筑无电池电话

These telephones are of Intrinsically Safe construction. They can be used in hazardous areas and allow to connect to the telephones in the safety areas, shown in the layout drawing shown on the previous "Marine Battery-less Telephone". IS Barrier shall be equipped intermediate for safety connection between two areas (Marine battery less telephones and Marine intrinsically safe construction battery less telephones). This system is roughly classified into two systems; Direct Telephone and Selective (12/24 stations) Telephone.

As they do not have devices to tell the reception, other devices such as Air horn, Whistle, and/or Beacon should be equipped.

The authentication of the IECEx has acquired.

IECEx Certificate No.: IECEx TIIS 16.0003X
Ex Protection: Exia II BT4 Ga Ta=55°C

Direct Telephones

Teléfonos directos　直通電話機　直拨电话

Unit Per Set

CODE	Type	Model No.	Dimensions W × H × D mm	Weight kg	Colour
37 21 98	Wall type	ODS4372-1-B	226 × 279 × 122	2.7	N3.5
99	Wall type w/ receptacle for head set	ODS4372-1H-B	226 × 279 × 138	2.9	

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Selective Telephones 12 Stations

Teléfonos Selectivos 12 Estaciones
選択式電話 12 ステーション　选择性电话 12 台

Unit Per Set

CODE	Type	Model No.	Dimensions W × H × D mm	Weight kg	Colour
37 22 00	Wall type	ODS5372-1	226 × 279 × 130	2.7	N3.5
01	Wall type w/ receptacle for head set	ODS5372-1H	226 × 279 × 122		

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Selective Telephones 24 Stations

Teléfonos Selectivos 24 Estaciones
選択式電話 24 ステーション　选择性电话 24 台

Unit Per Set

CODE	Type	Model No.	Dimensions W × H × D mm	Weight kg	Colour
37 22 02	Wall type	ODS5372-2-B	226×279×130	2.7	N3.5
03	Wall type w/ receptacle for head set	ODS5372-2H-B	226×279×122		

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Safety Protection Unit for Intrinsically Safe Battery-less Telephones

Unidad de protección de seguridad para teléfonos sin batería intrínsecamente seguros
舶用本質安全防爆構造バッテリーレス電話機用安全保持装置
用于本质安全无电池电话的安全保护装置

This unit intervenes between I.S. Battery-less Telephones in hazardous areas and telephones in safety areas to establish safety connection.

For calling device Relay contact Ratings: AC/DC 6A
Power supply for barrier: DC 24V, max. 0.5A

Ex. Protection: [Exia] II B Ta=60°C

Please specify the model number as below.
Model ODZ9492-[① ②]

① Maximum number of telephones possible to equip at hazardous area:
1: equip 1 unit, 2: equip 2 units, 3: equip 3 units,
4: equip 4 units

② Maximum number of telephones possible to equip at safe area in total
A: 8 stations, B: 16 stations, C: 24 stations

Example)

1 × telephone in hazardous area, 8 telephone system in safe area should be "ODZ9492-1A"

Unit Per Set

CODE	Type	Model No.	Dimensions W × H × D mm	Weight kg	Colour
37 22 04	Protection Box	ODZ9692-[① ②]	400 × 500 × 150	11	N3.5

Name of Mfr.: Nippon Hakuyo Electronics Ltd.

Waterproof Microphones

Micrófonos resistentes al Agua
防水型マイクロホン　防水型扩音器

Waterproof type microphone to be used for ship's radio amplifier. Available as microphone only or with curl cord with capacity 40 Ω or 600 Ω. Please specify the length of curl cord if required.

Unit Per Pc.

CODE	37 01 81	37 01 82	37 01 83	37 01 84
Curl Cord	With	Without	With	Without
Impedance	40 Ω		600 Ω	
Frequency	100 - 8,000 Hz		100 - 8,000 Hz	
Switch Circuit Capacity	AC 125V 5A DC 115V 0.5A		AC 125V 5A DC 115V 0.5AC	

Radio Room Clocks

Relojes para Cuarto de Radio　無線室用時計　电台钟

For use in radio rooms. The diameter of the dial is 200 mm with the numerals 1 - 12 on the outer edge and the numerals 13 - 00 on the inner side showing international time. Seconds

are marked clearly in red between the hour numerals. There are two 3 minute silent periods at 15 and 45 minutes past the hour marked in red for emergency signals, and two 3 minute silent periods at 0 and 30 minutes in green for distress signals. The clock has 2 hour hands, one to be set in Greenwich Mean Time and the other to indicate local time.

A Vapour-Proof type(IP54) with Stainless Steel Casing is also available.

37 02 01	Clock, radio room, quartz 200 mm dia.	Pc.
02	Clock, radio room, stainless steel casing, vapour-proof	Pc.

Marine Clocks

Relojes Marinos　船用時計　船用钟

A quartz, battery operated clock. The case is backed with rubber to provide resistance to shock and dust.

A Vapour-Proof type(IP54) with Stainless Steel Casing is also available.

37 02 04	Clock, marine, quartz 200 mm	Pc.
05	Clock, marine, stainless steel casing, vapour-proof	Pc.

Stopwatches

Cronómetros　ストップウォッチ　秒表

Precision stopwatches which can time to the accuracy of 1/5 and 1/10 of a second on an analogue watch and 1/100 of a second on a digital watch.

Analogue

Digital

Unit Per Pc.

Analogue		Digital	
CODE	Second	CODE	Second
37 02 11	1/5	**37 02 13**	1/100
12	1/10		

Stopwatches and Time Printers

Cronómetros e Impresoras de Tiempo

プリンター接続可能ストップウォッチ　时间记数秒表

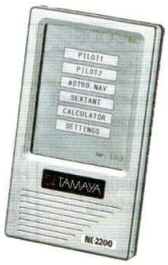
A 1/100 second digital stopwatch with a built- in printer to record the measurements. The main unit retains a memory even if the measurements are taken and printed out. It has an auto-start function that automatically starts measuring at the set time. The printer runs on 4 x R6P (UM-3) dry batteries. Furnished with two 38 mm wide rolls of printing paper.

37 02 16	System stopwatch digital 1/100 second	Pc.
37 02 18	Roll paper for digital stopwatch printer 38 mm wide × 2.5 mtr L　2's	Pkt
19	"　5's	"

Navigation Calculators

Calcuadoras de Navegación　天文航法計算機　天文航法计算器

Digital navigation calculators for assessing the ship's position by simple operation with built-in programs. Easy-to-understand dialogue system telling what input data are required, and what output data are displayed.



Major navigation functions are ;

* Simple operation with built-in programs.
* Course and Distance computation.
* Dead Reckoning computation.
* Great Circle computation.
* ETA computation.
* Current computation.
* LOP computation.
* Meridian Passage computation.
* Convenient conversions for to HMS and to HHH.
* Long term Nautical Almanac for the Sun, Moon, Venus, Mars, Jupiter, Saturn and 63 stars. The built-in Almanac is usable until 2100, and it is good with accuracy better than 0'.2.
* Twilight Time mode computes times of rise or set, civil twilight and azimuth for the Sun and rise or set, age and azimuth for the Moon.
* Prediction/Identification mode computes azimuth and altitude for all celestial bodies and displays any usable bodies above the horizon.

Specifications

Operation	Touch panel with stylus
Power source	3 pieces of size AAA battery (dry cell)
Operating time	Standard approx. 8 hours for continuous operation
Operating temperature	0°C - 45°C (32)
Display	Liquid crystal display (LCD), 240 × 320 dots
Dimensions	72 mm (W) × 125 mm (D) × 14 mm (H), or 2.83 in. (W) × 4.42 in. (D) × 0.53 in. (H)
Weight	165 g (without battery) or 582 oz. (with battery)
Standard accessories	Stylus and neck strap

37 02 27	Navigation calculator	Pc.

Digital Planimeters

Planímetros Digitales　デジタル面積計　数字式面积仪

A very precise instrument for quick and accurate determination of area on blueprints, maps, photographs, drawings, etc. Simply follow the outline of the area. The revolution of the measuring wheel in either direction is sensed by the electro shaft-encoder which generates pulses which are processed by the custom-made LSI.

Planix 7

Planix 10S marble

Unit Per Pc.

CODE	37 02 31	37 02 32
Model	PLANIX 7	PLANIX 10S Marble
Measurement Range	300 mm x 3 mtr	300 mm x 10 mtr
Measurement Functions	8 digits output/input HOLD, MEMO, BATTE, READY, cm^2, in^2, SCALE, m^2, km^2, ft^2, acre	Area, line length, and side length, with the following measuring units : mm, cm, m, km, in, ft, acre/yd, user-defined units
Display	Dot LCD 8 digits × 1 line, with zero suppression	LCD 16 digits × 2 lines
Resolution	One digit corresponds to 0.1 cm^2 or 0.01 in^2	±0.05 mm
Accuracy	Better than ±0.2% (±2/1,000 pulses)	±0.1% (100 x 100 mm area measurement)
Power	Internal nickel metal hydride (Ni-Mh) battery or AC adaptor	Internal nickel metal hydride (Ni-MH) battery or AC charger/adaptor
Operating Hours	30 hours (after 15 hours recharge)	20 hours (after 15 hours recharge)
Dimensions (Body)	150 × 240 × 39 mm	250 × 110 × 40 mm
Dimensions (storage case)	183 × 260 × 64 mm	183 × 260 × 64 mm
Weight	650 grm	630 grm
Accessories	Storage case, AC adaptor	Storage case, AC charger/adaptor, gauge template

Name of Mfr. : Tamaya

Automatic Chart Plotters

Instrumentos Automáticos de Dibujo para Carta Náutica

自動海図プロッター　自动图表绘图机

Automatic chart plotter continuously lights up ship's precise position on ordinary charts according to longitude and latitude signals from the GPS (Global Positioning System) or other position reference systems, contributing to ship operation labor-savings as well as safe navigation.

A convenient operation panel lets you register any chart for use in the system. The panel includes display functions for longitude, latitude, heading and speed. Additional interfaces receive data from an onboard gyrocompass and speed log for a high-accuracy position indication.

Also the automatic plotter has route planning and memory card storage functions.

When ordering, please ask for brochures or consult with a sales engineer from the local distributor for further information.

Specifications

Accuracy	±0.3 mm
Diameter of Light Mark	10 mm
Liquid Crystal Display	Alphanumeric, 16 characters × 2 lines
Display Information	Longitude, Latitude, Heading and Speed
Power Consumption	300 VA

37 02 36	Automatic chart plotter	AC 110 volt	Set
37	"	AC 220 volt	"

Clinometers

Clinómetros　傾斜計　倾斜仪

A clinometer is required for positioning a vessel on a proper trim. It also indicates the correct heel angle and is helpful in determining the appropriate locations for cargo and equipment.

Wall-mounted dial type and tube type(bubbles/balls) are available. With tube type clinometers you can check the inclination of the ship from the position of the air bubbles/balls in the glass tube.

There are types with maximum measurement angles of 40° (dial type), 5°, 15° (tube type with a bubble), and 40° (tube type with a ball).

Dial Type

Tube Type (Bubble)

Tube Type (Ball)

Unit Per Pc.

CODE	Type	Specification
37 02 41	Dial Type	Heavy glass front, 200 mm dial, graduated 0 – 40 on each side of the vertical plane in 5 integrals, 80 mm pointer and two maximum indicators with reset device and stop to hold movable pointer when not in use. Weight 1.5 kg.
37 02 42	Tube Type (Bubble)	Single tube clinometer with a bubble type. Size: 200 × 550 × 20 mm, The tube is graduated 0 - 5°. Weight 1.7 kg.
37 02 43	Tube Type (Ball)	Single tube clinometer with a ball type. Size: 200 × 350 × 40 mm. The tube is graduated 0 - 40°. Weight 1.5 kg.

Azimuth Circles

Círculos Azimutales

アジマスサークル　方位仪

The Azimuth Circle is mounted on the repeater compass. By means of a prism and reflection mirror, sunlight is projected in the form of a line on to the compass card through a slit, thus making it possible to observe the sun. The most common types are listed below. When ordering, please specify the name of the manufacturer.

How to order: CODE

Azimuth circle, MANUFACTURER'S NAME & MODEL of repeater compass

Unit Per Pc.

CODE	Manufacturer	Model	Size mm			Graduation
			I.D	O.D	H	
37 03 21	Tokyo Keiki	-	246	260	120	Nil
22	Yokogawa-Navitek	KX-603				Graduated
23	Others	-	-			-

Marine Aneroid Barometers

Barómetros Marinos
船舶用アネロイド気圧計　船用气压表

Specially designed for marine use. It will withstand the vessels vibration without losing accuracy. Available in 150 mm and 200 mm dial size.

37 02 46	Barometer, aneroid, marine use 150 mm dia.	Pc.
47	" 200 mm dia.	Pc.

Hygrometers

Hygrómetros　乾湿計　干湿计

Wet & Dry Bulb Hygrometer

Higrómetro de Bulbo Seco y Húmedo
乾湿計　干湿球湿度计

Consisting of dry and wet alcohol filled glass thermometers fixed on a panel. By differential indication between these thermometers, humidity can be read from the table mounted on a panel. Range –10 to 50°C in 1° integrals. Panel size 280 × 80 mm.

37 02 51	Hygrometer, wet & dry	Pc.

Dial Thermo-Hygrometers

Termohigrómetros de Esfera
丸型温湿度計 圆形温湿度计

Wall mounted bimetallic dial thermometer with hair hygrometer. Standard dial diameter is 100 mm. Best for cabin use.

37 02 56	Dial thermo-hygrometer wall-mount 100 mm	Pc.

Sling Psychrometers (Hygrometers)

Sling Psychrometers (Higrómetros)
振廻式乾湿計　旋转式干湿度计

Two similar balanced thermometers mounted on brass panel with chain. A metal handle enables the instrument to be whirled. Furnished with psychrometeric table and leather case. Range –20 to 50°C in 1/2° div. Case size is 200 × 40 × 40 mm.

37 02 61	Psychrometer, sling type, complete	Set

Hair Hygrometers (Lambreht's Polymeters)

Higrómetros Capilares　毛髪湿度計　毛发湿度计

This instrument, known as a polymeter, measures temperature, humidity, vapour tension and dew point. A mercury filled glass thermometer is attached. The humidity element is a bundle of human hair. The dial which indicates selective humidity is 80 mmø. Temperature range –20 to 50°C in 1° div. and Humidity scale 0 to 100 % 0.18 kg in weight. 263 mm in length.

37 02 66	Hair hygrometer (polymeter) with mercury thermometer	Pc.

Digital Thermo-Hygrometers

Termohigrómetros digitales　デジタル式温湿度計　数字式温度湿度计

A compact, portable thermo-hygrometer that monitors atmospheric temperature and humidity by single unit.

Pen Type

Pocketable Type

Unit Per Pc.

CODE		37 02 58	37 02 59
Type		Pen Type	Pocketable Type
Measuring Range	Temp.	-10°C – 50°C	-20°C – 60°C
	Humi.	5.0 – 95.0 %rh	0 – 100.0 %rh
Display		LCD	
Power Requirement		1 × Lithium battery CR2032	2 × LR03 type alkaline battery
Size		W167 × H33 × D15 mm	W56 × H168× D30.5 mm
Weight		49 grm	75 grm

Digital Hand Anemometers

Anemómetros Manuales Digitales
デジタル手持ち風速計　数字式手持风速计

Portable digital anemometer with temperature measurement function. It can be used for wind force measurement in a wide range of fields, measuring range is 0.4 – 30.0 m/s, temperature range is -20°C - 60°C. Measurement accuracy will be ±3% +0.3m/s (wind force) and ±1.5°C (temperature).

37 02 71	Anemometer, hand, with dial gauge up to 22 m/s	Pc.

Digital Anemometers

Anemómetro digital　デジタル式風速計　数字式风速计

A portable digital anemometer with integrated vane or with remote vane extended by curled cord.

With Integrated Vane

With Remote Vane extended by Curled Cord

Unit Per Pc.

CODE	37 02 73	37 02 74
Type	With integrated vane	With remote vane extended by curled cord
Measuring Range	1.1 - 20.0 m/s -15 - 50.0°C	0.70 - 25.00 m/s -10.0 - 50.0°C
Power Requirement	1 × Lithium battery CR2032	1 × 9V (6F22) battery
Size	W144 × H47 × D26 mm	W71 × H181 × D38 mm
Curled Cord	-	L: 500 mm
Weight	95 grm	360 grm

Barographs

Barógrafos 自記気圧計
自动记录气压计

A newly designed self recording barometer. Very compact with a wide recording range. Can be installed in an indoor or outdoor instrument shelter. Provides an inked record of the station pressure for 24 hours or 7 days. Furnished with 7 days revolution recording paper for one year (55 sheets) and gear for one day drum rotation. One day recording paper is available upon request.

37 02 86	Barograph, 940-1, 045 mb, with recording paper for one year	Set
87	Recording paper 7 days for barograph 55 sheets	Pad
88	Recording paper 1 day for barograph 400 sheets	"

Specifications

Sensor	14 cell, 2 in. dia. aneroid
Sensitivity	±0.2 millibar
Accuracy	±0.2% of range
Lag Time	0.1 sec.
Temperature Compensation	Bimetallic Strip
Chart Scales	940 to 1,045 millibars 705 to 785 mm/Hg
Chart Drive	8-day spring wound
Drum Rotation	1 day & 7 day by gear change
Weight	3.5 kg
Size	325L × 155W × 240H mm

Sounding Leads

Plomadas おもり 测深锤

Designed for measuring sea depth. Has a hole at one end for connecting rope. Furnished without attached line.

Unit Per Pc.

CODE	Lead Weight (kg)	Description
37 03 01	3.2	Hand Lead
02	12.7	Deep Sea Lead

Sounding Rods

Varillas de Sondeo 测深棒 测深杆

A graduated square or round straight or jointed folding brass rod with attached ring; used for measuring the depth of liquid contained in a space. When ordering, specify the shape of the rod, the length, and the number of folds.

How to order: CODE

Sounding rod, NUMBER of FOLDING, SHAPE of ROD, LENGTH, GRADUATION

Unit Per Pc.

CODE	No.of Folding	Shape of Rod	Length	Graduation
37 03 06	Straight	Round	1 mtr	Metric
07	3	"	"	"
08	4	"	"	"
09	5	Square	"	Metric & inch
10	6	Round	3 ft	"

Nautical Sextants

Sextantes Náuticos 航海用六分儀
航海用六分仪

A sextant is an instrument for measuring the angle between two objects by bringing into coincidence to the eye of the observer, rays of light received directly from one object and reflected from the other. Its principal use is to measure the altitudes of celestial bodies above the visible sea horizon. Available in various types. When ordering, please specify the type of telescope (magnifying & lens diameter).

Unit Per Set

CODE	**37 03 33**	**37 03 34**
Star Telescope	7 × 35 mm	7 × 50 mm
	Prismatic Monocle	
Illumination	With Light	
Radius	162 mm	
Graduation	-5° ~ 125° into 1° on the arc	
Weight	2.0 kg	2.2 kg
Case	Plastic	Wooden

Binoculars

Binoculares 双眼鏡 望远镜

A wide variety of binoculars are available. The most popular types in the marine field are listed below. Furnished with a case.

Remark: These products are dual use items, and may therefore be restricted in supply by some authorities.

How to order: CODE

Binocular, MAGNIFICATION, LENS DIAM mm, FEATURES

Unit Per Pr.

CODE	Magnification & Lens Diam.	Features
37 03 41	7 × 35	CF, WP
42	7 × 50	CF, WP
43	7 × 50	IF
44	7 × 50	IF, WP
45	7 × 50	IF, WP, with Scale

Remark: CF=Center Focus, IF=Individual Focus, WP=Water Proof

All-Weather Stand Type Binoculars

Prismáticos con Soporte para Todo Tipo de Clima

全天候型スタンド式双眼鏡　全天候支架式望远镜

An airtight, waterproof, large binocular suitable for bridge use. Can be fixed with bolts onto a deck plate or bridge counter top. Specify the required magnification and lens diameter when ordering. The most common model is: Magnification 15, Lens Diameter 80 mm.

37 03 48	Binocular, stand type, 15 × 80 IFwater-proof	Pr.

Internal Gyro-stabilized Binoculars

Binoculares con giroestabilización interna

内蔵双眼鏡　内置陀螺稳定望远镜

This waterproof binocular makes the target easier to acquire and track even if it is moving at a high rate of speed, because of the prism, installed on a freely rotating gimbaled frame equipped with a highspeed gyro motor. The observer will have little problem keeping the target centered in the field of view.

Simply switch the power on and wait a moment until the gyro motor reaches operating speed. Focusing is achieved by adjusting each eyepiece. Foldback rubber eye cups permit eyeglass wearers to use this gyro-stabilized binoculars and still see a full field of view. To allow for individual differences in the distance between the eyes, an interpupilary control is provided. Finally simply lift the locking lever to free the gimbaled erecting prism assembly.

