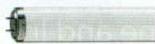


# 79

## Electrical Equipment

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## 1. Lamps

### Introduction for Ordering Lamps

Due to the wide variety of lamps available and in order to assist the purchase of lamps required for each individual purpose, below listed are standard illustrations of designations for bulbs, filaments and bases. Each lamp/bulb can be either specified under its full name or abbreviation.

#### A. Bulb Designations

Bulbs are available in the shapes shown below and each shape is designed for a particular purpose. Soft glass is normally used but hard glass is used for high wattages and outdoor applications. In order to increase the effective illumination the insides of the bulbs receive various coatings, including reflecting aluminium mirrors. Coloured bulbs are also available for special applications.

Type	Name	Abbreviation	Application
	Ordinary Shape	A	General household factory or ships illumination.
	Ball Tubular Shape	BT	Used for mercury or high sodium lamp.
	Flame Shape	C	Ornamental, Decorative Lighting
	Globe (ball) Shape	G	Ornamental, Decorative Lighting
	Pear Shaped Straight Neck	PS	Used for illuminations requiring 80 Watt and more.
	Parabolic Shape	PAR	Outdoor Spot or Flood Lighting
	Reflection Shape	R	Deck Flood Light etc.
	Straight Shape	S	Low Watt Illumination
	Tubular Shape	T	General Household Factory or Ships Low Watt Illumination
	Tubular (Fluorescent) Shape	T	Fluorescent Lighting

#### B. Lamp Base Designations

A wide range of bases are provided for above lamps. In addition to the screw bases used for most incandescent lamps, there are also bayonet, pin, lug and other bases. Fluorescent lamps use single-pin, bipin and double-contact recessed bases.



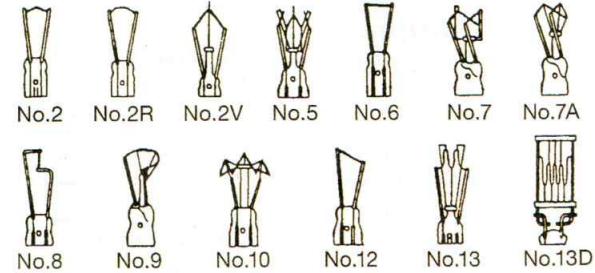
Edison Screw Size Table

Size	Base				Socket			
	O.D.d		Valley d <sub>1</sub>		Valley D		I.D. D <sub>1</sub>	
	Mini	Maxi	Mini	Maxi	Mini	Maxi	Mini	Maxi
E10	9.31	9.53	8.29	8.51	9.59	9.74	8.57	8.72
E12	11.60	11.81	10.33	10.54	11.94	12.09	10.67	10.82
E14	13.61	13.89	12.01	12.29	13.97	14.16	12.37	12.56
E17	16.28	16.53	14.91	15.16	16.68	16.83	15.31	15.46
E26	26.04	26.34	24.36	24.66	26.45	26.75	24.77	25.07
E27	26.15	26.45	23.96	24.26	26.55	26.85	24.36	24.66
E39	39.05	39.50	36.55	37.00	39.61	40.06	37.07	37.52
E40	39.05	39.50	35.45	35.90	39.60	40.05	36.00	36.45

#### Caution !

1. E-39 based lamp can not screw into an E-40 socket while an E-40 based lamp can screw into an E-39 socket. Please see the table above and compare figures of E-39 and E-40. (d<sub>1</sub> of E-39 is larger than that of E-40.)
2. E-26, E-27 based lamp can screw into an E-26, E-27 socket alternatively. Can be presumed to be the same size.

#### C. Filament Designations



#### Frosted Lamps

##### Vibration Service Medium Screw Base

Lámparas Mate, Base de Bayoneta de Doble Contacto Servicio de Vibración  
艷消耐振電球（ねじ込み式） 亞光防震灯泡（螺口式）

Inside frosted, medium screw base, "Vibration service" lamps for ships use. When ordering, specify the voltage and the number of watts required from the lamps listed below.



##### How to order: CODE

Lamp, frosted, vibration service, E-26, VOLTAGE, WATTAGE

Unit Per Pcs.

Frosted Medium Screw Base (E-26)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 01 01	15	25	79 01 21	15	25
02	20	25	22	20	25
03	25	25	23	25	25
04	30	25	24	30	25
05	40	25	25	40	25

(to be continued)

Unit Per Pcs.

Frosted Medium Screw Base (E-26)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 01 06	60	25	79 01 26	60	25
07	75	25	27	75	25
08	100	25	28	100	25
09	150	25	29	150	25
10	200	25	30	200	25

## Frosted Lamps

### Vibration Service Double Contact Bayonet Base

Lámparas Mate, Base de Bayoneta de Doble Contacto Servicio de Vibración  
艶消耐振電球（差し込み式） 亜光防震灯泡（插入式）



Inside frosted, double contact, bayonet base B-22 "Vibration service" lamps for ships use.

#### How to order: CODE

Lamp, frosted, vibration service, B-22, VOLTAGE, WATTAGE

Unit Per Pcs.

Frosted Bayonet Base (B-22)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 01 41	15	25	79 01 61	15	25
42	20	25	62	20	25
43	25	25	63	25	25
44	30	25	64	30	25
45	40	25	65	40	25
79 01 46	60	25	79 01 66	60	25
47	75	25	67	75	25
48	100	25	68	100	25
49	150	25	69	150	25
50	200	25	70	200	25

## Clear Lamps

### Vibration Service Medium Screw Base

Lámparas Clara, Base Roscada, Servicio de Vibración  
透明耐振電球（ねじ込み式） 透明灯泡



Clear, medium screw base, "Vibration service" lamps for ships use.

#### How to order: CODE

Lamp, clear, vibration service, E-26, VOLTAGE, WATTAGE

Unit Per Pcs.

Clear Medium Screw Base (E-26)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 01 81	20	25	79 01 91	20	25
82	25	25	92	25	25
83	30	25	93	30	25
84	40	25	94	40	25
85	60	25	95	60	25
79 01 86	75	25	79 01 96	75	25
87	100	25	97	100	25
88	150	25	98	150	25
89	200	25	99	200	25

## Clear Lamps

### Vibration Service Double Contact Bayonet Base

Lámparas Claras, Base Bayoneta de Doble Contacto Servicio de Vibración  
透明耐振電球（差し込み式） 透明灯泡



Clear, double contact, bayonet base, B-22 "Vibration service" lamps for ships use.

#### How to order: CODE

Lamp, clear, vibration service, B-22, VOLTAGE, WATTAGE

Unit Per Pcs.

Clear Bayonet Base (B-22)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 02 01	20	25	79 02 16	20	25
02	25	25	17	25	25
03	30	25	18	30	25
04	40	25	19	40	25
05	60	25	20	60	25
79 02 06	75	25	79 02 21	75	25
07	100	25	22	100	25
08	150	25	23	150	25
09	200	25	24	200	25

## Clear Mogul Screw (GES) Lamps

### Standard Type (E-39)

Lámparas Claras, Base Roscada Goliat (GES) Tipo Estándar  
モーガル標準透明電球 标准透明螺丝灯泡



Pear shaped lamp with a standard mogul base (E-39). A clear lamp for high watt illumination. GES denotes Goliath Edison Screw.

#### How to order: CODE

Lamp, clear, E-39, VOLTAGE, WATTAGE

Unit Per Pcs.

Standard Clear Mogul Screw Base (E-39)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 02 31	300	10	79 02 36	300	10
32	500	10	37	500	10
33	1,000	10	38	1,000	10

## Clear Mogul Screw (GES) Lamps

### (E-40)

Focos Claros Base Roscada de Mogul (GES)

モーガル透明電球 标准透明螺丝灯泡



Pear shaped with mogul base (E-40). Clear lamp bulb for high watt illumination.

#### How to order: CODE

Lamp, clear, E-40, VOLTAGE, WATTAGE

Unit Per Pcs.

Clear Mogul Screw Base (E-40)					
110-120 Volts			220-240 Volts		
CODE	Watts	Pieces Per Package	CODE	Watts	Pieces per Package
79 02 41	300	10	79 02 46	300	10
42	500	10	47	500	10
43	1,000	10	48	1,000	10

## LED Lamps

Lámparas LED L E D電球 LED 灯泡



More cost effective innovative lamp compared to conventional incandescent lamps or fluorescent lamps. LED (Light-Emitting Diodes) lamps keep lighting lifespan for several times longer and significantly more efficient than conventional incandescent lamps. Also, it consumes less energy about 90% than conventional incandescent lamps and effects to reduce of carbon dioxide.

CODE	Equivalent Watt	Actual Watt	Lighting Colour	Volt	Base Size	Unit Per Pcs.
79 02 51			Day Light	100V	E-26	
52	40	4.1	Incandescent			
55			Cool White			
79 02 53			Day Light	220V	E-27	
54	60	7.5	Incandescent			
56			Cool White			
79 02 57			Day Light	220V	E-27	
58	100	10	Incandescent			
59			Cool White			
79 02 60			Day Light	220V	E-27	
61	40	4	Incandescent			
62			Cool White			
79 02 63			Day Light	220V	E-27	
64	60	8	Incandescent			
65			Cool White			
79 02 66			Day Light	220V	E-27	
67	100	12	Incandescent			
68			Cool White			

## LED Globe Lamps

Lámparas LED Globo LED ボール電球 LED 球形灯

A spherical shape LED lamp commonly used for decorative lighting. Energy-efficient, long-lasting, and available in various sizes.



### How to order: CODE

LED globe lamp, BASE SIZE, BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE

CODE	Equivalent Watt	Actual Watt	Voltage	Size D x L	Unit Per Pcs.
<b>Base E-14, Lighting Colour 3000K</b>					
79 02 10	25	3	12-60V DC	45 x 75 mm	
11	25	3	85-265V AC	45 x 75 mm	
12	40	5	85-265V AC	45 x 75 mm	
<b>Base Ba-15d, Lighting Colour 3000K</b>					
79 02 13	25	3	12-60V DC	45 x 75 mm	
<b>Base B-22, Lighting Colour 3000K</b>					
79 02 14	25	3	12-60V DC	45 x 75 mm	
<b>Base E-27, Lighting Colour 3000K</b>					
79 02 25	25	3	12-60V DC	45 x 75 mm	
26	25	3	85-265V AC	45 x 75 mm	
27	40	5	85-265V AC	45 x 75 mm	
28	60	7	85-265V AC	45 x 75 mm	

## Coloured Lamps

Lámpara Coloreadas 色電球 螺丝口彩色灯泡

Available in red, green and yellow colours. Other colours must be made to order.



### How to order: CODE

Coloured lamp, VOLTAGE, BASE SIZE, WATTAGE, KIND of COLOUR

		E-26 Screw Base		B-22 Bayonet Base		Unit Per Pcs.	
		110-120V	220-240V	110-120V	220-240V		
CODE	Watts	CODE	Watts	CODE	Watts	CODE	Watts
						Red	
79 03 01	20	79 03 16	20	79 03 31	20	79 03 46	20
02	40		17	40	32	47	40
03	60		18	60	33	48	60
						Green	
79 03 06	20	79 03 21	20	79 03 36	20	79 03 51	20
07	40		22	40	37	52	40
08	60		23	60	38	53	60
						Yellow	
79 03 11	20	79 03 26	20	79 03 41	20	79 03 56	20
12	40		27	40	42	57	40
13	60		28	60	43	58	60

## Navigation Lamps

Lámparas de Navegación ナビゲーションランプ 螺丝口航行灯泡

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



### How to order: CODE

Lamp, navigation, BASE SIZE, VOLTAGE, WATTAGE

		24V		110-115V		220V		Unit Per Pcs.	
CODE	Watts	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		

## Tubular Navigation Lamps

Lámparas Tubulares de Navegación

チューブラナビゲーションランプ 管状航行灯

Tubular glass bulbs with a specially constructed filament designed for navigational use.



### How to order: CODE

Lamp, navigation, tubular, BASE SIZE, VOLTAGE, WATTAGE

		Unit Per Pcs.		E-27	
CODE	Volt	Watts (or cd)	Diam mm	Length mm	
79 04 07	24 V	26 cd			
79 04 08		26 cd			
21	110 V	40 W			
22		60 W			
09		65 cd			
79 04 10		26 cd			
23	220 V	40 W			
24		60 W			
17		65 cd			
			38	100	

(to be continued)

Unit Per Pc.				
CODE	Volt	Watts (or cd)	Diam mm	Length mm
<b>BAY15d (B.C. Indexing Candelabra Base)</b>				
79 04 18	12 V	10 W (12cd)	25	70
19		18 cd		
20		25 W (30cd)		
79 04 25	24 V	10 W (12cd)	38	100
30		18 cd		
35		25 W		
79 04 36	110 V	40 cd	40	60
79 04 37	220 V	40 cd		

B-22d (D.C. Medium Bayonet Base)				
CODE	Volt	Watts (or cd)	Diam mm	Length mm
79 04 38	24 V	13 cd	38	100
39		26 cd		
40		35 cd		
41		65 cd		
79 04 42	110 V	13 cd		
43		26 cd		
26		40 W		
27		60 W		
79 04 45	220 V	13 cd		
46		26 cd		
47		35 cd		
28		40 W		
29		60 W		
48		65 cd		

P-28s (Medium Prefocus Base)				
CODE	Volt	Watts (or cd)	Diam mm	Length mm
79 04 49	24 V	40 W (60 cd)	38	108
79 04 50	48 V	65 W (60 cd)		
79 04 31	110 V	40 W		
32		60 W (60 cd)		
79 04 33	220 V	40 W		
34		65 W (60 cd)		

## LED Tubular Navigation Lamps

Luces de navegación tubulares LED

管形 LED ナビゲーション電球 LED 管状导航灯

Tubular shape LED lamps, energy-efficient, long-lasting, designed for navigational use.



79 04 87	LED Tubular Navigation Lamp, 5W, Base P28s, 85-265V, size 32 x 110mm, Equivalent 60-65W	Pc.
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## Emergency Battery Lamps

Lámparas para Batería de Emergencia

非常用灯用電球 螺丝口应急电池灯泡

Low voltage emergency lamps powered by batteries. To be used as a lighting source in case of an emergency or "black out".



**How to order: CODE**

Lamp, emergency, battery, BASE SIZE, VOLTAGE, WATTAGE

## E-26 Screw Base

Unit Per Pcs.

12 Volt			24 Volt				
CODE	Watts	Size mm	CODE	Watts	Size mm		
		A			B		
79 04 51	10	55	98	79 04 61	10	55	98
52	20	55	98	62	20	55	98
53	30	55	105	63	30	55	105
54	40	55	105	64	40	55	105
55	60	60	110	65	60	60	110
79 04 56	100	70	136	79 04 66	100	70	136

(to be continued)

## E-22 Bayonet Base

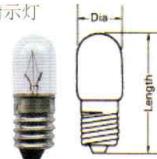
Unit Per Pcs.

12 Volt				24 Volt			
CODE	Watts	Size mm		CODE	Watts	Size mm	
		A	B			A	B
79 04 71	10	55	98	79 04 81	10	55	98
72	20	55	98	82	20	55	98
73	30	55	105	83	30	55	105
74	40	55	105	84	40	55	105
75	60	60	110	85	60	60	110
79 04 76	100	70	136	79 04 86	100	70	136

## 2. Pilot Lamps

Lámpara Piloto o Lámpara Tubular パイロット球 指示灯

As we carry quite a large assortment of pilot lamps, specify type of glass, base, length and other details such as voltage, wattage, ampere, etc.



### A. Tubular Pilot Lamps

#### 1. Screw Base

**How to order: CODE**

Pilot lamp, tubular, BASE SIZE, BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE

CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
<b>Base E-10, Clear, Dia. 10 x Length 28 mm (Part 1)</b>					
79 05 01	6.3 V	0.15 A	79 05 07	30 V	0.11 A
02	8 V	0.15 A	12	48 V	2 W
03	12 V	0.11 A	08	48 V	3 W
04	18 V	0.11 A	09	60 V	3 W
05	24 V	0.11 A	10	110 V	5 W
79 05 06	28 V	0.11 A	79 05 11	220 V	5 W

#### Base E-10, Clear, Dia. 10 x Length 28 mm (Part 2)

79 05 13	4 V	0.15 A	79 05 58	28 V	0.04 A
14	6.3 V	0.25 A	59	28 V	1 W
15	8 V	0.25 A	60	28 V	3 W
28	12 V	0.15 A	65	30 V	2 W
29	12 V	2 W	66	48 V	5 W
79 05 30	18 V	2 W	79 05 67	60 V	2 W
39	24 V	1 W	72	110 V	3 W
40	24 V	2 W	73	220 V	3 W
57	24 V	3 W			

#### Base E-12, Clear, Dia. 13 x Length 33 mm (Part 1)

79 05 16	6.3 V	0.15 A	79 05 22	30 V	0.11 A
17	8 V	0.15 A	27	48 V	2 W
18	12 V	0.11 A	23	48 V	3 W
19	18 V	0.11 A	24	60 V	5 W
20	24 V	0.11 A	25	110 V	5 W
79 05 21	28 V	0.11 A	79 05 26	220 V	5 W

#### Base E-12, Clear, Dia. 13 x Length 33 mm (Part 2)

79 05 74	24 V	2 W	79 05 83	115 V	5 W
75	24 V	3 W	89	220 V	3 W
81	28 V	2 W	90	220 V	10 W
82	30 V	2 W			

#### Base E-12, Clear, Dia. 15 x Length 45 mm (Part 1)

79 05 31	6.3 V	0.15 A	79 05 35	28 V	0.11 A
32	12 V	0.11 A	36	30 V	0.11 A
33	18 V	0.11 A	37	110 V	5 W
34	24 V	0.11 A	38	220 V	5 W

#### Base E-12, Clear, Dia. 15 x Length 45 mm (Part 2)

79 05 91	24 V	3 W	79 05 95	48 V	5 W
92	24 V	5 W	96	110 V	10 W
93	28 V	5 W	97	220 V	10 W
94	30 V	5 W			

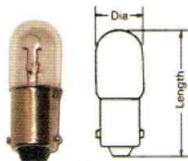
(to be continued)

Unit Per Pcs.					
CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
<b>Base E-12, Clear, Dia. 20 x Length 48 mm (Part 1)</b>					
79 05 41	12 V	5 W	79 05 49	48 V	5 W
42	18 V	0.11 A	50	60 V	5 W
43	18 V	5 W	51	110 V	5 W
44	24 V	0.11 A	52	110 V	10 W
45	24 V	3 W	53	110 V	20 W
79 05 46	24 V	5 W	79 05 54	220 V	5 W
47	28 V	5 W	55	220 V	10 W
48	30 V	5 W	56	220 V	20 W
<b>Base E-12, Clear, Dia. 20 x Length 48 mm (Part 2)</b>					
79 06 13	6 V	5 W	79 06 30	24 V	10 W
14	8 V	5 W	35	24 V	20 W
15	12 V	3 W	36	50 V	5 W
27	12 V	10 W	37	115 V	10 W
28	12 V	20 W	38	115 V	20 W
79 06 29	18 V	3 W			
<b>Base E-12, Clear, Dia. 20 x Length 70 mm</b>					
79 05 61	110 V	10 W	79 05 63	220 V	10 W
62	110 V	15 W	64	220 V	15 W
<b>Base E-14, Clear, Dia. 15 x Length 48 mm</b>					
79 05 68	24 V	5 W	79 05 70	220 V	10 W
69	110 V	10 W	71	220 V	15 W
<b>Base E-26, Clear, Dia. 26 x Length 60 mm</b>					
79 05 76	24 V	5 W	79 05 79	220 V	10 W
77	110 V	10 W	80	220 V	15 W
78	110 V	15 W			
<b>Base E-26, Clear, Dia. 26 x Length 70 mm</b>					
79 05 84	24 V	5 W	79 05 87	220 V	10 W
85	110 V	10 W	88	220 V	15 W
86	110 V	15 W			

## 2. Bayonet Base

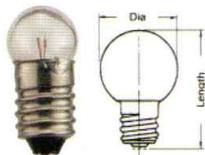
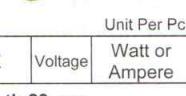
### How to order: CODE

Pilot lamp, tubular, BASE SIZE, BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE



Unit Per Pcs.					
CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
<b>Base BA-9s, Clear, Dia. 9 x Length 23 mm</b>					
79 06 39	12 V	3 W	79 06 48	30 V	2 W
40	24 V	50 mA	49	30 V	100 mA
46	24 V	80 mA	50	36 V	2 W
47	24 V	3 W	59	60 V	20 mA
<b>Base BA-9s, Clear, Dia. 10 x Length 28 mm (Part 1)</b>					
79 06 01	6.3 V	0.15 A	79 06 07	30 V	0.11 A
02	8 V	0.15 A	12	48 V	2 W
03	12 V	0.11 A	08	48 V	3 W
04	18 V	0.11 A	09	60 V	3 W
05	24 V	0.11 A	10	110 V	5 W
79 06 06	28 V	0.11 A	79 06 11	220 V	5 W
<b>Base BA-9s, Clear, Dia. 10 x Length 28 mm (Part 2)</b>					
79 06 60	6.3 V	0.25 A	79 06 92	28 V	0.04 A
70	8 V	0.25 A	93	28 V	1 W
77	12 V	0.15 A	94	30 V	1 W
78	12 V	2 W	95	30 V	2 W
79	18 V	1 W	96	48 V	5 W
79 06 80	24 V	1 W	79 06 97	60 V	2 W
90	24 V	2 W	98	110 V	3 W
91	24 V	3 W	99	220 V	3 W

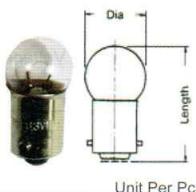
(to be continued)

Unit Per Pcs.					
CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
<b>Base BA-15d, Clear, Dia. 20 x Length 48 mm (Part 1)</b>					
79 06 16	18 V	0.11 A	79 06 22	110 V	10 W
17	18 V	5 W	23	110 V	20 W
18	24 V	0.11 A	24	220 V	5 W
19	24 V	3 W	25	220 V	10 W
20	24 V	5 W	26	220 V	20 W
79 06 21	110 V	5 W			
<b>Base BA-15d, Clear, Dia. 20 x Length 48 mm (Part 2)</b>					
79 07 36	6 V	10 W	79 07 43	24 V	15 W
37	12 V	5 W	44	24 V	20 W
38	12 V	10 W	45	110 V	15 W
39	12 V	20 W	46	115 V	5 W
40	18 V	2 W	47	115 V	10 W
79 07 41	18 V	3 W	79 07 48	115 V	20 W
42	24 V	10 W			
<b>Base BA-15d, Clear, Dia. 25 x Length 70 mm</b>					
79 06 31	110 V	10 W	79 06 33	220 V	10 W
32	110 V	15 W	34	220 V	15 W
<b>Base BA-15d, Clear, Dia. 25 x Length 70 mm</b>					
79 07 76	24 V	40 W	79 07 78	110 V	40 W
77	110 V	15 W	79	220 V	25 W
<b>Base BA-22d, Clear, Dia. 20 x Length 70 mm</b>					
79 06 41	24 V	5 W	79 06 44	220 V	10 W
42	110 V	10 W	45	220 V	15 W
43	110 V	15 W			
<b>B. Globular Pilot Lamps</b>					
<b>1. Screw Base</b>					
					
<b>How to order: CODE</b>					
Pilot lamp, globular, BASE SIZE, BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE					
<b>2. Bayonet Base</b>					
					
Unit Per Pcs.					
CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
<b>Base E-10, Clear, Dia. 11 x Length 23.5 mm (Part 1)</b>					
79 06 51	6.3 V	1 W	79 06 58	18 V	0.11 A
52	12 V	2 W	54	24 V	0.11 A
57	12 V	0.11 A	55	24 V	1 W
53	18 V	2 W	56	30 V	1 W
<b>Base E-10, Clear, Dia. 11 x Length 23.5 mm (Part 2)</b>					
79 07 80	12 V	3 W	79 07 83	24 V	5 W
81	12 V	5 W	84	30 V	2 W
82	24 V	2 W			
<b>Base E-12, Clear, Dia. 19 x Length 35 mm</b>					
79 06 61	24 V	3 W	79 06 65	110 V	5 W
62	24 V	5 W	66	115 V	5 W
63	24 V	10 W	67	220 V	5 W
64	100 V	5 W			
<b>Base E-12, Clear, Dia. 25 x Length 40 mm</b>					
79 07 85	6.3 V	3 W	79 07 89	115 V	5 W
86	28 V	6 W	90	115 V	10 W
87	110 V	5 W	91	220 V	5 W
88	110 V	10 W			
<b>Base E-26, Frost, Dia. 35 x Length 72 mm</b>					
79 06 68	220 V	30 W	79 06 69	220 V	40 W

## 2. Bayonet Base

### How to order: CODE

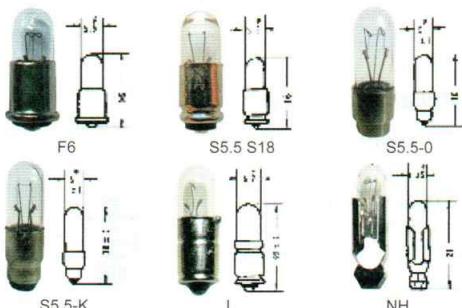
Pilot lamp, globular, BASE SIZE, BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE



Unit Per Pcs.

CODE	Voltage	Watt or Ampere	CODE	Voltage	Watt or Ampere
<b>Base BA-9s, Clear, Dia. 11 x Length 23.5 mm (Part 1)</b>					
79 06 71	6.3 V	1 W	79 06 74	24 V	0.11 A
72	12 V	2 W	75	24 V	1 W
73	18 V	5 W	76	30 V	1 W
<b>Base BA-9s, Clear, Dia. 11 x Length 23.5 mm (Part 2)</b>					
79 07 92	12 V	3 W	79 07 95	24 V	3 W
93	18 V	2 W	96	30 V	2 W
94	24 V	2 W			
<b>Base BA-15d, Clear, Dia. 19 x Length 35 mm (Part 1)</b>					
79 06 81	6 V	8 W	79 06 86	100 V	5 W
82	12 V	10 W	87	110 V	5 W
83	24 V	3 W	88	115 V	5 W
84	24 V	5 W	89	220 V	5 W
85	24 V	10 W			
<b>Base BA-15d, Clear, Dia. 19 x Length 35 mm (Part 2)</b>					
79 07 97	12 V	20 W	79 07 99	220 V	10 W
98	24 V	20 W			

## C. Miniature Pilot Lamps



### How to order: CODE

Pilot miniature lamp, TYPE, VOLTAGE, WATTAGE or AMPERE

Unit Per Pcs.

CODE	Voltage	Watt or Ampere	Type	Size mm Diam. x Length
79 07 01	6	0.1 A	F6	5.5 x 16
	6	0.2 A	"	
	14	0.05 A	"	
	14	0.08 A	"	
	18	1 W	"	
	28	0.025 A	"	
	28	0.04 A	"	
79 07 11	6	0.2 A	S5.5-S18	5.5 x 16
	14	0.08 A		
	28	0.04 A		
79 07 16	14	0.05 A	S5.5-O	5 x 16
	18	0.05 A		
	28	0.04 A		
79 07 21	6	0.6 W	S5.5-K	5 x 18
	12	0.6 W		
	18	0.6 W		
	24	0.6 W		
	28	0.6 W		
79 07 30	15	15 mA	L	6.2 x 22
	15	20 mA		
	30	30 mA		
79 07 35	28	22 mA	NH	4.85 x 21

## LED Pilot Lamps

Pilotos LED LED バイロット球 LED 指示灯

A compact, energy-efficient light used as an indicator or signal, providing a bright and long-lasting illumination. Commonly employed in various applications such as control panels, machinery, automotive dashboards.



### How to order: CODE

Pilot lamp, LED, tubular, BASE SIZE, BODY DIAM x LENGTH mm, VOLTAGE, WATTAGE

Unit Per Pcs.

CODE	Equivalent Watt	Actual Watt	Voltage	Size D x L
<b>Base E-14, Clear, Tubular Type, Lighting Colour 3000K</b>				
79 09 05	5	0.8	10-30V AC/DC	17 x 52 mm
10	15	2	10-30V AC/DC	28 x 60 mm
15	25	3	10-30V AC/DC	28 x 60 mm
79 09 27	7	1	85-265V AC	17 x 52 mm
	15	2	85-265V AC	28 x 60 mm
	25	3	85-265V AC	28 x 60 mm
30	40	5	85-265V AC	28 x 60 mm
<b>Base Ba-15d, Clear, Tubular Type, Lighting Colour 3000K</b>				
79 09 37	5	0.8	10-30V AC/DC	17 x 47 mm
38	15	2	10-30V AC/DC	28 x 58 mm
39	25	3	10-30V AC/DC	28 x 58 mm
79 09 40	7	1	85-265V AC	17 x 47 mm
	15	2	85-265V AC	21 x 60 mm
	25	3	85-265V AC	21 x 60 mm
<b>Base E-27, Clear, Tubular Type, Lighting Colour 3000K</b>				
79 09 49	15	2	85-265V AC	28 x 60 mm
50	25	3	85-265V AC	28 x 60 mm
63	40	5	85-265V AC	28 x 60 mm

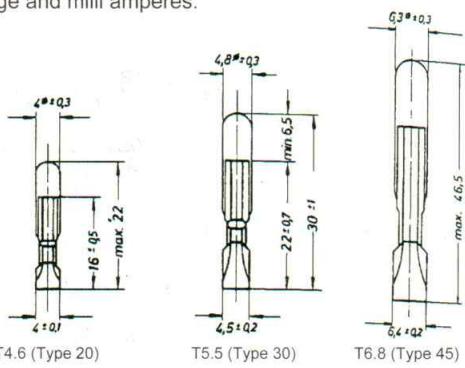
## Telephone Switch Board Lamps

### (Taunus Lamps)

Lámparas de Comunicación Telefónica

電話交換機用ランプ 电话配電盤灯

A wide range of models are available, the standard models are listed below. When ordering, please specify lamp type, voltage and milli amperes.



### How to order: CODE

Taunus lamp, TYPE, VOLTAGE, mA

CODE	Type	Voltage	Current mA	Unit Per Pcs.	
				Size mm Diam. x Length	
79 08 21	T4.5	6	20	4.5 x 16	
22			40		
79 08 23		12	20		
24			40		
79 08 25		24	20		
26	T4.6 (20)		40	4.6 x 22	
27			50		
79 08 28		30	40		
79 08 29		6	20		
30			40		
79 08 31	T5.5K	12	20	5.5 x 22	
32			40		
79 07 50		24	20		
51			40		
79 08 33			50		
79 07 52	T5.5K (30)	30	20	5.5 x 30	
53			40		
79 08 34		36	20		
79 08 35		48	20		
79 08 36		60	20		
79 08 37	T6.8 (45)	6	40	6.8 x 44	
79 08 38		12	50		
79 08 39		24	20		
40			50		
79 08 41		30	50		
79 08 42	T6.8 (45)	6	40	6.8 x 44	
43			200		
79 08 44		12	20		
45			40		
46			100		
79 07 56	T6.8 (45)	24	20	6.8 x 44	
79 08 47			40		
79 07 57			50		
79 08 48			80		
79 08 49		28	40		
50	T6.8 (45)		50	6.8 x 44	
79 07 58		30	20		
59			40		
60			50		
79 08 51		36	20		
52	T6.8 (45)		40	6.8 x 44	
53			50		
79 08 54		48	20		
55			25		
56			40		
57			50		
79 08 58	T6.8 (45)	60	20	6.8 x 44	
79 08 59		6	20		
60			40		
79 08 61		12	20		
62			50		
63			100		
79 07 66	T6.8 (45)	24	20	6.8 x 44	
79 08 64			25		
79 07 67			40		
68			50		
69			60		
70			90		
79 08 65	T6.8 (45)	28	25	6.8 x 44	
66			45		
79 07 71		30	40		
79 08 67			50		
79 07 72			90		
73			120		
79 08 68	T6.8 (45)	36	20	6.8 x 44	
69			40		
70			50		
79 08 71		48	20		
72			50		
79 08 73		60	20	6.8 x 44	
74			40		

## Single LED Indicator Lamps

Indicadores Luminosos LED Simples

LED インディケーターランプ 单 LED 指示灯



Midget Flanged T1 3/4      Midget Grooved T1 3/4      Bayonet Ba9s      Edison E10

T1 3/4, 6 x 16 mm, 24-28 volts

Unit Per Pcs.

CODE	Colour	CODE	Colour
<b>Midget Flanged</b>		<b>Midget Grooved</b>	
79 05 98	Red	79 07 10	Red
99	Blue	14	Blue
79 06 00	Green	15	Green
79 07 08	Yellow	19	Yellow
09	White	20	White

Bayonet Ba9s, 10 x 24 mm

Unit Per Pcs.

CODE	Colour	CODE	Colour	CODE	Colour
<b>6 volts</b>		<b>12 volts</b>		<b>24 - 28 volts</b>	
79 07 26	Red	79 07 34	Red	79 07 62	Red
27	Blue	49	Blue	63	Blue
28	Green	54	Green	64	Green
29	Yellow	55	Yellow	65	Yellow
33	White	61	White	74	White

Edison E10, 10 x 24 mm

Unit Per Pcs.

CODE	Colour	CODE	Colour	CODE	Colour
<b>6 volts</b>		<b>12 volts</b>		<b>24 - 28 volts</b>	
79 07 75	Red	79 08 15	Red	79 08 87	Red
79 08 00	Blue	20	Blue	88	Blue
05	Green	75	Green	89	Green
10	Yellow	85	Yellow	90	Yellow
14	White	86	White	91	White

## Indicator Lamps

BA7s Base

Lámpara Indicadora BA7s Base

インディケーターランプ 指示燈



Unit Per Pcs.

CODE	Volts	mA	Watts	Size mm Diam. x Length
79 08 76	6	100	0.6	T6.8 x 20mm
79 08 77	12	170	2	
79 08 78		50	1.2	
79 08 79	24		3	
79 08 80		50		
79 08 81	12	100	1.2	T6.8 x 23mm
79 08 82	30		2	
79 08 83	36	50	1.8	
79 08 84	60	20		

## LED Panel Indicating Lights

Luces indicadoras de panel LED

LED パネル表示ライト LED 面板显示灯

Using a LED lighting structure increases the safety of operations, and the panel indicator lights are armed with valuable reflector optics to illuminate and intensify visibility. LED light will eliminate the downtime necessary for repairs or replacements



as it does not require as much maintenance as other lighting options. Simple push-in installation mounts in any thickness material. Available in five colors: white, red, green, yellow and blue.

#### Fitting φ22mm, 24V AC/DC

Unit Per Pcs.

CODE	Colour	Current mA	Dia X Length mm
79 08 92	White		
93	Red		
94	Green	20	29 X 52
95	Yellow		
96	Blue		

#### Fitting φ22mm, 110V AC

Unit Per Pcs.

CODE	Colour	Current mA	Dia X Length mm
79 08 97	White		
98	Red		
99	Green	20	29 X 52
79 09 00	Yellow		
57	Blue		

#### Fitting φ22mm, 230V AC

Unit Per Pcs.

CODE	Colour	Current mA	Dia X Length mm
79 09 58	White		
59	Red		
60	Green	20	29 X 52
61	Yellow		
62	Blue		

### Pygmy Lamps

Lámparas pigmeas ピグミーランプ 侏儒灯



A compact size incandescent lamps, perfect for display cabinets, side lamps, fridges, sewing machines or any other appliance which requires small lamps.

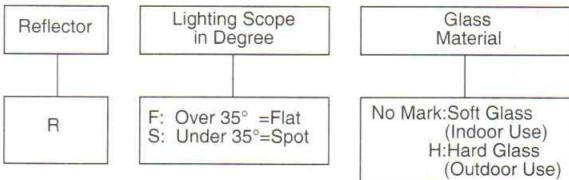
CODE	Watts	Volts	Base
79 09 81	25W	24V	E-14
82	25W	24V	B-15D

### 3. Reflector Lamps

#### Reflector Lamps

Lámparas Reflectoras リフレクターランプ 室内反光型反射灯

How to understand the Reflector Lamp Denotation



#### Flat Reflector Lamps

for Indoor Use (RF)

Lámparas Reflectoras Planas para Uso Interior (RF)

"RF" 屋内散光形ランプ 螺口平面散光灯泡 -RF

To be used only for indoor lighting. Preferably to be used for wide area lighting. When ordering, specify the voltage, number of watts, and screw base.



#### How to order: CODE

Reflector lamp, RF, flat indoor use, VOLTAGE, WATTAGE

Type "RF"

Unit Per Pcs.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 01	100	E-26	79 09 06	100	E-26
02	150	"	07	150	"
03	200	"	08	200	"
04	300	"	09	300	"

#### Spot Reflector Lamps

for Indoor Use (RS)

Lámparas Reflectoras para Uso Interior (RS)  
RS 屋内集光型ランプ 螺口平面散光灯泡 -RS

To be used only for indoor lighting. Especially useful in dark spots. When ordering, specify the voltage, number of watts, and the base type and size.

#### How to order: CODE

Reflector lamp, RS, spot indoor use, VOLTAGE, WATTAGE

Type "RS"

Unit Per Pcs.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 11	100	E-26	79 09 16	100	E-26
12	150	"	17	150	"
13	200	"	18	200	"
14	300	"	19	300	"

#### Flat Reflector Lamps

for Outdoor Use (RF-H)

Lámparas Reflectoras Planas para Uso Exterior (RF-H)  
"RF-H" 屋外散光形ランプ 螺口室外反光灯泡 RF-H

Specially designed for outdoor use. Requires no shade or covering. Preferably used for wide area lighting on deck or in the engine room. Made of hardened heat resisting glass. When ordering, specify the voltage, number of watts, and screw base size.

#### How to order: CODE

Reflector lamp, RF-H, flat outdoor use, VOLTAGE, WATTAGE

Type "RF-H"

Unit Per Pcs.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 21	100	E-26	79 09 31	100	E-26
22	150	"	32	150	"
23	200	"	33	200	"
79 09 24	300	E-39	79 09 34	300	E-39
25	500	"	35	500	"
26	1,000	"	36	1,000	"

#### Spot Reflector Lamps

for Outdoor Use (RS-H)

Lámparas Reflectoras para Uso Exterior (RS-H)  
RS-H 屋外集光型ランプ 螺口室外聚光灯泡 (RS-H)

Specially designed for outdoor use. Requires no shade or covering. Spotlight type made of hardened heat-resisting glass.

#### How to order: CODE

Reflector lamp, RS-H, spot outdoor use, VOLTAGE, WATTAGE

Type "RS-H"  
Unit Per P.C.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 41	100	E-26	79 09 51	100	E-26
42	150	"	52	150	"
43	200	"	53	200	"
79 09 44	300	E-39	79 09 54	300	E-39
45	500	"	55	500	"
46	1,000	"	56	1,000	"

## Infrared Ray Lamps

Lámparas de Rayo Infrarrojo

赤外線乾燥用電球 红外线灯泡

This unit is designed for use where heat is required. For example, drying of electric motors, paints, etc. When ordering, specify the voltage, the number of watts, and the screw base required.



Denotes : IR – Infrared Ray  
R – Reflector  
H – Hard Glass

### How to order: CODE

Infrared ray lamp, IR-RH, VOLTAGE, WATTAGE

Type "IR-RH"  
Unit Per P.C.

100-110 Volts			220-230 Volts		
CODE	Watts	Screw Base	CODE	Watts	Screw Base
79 09 71	250	E-26	79 09 76	250	E-26
72	375	E-26	77	375	E-26
73	500	E-26	78	500	E-26
74	500	E-39	79	500	E-39

## 4. Sodium Lamps / Halogen Lamps

### High Pressure Sodium Lamps

Lámparas de Sodio Alta Presión

高压ナトリウムランプ 球管形高压钠灯

A high pressure sodium lamp which gives superior colour rendition characteristics, has a rated life of 24,000 hours, a 2100°K colour temperature factor and a very high lumen output almost twice that of comparable mercury vapour lamps. For use with a high pressure sodium lamp ballast.

BT-Bulb	BT-F-Bulb	T-Bulb	R-Bulb
NH Type	NHF Type	NHT Type	NHR Type

Denotes : BT – Ball Tubular  
T – Tubular  
F – Diffusion  
R – Reflector  
N – No external ignitor is required  
H – Hard Bulb

### How to order: CODE

High pressure sodium lamp, TYPE of BULB, TYPE, WATTAGE

CODE	Type	Wattage	Screw Base	Glass Ømm	Overall Length mm
<b>BT-Bulb</b>					
79 12 01 02	NH	700	700	E-39	150 375
1,000					
<b>BT-F-Bulb</b>					
79 12 06 07	NH	700 F	700	E-39	150 375
1,000 F					
<b>T-Bulb</b>					
79 12 11 12 13 14 15	NHT	150 250 400 700 1000	150 250 400 700 1,000	E-39	48 212 48 257 48 285 55 330 55 383
<b>R-Bulb</b>					
79 12 18 19 20	NHR	150 250 400	150 250 400	E-39	165 310 165 310 180 320

### High Pressure Sodium Lamp Ballasts

Reactancias para Lámparas de Sodio Alta Presión

高压ナトリウム安定器 高压钠蒸汽灯镇流器

These ballasts incorporate a high-voltage pulse generator for starting the lamp. The pulse generation does not effect the lamp during arcing. An emergency thermostat is built in to cut off the power automatically in the event of any fault. As a wide range of products with respective specifications are available, when ordering, please specify the following details.



### Guide of How to order

CODE .....	79 12 21
Name .....	Sodium lamp ballast
Lamp Type .....	BT
Input Voltage .....	100 V
Lamp Wattage .....	700 W
Lamp Ampere .....	7.9 amp.
Frequency .....	50/60 Hz
Lamp Dimension .....	150 mm diam x 375 mm L
Lamp Base .....	E-39
Etc .....	If any

### Electronic Superimposed Ignitors for HS Lamps 400 W

Arrancadores de superposición electrónicos

電子多層イグナイター 电子叠加点火器

A standard version compact shape for high pressure sodium lamps (HS).