It can be operated with either 4AA batteries or 1 lithium battery, and also operated on 12-32 volt DC power sources when used with the supplied DC regulator, where auxiliary power is available.

Figure 1.

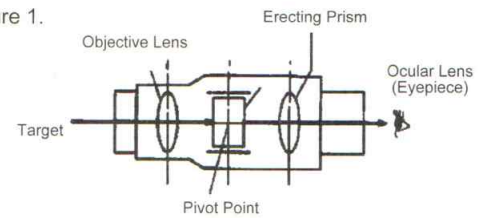
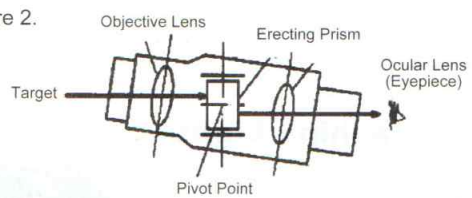


Figure 2.



Unit Per Pr.

CODE	**37 03 51**	**37 03 52**
Model	S-1240	S-1640
Magnification	12X	16X
Objective Lens (Diameter)	40 mm	40 mm
Exit Pupil	3.3 mm	2.5 mm
Eye Relief	17 mm	12 mm
Field of View - Actual	4.7°	3.4°
Field of View - Apparent	56.4°	54.4°
Field fo View - 1,000 mtr	82 mtr	60 mtr
Relative Brightness	11.1	6.25
Eyepiece Focusing Adjustment	± 5 diopters	
Interpupilary Adjustment	60 - 70 mm	
Stabilization Freedom	± 5° in any direction	
Size (L × W × H) mm	210 × 200 × 90	
Weight	1.8 kg	
Battery	4AA alkaline or 1 2CR5 lithium battery	
External Power Source	12 - 32V (Use with supplied Deregulator)	
Name of Mfr.	Fuji Photo Optical Co., Ltd.	

(to be continued)

Digital Binoculars with HD Video Recording

Binoculares digitales con grabadora de vídeo en disco duro

デジタル録画機能付き双眼鏡

带数字录像功能的望远镜

Designed to combine the magnification capabilities of binoculars with the recording capabilities of a camcorder.

- 1,920x1,080 Full HD 60i/24i recording with 7MP still image capture.
- 3D viewing directly through EVF, no need for 3D glasses.
- 10x Seamless Zoom with AutoFocus.
- Optical Steady Shot image stabilization with Active Mode.

Unit Per Pr.

CODE	**37 03 53**
Protection	IPX4 (Rain), IP5X (Dust)
Memory Card	SD/SDHC/SDXC/Memory Stick
Dimension	148.5 × 72.5 × 157.5 mm
Weight	765 grm

Night Vision Binoculars

for Anti-piracy

Binoculares de visión nocturna antipiratería

海賊対策用暗視双眼鏡　反海盗用夜视望远镜

An optical instrument that you can see a night view even in a moonless, cloudy night.

Remark: The products are dual use items, and may therefore be restricted in supply by some authorities.

Bushell Night Vision

- Night vision: Generation 1
- Infrared illuminator: Built-in
- Water resistant
- Great for close-range viewing (Security). Long-range viewing (Wildlife observation)
- Magnification × objective lens: 2.5 × 42

Yukon Night Vision

- Day and night operation
- Higher resolution than Gen. 1
- Effective over 300 yards
- Brightness adjustment control
- Stealth IRTM operation with invisible, powerful dual IR illuminators
- Direct video output capability
- Magnification × objective lens: 5 × 42

Unit Per Pr.

CODE	Model	Capacity Magnification × Objective Lens
37 03 55	Bushell night vision	2.5 × 42
56	Yukon night vision	5 × 42

Navigation Lights

Luces de Navegación　航海灯　桅灯（双灯）

All lights suit to the requirements of "MSC253(83)" and "Convention on the International Regulations for Preventing Collisions at Sea, 1972" of IMCO (Inter-governmental Maritime Consultative Organization). Available with a polycarbonate lens and polycarbonate case. Each type of lights suits to the regulations as bellow.

Navigation Light Classification

Class	No. of Light	Application
Class1 A-2	Double & Single	For vessels of 50 mtr or more in length
Class1 or 2 B-1	Double & Single	For vessels of 20 mtr or more but less than 50 mtr in length
Class1 or 2 B-2	Single	For vessels of less than 20 mtr in length
Class1, 2 or 3 B-3	Single	

Class 1 (A-2) Polycarbonate Lens & Case

Lente y Funda de Policarbonato
ポリカーボネート製レンズ＆ケース　聚碳酸酯镜片和外壳


Masthead Light


Side Light


White Light


Red Light

How to order CODE

ITEM, class A-2, polycarbonate lens & case, NUMBER of LIGHTS

Unit Per Pc.

CODE	Item	No. of Light	Project Angle	Visibility (n.m)	Bulb (Watt)	Weight (kg)
37 04 21	Masthead Light, Clear	Double	225	Over 6	60	2.3
22	Side Light, Green (Starboard)	"	112.5	Over 3	"	2.4
23	Side Light, Red (Port)	"	112.5	"	"	2.4
24	Stern Light, Clear	"	135	"	40	2.4
25	Towing Light	Single	135	"	"	1.4
26	White Light (Anchor Light)	"	360	"	"	1.4
27	Red Light (Not Under Command Light)	"	360	"	60	1.4
28	Green Light	"	360	"	"	1.4

Navigation Lamps

Lámparas de Navegación
ナビゲーションランプ　桅灯（双灯）

Specially designed for use with navigation lights. Made of electrolysis glass with special constructed filament to withstand varying voltages. Can be used also with direct current. Low voltage bulbs can run on battery (emergency) power.

How to order: CODE

Lamp, navigation, BASE SIZE, VOLTAGE, WATTAGE

Unit Per Pc.

24V		110-115V		220V	
CODE	Watts	CODE	Watts	CODE	Watts
E-26 Screw Base					
79 04 01	40	79 04 03	40	79 04 05	40
02	60	04	60	06	60
B-22 Bayonet Base					
79 04 11	40	79 04 13	40	79 04 15	40
12	60	14	60	16	60

Green Flashing Lights

Luces Verdes de Destello
綠色閃光　绿色闪光灯

Signal lights for large ships not less than 200 mtrs in length. All these lights conform to the Maritime Traffic Safety Law.

One all-round green flashing light, with 2 mile range visibility, flashes at regular intervals at a frequency of between 180 and 200 flashes per minute. Available with a glass or polycarbonate lens.

How to order: CODE

Green flashing light, MATERIAL of LENS and CASE, VOLTAGE, TYPE of SOCKET

Unit Per Pc.

CODE	37 04 61	37 04 64	37 04 62	37 04 63
Lens	Polycarbonate		Glass	
Case	Polycarbonate		Brass plate	
Voltage	100/110/115V	220V	100/110/115V	220V
Socket	E-26		B-22	
Watt	60W		100W	
Weight	1.2 kg		4.9 kg	

Red Flashing Lights

Luces Rojas de Destello
赤色閃光燈　红色闪光灯

Signal lights for cargo ships carrying dangerous cargoes (the explosive and organic peroxide cargo ships over 300 G.T., high pressure gas and ignitable liquid bulk cargo ships over 1,000 G.T.). These lights conform to the Maritime Traffic Safety Law.

One all-round red flashing light, with 2 mile range visibility, flashes at regular intervals at a frequency of between 120 and 140 flashes per minute. Available with a glass or polycarbonate lens.

How to order: CODE

Red flashing light, MATERIAL of LENS and CASE, VOLTAGE, TYPE of SOCKET

Unit Per Pc.

CODE	37 04 66	37 04 69	37 04 67	37 04 68
Lens	Polycarbonate		Glass	
Case	Polycarbonate		Brass plate	
Voltage	100/110/115V	220V	100/110/115V	220V
Socket	E-26		B-22	
Watt	60W		100W	
Weight	1.2 kg		4.9 kg	

Spare Bulbs for Flashing Light

Bombillas de Repuesto para Luz Intermitente
閃光燈用予備電球　　闪光灯备用灯泡

Clear glass bulbs suitable for both green and red flashing lights of the aforementioned types.

How to order: CODE

Spare bulb for flashing light, VOLTAGE, WATTAGE, TYPE of SOCKET

Unit Per Pc.

CODE	Voltage	Wattage	Socket
37 04 71	100V	60W	E-26
72		100W	B-22
73	115V	60W	E-26
74		100W	B-22
76	220V	60W	E-26
75		100W	B-22

Marine Searchlights

Proyectores Marinos
サーチライト
船用探照灯

SW 450 / 2000

DS 463 HGS / 525 HGS

Multi-purpose search-light, suitable for many types of ocean-going vessels. Used with a halogen lamp. Made of seawater resistant aluminium with toughened front glass.

How to order: CODE

Marine searchlight, MODEL, POWER SOURCE VOLTAGE, WATTAGE, RANGE

Unit Per Set

CODE	37 04 81	37 04 82	37 04 85	37 04 86
Model	SW 450 / 2000		DS 463 HGS	DS 525 HGS
Power Source	AC 110V	AC 220V	AC 110 or 220 V	
Wattage	2,000W		2,000W	
Range	1,730 mtr	1,430 mtr	1,300 mtr	1,500 mtr
Diam. of Reflector	450 mm		360 mm	420 mm
Lamp Holder	GY-16		GY-16	

(to be continued)

Material	Seawater resistant aluminium	Seawater resistant aluminium	
Fixing Method	Mounting bracket	Flange base (Diam: 260 mm)	
Weight	36.3 kg	22 kg	26 kg
Name of Mfr.	WISKA	Pesch Seematz	

Xenon Searchlights

Proyector de Xenón
キセノンサーチライト　氙素探照灯

A compact searchlight "U-beam" mounted with a 150W high performance xenon short-arc lamp of high luminous intensity and low energy consumption. The searchlight radiates a powerful white beam with a luminous intensity of 1,500,000 candela and colour temperature of 6,000°K, similar to sunlight.
Two beam angle types are available. Use of the remote control allows for easy, simultaneous control of the horizontal and elevational angle of the lamp head.

How to order: CODE

Xenon Searchlight, BEAM ANGLE, LUMINOUS INTENSITY cd., POWER SOURCE VOLTAGE

Unit Per Set

CODE	37 04 91	37 04 92
Beam Angle	5	10
Center Luminous Intensity cd.	1.5 millon	1 million
Lamp Model	UXR-150MA	UXR-150A/W
Depression/elevation Angle	Upward : 5 Downward : 35	
Material	Anti - corrosion aluminium	
Power Source	DC 24V, 7.8A	
Weight	9 kg	

Suez Canal Searchlights

Proyector Canal de Suez
スエズ運河サーチライト
苏伊士运河探照灯

Complying with the "Rules of Navigation" established by The Suez Canal Authority, which states that ships which go through the canal during the night must be equipped with The Suez Canal Searchlight. The lamp must have a luminous intensity of a single light beam not less than 3×10^6 (3 million) candela, which is equivalent to a high efficiency lamp of 2,000 watts for vessels up to 30,000 S.C. tons gross and 3,000 watts for vessels over 30,000 S.C. tons gross.

The searchlights must have a certificate issued by one of the Classification Societies such as N.K., Lloyd, etc. and must be equipped with a 2 lamp carrier that can be turned into position to let the lamp focus directly on the reflector. Available in a floor mounting type or ceiling mounting type. The most popular model is the floor mounting, manual operated type as listed below. This type is also available for use with incandescent lamps or halogen lamps.

Specifications

Kind of Lamp		Incandescent lamp	Halogen lamp
Lamp	Voltage	100V, 110V, 115V, 220V, 230V	
	Watt	2,000W, 3,000W	2,000W
Reflector		550 mm	640 mm
Form of Control		Manual Operation	
Elevation Angle		Up above 30 deg. down below 30 deg.	Up above 20 deg. down below 20 deg.
Horizontal Turning Angle		360 deg.	
Height from the floor to the center of lamp		650 mm	
Temperature range		−25°C to 45°C	
Material		Stainless Steel 1.4301 (V2A)	
Weight		40 kg	

How to order: CODE

Searchlight, Suez Canal, KIND of LAMP, POWER SOURCE VOLTAGE, WATTAGE

Unit Per Pc.

Incandescent Lamp Type			Incandescent Lamp Type		
CODE	Voltage	Wattage	CODE	Voltage	Wattage
37 05 01 02	100V	2,000W 3,000W	**37 05 11**	100V	2,000W
37 05 03 04	115V	2,000W 3,000W	**37 05 12**	115V	2,000W
37 05 05 06	220V	2,000W 3,000W	**37 05 13**	220V	2,000W
37 05 07 08	230V	2,000W 3,000W	**37 05 14**	230V	2,000W

Incandescent Lamps

for Suez Canal Searchlight

Lámparas Incandescentes

スエズ運河サーチライト用白熱電球　白炽灯

Spare incandescent lamps for the incandescent lamp searchlight mentioned above. When ordering, specify the voltage and wattage of the lamp.

Unit Per Pc.

CODE	37 05 21	37 05 22	37 05 23	37 05 24	37 05 25	37 05 26
Type	A 100V 2,000W	A 115V 2,000W	Z 220V 2,000W	Z 100V 3,000W	Z 115V 3,000W	Z 220V 3,000W
Rated Voltage	100V	110-115V	220V	100V	110-115V	220V
Lamp Capacity	2,000 W			3,000 W		
Base	G 150					

Halogen Lamps

for Suez Canal Searchlight

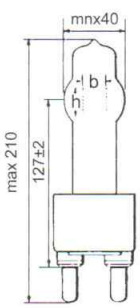
Lámparas Halógenas

スエズ運河サーチライト用ハロゲンランプ

卤素灯

Spare halogen lamps for the halogen lamp type searchlights mentioned above. When ordering, specify the voltage of the lamp.

6994Z
6994Z-CYX



Unit Per Pc.

CODE	37 05 31	37 05 32	37 05 33
Type	100V 2,000W	120V 2,000W	220V 2,000W
Rated Voltage	100V	110-120V	220V
Lamp Capacity	2,000W		
Base	G 38		

Marine LED Searchlights

Proyectores LED Marinos

LED サーチライト　LED 探照灯

Multi-purpose LED search light, suitable for many types of ocean-going vessels, designed as a replacement of traditional halogen lamp. Made of aluminium base, waterproof (IP65). Compliance with ROHS and CE. Wide input voltage: AC 90-260V, 50/60Hz.

How to order: CODE

Marine LED searchlight, MODEL, POWER SOURCE VOLTAGE, WATTAGE, RANGE

Unit Per Pc.

CODE	37 05 34
Material	Aluminum + Tempered Glass
Power Source	AC 90-260V 50/60HZ
Power Consumption	500W
Operating Temperature	-20°C - 60°C
Lifespan	50,000 Hours
Nominal Light Flux	≥ 65,000LM
Beam Angle	25°/ 60°/ 90°
Dimension (mm)	Ø368 H510 × L414 × W285
Weight	13 kg

Remote Control LED Searchlights

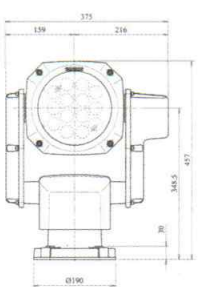
Proyectores LED con Mando a Distancia

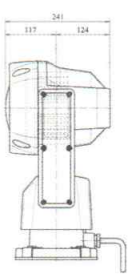
リモートコントロール LED サーチライト

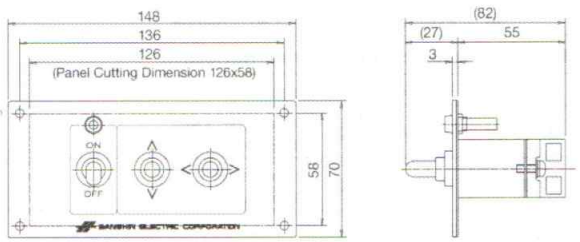
遥控 LED 探照灯

The remote-control LED Searchlight is vibration-resistant and has high energy savings compared to traditional halogen lamps. Protection Class: IP56.

RGL40E

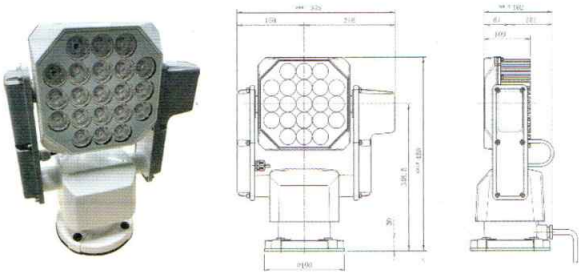


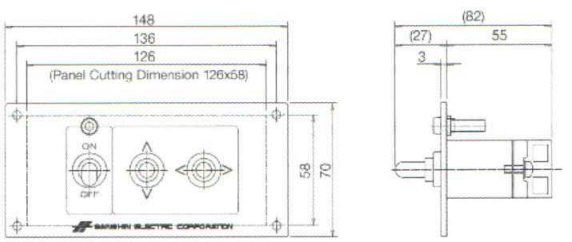




CPF195 Remote Control Panel

RGL80E





CPF195J Remote Control Panel

Unit Per Pc.

CODE	Type	Main Voltage	Power	Turning Angle	Max. Luminous Intensity	Service Life hours	Weight kg
37 05 35	RGL40E	DC 24V	40W	Left and right 170°	250,000 cd	40,000	13
37 05 36	RGL80E	AC 100/220V	80W		1,000,000 cd.	10,000	13.7

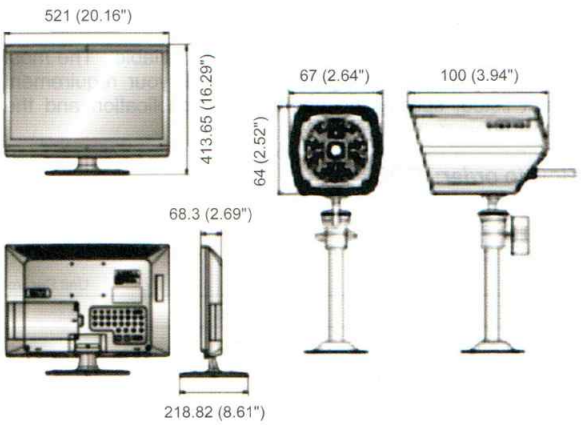
Camera Monitoring System

with Infrared Illuminators

Sistema de observación con cámara con iluminación infrarroja
赤外線発光式監視カメラステム
红外灯监控摄像系统

Camera monitoring system provides maximum protection for any spot 24 hours a day, 7 days a week. Simple to set up, you can monitor any time from anywhere around the world. All four cameras are waterproof to IP66, compact and highly durable to achieve clear stable video, even in harsh outdoor conditions. Single cable to each camera cover all wiring needs including power so you have the freedom to place them anywhere, even if there is no electrical outlet in the area. The four night vision cameras are equipped with 30 infrared LEDs which allow them to detect and show objects as far as 50 feet, even in the darkest conditions. The built in 500 GB hard drive allows for extended recording time and is expandable to 1 TB for maximum data capacity. Please contact your local supplier about more details.

Dimensions



Main Feature:

- Smartphone ready.
- 4×infra red night vision cameras – 600TV lines of high super resolution.
- H.264 high performance compression.
- 8 channel digital video recorder.
- Vivid 22" LCD display.
- 500 GB of storage USB 2.0.

Accessories;

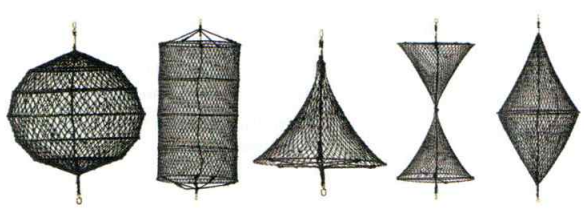
4 pcs.	Camera & bracket	1 pc.	Power cable
4 pcs.	60ft. extension cable	1 pc.	Remote control
1 pc.	User manual	1 pc.	Quick guide
1 pc.	VGA cable	1 pc.	Mouse
1 pc.	Network setup guide	1 pc.	Ethernet cable
2 pcs.	Battery		

37 05 43	Camera monitoring system with infrared illuminators Samsun model SME-4220	Set

Day Signals

Señales Diurnas　昼間標識　信号球

Equipment required on board by the International Regulations for Preventing Collisions at Sea, 1972. The standard size is 610 mm (24") in diameter in a net folding type.



Black Ball　Black Cylindrical Shape　Black Conical Shape　Double Conical Shape (Black DrumType)　Diamond Shape

37 05 81	Black ball	Net diam. 610 mm	Pc.
82	Black cylindrical shape,	Net diam. 610 mm	"
83	Black conical shape,	Net diam. 610 mm	"
84	Double conical shape,	Net diam. 610 mm	"
85	Diamond shape,	Net diam. 610 mm	"

Nautical Publications

Publicaciones Náuticas 海事出版物 航海日志

Publications from various countries are available. The most popular publications are listed below. If your requirement is not listed, specify the name of the publication and the published year.