Phasing of the ignition voltage: 60–90 °el and 240–270 °el.  
Max. permitted casing temperature: 105 °C.  
Fastening: male nipple with pre-assembled washer and nut.  
For luminaires of protection class I and II.  
For luminaires of protection class I (140594, 147707).



Aluminium Casing Z 400M



Plastic Casing Z 400MK

Z 400M: Aluminium casing with screw terminals 0.75-4 mm<sup>2</sup>  
Z 400MK: Plastic casing with screw terminals 0.75-4 mm<sup>2</sup>

Unit Per Pcs.						
CODE	Type	Voltage	Max. Lamp Current	Ignition Voltage	Load Capacity	Weight
79 12 22	Z 400M	220-240V	5A	4-5 kV	20-50 pF	140 grm
79 12 23	Z 400MK					130 grm

Name of Mfr.: Vossloh-Schwabe Deutschland GmbH

## Illumination Halogen Lamps

### E-11 Screw Base

Lámparas Halógenas para Iluminación - Base Roscada

照明用ハロゲンランプ 螺口卤素灯泡

1/20 smaller than corresponding general lighting use incandescents and provides 2,000 hrs. of service without fading.



### How to order: CODE

Illumination halogen lamp, E-11 screw base, VOLTAGE, WATTAGE

Unit Per Pcs.					
CODE	Watts	Volt	Glass Type	Overall Length mm	Screw Base
79 12 51	75	110	T11	65	
52	100	110	T11	65	
53	150	110	T13	70	
54	250	110	T13	76	
55	500	110	T13	90	
79 12 56	500	220	T13	90	

E-11

## Tungsten Halogen Lamps

### R7S Cap Base

Lámparas Halógeno Tungsteno

タンゲステンハロゲンランプ 灯口钨卤素灯泡

Compact in size, 500W-1/10, 1,500W-1/20 of corresponding general lighting use incandescents. Used for floodlighting, spotlighting, lighting for factories, gymnasiums, photocopying, etc.



### How to order: CODE

Tungsten halogen lamp, R7S cap base, VOLTAGE, WATTAGE

Unit Per Pcs.					
CODE	Watts	Volt	Size mm		Base Type
			Glass Diam.	Overall Length	
79 12 61	300	110	9	117	
62	500	110	11	117	
66	1,000	110	11	189	
79 12 63	500	220	11	117	R7S
67	1,000	220	11	189	
64	1,000	220	11	208	
65	1,000	220	11	248	

R7S

## Tubular Shape Halogen Lamps

### E-39 Screw Base

Lámparas Halógenas con figura Tubular - Base Roscada

外球付ハロゲンランプ 管状卤素灯泡

Designed for use with an E-39 screw base lamp holder.



### How to order: CODE

Halogen lamp, tubular shape, E-39, VOLTAGE, WATTAGE

Unit Per Pcs.					
CODE	Watts	Volt	Size mm		
			Glass Dia.	Overall Length	
79 12 71	500	100-120V	38	205	E-39
79 12 72	500	200-240V	38	215	
73	1,000	"	38	255	



Unit Per Pcs.

## Sealed Beam Lamps

Lámparas Selladas Halógena シールドビームランプ 密封光束灯泡

Designed for maximum safe vision under all weather conditions. Not only gives greater illumination distance but also prevents reflection from moisture particles in the air. "PAR" denotes parabolic shape.

Unit Per Pcs.					
CODE	Watts	Volt	Size mm		
			Glass Dia.	Overall Length	
79 12 91	50	24	145	103	3
92	75	24	178	138	
93	80	24	145	103	

## 5. Fluorescent Lamps

### Fluorescent Lamps

Lámparas Fluorescentes - Tipo Estándar 蛍光ランプ 荧光灯



How to understand Fluorescent Lamp Denotations:

Type	Watts	Glass Diam.
FL : Straight FCL: Circle FLR: Straight & Rapid Start	4, 6, 8, 10, 15, 20, 30, 38, 40,	S : 32.5 mm SS: 25.5 mm or 28.0 mm

Length

No Mark: 580 mm  
EL : 588.7 mm

Colour

D : Day Light  
W : Cool White  
WW : Warm White

Note: S &amp; SS marked FL lamps have the same luminosity as the conventional diameter of FL lamps.

## Fluorescent Lamps

Lámparas Fluorescentes - Tipo Estándar 蛍光ランプ 荧光灯

Fluorescent tube lamps requiring glow starters. Available in three colours of cool white, warm white and daylight. Specify which colour when ordering.



### Cool White Colour

### How to order: CODE

Fluorescent lamp, cool white, TYPE, WATTAGE

CODE	Type	Watts	$\Phi$ mm D	L mm A	Unit Per Pcs.	
					Type of Starter	
79 14 01	FL-4W	4		134.5		
02	FL-6W	6	15.5	210.5	FG-7E	
03	FL-8W	8		287.0	or	
79 14 04	FL-10W	10	25.5	330.0	FG-7P	
05	FL-15W	15		436.0		
79 14 06	FL-20	20	38.0			
79 14 07	FL-20SW	20		32.5		
08	FL-20S/18	18				
79 14 09	FL-20SS-W/18	18	28.0			
79 14 10	FL-20/EL	20	38.0			
11	FL-20S/EL	20	32.5			
12	FL-20-SSCW/18-24	18	25.5			
79 14 14	FL-30SW	30	32.5	630.0	FG-1P	
79 14 15	FL-40	40	38.0			
79 14 16	FL-40SW	40		32.5		
17	FL-40S/38	38				
79 14 18	FL-40SS-W/37	37	28.0			

### Daylight Colour

CODE	Type	Watts	Unit Per Pcs.	
			Size mm	Packed in
79 14 46	FLR-20SD	20	32.5	580
47	FLR-20	20	38.0	580
79 14 48	FLR-40SD	40	32.5	1,198
49	FLR-40	40	38.0	1,198

### LED Fluorescent Lamps T8

Lámparas Fluorescentes LED LED 荧光灯



Innovative LED fluorescent lamps, compatible with most of magnetic ballasts (CCGs) with grow start and rapid start type as direct replacement with traditional fluorescent lamps. Energy saving up to 61%, instant 100% light without flickering.

In case of Inverter Type such as FHF or electronic ballasts(ECGS), retrofit is required and wiring must be changed for direct connection.

### Daylight Colour

#### How to order: CODE

Fluorescent lamp, daylight colour, TYPE, WATTAGE

CODE	Type	Watts	$\Phi$ mm D	L mm A	Unit Per Pcs.	
					Type of Starter	
79 14 21	FL-4D	4		134.5		
22	FL-6D	6	15.5	210.5	FG-7E	
23	FL-8D	8		287.0	or	
79 14 24	FL-10D	10	25.5	330.0	FG-7P	
25	FL-15D	15		436.0		
79 14 26	FL-20	20	38.0			
79 14 27	FL-20SD	20		32.5		
28	FL-20S/18	18				
79 14 29	FL-20SS-D/18	18	28.0			
79 14 30	FL-20/EL	20	38.0			
31	FL-20S/EL	20	32.5			
32	FL-20-SSCW/18-24	18	27.0			
79 14 34	FL-30SD	30	32.5	630.0	FG-1P	
79 14 35	FL-40	40	38.0			
79 14 36	FL-40SD	40		32.5		
37	FL-40S/38	38				
79 14 38	FL-40SS-D/37	37	28.0			

### Rapid Start Fluorescent Lamps

#### (Rapid Start FL Lamps)

Lámparas Fluorescentes Encendido Rápido

ラピッドスタート型蛍光ランプ 快亮型日光灯管

Rapid start lamps use a rapid start circuit ballast to start within one to two seconds. Does not require a glow starter.



Please specify which colour is required when ordering.

### Cool White Colour

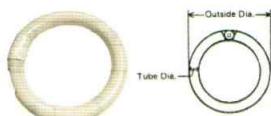
CODE	Type	Watts	Size mm		Packed in
			Diam.	Length	
79 14 41	FLR-20SW	20	32.5	580	25
42	FLR-20	20	38.0	580	25
79 14 43	FLR-40SW	40	32.5	1,198	25
44	FLR-40	40	38.0	1,198	25

### Daylight Colour

#### How to order: CODE

Fluorescent lamp, circle, cool white, SIZE, WATTAGE

CODE	Size	Watts	Unit Per Pcs.	
			Glass x Circle Diam. O.D.	Starter Type
79 14 65	FCL-20W/18	18	29 x 205	FG-1P or 1E
66	FCL-30W/28	28	29 x 225	FG-1P or 1E
67	FCL-32W/30	30	29 x 299	FG-5P
68	FCL-40W/38	38	29 x 373	FG-4P
79 14 69	European	40	29 x 400	FG-4P
70	U.S.A	40	1-1/8" x 16"	FG-4P



### Daylight Colour

#### How to order: CODE

Fluorescent lamp, circle, day light, SIZE, WATTAGE

CODE	Size	Watts	Glass x Circle Diam. O.D.	Starter Type	Unit Per Pc.
79 14 51	FCL-20D/18	18	29 x 205	FG-1P or 1E	
52	FCL-30D/28	28	29 x 225	FG-1P or 1E	
53	FCL-32D/30	30	29 x 299	FG-5P	
54	FCL-40D/38	38	29 x 373	FG-4P	
79 14 55	European	40	29 x 400	FG-4P	
56	U.S.A	40	1-1/8" x 16"	FG-4P	

## Circle Fluorescent Lamps

### Rapid Start

Lámparas Circulares Fluorescentes - Encendido Rápido  
ラピッドスタートサークライン蛍光灯 快亮环型日光灯管

Same as the lamps above but these require a rapid start fixture.



CODE	Size	Watts	Glass x Circle Diam. O.D. mm	Unit Per Pc.
79 14 61	FCR-20	18	29 x 205	
62	FCR-30	28	29 x 225	
60	FCR-32	30	29 x 299	
63	FCR-40	38	29 x 373	

## Energy Saving Lamps

Lámparas de ahorro energético 省エネ型電球 节能灯

Suitable for when functionality precedes form and high number of lumen is required.



### Compact Fluorescent Lamp, 2700°K Used without ballast

#### 130V AC

CODE	Watts	Cap	Type	D x I mm	Unit Per Pc.
79 14 96	7			40 x 120	
97	9	E14	T4-2U	40 x 135	
98	11			40 x 140	
79 14 99	5			40 x 120	
79 15 00	9	E27	T4-2U	40 x 135	
09	11			40 x 140	
79 15 10	15			48 x 133	
11	20	E27	T4-3U	48 x 155	
12	23			48 x 160	

#### 240V AC

CODE	Watts	Cap	Type	D x I mm	Unit Per Pc.
79 15 13	9	B22	T4-2U	40 x 135	
79 15 14	5			40 x 120	
15	7	E14	T4-2U	40 x 125	
16	9			40 x 135	
17	11			40 x 140	
79 15 18	5			40 x 120	
19	7	E27	T4-2U	40 x 125	
20	9			40 x 135	
23	11			40 x 140	
79 15 24	15	E27	T4-3U	48 x 133	
30	20			48 x 155	

### 6200°K Daylight Used without Ballast

#### 130V AC

CODE	Watts	Cap	Type	D x I mm	Unit Per Pc.
79 15 31	7			40 x 125	
34	9	E14	T4-2U	40 x 135	
39	11			40 x 140	
79 15 40	5			40 x 120	
41	7	E27	T4-2U	40 x 125	
42	9			40 x 135	
43	11			40 x 140	
79 15 44	15	E27	T4-3U	48 x 133	
45	20			48 x 155	
79 15 46	23	B27	T4-2U	48 x 160	

## 230V AC

CODE	Watts	Cap	Type	D x I mm	Unit Per Pc.	
79 15 47	9			40 x 135		
48	11	E14	T4-2U	40 x 140		
79 15 49	5			40 x 120		
50	7	E27	T4-2U	40 x 125		
59	9			40 x 135		
60	11			40 x 140		
79	15 80	20	E27	T4-3U	48 x 155	
99	23			48 x 160		

## Compact Fluorescent Light Bulbs

Bombilla Fluorescente Compacta 電球形蛍光ランプ 小型螢光燈泡

A compact fluorescent lamp can be replaced an incandescent lamp using less power and having a longer rated life. All bulbs has E-26 screw base.



CODE	100V	220V	Equivalent Watt	Colour	Size mm Diam x L
<b>Pear Shape - E-26 Screw Base</b>					
79 15 61	79 15 64		40 watt	Incandescent Cool White Daylight	60 x 116
62	65				
63	66				
79 15 67	79 15 70		60 watt	Incandescent Cool White Daylight	60 x 109
68	71				
69	72				
79 15 73	79 15 76		100 watt	Incandescent Cool White Daylight	65 x 133
74	77				
75	78				
<b>Globeless - E-26 Screw Base</b>					
79 15 81	79 15 84		40 watt	Incandescent Cool White Daylight	40 x 89
82	85				
83	86				
79 15 87	79 15 90		60 watt	Incandescent Cool White Daylight	40 x 112
88	91				
89	92				
79 15 93	79 15 96		100 watt	Incandescent Cool White Daylight	48 x 130
94	97				
95	98				

## Single Pin End Fluorescent Lamps

Lámparas Fluorescentes de Conector Simple

シングルピン蛍光ランプ 单栓端日光灯

Fluorescent lamps of 20W or 40W for starter less ignition, to be operated by means of special explosion-proof ballasts on A.C. mains; the lamps are designed specifically for application in areas where an explosion hazard exists. "TL"X instant-start lamps, stabilized by special ballasts, are provided with an internal ignition strip connected to one of the electrodes. Since the electrodes are not pre-heated, only one electrical contact is required at each lamp-end. To exclude all possible sparking effects during ignition, the caps and, in particular, the long, thick lamp-pins are constructed so as to ensure maximum contact with the appropriate lamp holders.



### Application

In "flameproof" and "increased safety" luminaries designed in accordance with IEC 79/1, 79/7, EN 50018 and 50019, VDE 170/171 and similar specifications, both for indoor and outdoor applications :

## Dimensions

	20W	40W	mm
A	574	1,184	
B	593	1,202	
C	611	1,221	
D	41	41	



## Specifications

Type	Nominal		Colour	Luminous	Weight
	Length	Diam.		lm	grm
"TL" X 20W/33	574 mm	41 mm	Cool	940	150
"TL" X 40W/33	1,184 mm	41 mm	White	2,300	292
79 14 79	Lamp Fluorescent, single pin end, type "TL" X20W/33, 38 x 574 mm		Pc.		
79 14 80	Lamp Fluorescent, single pin end, type "TL" X40W/33, 41 x 1,184 mm		Pc.		

## Germicidal Lamps

Lámparas Germicidas 殺菌灯 杀菌灯

Specially designed low voltage mercury vapour lamps which radiate ultraviolet rays of 250 - 260 mm. This short wave ray is a very effective bactericide for medical and sanitary purposes, such as the germicide of food stuff in the refrigerator, table ware, cooking utensils in the galley, and barber tools, room air, etc.

This lamp comes in the same type and sizes as common fluorescent tube lamps and can be used within the same fixture.

5 sizes are available. Specify when ordering.

Unit Per Pcs.

CODE	Model	Wattage	Size mm		Cap	Glow Starter
			Φ	L		
79 14 91	GL- 4	4	15.5	134.5	G 5	FG7P (7E)
92	GL- 6	6	15.5	210.5	G 5	FG7P (7E)
93	GL- 8	8	15.5	287.0	G 5	FG7P (7E)
94	GL-10	10	25.5	330.0	G13	FG7P (7E)
95	GL-15	15	25.5	436.0	G13	FG1P (7E)
79 14 90	GL-30	30	25.5	893.0	G13	FG-4P

## Caution!

Do not stare directly at the lamp when it is on as GERMICIDAL rays are injurious to the eyes. Wear ordinary safety goggles.

## Starters for Fluorescent Lamps

Cebadores para Lámparas Fluorescentes 荧光ランプスターター 启辉器

Each fluorescent lamp requires a starter for the purpose of preheating before lighting. When ordering, specify type "E" or "P" as well as the wattage of the lamps.



## Starter Application Table

Type	Applicable Fluorescent Lamps
FG-7E or FG-7P	FL4, FL-6, FL-8, FL-10 GL-6, GL-10
FG-1E or FG-1P	FL15, FL-20SS/18, FL-20S, FL-20, FL-20SS, FL-20S/EL, FL-20EL FL-30S, FCL-20, FCL-30, GL-15

(to be continued)

FG-4P	FL-40S, FL40, FCL-40
FG-5P	FCL-40
FS-2	Single: FL-4, FL-6, FL-8 Series: FL4 – FL22
FS-U	Single: FL4 – FL13, FL15 – FL80

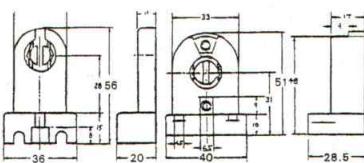
CODE	Type	Base Type	Size mm
			Diam. x Length
79 15 01	FG-7E	E-17	17 x 40
02	FG-1E	E-17	17 x 40
03	FG-7P	P-21	21 x 38
04	FG-1P	P-21	21 x 38
05	FG-4P	P-21	21 x 38
79 15 06	FG-5P	P-21	21 x 38
79 15 07	FS-2	P-21	21 x 38
79 15 08	FS-U	P-21	21 x 38

## Fluorescent Lamp Holders

Porta-lámparas Fluorescentes 荧光燈用ソケット 旋转弹簧荧光灯脚座

There are many types of lamp holders available. The most common types are illustrated and listed below with their respective specifications.

## A. Spring Loaded Rotor Type



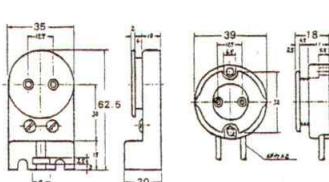
## How to order: CODE

FL lamp holder, spring loaded rotor type, ELECTRICITY RATING, SIZE

Unit Per Pcs.

CODE	Electricity Rating	Size mm			Material
		W	H	D	
79 15 21	250 V x 1 Amp.	36	56	20	Phenol Resin
22	250 V x 3 Amp.	40	51	28.5	

## B. Spring Loaded Support Type



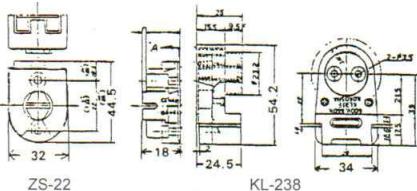
## How to order: CODE

FL lamp holder, spring loaded support type, 250 volt, 1 amp, SIZE

Unit Per Pcs.

CODE	Electricity Rating	Size mm			Material
		W	H	D	
79 15 25	250 V x 1 Amp.	35	62.5	20	Phenol Resin
26	250 V x 1 Amp.	39	39	18	

### C. KOKOSHA Spring Loaded Support Type



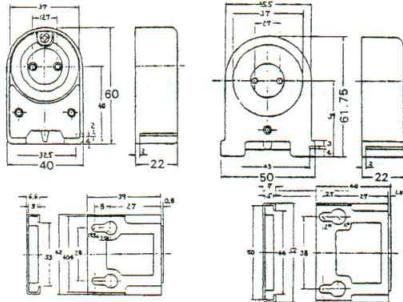
#### How to order: CODE

FL lamp holder, KOKOSHA spring loaded support type, MODEL

Unit Per Pc.

CODE	Model	Electricity Rating	Size mm			Material
			W	H	D	
79 15 28	ZS-22	300 V x 1 Amp.	32	44.5	18	Phenol
29	KL-238	600 V x 660 W	34	54.2	24.5	Resin

### D. Turret Type



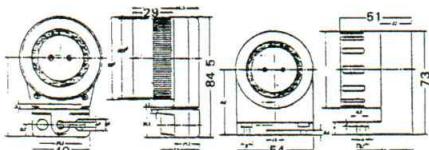
#### How to order: CODE

FL lamp holder, turret type, 300 volt, 1 amp, SIZE

Unit Per Pc.

CODE	Electricity Rating	Size mm			Material
		W	H	D	
79 15 32	300 V x 1 Amp.	40	60	22	Phenol
33	300 V x 1 Amp.	50	61.75	22	Resin

### E. Waterproof Type



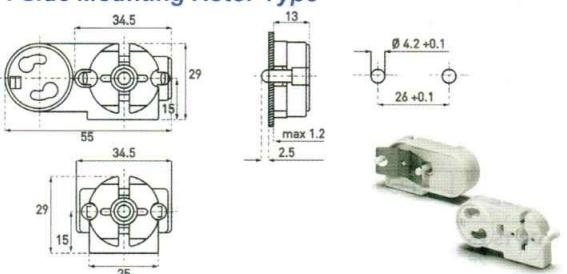
#### How to order: CODE

FL lamp holder, waterproof type, ELECTRICITY RATING, SIZE

Unit Per Pc.

CODE	Electricity Rating	Application	Size mm			Material
			W	H	D	
79 15 35	300V x 1 Amp.	20 ~	40	84.5	29	Phenol
36	300V x 3 Amp.	40W	54	73	51	Resin

### F. Side Mounting Rotor Type



### How to order: CODE

FL lamp holder, With or Without Starter holder, side mounting complete with spring plate type, 250 volt, 2 amp, SIZE

CODE	Type	Electricity Rating	Application	Unit Per Pc.		
				W	H	D
79 15 37	With Starter Holder	250V x 2A	T8 / T12	55	29	13
38	Without Starter Holder	250V x 2A	T8 / T12	25	29	13

### Ballasts for Fluorescent Lamp

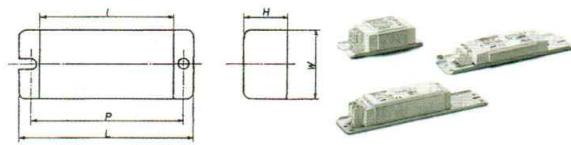
#### for Marine Use

(Ref. JIS F8431-1985)

Preactancias para Lámpara Fluorescente Uso Marino

船用螢光燈安定器 船用荧光灯镇流器

Low power factor ballasts for marine fluorescent lamps supplied from 100V, 115V or 220V AC 60Hz and used on board at an ambient temperature of 50°C or less.



#### Principal Dimensions of Ballast

Class	Watts	P	Unit: mm		
			L	I	H
FBM-C	6	55 ± 2	63 or less	48 or less	35 or less
	8	85 ± 2	100 or less	75 or less	35 or less
	10	85 ± 2	100 or less	80 or less	40 or less
	15	110 ± 2	130 or less	95 or less	40 or less
	20	110 ± 2	130 or less	95 or less	40 or less
	30	115 ± 2	140 or less	105 or less	50 or less
	40	115 ± 2	140 or less	110 or less	50 or less
FBM-T	40	160 ± 2	215 or less	185 or less	50 or less

#### How to order: CODE

FL lamp ballast, CLASS, WATTAGE

CODE	Class	Watts	Rated Input Voltage V	Rated frequency Hz	Rated Input Current A	Applicable Fluorescent Lamp	
						Type	Current A
79 15 51		6				0.147	FL6 0.147
79 15 52		8				0.170	FL8 0.170
79 15 53	FBM-C	10	100			0.230	FL10 0.230
79 15 54		15		60		0.300	FL15S 0.300
79 15 55		20	115			0.360	FL20 0.375
79 15 56		30				0.610	FL30 0.620
79 15 57	FBM-T	40				0.970/0.840	FL40 0.435
79 15 58		40	220	60	0.420	FL40	0.435

Remarks: Letters FBM of class symbol denote the ballast for marine fluorescent lamp and the last letter C denotes the choke coil type and T, the transformer type.

## 6. Lighting Fixtures

### Lighting Fixtures

Proyectores 投光器 投光器

#### For Reflector Lamp

Proyectores para bombillas reflectoras

リフレクター電球用投光器 用于反射灯泡的泛光灯

Can be used with a reflector lamp such as RF, RS, as cargo lights. Available in flanged base and screw clamp types. Body and base are made of brass, and shade and guard are made of stainless steel. Class of Protection is IP-56.



Flanged Base



Screw Clamp

#### How to order: CODE

Lighting fixture, reflector lamp, TYPE of FITTING, LAMP BASE, APPLICABLE LAMP

Unit Per Pcs.

CODE	Fitting	Lamp Base	Applicable Lamp	Weight kg
79 18 01	Flanged - Base	E-26	RF&RS-100, 150, 200 W	3.2
02		E-39	RF&RS-300, 500 W	4.5
79 18 03	Screw - Clamp	E-26	RF&RS-100, 150, 200 W	3.6
04		E-39	RF&RS-300, 500 W	4.9

#### Flood Type

Proyectores Intensivos y Extensivos

投光照明器具 投射式照明器材

Vibration-proof flood lighting fixture. Can be used with high pressure sodium lamps. Aluminium reflector with steel frame. Ballasts are sold separately.



Mirror Reflector  
(Narrow Beam)



Diamond Cut Reflector  
(Wide Beam)

Unit Per Pcs.

CODE	Type of Reflector	Beam Angle	Base Size	Applicable Lamp	Weight kg
79 18 16	Mirror	Narrow 20°	E-39	Incandescent lamp KF 1000W High Pressure Sodium lamp NH700W/1000W	20.0
79 18 17	Diamond Cut	Wide 55°			20.0

### LED Flood Lights - IP65

Aparatos de iluminación LED LED 投光器 LED 泛光灯

Energy saving LED flood lighting fixtures, designed as a replacement of traditional high output floodlights. Made of aluminium base, waterproof (IP65), wide beam angle 120°, Lifespan for 30,000 hours.



Unit Per Set

CODE	Voltage	Watt	Colour	Dimensions H x W x D (mm)	Weight
79 20 19	AC100 - 240V	30W	Cool White Day Light	230x195x52	1.2 Kg
20		50W	Cool White Day Light	285x240x68	1.6 Kg
79 18 18		70W	Cool White Day Light	337x290x73	2.5 Kg
19		100W	Cool White Day Light	337x290x77	3.0 Kg
79 20 30		150W	Cool White Day Light	425x325x77	3.5 Kg
33		200W	Cool White Day Light	425x325x100	5.4 Kg
79 18 20		300W	Cool White Day Light	435x393x100	7.1 Kg
25					

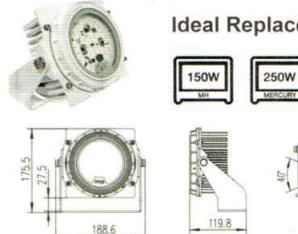
### LED Floodlights - IP 66

Proyectores LED IP66 LED 投光器 IP66 LED 泛光灯 IP66

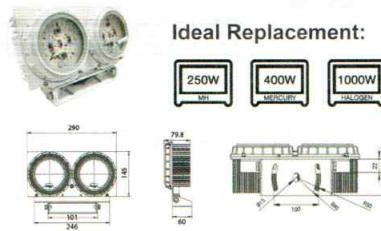
The versatile floodlight made of marine grade aluminum alloy with powder coating and comes with 4mm tempered glass front cover. Reliable AC driver on board to enhance service life. Rapid heat-dispersing design prolongs lamp life and optimizes lumen output. Long service life of 100,000 hours @ 50°C. JIS and IEC safety and EMC compliance. Ingress Protection: 66. Interchangeable modules. Wide or Narrow beam angle available. Triac dimming compatible (220-240VAC & 100V-120VAC only).

Application: Decks, Marinas, Docks, Ports, Warehouses. ABS and IEC60533 certified. Additional optional SUS316 Stainless steel protection guard for 1 module series.

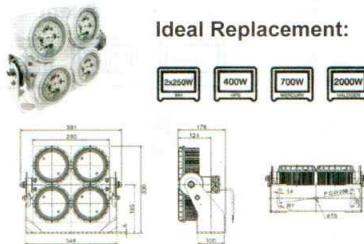
#### 1x Wide Angle Module



#### 2x Wide Angle Module



#### 4x Lights, Wide Angle Module



CODE	Module	Voltage	Power	CCT	System Lumen	Weight kg	Unit Per Pc.
79 18 05	1	220-240V AC	56W	5,000K	5,400 lm	1.9	
79 18 06		100-120V AC			4,500 lm		
79 18 07		20- 32V DC			4,600 lm		
79 18 08	2	220-240V AC	112W	5,000K	11,000 lm	3.5	
79 18 09		100-120V AC			9,000 lm		
79 18 10		20- 32V DC			9,800 lm		
79 18 15	4	220-240V AC	224W	5,000K	22,000 lm	9.3	
79 18 30		100-120V AC			18,000 lm		

CODE	Module	Beam Angle (50%)	Beam Angle (10%)	Voltage	Power	CCT	System Lumen	Weight kg	Unit Per Pc.
79 18 38	1	17°	32°	90W	5,000K		11,400 lm	4.35	
79 18 39		45°	87°				10,800 lm		
79 18 40		105°	148°				11,700 lm		
79 18 48	2	17°	32°	180W	5,000K		22,800 lm	8.6	
79 18 49		45°	87°				21,600 lm		
79 18 50		105°	148°				23,400 lm		
79 18 56	4	17°	32°	360W	5,000K		45,600 lm	17	
79 18 59		45°	87°				43,200 lm		
79 18 60		105°	148°				46,800 lm		

## LED Floodlights with Beam Angle

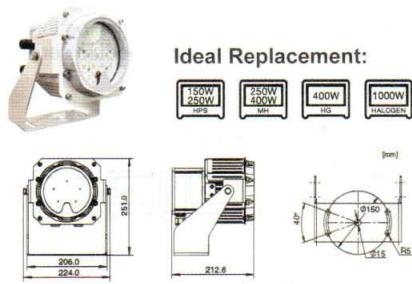
Proyector LED con ángulo de haz IP66

ビーム角付 LED 投光器 IP66 LED 泛光灯, 光束角 IP66

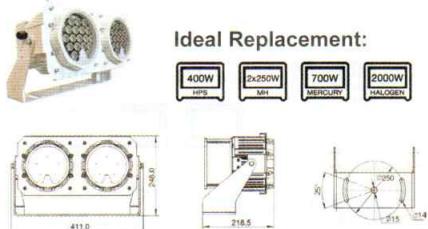
Long service life of >50,000 hours L70 @ 50°C. JIS and IEC safety and EMC compliance. Ingress Protection: 66 (Housing), 67 (Junction Box). ABS and IEC60533 certified. Flood, Medium and Narrow beam angles available.

Application: Decks, Marinas, Docks, Ports, Warehouses. Additional optional SUS316 Stainless steel protection guard for 1 module series.

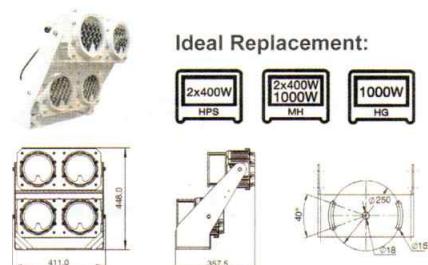
### 1x Wide Angle Module



### 2x Wide Angle Module



### 4x Wide Angle Module



## LED Floodlights - IP67

Proyectores LED IP67 LED 投光器 IP67

LED 泛光灯 IP67



### AC 85 - 265V Type

High watertight LED floodlight (IP67) made of Stainless steel. Lifespan for 50,000 hours.

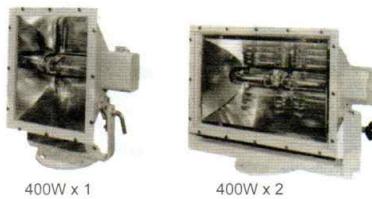
CODE	Voltage	Power	Colour	Dimension HWD mm	System Lumen	Weight kg	Unit Per Pc.
79 18 68		30W		340 x 390 x 145	3,000	6.0	
79 18 69	AC 85 - 265V	50W	Daylight	365 x 495 x 145	5,000	10.6	
79 18 70		100W		490 x 624 x 145	10,000	16.7	

## High Pressure Sodium Lamp Flood Lighting Fixtures

Proyectores de Lámpara de Sodio Alta Presión

角型ナトリウム投光照明器具 方形高压钠灯投光器

This floodlight of H.P. sodium light illuminates a larger area than the circular type of incandescent projector. Also used for funnel lighting and very efficient for use in dense fog. Vibration proof, water proof and airtight. Furnished without lamps. Accompanying ballast is another order.



### How to order: CODE

Flood lighting fixture, high pressure sodium lamp, WATTAGE and NUMBER of LAMPS, VOLTAGE

	CODE	79 18 21	79 18 22	79 18 23	79 18 24	Unit Per Set
Lamp	Watt x Nos.	400W x 1		400W x 2		
	Luminous-flux. (lm)	47,000		47,000 x 2		
AC Voltage	110 V	220 V	110 V	220 V		
Dimensions mm	W x D x H	430 x 285 x 543	W x D x H	740 x 285 x 543		
Height of Light Source		332 mm				
Base	Out Dia.	240 mm				
Flange	Bolt Circle	200 mm				
Material	Body	Stainless Steel				
	Bracket	Mild Steel				
Weight		19 kg		30 kg		

## High-Brightness LED Flood Lighting Fixtures

Aparatos de iluminación LED de alta luminosidad

高輝度 LED 投光器 高亮度 LED 泛光灯

A vibration-proof, shock resistance and robust flood lighting with High-brightness LED. 1/6 of power consumption compared with incandescent lamp, and no mercury used as compliance with ROHS.



SLD-120



SLD-150



SLD-240

### How to order: CODE

LED Flood lighting fixture, high-brightness, WATTAGE and NUMBER of LAMPS, VOLTAGE

	Unit Per Set		
CODE	79 18 35	79 18 36	79 18 37
Model	SLD-120	SLD-150	SLD-240
Lamp (Watt x Nos.)	13W x 6	3W x 12	13W x 12
Max. Luminous flux	More than 76,000 cd	More than 400,000 cd	More than 265,000 cd
Protection Class	IP56		
Power Source	AC100V – 220V		
Material	Body	Aluminium	
	Bracket	Aluminium	
Dimensions mm (W x H x D mm)	256x254x41	333x282x141	508x335x133
Weight kg	4.7 kg	7.5 kg	10.5 kg

Name of Mfr: Shonan Kosakusyo Co, Ltd.

## Rechargeable LED Portable Floodlight

Proyector portátil LED recargable

充電式 LED ポータブル投光器

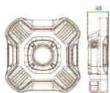
可充电 LED 便携式泛光灯

The aluminium alloy LED front frame comes with polycarbonate diffuser and ABS plastic housing. High performance COB LED with rechargeable lithium ion battery. Long service life of 50,000 hours LED lifespan, battery life up to 500 charges. USB power bank functions for emergency charging of mobile devices. Swivel stand can rotate 180°. 5/7 step dimming available. Vibration and impact resistant. RoHS safety compliant. Ingress Protection: 54.

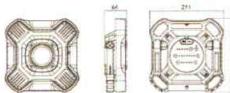


Application: Decks, Marinas, Docks, Ports, Warehouses.

20W power



40W Power



Unit Per Pcs.

CODE	Main Voltage	Power	CCT	System Lumen	Weight kg
79 18 78	100-240V AC	20W	5,000 K	2,600 lm	0.7
79 18 79	100-240V AC	40W	5,000 K	5,000 lm	1.5

## Explosion Proof LED Floodlights

Proyectores LED antideflagrantes

防爆 LED 投光器 防爆 LED 泛光灯

Made of marine grade seawater resistant aluminium alloy body with anti-corrosion power coating and SUS316 stainless steel mounting bracket, protection guard and external fasteners. Ultra long Service life of 100,000 hours at 40°C. JIS and IEC safety and EMC compliance. ATEX and IECEX approvals certified by CSA and SIRA for Zones 1/2 & 21/22 applications.

EX class – II 2G Ex db be op is IIC T6/T5/T4 Gb & II 2D Ex tb op is IIIC T80°C/T100°C/T135°C Db. Ingress Protection: 66, 67.

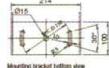
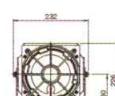
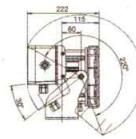
Available in both narrow and wide beam angles.

### 1 module



#### Ideal Replacement:

150W (MH),  
250W (Mercury),  
500W (Halogen)

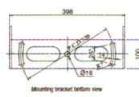
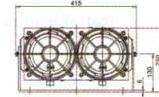


### 2 modules



#### Ideal Replacement:

250W (MH),  
400W (Mercury),  
1,000W (Halogen)

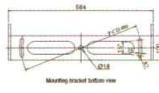
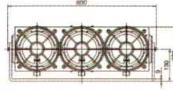


### 3 modules



#### Ideal Replacement:

150W (HPS),  
400W (MH),  
1,500W (Halogen)



CODE	Module	Main Voltage	Beam Angle	Power	CCT	System Lumen	Weight kg
79 18 45	1	100V-120V AC / 220-240V AC	108°	78W	5,000K	6,000 lm	5.8
79 18 65			36°			5,680 lm	6.0
79 18 75	2	100V-120V AC / 220-240V AC	108°	156W	5,000K	12,000 lm	11.5
79 18 80			36°			11,800 lm	11.7
79 18 85	3	100V-120V AC / 220-240V AC	108°	234W	5,000K	17,100 lm	17.0
79 19 25			36°			16,900 lm	17.3

## Marine Non-Watertight Fluorescent Ceiling Lights

Luminaria Fluorescente no Estanca

船用萤光灯井灯 (非防水) 船用天花板日光灯 (无防水)

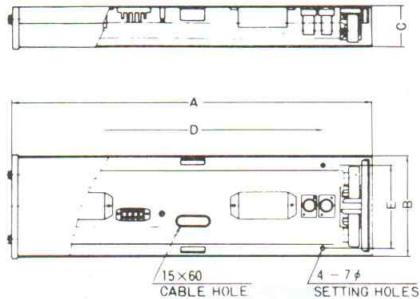
### (Ref. JIS F 8436-1983)

Mainly used for lighting living quarters in ships at an ambient temperature of 40°C or less. Made of a steel plate with melamine resin baked finish and milky white acrylic diffuser. Glow starting with high or low power factor ballast. One, two and three lamp types, as well as surface and recessed types are available.



When ordering, please specify the voltage and frequency required.

### Surface Mounting with Diffuser



#### How to order: CODE

FL ceiling light, non-watertight, surface mounting with diffuser, TYPE, VOLTAGE, WATTAGE, NUMBER of LAMPS

CODE	Type	Lamps	Dimensions mm					Unit Per Pc.
			A	B	C	D	E	

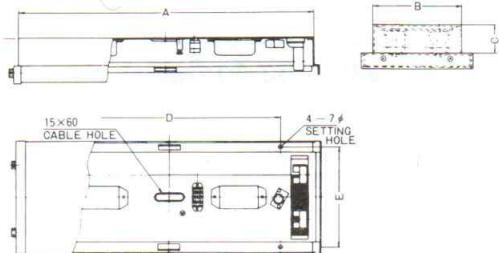
#### Rated Voltage 100, 115

79 18 41	KQB201	20W x 1	660	180	55	480	140	
42	KQB401	40W x 1	1,280	180	55	550	140	
79 18 43	KQB202	20W x 2	660	180	55	480	140	
44	KQB402	40W x 2	1,280	180	55	550	140	
79 19 01	KQB203	20W x 3	660	300	55	480	250	

#### Rated Voltage 220

79 19 02	KQB201	20W x 1	660	180	55	480	140	
03	KQB202	20W x 2	660	180	55	480	140	
04	KQB203	20W x 3	660	300	55	480	250	
79 18 46	KQB401	40W x 1	1,280	180	55	550	140	
47	KQB402	40W x 2	1,280	180	55	550	140	

### Recessed Fitting with Diffuser



#### How to order: CODE

FL ceiling light, non-watertight, recessed fitting with diffuser, TYPE, VOLTAGE, WATTAGE, NUMBER of LAMPS

CODE	Type	Lamps	Dimensions mm					Unit Per Pc.
			A	B	C	D	E	

#### Rated Voltage 100, 115

79 18 51	KQA201	20W x 1	642	140	55	500	160	
52	KQA401	40W x 1	1,250	140	70	500	160	
79 18 53	KQA202	20W x 2	642	140	55	500	160	
54	KQA402	40W x 2	1,250	140	70	500	160	

#### Rated Voltage 220

79 18 55	KQA203	20W x 3	642	260	55	500	280	
79 19 05	KQA201	20W x 1	642	140	55	500	160	
06	KQA202	20W x 2	642	140	55	500	160	
07	KQA203	20W x 3	642	260	55	500	280	
79 18 57	KQA401	40W x 1	1,250	140	70	500	160	
58	KQA402	40W x 2	1,250	140	70	500	160	

### Marine Watertight Fluorescent Ceiling Lights

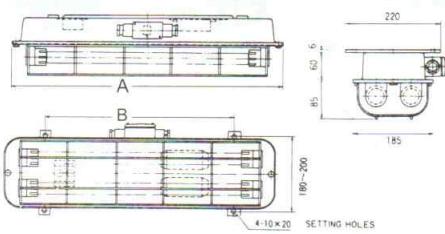
Luminaria Fluorescente Estanca

船用萤光天井灯（防水） 船用天花板日光灯（防水）

(Ref. JIS F8437-1983)

Mainly used for the lighting of machinery room, galleys, bath rooms, outdoor passageways, in ships at an ambient temperature of 45°C or less. When ordering, please specify the voltage and frequency required.

### Surface Mounting Drip-proof Fitting with Guard



#### How to order: CODE

FL ceiling light, drip-proof, surface mounting with guard, TYPE, VOLTAGE, WATTAGE, NUMBER of LAMPS

CODE	Model	Lamps	Dimensions mm		Unit Per Pc.
			A	B	

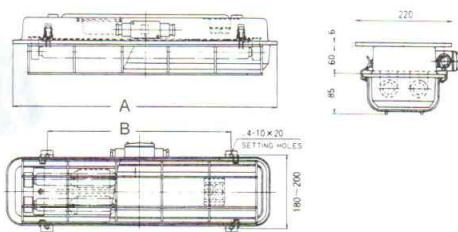
#### Rated Voltage 100, 115

79 18 61	KGW201	20W x 1	715	500	
62	KGW202	20W x 2	715	500	
79 18 63	KGW401	40W x 1	1,335	1,100	
64	KGW402	40W x 2	1,335	1,100	

#### Rated Voltage 220

79 19 08	KGW201	20W x 1	715	500	
09	KGW202	20W x 2	715	500	
79 18 66	KGW401	40W x 1	1,335	1,100	
67	KGW402	40W x 2	1,335	1,100	

### Watertight Fitting with Diffuser & Guard



#### How to order: CODE

FL ceiling light, watertight, surface mounting with diffuser and guard, TYPE, VOLTAGE, WATTAGE, NUMBER of LAMPS

CODE	Model	Lamps	Dimensions mm		Unit Per Pc.
			A	B	

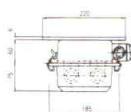
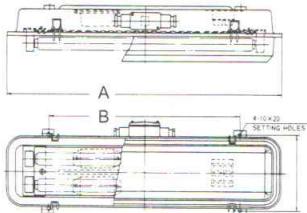
#### Rated Voltage 100, 115

79 18 71	KAW201	20W x 1	715	500	
72	KAW202	20W x 2	715	500	
79 18 73	KAW401	40W x 1	1,335	1,100	
74	KAW402	40W x 2	1,335	1,100	

#### Rated Voltage 220

79 19 10	KAW201	20W x 1	715	500	
11	KAW202	20W x 2	715	500	
79 18 76	KAW401	40W x 1	1,335	1,100	
77	KAW402	40W x 2	1,335	1,100	

## Watertight Fitting with Diffuser



### How to order: CODE

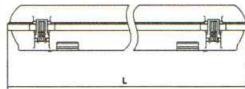
FL ceiling light, watertight, surface mounting with diffuser, TYPE, VOLTAGE, WATTAGE, NUMBER OF LAMPS

CODE	Model	Lamps	Dimensions mm		Unit Per Pc.
			A	B	
<b>Rated Voltage 100, 115</b>					
79 18 81	KEW201	20W x 1	715	500	
82	KEW202	20W x 2	715	500	
79 18 83	KEW401	40W x 1	1,335	1,100	
84	KEW402	40W x 2	1,335	1,100	
<b>Rated Voltage 220</b>					
79 19 12	KEW201	20W x 1	715	500	
13	KEW202	20W x 2	715	500	
79 18 86	KEW401	40W x 1	1,335	1,100	
87	KEW402	40W x 2	1,335	1,100	

## LED Watertight Fixtures with Diffuser

Luminarias estancas LED con difusor

ディフューザー付 LED 防水器具 带扩散器的 LED 防水灯具



Innovative LED Watertight Fixture, IP65 Waterproof. High impact resistant polycarbonate body and diffuser.

### How to order: CODE

LED ceiling light, watertight, surface mounting with diffuser, TYPE, VOLTAGE, WATTAGE, COLOUR

CODE	Voltage	Lamps	Colour	Dimensions L x W x H (mm)		Unit Per Pc.	
				1	2		
79 18 88 89	100-240V	11.5W x 1	Cool White	655	89	92	
		11.5W x 1	Daylight	655	89	92	
		11.5W x 2	Cool White	655	130	92	
		11.5W x 2	Daylight	655	130	92	
79 18 90 94		23W x 1	Cool White	1,265	89	92	
		23W x 1	Daylight	1,265	89	92	
79 18 95 99		23W x 2	Cool White	1,265	130	92	
		23W x 2	Daylight	1,265	130	92	
79 19 00 14							

## LED Watertight Luminaires

Luminarias estancas LED LED 防水照明器具 LED 防水灯具

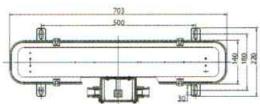
### LWJ Series (JIS Type)

Triac dimming compatible, with specially designed polycarbonate diffuser to optimize LED light transmission. Including built-in high thermal efficient linear module that allows for operation at



ambient temperature of up to 45°C without compromising long service life of 50,000 hours L70 @ 45°C. JIS and IEC safety and EMC compliance. ABS and IEC60533 certified. Surface Mounted. Diffuser material: Poly Carbonate, Housing Material: SUS316 Stainless Steel or Zinc coated steel, Power coated green. Flexible wiring, Heat resistant up to 105°C. Protection Class: IP65.

### 2FT 10W or 20W Type



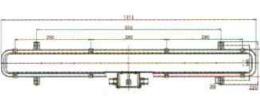
#### Ideal Replacement

1 X 18W	LWJ21 for 1X18W
2 X 18W	LWJ22 for 2X18W

Unit Per Pc.

CODE	Main Voltage	Power	System Lumen	Dimensions LxWxH mm	Weight Kg
<b>Housing: Zinc Coated Steel</b>					
79 19 15	220-240V AC	1×10W	1,000 lm	703×220×106.5	3.1
79 19 16		2×10W	2,000 lm		3.3
<b>Housing: SUS 316</b>					
79 19 17	220-240V AC	1×20W	1,000 lm	703×220×106.5	3.2
79 19 18		2×20W	2,000 lm		3.4

### 4FT 20W or 40W Type



#### Ideal Replacement

1 X 36W	LWJ41 for 1X36W
2 X 36W	LWJ42 for 2X36W

Unit Per Pc.

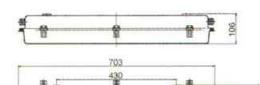
CODE	Main Voltage	Power	System Lumen	Dimensions LxWxH mm	Weight Kg
<b>Housing: Zinc Coated Steel</b>					
79 19 19	220-240V AC	1×10W	2,000 lm	1,313×220×106.5	5.1
79 19 20		2×10W	4,000 lm		5.5

### LWS Series (IEC type)

Superior thermal design to allow for operation at high ambient temperature up to 45°C. Long service life of 50,000 hours @ 45°C (Ta). Polycarbonate diffuser to optimize LED light transmission. JIS and IEC safety and EMC compliance. ABS and IEC60533 certified. Surface Mounted. Diffuser material: Poly Carbonate, Housing Material: SUS316 Stainless Steel or Zinc coated steel, Power coated white. With Metal Bracket. Flexible wiring, Heat resistant up to 105°C. Protection Class: IP67. Available with battery backup system and emergency lighting.



### 2FT 10W or 20W Type



#### Ideal Replacement

1 X 18W	LWS21 for 1X18W
2 X 18W	LWS22 for 2X18W

Unit Per Pc.

CODE	Main Voltage	Power	System Lumen	Dimensions LxWxH mm	Weight Kg
<b>Housing: Zinc Coated Steel</b>					
79 19 67	220-240V AC	1×10W	1,000 lm	703×220×106	2.6
79 19 68		2×10W	2,000 lm		2.7
<b>Housing: SUS 316</b>					
79 19 69	220-240V AC	1×10W	1,000 lm	703×220×106	2.7
79 19 70		2×10W	2,000 lm		2.8



**No-guard Type**

Unit Per Pcs.

CODE	Lamps	Dimensions mm			Fitting Size mm
		A	B	C	

**Rated Voltage, 100**

79 19 21	20W x 1	768	188	156	500	150
22	20W x 2	768	188	156	500	150
79 19 23	40W x 1	1,386	188	156	500	150
24	40W x 2	1,386	188	156	500	150

**Rated Voltage, 220**

79 19 26	20W x 1	768	188	156	500	150
27	20W x 2	768	188	156	500	150
79 19 28	40W x 1	1,386	188	156	500	150
29	40W x 2	1,386	188	156	500	150

**With Guard Type**

Unit Per Pcs.

CODE	Lamps	Dimensions mm			Fitting Size mm
		A	B	C	

**Rated Voltage, 100**

79 19 31	20W x 1	768	188	161	500	150
32	20W x 2	768	188	161	500	150
79 19 33	40W x 1	1,386	188	161	500	150
34	40W x 2	1,386	188	161	500	150

**Rated Voltage, 220**

79 19 36	20W x 1	768	188	161	500	150
37	20W x 2	768	188	161	500	150
79 19 38	40W x 1	1,386	188	161	500	150
39	40W x 2	1,386	188	161	500	150

**LED Recessed Luminaires**

Lámparas LED empotradas

埋込み型 LED 荧光灯器具

嵌入式 LED 荧光灯灯具

Triac dimming compatible, and integrated with LED linear module(s) to provide high illumination performance.

Long service life of >50,000 hours

L70 @ 45°C. JIS and IEC safety and EMC compliance. Mounting Method: 4 mounting brackets, Hole cut out: 638 X 211mm (2FT), 1,247 x 211 (4FT). Diffuser material: PMMA (Polymethylmethacrylate) ice crystal, Housing material: Zinc coated steel, Powder coated white. Flexible wiring, Heat resistant up to 105°C. Protection Class: IP44 in conjunction with ceiling.

Available equipped type with "Battery backup system or "Emergency lighting", if required.

**2FT 12.5W or 25W Type****Ideal replacement**

- 1 X 18W RCB-211 for 1X18W
- 2 X 18W RCB-221 for 2X18W

Unit Per Set

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kg
79 19 40 41	220-240V AC	1 x 12.5W 2 x 12.5W	950 lm 1,900 lm	662x262x75.6	3.7 4.0

**4FT 25W or 50W Type****Ideal replacement**

- 1 X 36W RCB-421 for 1X36W
- 2 X 36W RCB-441 for 2X36W

Unit Per Set

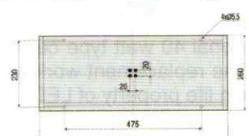
CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kg
79 19 42 43	220-240V AC	1 x 24W 2 x 24W	1,900 lm 3,800 lm	1,272x262x75.6	6.9 7.5

**LED Surface Luminaires**

Luminarias LED de superficie LED 面照明器具 LED 表面灯具

Triac dimming compatible, with specially designed polycarbonate diffuser to optimize LED lighting performance. Long service life of >50,000 hours L70 @ 45°C. JIS and IEC safety and EMC compliance. Mounting Method: 4 mounting holes, ø5.5mm. Diffuser material: Poly Carbonate. Housing Material: Zinc coated steel, Power coated white. Flexible wiring, Heat resistant up to 105°C.

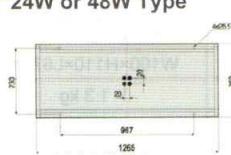
Protection Class: IP20 in conjunction with ceiling. Available equipped type with "Battery backup system or "Emergency lighting", if required.

**2FT 12.5W or 25W Type****Ideal replacement**

- 1 X 18W SC21 for 1X18W
- 2 X 18W SC22 for 2X18W

Unit Per Set

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kg
79 19 46 47	220-240V AC	1 x 12.5W 2 x 12.5W	950 lm 1,900 lm	650 x 260 x 55	2.5 2.8

**4FT 24W or 48W Type****Ideal replacement**

- 1 X 36W SC41 for 1X36W
- 2 X 36W SC42 for 2X36W

Unit Per Set

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kg
79 19 48 49	220-240V AC	1 x 24W 2 x 24W	1,900 lm 3,800 lm	1,265 x 260 x 55	5.0 5.6

**Replacement LED Linear**

Unit Per Pcs.

CODE	Watt	Length	CODE	Watt	Length
79 19 44	12.5 W	2 FT	79 19 45	24 W	4 FT
79 19 50	10 W		79 19 66	20 W	

### When ordering shades or guards for lighting fixtures ;

Shape and size are different from manufacturers for the lighting fixtures. Please specify following necessary information for your suppliers.

Manufacturer's name .....  
Model / Type .....  
Part number .....

## LED Ceiling Lights

Plafones LED LED 照明器具 LED 吸顶灯

Energy saving LED fixture for living quarters (IP20). Housing/Body: PC milky cover, PC body.



Unit Per Pcs.

CODE	Voltage	Watt	Colour	Lumen Output	Dimensions L × W × H mm	Weight kg
79 20 09	100-240V AC	16W	Warm	1,400 lm	600 × 135 × 46	0.6
79 20 10		32W	White	2,800 lm	1,200 × 135 × 46	1.1

### Ceiling Lights

#### for LED Fluorescent Lamp

Luces para el techo con lámparas fluorescentes LED  
LED 萤光灯器具 LED 吸顶荧光灯

Energy saving LED fluorescent lamp fixture for vessel's engine room. The 24 watt type ceiling light create the illuminance as same as of conventional 40 watt type ceiling light, which save a lot of energy. The replacement work will be extremely reduced due to the long life property of LED.



Material: Housing—stainless steel and diffuser—polycarbonate. Please ask your local supplier for more details.

Unit Per Set

CODE	79 19 51	79 19 52
Lamp	10W x 2	24W x 1
Frequency	50 / 60 Hz	
Phase	Triple	Single
Voltage	110 - 240V	
Protection Degree	IP 67	IP 55 (Cable gland wiring type)
Size	W193×H116×L692mm	W100×H110×L670mm
Weight	3.2 kg	1.3 kg
Model as Reference	Aqua Signal No.1445203203	Toka Seiki ML-241

## LED Panel Lights

Panel de iluminación LED LED パネルライト LED 面板灯

Made of marine grade aluminium, comes with high-efficiency light guide. Easy installation with no external drivers needed, and super slim design for surface mounted application. High-efficiency constant current driver. Long service life of 50,000 hours L70 @ 40°C. Cabin entry: 2 plastic cable glands M20, and cable max. 13mm dia. JIS and IEC safety and EMC compliance.

\*Note: Replace whole unit when light not working.

### PL 353353 Series

353 × 353 mm

70% more energy-efficient compared to 1 × 18W fluorescent lighting system.



Ideal replacement



Weight: 2.7 kg

Unit Per Set

CODE	IP	Main Voltage	Power	OCT	Driving Current	System Lumen
79 19 53	22	100-240V AC	10W			850 lm
79 19 55	22	100-240V AC/24V DC	10W (AC) / 5W (DC)	4,000 K	350 mA	850 lm (AC) >120 lm (DC)

### PL 625257 Series

625 × 257 mm

70% more energy-efficient compared to 2 × 18W fluorescent lighting system.



Ideal replacement



Weight: 3.3 kg

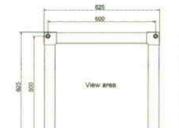
Unit Per Set

CODE	IP	Main Voltage	Power	OCT	Driving Current	System Lumen
79 19 57	22	100-240V AC	24W			1,700 lm
79 19 59	22	100-240V AC/24V DC	24W (AC) / 5W (DC)	4,000 K	800 mA	1,700 lm (AC) >120 lm (DC)

### PL 625625 Series

625 × 625 mm

70% more energy-efficient compared to 3 × 18W fluorescent lighting system.



Ideal replacement



Weight: 7.0 kg

Unit Per Set

CODE	IP	Main Voltage	Power	OCT	Driving Current	System Lumen
79 19 61	22	100-240V AC	47W			2,800 lm
79 19 63	22	100-240V AC/24V DC	47W (AC) / 5W (DC)	4,000 K	800 mA	2,800 lm (AC) >120 lm (DC)

### IP Rating Chart

The IP (International Protection, or Ingress Protection) Code consists of the letters IP followed by two digits, as defined in international standard IEC 60529.

The first digit indicates the level of protection that the enclosure provides against access to hazardous parts (e.g., electrical conductors, moving parts) and the ingress of solid foreign objects.

**First Digit: Solid**

Level	Object size protected against	Effective against
0	Not protected	No protection against contact and ingress of objects.
1	>50 mm	Any large surface of the body, such as the back of the hand, but no protection against deliberate contact with a body part.
2	>12.5 mm	Fingers or similar objects.
3	>2.5 mm	Tools, thick wires, etc.
4	>1 mm	Most wires, screws, etc.
5	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment; complete protection against contact.
6	Dust tight	No ingress of dust; complete protection against contact.

The second digit indicates the protection of the equipment inside the enclosure against harmful ingress of water.

**Second Digit: Liquid**

Level	Object size protected against	Effective against
0	Not protected	-
1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect.
2	Dripping water when tilted up to 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.
3	Spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.
4	Splashing water	Water splashing against the enclosure from any direction shall have no harmful effect.
5	Water jets	Water projected by a nozzle (6.3mm) against enclosure from any direction shall have no harmful effects.
6	Powerful water jets	Water projected in powerful jets (12.5mm nozzle) against the enclosure from any direction shall have no harmful effects.
7	Immersion up to 1 m	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).
8	Immersion beyond 1 m	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. Normally, this will mean that the equipment is hermetically sealed. However, with certain types of equipment, it can mean that water can enter but only in such a manner that it produces no harmful effects.

**LED Aisle Lights**

Luces LED para pasillos LED 通路灯 LED 通道灯

A long life, minimize the waste cost for replacement of fluorescent lamp, also respond to Restricting the



use of Hazardous Substance (RoHS). Thin-design and a self-powered ceiling, suitable for aisle light. Material: Metal frame – Aluminium, Rest frame: Polycarbonate. Operating temperature: -30 to +50°C.

Unit Per Pcs.

CODE	79 19 65
Model	CNL-01
Voltage	AC 100-240V
Wattage	19 W x 1
Power Factor	90Min (%)
Colour Temperature	6,000 K
Luminous Flux	1,900 lm
Dimension (L x W x H)	602 x 73 x 34 mm
Weight	1.0 kg

Name of Mfr.: Toka Seiki Co., Ltd.

**Explosion-Proof LED Ceiling Lights**

Plafones LED antideflagrantes

防爆型 LED 萤光灯器具 防爆 LED 吸顶灯



Energy saving Ex LED fixture for hazardous areas (T6), watertight (IP66). Type of protection: A-tex II 3G Ex nA IIC T6, Zone 2 and 22. Housing: Compressed fibreglass reinforced polyester. Diffuser: Injected polycarbonate transparent with UV protection. Closing clips: Stainless Steel.

CODE	Voltage	Watt	Colour	Dimensions L x W x H mm	Lumen Output	Weight Kg
79 19 30	AC 220-240V	18	Cool	665 x 145 x 101	2,200	1.9
79 19 35		32	White	1,289 x 145 x 101	4,800	3.2

**Explosion Proof LED Bulkhead Lights**

Luces de mamparo LED antideflagrantes

防爆 LED 壁付灯 防爆 LED 壁灯



Standard



Emergency

A compact, versatile, and robust light ideal for safely illuminating walkways, steps and entrances within hazardous areas. ATEX, IECEx and UKEX certified for safe use in Zones 1/21, all models in the range feature Wolf's patented DLO (Directional Linear Optics) technology, which means the beam can be directed exactly where needed, with no light overspill or wasted lumens, and there's no glare - even when installed at eye level.

The Emergency LED Bulkhead has all the features and benefits of the standard Bulkhead range, with the additional safety of an emergency back-up should power fail in the Hazardous Area. Different emergency mode durations are available and selectable on board by the installer.

CODE	79 19 89	79 19 90	79 19 91	79 19 92	Unit Per Set
Type	Standard		Emergency		
Model	LBXS-L-59	LBXS-L-65	LBXE-L-59	LBXN-L-59	
Input Voltage Range	88 - 140V AC; 180 - 277 V AC		100-140V AC; 200-277V AC		
Input Power (W)	24	16	32	6	
Frequency		50 - 60 Hz			
Power Factor		>0.95		>0.90	
Lumen Output (Max)*	1,629	1,086	1,629 (output dependent on duration setting 1, 2 or 4 hours)		
Colour Temperature		5,000K			
LED Module & Qty		1 x DLO (Directional Linear Optics)			
Lower Temp. Limit	-50°C		-40°C		
Upper Temp. Limit	59°C	65°C	59°C		
Certificate	ExVeritas 19 ATEX 0439X / IECEx EXV 19.0002X / ExVeritas 21 UKEX 0945X				
Weight	4 kg		5.5 kg		

Name of Mfr.: Wolf Safety Lamp Company

## Explosion Proof LED Linear Lights

Luces lineales LED antideflagrantes

防爆 LED リニアライト 防爆 LED 线性灯



ATEX, IECEx and UKEX certified for safe use in Zones 1 and 21 potentially explosive atmospheres. Ideal for illuminating hazardous area walkways, corridors, and long and large open areas, all products are IP66/67 rated, tough, reliable, and ideal for indoor or outdoor use in new installations and for replacing existing fluorescent or LED installations for improved performance and lower energy consumption. Available with Forward Facing Array LEDs or Directional Linear Optics LEDs for low glare.

The Emergency linear has all the features and benefits of the standard range with the additional safety of an emergency back-up should power fail in the Hazardous Area. Different emergency mode durations are available and selectable on board by the installer. Available with Forward Facing Array LEDs or Directional Linear Optics LEDs for low glare.

CODE	79 19 93	79 19 94	79 19 95	79 19 96	Unit Per Pcs.
Type	Standard				
Model	LMX2S-F-60	LMX2S-L-60	LMX4S-F-60	LMX4S-L-60	
Input Voltage Range	88 - 140V AC; 180 - 277 V AC				
Input Power (W)	23W	24W	46W	48W	
Beam Angles	115°	90°	115°	90°	
Frequency		50 - 60 Hz			
Power Factor		>0.90			
Enclosure Size	2 ft		4 ft		
Lumen Output (Max)*	2,629	1,988	5,258	3,976	
LED Module & Qty	1x FFA	1 x DLO	2 x FFA	2 x DLO	
Dust Surface Temp.	T80°C/ T90°C (dependent on model)				
Gas Temp. Class		T4			
Lower Temp. Limit		-50°C			
Upper Temp. Limit		60°C			
Approval	II 2 G Ex eb mb IIC T4 Gb II 2 D Ex tb IIIC T80°C...T90°C Db (dependent on model type)				
Certificate	ExVeritas 19 ATEX 0433X, IECEx EXV 19.0001X, ExVeritas 21 UKEX 0946X				
Weight	5 kg		9 kg		

Name of Mfr.: Wolf Safety Lamp Company

CODE	79 19 97	79 19 98	79 19 99	79 20 00	Unit Per Pcs.
Type		Emergency			
Model	LMX2E-F-60	LMX2E-L-60	LMX4E-F-60	LMX4E-L-60	
Input Voltage Range	100 - 140V AC; 200 - 277 V AC				
Input Power (W)	31W	32W	52W	56W	
Beam Angles	115°	90°	115°	90°	
Frequency		50 - 60 Hz			
Power Factor		>0.90			
Enclosure Size	2 ft		4 ft		
Lumen Output (Max)*	2,629	1,988	5,258	3,976	
LED Module & Qty	1x FFA	1 x DLO	2 x FFA	2 x DLO	
Dust Surface Temp.		T90°C			
Gas Temp. Class		T4			
Lower Temp. Limit		-40°C			
Upper Temp. Limit		60°C			
Approval	II 2 G D Ex eb mb IIC T4 Gb Ex tb IIIC T80°C..90°C Db				
Certificate	ExVeritas 19 ATEX 0433X, IECEx EXV 19.0001X, ExVeritas 21 UKEX 0946X				
Weight	6.5 kg		10.5 kg		

Name of Mfr.: Wolf Safety Lamp Company

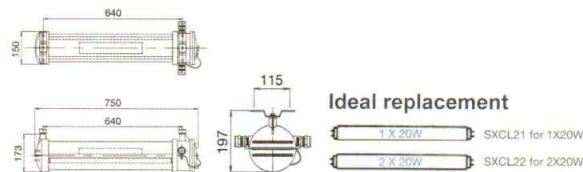
## Explosion-Proof LED Tubular Light

Tubo de luz LED antideflagrante

防爆型 LED チューブライト 防爆 LED 管状灯

Made of aluminium alloy housing with anti-corrosion powder coating with option for glass or polycarbonate diffuser. Long Service life of 100,000 hours. JIS and IEC safety and EMC compliance. ATEX and IECEx approvals certified by CSA and SIRA for Zones 1/2 & 21/22 applications. EX class – Ex db IIC T6 Gb and Ex tb IIIC T85°C Db. Ingress Protection: 66. Available equipped type with 3hrs battery back up for sustained emergency lighting using secondary LED light source. Maintained and non-maintained modes are supported.

### 2FT 12.5W or 25W Type



Ideal replacement

- 1 X 20W SXCL21 for 1X20W
- 2 X 20W SXCL22 for 2X20W

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kg	Unit Per Pcs.
Diffuser: Polycarbonate						
79 21 06	100 – 120V AC	1 x 12.5W	970 lm	750 x 173 x 197	5.6	
79 21 07		2 x 12.5W	1,940 lm		5.7	
79 21 08		1 x 12.5W	970 lm		5.6	
79 21 09		2 x 12.5W	1,940 lm		5.7	
Diffuser: Glass						
79 21 10	100 – 120V AC	1 x 12.5W	970 lm	750 x 173 x 197	8.7	
79 21 11		2 x 12.5W	1,940 lm		8.8	
79 21 12		1 x 12.5W	970 lm		8.7	
79 21 13		2 x 12.5W	1,940 lm		8.8	

**4FT 24W or 48W Type****Ideal replacement**

- |         |                  |
|---------|------------------|
| 1 X 40W | SXCL41 for 1X20W |
| 2 X 40W | SXCL42 for 2X20W |

Unit Per Pc.

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kg
<b>Diffuser: Polycarbonate</b>					
79 21 14	100 – 120V AC	1 x 24W	1,940 lm		8.7
79 21 15	120V AC	2 x 24W	3,880 lm		8.9
79 21 16	220 – 240V AC	1 x 24W	1,940 lm		8.7
79 21 17	240V AC	2 x 24W	3,880 lm		8.9

**Diffuser: Glass**

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kg
79 21 18	100 – 120V AC	1 x 24W	1,940 lm		14.7
79 21 19	120V AC	2 x 24W	3,880 lm		14.9
79 21 23	220 – 240V AC	1 x 24W	1,940 lm		14.7
79 21 24	240V AC	2 x 24W	3,880 lm		14.9

**90 – 260V Type**

Energy saving Ex LED fixture for hazardous areas (T5), watertight (IP67)



Type of protection: A-TEX II 2G Ex de op is IIC T5 Gb, Zone 1, 2 (gas) and 21, 22 (dust)

Housing: Aluminium die casting, yellow epoxy powder coated.

Unit Per Pc.

CODE	Main Voltage	Power	System Lumen	Dimensions L x W x H mm	Weight Kg
<b>Diffuser: Polycarbonate</b>					
79 21 39	90 – 260V AC	2 x 10W	2,160 lm	208 x 784	6.5
79 21 40	260V AC	2 x 18W	4,200 lm	208 x 1,390	9.2

**Cargo Lights**

Pantalla Bodega カーゴランプ 货灯

**Single Base Cargp Lights**

Lámparas Cargp de Base Única 簡易形カーゴランプ 轻型货灯

Ref. JIS F 8430

Drip proof single base cargo lights for marine use. Main body is made of painted steel plate.

**How to order: CODE**

Cargo light, single base, TYPE, WATTAGE

Unit Per Pc.

CODE	Type	Lamp		Guard Diam. mm	Construction
		Watt	Number	Base	
79 20 03 04	No. 2	300 500	1	E39	400 Drip-proof

**Quadruple Base, Semi Portable Type**

Base cuádruple, tipo semiportátil

4 灯用カーゴライト 四个照明灯的货物照明灯

(Ref. JIS F8412-1983)

Drip proof, vibration proof, quadruple base cargo light. Main body made of steel sheet and painted for marine use.

**How to order: CODE**

Cargo light, quadruple base, semi portable type, No. 1 – 3, 60 watts, LAMP BASE

Unit Per Pc.

CODE	Type	Lamp Watt	Lamp Number	Lamp Base	Guard Diam. mm	Construction
79 20 07 08	No. 1-3	60	4	E26	410	Drip Proof & Vibration Proof
				B22		

**Projector Type**

Proyector Estanco de Carga

二種カーゴライト 投影式装卸貨用照明灯

(Ref. JIS F8412-1983)

Waterproof single base projector type cargo lights for marine use. Main body made of painted steel plate.

**How to order: CODE**

Cargo light, projector type, TYPE, WATTAGE, LAMP BASE

Unit Per Pc.

CODE	Type	Lamp Watt	Lamp Number	Lamp Base	Guard Diam. mm	Construction
79 20 11 12	No. 2-1	200	1	E26	350	Water Proof
				B22		
79 20 13 14	No. 2-2	300 500	1	E39	410	

**Boat Deck Lights****Water & Vibration Proof**

Luces para Cubierta de Bote Resistente al Agua y Vibración

ポートデッキランプ 小艇甲板灯

(Ref. JIS F8413-1983)

Water and vibration proof single base boat deck lights. Mainly used for illuminating a lifeboat during and immediately after the launching process. Main body made of painted steel sheet.

**How to order: CODE**

Boat deck light, water &amp; vibration proof, TYPE, WATTAGE, LAMP BASE

Unit Per Pc.

CODE	Type	Lamp Watt	Lamp Number	Lamp Base	ΦD mm	Construction
79 20 21 22	No. 1	100 200	1	E-26	350	Water and Vibration Proof
				B-22		
79 20 23 24	No. 2	300 500	1	E-39	410	

**Boat Deck Lights****Watertight Sealed Beam Type**

Luces de cubierta, Estanques Tipo Viga Sellada

防水密閉ビームタイプ・ポートデッキライト

船用甲板灯 水密密封光束型



Made of casting brass body with casting iron made fixing bed.

CODE	Type	Lamp		Height mm	Weight kg	Unit Per Pcs.	
		Volt	Watt			D	H
79 20 28	S1R	24 V	60 W	308	4.7		
29	S2R	24 V	75/55 W	308	4.7		

## LED Boat Deck Floodlight

Proyector LED para cubierta de barco

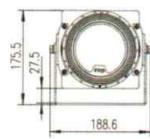
LED ポートデッキ投光器 LED 船甲板泛光灯

The versatile floodlight made of marine grade aluminum alloy with powder coating and comes with 4mm tempered glass front cover. Reliable driver on board to enhance service life. Rapid heat-dispersing design prolongs lamp life and optimizes lumen output. Long service life of 100,000 hours @ 50°C. JIS and IEC safety and EMC compliance. Ingress Protection: 66. ABS and IEC60533 certified. Interchangeable modules.

Application: Decks, Marinas, Docks, Ports, Warehouses.  
Weight: 1.9 kg



Ideal Replacement:



CODE	Main Voltage	Power	CCT	System Lumen
79 20 05	20-32V DC	56W	5,000 K	4,900 lm

## Marine Floodlighting Projectors

Water & Vibration Proof

Proyectores Marinos - Resistente al Agua y Vibración  
船用プロジェクター 船用反射灯

(Ref. JIS F8417-1983)

Water and vibration proof single base flood lighting projector. Main body made of painted steel sheet. Mainly used on board ships.



Unit Per Pcs.

CODE	Type	Lamp			$\phi D$ mm
		Watt	Number	Base	
79 20 32	No. 2	500	1	E39	410

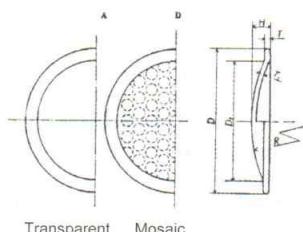
## Front Glasses for Marine Electric Light

Cristal para Proyectores

船用カーボランプ用前面ガラス 船用灯罩

(Ref. JIS F8403-1981)

Front glasses for cargo lights, flood-lighting projectors, boat deck lights and others. Available in two kinds of glass, transparent and mosaic.



CODE	Type	Size mm			
		D	D <sub>1</sub>	H	T
79 20 36	A300	300	280	30	8
37	D300	300	280	30	8
38	A350	350	325	35	9
39	D350	350	325	35	9

Denotes A ..... Transparent Glass

D ..... Mosaic Glass

## Marine Pendant Lights

Water & Vibration Proof

Farol Techo - Resistente al Agua y Vibración 船用作業灯 吊式探照灯  
(Ref. JIS F8414-1990)

Marine pendant light, mainly used for illuminating a working area such as in engine rooms and stores in ships. Water and vibration proof.



How to order: CODE

Pendant light, water & vibration proof, TYPE, LAMP BASE, WATTAGE

CODE	Type	Lamp Base	Lamp Voltage	Lamp Watt	Glass Globe	Unit Per Pcs.
79 20 51	1	E-12	125	20	S 80A	
		B-15				
79 20 53	1M	E-12	250	60	S 90A	
		B-15				
79 20 55	2	E-26	250	100	S120A	
		B-22				
79 20 57	2M	E-26	250	200	S135A	
		B-22				
79 20 59	3	E-26	250	100	S120A	
60	3M					
79 20 61	4	E-26	250	200	S135A	
62	4M					

Remark: Main body material is metal casting but the letter "M" suffixed to type number denotes that of synthetic resins.

## Marine Watertight Type Wall Lights

Farol Pared Tipo Estanco 船用防水型壁付灯 防水船用墙壁灯

Watertight Wall Light Fixture mainly used for the illumination of passageways in exposed areas on board ships.



Type W



Type WB-1



Type WB-2

CODE	Type	Watt	Applicable Glass Globe	Lamp Base	Main Body Material	Unit Per Pcs.
79 20 66	W	60	F175A	E-26	Cast Iron	
	WB-1	20	S57A	B-15	Synthetic Resin	
	WB-2	60	S90A	E-26	Synthetic Resin	

## LED Marine Wall Lights

Luces LED navales para paredes 船用 LED 壁付灯 船用 LED 壁灯

**BG Series: Cable wiring connected by side entry**

10W/12W/13W

Made of marine grade aluminium alloy with powder coating and PBT fiberglass reinforced body, polycarbonate diffuser and clear or red guard. Alternative to 100W incandescent bulb, and energy savings up to 90% compared to 100W incandescent bulb. Vibration-resistant. Long service life of

50,000 hours L70@45°C. JIS and IEC safety and EMC compliance. Ingress protection: 56. ABS and IEC60533 certified. Weight: 1.0 kg. Triac dimming compatible (220-240VAC & 100V-120VAC only). Please specify which guard is preferable, polycarbonate clear or polycarbonate red, when ordering.



Unit Per Pcs.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen
<b>Guard: Polycarbonate Clear</b>					
79 20 40	24V DC	10W			950 lm
41	100-120V AC	12W	5,000K	160°	900 lm
42	220-240V AC	13W			900 lm
<b>Guard: Polycarbonate Red</b>					
79 20 43	24V DC	10W			950 lm
44	100-120V AC	12W	5,000K	160°	900 lm
45	220-240V AC	13W			900 lm

CCT denotes Correlated Colour Temperature.

### FG Series: Cable wiring connected by back entry, through wall

10W/12W/13W



Unit Per Pcs.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen
<b>Guard: Polycarbonate Clear</b>					
79 20 46	24V DC	10W			950 lm
47	100-120V AC	12W	5,000K	160°	900 lm
48	220-240V AC	13W			900 lm
<b>Guard: Polycarbonate Red</b>					
79 20 49	24V DC	10W			950 lm
50	100-120V AC	12W	5,000K	160°	900 lm
63	220-240V AC	13W			900 lm

CCT denotes Correlated Colour Temperature.

30W

Alternative to 300W incandescent bulb, and energy savings of up to 90% compared to 300W incandescent bulb. Long service life of 30,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. ABS and IEC60533 certified. Ingress protection: 56. Weight: 1.5 kg.



Unit Per Pcs.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen
<b>Guard: Polycarbonate Clear</b>					
79 20 64	100-240V AC/DC	30W	5,000K	180°	2,900 lm
<b>Guard: Polycarbonate Red</b>					
79 20 65	100-240V AC/DC	30W	5,000K	180°	2,900 lm

CCT denotes Correlated Colour Temperature.

### LED Marine Pendant Lights

Luces LED navales colgantes

舶用 LED 作業灯 船用 LED 作业灯

EG 10W/12W/13W



A complete solution with heat sink, driver and polycarbonate diffuser. Made of marine grade aluminium alloy with powder coating and PBT fiberglass reinforced body, polycarbonate diffuser and clear or red guard. Vibration-resistant. Energy savings of up to 90% compared to 100W incandescent bulb. Long service life of 50,000 hours L70 @ 45°C. JIS and IEC safety and EMC compliance. ABS and IEC60533 certified. Triac dimming compatible (220-240VAC & 100V-120VAC only). Weight: 1.0 kg. IP56.

Unit Per Pcs.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen
<b>Guard: Polycarbonate Clear</b>					
79 20 69	24V DC	10W			950 lm
70	100-120V AC	12W	5,000K	160°	900 lm
92	220-240V AC	13W			900 lm
<b>Guard: Polycarbonate Red</b>					
79 20 93	24V DC	10W			950 lm
94	100-120V AC	12W	5,000K	160°	900 lm
95	220-240V AC	13W			900 lm

CCT denotes Correlated Colour Temperature.

EG30W

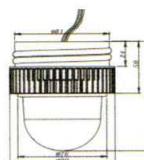
Alternative to 300W incandescent bulb, and energy savings of up to 90% compared to 300W incandescent bulb. Long service life of 30,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. ABS and IEC60533 certified. Ingress protection: 56. Weight: 1.5 kg.

Unit Per Pcs.

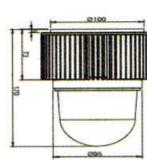
CODE	Voltage	Power	CCT	Beam Angle	System Lumen	Type
<b>Guard: Polycarbonate Clear</b>						
79 20 96	100-240V AC/DC	30W	5,000K	180°	2,900 lm	LMU03050PC
<b>Guard: Polycarbonate Red</b>						
79 20 97	100-240V AC/DC	30W	5,000K	180°	2,900 lm	LMU03050PR

CCT denotes Correlated Colour Temperature.

### Replacement LED Modules for LED Wall Light and Pendant Light



Equivalent to 100W Incandescent Bulb (10/12/13W)



Equivalent to 300W Incandescent Bulb (30W)

Unit Per Pcs.

CODE	Power
79 21 87	24V DC 10W
88	100-120V AC 12W
89	220-240V AC 13W
90	100-240V AC/DC 30W

## LED Watertight Cargo Lights

Luces de carga estancas LED

LED 防水型カーゴライト LED 防水貨物灯

Energy saving LED High Bay light, as replacement of traditional cargo lights. Made of aluminium base, waterproof (IP65), beam angle 90°, lifespan for 30.000 hours, with eye bolt mounting.



Unit Per Pcs.

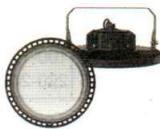
CODE	Main Voltage	Power	Colour	Dimensions D x H mm	System Lumen	Weight kg
79 20 15	85-265V	100W		275 x 115	10,000 lm	1.9
79 20 16	265V	150W	Daylight	310 x 120	15,000 lm	2.5
79 20 17	AC	200W		345 x 125	20,000 lm	3.1

## LED High Bay Lights

Iluminación LED para patios altos

LED 高天井照明 用于高天井的 LED 照明

The high bay LED light fixture provides high efficiency visibility. Aluminium construction ensures long life, waterproof (IP65) and high reliability with 50,000 working hours. Wide input voltage: AC 85-265V, 50/60Hz, compliance with ROHS and CE.



Unit Per Pcs.

CODE	Voltage	Power	Light Efficiency	Colour	System Lumen	Working lift
79 21 62	85-265V	150W	4,000K	Warm White		
79 21 63	AC	150W	6,500K	Daylight	6,000 lm	50,000 hours

## Explosion-Proof LED Pendant Light

Lámpara colgante LED antideflagrante

防爆タイプ LED ペンダントライト 防爆 LED 吊灯

### SXPL Series

Made of marine grade seawater resistant aluminium alloy body with anti-corrosion powder coating, borosilicate glass diffuser and stainless-steel protection guard and external fastener. Long Service life of 50,000 hours. JIS and IEC safety and EMC compliance. ATEX and IECEEx approvals certified by CSA and SIRA for Zones 1/2 & 21/22 applications. Ex Class – Ex db IIC T6 Gb and Ex tb IIIC T85°C Db.



Unit Per Pcs.

CODE	Main Voltage	Power	CCT	System Lumen
79 21 03	24V DC	10W		950 lm
79 21 04	100-120V AC	12W	5,000 K	900 lm
79 21 05	220V-240V AC	13W		

## Glass Globes

### for Marine Electric Light

Cristal para Farol Marino 船用ガラスグローブ 船用灯灯罩

(Ref. JIS F8402-1982)

Glass globes used for marine electric lights with incandescent lamps.

Illustration	Type	Dimensions mm				Colour
		D	d	H	T/h	
<b>Flange Type</b>						
	90	105	90	150	6	A, AB, AG, AR, AYR
	175	190	175	60	4	A
	250 300 350	262 312 362	250 300 350	85 90 95	4 4 4	B
<b>Screw in Type</b>						
	57	59.9 - 60.3	57	75	22	
	80	83.4 - 83.7	80	90	26	A
	90	83.4 - 83.7	90	150	26	A, AB, AG, AR, AYR
	110	83.4 - 83.7	110	160	26	B
	120	123.0 - 123.4	120	175	26	A
	135	123.0 - 123.4	135	220	26	A
	230	123.0 - 123.4	230	157	26	B

1. Symbols of class denote the shape of fitting part of globes as follows:

F ... Flange type  
S ... Screw in type

2. Type is classified according to the outside diameter of the globe in mm.  
 3. Symbols of colour denote the following.  
 A ..... Colourless Transparency  
 B ..... Frosted  
 AB..... Transparent blue  
 AG .... Transparent green  
 AR..... Transparent red  
 AYR... Transparent yellow

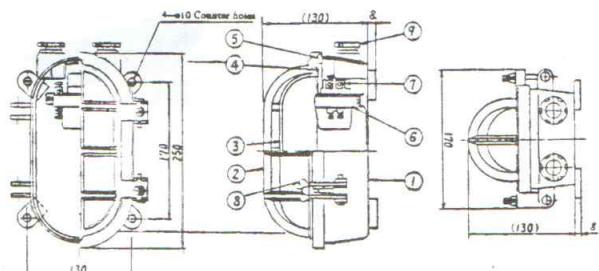
### How to order: CODE

Glass globe, TYPE of FITTING, TYPE

		Unit Per Pc.	
CODE	Type	CODE	Type
79 20 71	F90A	79 20 81	S57A
72	F90AB	82	S80A
73	F90AG	83	S90A
74	F90AR	84	S90AB
75	F90AYA	85	S90AG
79 20 76	F175A	79 20 86	S90AR
77	F250B	87	S90AYS
78	F300B	88	S110B
79	F350B	89	S120A
		90	S135A
		79 20 91	S230B

## Watertight Type Passage Lights

Luces para Pasillo Tipo Estanco 船用防水型通路燈 通道灯



(Ref. JIS F8441)

Watertight passage lights using incandescent lamps of 40 watts or less at 110V or less as a light source, mainly applied for weather decks aboard in a place of ambient temperature 40°C or less.