How to order: CODE
TITLE, PUBLISHED YEAR

British Publications

Unit Per Vol

CODE	Titles
Nautical Almanac	
37 06 01	Brown's Nautical Almanac
03	GP100 The Astronomical Almanac
04	GP200 Astronomical Phenomena
05	AP1602 The UK Air Almanac
Misc . Publications	
37 06 66	Guide to Port Entry
69	Norie's Nautical Tables
74	International Medical Guide for Ships
76	Ships Captain's Medical Guide
78	Ship's Routeing
81	International Health Regulations
82	Vaccination Certificate Requirements and Health Advice
83	Tanker Safety Guide Chemicals
84	Mooring Equipment Guidelines 4th Edition OCIMF
86	The Ships Atlas 19th edition
87	Reeds Marine Distance Tables
89	Tank Cleaning Guide Dr. Verways
90	Storck Guide: Stowage & Segregation Guide to IMDG Code

American Publications

Unit Per Vol

CODE	Stock No.	Titles
NGA List of Lights		
37 07 21	PUB110	Greenland, the East Coasts of North and South America
37 07 22	PUB111	The West Coasts of North and South America and Pacific Ocean
37 07 23	PUB112	Western Pacific and Indian Oceans, Persian Gulf and Red Sea
37 07 24	PUB113	The West Coasts of Europe, Africa, the Mediterranean and Black Sea
37 07 25	PUB114	British Isles, English Channel and North Sea
37 07 26	PUB115	Norway, Iceland, and Arctic Ocean
37 07 27	PUB116	Baltic Sea with Kattegat, Belts and Sound and Gulf of Bothnia
NGA Sight Reduction Tables for Marine Navigation		
37 07 31	PUB229 Vol. 1	0° - 15° Latitude
32	PUB229 Vol. 2	15° - 30°Latitude
33	PUB229 Vol. 3	30° - 45° Latitude
34	PUB229 Vol. 4	45° - 60° Latitude
35	PUB229 Vol. 5	60° - 75° Latitude
36	PUB229 Vol. 6	75° - 90° Latitude
NGA Sight Reduction Tables for Air Navigation		
37 07 38	PUB249 Vol. 1	Selected Stars
37 07 39	PUB249 Vol. 2	Latitudes 0° - 40°, Declination 0° - 29°
37 07 40	PUB249 Vol. 3	Latitudes 39° - 89°, Declination 0° - 29°
NGA Atlas of Pilot Charts		
37 07 41	PUB105	South Atlantic Ocean
42	PUB106	North Atlantic Ocean
43	PUB107	South Pacific Ocean
44	PUB108	North Pacific Ocean
45	PUB109	Indian Ocean
NGA Sailing		
37 07 48	PUB120 to 200	Sailing Directions

Note: As to NGA Sailing Directions, specify NGA stock number or title when ordering.

NGA Misc. Publications		
37 07 53	PUB117	Radio Navigational Aids
56	PUB102	International Code of Signals
59	PUB150	World Port Index

Note : NGA – National Geospatial-Intelligence Agency

Japanese Publications

Unit Per Vol

CODE	Stock No.	Titles
Tide Tables		
37 07 86	No.781	Vol-1 Japan & its Vicinities
87	No.782	Vol-2 Pacific & Indian Ocean
98	CORN 501	Check List for Life Saving Appliances
Misc. Publications		
37 07 88	No.411	Light Lists
89	No.681	Nautical Almanac

Panama Publications

Unit Per Vol

CODE	Stock No.	Titles
37 07 90	MROPC	Maritime Regulations for transiting the Panama Canal

Egyptian Publications

Unit Per Vol

CODE	Stock No.	Titles
37 07 97	-	Suez Canal Rules of Navigation

ITU Publications

Unit Per Vol

CODE	ITU Article No.	Titles
37 07 91	ITU 05 CD	List of Ship Stations and Maritime Mobile Service Identity Assignments
37 07 93	ITU 04 CD	List of Coast Stations and Special Services Stations LIST IV
37 07 95	ITU MM CD	Manual for use by the Maritime Mobile & Maritime Mobile-Satellite Services
37 07 96	ITU RR CD	Radio Regulations Vol 1-4 (CD)

Note: ITU – International Telecommunication Union

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CODE	Ref No.	Title	Unit
IMO Publications			
37 16 77	IE100E	IBC Code	Vol
37 16 01	IG110E	SOLAS (Consolidated edition)	"
37 17 90	KA112E	International Health Regulations	"
37 17 91	I114E	Quantification Addendum: International Medical Guide for Ships 3rd Edition	"
37 06 74	I115E	International Medical Guide for Ships 3rd Edition	"
37 16 73	IB116E	Guide to Maritime Security and the ISPS Code	"
37 16 02	ID117E	ISM Code	"
37 16 78	K128E	Casualty Investigation Code	"
37 16 03	IB155E	FSS Code (Fire Safety Systems)	"
37 16 80	K191E	Polar Code	"
37 16 07	IN200E	IMDG Code (International Maritime Dangerous Goods Code) (Two Vols)	"
37 16 11	IL210E	IMDG Code Supplement	"
37 16 81	K240E	International Grain Code (1991 Edition)	"
37 16 13	IK260E	IMSBC Code and Supplement	"
37 17 92	IC265E	2011 ESP Code	"
37 16 82	KA266E	BLU Code (including BLU Manual) (2011 Edition)	"
37 16 83	IA275E	Code of Safe Practice for Ships Carrying Timber Deck Cargoes, 2011 (2012 Edition)	"
37 17 93	KC282E	The International Convention for Safe Containers, 1972 (CSC 1972)	"
37 16 84	IC284E	IMO/ILO/UNECE Code of Practice for Packing of Cargo Transport Units (CTU Code) (2014 Edition)	"
37 16 85	E288E	OSV Code (2000 Edition)	"
37 16 72	IC292E	CSS Code - Code of Safe Practice for Cargo Stowage and Securing	"
37 16 16	E500E	Int. Convention for the Prevention of Pollution of the Sea by Oil (OILPOL)	"
37 16 17	I504E	Supplement Relating to the International Convention for the Prevention of Pollution of the Sea by Oil (1954)	"
37 16 19	IA516E	Reporting of Incidents involving Harmful Substances under MARPOL 73/78	"
37 16 20	IF520E	MARPOL (Consolidated Edition 2022)	"
37 16 86	KB531E	Waste Assessment Guidelines under the London Convention and Protocol (2021 Edition)	"
37 16 22	IB532E	London Convention and London Protocol	"
37 16 87	I533E	The London Protocol - What it is and how to implement it (2014 Edition)	"
37 16 88	I538M	London Convention and Protocol: Guidance for the Development of Action Lists and Action Levels for Dredged Material (2009 Edition)	"
37 16 89	IA545E	PSSA (Particularly Sensitive Sea Areas) (2007 Edition)	"
37 16 90	I546E	Carbon Dioxide Sequestration (2016 Edition)	"
37 16 23	E556E	OPRC - HNS Protocol 2000	"
37 16 91	IA557E	Manual on Oil Pollution: Section I - Prevention (2011 Edition)	"
37 16 92	I558E	Response to a Marine Oil Pollution Incident (2016 Edition)	"
37 16 24	IB560E	Manual on Oil Pollution Section II - Contingency Planning	"
37 16 25	KA566E	Manual on Oil Pollution Section III - Salvage	"
37 16 26	KA569E	Manual on Oil Pollution Section IV - Combating Oil Spills	"
37 16 27	KA572E	Manual on Oil Pollution - Section V. Administrative Aspects of Oil Pollution Response	"
37 16 28	IA575E	IMO/UNEP Guidelines on Oil Spill Dispersant Application	"
37 16 29	K578E	Manual on Oil Pollution - Section VI. IMO Guidelines for the Sampling and Identification of Oil Spills	"
37 16 93	E579E	Manual on Oil Spill Risk Evaluation and Assessment of Response Preparedness (2010 Edition)	"
37 16 94	I580E	IMO/UNEP Guidance Manual on the Assessment and Restoration of Environmental Damage Following Marine Oil Spills (2009 Edition)	"
37 16 95	I582E	Guideline for Oil Spill Response in Fast Currents (2013 Edition)	"
37 16 96	E584E	Bioremediation in Marine Oil Spills (2004 Edition)	"
37 16 97	KB586E	Guidelines for the Development of Shipboard Marine Pollution Emergency Plans (2010 Edition)	"
37 16 98	E590E	IMO/FAO Guidance on Managing Seafood Safety During and after Oil Spills (2002 Edition)	"
37 16 67	IB597E	Port Reception Facilities	"
37 16 99	E598E	Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities (2000 Edition)	"
37 17 00	KA617E	Crude Oil Washing Systems (2000 Edition)	"
37 17 64	K619E	Dedicated Clean Ballast Tanks (1982 Edition)	"

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CODE	Ref No.	Title	Unit
37 17 66	IA621E	Ballast Water Management Convention and BWMS Code with Guidelines for Implementation (2018 Edition)	Vol
37 17 94	I624E	Ballast Water Management – How to Do It	"
37 16 30	KA630E	Manual on Chemical Pollution: Section I - Problem Assessment and Response Arrangements	"
37 16 31	IA 633E	Manual on Chemical Pollution: Section II - Search and Recovery of Packaged Goods Lost at Sea.	"
37 16 32	IB636E	MARPOL - How to do it	"
37 17 67	I637E	Manual on Chemical Pollution: Section 3 – Legal and Administrative Aspects of HNS Incidents (2015 Edition)	"
37 16 33	KA646E	Pollution Prevention Equipment under MARPOL	"
37 16 34	I649E	Field Guide for Oil Spill Response in Tropical Waters	"
37 16 35	IE650E	Port State Control 2021	"
37 16 36	I653E	Guidelines for the Provisional Assessment of Liquids Transported in Bulk	"
37 16 37	IC656E	Guidelines for the Implementation of MARPOL Annex V	"
37 17 95	KA657E	Instruments relevant to Port State Control 2021	"
37 17 68	IA659E	Poster: MARPOL Annex V Discharge Provisions	"
37 17 69	K662E	Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (2012 Edition)	"
37 16 39	ID664E	MARPOL Annex VI and NC 2008 with Guidelines for Implementation	"
37 17 70	I665E	Bunkers Sampling Guidelines (2005 Edition)	"
37 17 71	KB680E	International Convention on the Control of Harmful Anti-Fouling Systems (AFS) on Ships, 2001 (2023 Edition)	"
37 17 72	I685E	IMO Guidelines on Ship Recycling (2006 Edition)	"
37 17 73	I686E	Use of Sorbents for Spill Response – an Operational Guide (2016 Edition)	"
37 16 68	IC701E	Load Lines Convention 1966 (2021 Edition)	"
37 17 74	K713E	Tonnage Measurement of Ships, 1969 (1970 Edition)	"
37 16 69	KC772E	BCH Code	"
37 16 40	E782E	Code for Construction & Equipment of Ships Carrying Liquified Gases in Bulk	"
37 17 75	K817E	Code on Noise Levels on Board Ships (2014 Edition)	"
37 17 76	KA820E	Code of Safety for Special Purpose Ships (2008 Edition)	"
37 17 77	IC844E	2010 FTP Code (2012 Edition)	"
37 16 41	IA847E	Graphical Symbols for Shipboard Fire Control Plans	"
37 17 78	KB867E	Code on Alerts and Indicators, 2009 (2010 Edition)	"
37 17 96	KC874E	The International Code on Intact Stability, 2008 (2008 IS Code)	"
37 16 43	IB904E	Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREG)	"
37 17 79	ID908E	International SafetyNET Manual (2022 Edition)	"
37 17 80	K915E	International Convention on Standards of Training, Certification and Watchkeeping for Fishing Vessel Personnel, 1995 (STCW-F) (1996 Edition)	"
37 16 44	IH927E	Ship's Routeing	"
37 16 45	ID938E	STCW (2017 Edition)	"
37 17 81	KB946E	Pocket Guide for Cold Water Survival (2012 Edition)	"
37 17 97	IA947E	A Pocket Guide to Recovery Techniques (2014 Edition)	"
37 17 82	IF951E	NAVTEX Manual (2023 Edition)	"
37 16 49	KB955E	SAR Convention. International Convention on Search and Rescue, 1979	"
37 16 50	KK960E	IAMSAR Manual (International Aeronautical and Maritime Search and Rescue Manual) Volume I - Organization and Management"	"
37 16 51	IH961E	IAMSAR Manual (International Aeronautical and Maritime Search and Rescue Manual) Volume II – Mission Coordination	"
37 16 52	KK962E	IAMSAR Manual (International Aeronautical and Maritime Search and Rescue Manual) Volume III – Mobile Facilities	"
37 17 83	IB966E	IAMSAR Manual, Volume III – Action Cards (2022 Edition)	"
37 17 98	KA968E	Guidelines on Fatigue	"
37 16 55	I969E	GMDSS Operating Guidance Card	"
37 16 57	II970E	GMDSS Manual	"
37 16 70	KG978E	Performance Standards for Shipborne Radiocommunication and Navigational Equipment	"
37 16 59	IB 981E	Poster: Life-Saving Appliances Symbols	"
37 16 60	KF982E	Life-Saving Appliances inc. LSA Code	"
37 16 71	KA987E	IMO Standard Marine Communication Phrases (IMO SMCP)	"

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CODE	Ref No.	Title	Unit
37 06 67	IB994E	International Code of Signals	Vol
37 16 63	IMOCAT	IMO Publications Catalogue	"
37 17 99	TB101E	Basic Training for Oil and Chemical Tanker Cargo Operations	"
37 17 84	ETC102E	Advanced Training for Oil Tanker Cargo Operations (Model course 1.02)	"
37 17 85	TA103E	Advanced Training for Chemical Tanker Cargo Operations (Model course 1.03)	"
37 18 00	TC104E	Basic Training for Liquefied Gas Tanker Cargo Operations	"
37 17 86	T105E	Advanced Training for Liquefied Gas Tanker Cargo Operations (Model course 1.05)	"
37 17 87	TA114E	Medical First Aid (Model course 1.14 plus compendium)	"
37 17 88	ETA127E	Operational Use of Electronic Chart Display and Information Systems (ECDIS) (Model course 1.27)	"
37 17 89	KTB203E	Advanced Training in Fire Fighting (Model course 2.03 plus compendium)	"

Sailing Directions

37 09 21	NP001	Africa Pilot Volume I	Vol
37 09 22	NP002	Africa Pilot Volume II	"
37 09 23	NP003	Africa Pilot Volume III	"
37 09 24	NP004	South-East Alaska Pilot	"
37 09 25	NP005	South America Pilot Volume I	"
37 09 26	NP006	South America Pilot Volume II	"
37 09 27	NP007	South America Pilot Volume III	"
37 09 28	NP007A	South America Pilot Volume IV	"
37 09 29	NP008	Pacific Coasts of Central America and United States Pilot	"
37 09 30	NP009	The Antarctic Pilot	"
37 09 31	NP010	Arctic Pilot Volume I	"
37 09 32	NP011	Arctic Pilot Volume II	"
37 09 33	NP012	Arctic Pilot Volume III	"
37 09 34	NP013	Australia Pilot Vol I	"
37 09 35	NP014	Australia Pilot Vol II	"
37 09 36	NP015	Australia Pilot Vol III	"
37 09 38	NP018	Baltic Pilot Vol I	"
37 09 39	NP019	Baltic Pilot Vol II	"
37 09 40	NP020	Baltic Pilot Vol III	"
37 09 41	NP021	Bay of Bengal Pilot	"
37 09 42	NP022	Bay of Biscay Pilot	"
37 09 43	NP023	Bering Sea and Strait Pilot	"
37 09 44	NP024	Black Sea and Sea of Azov Pilot	"
37 09 45	NP025	British Columbia Pilot Vol I	"
37 09 46	NP026	British Columbia Pilot Vol II	"
37 09 47	NP027	Channel Pilot	"
37 09 48	NP028	Dover Strait Pilot	"
37 09 49	NP030	China Sea Pilot Vol I	"
37 09 50	NP031	China Sea Pilot Vol II	"
37 09 51	NP032A	China Sea Pilot Vol III	"
37 09 17	NP032B	China Sea Pilot Vol IV	"
37 09 52	NP033	Philippine Islands Pilot	"
37 09 53	NP034	Indonesia Pilot Volume II	"
37 09 54	NP035	Indonesia Pilot Volume III	"
37 09 55	NP036	Indonesia Pilot Volume I	"
37 09 56	NP037	West Coast of England and Wales Pilot	"
37 09 57	NP038	West Coast of India Pilot	"
37 09 58	NP039	South Indian Ocean Pilot	"
37 09 59	NP040	Irish Coast Pilot	"
37 09 60	NP041	Japan Pilot Volume I	"
37 09 61	NP042A	Japan Pilot Volume II	"
37 09 62	NP042B	Japan Pilot Volume III	"
37 09 95	NP042C	Japan Pilot Volume IV	"

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37 09 63	NP043	South and East Coasts of Korea, East Coast of Siberia and Sea of Okhotsk Pilot	Vol
37 09 64	NP044	Malacca Strait and West Coast of Sumatera Pilot	"
37 09 65	NP045	Mediterranean Pilot Volume I	"
37 09 66	NP046	Mediterranean Pilot Volume II	"
37 09 67	NP047	Mediterranean Pilot Volume III	"
37 09 68	NP048	Mediterranean Pilot Volume IV	"
37 09 69	NP049	Mediterranean Pilot Volume V	"
37 09 70	NP050	Newfoundland and Labrador Pilot	"
37 09 71	NP051	New Zealand Pilot	"
37 09 72	NP052	North Coast of Scotland Pilot	"
37 09 73	NP054	North Sea (West) Pilot	"
37 09 74	NP055	North Sea (East) Pilot	"
37 09 75	NP056	Norway Pilot Volume I	"
37 09 76	NP057A	Norway Pilot Volume IIA	"
37 09 77	NP057B	Norway Pilot Volume IIB	"
37 09 78	NP058A	Norway Pilot Volume IIIA	"
37 09 79	NP058B	Norway Pilot Volume IIIB	"
37 09 80	NP059	Nova Scotia and Bay of Fundy Pilot	"
37 09 81	NP060	Pacific Islands Pilot Volume I	"
37 09 82	NP061	Pacific Islands Pilot Volume II	"
37 09 83	NP062	Pacific Islands Pilot Volume III	"
37 09 84	NP063	Persian Gulf Pilot	"
37 09 85	NP064	Red Sea and Gulf of Aden Pilot	"
37 09 86	NP065	St. Lawrence Pilot	"
37 09 96	NP066A	South-West Coast of Scotland Pilot	"
37 09 97	NP066B	North-West Coast of Scotland Pilot	"
37 09 88	NP067	West Coast of Spain and Portugal Pilot	"
37 09 89	NP068	East Coast of the United States Pilot Volume I	"
37 09 90	NP069	East Coast of the United States Pilot Volume II	"
37 09 91	NP069A	East Coast of Central America and Gulf of Mexico Pilot	"
37 09 92	NP070	West Indies Pilot Volume I	"
37 09 93	NP071	West Indies Pilot Volume II	"
37 09 94	NP072	Southern Barents Sea & Beloye More Pilot	"

List of Lights and Fog Signals

37 06 11	NP074	British Isles and North Coast of France, Volume. A	Vol
37 06 12	NP075	Southern & Eastern Sides of the North Sea, Volume. B	"
37 06 13	NP076	Baltic Sea including Kattegat, Belts and Sound, Volume. C	"
37 06 14	NP077	Eastern Atlantic, Western Indian, Arabian & Seas, Volume. D	"
37 06 15	NP078	West Mediterranean, Volume. E	"
37 06 16	NP079	N.E. Indian Ocean, Central part of South China and Eastern Archipelagic Seas, Volume F	"
37 06 17	NP080	Western Side of South Atlantic Ocean & East Pacific Ocean, Volume. G	"
37 06 18	NP081	Northern and Eastern Coasts of Canada, Volume. H	"
37 06 19	NP082	Western Side of the North Atlantic Ocean, Volume. J	"
37 06 20	NP083	Western Pacific Oceans, South of the Equator, Volume. K	"
37 06 21	NP084	Northern Seas: Coast of Norway North of latitude 60°55' N, Volume. L	"
37 06 57	NP085	Western Side of North Pacific Ocean, Volume. M	"
37 06 58	NP086	East Mediterranean and Black Seas, Volume. N	"
37 06 59	NP087	North Part of South China and Eastern Archipelagic Seas, Volume P	"
37 06 65	NP088	Eastern Indian Ocean, South of the Equator, Volume Q	"

U.K. Publications

37 06 68	NP100	The Mariner's Handbook	Vol
37 17 44	NP120	Admiralty Manual of Tides	"

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CODE	Ref No.	Title	Unit
37 06 92	NP131	Catalogue of Admiralty Charts and Publications	Vol
37 17 45	NP133A	Paper Chart Maintenance Record	"
37 17 51	NP133C	ENC Maintenance Record	"
37 06 71	NP136-1	Ocean Passages for the World – Atlantic Ocean Vol. I	"
37 06 93	NP136-2	Ocean Passages for the World – Indian & Pacific Oceans Vol. II	"
37 17 46	NP160	Tidal Harmonic Constants (European Waters), Edition 6 2015	"
37 17 14	NP164	Dover, Times of High Water and mean range of the Tide (published annually)	"
37 06 24	NP201A	Admiralty Tide Tables Vol. 1A - United Kingdom – English Channel to River Humber	"
37 06 25	NP201B	Admiralty Tide Tables Vol. 1B - United Kingdom and Ireland	"
37 06 07	NP202	Admiralty Tide Tables Vol. 2 - North Atlantic Ocean and Arctic Regions	"
37 06 08	NP203	Admiralty Tide Tables Vol. 3 - Indian Ocean (including Tidal Stream Tables)	"
37 06 09	NP204	Admiralty Tide Tables Vol. 4 - South Pacific Ocean (including Tidal Stream Tables)	"
37 06 10	NP205	Admiralty Tide Tables Vol. 5 - South China Sea and Indonesia (Including Tidal Stream Table)	"
37 06 23	NP206	Admiralty Tide Tables Vol. 6 - North Pacific Ocean (Including Tidal Stream Table)	"
37 06 49	NP207	Admiralty Tide Tables Vol. 7 - South West Atlantic Ocean and South America	"
37 06 50	NP208	Admiralty Tide Tables Vol. 8 - South East Atlantic Ocean, West Africa and Mediterranean (including Tidal Stream Tables)	"
37 17 16	NP209	Tidal Stream Atlas - Orkney and Shetland Islands	"
37 17 17	NP214	Co-Tidal Atlas - Persian Gulf	"
37 17 18	NP215	Co-Tidal Atlas – South East Asia	"
37 17 19	NP218	Tidal Stream Atlas - North Coast of Ireland and West Coast of Scotland	"
37 17 20	NP219	Tidal Stream Atlas - Portsmouth Harbour & Approaches	"
37 17 21	NP220	Tidal Stream Atlas - Rosyth Harbour & Approaches	"
37 17 22	NP221	Tidal Stream Atlas - Plymouth Harbour & Approaches	"
37 17 23	NP222	Tidal Stream Atlas - Firth of Clyde & Approaches	"
37 17 52	NP231	Guide to the Practical Use of ENCs	"
37 17 53	NP232	Guide to ECDIS Implementation, Policy and Procedures	"
37 17 24	NP233	Tidal Stream Atlas - Dover Strait	"
37 17 25	NP234	Cumulative List of Admiralty Notices to Mariners	"
37 17 26	NP247(1)	Annual Summary of Admiralty Notices to Mariners Part 1	"
37 17 54	NP247(2)	Annual Summary of Admiralty Notices to Mariners Part 2	"
37 17 27	NP249	Tidal Stream Atlas - Thames Estuary (with Co-Tidal Chart)	"
37 17 28	NP250	Tidal Stream Atlas - The English Channel	"
37 17 29	NP251	Tidal Stream Atlas - North Sea - Southern Part	"
37 17 30	NP252	Tidal Stream Atlas - North Sea – North Western Part	"
37 17 31	NP253	Tidal Stream Atlas - North Sea - Eastern Part	"
37 17 55	NP254	Tidal Stream Atlas - The West Country, Falmouth to Teignmouth	"
37 17 56	NP255	Tidal Stream Atlas - Falmouth to Padstow including Isles of Scilly	"
37 17 32	NP256	Tidal Stream Atlas - Irish Sea and Bristol Channel	"
37 17 33	NP257	Tidal Stream Atlas - Approaches to Portland	"
37 17 57	NP258	Tidal Stream Atlas - Bristol Channel (Ludy to Avonmouth)	"
37 17 58	NP259	Tidal Stream Atlas - Irish Sea, Eastern Part	"
37 17 59	NP263	Tidal Stream Atlas - Lyme Bay	"
37 17 34	NP264	Tidal Stream Atlas - The Channel Islands and Adjacent Coasts of France	"
37 17 35	NP265	Tidal Stream Atlas – France, West Coast	"
37 06 26	NP281(1)	Admiralty Lists of Radio Signals Vol. 1 Part 1: Maritime Radio Stations: Europe, Africa & Asia	"
37 06 27	NP281(2)	Admiralty Lists of Radio Signals Vol. 1 Part 2: Maritime Radio Stations: The Americas, Far East and Oceania	"
37 06 28	NP282(1)	Admiralty Lists of Radio Signals Vol. 2: Radio Aids to Navigation, Differential GPS (DGPS), Legal Time, Radio Time Signals & Electronic Position Fixing System, Europe, Africa and Asia (excluding the Far East)	"
37 06 94	NP282(2)	Admiralty Lists of Radio Signals Vol. 2: Radio Aids to Navigation, Differential GPS (DGPS), Legal Time, Radio Time Signals & Electronic Position Fixing System, The America, Far East and Oceania	"
37 06 30	NP283(1)	Admiralty Lists of Radio Signals Vol. 3 Part 1: Maritime Safety Information Services: Europe, Africa and Asia (excluding Far East)	"
37 06 31	NP283(2)	Admiralty Lists of Radio Signals Vol. 3 Part 2: Maritime Safety Information Services: The Americas, Far East and Oceania	"

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CODE	Ref No.	Title	Unit
37 06 32	NP284	Admiralty List of Radio Signals Vol. 4: Meteorological Observation Stations	Vol
37 06 33	NP285	Admiralty List of Radio Signals Vol. 5: Global Maritime Distress & Safety Systems (GMDSS)	"
37 06 35	NP286(1)	Admiralty List of Radio Signals Vol. 6 Part 1: Pilot Services, Vessel Traffic Services & Port Operations: United Kingdom & Europe	"
37 06 36	NP286(2)	Admiralty List of Radio Signals Vol. 6 Part 2: Pilot Services, Vessel Traffic Services & Port Operations: Europe, Arctic & Baltic Coasts	"
37 06 37	NP286(3)	Admiralty List of Radio Signals Vol. 6 Part 3: Pilot Services, Vessel Traffic Services & Port Operations: Mediterranean Sea, Black Sea, Caspian Sea & Suez Canal	"
37 06 38	NP286(4)	Admiralty List of Radio Signals Vol. 6 Part 4: Pilot Services, Vessel Traffic Services & Port Operations: Indian sub-continent, South East Asia & Australasia	"
37 06 39	NP286(5)	Admiralty List of Radio Signals Vol. 6 Part 5: Pilot Services, Vessel Traffic Services & Port Operations: North America, Canada & Greenland	"
37 06 46	NP286(6)	Admiralty List of Radio Signals Vol. 6 Part 6: Pilot Services, Vessel Traffic Services & Port Operations: North East Asia & Russia (Pacific Coast)	"
37 06 47	NP286(7)	Admiralty List of Radio Signals Vol. 6 Part 7: Pilot Services, Vessel Traffic Services & Port Operations: Central & South America & the Caribbean	"
37 06 48	NP286(8)	Admiralty List of Radio Signals Vol. 6 Part 8: Pilot Services, Vessel Traffic Services & Port Operations: Africa (excluding Mediterranean Coast), Red Sea and the Persian Gulf	"
37 17 39	NP294	How to keep Your Admiralty Products Up-to-Date	"
37 17 60	NP303(1)	Rapid Sight Reduction Tables for Navigation Vol. 1	"
37 17 61	NP303(2)	Rapid Sight Reduction Tables for Navigation Vol. 2	"
37 17 62	NP303(3)	Rapid Sight Reduction Tables for Navigation Vol. 3	"
37 06 02	NP314	The Nautical Almanac	"
37 17 47	NP321	The Star Almanac for Land Surveyors	"
37 06 73	NP323	The Star Finder & Identifier	"
37 17 40	NP337	Tidal Stream Atlas - The Solent and Adjacent Waters	"
37 06 41	NP350(1)	Admiralty Distance Tables Vol.1 - Atlantic Ocean	"
37 06 43	NP350(2)	Admiralty Distance Tables Vol. 2 - Indian Ocean	"
37 06 44	NP350(3)	Admiralty Distance Tables Vol. 3 - Pacific Ocean	"
37 17 41	NP5011	Symbols and Abbreviations Used on Paper Charts	"
37 17 63	NP5012	Guide to ENC Symbols Used in ECDIS	"
37 17 42	NP735	IALA Maritime Buoyage System	"
37 06 66	GTPE-2023	Guide to Port Entry	"
37 06 60	-	Code of Practice for Controlling Risks due to Noise on Ships	"
37 06 63	-	Code of Practice for Controlling Risks due to Whole-body Vibration in Ships	"
37 06 64	-	Code of Practice for Controlling Risks due to Hand-transmitted Vibration on Ship	"

US Publications

37 07 01	US TCTA	U.S. Tidal Current Tables - Atlantic and Gulf Coasts of the United States	Vol
37 07 02	US TCTP	U.S. Tidal Current Tables - Pacific Coast of United States Including the Hawaiian Islands	"
37 07 71	US LL1	USCG Light Lists VOL.1 - Atlantic Coast - St. Croix River, Marine to Shrewsbury River, New Jersey	"
37 07 72	US LL2	USCG Light Lists VOL.2 - Atlantic Coast - Shrewsbury River, New Jersey to Little River, South Carolina	"
37 07 73	US LL3	USCG Light Lists VOL.3 - Atlantic & Gulf Coasts - Little River, S.Carolina to Econfina River, Florida	"
37 07 74	US LL4	USCG Light Lists VOL.4 - Gulf of Mexico - Econfina River, Florida to Rio Grande, Texas	"
37 07 75	US LL5	USCG Light Lists VOL.5 - Mississippi River System	"
37 07 76	US LL6	USCG Light Lists VOL.6 - Pacific Coast & Pacific Islands	"
37 07 77	US LL7	USCG Light Lists VOL.7 - Great Lakes & The St. Lawrence River above the St. Regis River	"
37 07 21	US LL110	USCG List of Lights - Greenland, the East Coasts of North & South America & the West Indies	"
37 07 22	US PUB.111	U. S. List of Lights - The West Coasts of North & South America, Australia, Tasmania, New Zealand, & Islands of the North and South Pacific Oceans	"
37 07 23	US PUB.112	U. S. List of Lights - Western Pacific and Indian Ocean Including the Persian Gulf & Red Sea	"
37 07 24	US PUB.113	U.S. List of Lights - The West Coasts of Europe and Africa, the Mediterranean Sea, Black Sea & Azovskoye More (Sea of Azov)	"
37 07 25	US PUB.114	U.S. List of Lights - British Isles, English Channel, and North Sea	"
37 07 26	US PUB.115	U.S. List of Lights - Norway, Iceland and Arctic Ocean	"
37 07 27	US PUB.116	U.S. List of Lights - Baltic Sea with Kattegat, Belts and Sound and Gulf of Bothnia	"
37 07 07	US NOAA	U.S. Tide Tables - East and Gulf Coasts of the United States (Including the Bahamas and Caribbean)	"

(to be continued)

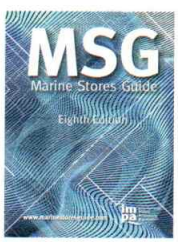
CODE	Ref No.	Title	Unit
37 07 09	US NOAA	U.S. Tide Tables - West Coast of the United States Including the Hawaian Islands and U.S. Territories in the Pacific	Vol
37 07 11	US CP1	U.S. Coast Pilot Vol. 1 – Atlantic Coast: Eastport, ME to Cape Cod, MA	"
37 07 10	US CP2	U.S. Coast Pilot Vol. 2 – Atlantic Coast: Cape Cod, MA to Sandy Hook, NJ	"
37 07 13	US CP3	U.S. Coast Pilot Vol. 3 – Atlantic Coast: Sandy Hook, NJ to Cape Henry, VA	"
37 07 14	US CP4	U.S. Coast Pilot Vol. 4 - Atlantic Coast: Cape Henry, VA to Key West, FL	"
37 07 15	US CP5	U.S. Coast Pilot Vol. 5 - Gulf of Mexico, Puerto Rico and Virgin Islands	"
37 07 16	US CP6	U.S. Coast Pilot Vol. 6 - Great Lakes & Their Connecting Waterways	"
37 07 17	US CP7	U.S. Coast Pilot Vol. 7- Pacific Coast, California	"
37 07 18	US CP8	U.S. Coast Pilot Vol. 8 - Alaska: Dixon Entrance to Cape Spencer	"
37 07 19	US CP9	U.S. Coast Pilot Vol. 9 - Pacific & Arctic Coasts Alaska: Cape Spencer to Beaufort Sea	"
37 07 20	US CP10	U.S. Coast Pilot Vol. 10 - Pacific Coast: Oregon, Washington, Hawaii and Pacific Islands	"
37 07 03	US 5090	Maneuvering Board (Pad of 50)	"
37 07 04	US WP9998	9998 Chart Correction Template	"
37 07 05	US PUB.9	American Practical Navigator "Bowditch" Vol 1 & 2	"
37 07 56	US NV102	International Code of Signals (U.S) Pub. 102	"
37 07 41	US NV105	Atlas of Pilot Charts - South Atlantic Ocean	"
37 07 42	US NV106	Atlas of Pilot Charts - North Atlantic Ocean	"
37 07 43	US NV107	Atlas of Pilot Charts - South Pacific Ocean	"
37 07 44	US NV108	Atlas of Pilot Charts - North Pacific Ocean	"
37 07 45	US NV109	Atlas of Pilot Charts - Indian Ocean	"
37 07 53	US RA117	Radio Navigational Aids	"
37 07 59	US NV150	World Port Index	"
37 07 57	US NV151	Distance Between Ports	"
37 07 58	US NR1	USCG Navigation Rules and Regulations Handbook	"
37 07 48	US PUB125	U.S. Sailing Directions - West Coast of South America	"
37 07 31	US SR229-1	Sight Reduction Tables Marine Navigation Vol 1 Lat. 0 to 15 Inclusive	"
37 07 32	US SR229-2	Sight Reduction Tables Marine Navigation Vol 2 Lat. 15 to 30 Inclusive	"
37 07 33	US SR229-3	Sight Reduction Tables Marine Navigation Vol 3 Lat. 30 to 45 Inclusive	"
37 07 34	US SR229-4	Sight Reduction Tables Marine Navigation Vol 4 Lat. 45 to 60 Inclusive	"
37 07 35	US SR229-5	Sight Reduction Tables Marine Navigation Vol 5 Lat. 60 to 75 Inclusive	"
37 07 36	US SR229-6	Sight Reduction Tables Marine Navigation Vol 6 Lat. 75 to 90 Inclusive	"
37 07 38	US SR249-1	Sight Reduction Tables for Air Navigation Vol 1 Selected Stars	"
37 07 39	US SR249-2	Sight Reduction Tables for Air Navigation Vol 2 Lat. 0 to 40	"
37 07 40	US SR249-3	Sight Reduction Tables for Air Navigation Vol 3 Lat. 39 to 89	"
37 18 01	US CFR33-1	U.S. Code of Federal Regulations (Part 1 to 124)	"
37 18 02	US CFR33-2	U.S. Code of Federal Regulations (Part 125 to 199)	"
37 18 03	US CFR33-3	U.S. Code of Federal Regulations (Part 200 to end)	"
37 18 05	US CFR46-1	U.S. Code of Federal Regulations - 46 (Part 1 - 40)	"
37 18 06	US CFR46-2	U.S. Code of Federal Regulations - 46 (Part 41 - 69)	"
37 18 07	US CFR46-3	U.S. Code of Federal Regulations - 46 (Part 70 - 89)	"
37 18 08	US CFR46-4	U.S. Code of Federal Regulations - 46 (Part 90 - 139)	"
37 18 09	US CFR46-5	U.S. Code of Federal Regulations - 46 (Part 140 - 155)	"
37 18 10	US CFR46-6	U.S. Code of Federal Regulations - 46 (Part 156 - 165)	"
37 18 11	US CFR46-7	U.S. Code of Federal Regulations - 46 (Part 166 - 199)	"
37 18 12	US CFR46-8	U.S. Code of Federal Regulations - 46 (Part 200 - 499)	"
37 18 13	US CFR46-9	U.S. Code of Federal Regulations - 46 (Part 500 - END)	"
37 18 44	US CG515	CG-515 + Foreign Vessel Rules A Complication of Applicable CFR33 & CFR46	"
37 18 14	US CFR47-1	U.S. Code of Federal Regulations - 47 (Part 0 - 19) 2021	"
37 18 15	US CFR47-2	U.S. Code of Federal Regulations - 47 (Part 20 - 39) 2021	"
37 18 16	US CFR47-3	U.S. Code of Federal Regulations - 47 (Part 40 - 69) 2021	"
37 18 17	US CFR47-4	U.S. Code of Federal Regulations - 47 (Part 70 - 79) 2021	"
37 18 18	US CFR47-5	U.S. Code of Federal Regulations - 47 (Part 80 - END) 2021	"
37 18 19	US CFR49-1	U.S. Code of Federal Regulations - 49 (Part 1 to 99)	"

(to be continued)

CODE	Ref No.	Title	Unit
37 18 20	US CFR49-2	U.S. Code of Federal Regulations - 49 (Part 100 to 177)	Vol
37 18 21	US CFR49-3	U.S. Code of Federal Regulations - 49 (Part 178 to 199)	"
37 18 22	US CFR49-4	U.S. Code of Federal Regulations - 49 (Part 200 - 299)	"
37 18 42	US CFR49-5	U.S. Code of Federal Regulations - 49 (Part 300 - 399)	"
37 18 23	US CFR49-6	U.S. Code of Federal Regulations - 49 (Part 400- 571)	"
37 18 43	US CFR49-7	U.S. Code of Federal Regulations - 49 (Part 572 - 999)	"
37 18 24	US CFR49-8	U.S. Code of Federal Regulations - 49 (Part 1000 - 1199)	"
37 18 25	US CFR49-9	U.S. Code of Federal Regulations - 49 (Part 1200 - End)	"
37 18 45	US PUB NO.1	U.S. Chart No. 1: Symbols, Abbreviations and Terms used on Paper and Electronic Navigational Charts	"
37 18 46	US PUB 241	Garbage Record Book	"
37 18 47	US PUB 242	Ballast Water Record Book	"
37 18 48	US PUB 248	Chemical Data Guide for Bulk Shipment by Water USCG CIM 16616.6A	"
37 18 49	US PUB.1310	Radar Navigation and Maneuvering Board Manual	"
37 18 26	ASTM101	A.S.T.M. Petroleum Measurement Tables Vol.1, Generalized Crude Oils (Tables 5A & 6A)	"
37 18 27	ASTM102	A.S.T.M. Petroleum Measurement Tables Vol.2, Generalized Products (Tables 5B & 6B)	"
37 18 28	ASTM103	A.S.T.M. Petroleum Measurement Tables Vol.3, Individual and Special Applications (Tables 6C)	"
37 18 29	ASTM104	A.S.T.M. Petroleum Measurement Tables Vol.4, Generalized Crude Oils (Tables 23A & 24A)	"
37 18 30	ASTM105	A.S.T.M. Petroleum Measurement Tables Vol.5, Generalized Products (Tables 23B & 24B)	"
37 18 31	ASTM106	A.S.T.M. Petroleum Measurement Tables Vol.6, Individual and Special Applications (Tables 24C)	"
37 18 32	ASTM107	A.S.T.M. Petroleum Measurement Tables Vol.7, Generalized Crude Oils (Tables 53A & 54A)	"
37 18 33	ASTM108	A.S.T.M. Petroleum Measurement Tables Vol.8, Generalized Products (Tables 53B & 54B)	"
37 18 34	ASTM109	A.S.T.M. Petroleum Measurement Tables Vol.9, Individual and Special Applications (Tables 54C)	"
37 18 35	ASTM110	A.S.T.M. Petroleum Measurement Tables Vol.10, Background Development and Computer Documentation	"
37 18 36	ASTM111	A.S.T.M. Petroleum Measurement Tables Vol.11 & 12, Intraconversion between Volume & Density Measures	"
37 18 40	ASTM 1155M	Standard Test Method for Calculation of Volume and Weight of Industrial Aromatic Hydrocarbons and Cyclohexane	"
37 18 38	M.E.T.516	US Port State Control	"
37 18 39	USCG 515	Rules and Regulations for Foreign Vessels Operating in the Navigable Waters of the United States	"
37 18 50	US MRPC	Regulations for Transiting the Panama Canal (including CD-ROM)	"

Marine Stores Guide

Guía Pertrechos Marinos
船用品カタログ
船用物料手册



A reference book for international marine ships stores. This catalogue is published for ship owners, ship's officers and ship suppliers.