### Specification

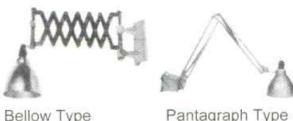
Material	1. Body	Cast Iron
	2. Guard	Cast Iron
	3. Globe	Glass
	4. Gasket	Synthetic Rubber
	5. Gasket	Synthetic Rubber
	6. Screw	Brass
Size mm	Overall	Length 250 mm
	Overall	Width 170 mm
	Overall	Depth 130 mm
Voltage	110 V	
Wattage	40 W	

79 21 01	Passage light, watertight, with guard, E-26 × 40W	Pc.
79 21 02	Passage light, watertight, without guard, E-26 × 40W	Pc.

## Chart Table Lights

### Wall Mounting

Luces de mesa Chart 壁付け海図台灯 图台灯



Bellow Type Pantagraph Type

		Unit Per Set
CODE	79 21 20	79 21 21
Extended Type	Bellow Type	Pantagragh Type
Extended to	820 mm	880 mm
Unextended	225 mm	180 mm
Setting Hole	75 × 75 × 90 mm × 6	65 × 95 mm × 4
Shade Size	160Φ × 155H mm	160Φ × 145H mm
Material	Aluminium Plate	Steel Plate
Arm	Brass Plate	Steel Plate
Base	Cast Iron	Cast Iron
Lamp	40W or 60W	
Base	E-26	
Weight	3.9 kg	3.0 kg

## Flexible LED Chart Table Light

Lámpara LED flexible de sobremesa

LED チャートテーブルライト 灵活的 LED 图表台灯

Made of an Anodized aluminum body, the 53cm flexible gooseneck light features CREE XP-G LED light source. 3-step dimming. Push-pull focusing lens. Long LED Lifespan of 60,000 hours at L70. USB Type-C power input. Vibration resistant. JIS and IEC safety and EMC compliance. Ingress Protection: 20. Application: Bridges and Cabins Weight: 0.216 kg. Available equipped type with red diffuser.



79 21 22	Flexible LED chart table light, 100-240V AC, 2W 6,500 K, 200 lm	Pc.
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## Universal Table Lights

Luces Universales para Mesa 卓上燈 万向桌灯

Designed for lighting study areas. Lighter and easy to handle due to spring suspension. Can be fitted on a desk or wall by simply exchanging bases.

Available in incandescent lamp and fluorescent lamp types. FL type of 220V requires a special ballast.



Incandescent Lamp Type



F.L. Lamp Type

### Fitting Base



### How to order: CODE

Universal table light, TYPE of LAMP, WATTAGE, FITTING TYPE

Unit Per Set				
CODE	For	Watts	Maximum Height mm	Fitting Parts
79 21 25	Incandescent Lamp	100W	865	Clamp Bracket
79 21 26				Table Base
79 21 27				Wall Bracket
79 21 28	F.L. Lamp	20W × 1	840	Clamp Bracket
79 21 29				Table Base
79 21 30				Wall Bracket

## LED Downlights

Luces LED descendentes LED ダウンライト LED 筒灯



### DL Series Swint Downlight

Made of marine grade aluminium alloy with powder coating, and polycarbonate diffuser. Built-in with integrated driver for ease of installation, and vibration-resistant. Energy savings of up to 86% compared to 50W halogen. Superior heat sink designed to enhance the service life. Long service life of 50,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. ABS and IEC60533 certified. Application: Cabins, Passageways, Galleys, Meeting rooms. Protection Class: IP44 in conjunction with ceiling. Note: Replace whole unit when light is not working.

**Ideal Replacement:** DL7A2S (7W) for CFL 50W

Unit Per Pcs.	
CODE	79 21 31
Model	LDAS074KA22W
Main Voltage	220–240V AC
Power	7W
CCT	4,000K
Beam Angle	105°
System Lumen	566 lm
Dimensions	Dia 97 × H 40.5 mm
Weight	0.2 kg

### DL Series Downlight



Made of marine grade aluminium alloy with powder coating, comes with polycarbonate diffuser. Triac dimming compatible (220-240 VAC only). Designed with reliable AC driver on board to enhance the service life. Vibration-resistant. Energy savings of up to 60% compared to compact fluorescent system. Long service life of 50,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. ABS and IEC60533 certified. Application: Cabins, Passageways, Galleys, Meeting rooms. Protection Class: IP44 in conjunction with ceiling.

\*Note: Replace whole unit when light is not working.

#### Ideal Replacement:

DLA12040 (12W) for 18W CFL

DLA15040 (15W) for 26W CFL

Unit Per Pcs.

CODE	Voltage	Power	CCT	Beam Angle	System Lumen
79 21 32	24V DC	15W	4,000K	85°	1,050 lm
35	100-120AV	15W			1,050 lm
33	220-240V AC	12W			820 lm
34	220-240V AC	15W			1,050 lm

## DLS Series

Fire-rated for 30, 60 and 90 minutes. Made of steel with powder coating, aluminium heatsink, Polymethyl methacrylate (PMMA) diffuser and polycarbonate bezel. Vibration-resistant. Energy savings of up to 55% compared to compact fluorescent system. Long service life of 50,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. ABS certified. Application: Cabins, Passageways, Galleys, Meeting rooms. Protection Class: IP65 in conjunction with ceiling.



Note: Replace whole unit when light is not working.

**Ideal Replacement:** DLSS88A2 (8W) for 18W CFL

Unit Per Pcs.

CODE	79 21 38
Model	LDD08XKA22W
Main Voltage	220-240V AC
Power	8W
CCT	3,000/4,000/6,000K Selectable
Beam Angle	60°
System Lumen	900 lm
Dimensions	Dia 88 × H 30 mm
Weight	0.3 kg

## Bed Lamp Fixtures

Luces de Camarote 船用寝台灯 船用床头灯



### Incandescent Lamp Use

Chrome plate finished brass made base and body with frost glass globe.

Unit Per Pcs.

CODE	Lamp Base	Watt	Size mm
79 21 36	E-26	20	230 × 115 × 120
79 21 37	B-22		

### Fluorescent Lamp Use



Made of synthetic resin foundation covered with milky white polystyrene diffuser. When ordering, please specify power source voltage and applicable wattage of the fluorescent lamp.

### How to order: CODE

Bed lamp fixture, FL lamp, VOLTAGE, WATTAGE

Unit Per Set

CODE	Lamp	Size mm Width × Height × Depth
AC 110 volt		
79 21 41	8 W × 1	393 × 110 × 90
42	10 W × 1	393 × 110 × 90
43	15 W × 1	504 × 110 × 90
AC 220 volt		
79 21 45	8 W × 1	393 × 110 × 90
46	10 W × 1	393 × 110 × 90
47	15 W × 1	504 × 110 × 90

## LED Berth Lights

Luces LED para camarotes LED 寝台灯 LED 卧铺灯

Special design polycarbonate diffuser to optimize the LED light transmission.

Slim profile design that is easily mounted to provide illumination performance while using significantly less energy, and useful for lighting in Passageways, Cabins, Lounges, Dining rooms, and Accommodation areas. Long service life of 50,000 hours L70 @ 40°C. JIS and IEC safety and EMC compliance. 2 mounting holes Ø5.5mm.



Material: Diffuser- Polycarbonate, Housing- Galvanized steel, powder coated white.

Protection Class: IP20 in conjunction with ceiling.

\*Note: Replace whole unit when light is not working.

CODE	Main Voltage	Power	System Lumen	Unit Per Pc.	
				Dimensions L x W x H mm	Weight Kg
79 21 48	100-120V AC	4W	280 lm	230 × 70 × 31.6	0.25
49	220-240V AC				

### USB Charging Port Series

Lights includes dimming function with dimming knob and 2 USB ports with optional universal socket. Housing- Aluminum, powder coated white. 2 mounting holes, D4.2mm, L14.2mm.



CODE	Main Voltage	Power	System Lumen	Unit Per Pc.	
				Dimensions L x W x H mm	Weight Kg
79 21 53	100-120V AC	4W	370 lm	320 × 65 × 70	1.0
54	220-240V AC				

## 7. Hand Lamps

### Watertight Hand Lamps

Lámpara Portátil de Mano Estanca 防水手提灯 防水工作灯

Watertight hand portable lamp with S90A screw globe and cast iron body and guard. Handle grip is made of hard wood or hard rubber and a hanging hook is fixed. Suitable for 60 watt lamp either E-26 or B-22. 350 mm overall length. Lamp excepted.



CODE	Lamp Base	Lamp Watts	Applicable Glass Globe		Unit Per Pc.
			SAO-90		
79 21 51	E-26	60			
79 21 52	B-22				

### Non-Watertight Hand Lamps

Lámpara Portátil de Mano No Estanca 非防水手提灯 无防水工作灯

Plastic handle and iron guard hand lamp with hanging hook. 100 mm guard diameter and 265 mm overall length. Rated voltage 125V.



CODE	Lamp Base	Watts		Unit Per Pc.
		E-26	B-22	
79 21 66				
67				

### LED Safety Guide Hand Lamp

Lámpara LED de mano de guía de seguridad LED 作業用安全指示灯 LED 作业安全指示灯

A handy lamp used for indicating emergency with red high luminance LED light. Made of red colour polycarbonate resin, and 2 x AA battery operated.

\*Continuous Lighting: 160 hours  
\*Continuous Flashing: 100 hours  
\*Waterproof type



CODE	Description	Unit
79 21 68	LED Safety Guide Hand Lamp, red color waterproof	Pc.

### Explosion Proof Portable Hand Lamps

Lámparas Manuales Portátiles Anti-deflagrantes 防爆型ハンドランプ 携带式手提灯



This explosion proof portable hand lamp is specially designed for use in hazardous atmospheres containing explosive and combustible gases and vapours.

#### How to order: CODE

Portable hand lamp, explosion-proof, VOLTAGE, WATTAGE

CODE	Wattage	Voltage	Unit Per Pc.	
			Lamp Base	
79 21 71	60W	110		
79 21 72		220		
79 21 73		110		
79 21 74	100W	220	E-26	

### LED Marine Portable Work Lights

Luces LED de trabajo portátiles navales

舶用 LED 手提灯 船用 LED 手提灯



A complete solution with heat sink, driver and polycarbonate diffuser. Made of marine grade aluminium alloy with powder coating and polycarbonate body, diffuser and clear or red guard.

Vibration-resistant, and energy savings of up to 90% compared to 100W incandescent bulb. Long service life of 50,000 hours L70 @ 45°C. JIS and IEC safety and EMC compliance. ABS and IEC60533 certified. Beam Angle: 160°, System Lumen: 10W 950lm, 12W and 13W 900 lm, IP 56, Weight: 1.0 Kg. Triac dimming compatible (220-240VAC & 100V-120VAC only).

### 10W/12W/13W

CODE	Voltage	Power	CCT	Beam Angle	System Lumen	
79 21 75	24V DC	10W			900 lm	
79 21 76	100-120V AC	12W	5,000K	160°	900 lm	
79 21 77	220-240V AC	13W			950 lm	

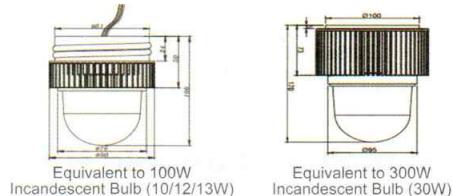
### 30W (100-240V AC/DC)

Alternative to 300W incandescent bulb, and energy savings of up to 90% compared to 300W incandescent bulb. Long service life of 30,000 hours L70 @ 40°C. ABS and IEC60533 certified. Beam Angle: 180°, System Lumen: 2,900lm, IP 56, Weight: 1.5 Kg.



Unit Per Pcs.						
CODE	Guard	Voltage	Power	CCT	Beam Angle	System Lumen
79 21 85	Clear	100-120V AC/DC	30W	5,000K	180°	2,900 lm
79 21 86	Red					

### Replacement LED Modules for Portable Work Light



Unit Per Pcs.

CODE	Power
79 21 87	24V DC 10W
88	100-120V AC 12W
89	220-240V AC 13W
90	100-240 AC/DC 30W

### Rechargeable LED Portable Work Light

Luz de trabajo portátil LED recargable

充電式 LED ポータブル作業灯 可充电 LED 便携式工作灯

The heavy-duty COB LED features an aluminium alloy handle with polycarbonate diffuser and thermoplastic rubber at both ends for impact protection. Hanger hook and magnetic base for easy mounting. 2 steps dimming and torch mode via LED at the top. Service life of 50,000 hours LED lifespan, battery life up to 500 charges. Lithium-ion battery rechargeable by 5V 1A micro USB port. Vibration and impact resistant. RoHS safety compliant. Ingress Protection: 54. Application: Engine rooms, Low Visibility Areas, Decks, Warehouses, Yards.



79 21 55	Portable Work Light Rechargeable, 3W 100-240V AC, 5,000 K, 300 lm	Pc.
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### Watertight Fluorescent Hand Lamps (Line Lights)

Lámparas Manuales Fluorescentes (Luces de Linea)

作業用防水蛍光灯 防水工作日光灯

This polycarbonate cylindrical type fluorescent hand lamp with built-in ballast has the following advantages:



1. This line light will not break easily if it is hit or dropped.
2. It is waterproof.
3. If the fluorescent lamp is broken inside, this line light is not liable to ignite.
4. Since pieces of broken glass will not scatter, it will not cause damage to any apparatus.
5. This line light is cold-proof so that it can be used in any cold place.

#### Specifications

Voltage & Hz	100-110V/200V 50 or 60 Hz	
Starter	Glow Start Type	
Lamp	FL20	FL10
Ampere	0.36A	0.23A
Average Life	7,500h	5,000h
Size	964L x 74 mm	714L x 74Φ mm
Weight	2 kg	1.8 kg
Accessories	1. Cabtyre Cable 2.5 Mtrs 2. Watertight Plug	

### How to order: CODE

FL hand lamp, watertight, VOLTAGE, WATTAGE

Unit Per Pcs.						
CODE	Guard	Voltage	Power	CCT	Beam Angle	System Lumen
79 21 85	Clear	100-120V AC/DC	30W	5,000K	180°	2,900 lm
79 21 86	Red					

Unit Per Pcs.

CODE	Wattage	Voltage	Starter
79 21 81	10W	100/110V	FG-1E
82	20W	100/110V	FG-1E
83	10W	200V	FG-1E
84	20W	200V	FG-1E

Unit Per Pcs.

### Explosion-Proof LED Hand Lamps

Luces de trabajo LED antideflagrantes

防爆型 LED 作業灯 防爆 LED 工作灯

The Explosion proof LED portable lamp is ATEX Directive Certified for use in Zones 1 and 2 hazardous locations. Suitable for inspection and work in confined space applications, such as metal tanks. Wide voltage input from AC12-24V AC/DC and AC 90-260V, 50/60Hz.



Unit Per Pcs.

CODE	79 21 64	79 21 65
Voltage & Hz	AC12-24V AC/DC	AC90-260V 50/60Hz
Output	1,200 Lumens (effective lumens)	
Light Source Power	LED 12W	
Areas of Class (Gases)	Zone 1 and 2, Gas Groups: IIA, IIB, and IIC	
Areas of Class (Dusts)	Zone 21 and 22, Dust Groups: IIIA, IIIB, and IIIC	
Temperature Class (Gases / Dusts)	T4 / 95°C	
Light Source Life	100,000 Hours	
Dimension	Φ63 x 405 mm	
Weight	640 g (without cable)	

Name of Mfr.: Fortune Protection Safety Ltd.

### 8. Warning Lights

#### Rotary Warning Lights

Luces Rotativas de Señales (Alarma) 標識用回転灯 警告用回转灯

All-polycarbonate plastic resin construction with single reflector, producing 180 - 215 flashes per minute horizontally 360°. Available globe colours are red and yellow. Size 180 mm (φ) x 206 mm (H).



#### How to order: CODE

Rotary warming light, VOLTAGE, WATTAGE, COLOUR

Unit Per Pcs.

CODE	Colour	Rated Voltage	Lamp	Beam Intensity cd.	Flashhes Per Minute	Nt Wt. kg
79 21 91	Red	DC12V	12V	30,000	200	1.3
79 21 92	Yellow		40W			
79 21 93	Red		24V			
79 21 94	Yellow		40W			
79 21 95	Red	AC100V	100V	7,500	180/215 (50/60Hz)	1.2
79 21 96	Yellow		30W			
79 21 97	Red		200V			
79 21 98	Yellow		30W			

## 9. Flashlights

### Strong Flashlights

Linternas Fuertes ストロングライト 强力手电筒

All plastic light with a range of more than 300 meters.



Regular (6 Batteries)



Regular (4 Batteries)

#### How to order: CODE

Strong flashlight, NUMBER of BATTERIES, REMARK

Unit Per Pcs.

CODE	Number of Battery	Remarks
79 22 01	R20P (UM-1) x 6	Regular
02	R20P (UM-1) x 4	Regular

### Industrial Flashlights

Linternas Industriales 懐中電灯 手电筒

Industrial flashlights made of tough plastic.



Unit Per Pcs.

CODE	Battery	Remarks
79 22 12	R20P (UM-1) x 2	Industrial
13	R20P (UM-1) x 3	Industrial

### Industrial Quality LED Flashlights

Linternas LED de calidad industrial LED 懐中電灯 LED 手电筒

Extremely durable industrial grade switch with a super tough polycarbonate lens.

Power source : 2 x D cell Alkaline

Light source : LED

Light output : 50 Lumens

Beam distance : 75 meter



79 22 10 Flashlight, LED, industrial 2618 LED

Pcs.

### Intrinsically Safe LED Flashlights

#### Razor Model 60160 & 60170

Linternas LED intrinsecamente seguras

本質安全防爆 LED 懐中電灯 本质安全防爆 LED 手电筒



#60160



#60170

A LED flashlight exhibits a piercing beam supported by its deep dish reflector, focuses light from high output LED. A Zone Zero safety classification makes it the safest of its kind.

Unit Per Pcs.

CODE	79 22 29	79 22 18
Model	Razor #60160	Razor #60170
Max. Output	High :325 lm/Low 125 lm	High :325 lm/Low 125 lm Downlight: 150 lm
Runtime	High 7 hours/Low 24 hours	High 7 hours / Low 24 hours Downlight: 20 hours
Batteries	3 x AA Cells	
Safety Rating	Intrinsically safe - Zone Zero rating	

Ingress Protection	X7
Safety Standard	ATEX/IECEx: Zone 0, Ex ia IIC T2 Ga, UL 913, Class I, II, III Div I & II A-G T2
Body Colour	High-Vis Yellow
Size & Weight	L: 181 x W: 50 x H: 50 mm, Weight: 227 grm

Name of Mfr.: KBS Innovations

### Safety Approved LED Flashlights

Linternas LED de seguridad aprobada

防爆型 LED 懐中電灯 防爆型 LED 手电筒

For use in hazardous atmospheres and switch guard prevents accidental lighting.



2217 LED



2224 LED

CODE	79 22 35	79 22 36
Model	2217 LED	2224 LED
Power Source	2 x 'D' cell Alkaline	3 x 'D' cell Alkaline
Beam Distance	100 mtr	88 mtr
Light Output	80 lumens	60 lumens
Runtime	200 hrs	250 hrs
Weight	0.17 kg	0.14 kg
Safety Approvals	UL protection method, Intrinsically safe, Divisions 1 & 2, Class I, II, III Div 1 Groups A-G, Class I, II, III Div 2 Groups A-G, Operating Temp T5	

Name of Mfr.: KBS Innovations

### ATEX Specification Models



2217 LED ATEX

CODE	79 22 37
Model	2217 LED ATEX
Power Source	2 x 'D' cell Alkaline
Beam Distance	100 mtr
Light Output	80 lumens 2,450 candelas
Runtime	200 hrs
Weight	0.14 kg
Safety Approvals	IECEx protection Methods: Ex ia IIB T3 Ga, Ex ia IIIB T145°C Da, -5°C ≤ +40°C UL protection Methods: Intrinsically Safe Division 1 and 2, Class I, II, III Div 1 Groups A-G, Class I, II, III Div 2 Groups A-G, T5, ATEX protection Methods: II 1GD Ex ia IIB T3 Ga, Ex ia IIIB T145°C Da -5°C ≤ Ta ≤ +40°C, Zone 0

Name of Mfr.: KBS Innovations



SF-12 LED



DS-12 LED

Unit Per Pc.

CODE	79 22 30	79 22 60
Model	SF-12	DS-12
Light Source	Cree XP-E LED	
Power Source	3 x 'C' cell Alkaline	
Beam Distance	93 mtr (low) 137 mtr (high)	100 mtr (low) 140 mtr (high)
Light Output	55 lumens (low) 124 lumens (high)	65 lumens (low) 130 lumens (high)
Runtime	80 hrs (low) 42 hrs 30min. (high)	98 hrs (low) 55 hrs (high)
Weight	190 gram	
Safety Approvals	UL - Class I Div 1 Group A,B,C,D, Class II D 1 Group E,F,G, Class III, Operating Temp T4 Atex - Ex II 1 G Ex ia IIC T4 IECEx - Ex II 1 G Ex ia IIC T4 CE & ROHS Approved	

Name of Mfr.: Day Sun Technology Ltd.

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Electrical Equipment

## Intrinsically Safe LED Flashlights Zone 0, 1, 2

Linteras LED antideflagrante para zonas 0, 1 y 2

防爆型 LED 懐中電灯 ゾーン 0, 1, 2 対応

防爆 LED 手电筒, 用于 0、1 和 2 区

ATEX Directive certified for safe use in hazardous locations in zones 0, 1& 2 and zones 20, 21 & 22. Suitable for use in offshore oil and gas, marine vessels, refining and petrochemical industries.



EX-6180



EX-5380



EX-7180

Unit Per Pc.

CODE	79 22 05	79 22 06	79 22 07
Model	EX-6180	EX-5380	EX-7180
Power Source	2 x LR20(D) Primary Alkaline cells	2 x LR6 (AA) Alkaline Batteries	2 x LR3 (AAA) Alkaline Batteries
Beam Distance	80 mtr	81 mtr	35 mtr
Light Output	- Source Lumens: 148 lm - Effective Lumens: 124 lm	- Source Lumens: 174 lm - Effective Lumens: 110 lm	- Source Lumens: 68 lm - Effective Lumens: 53 lm
Power	3V 1.7W	3V 1.2W	3V 0.6W
Light Duration	15 hours	4.75 hours	4.4 hours
Dimension	Φ65 x 200 mm	Φ40 x 172 mm	Φ23 x 137 mm
Weight	176 g (without battery)	114 g (without battery)	31 g (without battery)

Name of Mfr.: Fortune Protection Safety Ltd.

## Accessory Parts for Flashlight

Accesorios para linternas フラッシュライト付属品 手电筒配件

The removable wand allows you to direct light beam when needed. Fits for all 2 and 3 D-cell flashlights, which slip on and off very easily. 6-1/2" in length, available in color red. Helmet clip is also available when required.



CODE	Description	Model
79 22 43	Slip on wand 8" for flashlight - Color Red	23863
79 22 49	Helmet Clip	10B-2261

Name of Mfr.: KBS Innovations

## Rechargeable LED Lanterns

Linternas LED recargables

充電式 LED ランタン 可充电 LED 灯笼

Powerful flood beam lantern illuminates work areas and only weights 860 grams. Articulating head, super tough nylon construction, waterproof for 24 hours at 1mtr. Wall mountable.



Unit Per Pc.

CODE	79 22 69
Model	Lighthawk Vision 600
Lamp	Advanced LED Technology
Power Source	4 CELL Lithium Ion Rechargeable Battery
Beam Distance	250 mtr
Light Output	600 lumens
Runtime	6.25 hours
Dimensions (mm)	L 241 x W 79 x H 130
Weight	0.86 kg

Name of Mfr.: KBS Innovations

## Intrinsically Safe Rechargeable LED Lanterns

Linternas LED recargables, intrínsecamente seguras

本質安全型 LED 充電式ランタン

本质安全型可充电 LED 灯



Intrinsically safe, super lightweight, full size, long range rechargeable lantern. Available in dual mode spot beam (high/low). Waterproof and submersible.

CODE	79 22 70
Model	Lighthawk GEN II
Lamp	Advanced LED Technology
Power Source	4 CELL Lithium Ion Rechargeable Battery
Beam Distance	447 mtr
Light Output	300 lumens on high / 125 lumens on low
Runtime	7 hours on high / 14 hours on low
Ingress Protection	IP 67
Safety Approvals	Intrinsically Safe, UL Protection Methods UL 913 CSA C22.2 No 157, Class I, II, III, Divisions 1 & 2, Groups C-G, T1, Meets NFPA 1901 14.1.11.2 2003 Edition
Dimensions (mm)	L 241 x W 79 x H 130
Weight	0.86 kg

Name of Mfr.: KBS Innovations

## Safety Approved LED Lanterns

Linternas LED antideflagrantes

防爆型 LED ランタン 防爆 LED 灯笼



For use in hazardous atmospheres, and waterproof IP 67 rating.

2206 LED

		Unit Per Pcs.
CODE	79 22 41	
Model	2206 LED	
Power Source	4 x 'D' cell Alkaline	
Beam Distance	165 mtr	
Light Output	90 lumens	
Runtime	150 hours	
Safety Approvals	UL protection methods, UL 913 CSA C22.2, Intrinsically Safe, Divisions 1 & 2, Class I, II, III Div 1 Groups A-G, Class I, II, III Div 2 Groups A-G, Operating Temp T5	
Weight	0.42 kg	

Name of Mfr.: KBS Innovations

## Rechargeable Flashlights

Linternas Recargables 充電式懐中電灯 充电式手电筒

Extra-bright beam with polished reflector. Battery replacement is unnecessary, as Cadnica batteries can be recharged hundreds of times. No danger of over-charging.



Unit Per Pcs.				
CODE	Volt	Continuous Operation	Charging Time	Flange Base Bulb Type
79 22 45		70 min.	10 hours	2.5 V 350 mA
47	100 V	60 min.	10 hours	6 V 550 mA
48		130 min.	16 hours	6 V 550 mA
79 22 46	220 V	70 min.	10 hours	2.4 V 600 mA

## Rechargeable Safety Hand Lamp Zone 0, 1, 2

Lámparas de mano recargables conformes a la normativa ATEX  
充電式 ATEX 規則適合ハンドランプ 符合 ATEX 标准的可充电手灯

Intrinsically Safe Hand Lamp is ATEX Directive certified for safe use in hazardous locations in zones 0, 1 & 2 and zones 20, 21&22. Suitable for use in offshore oil and gas, marine vessels, refinery and petrochemical industries. Compatible Charger input voltage AC 90-260V,50/60Hz



		Unit Per Pcs.
CODE	79 22 14	
Product Reference	EX-2480Z0	
Product Description	'ia' Intrinsically Safe	
Area of Class (Gases)	Zones 0, 1 & 2 Gas Groups IIA, IIB and IIC	
Temp. Class (Gases)	T4	
Area of Class (Dust)	Zones 20, 21 & 22 Dust Groups IIIA, IIIB and IIIC	
Temp. Class (Dusts)	135°C	
Ambient Temperature	-20°C to +40°C	
Ex Mark	I M1 Ex ia I Ma II 1G Ex ia op is IIC T4 Ga II 1D Ex ia IIIC T135°C Da	
Beam Type	Spot / Flood	
Light Source:	Type	High Power LED Bulb
	Watts	3 Watts
	Output	Up to 165 lm
	Duration	Up to 7 hours at high mode

Power Source	Type	Rechargeable Battery, Lithium-Ion
	Volts	3.2V 2,000 mAh
Ingress Protection		IP66
Weight (Excl. Cells)		190 grams
Name of Mfr.: Fortune Protection Safety Ltd.		

## Flashlight Bulbs

Bombillas de Linternas フラッシュライト球 手电筒电灯泡

Furnishable flange base and screw base. When ordering, specify the base type and voltage.

**How to order: CODE****Flashlight bulb, TYPE of BASE, VOLTAGE, AMPERE**

Unit Per Pcs.							
CODE	Volts	Amp	Base	CODE	Volts	Amp	Base
79 22 51	2.5	0.5		79 22 55	2.5	0.3	
52	3.8	0.5		56	2.5	0.5	
53	4.8	0.5	P-13.5S	57	3.8	0.3	
50	6.0	0.55		58	3.8	0.5	
54	7.2	0.55		59	6.0	0.5	E-9

## Safety Torches

**Compliant with ATEX Directive, Zone 1, 2**

Normativa ATEX para lámparas de seguridad

ATEX 規則適合安全灯 符合 ATEX 标准的安全灯

The ATEX safety torch is a reliable, simple and cost-effective portable torch. Available with a straight or right-angle body, and Vacuum or Xenon bulbs, it's CE marked to the ATEX directive and IECEx certified for safe use.



The Wolf ATEX torch range is sealed dust tight and protected from water immersion, with a certified IP67 enclosure.

Unit Per Pcs.						
CODE	79 22 61	79 22 62	79 22 63	79 22 64		
Model	TS-26B	TR-26B	TS-24B	TR-24B		
Shape	Straight	Angle	Straight	Angle		
Type of Protection		Increased safety, intrinsic safety				
Approval Code:	Ex eb ib IIB T4 Gb IP67 Ex tb IIIC T95°C Db	Ex eb ib IIB T4 Gb IP67 Ex tb IIIC T95°C Db				
Area of Classification (Gas)		Zones 1 & 2 Gas Groups IIA, IIB				
Temperature Class (Gas)		T6		T4		
Ambient Temperature (Gas)		-10°C to +40°C	-20°C to +40°C	-10°C to +40°C / +55°C*		
Area of Classification (Dust)		Zones 21 and 22 Dust Groups IIIA, IIIB, IIIC				
Temperature Class (Dust)		65°C		95°C		
Certificate	BAS02ATEX2220X / IECEx BAS 15.0033X					
Enclosure	Impact Resistant Thermoplastic, Electrostatic Non-hazardous					
Lens	Polycarbonate	Toughened Glass	Polycarbonate	Toughened Glass		
Beam Type	Medium spot					
Light Output	11 lumens		16 lumens			
Power Supply	R20 primary cells to IEC60086	R20/LR20 primary cells to IEC60086				
Volt	2 x 1.5V	2 x 1.5V				
Light Duration	Up to 5 hours		Up to 12 hours			
Ingress Protection	IP 67					
Weight (with cells)	350 g	390 g	450 g	490 g		
Name of Mfr.	The Wolf Safety Lamp Company Ltd.					

\* dependent on battery selection

## Rechargeable Safety Torches

Lámpara de Seguridad Recargable

充電式 ATEX 規制適合安全灯 充電式安全手電筒

An ATEX and IECEx certified rechargeable right angle safety torch, using the latest technology to give excellent performance, robustness and reliability for safe use



Unit Per Pc.

CODE	79 22 67	79 22 68
Product Reference	R-50	R-55
Product Description	Rechargeable Safety Torch, Right-Angle	
	Zone 1 LED	Zone 0 LED
Approval Code	I M2/II 2GD Ex ib I Mb/IIC T4 Gb (-40°C ≤ Ta ≤ +40°C) Ex ib IIIB T200°C Db IP67	I M1/II 1G2D Ex ia I Ma/IIC T4 Ga (-40°C ≤ Ta ≤ 50°C) Ex ia IIIB T200°C Db IP67
Type of Protection	'ib' intrinsic safety	'ia' intrinsic safety
Area of Class(Gases)	Zones 1 & 2	Zones 0, 1 & 2
	Gas Groups IIA, IIB and IIC	
Temp. Class(Gases)	T4	
Area of Class (Dust)	Zones 21 and 22	Zones 21 & 22
Max Surface Temp. (Dusts)	T200°C	
Ambient Temperature	-40°C to + 40°C	
Certificate	Baseefa05ATEX0069X / IECEx BAS06.0001X	
Enclosure	Impact Resistant Thermoplastic, Chemical Resistant, Static Dissipative	
Lens	Toughened Glass 4mm	
Beam Type	High Output Spot Beam	
Type	High Power LED	
Watts	3 Watts	
Output	High Power – Up to 243 lm Low Power – Up to 135 lm	
Life	25,000 hrs+	
Pt. no.	R-271	
Type	Rechargeable Battery, Lithium-Ion	
Volts	7.4 V	
Capacity/Life	2.4Ah / Up to 500 Recharge Cycles	
Light Duration	High Power – Up to 3.5hrs Low Power – Up to 6.5hrs	
Ingress Protection	IP67	
Weight (Excl. cells)	0.375 kg	
Compatible Chargers	RC-200L 12-24Vdc / RC-200H 100-254Vac	
Name of Mfr.	The Wolf Safety Lamp Company	

## Battery Charger for ATEX Rechargeable Torches

Cargadores de batería para linternas recargables ATEX

ATEX 充電式トーチ用充電器

电池充电器 用于 ATEX 充电式手电筒



For use with all torches in the rechargeable torch range.

Unit Per Pc.

CODE	Model	Voltage	Suitable For
79 22 71	RC-200H	90-264V AC	R-50 & R-55

Note: Recharge time requires 3 hours for full charge, and 1.5 hours for 90% charge.

## Personal Issue Safety Torches

Linterna de Seguridad Personal 小型防爆トーチ 小型安全手電筒

Mini and Micro torches are tough, reliable and compact enough to easily store in your pocket. Using the latest LED light source technology, light output is highly impressive, with the new M-70 Mini torch achieving up to 107 lumens (at source) from its 2 X AAA batteries. ATEX and IECEx certified for safe use in potentially explosive gas, vapour, mist or dust atmospheres where a T4 or T5 temperature class permits, all models are approved to Group I for use in mining applications.



Unit Per Pc.

CODE	79 22 76	79 22 78	79 22 79	79 22 77	79 22 80		
Product Reference	M-10	M-40	M-60	M-70	M-85		
Product Description	ATEX LED Micro Torch	ATEX LED Mini Torch	ATEX LED Mini Torch	ATEX LED Mini Torch	ATEX LED Midi Torch		
Approval Code	I M1/II 1G Ex ia I Ma/ IIC T4 Ga (-40°C < Ta < +50°C) II 2D Ex ib IIIB T95°C Db IP67	I M1/II 1G Ex ia I Ma/ IIC T4 Ga (-40°C < Ta < +50°C) II 2D Ex ib IIIB T125°C Db IP67	I M1/II 1G Ex ia I Ma/ IIC T4 Ga (-40°C < Ta < +50°C) II 2D Ex ib IIIB T130°C Db IP67	I M1/II 1G Ex ia I Ma/ IIC T4 Ga (-20°C < Ta < +40°C) II 1D Ex ia IIIC T200 160°C Da IP67	I M1/II 1G Ex ia op is I Ma/IIC T3/T4 Ga (-40°C ≤ Ta ≤ +40°C) II 1D Ex ia op is IIIB T200°C Da IP67		
Type of Protection	ia/lb						
Area of Classification (Gases)	Zones 0, 1 & 2						
Temperature class (gas)	T5	T4		T3/T4			
Area of Classification (Dust)	Zone 21 & 22			Zone 20, 21 & 22	Zone 20, 21 & 22		
Max Surface Temp. (Dust)	95°C	125°C	130°C	160°C	200°C		
Certification	Baseefa06ATEX0084X, IECEx BAS 06.0023X						
Beam Type	Medium Spot						
Light Source:	Type	1×5mm LED White (Nichia)	3×5mm LED White (Nichia)	1 × High Power Cree LED	High power LED		
	Output	30 cd	3 × 30 cd	Up to 139 lm	Up to 107 lm		
	Life	25,000 hrs +					
Power Source:	Pt. no.	M-102 (4 pack)	M-402 (3 pack)		M-202 (2 pack)		
	Type	LR44 primary cells to IEC60086	LR1 primary cells to IEC60086		LR03 primary cells to IEC60086		
	Volts	4 × 1.5V	3 × 1.5V		2 × 1.5V		
Light Duration	Up to 2 hrs	Up to 10 hrs	Up to 3 hrs	Up to 7 hrs	Up to 7 hrs		
Weight	25 g	60 g		50 g	190 g		
Ingress Protection	IP67						
Name of Mfr.:	The Wolf Safety Lamp Company Ltd.						

Name of Mfr.: Wolf Safety Lamp Company Ltd.

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Electrical Equipment

## LED Flashlights

Lámpara de Destello LED LED ライト LED 手電筒

An advanced flashlight equipped with LED (Light-emitting Diodes) lightbulb which has better brightness and running time than conventional incandescent lights. Dry batteries are separate order. Casing is made from ABS plastic and drip-proof.



Unit Per Pcs.

CODE	Batteries	Weight grm
79 22 81	R6P (UM-3) x 2	80
82	R6P (UM-3) x 3	196
83	R20P (UM-1) x 2	190
84	R20P (UM-1) x 4	455

## Safety LED Torches

Linternas LED de seguridad 安全 LED トーチ

安全 LED 手电筒

The ATEX LED safety torch is an ATEX and IECEx certified primary cell LED safety torch which uses the latest technology to give excellent performance, robustness and reliability for safe use in Zones 0, 1 and 2 potentially explosive gas and Zones 20, 21 and 22 dust atmospheres.



Unit Per Pcs.

CODE	79 22 86	79 22 88
Model	TR-30+ Right Angle Primary Cell	TR-35+ Right Angle Primary Cell
Body Colour	Yellow	Yellow
Approval Code	I M2/II 2GD Ex ib op is I Mb/IIC T4 GbEx ib op is IIIB T130°C Db	I M1/II 1GD Ex ia op is I Ma/IIC T4 GaEx ia op is IIIB T130°C Da
Type of Protection	'ib' intrinsic safety	'ia' intrinsic safety
Area of Classification (gases)	Zones 1 & 2 Gas Groups IIA, IIB, IIC	Zones 0, 1 & 2 Gas Groups IIA, IIB, IIC
Temp Classification (Gases)	T4	
Area of Classification (Dust)	Zones 21 and 22 Dust Groups IIIA and IIIB	Zones 20, 21 & 22 Dust Groups IIIA and IIIB
Certificate	ATEX Baseefa 07ATEX0091X / IECEx BAS 06.0089X	
Light Output	Up to 130 lumens	
Power Supply	2 x LR20 Primary Cells	
Ingress Protection	IP67	
Weight (incl. cells)	0.5 kg	

Name of Mfr.: Wolf Safety Lamp Company

## LED Safety Lights

Luces LED de seguridad LED 防爆安全灯 LED 防爆安全灯



PX-2

PX-1

Unit Per Pcs.

CODE	79 22 92	79 22 94
Model	PX 2	PX 1
Light Source	1W CREE LED	3W CREE LED
Output	30 lumens	120 lumens
Area of Classification	ATEX Directive Zone 1 approved	
Body Material	PC (Polycarbonate)	
Protection Class	II 2G Ex ib e IIB T4 Gb II 2D Ex ib IIC T105°C Db IP68	
Battery	2 x AAA / Micro / 1.5 volt each	4 x AA / Mignon / 1.5 volt each
Size mm	22 dia x 142 length	39 dia x 167 length
Weight grm	20	80
Name of Mfr.:	Parat GmbH + Co. KG	
CODE	79 22 93	79 22 95
Model	DF1013	SF-7
Light Source	Osram 1W LED	Cree XP-E LED
Power Source	4 x AA Alkaline	4 x AA Alkaline
Beam Distance	122m	110 mtr(low) / 231 mtr(high)
Light Output	80 lumens	32 lumens(low) / 133 lumens(high)
Runtime	14 hrs 55 min.	69 hrs 10 min.(low) / 6 hrs(high)
Size	175 x 45 x 45 mm	174 x 47 x 47mm
Weight	105 grm	115 grm
Safety Approval	UL - Class I Div 1&2 Group A,B,C,D, Class II Div 1&2 Group E,F,G, Class III T4. Atex – Ex II 1 G Ex ia IIC T4 IECEx – Ex ia IIC T4 Ga / IECEx UL 11.0042X. CE & ROHS & REACH Approved	UL - Class I Div 1 Group A,B,C,D, Class II D 1 Group E,F,G, Class III T4 Atex – Ex II 1 G Ex ia IIC T4 IECEx – Ex ia IIC T4 Ga / IECEx UL 13.0013X CE & ROHS & REACH Approved

Name of Mfr.: Day Sun Technology Ltd.

## Pen Lights

Luces de bolígrafo ペンライト 钢笔灯

Rugged, compact, 135 lumens which fits comfortably in your pocket with strong light.



Anodized aluminium construction, rear push-button switch with momentary and continually-on modes, engineered to provide high output throughout entire runtime.

Unit Per Pcs.

CODE	79 22 96
Power Source	2 x AAA Batteries
Beam Distance	32 mtr
Light Output	135 lumens
Runtime	3 hours
Dimensions(mm)	L 130 x W 16
Weight	0.86 kg

Name of Mfr.: KBS Innovations

## Personal Safety Beacons

Baliza de seguridad personal 個人用安全ビーコン 个人安全信标

It is suitable for working in low light situations to signal the location of a worker, just attached to the back of a helmet or a harness. There are five colours available, so can be useful to identify teams with each different colour. It has long runtime with three settings, a steady flash mode, random flashing mode and steady mode, and can be seen from over 300 meter away. Three types of clips are available, Metal, plastic and magnet.



### How to order: CODE

Personal Safety Beacon, COLOUR OF LIGHT, TYPE OF CLIP

Unit Per Pcs.

CODE	79 22 97
Light Colours	Amber, Blue, Green, Red, White
Type of Clips	Metal Clip, Plastic Clip, Magnet
Power Source	2AAA alkaline batteries (included)
Light Visible	304.8 mtr
Safety Approvals	Waterproof IP67, Class 1, Div 1
Dimensions (mm)	L 68.6 x W 66 x H 38
Weight	0.96 kg

Name of Mfr.: KBS Innovations

## 10. Batteries

### Dry Batteries

Pilas Secas 乾電池 干电池

Dependable, long lasting and economical. Leak-proof, used for flashlights, transistor radios, transistor clocks, photo flasher, etc.



Unit Per Pcs.

CODE	Type	ANSI	Volt	Size mm Dia x L	Application
79 24 01	R20P(UM-1)	D	1.5	34.2 x 61.5	Flashlight
02	R14P(UM-2)	C	1.5	26.2 x 50.0	Penlight
03	R6P(UM-3)	AA	1.5	14.5 x 50.5	Meter
10	R03(UM-4)	AAA	1.5	10.5 x 44.5	Remote Controller
04	R1(UM-5)	N	1.5	12.0 x 30.2	TR. Radio
79 24 05	6F22(S-006P)	-	9.0	26.5 x 17.5 x 48.5	Radio
06	FM-3K		1.5	89 x 47.5 x 135	Instrument

### Coin or Button Type Batteries

Batería Tipo Botón コイン・ボタン型電池 硬币或纽扣型电池

Small light weight batteries for wide range of applications; such as flashlights, digital cameras, watches.



Lithium Manganese Dioxide Battery



Silver Oxide Battery



Micro Alkaline Battery

### CR Coin Type

### Lithium Manganese Dioxide Batteries

Pila Tipo modeda de Litio Dióxido de Manganeso

リチウムコイン電池 紐扣式鋰電池

CODE	JIS Type	Size Diam x H mm	Volt	Applications
79 24 15	CR 1216	12.5 x 1.6		
12	CR 1220	12.5 x 2.0		
16	CR 1616	16.0 x 1.6		
17	CR 1620	16.0 x 2.0		
18	CR 2012	20.0 x 1.2		
79 24 19	CR 2016	20.0 x 1.6		
20	CR 2025	20.0 x 2.5		
13	CR 2032	20.0 x 3.2		
27	CR 2320	23.0 x 2.0		
			3.0	Camera/ Keylight

### Button Type

### Silver Oxide Batteries

Pila Tipo Botón de Óxido de Plata 酸化銀電池 氧化銀电池

Unit Per Pcs.

CODE	IEC Type	Size Diam x H mm	Volt	Applications
79 24 28	SR41	7.9 x 3.6		
29	SR43	11.6 x 4.2		
11	SR44 (G-13)	11.6 x 5.4		
30	SR48	7.9 x 5.4		
31	SR55 (SR1120)	11.6 x 2.05		
79 24 32	SR54 (SR1130)	11.6 x 3.05		
33	SR57	9.5 x 2.7		
79 24 34	4SR44	13.0 x 25.1	6.2	

### Micro Alkaline Batteries

Micropila Alcalina アルカリボタン電池 微型碱性电池

Unit Per Pcs.

CODE	IEC Type	Size Diam x H mm	Volt	Applications
79 24 36	LR41	7.9 x 3.6		
37	LR43	11.6 x 4.2		
14	LR44	11.6 x 5.4		
38	LR54 (LR1130)	11.6 x 3.05		
39	LR55 (LR1120)	11.6 x 2.05		
79 24 40	4LR44	13.0 x 25.1	6.0	

### Alkaline Batteries

Pilas Alkalinas アルカリバッテリー 碱性电池

Designed for applications where high-drainage occurs when using tape recorders, motor-drive appliances and photo flash, etc. Alkaline batteries are not rechargeable.



CODE	TYPE	Nominal Voltage	Size mm	
			Diam.	Length
79 24 21	LR20 (AM-1)		34.2	61.5
22	LR14 (AM-2)		26.2	50.0
23	LR 6 (AM-3)	1.5	14.5	50.5
24	LR03 (AM-4)		10.5	44.5
25	LR 1 (AM-5)		12.0	30.2
79 24 26	6LR61 (006P)	9	26.5 x 17.5 x 48.5	

### Lantern Batteries

Pilas para Linterna

ランタンバッテリー 提灯电池

Weatherproof heavy duty 6 volt lantern battery. For use in lanterns, flashers and alarms.

Size: 67 x 67 x 100 mm



79 24 35	Battery lantern 6V	Pcs.
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## Special Dry Batteries

Pilas Secas Especiales 特殊乾電池 特殊干电池

The undermentioned batteries are for use with special instruments such as a Servomex Oxygen Analyser, T.D.S. Meter, and potentiometer, etc.



PP-7

PP-0

HP-1

Unit Per Pc.

CODE	Name	Voltage	Size mm		
			L	W	H
79 24 41	Dry Battery PP-7	9V	46.0	46.0	62.2
42	Dry Battery PP-9	9V	66.0	52.0	81.0
43	Dry Battery HP-1	12V	133.5	68.3	136.5

### Battery Conversion Table

IEC	Volt	ANSI/NEDA (U.S.A.)	EVEREADY	DURACELL	VERTA (German)	JIS (Japan)
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#### Manganese Dry Batteries

R20P	1.5	13C	1050	M13F	2020	R20P (UM-2)
M14P		14C	1035	M14F	2014	R14P (UM-2)
R 6P		15C	1015	M15F	2006	R 6P (UM-3)
R03		24F	912	M24F	239	R03 (UM-4)
R 1		910F	904	M910	245	R 1 (UM-5)
6F22	9	1604D	1222	M9VSHD	3022	6F22 (S-006P)

#### Alkaline Primary Batteries

LR20	1.5	13A	E95	MN1300	4020	LR20 (AM-1)
LR14		14A	E93	MN1400	4014	LR14 (AM-2)
L4 6		15A	E91	MN1500	4006	LR 6 (AM-3)
LR03		24A	E92	MN2400	4003	LR03 (AM-4)
LR1		910A	E90	MN9100	4001	LR 1 (AM-5)

## Rechargeable Batteries

Pilas Recargables 充電式乾電池 充电式干电池

Rechargeable batteries can be brought back to life hundreds of times and are completely sealed and free from leakage. They have good temperature characteristics and superior voltage regulation at either high or low discharge currents. They are the same size as ordinary dry cells but can be employed at a minimum cost and maximum convenience for a wide variety of uses. Necessary recharging time is 14 – 16 hours.



Unit Per Pc.

CODE	IEC Size No.	Nominal Voltage	Size mm		Nominal Capacity at 5 Hrs.	Unit
			Diam	L		
79 24 51	R20	1.2V	34.0	61.5	4,000mAH	Pc.
			26.0	50.0	1,800	Pc.
			14.5	50.5	500	Pc.
79 24 54	R20	1.2V	34.0	61.5	1,200mAH	2's/Pkt
			26.0	50.0	1,200	2's/Pkt
			14.5	50.5	500	4's/Pkt
79 24 57	6F22	9V	49×26×17.5		75	Pc.

## Battery Chargers for Rechargeable Battery

Cargadores de Pila para Pila Recargable 乾電池充電器 充电式干电池

For rechargeable cadmium batteries of IEC size No. R20P (UM-1), R14P (UM-2), R6P (UM-3) and 6F22 (S-006P).



Unit Per Set

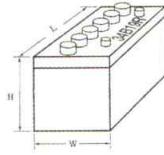
CODE	Input Voltage	Size mm	Weight grm
79 24 71	117		
79 24 72	220		390

## Wet Cell Batteries

Baterias (Acumuladores) 蓄電池 蓄电池

(Ref. JIS D5301-91)

Wet cell batteries for high or low capacity. Specially designed for marine use. 24 hours required for battery charging prior to delivery because the batteries are kept uncharged in stock.



### 12-Volt

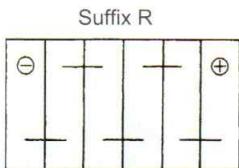
#### How to order: CODE

Battery, wet cell, 12 volt, TYPE, SIZE, AMPERE/5 Hours

Unit Per Set

CODE	Type	Size mm L x W x H	Capacity Amp./ 5Hr	Weight kg	Equivalent Old Type No.
79 25 22	26A 19R	187 x 127 x 162	21	7.5	12N24-3
	30A 19R	187 x 127 x 162	21	7.0	-
	34B 19R	187 x 127 x 203	27	9.5	NS 40ZA
	36B 20R	197 x 129 x 203	28	10.5	NS 40Z
	32C 24R	238 x 135 x 207	32	11.5	N 40
79 25 12	40B 19R	187 x 127 x 202	28	9.0	-
	46B 19R	187 x 127 x 227	36	9.5	-
	46B 24R	238 x 128 x 202	36	11.5	NS 60
	48D 26R	260 x 173 x 204	40	15.5	N 50
	55B 24R	238 x 128 x 202	36	12.5	NX100-S6G
79 25 15	55D 23R	232 x 173 x 202	48	15.0	-
	55D 26R	260 x 173 x 202	48	16.5	N 50Z
	65D 26R	260 x 173 x 204	52	17.0	NS 70
	65D 31R	306 x 173 x 204	56	19.5	N 70
	70B 24R	238 x 128 x 227	46	12.0	-
79 25 17	75D 23R	232 x 173 x 202	52	16.0	-
	75D 26R	260 x 173 x 201	52	17.0	F100-5
	80D 26R	260 x 173 x 201	55	18.5	NX110-5
	85D 23R	232 x 173 x 225	58	15.5	-
	95D 31R	305 x 173 x 202	64	20.5	NX120-7
79 25 40	95E 41R	410 x 176 x 213	80	25.5	N 100
	100E 41R	409 x 175 x 211	80	25.0	-
	110D 26R	260 x 173 x 225	64	18.5	-
	110E 41R	409 x 175 x 211	83	26.0	-
	115E 41R	410 x 176 x 213	88	29.0	NS 120
79 25 42	115F 51	505 x 182 x 213	96	32.0	N 120
	130F 51	504 x 182 x 212	96	29.5	F160-12
	144F 51	505 x 182 x 213	112	36.0	NS 150
	145G 51	508 x 222 x 213	120	40.0	N 150
	155G 51	507 x 222 x 212	120	35.0	-
79 25 50	190H 52	521 x 278 x 220	160	58.0	N 200
	210H 52	520 x 278 x 218	160	60.0	-

Note: Suffix R denotes the position of the + - of the battery terminal as shown below.



## No Suffix

**Maintenance-free Sealed Wet Cell Batteries**

Baterías (Acumuladores Sellados) de Mantenimiento Libre

メンテナスフリー蓄電池 不需维护的密封蓄电池

Needs no maintenance through its life. Each cell is sealed and filled with gelled electrolyte. 24 hours required for battery charging prior to delivery because the batteries are kept uncharged in stock.

**How to order: CODE**

Battery, maintenance-free, wet cell, 12 volt, AMPERE/5 hours,

SIZE

Unit Per Set

CODE	Capacity Amp./5hr	Size mm L x W x H	Weight kg	Model (JIS)
79 25 51	28	197 x 127 x 203	10.0	B20
52	30	197 x 129 x 202	9.5	-
53	36	238 x 129 x 203	12.5	B24
54	55	232 x 173 x 202	17.6	D23
55	58	260 x 173 x 202	18.6	D26
79 25 56	72	303 x 173 x 202	23.2	D31
57	80	410 x 176 x 213	28.1	E41
58	112	505 x 182 x 213	35.7	F51
59	140	508 x 222 x 213	43.0	G51
60	176	521 x 278 x 220	56.7	H52

**Lead-Acid Marine Batteries**

Baterías Marina de Ácido-Plomo 船用鉛蓄電池

船用铅蓄电池

Used on board as an electric source for communication, illumination, emergency equipment, automation, etc.



It is constructed so that it will function even when tilted at a 40° incline because the electrolytes will not spill out.

Unit Per Pcs.

CODE	Type	Voltage	Capacity Ampere Ah/20 hrs	Max. Size mm			Weight kg
				L	W	H	
79 26 31	SS400	2	400	285	170	400	30
32	SS300	2	300	195	170	400	25
33	SS200	4	200	270	170	400	30
34	PS9-6S	6	108	472	133	226	28
35	PS7-6S	6	84	472	133	226	25
79 26 36	PS5-6S	6	60	303	132	226	17

**Maintenance-Free Lead-Acid Marine Batteries**

Pilas navales de ácido plúmico que no necesitan mantenimiento

メインテナスフリー鉛蓄電池 免维护铅酸蓄电池

Maintenance free type Lead-Acid Battery where no topping up is required throughout the battery life. Used on board as an electric source for communication, illumination, emergency equipment, automation, etc.



Require 24 hours for recharging the battery. Recommended operating temperature is 5-30°C

CODE	Type	Voltage	Capacity Ampere Ah/10 hrs	Max. Size mm			Weight kg
				L	W	H	
79 25 92	MSE-150	2	150	106	170	354	12.5
93	MSE-200	2	200	106	170	354	15
94	MSE-300	2	300	150	170	354	21.5

**Battery Chargers**

Cargadores para Bateria バッテリー充電器 充电器

From among various types of battery chargers, the most common type is listed below. Larger or smaller sizes are also available on request.



Unit Per Pcs.

CODE		79 26 51	79 26 53	79 26 52	79 26 54
Output AC Power	Voltage	6 - 75 V	6 - 35 V	6 - 75 V	6 - 35 V
Ampere		15 A	20 A	15 A	20 A
Input DC Power		100 V		200 V	
Ampere		15.0 A	12.0 A	7.5 A	6.0 A
Ah Capacity		10-176 Ah			
Battery	Voltage & Numbers	6V : 1-9 12V : 1-4	6V : 1-6 12V : 1-3	6V : 1-9 12V : 1-4	6V : 1-6 12V : 1-3
Size mm		310 x 400 x 300			
Weight		29 kg	26 kg	29 kg	26 kg

**Battery Hydrometers**

Densímetro para Bateria バッテリー比重計 电池液体比重计

Graduated instrument for monitoring the acid content of batteries.



79 26 61	Hydrometer battery length 250 mm	Pcs.
62	Hydrometer battery length 380 mm	Pcs.

**Battery Syringes**

Jeringas para Bateria バッテリースポイド 电池注射器

P.V.C. tube with rubber bulb.  
Used for refilling battery solution.



79 26 66	Rubber battery syringe 380 mm	Pcs.
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**Battery Terminals**

Terminales de bateria バッテリーターミナル 电池端子

Electrical contacts used to connect a load or charger to a single cell or multiple cell battery. Ensure the correct electrical polarity as the diameters are slightly different.



CODE	Battery Type	Electrode	Type	Unit
79 26 71	B	+	Wing Nut & Bolt Type	Pcs.
72	B	-		
79 26 73	C - H	+	Pcs.	
74	C - H	-		

## 11. Plugs & Receptacles

### Watertight Plugs & Receptacles

Conformed to IEC 309-1 and 309-2

Enchufe y Caja de Contacto (Conforme a IEC 309-1 y 309-2)

IEC 基準適合型防水プラグ・レセプタクル

IEC 标准防水电源插头

Designed to meet IEC (International Electrotechnical Commission) standards and colour coding system. The configurations for plugs and receptacles are single-rated which assures proper mating of devices with the same voltage and amperage. So it is impossible to couple a plug and receptacle of different voltage and/or amperage ratings to avoid causing damage to the equipment or even personal injury. The receptacles with Interlock device eliminate the possibility of making or breaking the circuit under load or making a haphazard connection.

Rated Voltage : 500V

Rated Current : 16/20A

Protection Degree : IP56

#### Position of Ground Contact

Type	Frequency	Rated Operating Voltage	Position of Ground Contact	Colour
(2P+Earth)	50 and 60 Hz	100 to 130V	Clock face position	
		200 to 250V	4 6	Yellow Blue
(3P+Earth)	50 and 60 Hz	200 to 250V	9	Blue
		380 to 415V	6	Red
	60 Hz	440 to 460V	11	Red

#### Plug (Offset Angle) 500V 16/20A

PI2-2B (2P+Earth)



AC 100-130V AC 200-250V

PI2-3B (3P+Earth)



AC 200-250V AC380-415V/  
AC440-460V

#### Plug (Right Angle) 500V 16/20A

PI2-2B1 (2P+Earth)



AC 100-130V AC 200-250V

#### Receptacle 500V 16A

PI2-2 (2P+Earth)



AC 100-130V AC 200-250V

PI2-2-2 (2P+Earth)



AC 100-130V AC200-250V

RI2-3 (3P+Earth)



AC 200-250V AC 380-415V/  
AC 440-460V

#### Receptacle with Interlock Switch 500V 16/20A

RSIL2-2 (2P+Earth)



AC 100-130V AC 200-250V

RSIL2-3 (3P+Earth)



AC 200-250V AC380-415V/  
AC440-460V

#### Receptacle with Switch 250V 16A

RSIL2-22 (2P+Earth)



AC 100-130V AC 200-250V

RSIL2-22 (2P+Earth)



AC 100-130V AC 200-250V

Unit Per P.C.

CODE	No of Pole	Input Voltage	Model	Colour	Rated Capacity
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#### Plug – Offset Angle

79 27 51	2+Earth	AC100 - 130V	PI2-2B	Yellow	AC 500V 16/20A
79 27 52		AC200 - 250V		Blue	
79 27 53	3+Earth	AC200 - 250V	PI2-3B	Blue	
79 27 54		AC380 - 415V/ AC440 - 460V		Red	

#### Plug – Right Angle

79 27 55	2+Earth	AC100 - 130V	PI2-2B1	Yellow	AC 500V 16/20A
79 27 56		AC200 - 250V		Blue	

#### Receptacle

79 27 61	2+Earth	AC100 - 130V	RI2-2	Yellow	AC 500V 16A
79 27 62		AC200 - 250V		Blue	
79 27 65	2+Earth x 2	AC100 - 130V	RI2-2-2	Yellow	
79 27 66		AC200 - 250V		Blue	
79 27 63	3+Earth	AC200 - 250V	RI2-3	Blue	
79 27 64		AC380 - 415V/ AC440 - 460V		Red	

#### Receptacle with Interlock Switch

79 27 71	2+Earth	AC100 - 130V	RSIL2-2	Yellow	AC 500V 16/20A
79 27 72		AC200 - 250V		Blue	
79 27 73	3+Earth	AC200 - 250V	RSIL2-3	Blue	
79 27 74		AC380 - 415V/ AC440 - 460V		Red	

#### Receptacle with Switch

79 27 75	2+Earth	AC100 - 130V	RSI2-22	Yellow	AC 250V 16A
79 27 76		AC200 - 250V		Blue	

## Watertight CEE-Form Plugs and Receptacles and Switch Socket

Tapones y recipientes estancos con forma CEE

防水 CEE 型プラグ・レセプタクル 防水 CEE 型插头、插座

### CEE Male Plugs – AC110V, Yellow Colour

Unit Per Pcs.

CODE	Pole	Amp	H	IP
79 27 59	3	16	4	44
79 27 60		32		
79 27 67		16	6	67



### CEE Female Plugs – AC110V, Yellow Colour

Unit Per Pcs.

CODE	Pole	Amp	H	IP
79 27 68	3	16	4	44
79 27 69		32		
79 27 70		16	4	67



### CEE Male Plugs – AC220V Blue Colour

Unit Per Pcs.

CODE	Pole	Amp	H	IP
79 27 01	3	16	6	44
79 27 02		32		
79 27 03		16		
79 27 04	32	6	67	
79 27 05		63		
79 27 06	4	16	9	44
79 27 07		32		



### CEE Female Plugs – AC230V, Blue Colour

Unit Per Pcs.

CODE	Pole	Amp	H	IP
79 27 77	3	16	6	44
79 27 78		32		
79 27 79		16		
79 27 80	32	6	67	
79 27 81		63		
79 27 82	4	16	9	44
79 27 83		32		



### CEE Male Plugs – AC380V, Red Colour

Unit Per Pcs.

CODE	Pole	Amp	H	IP
79 27 08	4	16	6	44
79 27 09		32		
79 27 10		16		
79 27 11	32	6	67	
79 27 12		63		
79 27 13	5	125		
79 27 14		16	6	44
79 27 15		32		
79 27 16		16		
79 27 17		32	6	67
79 27 18	63			
79 27 19		125		



### CEE Female Plugs – AC380V/400V, Red Colour

Unit Per Pcs.

CODE	Voltage	Pole	Amp	H	IP
79 27 20	4		16	6	44
79 27 21			32		
79 27 22			16		
79 27 23	380		32	6	67
79 27 24			63		
79 27 25	5		125		
79 27 26			16	6	44
79 27 27			32		
79 27 28			16		
79 27 29			32	6	67
79 27 30	63		63		
79 27 31			125		
79 27 84	400	4	16	6	67



### CEE Receptacles – AC110V, Red Colour

Unit Per Pcs.

CODE	Pole	Amp	H	IP
79 27 85	3		16	
79 27 86			32	
79 27 87			16	
79 27 88	3		6	44
			32	67



### CEE Receptacles – AC220V, Blue Colour

Unit Per Pcs.

CODE	Pole	Amp	H	IP
79 27 32	3		16	
79 27 33			32	
79 27 34			16	
79 27 35	4		32	6
79 27 36			63	67
79 27 37	5	16	9	44
79 27 38		32		



### CEE Receptacles – AC380V/400V, Red Colour

Unit Per Pcs.

CODE	Voltage	Pole	Amp	H	IP
79 27 39	4		16	6	44
79 27 40			32		
79 27 41			16		
79 27 42	5		32	6	67
79 27 43			63		
79 27 44	380		125		
79 27 45			16	6	44
79 27 46			32		
79 27 47			16		
79 27 48			32	6	67
79 27 49	400		63		
79 27 50			125		
79 27 89		4	32	3	67



### Switch Sockets – AC110V - 400V, Red Colour

Unit Per Pcs.

CODE	Voltage	Pole	Amp	IP
79 27 90	230		16	
79 27 91			16	
79 27 92			32	
79 27 93	400		16	
79 27 94			32	
79 27 95	110		16	
79 27 96			16	
79 27 97	230		32	
79 27 98			32	
79 27 99	400	4	16	
			32	



## Watertight Plugs & Receptacles Synthetic Resin

Clavijas y Base Estanca/Resina Sintética

船用防水型プラグ・レセプタクル 水密电池及插座

### (Ref. JIS F 8832, 8833)

Watertight type plug and receptacle with earthing contact for use on the circuits of lights and small electric appliances rated 250V or less. Synthetic resin made body will be furnished unless otherwise specified for materials such as cast iron or brass.

### F8832-Plugs



1MA  
(79 28 01)



1MB  
(79 28 02)



Size

2MA  
(79 28 03)2MB  
(79 28 04)

Size

**How to order: CODE**

Plug, watertight, JIS F-8832, TYPES, STRAIGHT or ANGLE, NUMBER of PINS

Unit Per Pcs.					
CODE	Type	Body Material	No. of Pin	Rated Capacity	
79 28 01	1MA	Straight	Synthetic Resin	3	250V 20 Amp
02	1MB	Angle			

Unit Per Pcs.					
CODE	Type	Body Material	No. of Pin	Rated Capacity	
79 28 03	2MA	Straight	Synthetic Resin	4	250V 20 Amp
04	2MB	Angle			

Note: M denotes that the body is made of synthetic resin.  
A denotes straight plug.  
B denotes angle plug.

**F8833-Receptacles**1M  
(79 28 06)2M  
(79 28 07)S1MR  
(79 28 08)**How to order: CODE**

Receptacle, watertight, JIS F 8833, TYPE, NUMBER of PINS, WITHOUT or WITH SWITCH

Unit Per Pcs.					
CODE	Type	Body Material	Switch	No. of Pin	Rated Capacity
79 28 06	1M	Synthetic Resin	Without	3	250V 15 Amp.
79 28 07	2M		Without	4	
79 28 08	S1MR		With	3	125V-DC 5 Amp. 125V-AC 10 Amp. 250V-DC 2 Amp. 250V-AC 5 Amp.

Note: M denotes that the body is made of synthetic resin.  
S denotes the receptacle with a switch.  
R denotes with the internal switch of rotary type...

**Plug & Receptacle Sets**

Regarding aforementioned plug & receptacle, the following combinations are most commonly available.

**How to order: CODE**

Plug & receptacle set, watertight, TYPE of PLUG & RECEPTACLE, NUMBER of PINS

CODE	Combination of		No. of Pin	Unit Per Set
	F8832 Plug Type No.	F8833 Receptacle Type No.		
79 28 11	1MA (Straight)	1M (w/o Switch)	3	
12	1MA (Straight)	S1MR (w Switch)	3	
13	1MB (Angle)	1M (w/o Switch)	3	
14	1MB (Angle)	S1MR (w Switch)	3	
79 28 15	2MA (Straight)	2M (w/o Switch)	4	
16	2MB (Angle)	2M (w/o Switch)	4	

**Spare Interiors for Plug & Receptacle**

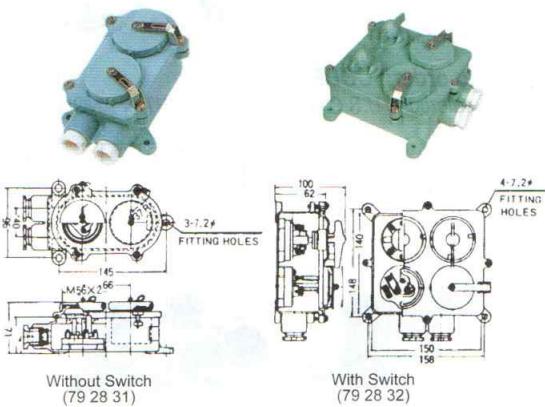
CODE	Interior	For	Pin No.	Applicable Type No.
79 28 21		Plug F8832	3	1MA Straight (79 28 01) 1MB Angle (79 28 02)
79 28 22		"	4	2MA Straight (79 28 03) 2MB Angle (79 28 04)
79 28 23		Receptacle F8833	3	1M without Switch (79 28 06) S1MR with Switch (79 28 08)
79 28 24		Receptacle F8833	4	2M without Switch (79 28 07)
79 28 25		Switch F8833	3	S1MR with Switch (79 28 08)

**Watertight 3-pin Twin Receptacles****Synthetic Resin**

Bases Dobles Estanca de 3-Pin / Resina Sintética

防水 3P 連結型レセプタクル 防水三销插座

Double receptacles to be used with watertight JIS 3 pin plugs.  
Main bodies are synthetic resin.

Without Switch  
(79 28 31)With Switch  
(79 28 32)

CODE	Type	Pins	Rated Capacity
79 28 31	Without Switch	3	250V 15A
79 28 32	With Switch	3	250V AC5A DC2A or 125V AC10A DC5A

Note: Spare interiors of the above are exactly the same as formerly coded items of F8832, F8833.

## Watertight Plug & Twin Receptacle Sets

### Synthetic Resin

Clavija con 3-pin y Base Estanca

防水プラグ & ツインレセプタクルセット 防水三栓插头及插座

Combination of above twin receptacle with  
aforementioned F8832 plugs are as follows.

### How to order: CODE

Plug & twin receptacle set, watertight, TYPE of PLUG &  
RECEPTACLE, NUMBER of PINS

CODE	Combination of		No.of Pin	Unit Per Set
	Plug	Receptacle		
79 28 36	Straight Plug F8832-1MA (79 28 01)	Twin Receptacle without Switch (79 28 31)	3	
79 28 37	"	Twin Receptacle with Switch (79 28 32)	3	
79 28 38	Angle Plug F8832-1MB (79 28 02)	Twin Receptacle without Switch (79 28 31)	3	
79 28 39	"	Twin Receptacle with Switch (79 28 32)	3	

## Watertight 3-pin Plugs & Receptacles

### Cast Iron

### U.S.C.G. R & S Type

Clavija con 3-Pin y Base Estanca/Hierro fundido

Tipo U.S.C.G. ys

米国式防水 3P プラグレセプタクル

美式防水 3P 插头插座

Cast iron receptacle box sealed with synthetic rubber packing  
and brass plug. Rated capacity is 250V, 10 amp. One 6.8  
mm and two 5.3 mm diameter pins on the plug.

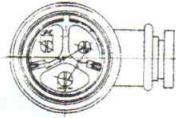
### Plugs



Straight



Angle



### How to order: CODE

Plug, watertight, U.S.C.G. 3-pin, STRAIGHT or ANGLE

Unit Per Pcs.			
CODE	79 28 51	CODE	79 28 52
Type	Straight	Type	Angle

### Receptacles



Without Switch



With Switch

### How to order: CODE

Receptacle, watertight, U.S.C.G. 3-pin, WITHOUT or WITH SWITCH

Unit Per Pcs.			
CODE	79 28 56	CODE	79 28 57
Type	Without Switch	Type	With Switch

## Plug & Receptacle Sets

Above plug & receptacle combination.

### How to order: CODE

Plug & receptacle, watertight, 3-pin, U,S,C,G, R & S type, TYPE of PLUG and RECEPTACLE

CODE	Combination of		Unit Per Set
	Plug	Receptacle	
79 28 61	Straight (79 28 51)	W/o Switch (79 28 56)	
79 28 62	Angle (79 28 52)	"	
79 28 63	Straight (79 28 51)	W/Switch (79 28 57)	
79 28 64	Angle (79 28 52)	"	

## Spare Interiors for 3-pin Plug & Receptacle U.S.C.G. R & S Type

CODE	Interior	For	Pin	Unit Per Pcs.	
				Remark	
79 28 66		Plug	3	U.S.C.G. Straight or Angle Type (79 28 51 or 79 28 52)	
79 28 67		Receptacle	3	U.S.C.G. with or without Switch (79 28 56 or 79 28 57)	
79 28 68		Switch	3	U.S.C.G. Type (79 28 57)	

## Watertight 3-pin Plugs & Receptacles

### with Switch, Type HNA

Clavija con 3-Pin y Base Estanca con Interruptor, Tip HNA

HNA 式防水 3P プラグレセプタクル

HNA 型防水 3P 插头插座

Watertight marine use plug & receptacle with switch. Rated capacity is 250V, 10 amp. Available in cast brass or synthetic resin main body.



Plug

Receptacle with Switch

CODE	Type	Description		Unit
		Synthetic Resin		
79 28 81	HNA	Plug 3 Pin		Pc.
84	"	Plug 3 Pin with Self-locking		"
82	"	Receptacle with Switch 3 Pin		"
83	"	Plug & Receptacle with Switch 3 Pin		Set

Cast Brass				
79 28 86	HNA	Plug 3 Pin		Pc.
85	"	Plug 3 Pin with Self-locking		"
87	"	Receptacle with Switch 3 Pin		"
89	"	Receptacle with Self-locking Switch 3 Pin		"
88	"	Plug & Receptacle with Switch 3 Pin		Set

### Spare Interiors for 3-pin Plug & Receptacle HNA Type

CODE	Interior	For	Pin	Unit Per Pcs.	Remark
79 28 91		Plug	3	UB (79 29 01)	HNA Type (79 28 81 or 79 28 86)
79 28 92		Receptacle	3	I (79 29 05)	HNA Type with Switch (79 28 82 or 79 28 87)
79 28 93		Switch	3	IB (79 29 04)	HNA Type (79 28 82 or 79 28 87)

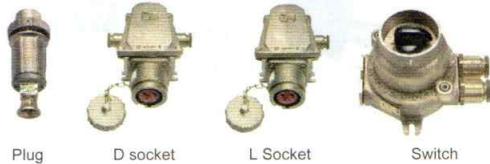


### Explosion Proof Plugs, Sockets and Switches

Enchufes, tomas e interruptores antideflagrantes

防爆型プラグ、ソケット、スイッチ 防爆插头、插座和开关

Brass made, designed to prevent sparks in hazardous environments, ensure safety during electrical connections in potentially explosive atmospheres.



Plug D socket L Socket Switch

#### Specifications

Explosion Protection	Plug/Socket: Zone 1, II2G EEx ed IIC T6/T5 Switch: Zone 21,1, II2G EEx ed IIC T6/T5Gb, II2D Ex tb IIIC T80° Db
IP	Plug/Socket: 56 Switch: 66
Ambient Temperature	Plug/Socket: -40°C up to +40°C: T6/ -40°C up to +55°C: T7 Switch: -40°C up to +55°C
Voltage	Plug/Socket: max 415V, 50/60Hz Switch: max 690V
Rated Current	16A
Switching Capacity	250V/16A: AC 3

Unit per Pcs.

CODE	Description	Voltage	Pole	H
79 28 94	Plug			
79 28 95	D Socket	220 - 250V	3	6
79 28 96	L Socket			
79 28 97	On-Off Switch	690V (max)	-	-

### Non-Watertight Type Plugs & Receptacles

Clavija y Base Tipo No Estanca

船用非防水プラグ及びレセプタクル

船用无防水插头及插座

(Ref. JIS F 8831, 8835)

Non-watertight double pole plug & receptacle with a grounding contact for marine use. Used for lighting fittings and small electric apparatus. Made of phenol resin.

### Non-Watertight "Siemens" Cable Plugs & Receptacles with Earthing Contact

Clavija para Cable y Base No Estanca "Siemens" con Toma-Tierra  
シーメンズ型プラグ・レセプタクル

不防水 "Siemens" 电缆插塞及插座

Phenol resin round 2 pin plug with grounding and side entry for cabling. The pin diameter is 4.8 mm and the distance between pin center is 19.5 mm. Able to connect 250V, 10 amp. DC and 250V, 16 amp. AC.



Plug  
(79 29 21)

Single Receptacle  
(79 29 22)

Double Receptacle  
(79 29 23)

CODE	Description	Unit
79 29 21	Plug, 2 round pin "Siemens"	Pc.
79 29 22	Receptacle single, 2 round pin "Siemens"	Pc.
23	Receptacle double, 2 round pin "	"
79 29 24	Plug & single receptacle, 2 round pin "Siemens"	Set
25	Plug & double receptacle, 2 round pin "	"

### Non-Watertight "Siemens" Distribution Plugs

Clavija Distribución No Estanca "Siemens", 3 Tomas

シーメンズ型三方レセプタクル 不防水 "Siemens" 分配插塞

Combination of 2 round pin plugs with 3 way receptacles. Rated capacity 250V, 10 amp. Made of phenol resin.



79 29 30	Distribution plug "Siemens" phenol resin, 2 round pin	Pc.
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## Non-Watertight "Siemens" Cable Connectors

Clavija y Base Aérea, No Estanco "Siemens"

シーメンズ型電線コネクター "Siemens" 无防水电线接头

Rubber coated phenol resin 2 round pin plug and receptacle. Rated capacity 250V, 10 amp.



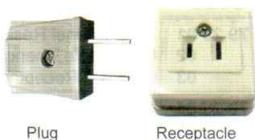
79 29 35	Cable connector "Siemens" phenol resin, 2 round pin	Pr.
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## Non-Watertight 2-Flat Pin Cabin Plugs & Receptacles

### Phenol Resin

Calvija Macho 2 Pin Americana y Base Americana 2 Pin, No Estanco  
防水 2 フラットピンプラグ 无防水室内二平栓插头及插座

Phenol resin 2-flat pin for cabin use plug & receptacle.



CODE	Item	Rating	Unit
79 29 51	Plug, 2 flat pin	125V 15A	Pc.
52	Receptacle	250V 15A	"
53	Plug & receptacle	-	Pr.

## Plug & Receptacle Adaptors

Adaptadores Clavija y Base Europea/Americana

プラグアダプター 插头及插座承接器

Non-watertight plug & receptacle adapters for cabin use. Available various types of adaptors to convert power outlet to other countries when traveling, as shown below.

CODE	External Appearance	Conversion	Rating	Unit Per Pcs.
79 29 61	A Type	B/C/SE → A	10A, 250V	
79 29 62	C Type	A/B/SE → C	10A, 250V	
79 29 54	B Type	A/C/SE → B	10A, 250V	

CODE	External Appearance	Conversion	Rating	Unit Per Pcs.
79 29 55	O Type	A/B/C/SE → O	10A, 250V	
79 29 56	SE Type	A/B/C → SE	10A, 250V	
79 29 57	BF Type	A/B/C/ O/SE/ B3/O2 → BF	13A, 250V	
79 29 58	B3 Type	A/B/C/ O/SE/ BF/O2 → B3	10A, 250V	
79 29 59	O2 Type	A/B/C/ O/SE/ BF/B3 → O2	10A, 250V	
79 29 60	A Type	B/C/O/ SE/BF B3/O2 → A	10A, 250V	

## Multiway Receptacles with Cord and Plug

Receptáculo de Multientrada con Cable y Tapón

電源タップ 多孔插座延長線

Electric receptacles with extension cord for all portable equipments to help you place them in the best indoor locations. Please specify the type of plugs and length of extension cable when ordering.



CODE	Number of Receptacles	Length of Cord	CODE	Number of Receptacles	Length of Cord
European Plug (2 Round Pins)					

79 29 63	2 ways	3 mtr 5 "	79 29 67	4 ways	3 mtr 5 "
64			68		7 "
79 29 65	3 ways	3 mtr 5 "	69		10 "
66			70		

CODE	Number of Receptacles	Length of Cord	CODE	Number of Receptacles	Length of Cord
British Plug (3 Flat Pins)					
79 29 82	2 ways	3 mtr 5 "	79 29 88	4 ways	3 mtr 5 "
83			89		7 "
79 29 84	3 ways	3 mtr 5 "	90		10 "
85			91		

Unit Per Pcs.					
CODE	Number of Receptacles	Length of Cord	CODE	Number of Receptacles	Length of Cord
<b>U.S.A./ Japanese (2 Flat Pins)</b>					
79 29 92 93	2 ways	3 mtr 5 "	79 29 96 97 98 99	4 ways	3 mtr 5 "
79 29 94 95	3 ways	3 mtr 5 "			7 " 10 "
<b>Multi Plug (2 Round/3 Flat/2 Flat Pins)</b>					
79 29 45 46	3 ways	3 mtr 5 "	79 29 49 50	5 ways	3 mtr 5 "
79 29 47 48	4 ways	3 mtr 5 "			

## Cabin Flush Receptacles

Receptáculos empotrados en cabina

埋込コンセント 机舱内の冲洗式插座

Cabin flush receptacles for various pin plugs with U type grounding outlet. Finished with a plastic ivory coloured plate. Able to connect up to 125V, 15 amp.

### How to order: CODE

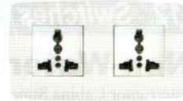
Receptacle, cabin flush, PIN TYPE, NOS OF GANG, AMPERE VOLTAGE

Unit Per Pcs.			
CODE	Series	Pin Type	Rating
79 29 73	1 Gang, 2P + E	JIS	15A, 125V
79 29 07		BS	13A, 240VAC
79 29 08		Schuko	16A, 250VAC
79 29 09		Universal	13A, 250VAC
79 29 74	1 Gang, 2P + E	JIS	15A, 125V
79 29 10		BS	13A, 240VAC
79 29 11		Schuko	16A, 250VAC
79 29 12		Universal	13A, 250VAC

## Cabin Surface Receptacles

Receptáculos de superficie de cabina 露出コンセント 船舱表面垃圾箱

Plastic & bakelite surface receptacle for various pin plug. Can be used as a temporary extension receptacle from the flush receptacle by connecting a cord.



Unit Per Pcs.			
CODE	Series	Pin Type	Rating
79 29 76 77 78 79	1 Gang, 2P + E	1 Gang, 2P + E	125V, 15A
		2 Gang, 2P + E	
		3 Gang, 2P + E	
		4 Gang, 2P + E	
79 29 13 14	BS	1 Gang, 2P + E 2 Gang, 2P + E	13A, 240VAC
79 29 15 16	Schuko	1 Gang, 2P + E 2 Gang, 2P + E	16A, 250VAC
79 29 17 18	Universal	1 Gang, 2P + E 2 Gang, 2P + E	13A, 250VAC

## 2-Flat Pin 3 Way Receptacles

Clavija Americana Ladrón 3 Tomas

三方レセプタクル 2 平销 3 向插座

2 flat pin 3 way receptacle with a one way plug. Rated capacity is 125V, 10 amp.

79 29 81	2 flat pin 3 way receptacle with one way plug	Pc.
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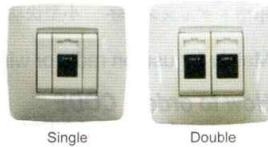
## Data Sockets

Salida para cables de comunicación

通信ケーブル用コンセント 通信电缆插座

### CAT 6. Data Sockets for Lan Cable

Flush type CAT 6. Data socket for LAN cables. Available in single or double socket.



Single      Double

Unit Per Pcs.

CODE	Type	Socket No.	Size mm	
			H	W
79 29 26 27	Flush Socket	Single Double	89.9	89.9

## USB Outlet Sockets

Flush type double USB outlet socket. 110-240 VAC, 5 VDC, 2.1A.



79 29 28	USB double outlet socket, 110-240 VAC	Pc.
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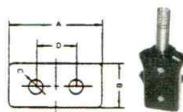
## Iron Plugs

Clavijas para Plancha アイロン用プラグ 电熨斗插头

Heat resistant synthetic resin plugs. Furnished in a round pin type.

### How to order : CODE

Iron plug, VOLTAGE, AMPERE



Unit Per Pcs.

CODE	Rating		Size mm			
	Voltage	Ampere	A	B	C	D
79 29 86 87	250	6 15	30 40	15 20	6 7	15 20

## 12. Switches

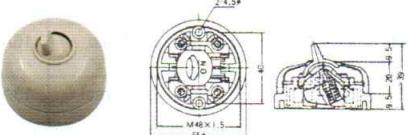
### Non-Watertight Snap Switches

Interruptor Cabina Superficie Redondo, No Estanco

船用非防水型小型スイッチ 不防水快动开关

(Ref. JIS F 8840)

Non-watertight type snap switches with toggle type knob used for circuits, light fittings and small electric fittings. The rated voltage is 250V or less, DC10A and AC20A or less. Made of phenol resin. T denotes Toggle Knob type.



**How to order: CODE**

Snap switch, non-watertight, TYPE, NUMBER of POLES, SIZE, RATED CAPACITY

CODE	Type	No. of Pole	Size mm		Rate Capacity			Unit Per Pcs.		
			D	H	V		Ampere		DC	AC
					125	5	10	250		
79 30 01	1T	2	56	30	125	5	10	250	2	5
79 30 02	2T	2	64	40	125	10	20	250	5	10

### Small Snap Switches

Interruptores de Bola

小型トグルスイッチ 小型快动开关

Mainly for use on radio or wireless operations.