37 08 03	Marine stores guide	Vol.

Chart Catalogues

Cátalogo de Cartas Náuticas
海図カタログ　英国海図目录

Many chart catalogues are available as per list below. Some of the chart catalogues has several volumes, so please specify volume number when ordering.

37 08 06	British admiralty chart catalogue NP-131	Vol.
07	NGA (America) chart catalogue	"
08	Australian chart catalogue	"
09	Japanese chart catalogue No. 900	"
10	Canadian chart catalogue	"
11	New Zealand chart catalogue	"

Nautical Charts

Cartas Náuticas　海図　海图

Most popular charts are listed below without chart numbers. When ordering, specify the type and number of the chart required.

British

37 08 16	Admiralty chart	Sht
17	Admiralty chart folio	Set
19	Loran C navigator chart	Sht
20	Omega navigator chart	"

(to be continued)

	American	
37 08 23	NIMA (National Imagery and Mapping Agency) chart	Sht
24	NOS (National Ocean Survey) chart	"
	Japanese	
37 08 26	Japanese chart	Sht
28	Loran C navigator chart	"
	Australian	
37 08 31	Australian chart	Sht
	Canadian	
37 08 36	Canadian chart	Sht
38	Loran-C navigator chart	"
	Other Countries	
37 08 41	New Zealand chart	Sht
42	Chinese chart	"
43	Egyptian chart	"

Marine Forms

Formularios Marinos
船舶用書式　航海日志

Various kinds of marine forms are published. The most popular items are listed below.

Unit Per Vol

CODE	Description	Size
	For Deck Dept.	
37 08 51	Ship's log book (0010)	B-4
52	Noon report (for deck use) (0150)	B-6
53	Oil record book (for tankers) (0210)	B-4
54	Bell book (for deck use) (0160)	-
71	Official log book (0030)	A-4
37 08 72	Deck abstract log (0040)	B-3
73	Commander's daily report (0070)	B-6
74	Quarter master's daily report (0080)	B-6
75	Bridge daily report (0090)	B-6
76	Chronometer journal (0100)	B-5
37 08 77	Compass journal (0110)	B-5
78	Bridge order book (0140)	B-5
79	Radar log (0170)	A-4
80	Radar log	B-4
81	Night order book (0180)	A-4
37 08 82	Sight observation note book (0190)	A-4
83	Compass Error Log Book	-
	For Engine Dept.	
37 08 57	Chief engineer's log book (1020)	A-3
60	Noon report (for engine use) (1250)	B-6
61	Oil record book (for all ships) (1160)	B-4
62	Bell book (for engine use) (1260)	A-5
94	Chief engineer's night order book	A-4
37 08 95	Dynamo & auxiliary log book (1080)	A-4
96	Dynamo engine diary (1090)	A-4
97	Chief engineer's abstract log (1100)	B-3
98	Chief engineer's log book of refrigerating machinery (1130)	B-5
99	Chief engineer's daily report (1140)	B-6
	For Radio Room	
37 08 66	Radio log book (2205)	A-4
67	Radar log book	A-4
68	GMDSS radio log (English) (2207)	A-4
69	VHF radio telephone log (2211)	B-5
70	Bridge report (2250)	B-5
86	Inventory (2550)	A-4

(to be continued)

	Custom Forms	
37 09 01	Declaration inward / outward of vessel	A-4
02	Cargo manifest	A-3
03	Crew manifest	A-4
04	Parcel list (4830)	A-4
05	Declaration of crew's baggages	A-4
	Sanitary Forms	
37 09 06	Sanitary Log Book (2710)	A-4
	IMO Forms	
37 09 11	General declaration (IMO371.E)	A-4
12	Freight/cargo manifest	A-4
13	Ship's stores declaration (IMO373.E)	A-3
14	Crew's effects declaration (IMO374.E)	A-4
15	Crew list (IMO375.E)	A-4
16	Passenger list (IMO376.E)	A-4

Marine Forms for Panamanian Flag Vessel

Formularios Marítimos para Buques de Bandera Panameña
パナマ籍船舶用書籍　在巴拿马注册的船只的书籍

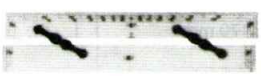
The following marine forms for Panamanian flag vessel must be authenticated by the Panamanian Consulate before delivery on board.

37 08 87	Oil record book authenticated by the Panamanian Consulate	Vol.
88	Official log book authenticated by the Panamanian Consulate	"
89	Vessel crew logbook authenticated by the Panamanian Consulate	"

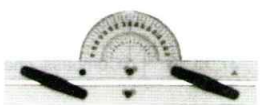
Parallel Rules

Reglas Paralelas　平行定規　平行尺

Made of transparent plastic in wooden case. Available in plain or with semi circular protractor.



Plain



with Protractor

Unit Per Pc.

Plain		with Protractor	
CODE	Length mm	CODE	Length mm
37 10 01	450	**37 10 03**	450
02	600	**04**	600

Nautical Triangles

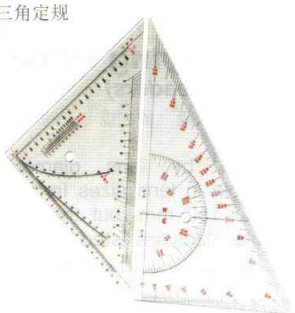
(Set Squares)

Triángulos Náuticas　三角定規　三角定规

"Inoue" and "Kent" types are available.

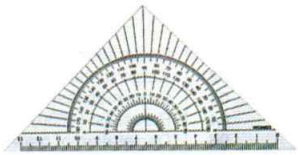
1. Inoue Type

Nautical Triangles, a position finder for the navigator, consisting of a danger-angle triangle (A) and a protractor triangle (B) made of transparent plastic, 36 cm.



A　B

2. Kent Type



Two 45° triangles provide an easy method for plotting position and course and doing other chart work. Using protractor scales, the triangle is easily aligned in any direction with a chart meridian. Direction is maintained as one triangle is slid along the other to the desired position. Durable, clear, vinylite. Long side length 30 cm.

CODE	Type	Function	Size mm	Unit
37 10 07	Inoue	Danger angle and protractor	360 mm	Pr.
08	Kent	Protractor	300 mm	Pc.

Chart Dividers

Compás de División para Carta Náutica
海図用ディバイダー（両脚器）
海图两脚规

An instrument for chart work and other marine and engineering requirements. Made of brass with sharp steel points.

Unit Per Pr.

CODE	**37 10 11**	**37 10 12**	**37 10 13**
Length	150 mm	170 mm	200 mm

Chart Room Compasses

Compás de Cuarto para Carta Náutica
海図用コンパス
海图用室内两脚规

Extendible arm with a pencil lead point. The maximum circle diameter is 380 mm. 170 mm in overall length.

37 10 16	Compass, chart room, 170 mm	Pr.

Chart Weights

Pisapapeles para Carta Náutica　文鎮　海图压

Designed to keep charts firmly in place on the chart table. Backed with soft cloth in order not to scratch or harm charts and other papers.

Unit Per Pc.

CODE	**37 10 21**	**37 10 22**	**37 10 23**
Weight	550 grm	930 grm	1,300 grm

Magnifying Glasses
(Round Readers)

Lupas　拡大鏡　放大镜

Ordered by lens diameter. Available in lens sizes from 50 mm to 150 mm, but the most popular sizes are listed below.

Unit Per Pc.

CODE	**37 10 26**	**37 10 27**	**37 10 28**
Lens Diam.	75 mm	90 mm	100 mm

Chart Brushes

Cepillos para Carta Náutica
海図用ブラシ　海图用刷

A feather brush with grip. Overall length 270 mm.

37 10 31	Chart brush, feather 270 mm	Pc.

Illuminated Magnifiers

Lupa con Iluminación　照明拡大鏡　照明放大镜

The illumination magnifier product uses a large-diameter glass lens and a white LED as the light source.

It is highly effective for visual inspection and difficult assembly work of precision parts. This illuminated magnifier has a function to control the brightness of the illumination.

The product itself is compatible with 100 to 240 V as standard, but the outlet plug must be changed when used outside Japan.

Flexible Arm Type

Light Box Type

How to order: CODE

Illuminated magnifier, TYPE

Unit Per Pc.

CODE		**37 10 51**	**37 10 54**
Type		Flexible Arm Type	Light Box Type
Voltage		100 ～ 240V	
Lens	Diam.	130 mm	
	Magnification	× 3	
	Focus Length	130 mm	
Box Size		-	340 × 353 × 60 mm
Arm Overall Length		1,000 mm	-
Height		-	353 mm
Weight		2.5 kg	3.7 kg
Main Usage		For precision work	For precision work on a desk

Flags

Banderas Mercantes　国旗、商船旗　商船旗

National Flag

Ensign

A ship hoists her National flag (Sometimes "Civil Ensign") at ship's stern to denote nationality and hoists a national flag of a country where ship called as a matter of courtesy at ship's foremasthead. Few countries, such as the United Kingdom, have national flags for land purpose and ensign for maritime purpose with different pattern and they hoist ensign as ship's own national flag at ship's stern. When ordering please do not confuse this matter.

Flags are made of warp-knitting polyester, if not any other material are specially required. The flag hook is normally separate order.

National Flags

Banderas Nacionales 国旗 国旗

How to order: CODE

Flag, national, COUNTRY NAME, SIZE

Size: 2' × 3', 3' × 4' and 3' × 5'

Unit Per Sht.

CODE			Country Name
2' × 3'	3' × 4'	3' ×5'	
-	37 34 01	-	Afghanistan
37 31 02	02	37 37 02	Albania
-	03	-	Alderney
37 31 04	37 12 83	37 37 04	Algeria
-	37 34 05	-	American Samoa
-	37 34 06	-	Andorra
37 31 07	37 12 84	37 37 07	Angola
-	37 34 08	-	Anguilla
37 31 09	09	37 37 09	Antigua & Barbuda
10	37 12 01	10	Argentina
-	37 34 11	-	Armenia
37 31 12	12	37 37 12	Aruba
13	37 12 02	13	Australia
-	37 34 14	-	Austria
37 31 15	15	37 37 15	Republic of Azerbaijan
37 31 16	37 34 16	37 37 16	The Bahamas
17	17	17	Bahrain
18	37 12 85	18	Bangladesh
19	37 34 19	19	Barbados
-	20	-	Belarus
37 31 21	37 12 03	37 37 21	Belgium
22	37 34 22	22	Belize
23	23	23	Benin
24	24	24	Bermuda
-	25	-	Bhutan
37 31 26	37 12 04	37 37 26	Bolivia
27	37 34 27	27	Bosnia & Herzegovina
-	28	-	Botswana
37 31 29	37 12 05	37 37 29	Brazil
-	37 34 30	-	British Antarctic Territory
-	37 34 31	-	British Indian Ocean Territory
37 31 32	37 12 86	37 37 32	Brunei
33	06	33	Bulgaria
-	37 34 34	-	Burkina Faso
-	35	-	Burundi
37 31 36	37 34 36	37 37 36	Cambodia
-	37	37	Cameroon
37 31 38	37 12 08	-	Canada
40	37 34 40	-	Cabo Verde
41	41	-	Cayman Islands
-	37 34 42	-	Central African Republic
-	43	-	Republic of Chad
37 31 44	37 12 09	37 37 44	Chile
45	10	45	China (People's Republic of China)
-	37 34 46	-	Christmas Island
37 31 47	37 12 11	37 37 47	Colombia
-	37 34 48	-	Comoros
37 31 49	37 12 87	37 37 49	Congo, Democratic Republic
50	88	-	Congo, Republic
-	37 34 51	-	Cook Islands
37 31 52	37 12 12	37 37 52	Costa Rica
53	95	53	Cote D'Ivoire
54	37 34 54	54	Croatia
55	37 12 13	55	Cuba
57	14	57	Cyprus
37 31 58	37 34 58	37 37 58	The Czech Republic
59	37 12 16	59	Denmark
60	89	60	Djibouti
61	37 34 61	61	Dominica (Commonwealth of)
62	62	62	Dominican Republic
37 31 64	37 12 17	37 37 64	Ecuador
65	18	65	Egypt
66	19	66	El Salvador
67	90	67	Equatorial Guinea
68	91	68	Eritrea
37 31 69	37 34 69	37 37 69	Estonia
70	70	37 37 70	Ethiopia
71	71	-	Falkland Islands
-	72	-	Faroe Islands
37 31 73	73	37 37 73	Fiji
37 31 74	37 12 20	37 37 74	Finland
75	21	75	France
-	37 34 76	-	French Polynesia
-	77	-	French Southern & Antarctic Lands
78	37 12 92	37 37 78	Gabon
37 31 79	37 34 79	37 37 79	Republic of The Gambia
80	80	80	Georgia
81	37 12 23	81	Germany, (Federal Republic of)
82	37 34 82	82	Ghana
83	37 12 93	83	Gibraltar
37 31 84	37 12 24	37 37 84	Greece
-	37 34 85	-	Greenland
37 31 86	86	37 37 86	Grenada
-	87	-	Guam
37 31 88	37 12 25	37 37 88	Guatemala
-	37 34 89	-	Guernsey
37 31 90	90	37 37 90	Republic of Guinea
91	91	91	Republic of Guinea-Bissau
92	92	-	Guyana
93	37 12 26	37 37 93	Haiti
37 31 94	37 12 27	37 37 94	Honduras
95	94	95	Hong Kong
-	37 34 96	-	Hungary
37 31 97	37 12 28	37 37 97	Iceland
98	29	98	India
37 31 99	37 12 30	37 37 99	Indonesia
37 32 00	31	37 38 00	Iran
01	32	01	Iraq
02	33	02	Ireland
03	37 35 03	-	Isle of Man
37 32 04	37 12 34	37 38 04	Israel
05	35	05	Italy
06	36	06	Jamaica
07	37	07	Japan
-	37 35 08	-	Jersey
37 32 09	37 12 96	37 38 09	Jordan
10	37 35 10	10	Kazakhstan
11	11	11	Kenya
12	12	-	Kiribati
13	37 12 38	37 38 13	Korea, North (Democratic People's Republic of Korea)
37 32 14	37 12 39	37 38 14	Korea, South (Republic of Korea)
15	40	15	Kuwait
-	37 35 16	-	Kyrgyzstan
37 32 17	17	37 38 17	Laos
18	18	18	Latvia
37 32 19	37 12 41	37 38 19	Republic of Lebanon
-	37 35 20	-	Lesotho
37 32 21	37 12 42	37 38 21	Liberia
22	43	22	Libya
-	37 35 23	-	Liechtenstein

(to be continued)

(to be continued)

Unit Per Sht.

CODE			Country Name
2' × 3'	3' × 4'	3' ×5'	
37 32 24	37 35 24	37 38 24	Lithuania
-	25	-	Luxembourg
37 32 26	26	-	Macao
-	27	-	Macedonia
37 32 28	28	37 38 28	Madagascar
-	37 35 29	-	Malawi
37 32 30	37 12 44	37 38 30	Malaysia
31	37 35 31	31	Republic of Maldives
-	32	-	Mali
37 32 33	33	37 38 33	Malta
37 32 34	37 35 34	37 38 34	Marshall Islands
35	35	35	Mauritania
36	36	36	Mauritius
37	37 12 45	37	Mexico
38	37 35 38	38	Micronesia
-	37 35 39	-	Midway Island (Atoll)
-	40	-	Moldova
37 32 41	41	37 38 41	Monaco
-	42	-	Mongolia
37 32 43	43	37 38 43	Montenegro
-	37 35 44	-	Montserrat
37 32 45	37 12 46	37 38 45	Morocco
46	47	46	Mozambique
47	37 35 47	47	Myanmar
48	37 12 97	48	Namibia
37 32 49	37 35 49	37 38 49	Nauru
-	50	-	Nepal
37 32 51	37 12 48	37 38 51	The Netherlands
53	37 35 53	53	New Caledonia
54	37 12 49	54	New Zealand
37 32 55	37 12 50	37 38 55	Nicaragua
-	37 35 56	-	Niger
37 32 57	37 12 51	37 38 57	Nigeria
-	37 35 58	-	Niue
-	59	-	Norfolk Islands
-	37 35 60	-	Northern Cyprus
-	61	-	Northern Ireland
-	62	-	Northern Marianas
37 32 63	37 12 52	37 38 63	Norway
64	98	64	Oman
37 32 65	37 12 53	37 38 65	Pakistan
-	37 35 66	-	Palau
-	67	-	Palestine
37 32 68	37 12 54	37 38 68	Panama
69	37 35 69	69	Papua New Guinea
37 32 70	37 12 55	37 38 70	Paraguay
71	56	71	Peru
72	57	72	Philippines
-	37 35 73	-	Pitcairn Islands
37 32 75	37 12 58	37 38 75	Poland
37 32 76	37 12 59	37 38 76	Portugal
77	60	77	Puerto Rico
78	99	78	Qatar
79	61	79	Romania
80	37 35 80	80	Russian Federation
-	37 35 81	-	Rwanda
37 32 82	82	37 38 82	Saint Kitts and Nevis
83	83	83	Saint Lucia
-	84	-	St. Helena & Dependencies
-	85	-	St. Pierre & Miquelon
37 32 86	37 15 91	37 38 86	Saint Vincent and the Grenadines
87	37 35 87	87	Samoa
-	88	-	San Marino
37 32 89	89	37 38 89	Sao Tome & Principe
-	90	-	Sark
37 32 91	37 12 62	37 38 91	Saudi Arabia
92	37 15 92	92	Senegal
-	37 35 93	-	Republic of Serbia
37 32 94	94	37 38 94	Seychelles
95	95	95	Sierra Leone
37 32 96	37 12 63	37 38 96	Singapore
97	37 35 97	97	Slovak Republic
98	98	98	Slovenia
99	99	99	Solomon Islands
37 33 00	37 12 64	37 39 00	Somalia
-	37 36 01	-	Somaliland
37 33 02	37 12 65	37 39 02	South Africa
-	37 36 03	-	South Georgia & South Sandwich Islands
37 33 04	37 12 66	37 39 04	Spain
05	37 15 93	05	Sri Lanka
37 33 06	37 15 94	37 39 06	The Sudan
07	37 36 07	07	Suriname
-	08	-	Swaziland
09	37 12 67	37 39 09	Sweden
10	68	10	Switzerland
37 33 11	37 12 69	37 39 11	Syria
12	70	12	Taiwan (Republic of China)
-	37 36 13	-	Tajikistan
37 33 14	14	37 39 14	Tanzania
15	37 12 71	15	Thailand
-	37 36 16	-	Timor-Leste
37 33 17	17	37 39 17	Togo
18	18	18	Tonga
19	19	19	Trinidad & Tobago
-	20	-	Tristan Da Cunha
37 33 21	37 12 72	37 39 21	Tunisia
22	73	22	Turkey
-	37 36 23	-	Turkmenistan
-	24	-	Turks & Caicos Islands
37 33 25	25	37 39 25	Tuvalu
-	37 36 26	-	Uganda
37 33 27	27	37 39 27	Ukraine
28	37 12 75	28	United Arab Emirates
29	74	29	U. K. (United Kingdom of Great Britain and Northern Ireland)
30	78	30	U. S. A. (United State of America)
37 33 31	37 12 76	37 39 31	Uruguay
-	37 36 32	-	Uzbekistan
37 33 33	33	37 39 33	Vanuatu
-	34	-	Vatican City
37 33 35	37 12 79	37 39 35	Venezuela
37 33 36	37 12 80	37 39 36	Vietnam
37	37 36 37	37	Virgin Islands (British)
38	38	38	Virgin Islands (U.S.A.)
-	39	-	Wake Island
-	40	-	Wales
-	37 36 41	-	Wallis & Futuna
-	42	-	Sahrawi Arab Democratic Republic
37 33 43	37 15 95	37 39 43	Yemen
-	37 36 44	-	Zambia
-	45	-	Zimbabwe

(to be continued)

Size: 4' ×6' and 6' × 8'

Unit Per Sht.

CODE		Country Name
4' × 6'	6' × 8'	
37 40 01	-	Afghanistan
37 11 87	37 43 02	Albania
37 40 03	-	Alderney
37 11 01	37 43 04	Algeria
37 40 05	-	American Samoa
37 40 06	-	Andorra
37 11 02	37 43 07	Angola
37 40 08	-	Anguilla
37 11 03	37 43 09	Antigua & Barbuda
37 13 01	37 14 01	Argentina

(to be continued)

Unit Per Sht.