**How to order: CODE**

Snap switch, TYPE of CIRCUIT, RATED CAPACITY



Unit Per Pcs.

CODE	Circuit		Rated Capacity	Action	Case Size mm			Unit Per Pcs.
	Pole	Throw			L	W	D	
79 30 06	2	1	AC125V, 5A	ON-OFF	27.8	17.6	22.9	
07	2	2	AC125V, 5A	ON-OFF	27.8	17.6	22.9	
08	1	1	AC125V, 3A	ON-OFF	25.5	13.2	15	
09	2	1	AC125V, 25A	ON-OFF	33.2	19	25.1	

### Marine Watertight Type Small Rotary Switches

Interruptores Estanco Polia-Mida

船用防水小型スイッチ 船用防水小型转动式开关

(Ref. JIS F 8841)

Watertight small switch used on board for lighting and small electric fittings of a rated voltage 250V or less.

Made of synthetic resin and cast iron. Single switch with one inlet and outlet gland.



**How to order: CODE**

Rotary switch, watertight, TYPE, NUMBER of POLES, SIZE, RATED CAPACITY

CODE	Type	No. of Pole	Size mm			Rated Capacity		
			D	P	H	V	DC	AC
						125	5	10
79 30 14	1R		74	110	68	250	2	5
						125	5	10
70 30 15	1MR		84	120	78	250	2	5
						125	10	20
70 30 16	2R		84	120	78	125	10	20
						250	5	10
70 30 17	2MR							

Remark: Symbol R indicates Cast Iron Rotary Switch.

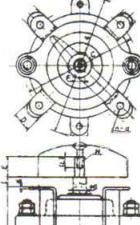
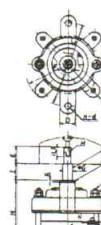
Symbol M indicates that the body cover and handle are synthetic resin.

### Rotary Switches

Commutadores 回転スイッチ 船用转动式开关

(Ref. JIS F8845-1996)

Marine rotary switches used to change over the resistance circuit, lamp circuit and indication circuit (excluding electric motors) in electric apparatus.



R1, R2

R3, R4

**How to order: CODE**

Rotary switch, TYPE of CIRCUIT, NUMBER of POLES, SIZE, RATED CAPACITY

CODE	Type	Switch Rotating Angle	Circuit	No. of Pole	Unit Per Pcs.	
					Voltage	Amp
79 30 28	R1		Off	1 - 8	AC, DC 250	6
					AC, DC 125	12
			On	1 - 8	AC, DC 250	10
					AC, DC 125	20
79 30 46	R3		60°	1 - 6	AC, DC 250	30
					AC, DC 125	45
79 30 54	R4			1 - 4	AC, DC 250	60

Remarks: The symbol of Type R denotes the rotary switch, and classified into R1, R2, R3, and R4 according to the rated capacity of the switch.

### Cabin Flush Toggle Switches

Interruptores Empotrables de Cabina

埋込トグルスイッチ 室内埋式纽扣开关



Available in single and double type with phenol resin plate.

CODE	Switch No.	Size mm			Rated Capacity
		H	W	D	
79 30 61	Single	115	82	48	125V DC5A AC 10A or 250V DC2A AC5A
	Double	115	144	48	

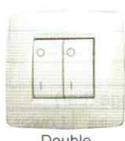
### Cabin Switches

Interruptores de cabina キャビンスイッチ 机舱开关

Available in single and double type with phenol resin plate.



Single



Double

Unit Per Pcs.

CODE	Type	Switch No.	Size mm		Rated Capacity
			H	W	
79 30 63 64	Flush Switch	Single Double	89.9	89.9	250V, 16A 2 Poles
79 30 65 70	Surface Switch	Single Double	89.9	89.9	

## Push Button Switches

### Non-Watertight

Pulsadores de Pared Marcha /Paro  
船用押ボタン 用于船舶的按钮

(Ref. JIS F 8503)

Used for intercommunication and alarm systems on board.  
Made of phenol resin.

Rating capacity: 125V, 1 amp.  
250V, 0.5 amp.



1S



1FA-1FB



2S

Unit Per Pcs.

CODE	Type	Size mm				Remark
		Flush Depth	Φ	L	W	
79 30 66	1S	56				
67	1FA	36				Non Watertight
68	1FB	43		115	72	
79 30 69	2S	70				Watertight

Remark: Type 1 denotes non-watertight type.

Type 2 denotes watertight type.

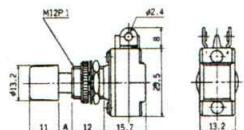
S denotes surface type, Type FA flush type of 36 mm in depth, Type FB flush type of 43 mm in depth.

FB denotes surface type, Type FA flush type of 36 mm in depth, Type FB flush type of 43 mm in depth.

## Small Push Button Switches

Pulsadores Bola 小型押ボタンスイッチ 小型按扭开关

Push button switches for cabin use. Non-watertight. Rating capacity AC 125V 3 amp. or AC 250V 1.5 amp.



79 30 74

Switch, push button, non watertight on-off, case size 13.2 x 25.5 x 15.7 mm

Pcs.

## Push Button Switches

Pulsadores プッシュスイッチ 按钮开关

ABS resin outer casing surface switch for use as an on-off switch for motors, etc.

(How to order: CODE

Push button switch, TYPE of FITTING, RATING



CODE	Rating	Applicable Motor Capacity			Outer Size mm L x W x D
		Phase	V	KW	
<b>Surface Type</b>					
79 30 76	2P 15A	1Φ	110	0.4	80 x 38 x 40
79 30 77	3P 15A	3Φ	220	2.2	80 x 38 x 40
79 30 78	2P 30A	1Φ	110	0.75	90 x 45 x 44
79 30 79	3P 30A	3Φ	220	3.7	90 x 45 x 44
<b>Weather Proof Type</b>					
79 30 81	2P 15A	1Φ	110	0.4	162 x 66 x 74
79 30 82	3P 15A	3Φ	220	2.2	162 x 66 x 74
79 30 83	3P 30A	3Φ	220	3.7	186 x 80 x 74

## Push Button Switches for Hoist

Botonera para Polea

ホイスト用プッシュスイッチ 吊车用按扭开关

Weather proofed suspension type switch made of ABS resin. Motor direct control and indirect control with AC starter types are available.

**How to order: CODE**Push button switch for hoist, TYPE of CONTROL,  
BUTTON NUMBERS

Unit Per Pcs.

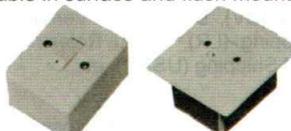
Type	Direct Control	Indirect Control	
CODE	79 30 85	79 30 86	79 30 88
Button Nos.	2	6	2
Operation	Up Down	Up Down 4 Quarters	Up Down
Rating	3Φ200/220V 400/440V 2.2KW		250V 5A 500V 2A
Applicable Cable Size mm	15.4 - 16.6	14.3 - 15.5	11.4 - 12.6
			17.2 - 18.4

## Non-Watertight Seesaw Switches

Interruptores de Vaiven Antiherméticos

シーソースイッチ 无防水跷板式开关

Synthetic resin cabin seesaw switches. Non-watertight. Available in surface and flush mounted types.



Surface



Flush

Unit Per Pcs.

CODE	Type	Rating	Size mm
79 30 91	Single Surface	250V 10A	65 x 52 x 39
92	Single Flush		89 x 82 x 53
93	Double Flush		132 x 39 x 51

## Dimmer Switches

Regulador Luz o Filtro Amortiguador

ディマースイッチ 減光器开关

For adjusting the lights of the incandescent lamp from bright to candle glow without flickering or steps.

When ordering, please specify the power source voltage and wattage of the applicable lamp.

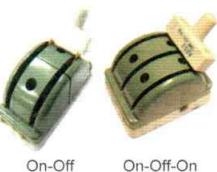
**How to order: 79 - 30 - 96**

Dimmer switch, power source voltage, wattage of the lamp (Pcs.)

## Knife Switches

Interruptores de Cuchilla ナイフスイッチ

Porcelain and synthetic resin rating 30 to 100 amperes, AC 250 volts. Used for switchboards, testing equipment, battery insulation, welders, etc., where no heavy duty service is required.



On-Off      On-Off-On

### How to order: CODE

Knife switch, NUMBER of POLES, TYPE, AMPERE

Unit Per Pcs.

2-Pole				3-Pole			
CODE	Type	Amp	Fuse	CODE	Type	Amp	Fuse
79 31 01	On-Off-On	30	No Fuse	79 31 06	On-Off-On	30	No Fuse
02	"	60	"	07	"	60	"
03	On-Off	30	Fusible	08	On-Off	30	Fusible
04	"	60	"	09	"	60	"
05	"	100	"	10	"	100	"

## Pressure Switches

Presostatos 壓力スイッチ 压力开关

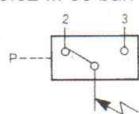
For opening or closing circuit at a set point within the adjusting range, operated by increasing or decreasing pressure. There are models actuated by diaphragm, piston, etc. The most common models are described below for your reference. Please ask for further information and brochures of various manufacturers and models available from local suppliers when required.



Switching function:  
Microswitch SPDT  
Terminals 1-3: Contacts close on rising pressure  
Terminals 1-2: Contacts open on rising pressure

### Diaphragm Actuated

For neutral gaseous and liquid fluids. Switching pressure range 0.02 ... 30 bar.



- Pressure switches for air, gas, water, hydraulic oil, lubricating oil, light fuel oil.
- Working viscosity up to 1,000 mm<sup>2</sup>/s.

Small size and preferred for pressure monitoring. Sealed design permits setting of differential switching points during operation without tools. Approved by shipping authorities, including, Bureau Veritas (BV), Det Norske Veritas (DNV), Lloyd's Register of Shipping (LR), Polski Rejestr Statków (PRS), USSR Register of Shipping (USSR), etc..

Repeatability

±2%

Switch Element

Microswitch

Protection Class

IP64

Ambient Temperature

-10 to + 80°C

Fluid Temperature

0 to +80°C

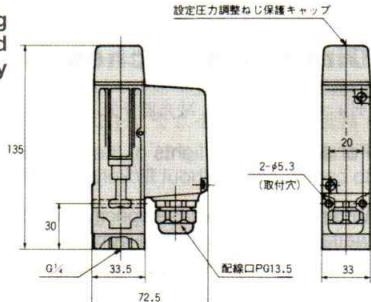
Max. Temperature at Switching Element

+80°C

Mounting Position

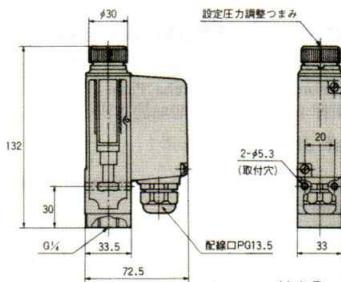
Optional

### Setting of switching point by allen head screw protected by plastic cover



CODE	79 31 51	79 31 52	Unit Per Pcs.
Type No.	0820150	0820750	
Adjustable Range (bar)	0.2 to 12	0.5 to 30	
Switching Pressure	Lower Range	0.9	1
Difference (bar)	Upper Range	1.4	2
Max. Allowable Pressure (bar)		50	
Switching Cycles/Minutes		Max. 60	
Pressure Sensor	Housing	Aluminium	
Materials	Seal	NBR (Perbunan)	
Type of Connection		Internal thread	
Connection		G 1/4	
Total Weight (kg)		0.4	
Name of Mfr.		Herion-Werke KG	

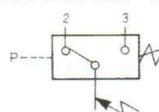
### Setting of switching point by scaled rotary button



CODE	79 31 53	79 31 54	Unit Per Pcs.
Type No.	0820160	0820760	
Adjustable Range (bar)	0.2 to 12	0.5 to 30	
Switching Pressure	Lower Range	0.9	1
Difference (bar)	Upper Range	1.4	2
Max. Allowable Pressure (bar)		50	
Switching Cycles/Minutes		Max. 60	
Pressure Sensor	Housing	Aluminium	
Materials	Seal	NBR (Perbunan)	
Type of Connection		Internal thread	
Connection		G 1/4	
Total Weight (kg)		0.4	
Name of Mfr.		Herion-Werke KG	

### Piston Actuated

For neutral gaseous and liquid fluids. Switching pressure range 0.02 ... 30 bar. With soft seal, no leakage.



Switching function:  
Microswitch SPDT  
Terminals 1-3: Contacts close on rising pressure  
Terminals 1-2: Contacts open on rising pressure

- For oil-treated compressed air, hydraulic oil and other fluids with good antifriction properties (state kind of fluid).
- Working viscosity up to 1,000 mm<sup>2</sup>/s.

Small design and provided with scale for easy adjustment of switching points even during operation. Design with glydring seal for application in temperatures below 0 °C. Approved by shipping authorities, including Bureau Veritas (BV), Det Norske Veritas (DNV), Lloyd's Register of Shipping (LR), Polski Rejestr Statków (PRS), USSR Register of Shipping (USSR), etc..

Repeatability

±2%

Switching Element

Microswitch

Protection Class

IP 54

Ambient Temperature

0 to +80°C

(Grooved ring seal)

-20 to 80°C (Glydring seal)

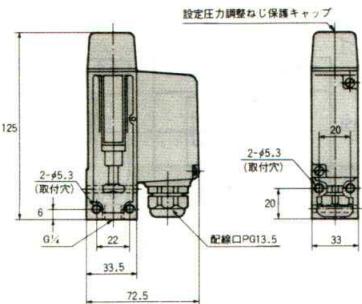
0 to 80°C

+80°C

Urgent

Fluid Temperature  
Max. Temperature at Switching Element  
Mounting Position

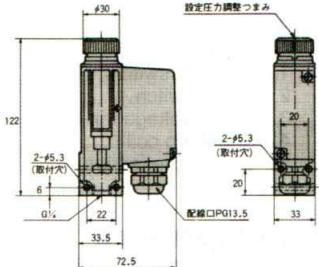
Switching pressure difference not adjustable. Setting of switching point by screw with hex. recessed hole protected by plastic cover.



Unit Per P.c.

CODE	79 31 56	79 31 57
Type No.	0821051	0821050
Adjustable Range (bar)	5 to 70	10 to 160
Switching Pressure Difference (bar)	Lower Range 7 Upper Range 12	9 18
Max. Allowable Pressure (bar)	250	
Switching Cycles/Minutes	Max. 20	
Pressure Sensor Materials	Housing Aluminium Seal NBR (Perburunan) Piston Stainless Steel	
Type of Connection	Inteerrnal thread	
Connection	G 1/4	
Total Weight (kg)	0.4	
Name of Mfr.	Herion-Werke KG	

Setting of switching point by scaled rotary button



Unit Per P.c.

CODE	79 31 58	79 31 59
Type No.	0821061	0821060
Adjustable Range (bar)	5 to 70	10 to 160
Switching Pressure Difference (bar)	Lower Range 7 Upper Range 12	9 18
Max. Allowable Pressure (bar)	250	
Switching Cycles/Minutes	Max. 20	
Pressure Sensor Materials	Housing Aluminium Seal NBR (Perburunan) Piston Stainless Steel	
Type of Connection	Inteerrnal thread	
Connection	G 1/4	
Total Weight (kg)	0.4	
Name of Mfr.	Herion-Werke KG	

## 13. Circuit Breakers & Transformers

### Switching Power Supplies

Interruptores de Suministro de Energía パワーソース 压力开关

For supplying a stabilized power source converting from AC100 volt or AC200 volt to weak DC voltage, and suitable for use as power sources in the control panel for valve operation, etc. Available output power ranges from 10 watt to 600 watt.



CODE	Model	Output Volt & Amp	Input Voltage	Size mm W × L × H	Weight grm
<b>Power 15 watt</b>					
79 32 11	HWS15A-5/A	DC 5V, 3A	AC85-265V	26.5×82×80	160
12	HWS15A-12/A	DC12V, 1.3A	AC85-265V	26.5×82×80	160
13	HWS15A-15/A	DC15V, 1A	AC85-265V	26.5×82×80	160
14	HWS15A-24/A	DC24V, 0.65 A	AC85-265V	26.5×82×80	160
<b>Power 50 watt</b>					
79 32 31	HWS50A-5/A	DC 5V, 10A	AC85-265V	26.5×82×120	260
32	HWS50A-12/A	DC 12V, 4.3A	AC85-265V	26.5×82×120	260
33	HWS50A-15/A	DC 15V, 3.5A	AC85-265V	26.5×82×120	260
34	HWS50A-24/A	DC 24V, 2.2A	AC85-265V	26.5×82×120	260
35	HWS50A-48/A	DC 48V, 1.1A	AC85-265V	26.5×82×120	260
<b>Power 75 watt</b>					
79 32 41	HWS80A-5/A	DC 5V, 16A	AC85-265V	28x82x160	420
42	HWS80A-12/A	DC 12V, 6.7A	AC85-265V	28x82x160	420
43	HWS80A-15/A	DC 15V, 5.4A	AC85-265V	28x82x160	420
44	HWS80A-24/A	DC 24V, 3.4A	AC85-265V	28x82x160	420
45	HWS80A-48/A	DC 48V, 1.7A	AC85-265V	28x82x160	420
<b>Power 100 watt</b>					
79 32 51	HWS100A-5/A	DC 5V, 20A	AC85-265V	28x82x160	420
52	HWS100A-12/A	DC 12V, 8.5A	AC85-265V	28x82x160	420
53	HWS100A-15/A	DC 15V, 7A	AC85-265V	28x82x160	420
54	HWS100A-24/A	DC 24V, 4.5A	AC85-265V	28x82x160	420
55	HWS100A-48/A	DC 48V, 2.1A	AC85-265V	28x82x160	420
<b>Power 150 watt</b>					
79 32 62	HWS150A-5/A	DC 5V, 30A	AC85-265V	37x82x160	470
63	HWS150A-12/A	DC 12V, 13A	AC85-265V	37x82x160	470
64	HWS150A-15/A	DC 15V, 10A	AC85-265V	37x82x160	470
65	HWS150A-24/A	DC 24V, 6.5A	AC85-265V	37x82x160	470
<b>Power 300 watt</b>					
79 32 82	HWS300-5	DC 5V, 60A	AC85-265V	61x82x165	1,000
83	HWS300-12	DC 12V, 27A	AC85-265V	61x82x165	1,000
84	HWS300-15	DC 15V, 22A	AC85-265V	61x82x165	1,000
85	HWS300-24	DC 24V, 14A	AC85-265V	61x82x165	1,000
86	HWS300-48	DC 48V, 7A	AC85-265V	61x82x165	1,000
<b>Power 600 watt</b>					
79 32 92	HWS600-5	DC 5V, 120A	AC85-265V	100x82x165	1,600
93	HWS600-12	DC 12V, 53A	AC85-265V	100x82x165	1,600
94	HWS600-15	DC 15V, 43A	AC85-265V	100x82x165	1,600
95	HWS600-24	DC 24V, 24A	AC85-265V	100x82x165	1,600
96	HWS600-48	DC 48V, 13A	AC85-265V	100x82x165	1,600

## Circuit Breakers

Interruptores automáticos サーキットブレーカー 断路器

Used for the protection of circuits and electrical equipment. Capable of starting or halting current automatically to avoid damage to equipment due to circuit overload or short circuits.

Circuit breakers are mainly classified and selected according to rated current and rated breaking capacity of the circuit and where it is used.

The following matters should be specified when ordering circuit breakers.

### 1. Manufacturer name and model number.

With this information the rated breaking capacity of the circuit can be found.

### 2. No. of poles:

- a) 2 pole (Usually used with branched circuits)
- b) 3 pole (Usually used for marine circuits)
- c) 4 pole (Usually used in industrial plants)

### 3. Frame size:

ex. 30A, 50A, 100A, 225A, 400A, 600A.

If the type or model number is understood, this information will not be necessary.

### 4. Rated current (Trip current)

This current value is usually smaller than the frame size.

ex. Frame size	Rated current
30A	10A, 15A, 20A, 30A
50A	10A ~ 50A
60A	10A ~ 60A
100A	10A ~ 100A

If the breaker is only instantaneous trip type, the value of the instantaneous trip current should be specified.

## 5. Method of mounting

### a) Front connected type (FC)

- Cable or busbars are connected directly to the terminal or breaker from the front side and the breaker is fitted directly to the rear iron frame.
- This type is seldom used for marine use. This type may only be used with a branch circuit and is not usually used in Main Switchboards.
- Normally used for industrial purposes.

### b) Rear-connected type (RC)

- Cable or busbars are connected directly to the rear terminal or the breaker on the rear side. This type cannot be fitted directly to the front side because the breaker is fitted directly to the rear iron frame.
- This type is seldom used for marine use but is still used more often than the Front - connected type.

### c) Plug in type (PM)

Cable or busbars are connected to the mounting base of the breaker, not directly to the breaker. In this way, the breaker itself can be removed from the mounting base without disconnecting the cable or busbars. This type is therefore most used for marine purposes.

## 6. Accessories

Accessories are sometime fitted to the breaker depending on the systems and functions of the equipment they are used in.

### 1. Auxiliary switch (Ax. Sw.)

Auxiliary switch opens or closes corresponding to the opening or closing of the circuit breaker. If the auxiliary switch is fitted in the breaker, the following information is required when ordering.

- One normal open contact
- One normal closed contact
- One normal and closed common contact
- Two normal open contacts
- Two normal closed contacts
- Two normal and closed common contacts

### 2. Alarm switch (Al. Sw.)

Alarm switch opens or closes when the breaker trips.

If the alarm switch is fitted to the breaker, the following-information is required when ordering.

- one normal open contact
- one normal closed contact
- others (Please specify how many open or closed contacts there are)

### 3. Under voltage trip coil

When the circuit voltage to the breaker is insufficient, the breaker trips automatically.

If the under voltage trip coil is fitted to the breaker, information about the voltage and frequency to the coil itself is needed:

AC or DC \_\_\_\_\_ V, \_\_\_\_\_ Hz.

### 4. Shunt trip coil

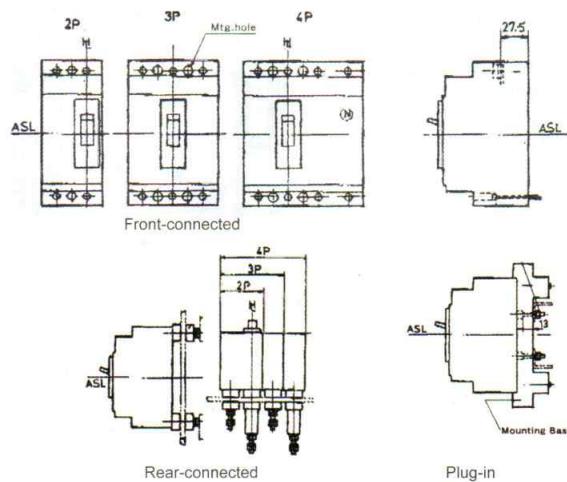
The breaker trips by means of energizing the voltage to the shunt coil.

If the shunt coil is fitted to the breaker, information about the voltage and frequency to the coil itself is needed:

AC or DC \_\_\_\_\_ V, \_\_\_\_\_ Hz.

### 5. Other accessories

Accessories other than those listed above in lines 1~4 are sometimes fitted to the breaker. In such cases information about the name and type/model no. of the accessories is required when ordering.



## How to order: 79 - 31 - 61

Circuit Breaker with the following information:

- 1) Type of model number ..... TO-100BA
- 2) No. of poles ..... 3 pole
- 3) Frame size ..... 100A
- 4) Rated current ..... 75A
- 5) Method of mounting ..... plug in type  
Please specify whether the mounting base is necessary, or not.
- 6) Accessories
  1. Auxiliary switch ..... one normal open
  2. Alarm switch ..... NIL
  3. Under voltage trip coil ..... necessary AC440V, 60Hz
  4. Shunt trip coil ..... NIL
  5. Other accessories ..... NIL

## Transformers

Transformadores 変圧器 变压器

### Two Way

Transformadores de dos vías 両用型变压器

双向变压器

A compact, high efficiency 2-way volt converter. Appropriate for use with electrical house appliances.



## How to order: CODE

Transformer, PRIMARY VOLTAGE and SECONDARY VOLTAGE, AMPERE

Unit Per Pcs.

CODE	Input-Output	Capacity	Ampere	
			Up	Down
79 33 01		100VA	0.5	1
02	110V-220V	200VA	1.0	2
03	or	300VA	1.5	3
04	220V-100V	500VA	2.5	5
05		1KVA	5.0	10

## Step Down for Travel use

Step Down para viajes

旅行用ステップダウントランسفォーマー

旅行用降压型

A voltage converter designed for use of 100 volt appliances in countries with 220-240 volt current. The converter has A type 2-flat pins for inlet plug and outlet receptacle. Please mention if other types of plug or receptacle are necessary depends on your plug type of the apparatus and your receptacle type where it is used.



CODE	Model	Max. Output Wattage for Primary AC Voltage		Size mm W x H x D	Weight gm	Unit Per Pcs.	
		110V-130V	220V-240V				
79 33 21	WT-71M	75W	30W	54 x 82 x 55	380		
22	WT-72M	120W	75W	65 x 110 x 62	700		
23	WT-73M	240W	100W	65 x 110 x 62	770		
24	WT-74M	300W	200W	80 x 120 x 68	1,250		
79 33 25	WT-75M	50W	35W	58 x 92 x 30	285		
26	WT-77M	140W	110W	95 x 142 x 30	750		

Name of Mfr.: Kashimura Co., Ltd.

### Step Up/Down Transformers for Home Appliances

Transformadores Evadore/Reductores para Electrodomésticos

家電用アップダウントランクスフォーマー

升圧 / 降圧変圧器 家用电器



A voltage converter designed for use of 100 volt appliances in countries with 220-240 volt current, or 220-240 volt appliances in countries with 100 volt. The converter has A type 2-flat pins single inlet plug and 2 pairs of multi type (for A type 2-flat pins and C type round pins) outlet receptacles. Please mention if other types of plug or receptacle are necessary depends on your plug type of the apparatus and your receptacle type where it is used.

Unit Per Pcs.

CODE	Model	Max. Output Wattage for Primary AC Voltage		Size mm W x H x D	Weight kg	Unit Per Pcs.	
		110V	220V-240V				
79 33 31	WT-11EJ	550W	550W	125 x 100 x 165	3.6		
32	WT-12EJ	1,000W	1,000W	125 x 100 x 165	4.5		
33	WT-13EJ	1,500W	1,500W	134 x 110 x 175	6.0		
34	WT-14EJ	1,500W	2,000W	145 x 110 x 200	7.1		
35	WT-15EJ	1,500W	3,000W	182 x 134 x 240	11.0		

Name of Mfr.: Kashimura Co., Ltd.

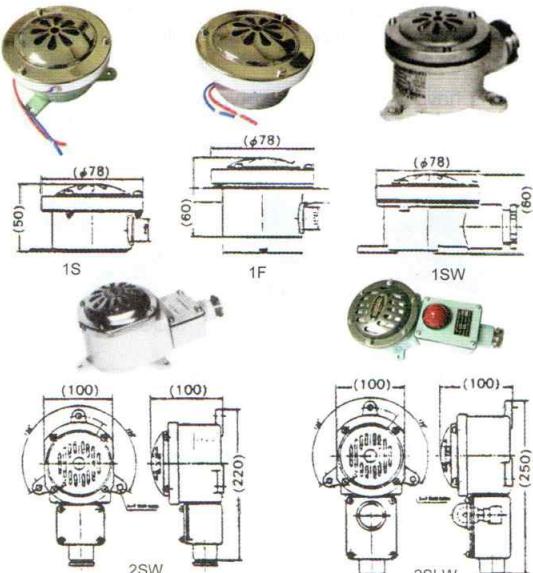
### 14. Buzzers & Bells

#### Marine Electric Alarm Buzzers

Sirenas Eléctrica Marina 船用ブザー 船用报警器

(Ref. JIS F 8502)

For emergency or engineer alarm signalling. Used where noise levels or acoustic properties can not be covered with ordinary signals. The mechanism is enclosed inside the housing. Available for DC or AC.



#### How to order: CODE

Alarm buzzer, CURRENT, TYPE, RATED VOLTAGE, REMARK

Unit Per Pcs.

CODE	Type	Rated Voltage	Sound level dB	Remark
For DC Current				
79 34 01	1S		80	Surface Mounting
79 34 02	1F		80	Flush Mounting
79 34 03	1SW		80	Surface Mounting and Waterproof
79 34 04	2SW		90	Surface Mounting and Waterproof
79 34 05	2SLW		90	Surface Mounting and with Pilot Lamp

#### For AC Current

79 34 11	1S	110		Surface Mounting
79 34 12		220		
79 34 13	1F	110		Flush Mounting
79 34 14		220		
79 34 15	1SW	110		Surface Mounting
79 34 16		220		Waterproof
79 34 17	2SW	110		Surface Mounting
79 34 18		220		Waterproof
79 34 19	2SLW	110		Surface Mounting
79 34 20		220		Waterproof with Pilot Lamp

Remark: 1. The type is classified in to 1 and 2 in accordance with sound level.

2. Type symbol S denotes surface mounting type, F, flush mounting type, L, buzzers with lamp, W, waterproof construction.

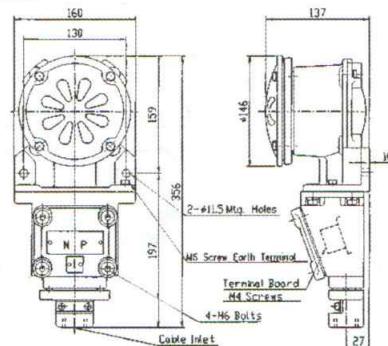
#### Alarm Buzzers

##### Explosion-proof Type

Sirenas/Tipo Antideflagrante

防爆型船用ブザー

警报蜂鸣器



Alarm buzzers suitable for use in hazardous areas, such as confined spaces and where explosive gas is a potential danger. Type of explosion-proof enclosure conforms to JIS C-0903 d2G4.

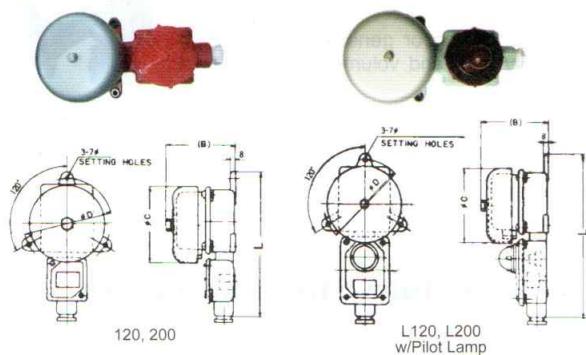
CODE	Model	Voltage	Capacity	Loudness	Weight
79 34 27 28	BXS-50-C	AC 100V AC 200V	50 VA	95 dB	11.5 kg

#### Marine Electric Alarm Bells

Alarmas de Campana Eléctricas 船用ベル 船用防水警铃

(Ref. JIS F8501-1983)

Watertight type electric bells used for signalling and warning aboard ships.



**How to order: CODE**

Alarm bell, TYPE, RATED VOLTAGE, WITHOUT or WITH PILOT LAMP

CODE	Type	Rated Voltage	Sound level dB	Unit Per Pcs.	
				Bell Ø	Overall L
<b>Without Pilot Lamp</b>					
79 34 31	120	DC-22	85	120	
79 34 32	200		95	200	
79 34 33		AC-110			
79 34 34	120	AC-220	85	120	230
79 34 35					
79 34 36	200	AC-110	95	200	
		AC-220			
<b>With Pilot Lamp</b>					
79 34 41	L120	DC-22	85	120	
79 34 42	L200		95	200	
79 34 43		AC-110			
79 34 44	L120	AC-220	85	120	265
79 34 45					
79 34 46	L200	AC-110	95	200	
		AC-220			

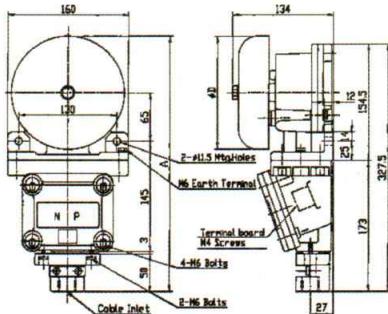
Remark: Type symbol L denotes with pilot lamp.

**Alarm Bells****Explosion-proof Type**

Alarma de Campana/Tipo Antideflagrante

防爆型ベル 警铃

Alarm bells suitable for use in hazardous areas, such as confined spaces and where explosive gas is a potential danger. Type of explosion-proof enclosure conforms to JIS C-0903 d2G4.



Unit Per Pcs.

CODE	Model	Voltage	Capacity	Loudness	Weight
79 34 51 52	BX-10C	AC 100V AC 200V	22 VA 8 VA	80 dB	5 kg
79 34 53		DC 24V			
79 34 54 55	BX-15C	AC 100V AC 200V	22 VA 8 VA	85 dB	5.5 kg
79 34 56		DC 24V			
79 34 57 58	BX-20C	AC 100V AC 200V	22 VA 8 VA	87 dB	6 kg
79 34 59		DC 24V			

**Watertight Electric Horns**

Conectores para Cable de Saldadura

防水電動ホーン 焊接电缆接头

For fast coding or general alarms. High intensity tone and volume. Made of cast aluminium.



Unit Per Pcs.

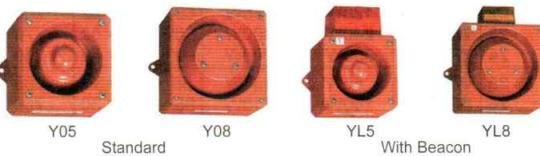
CODE	Voltage	Size mm		Weight kg
		Trumpet Ø	Overall L	
79 34 61	DC- 22V			
62	AC-110V	100	420	1.6
63	AC-220V			

**Marine Multi-Stage Sounders**

Sondas marinas multietapa

船用多段階サウンダー 船用多级测深仪

Industrial multi-stage alarms in several sound level, each stage is determined by a 5-way DIL switch. Signaling 32 selectable tones which is meeting international regulations. Made of flame-retardant ABS plastic enclosure. Can be used in conjunction with beacons to form a combination Sounder/Strobe. IP 65.

**How to order: CODE**

Multi-stage sounder, CURRENT, TYPE, RATED VOLTAGE, REMARK

CODE	Type	Rated Voltage	Sound level dB	Remark
------	------	---------------	----------------	--------

**32 Tone Sounder**

79 34 64	Y05	DC 24V	110	Up to 8 individually selectable stages. IP65	
79 34 65		AC115V			
79 34 66		AC230V			
79 34 67	Y08	DC 24V	116		
79 34 68		AC115V			
79 34 69		AC230V			

**Beacon 6 32 Tone Sounder**

79 34 70	YL5	DC 24V	110	2 stage alarms with high sound output. 6 lens colours are available. (amber, red, green, opal, blue and clear)	
79 34 71		AC115V			
79 34 72		AC230V			
79 34 73	YL8	DC 24V	116		
79 34 74		AC115V			
79 34 75		AC230V			

**Explosion Proof Sounders & Beacons**

Sirenas y balizas antideflagrantes

防爆型サウンダー&ビーコン

船用多级测深仪

Sounders and beacons for use in potentially explosive atmospheres and very harsh environmental conditions. Typical applications are Oil and Gas, On-shore and Offshore, Chemical, Petrochemical, Refineries & Marine locations etc. The unit incorporates a 3 or 4 stage alarm option with 60 tones to choose from which includes four tones that can be recorded or customized by the installer. All tones can be pre-set during installation.

Beacons have a choice of two types of light source: either Xenon (strobe) with multiple flash rate and power ratings or an LED array with three status type indication options and two power ratings.



Sounder      Beacon      Sounder & Beacon

**Specifications**

Explosion Protection	ATEX: Ex d IIC T4~T6 Gb, Ex tb IIIC T135°C~T85°C, Zone 1, 2, 21 & 22
IECEx	EN 60079-0:2012 (IEC 60079-0:2011), EN-60079-1:2007 (IEC 60079-1:2007) EN 60079-31:2009 (IEC 60079-31:2008)
Ambient Temperature	-40°C up to +70°C
Humidity	≤ 95% RH

CODE	Type	Rated Voltage	Sound level dB	Remark	Unit Per Pcs.
<b>Sounder</b>					
79 34 76	SD150	DC12-48V	115	-	
79 34 77		AC100-120V			
<b>Beacon</b>					
79 34 78	BC150	DC12-48V	-	Available in amber, red, blue colours	
79 34 79		AC100-240V			
79 34 80	BC150 (with lens guard)	DC12-48V	115	-	
79 34 81		AC100-240V			
<b>Sounder &amp; Beacon</b>					
79 34 82	SB150	DC12-48V	115	-	
79 34 83		AC100-240V			
79 34 84	BC150 (with lens guard)	DC12-48V	-	-	
79 34 85		AC100-240V			

## 15. Lamp Holders

### Lamp Holders

Portalámparas JIS型ソケット 灯支架

(Ref. JIS F 8401)

Marine lamp holders of the rated voltage 250 V or less mainly used for light fittings on board.

#### Flanged Type



FE-12 (79 35 01)



FB-15 (79 35 02)



FE-14 (79 35 03)



FE-26 (79 35 04)



FB-22 (79 35 05)



FE-39 (79 35 06)

#### Tubular Type



TE-26 (79 35 07)



TB-22 (79 35 08)



TE-39 (79 35 09)

#### With Brim



GE-26 (79 35 10)

CODE	Type	Shape	Rating		Main Body Material	Unit Per Pcs.
			Volt	Amp.		
79 35 01	FE-12	Flanged	125	1	Synthetic Resin	2
	FB-15			1	Synthetic Resin	
	FE-14			1	Synthetic Resin	
	FE-26		250	6	Porcelain	
	FB-22			3	Porcelain	
	FE-39			5	Brass	
79 35 07	TE-26	Tubular	6	Porcelain		
08	TB-22		3	Porcelain		
09	TE-39		15	Porcelain		
79 35 10	GE-26	With Brim	6	Synthetic Resin		

## European Type Lamp Holders

Portalámparas Tipo Europeo ヨーロッパ型ソケット 欧式灯座

Various types of brass made lamp holders such as with threaded bushing, back plate or mounting lug and they are all easily connected to the lighting fixture.

Lamp Base	BA-15D	B-22
Thread	M10	3/8", 1/2", 5/8"
Bayonet Type with Threaded Bushing		

Lamp Base	E-27	E-40
Thread	M10	3/8"
Screw Type with Threaded Bushing		

Lamp Base	BA-15D	B-22
Bayonet Type with Back Plate		
Bayonet Type with Back Plate		

Lamp Base	BA-15D, B-22, E-14, E-27	B-22, E-27
Nos. of Lug	2	3
Screw of Bayonet Type with Mounting Lug		

#### How to order: CODE

Lamp holder, European type, BASE TYPE, THREAD or LUG NUMBER

CODE	Base Type	Remark	Thread or Lug Number
79 35 16	BA-15D	Bayonet Type with Threaded Bushing	M10
79 35 17	B-22		3/8
79 35 18			1/2
79 35 19			5/8
79 35 20	E-27		M10
79 35 21	E-40		3/8
79 35 22	BA-15D	Screw Type or Bayonet Type with Mounting Lug	-
79 35 23	B-22		
79 35 24	BA-15D		
79 35 25	B-22		
79 35 26	E-14		
79 35 27	E-27		
79 35 28	B-22	2	
79 35 29	E-27		
			3

## Lamp Holders

### for Cap Base Halogen Lamp R7S

Portalámparas para lámpara halógena R7S de la base de la tapa

ハロゲンランプ R7S 用ランプホルダー 卤素灯 R7S 用灯座



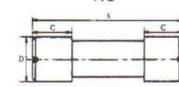
for Max. 500W

for Max. 1,000W

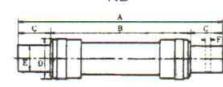
for Max. 2,000W

CODE	Descriptions	Unit
79 35 30	For max. 500W R7S halogen lamp	Pc.
79 35 31	For max. 1,000W R7S halogen lamp, with side connection with heat resistant cable	Pc.
79 35 32	For max. 2,000W R7S halogen lamp, with back connection and heat resistant cable	Pc.

Totally enclosed cartridge type fuse with a large breaking capacity. Excellent current limiting characteristics with no danger of explosion or flaming at breaking. Economical because the fusing element unit is replaceable. These types are approved by N.K., Lloyd, BV, ABS, and G. Lloyd.



Cylindrical Contact



Knife Blade Contact

#### Specifications

Feature	Totally enclosed Cartridge Type Fuse	
Rated Capacity	AC 500/DC 250V, 1A-200A	
Rated Breaking Capacity	20,000A	
Fusing Factor	135	

#### Dimensions mm

Type	A	B	C	D	E	Contact
NC-1	50		13.2	15		Cylindrical
NC-2	75		16.2	20		Cylindrical
NB-3	150	100		29	20	Knife Blade
NB-4	180	110		40	30	Knife Blade

#### How to order: CODE

Cello-lite fuse, TYPE, AMPERE

#### How to order: CODE

Fuse element for TYPE, AMPERE

Unit Per Set		Unit Per Pcs.		
Case & Element Complete	Type	Ampere	Rated Voltage	Element Only
CODE				CODE
79 36 61	NC-1	1	AC 500V DC 250V	79 36 91
62		3		92
63		5		93
64		10		94
65		15		95
66		20		96
67		25		97
68		30		98
79 36 71	NC-2	40	79 37 01	79 37 01
72		50		02
73		60		03
79 36 76	NB-3	75	79 37 06	79 37 06
77		100		07
79 36 81	NB-4	125	79 37 11	79 37 11
82		150		12
83		175		13
84		200		14

#### Fuse Wire

Alambre para Fusible 糸ヒューズ 保险丝



Unit Per Spool

CODE	Ampere	Weight Grm./Spool	CODE	Ampere	Weight Grm./Spool
79 37 21	1	225	79 37 26	20	450
22	3	225	27	30	450
23	5	450	28	40	450
24	10	450	29	50	450
25	15	450	30	60	450

#### Cello-Lite Cartridge Fuses

Type NC & Type NB

Fusibles de Cartucho Cello-Lite - Tipo NC y Tipo NB

NC.NB型セロライトヒューズ 密闭型保险丝

## Fuse Pullers

Extractores para Fusible Tipos Tijera - Tipo Mariposa  
ピューズ抜き 保险丝钳

Eliminates the danger of shock when removing cartridge fuses by hand and the problem of bending fuse clips due to the wrong removal.