CODE 4' × 6'	CODE 6' × 8'	Country Name
37 40 11	-	Armenia
37 11 73	37 43 12	Aruba
37 13 02	37 14 02	Australia
37 40 14	-	Austria
37 11 04	37 43 15	Republic of Azerbaijan
37 11 05	37 43 16	The Bahamas
06	17	Bahrain
07	18	Bangladesh
74	19	Barbados
37 40 20	-	Belarus
37 13 03	37 14 03	Belgium
37 11 08	37 43 22	Belize
51	23	Benin
52	24	Bermuda
37 40 25	-	Bhutan
37 13 04	37 14 04	Bolivia
37 11 09	37 43 27	Bosnia & Herzegovina
37 40 28	-	Botswana
37 13 05	37 14 05	Brazil
37 40 30	-	British Antarctic Territory
37 40 31	-	British Indian Ocean Territory
37 11 10	37 43 32	Brunei
37 13 06	37 14 06	Bulgaria
37 40 34	-	Burkina Faso
35	-	Burundi
37 11 11	37 43 36	Cambodia
53	-	Cameroon
37 13 08	37 14 08	Canada
37 40 39	-	Canary Island
40	-	Cabo Verde
37 40 41	-	Cayman Islands
42	-	Central African Republic
43	-	Republic of Chad
37 13 09	37 14 09	Chile
10	10	China (People's Republic of)
37 40 46	-	Christmas Island
37 13 11	37 14 11	Colombia
37 40 48	-	Comoros
37 11 88	37 43 49	Congo, Democratic Republic
89	50	Congo, Republic
37 40 51	-	Cook Islands
37 13 12	37 14 12	Costa Rica
37 11 55	37 43 53	Cote D'Ivoire
12	54	Croatia
37 13 13	37 14 13	Cuba
37 40 56	-	Curacao
37 13 14	37 14 14	Cyprus
37 11 13	37 43 58	The Czech Republic
37 13 16	37 14 16	Denmark
37 11 56	37 43 60	Djibouti
37 11 14	37 43 61	Dominica (Commonwealth of)
15	62	Dominican Republic
37 40 63	-	Dubai
37 13 17	37 14 17	Ecuador
18	18	Egypt
37 13 19	37 14 19	El Salvador
37 11 75	37 43 67	Equatorial Guinea
57	68	Eritrea
16	69	Estonia
58	70	Ethiopia
37 40 71	37 43 71	Falkland Islands
72	-	Faroe Islands
37 11 17	37 43 73	Fiji
37 13 20	37 14 20	Finland
21	21	France
37 40 76	-	French Polynesia
77	-	French Southern & Antarctic Lands
37 11 59	37 43 78	Gabon
90	79	Republic of The Gambia
18	80	Georgia

(to be continued)

37 13 23	37 14 23	Germany, (Federal Republic of)
37 11 60	37 43 82	Ghana
76	37 14 83	Gibraltar
37 13 24	24	Greece
37 40 85	-	Greenland
37 11 19	37 43 86	Grenada
37 40 87	-	Guam
37 13 25	37 14 25	Guatemala
37 40 89	-	Guernsey
37 11 21	37 43 90	Republic of Guinea
37 11 20	37 43 91	Republic of Guinea-Bissau
37 40 92	-	Guyana
37 13 26	37 14 26	Haiti
27	27	Honduras
37 11 91	37 43 95	Hong Kong
37 40 96	-	Hungary
37 13 28	37 14 28	Iceland
29	29	India
30	30	Indonesia
31	31	Iran
37 13 32	37 14 32	Iraq
33	33	Ireland
37 41 03	-	Isle of Man
37 13 34	37 14 34	Israel
35	35	Italy
37 13 36	37 14 36	Jamaica
37	37	Japan
37 41 08	-	Jersey
37 11 23	37 44 09	Jordan
24	10	Kazakhstan
37 11 25	37 44 11	Kenya
61	12	Kiribati
37 13 38	37 14 38	Korea, North (Democratic People's Republic of Korea)
39	39	Korea, South (Republic of Korea)
40	40	Kuwait
37 41 16	-	Kyrgyzstan
37 11 26	37 44 17	Laos
27	18	Latvia
37 13 41	37 14 41	Republic of Lebanon
37 41 20	-	Lesotho
37 13 42	37 14 42	Liberia
43	43	Libya
37 41 23	-	Liechtenstein
37 11 28	37 44 24	Lithuania
37 41 25	-	Luxembourg
37 41 26	37 44 26	Macao
27	-	Macedonia
37 11 29	37 44 28	Madagascar
37 41 28	-	Madeira
37 41 29	-	Malawi
37 13 44	37 14 44	Malaysia
37 11 30	37 44 31	Republic of Maldives
37 41 32	-	Mali
37 11 31	37 44 33	Malta
78	34	Marshall Islands
62	35	Mauritania
37 11 63	37 44 36	Mauritius
37 13 45	37 14 45	Mexico
37 11 32	37 44 38	Micronesia
37 41 39	-	Midway Island (Atoll)
40	-	Moldova
37 11 92	37 44 41	Monaco
37 41 42	-	Mongolia
37 11 93	37 44 43	Montenegro
37 41 44	-	Montserrat
37 13 46	37 14 46	Morocco
37 13 47	37 14 47	Mozambique
37 11 33	37 44 47	Myanmar
34	48	Namibia
64	49	Nauru
37 41 50	-	Nepal

(to be continued)

Unit Per Sht.

CODE 4' × 6'	CODE 6' × 8'	Country Name
37 13 48	37 14 48	The Netherlands
37 11 81	37 44 53	New Caledonia
37 13 49	37 14 49	New Zealand
50	50	Nicaragua
37 41 56	-	Niger
37 13 51	37 14 51	Nigeria
37 41 58	-	Niue
59	-	Norfolk Islands
60	-	Northern Cyprus
61	-	Northern Ireland
37 41 62	-	Northern Marianas
37 13 52	37 14 52	Norway
37 11 35	37 44 64	Oman
37 13 53	37 14 53	Pakistan
37 41 66	-	Palau
37 41 67	-	Palestine
37 13 54	37 14 54	Panama
37 11 36	37 44 69	Papua New Guinea
37 13 55	37 14 55	Paraguay
56	56	Peru
37 13 57	37 14 57	Philippines
37 41 73	-	Pitcairn Islands
37 41 74	-	Pohnpei
37 13 58	37 14 58	Poland
59	59	Portugal
37 13 60	37 14 60	Puerto Rico
37 11 65	37 44 78	Qatar
37 13 61	37 14 61	Romania
37 11 37	37 44 80	Russian Federation
37 41 81	-	Rwanda
37 11 82	37 44 82	Saint Kitts and Nevis
83	83	Saint Lucia
37 41 84	-	St. Helena & Dependencies
85	-	St. Pierre & Miquelon
37 11 43	37 44 86	Saint Vincent and Grenadines
37 11 94	37 44 87	Samoa
37 41 88	-	San Marino
37 11 95	37 44 89	Sao Tome & Principe
37 41 90	-	Sark
37 13 62	37 14 62	Saudi Arabia
37 11 66	37 44 92	Senegal
37 41 93	-	Republic of Serbia
37 11 38	37 44 94	Seychelles
67	95	Sierra Leone
37 13 63	37 14 63	Singapore
37 11 39	37 44 97	Slovak Republic
40	98	Slovenia
68	99	Solomon Islands
37 13 64	37 14 64	Somalia
37 42 01	-	Somaliland
37 13 65	37 14 65	South Africa
37 42 03	-	South Georgia & South Sandwich Islands
37 13 66	37 14 66	Spain
37 11 42	37 45 05	Sri Lanka
44	06	The Sudan
37 11 41	37 45 07	Suriname
37 42 08	-	Swaziland
37 13 67	37 14 67	Sweden
68	68	Switzerland
69	69	Syria
37 13 70	37 14 70	Taiwan (Republic of China)
37 42 13	-	Tajikistan
37 11 69	37 45 14	Tanzania
37 13 71	37 14 71	Thailand
37 42 16	-	Timor-Leste
37 11 70	37 45 17	Togo
71	18	Tonga
45	19	Trinidad & Tobago
37 42 20	-	Tristan Da Cunha
37 13 72	37 14 72	Tunisia

(to be continued)

37 13 73	37 14 73	Turkey
37 42 23	-	Turkmenistan
24	-	Turks & Caicos Islands
37 11 72	37 45 25	Tuvalu
37 42 26	-	Uganda
37 11 46	37 45 27	Ukraine
37 13 75	37 14 75	United Arab Emirates
74	74	U. K. (United Kingdom of Great Britain and Northern Ireland)
37 13 78	78	U. S. A. (United State of America)
76	76	Uruguay
37 42 32	-	Uzbekistan
37 11 47	37 45 33	Vanuatu
37 42 34	-	Vatican City
37 13 79	37 14 79	Venezuela
80	80	Vietnam
37 11 84	37 45 37	Virgin Islands (British)
85	38	Virgin Islands (U.S.A.)
37 42 39	-	Wake Island
40	-	Wales
41	-	Wallis & Futuna
37 42 42	-	Sahrawi Arab Democratic Republic
37 11 48	37 45 43	Yemen
37 42 44	-	Zambia
45	-	Zimbabwe

Ensigns (Civil Ensigns)

Bandera de la Marina Mercante　商船旗　商旗

How to order: CODE

Flag, ensign, COUNTRY NAME, SIZE

Unit Per Sht.

				
Country Name	Albania	Argentina	Australia	The Bahamas
2' × 3'	37 19 51	37 19 69	37 19 03	-
3' × 4'	37 19 68	37 19 01	37 19 04	37 19 06
3' × 5'	-	-	-	37 19 07
4' × 6'	37 19 52	37 19 02	37 19 05	37 19 08
6' × 8'	-	37 19 70	-	-

Unit Per Sht.

				
Country Name	Bangladesh	British Virgin Islands	Cayman Islands	Colombia
2' × 3'	37 19 71	37 19 53	-	-
3' × 4'	37 19 09	-	-	37 19 13
3' × 5'	-	37 19 54	37 19 10	-
4' × 6'	37 19 72	37 19 55	37 19 11	37 19 14
6' × 8'	-	-	37 19 12	-

Unit Per Sht.

				
Country Name	El Salvador	Falkland Island	Fiji	Ghana
2' × 3'	-	37 19 56	37 19 59	-
3' × 4'	-	-	-	37 19 16
3' × 5'	-	37 19 57	37 19 60	-
4' × 6'	37 19 15	37 19 58	37 19 61	-

Unit Per Sht.

Country Name	Gibraltar	Guatemala	India	Isle of Man
2' × 3'	-	37 19 18	37 19 20	37 19 62
3' × 4'	-	-	37 19 21	-
3' × 5'	-	-	-	37 19 63
4' × 6'	37 19 17	37 19 19	37 19 22	37 19 64

Unit Per Sht.

Country Name	Israel	Italy	Luxembourg	Malaysia
2' × 3'	-	-	-	37 19 29
3' × 4'	37 19 23	37 19 24	37 19 27	37 19 30
4' × 6'	-	37 19 25	37 19 28	37 19 31
6' × 8'	-	37 19 26	-	-

Unit Per Sht.

Country Name	Malta	Mauritius	New Zealand	Pakistan	Peru
2' × 3'	-	-	-	-	37 19 74
3' × 4'	37 19 32	37 19 35	37 19 36	37 19 38	37 19 75
4' × 6'	37 19 33	-	37 19 37	37 19 73	37 19 39
6' × 8'	37 19 34	-	-	-	37 19 76

Unit Per Sht.

Country Name	Singapore	Solomon Island	Turks & Caicos Islands	United Kingdom
1' × 1.5'	37 19 40	-	-	-
1.5' × 3'	37 19 41	-	-	-
2' × 3'	37 19 77	37 19 65	-	37 19 46
2' × 4'	37 19 42	-	-	-
3' × 4'	37 19 78	-	37 19 45	37 19 47
3' × 5'	-	37 19 66	-	37 19 48
3' × 6'	37 19 43	-	-	-
4' × 6'	37 19 79	37 19 67	-	37 19 49
4' × 8'	37 19 44	-	-	-
6' × 8'	37 19 80	-	-	37 19 50

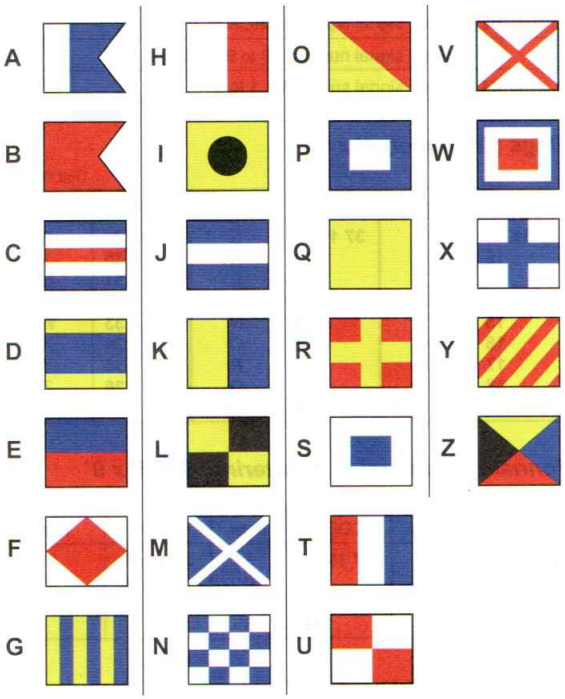
International Code of Signals

Código Internacional de Señales 国際信号旗 国际信号旗

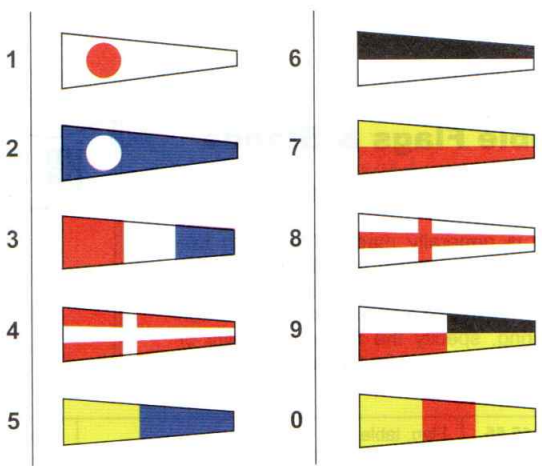
Made of Exlan bunting (synthetic fibre sometimes called Creslan, which has the appearance of wool).

Can be ordered individually or as complete sets. Sets include the following : 26 alphabet flags, 11 pennants (10 numeral and 1 answering) and 3 substitutes.

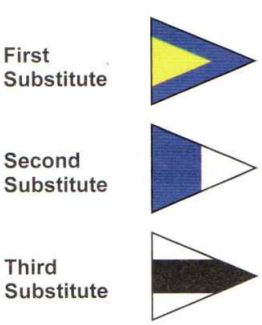
Alphabetical Flags



Numeral Pennants



Substitute



Code and Answering Pennant

37 15 01	Flag, signal full set, 40's A to Z, 0 to 9, 3 substitutes & 1 answering	Set
02	Flag, signal alphabetical, A to Z 26's	"
03	Flag, signal numeral, 0 to 9 10's	"
04	Flag, signal substitute, 1 to 3 3's	"

Flags (Alphabet) 4' x 6'

Unit Per Pc.

CODE	Alphabet	CODE	Alphabet	CODE	Alphabet
37 15 11	A	37 15 20	J	37 15 29	S
12	B	21	K	30	T
13	C	22	L	31	U
14	D	23	M	32	V
15	E	24	N	33	W
16	F	25	O	34	X
17	G	26	P	35	Y
18	H	27	Q	36	Z
19	I	28	R		

Pennant (Numeral & Answering) 2-2/3' x 9'

Unit Per Pc.

CODE	Item	CODE	Item	CODE	Item
37 15 41	1	37 15 45	5	37 15 49	9
42	2	46	6	50	0
43	3	47	7	51	Answering
44	4	48	8		

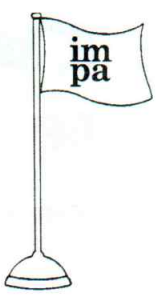
Substitutes 2-2/3' x 5-1/3'

Unit Per Pc.

CODE	Item	CODE	Item	CODE	Item
37 15 56	First	37 15 57	Second	37 15 58	Third

Table Flags & Stands

Banderas de Mesa y de Mastiles
卓上旗及びスタンド 桌旗及桌旗座



Flag is generally made of silk with two strings for tightening it to the stand pole. Owner's flags, etc. are available by special order. Standard size is 12 x 18 cm. When ordering, specify the flag's nationality or design. The stand for the table flag is sold separately.

37 15 65	Flag, table 12 × 18 cm	Pc.
66	Stand for table flag 400 mm	"

Repairing Bunting

Tela para Reparación de Bandera
修理用旗布 修补用旗布

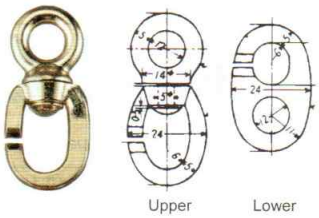
Synthetic fibre textile used for repairing flags. Available in 6 colours of black, red, yellow, white, green and blue. The standard width is 1,260 mm (4') in random lengths.

Unit Per Mtr.

CODE	Colour	CODE	Colour
37 15 71	White	37 15 74	Green
72	Red	75	Yellow
73	Blue	76	Black

Flag Hooks

Gancho para Bandera
旗用フック 旗钩



Made of cast brass or brass plated zinc die cast. The upper hook has a swivel and eye. The lower has an eye only with no swivel, sold individually or in sets.

37 15 81	Flag hook, complete upper/lower	Set
82	Flag hook, upper side	Pc.
83	Flag hook, lower side	"

Flag Blocks

Bloques para Bandera 旗用ブロック 旗坠

Cast brass flag line blocks covered by a semi-circle guard with an eye on top.

37 15 86	Flag block, brass, 32 mm	Pc.
87	Flag block, brass, 38 mm	"
88	Flag block, brass, 50 mm	"

Windsocks

Cortavientos 吹流し 风向标

A colonial textile tube shape that resembles a big sock. Used as a basic guide to wind direction and speed.

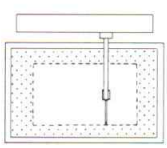
37 15 89	Windsock for wind direction and speed indication	Pc.

Marine Electric Window Wipers

Limpia-parabrisas Eléctricos para Ventanas
船用電動ワイパー 船用电动窗刷

A wide variety of wipers are available in parallel and fan types. The models below are provided merely as a reference for ordering the correct wipers. For further details, ask your supplier or provide a sample of the wipers you are currently using.

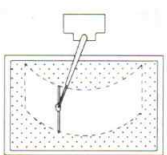
1. Parallel Type



1. Motor mounted : Inside, or outside
2. Wiping speed : Fixed, or variable
3. Heater : With heater, or without heater

1) Stroke speed is adjustable according to conditions.
2) Arm blade stops at a certain position.

2. Fan Type



1. Motor mounted : Inside, or outside
2. Wiping speed : Fixed, or variable
3. Heater : With heater, or without heater

1) Constant : Blade speed is constant
2) Variable : Blade speed is variable (Speed adjustable depending on the conditions of use)

Remarks:
Inside cabin type ... Motor is mounted inside the cabin.
Outside cabin type ... Motor is mounted outside the cabin.
With heater ... A heater is incorporated to prevent freezing.

3. Power Source

AC 100, 110, 115 V – Single Phase
AC 200, 220, 240 V – Single Phase

4. Motors

Parallel Type
Output 40W (Stroke Length 650 mm max.)
60W (" 1,200 mm max.)
100W (" 1,800 mm max.)
120W (" 2,600 mm max.)
Fan Type
Output 40W

5. Stroke Length - Parallel Type

400 - 650 mm (Single Blade)
700 - 1,200 mm (")
1,300 - 1,800 mm (")
2,600 mm (Twin Blade)

6. Wiping Angle - Fan Type: 30° – 110°

7. Blade Length: 600 mm

How to order: 37 - 20 - 01

Marine window wiper, electric (with the following information)

1. *Type of wiping mode (Parallel or Fan)*
2. *Power source*
3. *Wiping stroke speed (Fixed or Variable)*
4. *Wiper stroke length*
5. *Heater (With or Without)*
6. *Installing position of the motor (Inside or Outside)*
7. *Mounting position of the main frame (Upper and Lower positions of the window)*
8. *Height and width of the clear parts of the window*
9. *Length of the arm and blade*

Clear View Windshield Screens

Aclaradpres y Limpia-parabrisas para Pantalla
丸型ウインドワイパー　船用电动窗扫

A range of well proven and superior clear view screens of the highest quality. Unlike other similar screens it is not necessary to cut a large center hole for the fixing. These are fitted directly into the window glass by a series of fixing bolts for which a drilling template is provided.

Made of high quality, corrosion free materials. Gas tight and non-gas tight models available. Unless specified when ordering, the non-gas tight type will be supplied as standard. Suitable for glass thickness from 6 mm – 19 mm. Also specify power source voltage when ordering.