Unit Per Pr.

CODE	79 37 36	79 37 37
Type		
Size mm	W40 x L180	W80 x L110
Capacity	30 - 60A	30 - 60A
Material	Nylon Resin	Phenol Resin

## Cello-Lite Cartridge Fuses

### Type UC & Type UB

Fusibles de Cartucho Cello-Lite - Tipo UC y Tipo UB  
UC・UB型セロライトヒューズ UC 及 UB 型匣式保险丝

Cartridge type non-renewable fuse with high breaking capacity and current-limiting.

Complies with the specification of JIS C 8314 for particular requirements for low-voltage cartridge fuses, and duly approved by Nippon Kaiji Kyokai (NK), The Lloyd's Register (LR), American Bureau of Shipping (ABS), and Bureau Veritas (BV). Due to totally enclosed non-renewable construction, it insures safe operation, not allowing any flame or gas to burst at the moment of interruption.

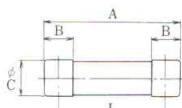


Diagram A

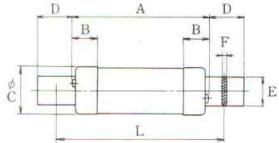


Diagram B

### Standard Rating

Type	Rated Voltage	Rated Current amp.	Fusing Factor	Rated Breaking Capacity kA
UC-1		1, 3, 5, 10, 15, 20, 25, 30		AC 50 (ACL 50)
UC-2	AC 500	40, 50, 60	1.35	
UB-3	DC 250	75, 100		DC 20 (DCL 20)
UB-4		125, 150, 175, 200		

### Dimensions

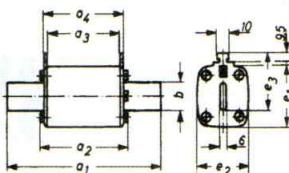
Type Number	Rated Current Amp	Dimensions mm							Diagram	Weight
		A	B	C	D	E	F	L		
UC-1	1.3, 5, 10, 15, 20, 25, 30	50	13.0	15	-	-	-	38	A	20
UC-2	40, 50, 60	75	16.0	20	-	-	-	60	A	51
UB-3	75, 100	95	17.5	30	25	20	3.2	120	B	160
UB-4	125, 150, 175, 200	110	20.5	42	35	30	4.5	145	B	395

		Unit Per Pcs.			
CODE	Type	Ampere	CODE	Type	Ampere
79 37 41	UC-1	1	79 37 52	UB-3	75
42		3	53		100
43		5	79 37 54	UB-4	125
44		10	55		150
45		15	56		175
46		20	57		200
47		25			
48		30			
79 37 49	UC-2	40			
50		50			
51		60			

## NH (HRC) Cartridge Fuses

Fusibles de Cuchilla HRC カートリッジヒューズ HRC 匣式保险丝

Low voltage high breaking capacity fuses. LV, HRC fuse links 500V AC for line protection, low-loss. Size 00 - 3 in accordance with DIN 57636 Part 2/VDE 0636 Part 2, class of operation gl IEC 269-2, class of operation gl. Knife contacts, ceramic insulating body, and indicator on the front plate.



General Size Table

Type	Rating Amp.	Size mm						
		a <sub>1</sub>	a <sub>2</sub>	a <sub>3</sub>	a <sub>4</sub>	b	e <sub>1</sub>	e <sub>2</sub>
00	6-100	79	54	46	49	15	35	20.5
	125-160	79	54	46	49	15	44	30
0	6-160	125	68	63	66	15	44	30
	35-160	135	70	63	67	20	44	30
1	200-250	135	70	63	67	20	47	39
	35-160	150	72	63	67	26	44	30
2	200-250	150	72	63	67	26	47	39
	315-400	150	72	63	67	26	52	44
3	315-400	150	72	63	67	33	58	52
	500-630	150	72	63	67	33	70	64

## NH (HRC) Cartridge Fuse Links

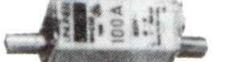
### 500V AC/6 - 160A Size "00"



Unit Per Pcs.

CODE	Rating Amp.	CODE	Rating Amp.	CODE	Rating Amp.
79 38 01	6A	79 38 05	25A	79 38 09	80A
02	10A	06	35A	10	100A
03	16A	07	50A	11	125A
04	20A	08	63A	12	160A

### 500V AC/6 - 160A Size "0"



Unit Per Pcs.

CODE	Rating Amp.	CODE	Rating Amp.	CODE	Rating Amp.
79 38 16	6A	79 38 20	25A	79 38 24	80A
17	10A	21	35A	25	100A
18	16A	22	50A	26	125A
19	20A	23	63A	27	160A

## 500V AC/35 – 250A Size "1"



Unit Per Pcs.

CODE	Rating Amp.	CODE	Rating Amp.	CODE	Rating Amp.
79 38 31	35A	79 38 34	80A	79 38 37	160A
32	50A	35	100A	38	200A
33	63A	36	125A	39	250A

## 500V AC/35 – 400A Size "2"



Unit Per Pcs.

CODE	Rating Amp.	CODE	Rating Amp.	CODE	Rating Amp.
79 38 41	35A	79 38 45	100A	79 38 49	250A
42	50A	46	125A	50	315A
43	63A	47	160A	51	400A
44	80A	48	200A		

## 500V AC/315-630A Size "3"



Unit Per Pcs.

CODE	Rating Amp.	CODE	Rating Amp.
79 38 55	315A	79 38 57	500A
56	400A	58	630A

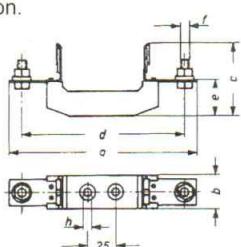
**NH (HRC) Single Pole Fuse Bases**

500/660V AC Size – "00" – "3"

Bases portafusibles unipolares NH (HRC)

NH (HRC) 单极ヒューズベース NH (HRC) 单极保险丝底座

All ceramic base plate with surface contact formed from one piece, galvanic surface protection.



Type	Rating Amp.	Size mm							
		a	b	c	d	e	f	g	h
00	100A	120	33	58	100	24	M 6	-	7.5
	160A	120	33	58	100	24	M 8	-	7.5
0	160A	170	30	65	148	31	M 8	-	7.5
1	250A	196	45	79	173	35	M10	30	10.5
2	400A	225	52	88	200	35	M10	30	10.5
3	630A	250	52	90	210	38	M12	30	10.5

CODE	Type	Amp.	CODE	Type	Amp.
79 38 61	00	100A	79 38 64	1	250A
62	00	160A	65	2	400A
63	0	160A	66	3	630A

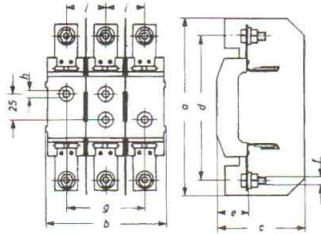
**NH (HRC) Triple Pole Fuse Bases**

500/660V AC Size – "00" – "2"

Bases portafusibles tripolares NH (HRC)

NH (HRC) 三極ヒューズベース NH (HRC) 三极保险丝底座

Sheet steel base plate steatite insulators with surface contact formed from one piece, galvanic surface protection.



Type	Rating Amp.	Size mm								
		a	b	c	d	e	f	g	h	i
00	100A	138	96	85	100	24	M 6	66	7.5	33
	160A	138	96	85	100	24	M 8	66	7.5	33
0	160A	180	131	88	148	31	M 8	87	7.5	44
1	250A	214	168	108	173	35	M10	108	10.5	54
2	400A	260	188	115	200	35	M10	125	10.5	62

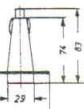
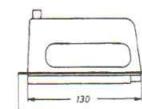
Unit Per Pcs.					
CODE	Type	Amp.	CODE	Type	Amp.
79 38 71	00	100A	79 38 74	1	250A
72	00	160A	75	2	400A
73	0	160A			

**NH (HRC) Fuse Link Universal Handles**

Maneta Extracción Fusibles de Cuchilla

HRC ナイフヒューズハンドル HRC 刀式保险丝万能手把

For H.R.C. or European standard fuse links. Made from bakelite with solid metal parts, zinc plated for all size knife fuses "00" to "4".



79 38 80 Handle, universal for NH (HRC) fuse link Pcs.

**DIN Style Diazed Fuses**

Fusibles de Botella D D カートリッジヒューズ D 型保险丝

Fuse links are made from ceramic material of high compression strength to withstand high mechanical and thermal stresses. Copper alloy made top and bottom contact discs. A coloured indicator disc is fixed to the front contact plate, giving a clear indication of the state of the fuses in use. Please specify the required type of action "Time Lag" (Delayed action) or "Quick Acting" (Quick response) when ordering.



"D" Screw Cap



"D" Cartridge Fuse



"D" Gauge Piece



Contact Protecting Cover

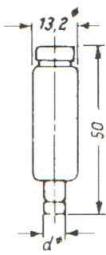


"D" Fuse Base

**Diazed Fuses****500V/2 – 25A Type E-16**

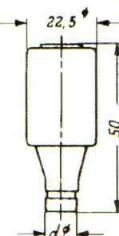
Unit Per Pcs.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam. "d" mm	CODE	Rating Amp.	Diam. "d" mm
79 39 01	2A	6	79 39 51	2A	6
02	4A	6		52	4A
03	6A	6		53	6A
04	10A	8		54	10A
05	16A	10		55	16A
79 39 06	20A	12	79 39 56	20A	12
07	25A	14		57	25A

**500V/2 – 25A Type E-27**

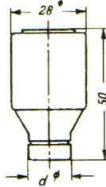
Unit Per Pcs.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam. "d" mm	CODE	Rating Amp.	Diam. "d" mm
79 39 11	2A	6	79 39 61	2A	6
12	4A	6		62	4A
13	6A	6		63	6A
14	10A	8		64	10A
15	16A	10		65	16A
79 39 16	20A	12	79 39 66	20A	12
17	25A	14		67	25A

**500V/35 – 63A Type E-33**

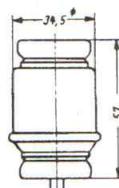
Unit Per Pcs.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam. "d" mm	CODE	Rating Amp.	Diam. "d" mm
79 39 21	35A	16	79 39 71	35A	16
22	50A	18		72	50A
23	63A	20		73	63A

**500V/80 – 100A Type R-1-1/4"**

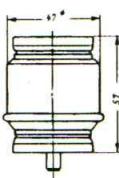
Unit Per Pcs.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	kg per pc.	CODE	Rating Amp.	kg per pc.
79 39 26	80A	0.107	79 39 76	80A	0.107
27	100A	0.11		77	100A

**500V/125 – 200A Type R-2"**

Unit Per Pcs.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	kg per pc.	CODE	Rating Amp.	kg per pc.
79 39 31	125A	0.207	79 39 81	125A	0.207
32	160A	0.21		82	160A
33	200A	0.22		83	200A

**"D" Fuse Caps**

Tapones para Fusible "D"

ヨーロッパ形ヒューズキャップ D 保险丝盖

For D-type cartridge fuses up to 200 amperes and 500 volts. Porcelain made body with a nickel-plated brass screw.



CODE	Type	Amp up to	Size mm		CODE	Type	Amp up to	Size mm
			a	b				
79 39 41	E-16	25	34	27	79 39 44	R-1-1/4"	100	52
42	E-27	25	42	38	45	R-2"	200	52
43	E-33	63	43	48				80

**DIN Style D0 (Neozed) Fuses**

Fusible de Tipo D0 (Neozed) DIN

ネオゼットヒューズ DIN型 D0 (Neozed) 保険絲

Do fuse links are manufactured in three sizes in rating from 2 to 100 amps. Please specify the required type of action "Time Lag" (Delayed action) or "Quick Acting" (Quick response) when ordering.

**500V/2-16A Type E-14**

Unit Per Pcs.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam x L mm	CODE	Rating Amp.	Diam x L mm
79 40 01	2A		79 40 06	2A	
02	4A		07	4A	
03	6A	11 x 36	08	6A	
04	10A		09	10A	
05	16A		10	16A	

**500V/20-63A Type E-18**

Unit Per Pcs.

Time Lag (Delayed Action)			Quick Acting (Quick Response)		
CODE	Rating Amp.	Diam x L mm	CODE	Rating Amp.	Diam x L mm
79 40 11	20A		79 40 16	20A	
12	25A		17	25A	
13	35A	15 x 36	18	35A	
14	50A		19	50A	
15	63A		20	63A	15 x 36

**500V/80-100A Type M30X2**

Unit Per Pcs.

Time Lag (Delayed Action)		
CODE	Rating Amp.	Diam x L mm
79 40 21	80A	22.5 x 43
79 40 22	100A	22.5 x 43

**IEC Industrial Cylindrical Fuses**

Fusible Cilindrico Industrial IEC

IEC型セラミックヒューズ IEC 工業用圓筒保険絲

Made from Ceramic bodies and silver plated copper end caps. gG/gL indicates Full range breaking capacity for General Industrial applications, and aM indicates Partial range breaking capability for Motor protection.



**Class gG/gL (Quick Acting)**

8 × 32mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 40 31	0.5A	400V	20kA
32	1A		
33	2A		
34	4A		
35	6A		
79 40 36	8A		
37	10A		
38	12A		
39	16A		
40	20A		
79 40 41	25A		

10 × 38mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 40 46	0.5A	500V	120kA
47	1A		
48	2A		
49	4A		
50	6A		
79 40 51	8A		
52	10A		
53	12A		
54	16A		
55	20A		
79 40 56	25A		
79 40 57	32A	400V	

14 × 51mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 40 61	1A	690V	80kA
62	2A		
63	4A		
64	6A		
65	8A		
79 40 66	10A		
67	12A		
68	16A		
69	20A		
70	25A		
79 40 71	32A	500V	120kA
79 40 72	40A		
79 40 73	50A	400V	

22 × 58mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 40 76	2A	690V	80kA
77	4A		
78	6A		
79	8A		
80	10A		
79 40 81	12A		
82	16A		
83	20A		
84	25A		
85	32A		
79 40 86	40A	500V	120kA
87	50A		
88	63A		
89	80A		
79 40 90	100A		
79 40 91	125A	400V	

**Class aM (Slow Acting)**

8 × 32mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 61 01	1A	400V	20kA
02	2A		
03	4A		
04	6A		
05	8A		
79 61 06	10A		
07	12A		
08	16A		
09	20A		
10	25A		

10 × 38mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 61 11	0.16A	500V	120kA
12	0.25A		
13	0.5A		
14	1A		
15	2A		
79 61 16	4A		
17	6A		
18	8A		
19	10A		
20	12A		
79 61 21	16A		
22	20A		
79 61 23	25A	400V	
24	32A		

14 × 51mm

Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 61 26	0.25A	690V	80kA
27	0.5A		
28	1A		
29	2A		
30	4A		
79 61 31	6A		
32	8A		
33	10A		
34	12A		
35	16A		
79 61 36	20A		
37	25A		
79 61 38	32A	500V	120kA
39	40A		
79 61 40	50A	400V	

22 × 58mm

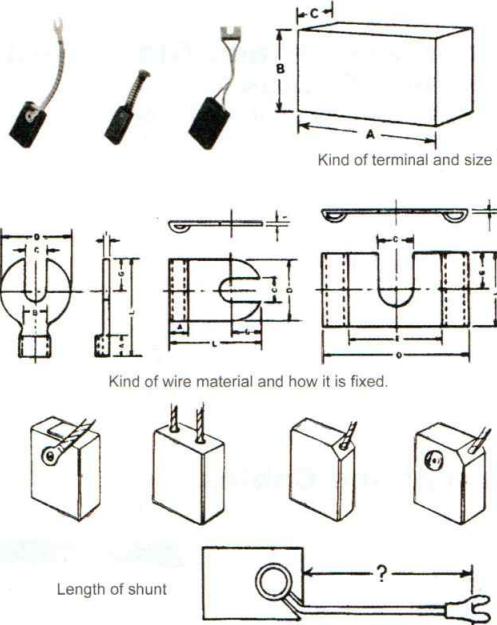
Unit Per Pc.

CODE	Rated Current	Voltage AC	Breaking Capacity
79 61 41	2A	690V	80kA
42	4A		
43	6A		
44	8A		
45	10A		
79 61 46	12A		
47	16A		
48	20A		
49	25A		
50	32A		
79 61 51	40A		
52	50A		
53	63A		
54	80A		
79 61 55	100A	500V	120kA
79 61 56	125A	400V	

## Carbon Brushes

Escobillas de Carbón カーボンブラシ 碳刷

When ordering, Carbon Brushes be sure to give the style as shown with the following information. Length, width, and thickness are shown as A, B, C in the illustration.



### How to order: 79 - 40 - 96

Carbon brush, size, kind of terminal, wire material, how it is fixed, shunt length (pc.)

## 17. Cables

### Welding Cables

Butyle Rubber Sheathed

1,000V or less – single conductor

Cables para Soldadura 溶接用電線 电焊电缆



Welding cable for general use. Cloth or paper wrapped wire sealed in rubber sheath.

Unit Per Mtr.					
CODE	mm <sup>2</sup>	Strand O.D. mm	Cable O.D. mm	Cable Construction mm	Kg Per mtr
79 41 01	22	7.0	11.8	0.45 x 20 x 7	0.31
02	38	9.1	14.5	0.45 x 34 x 7	0.50
03	60	11.7	17.5	0.45 x 20 x 19	0.75
04	100	15.2	21.8	0.45 x 34 x 19	1.23
05	150	18.7	25.9	0.45 x 34 x 27	1.71
79 41 06	200	21.2	29.0	0.45 x 34 x 37	2.30

### Rubber Cabtyre Cables

Natural Rubber Sheathed

600V or less – 1 to 4 conductors

Cables Eléctrico Bupreno ゴムキャブタイヤケーブル 橡胶电缆

Designed for electric tools and lighting fixtures. Natural rubber sheath encloses each conductor. Conductors completed with natural rubber sheath as a final seal. Fixed length is 200 mtrs/coil.



### How to order: CODE

Cable, rubber cabtyre, rubber sheathed, NUMBER of CONDUCTORS, NOMINAL mm<sup>2</sup>

CODE	Nominal mm <sup>2</sup>	Conductor		Cable Out Diam. mm	Kg Per Mtr
		Construction mm	O.D. mm		
<b>1-Conductor</b>					
79 41 11	0.75	0.18 x 30	1.1	6.4	0.06
12	1.25	0.18 x 50	1.5	7.0	0.08
13	2.0	0.26 x 37	1.8	7.3	0.09
14	3.5	0.32 x 45	2.5	8.0	0.11
15	5.5	0.32 x 70	3.1	8.8	0.15
16	8.0	0.45 x 50	3.7	9.4	0.18
17	14.0	0.45 x 88	4.9	11.5	0.27
<b>2-Conductor</b>					
79 41 21	0.75	0.18 x 30	1.1	10.5	0.16
22	1.25	0.18 x 50	1.5	11.5	0.19
23	2.0	0.26 x 37	1.8	12.0	0.22
24	3.5	0.32 x 45	2.5	13.5	0.30
25	5.5	0.32 x 70	3.1	15.0	0.38
26	8.0	0.45 x 50	3.7	16.5	0.47
27	14.0	0.45 x 88	4.9	21.0	0.73
<b>3-Conductor</b>					
79 41 31	0.75	0.18 x 30	1.1	11.0	0.18
32	1.25	0.18 x 50	1.5	12.0	0.23
33	2.0	0.26 x 37	1.8	13.0	0.27
34	3.5	0.32 x 45	2.5	14.5	0.35
35	5.5	0.32 x 70	3.1	16.0	0.46
36	8.0	0.45 x 50	3.7	17.5	0.57
37	14.0	0.45 x 88	4.9	22.0	0.91
<b>4-Conductor</b>					
79 41 41	0.75	0.18 x 30	1.1	12.0	0.21
42	1.25	0.18 x 50	1.5	13.0	0.27
43	2.0	0.26 x 37	1.8	14.0	0.32
44	3.5	0.32 x 45	2.5	16.0	0.44
45	5.5	0.32 x 70	3.1	17.5	0.57
46	8.0	0.45 x 50	3.7	19.5	0.72
47	14.0	0.45 x 88	4.9	24.0	1.16

### P.V.C. Cabtyre Cables

Portable Power Polyvinylchloride Sheathed

600V or less – 1 to 4 conductors

Cables Eléctrico P.V.C. ビニールキャブタイヤケーブル PVC 电线



For portable electric tools or wiring work. Each wire is covered with vinyl and an exterior vinyl sheath. Fixed length is 200 mtr/coil.

### How to order: CODE

Cable, P.V.C. cabtyre, NUMBER of CONDUCTORS, NOMINAL mm<sup>2</sup>

CODE	Nominal mm <sup>2</sup>	Conductor		Cable Out Diam. mm	Kg Per Mtr
		Construction mm	O.D. mm		
<b>1-Conductor</b>					
79 41 51	0.75	0.18 x 30	1.1	5.7	0.04
52	1.25	0.18 x 50	1.5	6.1	0.05
53	2.0	0.26 x 37	1.8	6.4	0.06
54	3.5	0.32 x 45	2.5	7.3	0.09
55	5.5	0.32 x 70	3.1	8.3	0.12
56	8.0	0.45 x 50	3.7	9.5	0.16
57	14.0	0.45 x 88	4.9	11.5	0.24
58	22.0	0.45x20 x 7	7.0	14.5	0.38
59	38.0	0.45x34x7	9.1	17.0	0.58
60	60.0	0.45x20x19	11.6	20.0	0.85
61	100.0	0.45x34x19	15.2	25.0	1.37

CODE	Nominal mm <sup>2</sup>	Conductor		Cable Out Diam. mm	Kg Per Mtr.	Unit Per Mtr.		
		Construction mm	O.D. mm			CODE	mm <sup>2</sup>	Cable Construction mm
<b>2-Conductor</b>								
79 41 66	0.75	0.18 x 30	1.1	8.8	0.1			
67	1.25	0.18 x 50	1.5	9.6	0.12			
68	2.0	0.26 x 37	1.8	10.5	0.15			
69	3.5	0.32 x 45	2.5	12.0	0.2			
70	5.5	0.32 x 70	3.1	14.5	0.3			
71	8.0	0.45 x 50	3.7	16.5	0.41			
72	14.0	0.45 x 88	4.9	20.0	0.64			
<b>3-Conductor</b>								
79 41 76	0.75	0.18 x 30	1.1	9.2	0.11			
77	1.25	0.18 x 50	1.5	10.5	0.14			
78	2.0	0.26 x 37	1.8	11.0	0.18			
79	3.5	0.32 x 45	2.5	13.0	0.26			
80	5.5	0.32 x 70	3.1	15.0	0.37			
81	8.0	0.45 x 50	3.7	17.5	0.51			
82	14.0	0.45 x 88	4.9	22.0	0.81			
<b>4-Conductor</b>								
79 41 86	0.75	0.18 x 30	1.1	9.9	0.14			
87	1.25	0.18 x 50	1.5	11.5	0.18			
88	2.0	0.26 x 37	1.8	12.0	0.21			
89	3.5	0.32 x 45	2.5	14.0	0.32			
90	5.5	0.32 x 70	3.1	16.5	0.46			
91	8.0	0.45 x 50	3.7	19.5	0.64			
92	14.0	0.45 x 88	4.9	24.0	1.02			

## Parallel P.V.C. Cables

Polyvinylchloride Sheathed 300V or less

Cables Paralelos de P.V.C. ピニール平行ケーブル 双股 PVC 电线

Designed as lighting cord and for indoor wiring. Fixed length is 100 mtrs/coil.



## Cotton Covered Lamp Cables

Rubber and Cotton Sheathed

660V or less – 2 conductors

Cable Eléctrico Forrado en Algodón (para Cafeteras y Planchas)

綿打コード 橡皮及棉线包扎电线

For percolators or pressing irons. Rubber covered wire, cloth taped and cotton sheathed. Fixed length is 100 or 200 mtrs/coil.



CODE	mm <sup>2</sup>	Cable Construction mm	CODE	mm <sup>2</sup>	Cable Construction mm	Unit Per Mtr.		
						CODE	mm <sup>2</sup>	Cable Construction mm
79 42 06	0.75	0.18 x 30	79 42 08	2.00	0.26 x 37			
07	1.25	0.18 x 50						

## Flexible Single Cables

P.V.C. Sheathed

300V or less – single conductor

Cables Simple Flexibles

一般機器配線用ケーブル 普通机器配线用 PVC 电线

Single cable with P.V.C. sheath for lighting or wiring indoor or outdoor appliances. Fixed length is 100 mtrs/coil.



CODE	mm <sup>2</sup>	Cable Construction mm	CODE	mm <sup>2</sup>	Cable Construction mm	Unit Per Mtr.
79 42 11	0.5	0.18 x 20	79 42 13	1.25	0.18 x 50	
12	0.75	0.18 x 30	14	2.0	0.26 x 37	

## Silicon Rubber and Glass Cloth Sheathed Cables

600V or less, Temperature 180°C or less

Cable Eléctrico Silicona

シリコンゴム絶縁ガラス編組ケーブル 硅胶与绝缘玻璃编织电线

Tin coated annealed copper wire enclosed by silicon rubber and exterior glass cloth sheathing. For generators, electrical tools and various electrical equipment.

CODE	mm <sup>2</sup>	O.D. mm	Construction mm	CODE	mm <sup>2</sup>	O.D. mm	Construction mm	Unit Per Mtr.
79 42 26	1.25	1.5	0.18 x 30	79 42 28	3.5	2.5	0.18 x 50	
27	2.0	1.8	0.26 x 37	29	5.5	3.1	0.26 x 37	

## Microphone Cables

Cables para Micrófono マイク・電話線 扩音器及电话用电线

Vinyl covered single wire entirely wrapped by a polyester tape-braided copper armour and an exterior vinyl sheath. Specially used for communication wiring. Fixed length is 100 mtrs/coil.

How to order: CODE

Microphone cable, NUMBER of CONDUCTORS, mm<sup>2</sup>

CODE	mm <sup>2</sup>	Out Diam. mm	Cable Construction mm	Unit Per Mtr.
<b>1-Conductor</b>				
79 42 31	0.3	3.7	0.18 x 12	
32	0.5	4.6	0.18 x 20	
33	0.75	5.0	0.18 x 30	
34	1.25	5.3	0.18 x 50	
<b>2-Conductor</b>				
79 42 36	0.3	5.2	0.18 x 12	
37	0.5	6.6	0.18 x 20	
38	0.75	7.4	0.18 x 30	
39	1.25	8.0	0.18 x 50	
<b>3-Conductor</b>				
79 42 41	0.3	5.5	0.18 x 12	
42	0.5	7.0	0.18 x 20	
43	0.75	7.8	0.18 x 30	
44	1.25	8.4	0.18 x 50	
<b>4-Conductor</b>				
79 42 46	0.3	5.9	0.18 x 12	
47	0.5	7.4	0.18 x 20	
48	0.75	8.4	0.18 x 30	
49	1.25	9.1	0.18 x 50	

## Radio-Frequency Coaxial Cables

Cables Antena Coaxial 高周波同軸ケーブル 高频同轴电缆

For cabling jobs of high frequency equipment. Polyethylene covered wire enclosed by braided copper armour and exterior plastic sheathing. When ordering, specify the code, size of cable and the number of ohms required.



How to order: CODE

Coaxial cable, radio frequency, Ohms, SIZE of CABLE

CODE	Size	Cable mm		O.D. mm	Test Voltage	Unit Per Mtr.
		Construction	Diam.			
<b>75 ohm (Ω)</b>						
79 42 61	1.5C-2V	0.26 x 1	0.26	2.9	1,000	
62	2.5C-2V	0.4 x 1	0.4	4.0	1,000	
63	3 C-2V	0.5 x 1	0.5	5.4	1,000	
64	5 C-2V	0.8 x 1	0.8	7.4	1,000	
65	7 C-2V	0.4 x 7	1.2	10.4	1,000	
66	10 C-2V	0.5 x 7	1.5	13.0	1,000	
<b>50 ohm (Ω)</b>						
79 42 71	1.5C-2V	0.18 x 7	0.54	2.9	300	
72	2.5C-2V	0.8 x 1	0.8	4.3	1,000	
73	3 C-2V	0.32 x 7	0.96	5.3	1,000	
74	5 C-2V	1.4 x 1	1.4	7.3	1,000	

### RG Type

Used for transmitting signals for various applications such as digital TV, CCTV, videos, internet radio equipment with higher frequency.



RG-6/U, RG-11/A/U



RG-59/U



RG12/U, RG-58/U



RG-213/U



RG-214/U

CODE	Type	Dimension mm		O.D. mm	Unit Per Mtr.
		Conductor	Insulation		
<b>75 ohm (Ω)</b>					
79 42 54	RG-6/U	18AWG (1/1.02mm)	4.57	6.93	
55	RG-11/A	14AWG (1/1.63mm)	7.11	10.20	
56	RG-59/U	23AWG (1/0.584mm)	3.7	6.10	

**50 ohm (Ω)**

79 42 57	RG12/U	18AWG (7/0.404mm)	7.26	13.30	
58	RG-58/U	20AWG (19/0.18mm)	2.95	4.95	
59	RG-213/U	13AWG (7/0.75mm)	7.25	10.30	
60	RG-214/U	13AWG (7/0.75mm)	7.25	10.80	

### Armoured Cables

**EP Rubber Insulated, P.V.C. Sheathed & Steel Wire Braided**

**600 V or less – 1 to 12 conductors**

Cable Eléctrico Armado Apantallado Sintético

E.P. ゴム絶縁ビニールシースあじろがい装ケーブル  
橡胶绝缘 PVC 电线

For heavy duty wiring on board.  
Rubber covered wires are entirely wrapped with hemp tape and then enclosed by plastic sheathing and braided metal armour.

**How to order: CODE**

Armoured cable, EP rubber insulated, P.V.C. sheathed & steel wire braided, NUMBER of CONDUCTORS, mm<sup>2</sup>

Unit Per Mtr.

CODE	mm <sup>2</sup>	Cable Strand mm		O.D. mm	Kg Per Mtr
		Construction	Diam.		
<b>1-Conductor</b>					
79 43 01	1.5	0.52 x 7	1.56	7.2	0.1
02	2.5	0.67 x 7	2.01	7.6	0.12
03	4.0	0.85 x 7	2.55	8.2	0.14
04	6.0	1.04 x 7	3.12	8.7	0.17
05	10.0	1.35 x 7	4.05	9.9	0.225

(to be continued)

CODE	mm <sup>2</sup>	Cable Strand mm		O.D. mm	Kg Per Mtr	Unit Per Mtr.
		Construction	Diam.			
<b>2-Conductor</b>						
79 43 08	1.5	0.52 x 7	1.56	11.7	0.205	
09	2.5	0.67 x 7	2.01	12.8	0.250	
10	4.0	0.85 x 7	2.55	13.9	0.3	
11	6.0	1.04 x 7	3.12	15.2	0.37	
12	10.0	1.35 x 7	4.05	17.1	0.49	
<b>3-Conductor</b>						
79 43 15	1.5	0.52 x 7	1.56	12.5	0.245	
16	2.5	0.67 x 7	2.01	13.5	0.295	
17	4.0	0.85 x 7	2.55	14.7	0.365	
18	6.0	1.04 x 7	3.12	16.1	0.455	
19	10.0	1.35 x 7	4.05	18.3	0.625	
<b>4-Conductor</b>						
79 43 26	1.0	0.43 x 7	1.29	11.2	0.205	
<b>7-Conductor</b>						
79 43 27	1.0	0.43 x 7	1.29	13.2	0.29	
<b>12-Conductor</b>						
79 43 28	1.0	0.43 x 7	1.29	19.0	0.445	
<b>19-Conductor</b>						
79 43 29	1.0	0.43 x 7	1.29	22.0	0.615	

### Enamelled Copper Wire

Hilo de Cobre Esmaltado エナメル銅線  
漆包铜线

For rewinding electric motors, instrument wiring, etc.



Unit Per Kgs.

CODE	Diam. mm	Max. Ω/Km at 20°C	App. Kg Spool	CODE	Diam. mm	Max. Ω/Km at 20°C	App. Kg Spool
79 43 51	0.29	266.4		79 43 60	0.70	44.81	
52	0.32	215.9	10	61	0.80	34.30	10
53	0.35	180.5		62	0.90	27.10	
54	0.40	138.1	15	63	1.0	21.95	15
55	0.45	109.2		64	1.2	15.24	
79 43 56	0.50	87.79	10	79 43 65	1.4	11.20	30
57	0.55	72.56		66	1.6	8.574	30
58	0.60	60.99	15	67	1.8	6.775	30
59	0.65	51.96		68	2.0	5.487	30

### Antenna Copper Wire

Cable de Cobre para Antena アンテナケーブル 天线铜丝

Specially designed for antenna systems on board vessels.



Unit Per Mtr.

CODE	Construction Wire x Strand	O.D. mm	CODE	Construction Wire x Strand	O.D. mm
79 43 76	1.6 x 19	8.0	79 43 78	1.6 x 7	4.0
77	1.2 x 19	6.0			

### Halogen-free Covered Cables

Cable Libre de Halógeno ハロゲンフリーケーブル 無卤電纜

The remarkably improved fire safety and environmental friendly cables for the ship, not emitting toxic burning fumes or thick smoke owing to Halogen-free insulation cover. Halogen-free refers to the absence of Halogens, such as Chlorine and Fluorine, and they don't emit any harmful Hydraulic Chloride

gas while existing PVC (Polyvinyl Chlorine) dose. In addition to above attractive features, the Halogen-free covered cable reduces cable weight and size to a minimum and still maintain quality, enabling easy installation. The Halogen-free range of cables are flame-retardant (IEC 60332-3).

The following designations are used for insulation materials and sheathing materials, and all materials are halogen-free; Insulation: XLPE stands for Cross-linked Polyethylene compound, and it has excellent mechanical and electrical characteristics. Sheathing: The designation SHF1 stands for Thermoplastic compound, and this material is Halogen-free, highly flame-retardant and has low smoke emission.

The listed cables are for fixed installation on all areas and on open deck in ships. However, if the cable is exposed to direct sun light protective covering or cable with black outer sheath is recommended.

#### **Unarmoured Power and Control Cable 0.6/1 kV HF-CXO**



Design		IEC 60092-353, design
1. Conductor	- Standard copper conductor	IEC 60228. class 2
2. Insulation	- XLPE plastic	IEC 60092-351
3. Bedding	- Separator tape	-
4. Sheath	- Polyolefine plastic, SHF1 - Standard colour Black	IEC 60092-359

#### Main Characteristics

Rated Voltage	0.6/1 kV (1.2 kV)
Max. Conductor Temperature	+90°C
Flame-retardant	IEC 60332-1-22 Category A
Halogen-free	IEC 60754 series
Smoke Emission	IEC 61034 series
Min. Recommended Installation Temperature	-15°C
Lowest Operation Temperature	-40°C
Approvals	ABS / BV / CCS / DNV / KRS / LRS / NK / RINA

CODE	mm <sup>2</sup>	Current Rating Amp	Nom. Outer Diam. mm	Approx. Weight grm/mtr	Unit Per Mtr.	
					1 - Conductor	
79 42 95	1.5	23	5.5	40		
96	2.0	40	6.0	52		
97	4.0	51	6.6	70		
75	6.0	52	7.2	90		
76	10.0	72	8.2	135		
77	16.0	96	9.4	205		

#### **1 - Conductor**

79 42 78	1.5	20	9.0	75
79	2.5	26	10.0	110
80	4.0	34	11.2	145
81	6.0	44	12.5	195
82	10.0	61	14.5	315

#### **2 - Conductor**

79 42 83	1.5	16	9.6	95
84	2.5	21	10.7	140
85	4.0	28	11.9	190
86	6.0	36	13.3	265
87	10.0	50	15.5	400
88	16.0	67	18.0	635

#### **3 - Conductor**

4 - Conductor					
79 42 89	1.5	16	10.5	125	
90	2.5	21	11.7	170	
91	4.0	28	13.4	245	
92	6.0	36	14.6	335	
93	10.0	50	17.1	515	
94	16.0	67	19.9	820	

#### **Armoured Power and Control Cable 0.6/1 kV HF-CXOSA**



Design	IEC 60092-353, design
1. Conductor	- Standard copper conductor
2. Insulation	- XLPE plastic
3. Bedding	- Separator Filler tape
4. Armour	- Copper wire braid, - coverage > 90%
5. Sheath	- Polyolefine plastic, SHF1 - Standard colour Black

#### Main Characteristics

Rated Voltage	0.6/1 kV (1.2 kV)
Max. Conductor Temperature	+90°C
Flame-retardant	IEC 60332-3-22
Halogen-free	IEC 60754 series
Smoke Emission	IEC 61034 series
Min. Recommended Installation Temperature	-15°C
Lowest Operation Temperature	-40°C
Approvals	ABS / BV / CCS / DNV / KRS / LRS / NK / RINA

CODE	mm <sup>2</sup>	Cross-section of Armour mm <sup>2</sup>	Current Rating Amp	Nom. Outer Diam. mm	Approx. Weight grm/mtr	Unit Per Mtr.	
						1 - Conductor	
79 43 31	6.0	3.1	52	8.5	130		
32	10.0	3.2	71	9.6	175		
33	16.0	4.1	96	10.7	270		

#### **1 - Conductor**

79 43 34	1.5	3.5	20	10.4	135
35	2.5	4.1	26	11.3	170
36	4.0	4.5	34	12.6	200
37	6.0	5.1	44	14.3	260
38	10.0	8.6	61	16.2	400

#### **2 - Conductor**

79 43 39	1.5	3.8	16	10.9	160
40	2.5	4.3	21	12.1	200
41	4.0	4.9	28	13.2	260
42	6.0	5.5	36	15.0	335
43	10.0	8.8	50	17.2	510
44	16.0	10.3	67	19.7	800

#### **3 - Conductor**

(to be continued)	(to be continued)
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CODE	mm <sup>2</sup>	Cross-section of Armour mm <sup>2</sup>	Current Rating Amp	Nom. Outer Diam. mm	Unit Per Mtr.
<b>4 - Conductor</b>					
79 43 45	1.5	4.2	16	11.9	185
46	2.5	4.7	21	13.0	245
47	4.0	5.4	28	14.9	315
48	6.0	8.6	36	16.3	435
49	10.0	9.8	50	18.7	635
50	16.0	11.8	67	21.5	1,000

**Unarmoured Switchboard Wire Cable  
0.6/1 kV HFF-CXP**



Design		IEC 60092-353, design
6. Conductor	- Standard copper conductor	IEC 60228, class 2
7. Insulation	- XLPE plastic	IEC 60092-351
8. Bedding	- Filler tape	-
9. Armour	- Copper wire braid, - coverage > 90%	IEC 60092-350
10. Sheath	- Polyolefine plastic, SHF1 - Standard colour Black	IEC 60092-359

**Main Characteristics**

Rated Voltage	0.6/1 kV (1.2 kV)
Max. Conductor Temperature	+90°C
Flame-retardant	IEC 60332-1-2
Halogen-free	IEC 60754 series
Smoke Emission	IEC 61034 series
Min. Recommended Installation Temperature	-15°C
Lowest Operation Temperature	-40°C
Approvals	ABS / BV / CCS / DNV / KRS / LRS / NK / RINA

Unit Per Mtr.

CODE	mm <sup>2</sup>	Current Rating Amp	Nom. Outer Diam. mm	Unit Per Mtr.
<b>Black - 1 Conductor</b>				
79 43 06	1.5	23	3.1	21
07	2.0	40	3.6	31
14	4.0	51	4.2	47
20	6.0	52	4.9	70
21	10.0	72	5.8	105
30	16.0	96	7.3	161

**Blue - 1 Conductor**

79 43 69	1.5	23	3.1	21
70	2.5	40	3.6	31
71	4.0	51	4.2	47
72	6.0	52	4.9	70

**Red - 1 Conductor**

79 43 73	1.5	23	3.1	21
74	2.5	40	3.6	31
75	4.0	51	4.2	47
79	6.0	52	4.9	70

**Yellow - 1 Conductor**

79 42 09	1.5	23	3.1	21
10	2.5	40	3.6	31
15	4.0	51	4.2	47
16	6.0	52	4.9	70

(to be continued)

Green/Yellow - 1 Conductor					
79 42 17	1.5	23	3.1	21	green/yellow
18	2.0	40	3.6	31	green/yellow
19	4.0	51	4.2	47	green/yellow
20	6.0	52	4.9	70	green/yellow
30	10.0	96	5.8	105	green/yellow
40	16.0	96	7.3	161	green/yellow

**Grey - 1 Conductor**

79 42 50	1.5	23	3.1	21	grey
51	2.5	40	3.6	31	grey
52	4.0	51	4.2	47	grey
53	6.0	52	4.9	70	grey

**Brown - 1 Conductor**

79 42 67	1.5	23	3.1	21	brown
68	2.5	40	3.6	31	brown
69	4.0	51	4.2	47	brown
70	6.0	52	4.9	70	brown

**Armoured Telecommunication Cable  
150/250V (300V) HF-IXOSA**



Design		IEC 60092-353, design
11. Conductor	- Standard copper conductor	IEC 60228, class 2
12. Insulation	- XLPE plastic	IEC 60092-351
13. Bedding	- Filler tape	-
14. Armour	- Copper wire braid, coverage > 90%	IEC 60092-350
15. Sheath	- Polyolefine plastic, SHF1	IEC 60092-359

**Main Characteristics**

Rated Voltage	150/250V (300V)
Max. Conductor Temperature	+90°C
Flame-retardant	IEC 60332-3-22
Halogen-free	IEC 60754 series
Smoke Emission	IEC 61034 series
Min. Recommended Installation Temperature	-15°C
Lowest Operation Temperature	-40°C
Approvals	ABS / BV / CCS / DNV / KRS / LRS / NK

CODE	mm <sup>2</sup>	Current Rating Amp	Nom. Outer Diam. mm	Unit Per Mtr.
79 41 07	1 x 2	11	8.0	100
08	2 x 2	11	11.1	150
09	4 x 2	11	12.7	245
10	7 x 2	11	15.5	372

**0.75 mm<sup>2</sup>**

79 41 07	1 x 2	11	8.0	100	green/yellow
08	2 x 2	11	11.1	150	green/yellow
09	4 x 2	11	12.7	245	green/yellow
10	7 x 2	11	15.5	372	green/yellow

**1.5 mm<sup>2</sup>**

79 41 62	1 x 2	20	9.5	110	green/yellow
63	2 x 2	20	13.5	200	green/yellow
64	4 x 2	20	16.1	325	green/yellow
65	7 x 2	20	19.1	470	green/yellow

## Heavy Electric Cables

### for Crane/Hoist Use

Cables Eléctricos para Grúa/Elevación Gruesos/Pesados  
クレーン用一般電線 吊车 / 起重机用电缆

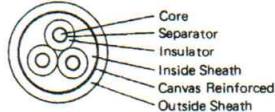
A wide range of models are available. The most common models of standard sizes are described below.