How to order: CODE

Clear view windshield screen, CLEAR VIEW DIAM mm, DEPTH INSIDE mm, POWER SOURCE VOLTAGE

Unit Per Set

CODE	Size mm			Weight kg	Revolution per Minute	Cans Watt
	Clear View	Overall Diam.	Depth Inside			
AC 110 Volt						
37 20 11	250	293	60	5.1	1,600 - 1,900	60
12	300	343	60	5.5	1,600 - 1,900	60
13	350	393	60	6.5	1,600 - 1,900	60
14	350	393	110	7.0	1,600 - 1,900	120
15	400	443	110	7.5	1,600 - 1,900	120
AC 220 Volt						
37 20 16	250	293	60	5.1	1,600 - 1,900	60
17	300	343	60	5.5	1,600 - 1,900	60
18	350	393	60	6.5	1,600 - 1,900	60
19	350	393	110	7.0	1,600 - 1,900	120
20	400	443	110	7.5	1,600 - 1,900	120

About GMDSS

All cargo ships of 300 gross registered tonnes and upwards and all passenger ships engaged on international voyages must be equipped with radio equipment that conforms to international standards as set out in the system.

The GMDSS was adopted by means of amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974. The amendments, contained in Chapter IV of SOLAS on Radiocommunications, were adopted in 1988 and entered into force on 1 February 1992 but provided for a phase-in period until 1 February 1999.

The final, global implementation of GMDSS became fully effective on 1 February 1999. On that date, all applicable ships had to comply with the GMDSS requirements in SOLAS. Specific equipment requirements for ships vary according to the sea area (or areas) in which the ship operators. The GMDSS combines various subsystems - all of which have different limitation with respect to coverage - into one overall system, and the oceans are divided into four sea areas :

About Inmarsat

It operates a constellation of geostationary satellites designed to extend phone, fax and data communications all over the world. Inmarsat provides the space segment necessary for instant and reliable distress and safety satellite communications for the maritime community.

Inmarsat-A

The Inmarsat-A analogue mobile satcoms system provides two-way direct-dial phone, fax, telex, electronic mail and data communications at rates up to 9.6 kbit/sec to and from anywhere in the world with the exception of the polar regions.

The service that most users access the Inmarsat system is Inmarsat-A. The first analog system of the Inmarsat system. Inmarsat-A can support high-quality direct-dial phone, telex, fax and data.

The System

An Inmarsat-A terminal is a small self-contained satellite earth station comprising, in the maritime environment, of an above deck equipment containing a parabolic antenna and electronics and a below deck equipment containing electronic units, power supplies and interface connections. Connections to telex, telephone, modem and facsimile equipment are contained in the below deck equipment.

Inmarsat ship borne terminals are referred to as a Mobile Earth Stations (MESs). In the same way Land based Earth Stations through which communications are routed are known as Land Earth Stations (LESs).

A call from an MES is routed via the Inmarsat network to an LES and thence into the national and international phone, telex and data networks. There are four Ocean Regions covering the world each with its own operational satellite.

Area A1 : Within range of VHF coast stations with continuous DSC alerting available (about 20-30 miles).

Area A2 : Beyond area A1, but within range of MF coastal stations with continuous DSC alerting available (about 150 miles).

Area A3 : Beyond the first two areas, but within coverage of geostationary maritime communication satellites (in practice this means Inmarsat). This covers the area between roughly 76° North and 76° South.

Area A4 : The remaining sea areas. The most important of these is the sea around the North Pole (the area around the South Pole is mostly land). Geostationary satellites, which are positioned above the equator, cannot reach this far.

Transmission and reception of signals are co-ordinated by four network co-ordination stations (NCS), one for each ocean region;

Atlantic Ocean Region East (AOR-E)
Atlantic Ocean Region West (AOR-W)
Indian Ocean Region (IOR)
Pacific Ocean Region (POR)

Inmarsat-B
The Inmarsat-B digital mobile satcoms system provides two-way direct-dial phone, telex, facsimile and data communications at rates up to 9.6 kbit/sec to and from anywhere in the world with the exception of the polar regions.

The System
An Inmarsat-B terminal is a small self-contained satellite earth station comprising, in the maritime environment, of an above deck equipment containing a parabolic antenna and electronics and a below deck equipment containing electronic units, power supplies and interface connections. Connections to telex, telephone, modem and facsimile equipment are contained in the below deck equipment.

Inmarsat ship borne terminals are referred to as a Mobile Earth Stations (MESs). In the same way Land based Earth Stations through which communications are routed are known as Land Earth Stations (LESs).

A call from an MES is routed via the Inmarsat network to an LES and thence into the national and international phone, telex and data networks. There are four Ocean Regions covering the world each with its own operational satellite.

Transmission and reception of signals are co-ordinated by four network co-ordination stations (NCS), one for each ocean region;

Atlantic Ocean Region East (AOR-E)
Atlantic Ocean Region West (AOR-W)
Indian Ocean Region (IOR)
Pacific Ocean Region (POR)

Inmarsat-B is the digital successor to Inmarsat-A. It supports high-quality direct-dial phone, telex, fax, data, and high-speed data. Inmarsat-B is a lower cost alternative to Inmarsat-A because the system is based on modern digital satellite telecommunications technologies. The use of digital technology enables Inmarsat-B to improve on Inmarsat-A, through less power usage and improved use of satellite power and bandwidth. Inmarsat-B offers Data services in two forms: 9.6 k standard service and 64 k High Speed Data (HSD).

Inmarsat-B is a good choice for high-volume users of voice and data. In the maritime environment these include the offshore exploration industry, cruiseship operators and deep-sea shipping companies.

Inmarsat-C
The Inmarsat-C satellite system provides two-way data communications to and from virtually anywhere in the world. Inmarsat-C terminals are simple, low-cost units small enough to be hand-carried or fitted to any vessel, vehicle or aircraft.

The System
Communications via the Inmarsat-C system are data or message-based. Anything that can be coded into data bits can be transmitted via Inmarsat-C. Messages are transferred to and from an Inmarsat-C terminal at an information rate of 600 bits/sec. Frequencies are 1626.5-1645.5 MHz (transmit), 1530.0-1545.0 Mhz (receive). Inmarsat-C is available in all four Inmarsat satellite coverage ocean regions · Atlantic Ocean East and West, Indian Ocean and Pacific Ocean · through about 40 land earth stations (LESs). A network co-ordination station (NCS) in each region controls communications traffic.

These units come in fixed, mobile, transportable, maritime and aeronautical configurations. All configurations employ omni-directional antennas.

Inmarsat-C supports tow-way text and data messaging, data-reporting and fleet broadcast communications at a data rate of 600 bits/sec. Inmarsat-C Internet gateway allows vessels to exchange Internet e-mail without the need for special software.

Inmarsat-M
It provides digital phone, fax and data capabilities through compact terminals. Inmarsat-M is still available in all ocean regions, this service has been largely replaced by the more cost-effective Inmarsat mini-M.

Inmarsat-mini-M
The Inmarsat mini M is a digital phone, fax and data system which is packaged in very compact terminals, utilizing spot beam satellite technology. The mini M terminal form is similar in size to a small laptop computer. The terminal provides direct-dial phone, fax and 2.4 kbps data connections.

The Inmarsat mini M comes in portable, maritime and vehicle terminal configurations. There is now a multi-terminal capable of multiple installation configurations.

Inmarsat M4
Inmarsat M4 is a combination of mini-M's low-speed voice, fax, and data capabilities with Inmarsat B's high speed data feature. An additional feature of M4 is the mobile packet data service. M4 utilizes the same spot beam satellite technology as mini-M, making it very small, lightweight, and power efficient.

About Cospas-Sarsat
Cospas-Sarsat is a satellite system designed to provide distress alert and location data to assist search and rescue (SAR) operations, using spacecraft and ground facilities to detect and locate the signals of distress beacons operating on 406 Megahertz (MHz) or 121.5 MHz. The position of the distress and other related information is forwarded by the responsible Cospas-Sarsat Mission Control Center (MCC) to the appropriate SAR authorities.

The Cospas-Sarsat System provides distress alert and location data to Rescue Coordination Centers (RCCs), for 121.5 MHz beacons within the coverage area of Cospas-Sarsat ground stations (Local User Terminals - LUTs), and for 406 MHz beacons activated anywhere in the world.

GMDSS Radio Equipment

(Global Maritime Distress and Safety System)

Equipo de Radio GMDSS (Sistema Mundial de Socorro y Seguridad Marítima)

全世界的な海上遭難安全システム

全球海上遇險及安全系統（GMDSS）無線通訊設備

GMDSS will provide an effective search and rescue system on a global basis using the advanced technology of satellite and terrestrial communications.

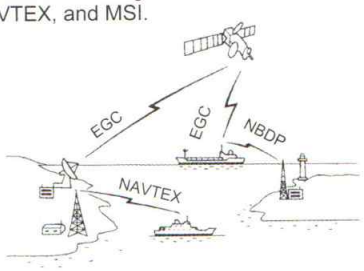
The basic concept of the GMDSS is that search and rescue authorities ashore, as well as vessels in the immediate vicinity of a ship in distress, will be rapidly alerted to the distress incident so that they can assist in a co-ordinated search and rescue operation without delay.

In the GMDSS, the radio equipment to be carried on a ship is determined by the ship's area of operation, as designated below.

Conventional ships will be obliged to comply with the requirements for the installment of GMDSS systems in stages during the period between February 1, 1992 and February 1, 1999 for all ships.

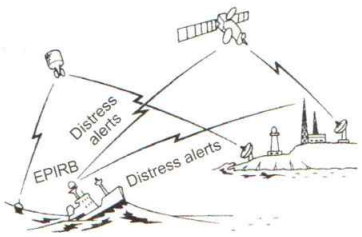
During normal time:

Receives navigational and meteorological warnings via EGC, NAVTEX, and MSI.



In emergency:

Transmits distress alerts through INMARSAT, DSC, and EPIRB.



Amendment 1988 to the International Convention for the Safety of Life at Sea 1974 Chapter IV "Radiocommunications" Part C – Ship Requirements

Regulation 7 Radio Equipment - General

No.	Item	Descriptions
1.1	A VHF radio installation	For transmitting and receiving (1) DSC on the frequency 156.525 MHz (CH 70) (2) Radiotelephony on the frequencies 156.300 MHz (CH 6), 156.650 MHz (CH 13) and 156.800 MHz (CH 16)
1.2	A radio installation	For maintaining a continuous DSC watch on VHF channel 70
1.3	A radar transponder	For operating in the 9 GHz band
1.4	A receiver	For receiving International Navtex service broadcast
1.5	A radio facility	For the reception of maritime safety information by the INMARSAT enhanced group calling system
1.6	A satellite emergency position-indicating radio beacon (EPIRB)	For transmitting a distress alert either through the polar orbiting satellite service operating in the 406 MHz band or, through the INMARSAT geostationary satellite service operating in the 1.6 GHz band.

Regulation 10 Radio Equipment – Sea areas A1, A2 and A3:

No.	Item	Descriptions
1.1	An INMARSAT ship earth station	For: (1) transmitting and receiving distress and safety communications using direct printing telegraphy (2) initiating and receiving distress priority calls (3) maintaining watch for shore-to-ship distress alerts (4) transmitting and receiving general radiocommunications, using either radiotelephony or direct-printing telegraphy
1.2	An MF radio installation	For transmitting and receiving on the following frequencies (1) 2,187.5 kHz using DSC, and (2) 2,182 KHz using radiotelephony
1.3	A radio installation	For maintaining a continuous DSC watch on the frequency 2,187.5 kHz
1.4	Means of initiating the transmission	For ship-to-shore distress alerts by a radio service operating either : (1) through the polar orbiting satellite service on 406 MHz (2) on HF using DSC, or (3) through the INMARSAT geostationary satellite service
2.1	DSC, Radiotelegraphy and MF/HF radio installation	For transmitting and receiving between 1,605 KHz and 4,000 kHz and between 4,000 kHz and 27,500 kHz using, (1) DSC (2) Radiotelegraphy and (3) Direct-printing telegraphy

(to be continued)

No.	Item	Descriptions
2.2	A radio installation	For maintaining DSC watch on 2,187.5 kHz, 8,414.5 kHz and one of the distress and safety DSC 4,207.5 kHz, 6,312 kHz, 12,577 kHz or 16,804.5 kHz
2.3	Means of initiating the transmission	For the transmission of ship-to-shore distress alerts (1) through the Polar Orbiting Satellite Service on 406 MHz, or (2) through the INMARSAT Geostationary Satellite Service
2.4	Radiocommunication, or direct-print telegraph	For transmitting and receiving general radiocommunications using radiotelephony or direct-printing telegraphy by an MF/HF radio installation operating between 1,605 kHz and 4,000 KHz and between 4,000 kHz and 27,500 kHz.

Note: Every ship shall be provided with the requirements of Regulation 7. In addition to the requirements of Regulation 7, every ship engaged on voyages beyond sea areas A1 and A2, but remaining within sea area A3, shall be provided with the requirements of Regulation 10, Paragraphs 1 or 2.

The Definition of Sea Areas

Area A1	Within range of shore-based VHF coast stations	Distance from shore: App. 20 - 30 miles
A2	Within range of shore-based MF coast stations (Excluding A1 area)	Distance from shore: App. 100 - 150 miles
A3	Within the coverage area of INMARSAT geostationary satellites (Excluding A1 and A2 areas)	Between north latitude 70° and south latitude 70°
A4	The remaining sea areas outside areas A1, A2 and A3.	Around the North Pole and the South Pole

Automatic Identification Systems

Sistemas de Identificación Automaticá

船舶自動識別装置

船舶自動識別器

Designed to meet the SOLAS requirements Chapter 5 Safety of Navigation - in Regulation 19-2.4 to all of ships of 300 gross tonnage and upwards engaged on international voyages, and for simple installation onto a ships bridge, and with quick and easy access for repair or replacement. As well as being intrinsically tough and rugged, the system also features a sophisticated touch screen minimum display for intuitive operation. With its touch-screen LCD (Liquid Crystal Display) minimum display, this AIS transponder transmits the ship's data to other vessels as well as shore-based VTS (Vessel Tracking Systems). Utilizing various VHF channels, this is ship-borne station consists of an integral GPS engine for timing, one VHF transmitter, three VHF receivers and a computer. Interface this with an external GPS for navigation, an antenna, a gyrocompass, and an optional ECDIS (Electronic Chart Display and Information System) or ARPA (Automatic Radar Plotting Aid) display system and you have everything required to comply with the mandatory carriage requirements that comes into effect July 1, 2002.

Static and voyage related data is transmitted every six minutes, while the dynamic information is transmitted between 2 seconds to 3 minutes, depending on the ships navigational status and speed. Short messages from ships or shore stations can be inserted into the AIS message structure that contain such information as; notices to mariners, navigational warnings, weather forecast and SAR (Search and Rescue) communications etc.

Features and Functions:

- Provision of tactical and strategic VTS information. Transmitting port data, berth assignments, pilotage, tides, currents as well as shipping agency information.
- Automatic data exchange, ship-to-ship and ship-to-shore.
- Short message service (121 characters).
- Collision avoidance.
- Detection of vessels that may be hidden in radar shadows.
- Overcomes target swapping of radar contacts.
- 4 mode operation: Autonomous, Continuous, Assigned and Polled.
- Telemetry applications for navigation aids such as lighthouse or buoys.
- Reduction of global VHF voice traffic.

The AIS message is divided into a number of categories that contain specific information which include:

- Static Data: IMO number / Call sign and name length and beam / Type of ship / Location of position fixed antenna onboard the ship.
- Dynamic Data: Ships position / Time in UTC (Universal Time Coordinated) / COG (Course Over Ground)/ SOG (Speed Over Ground)/ Heading / Navigational status / ROT (Rate of Turn).
- Voyage Related Data: Ships draft / Cargo / Destination and ETA (at masters direction).
- Safety Related Messages: As needed.

Unit Per Set

CODE		37 24 01
Item		Automatic Identification System
Dimensions & Weight	Display Unit	L230 × H140 × D50 mm, 1.5 kg
	Transceiver Unit	L270 × W350 × D75mm, 6.5 kg
Power Supply		24V DC
Power Drain		75 watts
GPS Receiver		12 Channel
Interfaces		3 × RS232, 5 × RS422
Name of Mfr.		McMurdo Limited

Radar Transponders
(SART - Search and Rescue Radar Transponder)

Transpondedores de Radar
レーダー・トランスポンダー　雷达应答器

At least 1 radar transponder shall be carried on each side of every cargo ship of 500 gross tons or more.

Upon receiving radio waves from 9 GHz shipboard radar, this unit sends signals to indicate its position and bearing on the screen.

37 25 01	Radar transponder (SART) 9 GHZ (with ship's registered flag)	Pc.

NAVTEX Receivers

Receptores NAVTEX
NAVTEX 受信機　NAVTEX 受信机

NAVTEX is an international maritime radio telex system. For receiving navigational warnings and safety information via printing telegraphy broadcast on 518 KHz along coastal areas.

37 25 06	NAVTEX receiver 518 kHz	AC 110V	Pc.
07	"	AC 220V	"

Note: Please specify the ship's registered flag when ordering

Satellite Emergency Position-indicating Radio Beacons
(Satellite EPIRB)

Radiofaros Indicadores de Posicion Emergencia de Satélite (Satélite EPIRB)
衛星 EPIRB　卫星紧急定位无线电导航台（卫星 EPIRB）

Transmitting a distress alert either through the polar orbiting satellite service, operating in the 406 MHz band, or through the INMARSAT geostationary satellite service operating in the 1.6 GHz band.

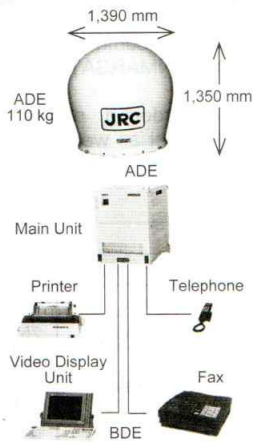
The unit will also float free if the ship sinks and will be automatically activated when afloat or activated manually in emergency. The EPIRB mentioned here is operated on 406 MHz and 121.5 MHz by the COSPAS/SARSAT satellite system which is adopted widely to the ships in the early stage of the introduction of the GMDSS. This type of EPIRB will broadcast on 406 MHz to be received by the COSPAS/SARSAT satellite and on 121.5 MHz to be used for homing by search-and-rescue vessels along with a strobe to pinpoint exact location.

It is required, when ordering, to specify the ship's registered flag, call sign, etc. to be programmed into the EPIRB as a rescue signal by the manufacturer before delivery.

37 25 11	Satellite EPIRB 406 MHz & 121.5 MHz (with ship's registered flag, etc.)	Pc.

Satellite Communication Equipment
INMARSAT B Ship Earth Station

Estación Terrestre de Barco B de INMARSAT con Equioamiento para Comunicación de Satélite
インサルマット—B 船舶地球局
海事卫星船舶通信装置



INMARSAT stands for the organization established by The Convention on the International Maritime Satellite Organization adopted on September 3rd, 1976. The INMARSAT maritime satellite communications service permits direct ship to land and ship to ship communication via INMARSAT satellite and coastal earth stations. The INMARSAT B Ship Earth Station provides a full range of instant, quality communication services from anywhere at sea into the world public telephone, facsimile, telex and data networks. It consists of an Above Deck Equipment (ADE) and a Below Deck Equipment (BDE) which are interconnected by a single cable.

ADE: Antenna and Radome
BDE: Communication unit, Video display unit and RO printer

Specification for reference

Frequency	Transmit: 1625.5 of 1646.5 MHz
Range	Receive: 1525.0 of 1545.0 MHz
Antenna	89 cm diameter parabolic antenna
Enclosure	FRP radome (1.39 mtr diameter)
Primary Power	100/110/220 VAC ± 10% Single-phase 60 Hz ± 6%
Size & Weight	ADE: H1,350 × φ1,390 mm, 110 kg BDE: Main unit H500 × W400 × D350 mm, 38 kg Video display unit H280 × W366 × D180 mm, 4.5 kg Printer H193 × W380 × D376 mm, 3.7 kg

How to order: CODE

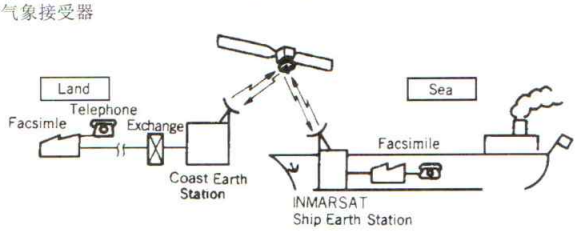
Ship earth station INMARSAT B with standard attachments
VOLTAGE (Specify Manufacturer's Name & Model)

Unit Per Set

CODE	**37 25 15**	**37 25 16**
Power Supply	AC 110V	AC 220V

INMARSAT Facsimile Receivers

Receptores de Facsímile INMARSAT
INMARSAT ファクシミリ送受信装置
气象接受器



Designed for INMARSAT communications to transmit all kinds of graphics and drawings that now can be transmitted over a terrestrial telephone line. Suitable for use in the shipowner's offices where there is a communication link with an INMARSAT ship to earth station.

When ordering, please specify the manufacturer's name and model as well as the INMARSAT ship to earth station currently on board.

Specifications for Reference

Standard	CCIT GII/GIII
Transmission Line	INMARSAT/Telephone
Document Size	B4 (252 mm width)
Reading/Recording	252 mm width max.
Data Compression	Modified Huffman (MH) GIII Modified Read (MR) GIII AM-PM-VSB (GII)
Size & Weight	H209 × W410 × D465 mm, 15 kg

How to order: CODE

INMARSAT facsimile receiver CCIT GII/GIII standard, VOLTAGE

Unit Per Set

CODE	37 25 21	37 25 22
Power Supply	AC 110V	AC 220V

GPS (Global Positioning System) Navigators

Navegadores GPS
(sistema Global de Posicionamiento)
GPS 受信装置　GPS 受信装置

Satellite-based radio navigation system to provide a global, all-weather, continuous 24 hour service for position fixing with high accuracy. The satellite system is available to an unlimited number of users when it is fully operational.
It is composed of 24 GPS satellites, each transmitting their own orbital data. The GPS navigator receives the orbital data from three or more GPS satellites to calculate a two or three dimension position, speed, and time.

Specifications for Reference

Accuracy Position & Speed	15 m RMS (C/A code, HDOP ≦ 2.5) 0.2 knot RMS (C/A code, HDOP ≦ 2.5)
Receiving Signal	1,575.42 MHz ± 1 MHz, C/A code
Data Display	A8 digit, 4-line LCD
Display Items	Position (Latitude, Longitude and Altitude), Course and speed, Data and time, Satellite data, Satellite signal receiving status and GPS positioning period, Range, Bearing and time to go, and Course deviation
Power Supply	100-115/220-240V, AC 50/60 Hz, 10-45V DC, 12W
Size & Weight	Receiver: H120 × W243 × D116 mm, 2.7 kg Antenna : H229 × 50 mm dia, 0.4 kg

How to order: CODE

GPS navigator, receiving signal 1,575.42 MHz, VOLTAGE

Unit Per Set

CODE	37 25 31	37 25 32
Power Supply	AC 110V	AC 220V

VHF Radio Telephones

Radiotelefonía VHF
国際 VHF 無線電話装置
国际 VHF 无线电话装置

Designed to provide ship-to-shore, ship-to-ship and on board communications, allowing the ship's crew to easily obtain emergency, safety, navigation, weather and business information.

Equipped with all ITU channels, USA, USCG, Canadian and private channels. Continuous scanning watch on channel 16.

Specifications for Reference

Frequency Range	Transmit Receive	155.50 - 159.50 MHz 155.50 - 159.50 MHz (Simplex) 160.60 - 163.50 MHz (Duplex)
Channel Capacity		57 ITU/USA channels, 4 Canadian channels, 9 weather channels, Up to 99 private channels
Mode of Operation		Simplex or Duplex
Power Supply		13.8V DC
Size & Weight		H290 × W240 × D145 mm, 6.5 kg

37 25 41	VHF radio telephone 155.50 - 159.50 MHz simplex mode	Set
42	" duplex mode	"

Magnetic Compasses

Compasses Magnéticos　磁気コンパス　磁罗经

A compass which measures direction by a needle which continuously seeks the magnetic meridian.
SOLAS Regulation requires ships of 150 gross tons or more to be fitted with a magnetic compass.

Here are some types of magnetic compasses for your reference. There are several sizes of compass card diameter, according to the type of magnetic compass and the manufacturers.

Table Type

Stand Type

Projector Type

37 25 51	Magnetic compass (With further information)	Set

Azimuth Mirrors

Espejos de Azimut 方位鏡 方位仪

A measuring instrument used with the magnetic compass. For obtaining the azimuth of observed objects by observing an object's reflection in a mirror or prism, pivoted in the centre of glass over a compass card.

37 25 53	Azimuth mirror (With manufacturer's name and model of Magnetic Compass)	Set

Gyro Compasses

Girocompases ジャイロ・コンパス
电罗经

Ships of 500 gross tons or more constructed on or after September 1st, 1984 and ships of 1,600 gross tons or more constructed before September 1st, 1984 shall be fitted with a gyro compass.

The gyroscope is mounted, ballasted and fitted so that it's north south line always remains within the meridian through the influence of the earth's diurnal revolution. Can be used as a sensor for the following types of navigation devices : Autopilots, Radar, Collision avoidance systems, Satellite navigation systems, Direction finders, etc. Here are some specifications as a reference when ordering.

Specifications for Reference

Master Compass	Follow-up accuracy : 0.1° Follow-up speed : 360°/15 sec. Gimbal freedom angle : ±45° Range of speed error correction : 0-40 knot/0-70°	
Power Supply	Main supply voltage	AC 110V/115/220/380 440V 3P 50/60 Hz
	Emergency supply voltage	DC 24V, 2.5A

37 25 56	Gyro compass (With further information)	Set

Radars

Radares レーダー 雷达

Electronic system by which the bearing and distance of an object are found by the emission of a radio pulse.

An object's bearing and distance can be measured by observing the direction from which the pulse returns and the time elapsed from when it was sent.

Ships of 500 gross tons or more constructed on or after September 1st, 1984 and ships of 1,600 gross tons or more constructed before September 1st, 1984 shall be fitted with a radar installation.

From February 1st, 1995, the radar installation will be capable of operating on the 9 GHz frequency band. In addition, cargo ships of 300 gross tons or more, when engaged on international voyages, shall be fitted with a radar installation capable of operating on 9 GHz frequency band.

Specifications for Reference

Peak Power	25 kW
Frequency	9,410 ± 30 MHz
Range Ring	0.25/0.05, 0.5/0.1, 0.75/0.25, 1.5/0.25, 3/0.5, 6/1, 12/2, 24/2, 48/8, 120/20 nm
CRT	21-inch Raster scan
Power Supply	100/110/115V AC, 50/60Hz, 1-P (7 ft) 200/220/230V AC, 50/60Hz, 3-P (9 ft)
Size & Weight	H1,270 × W535 × D575 mm, 100 kg

Remark: The above specifications are listed as a reference only. Please contact with a representative about which required features are available from various manufacturers.

37 25 61	Radar (With further information)	Set

Automatic Radar Plotting Aid (ARPA)

(Collision Avoidance System)

Radar Automático de Ayuda Gráfica
(Sistema de Colisión Evitable)
自動衝突予防援助装置
自动雷达测绘辅助装置（防碰撞系统）

Automatic radar plotting aids are required for ships of 10,000 gross tons or more, constructed on or after September 1984, and tankers constructed before September 1st, 1984.

It is designed to be operated as a separate or integral part of marine radar equipment. It will give precise target information to avoid collision in vector and numeric form.

There are various models world-wide. Please ask a representative about detailed specifications. Listed below are some specifications for your reference.

Specifications for reference

Peak Power	25 kW
Frequency	9,410 ± 30 MHz
Scanner Length	7 feet
Target Acquisition	Automatic and/or manual
Target Tracking	Automatic up to 40 targets
CRT Display	28 inch (Effective dia.: 340 mm)
Radar Range	0.25, 0.5, 0.75, 1.5, 3, 6, 12, 24, 48,120 mm
Range/bearing Measurement	VRM 1/2 and electronic bearing line (EBL)
Warnings	Min. CPA : 0-9.9 min. in 0.1 step Min. TCPA : 0-99 min. in 1 step
Power Supply	100/110/115/200/220V AC, 50/60 Hz
Size & Weight	H1,278 × W700 × D875 mm, 135 kg

Note: CPA = Closest Point of Approach
TCPA = Time of Closest Point of Approach

37 25 63	Automatic radar plotting aid (With further information)	Set

Navigation Systems

Sistemas de Navegación　航法装置　導航系統

Various kinds of navigation systems are available in the world. Some major navigational systems are produced here for your reference.

Major Navigational Systems

Systems	Service Area	Effective Range	Accuracy
Loran C (100 kHz)	Japan/Korea U.S.A./ Canada/North Sea Mediterranean	1,500 miles (Daytime)	30 - 500 mtr
Loran A (1.75-1.95 MHz)	Japan	700 miles (Daytime)	0.25 - 0.5 miles
Decca (70-130 kHz)	Europe/Japan/etc.	350 miles (Daytime)	20 - 100 mtr
Satellite Navigator (150, 400 MHz)	World-wide	World-wide	0.1 mile
GPS (1,575.42 MHz)	World-wide	World-wide	100 mtr

Loran C Navigators

Navegantes Loran C
ロランC 航法装置
Loran C 導航系統

A long range aid to navigation. Master and slave stations transmit synchronised signals which can be received by a special receiver on board the ship.

Since radio signals travel at a known speed, the difference in time at which the signals arrive at the ship can be converted into distance.

Signals from two pairs of Loran stations can thus fix the position of a ship.

Specifications for reference

Station Tracking	Master and all slave stations
Display	Fully automatic LAT/LON
Memory Capacity of Waypoints	50
Readouts	Course/Speed, Bearing/Distance and Time-to-go
Frequency	100 kHz
Power Supply	10 - 40V DC, 17W, 100/115/220V AC
Size & Weight	H142 × W271 × D314 mm, 4 kg

Decca Navigators

Navegantes Decca
デッカ航法装置　Decca 導航系統

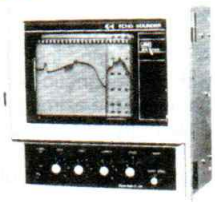
A radio aid for fixing positions up to 300 miles or more from the transmitter.

A master transmitter ashore controls a chain of other transmitters. A ship provided with a receiver can receive a transmitted signal by measuring the phase-difference of the Decometers.

The numbers indicated on the Decometers refer to coloured lattice lines printed on special charts. The ship's position is symbolized by where the numbered lines cross each other on the chart.

Echo Sounding Devices

Aparatos de Ecosondeo
音響測深装置　回声探深仪



For ships constructed before May 25, 1980, weighing greater than 1,600 gross tons and for ships constructed after May 25, 1980, weighing greater than 500 gross tons. All vessels falling under this classification which sail international routes must be fitted with an echo sounding device.

Electrically operated instrument that emits a sound from vessel's submerged surface and then measures and records the time interval which passes before the echo returns.

The most popular model is shown here. Please ask for further information and brochures of various models available from local manufacturers when required.

Specification for reference

Depth Range	0 - 450 mtr, 3 ranges
Max. Sounding Depth	450 mtr
Frequency	50 kHz or 200 kHz
Recording Paper	Dry type, 150 mm width x 15 mtr
Power Supply	100/115/220V AC, 50/60 Hz
Size & Weight	H380 v W360 × D210 mm, 16 kg

37 25 71	Echo sounding device (With further information)	Set

Weather Facsimile Receivers

Receptores de Facsímile Meteorológico
気象ファクシミリ　气象传真装置

Weather facsimile service is provided world-wide, and designed to meet the WMO (World Meteorological Organization) standards.
The most popular model is shown here. Please ask for further information and brochures of various models available from local manufacturers when required.

Specification for reference

Mode of Receiving	Fully automatic, Semi automatic, Manual and Programmed
Recording	Solid-state scanning by thermal head
Effective Scanning line	256 mm (10 inches)
Scanning Speed	60, 90, 120 and 240 spm
Mode of Emission	F3C
Frequency Range	HF: 2 - 24.9999 MHz
Power Supply	DC10-42V, less than 70V AC
Size & Weight	H106.5 × W300 × D254.5 mm, 5.3 kg

37 25 81	Weather facsimile receiver (With further information)	Set

Personal Location Beacons

Radiofaro para Localización Personal
個人用位置指示無線標識　個人用位置信標

Featuring a built-in GPS receiver (Global Positioning System) combined with a 406 MHz transmitter and 121.5 MHz homing signal. In the event of an emergency, an alert signal is

transmitted to Cospas-Sarsat satellites and forwarded to a secure co-ordinate centre within typically 3 minutes. The built-in GPS receiver will provide latitude and longitude co-ordinates to give a position to within typically 30 meters anywhere in the world.

It comes complete with lanyard and designer carry case to enable users to keep the personal location beacon safely attached at all times.

Features
- Built-in 12 channel GPS receiver.
- Geostationary coverage > 75°N - 75°S.
- Global alert to Cospas-Sarsat polar orbiting satellites.
- 406 MHz transmitter.
- 121.5 MHz homing frequency.
- GPS cold start time to fix typically less than 3 minutes.
- Positional accuracy to typically within 30 meters.
- GPS transmitted position update rate every 20 minutes (as permitted by Cospas Sarsat).
- GPS reacquisition time, typically less than 60 seconds.
- Complete with lanyard and designer carry case.
- User replaceable battery pack.

37 28 11	Personal location beacon with built-in GPS receiver	Set

Name of Mfr.: McMurdo Limited

Wristwatch Manoverboard Beacon

Radiofaro Tipo Reloj de Pulsera
腕時計型位置指示無線標識
錶型位置信標

The light weight, easy to wear waterproof, multi-function wristwatch has a built-in radio transmitter which when activated either manually or automatically, immediately transmits a distress tone on the international emergency search and rescue frequency (121.5 MHz). The distress signal transmitted can be detected by a surface rescue vessel or helicopter, which can accurately home in to the watch using direction-finding equipment. The unit is a working watch, fully waterproof to a depth of 50 mtr and can be set to manual or automatic activation on immersion in water, making it functional and easy-to wear manoverboard transmitter for crew members.

The distress signal transmitted can be detected by a surface rescue vessel or helicopter, which can accurately home in to the watch using either the emergency receiver or direction finder.

Features
- Automatic activation with manual on/off override.
- Chronograph 1/100 second with lap/split control.
- Alarm with chime.
- LCD backlight.
- Water resistant - tested to a depth of 50 mtrs.
- Transmission activation audible and visual LED alarms.
- Up to 8 hours transmission time.
- Range to surface vessel up to 1 nautical mile.
- Range to SAR helicopter up to 5 nautical miles.

Unit Per Pc.

CODE	**37 28 15**
RF Transmitter Frequency	121.5 MHz (121.65 MHz Training)
Class of Emission	A3X
RF Power	-25 dBm
Frequency Error	+/- 3.5 kHz
Duty Cycle	100%
Modulation Type	Sweep downward from 1.5 kHz to 650 Hz with sweep repetition of 2 Hz
Modulation Duty-Cycle	50%
Voltage	3.2 volts max. (CR2 battery)
Current Draw	20 µ Amps Quiescent 110 mAmps Transmitting
Weight including Strap	81 grm
Name of Mfr.	McMurdo Limited

(to be continued)

Voyage Data Recorder

Registrador de Datos de Navegación 航海記録装置 航海記録儀

Designed to meet the requirements of IMO performance standard A. 861 (20); (1) Passenger ships constructed on or after July 1, 2002, (2) Ro-Ro passenger ships constructed before July 1, 2002 not later than the first survey on or after July 1, 2002, (3) Passenger ships other than ro-ro passenger ships constructed before July 1, 2002 not later than January 1, 2004 and (4) Ships other than passenger ships of 3,000 gross tonnage and upwards constructed on or after July 1, 2002.

Voyage Data Recorder consists of Data Collection Unit (DCU), robust protective data storage capsule and replay and evaluation unit. It records conversations at the navigation bridge, VHF radio communication, speed, course and other information on the ship's condition for 12 hours. Records and plays back important voyage navigation, machinery and environmental data for post-incident evaluation and crew training.

Provides the following data recording solutions;
- Conversation and communication recording
- Radar recording
- Vessel motion response monitoring/recording
- Vessel performance and trends analysis
- Stand-alone and integrated bridge configulations

Data Collection Unit (DCU)

- Data Collection Unit
  Interfaced with ship equipment and collects, processes and stores all relevant ship's data for a period of 12 hours as required by IMO A.861.
- Protected Storage Unit
  Stores data received from the DCU on a solid state recording medium. The PSU is calamity resistant by means of a protective capsule. It is located on top of the ship's superstructure in order to provide easy access from outside.
- Relay and Evaluation Unit
  Used to reply and evaluate previously recorded time synchronized data. The REU is in addition an excellent

tool for training purposes. Data stores in the PSU can be downloaded through the DCU for replay or long-term storage of data.

Recording Paper

for Navigational Equipment

Papel para Equipamiento de Navegación
航海計器用記録紙　航仪器记录仪

As a wide variety of recording paper for use with different kinds of navigational equipment are available, please specify the name of the equipment, the type, model number, manufacturers name and any other information regarding the applications of the paper.

For Course Recorder

How to order: CODE

Course recorder paper, PAPER CHART NO., SIZE mm, MANUFACTURER'S NAME & MODEL of course recorder

Unit Per Rls.

CODE	Course Recorder		Paper	
	Mfr.	Model No.	Chart No.	Size mm
37 26 01	Tokyo Keiki	CR-1, 2, 3, 4	12010357-	150 × 75 × 35
02		DCR-10A, 40A	12010331-	200 × 75 × 35
13	YDK	KR-100A MKR-101A	V8105AA	100 mm × 18 mtr
14		KR-180A MKR-181A	V8104AH	180 mm × 18 mtr
35			V8105AH	

For Echo Sounder

How to order: CODE

Echo sounder recording paper, TYPE of PAPER, SIZE mm, MANUFACTURER'S NAME & MODEL of echo sounder

Unit Per Rls.

CODE	Course Recorder		Paper	
	Mfr.	Model No.	Type	Size mm
37 26 17	JRC	JFE-570S, JFE-582, JFE-585	J-8 (6ZPBS00006)	150 mm × 15 mtr
36		JFE-700, JFE-680 JFE-400 (For option printer NKG-901) JFE-380 (For option printer NKG-91)	7ZPJD0384	58 mm × 25 mtr
30	Furuno	FE-680, FE-680T	PD-1520NW	150 mm × 20 mtr
34		FE-700, FE-800 for Printer PP-505	TP0340	112 mm × 40 mtr

For Weather Facsimile Receiver

How to order: CODE

Facsimile recording paper, TYPE of PAPER, SIZE mm, MANUFACTURER'S NAME & MODEL of weather facsimile receiver

Unit Per Rls.

CODE	W.F. Receiver		Paper		
	Mfr.	Model No.	P/No.	Type	Size
37 26 40	JRC	JAX-9B	6ZPTS00108	HFB-19	260 mm × 25 mtr
45		JAX-91	6ZPTS00127	HFB-19 (HFB-03)	400 mm × 100 mtr
37 26 57	Furuno	FAX-408	-	TP0820	216 mm × 20 mtr
33		FAX-410	-	F220VP	257 mm × 30 mtr

(to be continued)

Course Recorder Pens

Bolígrafos registradores de cursos
コースレコーダーペン　课程记录笔

How to order: CODE

Course recorder pen, MANUFACTURER'S NAME & MODEL of course recorder

CODE	Course Recorder	Part No.	Colour	Unit
37 26 85	YDK KR100A/MKR101A KR180A/MKR181A	B9902AM	Red	3's/Pkt
86		B9902AN	Green	
87		B9902AP	Blue	
88		B9902AR	Purple	

*Remark: KR100A & MKR101A do not require blue colour pen.

Teleprinter Recording Paper

Papel para Telex
テレックス受信紙　电传记录纸

Available from 1 ply to 4 ply paper in various colour combinations. Standard size is 214 mm width. Colour combination is listed below. Besides the above, 257 mm width paper is also available on request.

How to order: CODE

Teleprinter recording paper, width 214 mm, NUMBERS of PLY, COLOUR COMBINATION

Unit Per Rls.

CODE	Ply	Colour Combination	Length (mtr)
37 26 93	1	White	175
94	1	Yellow	105
37 26 95	2	White/Yellow	81
96	3	White/Pink/Yellow	51
97	4	White/Pink/Blue/Yellow	48

Recording Paper for Navtex Receiver

Papel para Receptor Navtex
ナブテックス受信記録紙　Navtex 接收和记录纸

How to order: CODE

Recording paper for Navtex receiver, WIDTH x LENGTH, MANUFACTURER'S NAME & MODEL of Navtex receiver

Unit Per Rls.

CODE	Mfr. Name	Model	Paper Type	Width × Length
37 27 03	JRC	NCR 300A	5ZPMB00001	80 mm × 25 mtr
07		NCR-300	7ZPJD0044	80 mm × 40 mtr
37 27 08		NCR-333	6ZCAF00252 (DPU-414 Printer)	112 mm × 25 mtr
37 27 10			7ZPJD0384 (NGK-901 Printer)	58 mm × 25 mtr
37 27 04	Furuno	NX 500	TP0340	112 mm × 40 mtr
09		NX-700A	TP058-30CL	58 mm × 30 mtr
37 27 06	JMC	NT-1800	PR-950	112 mm × 25 mtr