#### 1. Name and Capacity

600V (Test V 3,000V/M)

EP Rubber Insulated and Polychloroprene Sheathed Flexible Power Cable Class – 3

#### 2. Construction



#### 3. Type

1. 600V 3PNCT General Type
2. 600V 3PNCT-B Bendable Type
3. 600V 3PNCT-T Twist Cable Type

#### 4. Specifications

Size: mm

Binubak Sectional Area mm <sup>2</sup>		80	100	125	150	200	250
Conductor	Number & Dia of Wire	19/27/ 0.45	19/34/ 0.45	19/42/ 0.45	27/34/ 0.45	37/34/ 0.45	37/42/ 0.45
	O.D.	13.5	15.2	16.8	18.7	21.2	23.6
Insulation Thick	2.1	2.1	2.7	2.7	3.3	3.3	
Canvas Tape Thick	0.5	0.5	1.0	1.0	1.0	1.0	
Single Core	Sheath Thick	3.4	3.5	3.7	3.8	4.1	4.2
	Cable O.D.	25.7	27.6	31.8	33.9	38.2	40.8
Double Core	Sheath Thick	4.6	4.8	5.2	5.4	5.9	6.3
	Cable O.D.	47.0	50.8	57.2	61.4	69.8	75.4
Triple Core	Sheath Thick	4.8	5.0	5.4	5.7	6.2	6.6
	Cable O.D.	50.3	54.3	61.2	65.9	74.9	80.9
Q'dple Core	Sheath Thick	5.1	5.4	5.8	6.1	6.7	7.1
	Cable O.D.	55.7	60.4	68.0	73.2	83.4	90.0
Approx. Weight	Single Core	1,270	1,520	1,940	2,200	2,910	3,480
	Double Core	3,490	4,190	5,280	6,030	7,980	9,590
	Triple Core	4,520	5,440	6,810	7,570	10,500	12,500
	Quadruple Core	5,660	6,840	8,560	9,840	13,200	15,700

When ordering, please specify the name, capacity, type, number of the core and size of the nominal sectional area.

#### How to order: 79 - 43 - 80

Polychloroprene sheathed EP rubber insulated flexible power cable, type x core x sectional area

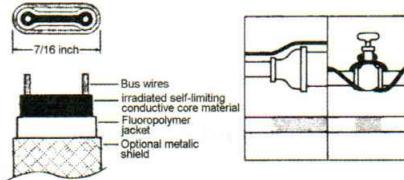
## Self Limiting Parallel Circuit Heaters Auto-Trace

Calentadores Circuitos Paralelos con Limitación Propia Auto-Trace

自己制御型ヒーター 自控式加热器

Auto-Trace is the electrical parallel circuit heat-tracing system. This unique technology enables the heater to vary its power output in response to sensed temperature at every point along its entire circuit. As the temperature increases,

Auto-Trace automatically decreases its heat output, and vice versa. In this way, the heater continually compensates for temperature fluctuations that can lead to system failure with conventional heat tracing methods.



Has the following system features:

1. Full range of heaters for a variety of applications.
2. Complete selection of component and control system.
3. Parallel circuitry for cut-to-length convenience at the jobsite.
4. Flexibility for easy field installation.
5. Self-regulation protects against over-heating at any wattage, even when the heater is overlapped.

From among various types, the most common circuit heaters are listed below.

BTW	Electrical heat-tracing for frost protection without steam cleaning. Used for frost protection of pipes and vessels. Also, used for process temperature maintenance up to 65°C.
QTVR	Electrical heat-tracing for process temperature maintenance applications up to 110°C which are not subject to steam cleaning. Used for process temperature maintenance of pipes and vessels. Also, used for frost protection of large pipes and for applications requiring medium temperature exposure capability.
KTV	Electrical heat-tracing for process temperature maintenance applications up to 150°C which may be subject to steam cleaning. Used for process temperature maintenance of pipes and vessels. Also, used for frost protection of large pipes and for applications requiring high temperature exposure capability.

These circuit heaters are sold by meter, various spare parts are available as extra accessories. For further information, please write for or ask your supplier for catalogues.

#### How to order: CODE

Parallel circuit heater, self limiting, VOLTAGE, TYPE

Unit Per Mtr.

110V		220V			
CODE	Type	Watt/ Foot	CODE	Type	W/m at 10°C
<b>BTW Series</b>					
79 43 85	3BTW1-CR	3	79 43 98	3BTW2-CR	9
81	3BTW1-CT	3	86	3BTW2-CT	9
90	5BTW1-CR	3	99	5BTW2-CR	16
82	5BTW1-CT	3	87	5BTW2-CT	16
79 44 01	8BTW1-CR	8	79 44 05	8BTW2-CR	25
02	8BTW1-CT	8	06	8BTW2-CT	25
03	10BTW1-CR	10	07	10BTW2-CR	29
04	10BTW1-CT	10	08	10BTW2-CT	29

(to be continued)

110V			220V			Unit Per Mtr.	
CODE	Type	Watt/ Feet	CODE	Type	W/m at 10°C		
<b>QTVR Series</b>							
79 44 09	10QTVR1-CT	10	79 44 12	10QTVR2-CT	38		
10	15QTVR1-CT	15	13	15QTVR2-CT	51		
11	20QTVR1-CT	20	14	20QTVR2-CT	64		
<b>KTV Series</b>							
79 44 15	5KTV1-CT	5	79 44 19	5KTV2-CT	16		
16	8KTV1-CT	8	20	8KTV2-CT	25		
17	15KTV1-CT	15	21	15KTV2-CT	47		
18	20KTV1-CT	20	22	20KTV2-CT	65		

Remark: "Watt/Ft" and "W/m at 10°C" is nominal power output.  
CT denotes Fluoropolymer outer jacket.  
CR denotes Modified polyolefin outer jacket.

## Extension Cord Reels

Prolongadores de Cables 延長コードリール 延长线轮

Portable reels which are suitable for use in a work place which is separated from an electrical power source. Available for use with cord lengths from 20 mtrs to 50 mtrs. Contains built in outlets that provide power connections for tools and equipment.



When ordering, please specify the required cord length, voltage, ampere, type of plug and receptacle currently in use so that reel can be used properly with your equipment.

### How to order: CODE

Extension cord reel, VOLTAGE, AMPERE, CORD LENGTH,  
TYPE of PLUG & RECEPTACLE

Unit Per Set			
CODE	Cord Length	CODE	Cord Length
<b>AC 110 Volt</b>		<b>AC 220 Volt</b>	
79 43 91	20 mtr	79 43 95	20 mtr
92	30 mtr	96	30 mtr
93	50 mtr	97	50 mtr

## 18. Cable Accessories

### Cable Terminal Lugs

Terminales Eléctricos de Zapata ターミナルラグ 无绝缘圆头端子

Made of tin-plated copper for conductivity and corrosion resistance. For connecting and terminating wire and easy to install with a crimping tool. Please specify type no. of terminal lugs with cable size to be applied.



Unit Per Pcs.

CODE	CableSize mm <sup>2</sup>	Hole Dia mm	Overall Size mm		Unit Per Pcs.
			Width	Length	
79 45 01	5.5	8	16	28	
79 45 02		6	12	24	
03	8	8	15	30	
04		10	15	30	
79 45 05	10	6	12	29	
79 45 06	14	8	16	33	
07		10	16	36	
79 45 08	16	10	18	46	

(to be continued)

CODE	CableSize mm <sup>2</sup>	Hole Dia mm	Overall Size mm		Unit Per Pcs.
			Width	Length	
75 45 09			6	11.5	
10	22		7	16	
11			8	17	
12			10	35	
79 45 13	25	6	14	31	
79 45 14	38	8	16	38	

### Insulated Eyelet

Equivalent to Type "R-TG"  
(See 79 47 01 to 79 47 12).



Unit Per Pcs.

CODE	CableSize mm <sup>2</sup>	Hole Dia mm	Overall Size mm		Colour of PVC Sleeve
			Width	Length	
79 45 21	1.25	4	8	20	Red
79 45 22		3	6	17	Blue
23	2	4	8	21	Blue
24		5	9	21	Blue
25		6	12	26	Blue
26	5.5	8	12	25	Blue
79 45 27		4	9	28	Yellow
28		6	12	32	Yellow
29		10	15	35	Yellow

### Insulated Spade

Equivalent to Type "Y-TG"  
(See 79 47 16 to 79 47 23).



Unit Per Pcs.

CODE	CableSize mm <sup>2</sup>	Hole Dia mm	Overall Size mm		Colour of PVC Sleeve
			Width	Length	
79 45 31	1.25	3	7	20	Red
32		3.5	7	20	Red
79 45 33		4	8	20	Blue
34	2	4	9	22	Yellow
35		5	9	21	Blue
79 45 36	5.5	4.5	8	20	Blue

### Insulated Spanner Head

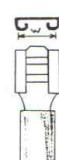
Equivalent to Type "Y-TG"  
(See 79 47 16 to 79 47 23).



Unit Per Pcs.

CODE	CableSize mm <sup>2</sup>	Hole Dia mm	Overall Size mm		Colour of PVC Sleeve
			Width	Length	
79 45 41	1.25	4	8	20	Red

### Insulated Receptacles



Unit Per Pcs.

CODE	CableSize mm <sup>2</sup>	ILug Width mm	Overall Length mm		Colour of PVC Sleeve
			Width	Length	
79 45 45		3		23	Red
46	1.25	4		23	Red
47		6		23	Red
79 45 48	2	5		23	Blue
79 45 50	5.5	6		25	Yellow

**Insulated Flat Pins**

Unit Per Pcs.  
CODE Cable Size mm<sup>2</sup> ILug Width mm Overall Length mm Colour of PVC Sleeve  
79 45 61 1.25 2 20 Red  
62 1.25 3 20 Red  
63 2 4 23 Blue  
64 5.5 4 25 Yellow

**Insulated Extension Connectors, Transparent**

Unit Per Pcs.  
CODE Cable Size mm<sup>2</sup> Overall Length mm Colour of PVC Sleeve  
79 45 71 1.25 25 Transparent

**Insulated Butt**

Unit Per Pcs.  
CODE Cable Size mm<sup>2</sup> Overall Length mm Colour of PVC Sleeve  
79 45 75 1.25 23 Red  
76 5.5 27 Yellow

**Insulated Cable Tip**

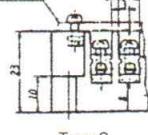
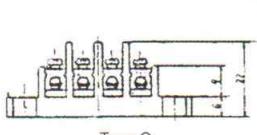
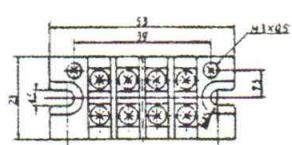
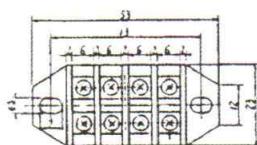
Unit Per Pcs.  
CODE Cable Size mm<sup>2</sup> ILug Width mm Overall Length mm Colour of PVC Sleeve  
79 45 81 1.25 2 21 Red  
82 2 2 21 Blue  
83 5.5 2.5 28 Yellow

**Terminal Boards for Marine Use****Electric Solderless Connecting Terminals**

Cuadro (Placa) de Bornes 船用端子盤 船用接线端板

(Ref. JIS F 8812)

For connecting cables of electric appliances of a rated voltage of 250 V or less. Made of phenol resin. Available in O and S type boards. The O type denotes terminal boards without name plates and the S type denotes terminals with name plates.

**How to order: CODE**

Terminal board, TYPE, AMPERE, NUMBERS of TERMINAL

**"O" Type Terminals**

Unit Per Pcs.

10 Ampere			20 Ampere		
CODE	Number of Terminal	Size mm	CODE	Number of Terminal	Size mm
79 46 01	2	23 x 37	79 46 06	2	26 x 42
02	3	23 x 45	07	3	26 x 52
03	4	23 x 53	08	4	26 x 62

**"S" Type Terminals**

Unit Per Pcs.

10 Ampere			20 Ampere		
CODE	Number of Terminal	Size mm	CODE	Number of Terminal	Size mm
79 46 11	2	23 x 37	79 46 21	2	26 x 40
12	3	23 x 45	22	3	26 x 50
13	4	23 x 53	23	4	26 x 60
14	5	23 x 61	24	5	26 x 74
15	7	23 x 77	25	7	26 x 94
16	10	23 x 101	26	10	26 x 137
17	12	23 x 107	27	12	26 x 157

**Separable Terminal Strips**

Regletas Cable Eléctrico 電線端子 电线端子

Solderless, easy handling 12 pole terminals, length can be cut as desired.



Molded



P.V.C. Flexible

**How to order: CODE**

Terminal strip, separated, TYPE, NOMINAL AMPERE

**Molded Strip**

Unit Per Pcs.

CODE	Nominal Ampere	Nominal Area mm <sup>2</sup>	Capacity Voltage
79 46 31	10	2.5	380
32	25	10	380
33	35	16	380

**P.V.C. Flexible Strip**

Unit Per Pcs.

CODE	Nominal Ampere	Nominal Area mm <sup>2</sup>	Capacity Voltage
79 46 36	10	2.5	380
37	20	6	380
38	25	10	380
39	35	16	380
40	50	25	380

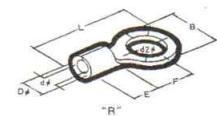
**Cable Shoes**

Terminales Eléctricos Prensado ケーブルシュー 电线端头

Galvanized copper made shoes for connecting cable wires with clamping tools.

**How to order: CODE**

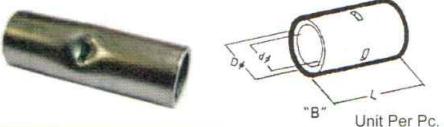
Cable shoe, TYPE, NOMINAL SIZE

**Type "R"**

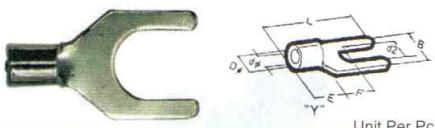
CODE	Nominal Size	Size mm				Applicable Twisted Wire mm <sup>2</sup>	Unit Per Pcs.
		d2φ	B	L	Dφ		
79 46 51	1.25 - 3	3.2	5.5	12.0	3.4	0.25 ~ 1.65	
52	1.25 - 4	4.3	8.0	15.6			
53	1.25 - 5	5.3					
79 46 54	2.0 - 4	4.3	8.5	16.5	4.2	1.04 ~ 2.63	
55	2.0 - 5	5.3	9.5	17.0			
56	2.0 - 6	6.4	12.0	21.5			
57	2.0 - 8	8.4					
79 46 58	5.5 - 4	4.3	9.5	19.5	5.6	2.63 ~ 6.64	
59	5.5 - 5	5.3	12.0	23.0			
60	5.5 - 6	6.4					
61	5.5 - 8	8.4	15.0	28.0			
62	5.5 - 10	10.5					
79 46 63	8.0 - 5	5.3	12.0	23.5	7.1	6.64 ~ 10.52	
64	8.0 - 6	6.4					
65	8.0 - 8	8.4	15.0	29.5			
66	8.0 - 10	10.5					

Equivalent to Type "Non-Insulated Round Head".  
(See 79 45 01 to 79 45 14)

### Type "B"



### Type "Y"



### Type "R-TG"



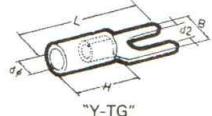
CODE	Nominal Size	Size mm				Applicable Twisted Wire mm <sup>2</sup>	Unit Per Pcs.
		d2φ	B	L	dφ		
79 47 01	1.25 - 3	3.2	5.5	17.4	3.2	0.5 ~ 1.65	
79 47 02	1.25 - 4	4.3	8.0	21.0			
79 47 03	1.25 - 5	5.3					
79 47 04	2.0 - 4	4.3	8.5	21.9	3.9	1.04 ~ 2.63	
79 47 05	2.0 - 5	5.3	9.5	22.4			
79 47 06	2.0 - 6	6.4	12.0	26.9			
79 47 07	2.0 - 8	8.4					

(to be continued)

CODE	Nominal Size	Size mm				Applicable Twisted Wire mm <sup>2</sup>	Unit Per Pcs.
		d2φ	B	L	dφ		
79 47 08	5.5 - 4	4.3	9.5	27.0	5.4	2.63 ~ 6.64	
79 47 09	5.5 - 5	5.3					
79 47 10	5.5 - 6	6.4		30.5			
79 47 11	5.5 - 8	8.4	15.0	35.5			
79 47 12	5.5 - 10	10.5					

Equivalent to Type "Insulated Eyelet" (See 79 45 21 to 79 45 29).

### Type "Y-TG"



"Y-TG"

CODE	Nominal Size	Size mm				Applicable Twisted Wire mm <sup>2</sup>	Unit Per Pcs.
		d2φ	B	L	dφ		
79 47 16	1.25 - 3L	3.7	7.7	19.4	3.2	0.5 ~ 1.65	
79 47 17	1.25 - 4M	4.3	8.1	21.9			
79 47 18	1.25 - 5	5.3	9.6	23.0			
79 47 19	2.0 - 4	4.3	8.0	21.5	3.9	1.04 ~ 2.63	
79 47 20	2.0 - 5	5.3		21.4			
79 47 21	5.5 - 4	4.3	9.0	25.7			
79 47 22	5.5 - 5	5.3					
79 47 23	5.5 - 6	6.4	12.5	32.7			

Equivalent to Type "Insulated Spade" (See 79 45 31 to 79 45 36), and "Insulated Spanner Head" (See 79 45 41).

### Cable Shoe Pliers

Alicates para Terminales 压着ペンチ 电缆终端套管钳子

A tool for pressing cable shoes on electric cables for sizes of 1.25, 2.0, 5.5 and 8 mm<sup>2</sup> in working capacity.  
A must tool for radio repairers and electricians. Length: 250 mm.

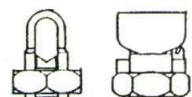


61 17 30 Plier, cable shoe 1.25 mm ~ 8 mm sq. Pr.

### Antenna Connectors

Sujetacable de Antena アンテナコネクター 天线接头

Brass made antenna connector for ships use.



Unit Per Pcs.

CODE	mm <sup>2</sup>	Applicable Antenna Wire
79 47 41	8	O.D. 2.0 ~ 3.2 mm
42	14	O.D. 2.0 ~ 5.0 mm
43	22	O.D. 2.0 ~ 6.0 mm
44	38	O.D. 2.0 ~ 8.0 mm

### Watertight Cable Connectors

Conectores de Cable Estanco 防水電線コネクター 防水电线接头

For connecting cables on deck or any other places where rain, seawater or humidity exists. Interior fixtures are brass sealed inside of a rubber cover.



Unit Per Pcs.

CODE	Pole	Ampere	CODE	Pole	Ampere
79 47 51	2	15	79 47 53	3	15
52	2	20	54	3	20

## Welding Cable Connectors

Conectores de cables de soldadura

溶接用ケーブルコネクター

焊接电缆连接器



Brass bar with interior and exterior covered in watertight rubber. Specially designed for welding cable connections.

CODE	Ampere	Applicable Cable Size mm	Overall Length mm	Weight grm	Unit Per Pcs.
79 47 61	300A	38 ~ 50	200	300	
62	500A	60 ~ 80	295	510	
63	750A	100 ~ 125	275	750	
64	1,000A	150 ~ 200	300	950	

## Cable and Pipe Straps (Saddle)

Grapa Metálica Tipo Puente サドル 线管夹



Iron made saddle used for electric cable or conduit pipes. Also available in plastic upon request.

CODE	Applicable Calbe O.D. mm	Pcs Per Box	CODE	Applicable Calbe O.D. mm	Pcs Per Box	Unit Per Box
79 47 71	9.8 ~ 12	100	79 47 76	30 ~ 33	50	
72	12.5 ~ 14	100	77	38 ~ 41	50	
73	14.5 ~ 17	100	78	50 ~ 53	20	
74	18 ~ 20	100	79	63.5 ~ 67	20	
75	25 ~ 26.5	50	80	76 ~ 79	10	

## Cable Staples

Grapas para Cable Tipo U ステーブル

电线 U 形钉



Plastic insulated WEB cable staples for temporarily stapling indoor cables. Supplied 100 pcs per box.

CODE	No.	Applicable Cable	CODE	No.	Applicable Cable	Unit Per Box
79 47 85	1	1.6 mm <sup>2</sup> x 2C	79 47 87	3	2.6 mm <sup>2</sup> x 2C	
86	2	2.0 mm <sup>2</sup> x 2C	88	4	2.6 mm <sup>2</sup> x 3C	

## Cable Clips

Grapa para Cable ケーブルクリップ 电夹



Made of plastic complete with hard plated steel pin, assembled ready for use.

CODE	Cable O.D.	CODE	Cable O.D.	Unit Per Pcs.
79 47 91	4 - 7 mm	79 47 94	16 mm	
92	7 - 11 mm	95	18 mm	
93	10 - 14 mm	96	21 mm	

## Cable Markers

Marcadores para Cable マーキングシート

电线记号板

Temporary or permanent marking for identification of cable after termination. Cloth made with glue on the back for easy application. Specify required number marked 0-9 or alphabet marked A-Z for each sheet or in full set.



79 48 01	Marking number, 0 - 9 each respective sheet	Pc.
79 48 02	Marking number, 0 - 9 in full set of 10 sheets	Set
79 48 03	Marking alphabet, A - Z each respective sheet	Pc.
79 48 04	Marking alphabet, A - Z in full set of 26 sheets	Set

## Marine Watertight Cable Glands for Electric Appliance

Prensaestopas estancos marinos para aparatos eléctricos

船用防水ケーブルグランド (箱用)

船用防水电缆贯穿导管



Brass, screw type cable glands for watertight electric appliances to be fixed on an enclosure by nut.

CODE	Nominal Size mm	Inner Gasket Inside Aiam. mm	Pipe Thread PF	Unit Per Pcs.
79 48 11	10	7	3/8	
12	15	9	1/2	
13	20	12	3/4	
14	25	16	1	
15	30	22	1-1/4	
79 48 16	35	28	1-1/2	
17	40	32	1-1/2	
18	45	36	2	
19	50	42	2	
20	55	46	2-1/2	
79 48 21	60	52	2-1/2	

## IP 68 Brass and Polyamide Cable Glands

Prensaestopas de latón y poliamida IP 68

IP 68 真鍮およびポリアミド製ケーブルグランド

IP 68 黄铜和聚酰胺电缆接头

Ingress Protection 68, brass and polyamide types are also available for higher watertight protection.



CODE	Nominal Size mm	CODE	Nominal Size mm	Unit Per Pcs.
Brass				
Polyamide				
79 47 24	M16 x 1.5	79 47 31	M16 x 1.5	
25	M20 x 1.5	32	M20 x 1.5	
26	M25 x 1.5	33	M25 x 1.5	
27	M32 x 1.5	34	M32 x 1.5	
28	M40 x 1.5	35	M40 x 1.5	
79 47 29	M50 x 1.5	79 47 36	M50 x 1.5	
30	M63 x 1.5	37	M63 x 1.5	

## Explosion Proof Cable Glands for Electric Appliance

Prensaestopas antideflagrantes para aparatos eléctricos

電気機器用防爆型ケーブルグランド 用于电器的防爆电缆接头

Explosion proof cable gland for use indoors, outdoors and hazardous areas. Available for multi armoured or unarmoured cables.



Multi armoured cables



Unarmoured cables

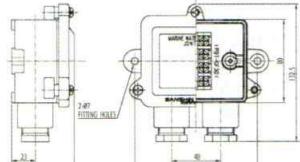
Specifications				Unit Per Pcs.					
Explosion Protection		IECEx: Ex d I/IIC MbGb, Ex e I/IIC MbGb, Ex nR IIC Gc, Ex tb IIIC Db(Multi armoured) Ex d IIC Gb, Ex e IIC Gb, Ex nR IIC Gc, Ex tb IIIC Db (Unarmoured) ATEX: II 2G, II 2D, II 3G		No. of Terminal	Rated V Amp	No. of Cable Gland	Material	Weight Kg	
Ingress Protection		IP 65							
Operating Temperature		-20°C up to +95°C							
		Unit Per Pcs.							
CODE	Nominal Size mm	CODE	Nominal Size mm						
For Multi Armoured Cable		For Unarmoured Cable							
79 47 45	M20	79 47 55	M20						
46	M25	56	M25						
47	M32	57	M32						
48	M40								
49	M50								
79 47 50	M63								

## Marine Watertight Joint Boxes

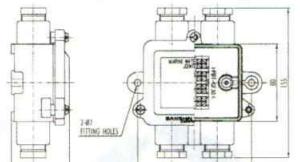
Caja Derivación Estanca 防水接続箱 船用防水接线盒

Marine watertight type joint boxes mainly used for wiring in engine rooms, stores and on decks, etc. Ingress Protection is 56.

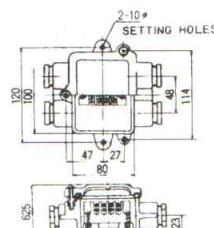
### Plastic



Type 1 (79 48 31)



Type 2 (79 48 32)



Type 2M (79 48 33)

### Brass.



1150



1151



1152 (T)



1153 (+)



1154



1155



1156

CODE	Type	No. of Terminal	Rated V	Rated Amp	No. of Cable Gland	Material	Weight Kg	
79 48 31	1	3	500	20	2	Polycarbonate	0.40	
	32	3	500	20	4	Polycarbonate	0.49	
	33	3	250	20	4	Phenol Resin	0.45	
79 52 01	1150	4	500	16	2	Brass	0.7	
	02	1151	4	500	16	2	Brass	0.6
	03	1152 (T)	4	500	16	3	Brass	0.7
	04	1153 (+)	4	500	16	4	Brass	0.8
	05	1154	4	500	16	3	Brass	0.8
	06	1155	4	500	16	4	Brass	0.9
	07	1156	4	500	16	3	Brass	0.8

## Explosion Proof Watertight Joint Boxes

Cajas de juntas estancas a prueba de explosiones  
防爆防水ジョイントボックス 防爆防水接头盒

Marine watertight explosion-proof joint boxes are specialized enclosures designed to prevent explosions from igniting surrounding gases or vapors. Made of brass, keep out water, ensuring electrical safety in hazardous environments by containing potential sparks.

Specifications					
Rated Current		2.5 mm <sup>2</sup> : max. 22 A 4.0 mm <sup>2</sup> : max. 30 A 6.0 mm <sup>2</sup> : max. 39 A			
Protection		II 2G EEx e II T6, Zone 1			
Temperature		-50°C ~ +100°C			
Voltage		Max 690 V			
Ignition Protection		67			



Unit Per Pcs.						
CODE	Type	No. of Terminal	Voltage	No. of Cable Gland	Material	Weight Kg
79 52 11	510/D	2	690	2	Brass	1.2
12	510/2	2	690	2	Brass	1.2
13	510/3	2	690	3	Brass	1.3
14	510/4	2	690	4	Brass	1.4

## Electric Cable Enclosures

### Fiberglass Reinforced Plastic

Caja Derivación Fibra de Vidrio ブルボックス 船用防水接线盒

FRP (Fiberglass Reinforced Plastic) box for treatment of cable end for use indoor and outdoor.



Waterproof and dustproof construction with inner packing.

CODE	Size mm W x L x D	CODE	Size mm W x L x D
79 48 35	100 x 100 x 100	79 48 38	200 x 200 x 100
36	150 x 150 x 100	39	200 x 200 x 125
37	150 x 150 x 150		

## Cable Guard Channels

### (Cable Trays)

Canalera Galvanizada Ranurada

ケーブルチャンネル 电缆保险盒



Galvanized iron channeling for cable guard. Standard sizes are listed below.

Unit Per Pc.					
CODE	Width mm	Length mm	CODE	Width mm	Length mm
79 48 41	50	1,800	79 48 43	50	1,800
42	75	1,800	44	75	1,800

## Self Locking Cable Ties

Ataduras de cables autolockantes  
セルフロックケーブルタイ 自锁式电缆扎带

### Plastic

A plastic band designed for bundling wires, hoses, tubing, etc. A stainless steel barb mounted in the head locks the band at any desired diameter.



### Unit: Per Piece

Unit Per Pc.			
CODE	Length mm	CODE	Length mm
79 48 51	100	79 48 56	350
52	150	45	450
53	200	46	760
54	250	47	810
55	300	48	920

### Unit: 100's/Packet

Unit Per Pkt			
CODE	Length mm	CODE	Length mm
79 48 49	100	79 48 60	350
50	150	69	450
57	200	70	760
58	250	71	810
59	300	72	920

### U-V Resistant Type (Per Piece)

Excellent UV (Ultra-Violet) resistant nylon suitable for outdoor use. Temperature range -40° to 180°F.

Unit Per Pc.			
CODE	Length mm	CODE	Length mm
79 48 73	100	79 48 76	250
74	150	77	300
75	200	78	350

### U-V Resistant Type (100'S/Packet)

Unit Per Pkt			
CODE	Length mm	CODE	Length mm
79 48 79	100	79 48 86	250
80	150	87	300
85	200	88	350

### Stainless Steel



### Unit: Per Piece

Unit Per Pc.			
CODE	Length mm	CODE	Length mm
79 48 05	100	79 48 08	350
06	150	09	400
89	200	97	450
07	250	10	500
90	300		

### Unit: 100's/Packet

Unit Per Pkt			
CODE	Length mm	CODE	Length mm
79 48 22	100	79 48 27	350
23	150	28	400
24	200	29	450
25	250	30	500
26	300		

## Cable Tie Gun for Stainless Steel

Herramienta de instalación de bridas de acero inoxidable

ステンレス結束バンド取り付け工具 不锈钢电缆扎带安装工具

A specialized tool to fasten durable stainless steel ties easily and safely. Designed to provide more efficient way of installing stainless steel cable ties with secure and tight grip than manual methods.



79 48 40	Cable tie gun for stainless steel cable tie	Pc.
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## Antenna Cable Insulators

Aislador de Cable de Antena アンテナ碍子 天线绝缘子

Duralex glass or porcelain insulators specially designed for ship antennas.



### How to order: CODE

Antenna cable insulator, TYPE, MATERIAL, SIZE

Unit Per Pc.			
CODE	Type	Material	Size mm
79 48 61	A	Porcelain with Galv. Iron	350 30
62		Duralex Glass with Brass	
79 48 63	B		270 60
64			350 90
79 48 65	C	Porcelain	190 50
66			250 55
79 48 67	D		75
68			100

## Alligator Clips

Pinza Cocodrilo ワニ口クリップ 鳄鱼夹

Plastic covered strong spring clips for wires, etc. Specify the overall length and the colour of the plastic cover, black or red.



### How to order: CODE

Alligator clip, TYPE, OVERALL LENGTH mm, COLOUR

Unit Per Pkt			
A-Type		B-Type	
CODE	Overall Length mm	CODE	Overall Length mm
79 48 81	34	79 48 84	62
82	50	-	-
83	73	-	-

## Banana Pin Plugs

Puntas para Multímetro Tipo "Banana" バナナチップ 栓塞

Coloured plastic with a chromed brass pin. The pin diameter is 4.5 mm. Available in red, black, green, white, yellow and blue, specify when ordering.



Unit Per Pc.			
CODE	Colour	CODE	Colour
79 48 91	Red	79 48 94	White
92	Black	95	Yellow
93	Green	96	Blue

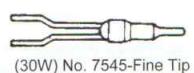
## 19. Solders

### Quick Rechargeable Soldering Irons

Soldadores Eléctrico Recargables

充電式コードレス半田ゴテ 快充電式电烙铁

A cordless portable soldering iron heated by a nickel cadmium 2.5V rechargeable battery. About 200 soldering jobs can be performed at one time in one hour of quick charging. Separate battery charger operates charging automatically when the iron is placed on it. The pilot lamp of the iron helps when working in dark places. A set includes a charger and two fine tips (No. 7545, No. 7577). For further information, please write or ask for a catalogue.

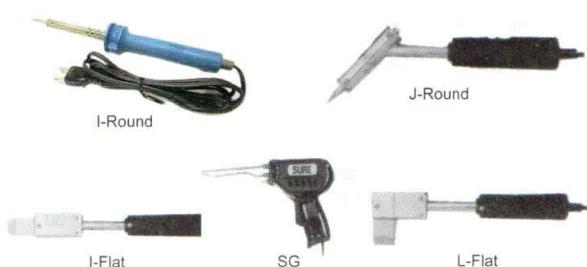


CODE	Description	Unit Per Pc.
79 50 01	Cordless soldering iron Model No. 7800 with charger AC 110V and 2 spare tips	Set
79 50 02	Spare Tip No. 7535 Regular	Pc.
03	Spare Tip No. 7545 Fine	Pc.
04	Spare Tip No. 7546 Heavy	Pc.
05	Spare Tip No. 7566 Micro	Pc.
79 50 06	Charger Ac 110V	Pc.

### Electric Soldering Irons

Soldadores Eléctricos 半田こて 电烙铁

Nickel chromed replaceable elements, insulated with mica and protected by a rugged outer housing. Replaceable tips.



### AC 110V

#### How to order: CODE

Soldering iron, electric, 110 volt, TYPE, WATTAGE

CODE	Watts	Top Size mm	Overall Length mm	Unit Per Pc.
<b>110V I-Round</b>				
79 50 11	15	4 x 76	230	
12	30	5 x 81	230	
13	60	7 x 110	410	
14	80	7 x 110	430	
15	100	9 x 110	345	
16	150	13 x 115	350	
17	200	16 x 125	365	
18	300	19 x 135	375	

(to be continued)

#### 110V I-Flat

79 50 21	150	8 x 33 x 110	330
22	200	8 x 33 x 110	330
23	300	15 x 35 x 115	350
24	500	18 x 40 x 150	430

#### 110V J-Round

79 50 26	100	9 x 125	340
27	150	13 x 130	340
28	200	16 x 145	340
29	300	19 x 150	360

#### 110V L-Flat

79 50 31	150	7 x 31 x 70	320
32	200	7 x 31 x 70	320
33	300	15 x 35 x 75	335
34	500	19 x 41 x 90	420

#### 110V SG

79 50 36	30	1.0 x 25	200
37	51	1.8 x 37	245

### AC 220V

#### How to order: CODE

Soldering iron, electric, 220 volt, TYPE, WATTAGE

Unit Per Pc.

CODE	Watts	Top Size mm	Overall Length mm	
<b>220V I-Round</b>				
79 50 51	30	5 x 81	230	
52	60	7 x 110	308	
53	80	7 x 110	308	
54	100	9 x 110	345	
55	150	13 x 115	350	
56	200	16 x 125	365	
57	300	19 x 135	375	

#### 220V I-Flat

79 50 61	150	8 x 33 x 110	330
62	200	8 x 33 x 110	330
63	300	15 x 35 x 115	350
64	500	18 x 40 x 150	430

#### 220V J-Round

79 50 66	100	9 x 125	340
67	150	13 x 130	340
68	200	16 x 145	340
69	300	19 x 150	360

#### 220V L-Flat

79 50 71	150	7 x 31 x 70	320
72	200	7 x 31 x 70	320
73	300	15 x 35 x 75	335
74	500	19 x 41 x 90	420

#### 220V SG

79 50 76	30	1.0 x 25	200
77	51	1.8 x 37	245

### Electric Soldering Iron Elements

Repuestos para Soldador Eléctrico

半田こてヒーター 电烙铁铁芯

Replacement spare heaters for the aforementioned electric soldering irons.



#### How to order: CODE

Element for electric soldering iron, VOLTAGE, TYPE, WATTAGE

CODE	Watts	Size mm	Unit Per Pc.
			CODE
110V			220V

**I-Round**

79 51 01	15	12 x 77	79 51 31
02	30	12 x 83	32
03	60	16.5 x 70	33
04	80	16.5 x 70	34
05	100	25.5 x 80	35
06	150	25.5 x 80	36
07	200	32 x 90	37
08	300	32 x 80	38

**I-Flat**

79 51 11	150	98 x 29 x 2	79 51 41
12	200	68 x 29 x 2	42
13	300	75 x 33 x 2.5	43
14	500	95 x 38 x 3	44

**J-Round**

79 51 16	100	25.5 x 80	79 51 46
17	150	25.5 x 80	47
18	200	32 x 90	48
19	300	35 x 90	49

**L-Flat**

79 51 21	150	68 x 29 x 2	79 51 51
22	200	68 x 29 x 2	52
23	300	75 x 33 x 2.5	53
24	500	95 x 38 x 3	54

**Resin Cored Soldering Wire**

Hilo Estaño para Soldar やに入り糸半田 树脂心焊丝

Ready for use soldering wire with resin core.  
450 grm spooled.

79 51 70	Soldering wire resin cored, 450 grm	Spl.
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**Soldering Bars**

Barra Estaño-Plomo para Soldar 棒半田 焊棒



For general soldering work. Contains 50 percent tin and lead.

79 51 72	Soldering bar	Kgs.
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**Soldering Paste**

Pasta para Soldar 半田ペースト 焊膏

Paste flux for all metals except aluminium.  
Takes the place of acid in all soldering jobs. Supplied in 50 grm tins.

79 51 74	Soldering paste 50 grm	Tin
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**Soldering Iron Tip Cleaners**

Limpia Portasoldador て先クリーナー 焊枪头清洁器



For removing oxide and cleaning soldering iron tips. Size : 110 x 75 x 25 mm.

79 51 76	Tip cleaner for soldering iron	Pc.
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**Desoldering Guns****(Solder Suckers)**

Desoldador con Bomba 半田吸取器 去焊枪

Hand operated high power suction cleaner ideal for electronic printed circuit board repairing. Overall length 215 mm. Inside diameter of the nozzle is 3 mm.



Desoldering Gun

Spare Nozzle

79 51 78	Desoldering gun vacuum suction type	Pc.
79 51 79	Spare nozzle for desoldering gun	Pc.

**20. Electrical Insulation Materials****Ebonite Solid Bars**

Barras Maciza de Ebonita エボナイト棒 硬橡胶棒

Standard length is one meter.



Unit Per Mtr.

CODE	Diam. mm	CODE	Diam. mm	CODE	Diam. mm
79 53 01	8	79 53 09	22	79 53 17	40
02	10	10	25	18	45
03	12	11	26	19	50
04	13	12	28	20	55
05	15	13	30	21	60
79 53 06	16	79 53 14	32	79 53 22	65
07	18	15	35		
08	20	16	38		

**Ebonite Sheets**

Planchas de Ebonita エボナイト板 硬橡胶板



Standard size is 600 x 900 mm. Furnished either full sheet or small cut as required.

**How to order: CODE**

Ebonite sheet, 600 x 900 mm, THICKNESS mm

Unit Per Sh.

CODE	Thick mm	CODE	Thick mm	CODE	Thick mm
600 x 900 mm					
79 53 31	3	79 53 36	11	79 53 41	25
32	5	37	13	42	30
33	6	38	15		
34	8	39	18		
35	10	40	20		

**Bakelite Solid Bars**

Barras Maciza de Baquelita

ベーカライト棒 硬胶木棒



Standard length is one meter.



Unit Per Mtr.

CODE	Diam. mm	CODE	Diam. mm	CODE	Diam. mm
79 53 51	8	79 53 59	22	79 53 67	40
52	10	60	25	68	45
53	12	61	26	69	50
54	13	62	28	70	55
55	15	63	30	71	60
79 53 56	16	79 53 64	32	79 53 72	65
57	18	65	35		
58	20	66	38		

## Bakelite Sheets

Planchas de Bakelite ベークライト板 胶木板

Standard size is 1,000 x 1,000 mm.



### How to order: CODE

Bakelite sheet, 1,000 x 1,000 mm, THICKNESS mm

Unit Per Sh.					
CODE	Thick mm	CODE	Thick mm	CODE	Thick mm
79 53 81	0.5	79 53 87	6	79 53 93	20
82	1	88	8	94	25
83	2	89	10	95	30
84	3	90	12	96	40
85	4	91	15	97	45
79 53 86	5	79 53 92	18	79 53 98	50

## Insulation Paper

Planchas Cartón Aislante コイル絶縁紙 绝缘纸

Made from 100 % craft pulp for the insulation of electrical instruments. Available in thicknesses from 0.05 to 0.5 mm. Standard width is 450 mm, supplied in rolls of 20 meters.



Unit Per Mtr.					
CODE	Thickness mm	Width mm	CODE	Thickness mm	Width mm
79 54 01	0.05		79 54 06	0.18	
02	0.08		07	0.25	
03	0.10	450	08	0.38	450
04	0.13		09	0.50	
05	0.15				

## Artificial Mica Sheets

Planchas de Mica Artificial

人工マイカ板 人工云母片



Size for all sheets is 450 x 900 mm.

Unit Per Sh.			
CODE	Thickness mm	CODE	Thickness mm
79 54 11	0.5	79 54 14	1.6
12	0.8	15	2.0
13	1.0		

## Insulating Mats from Rubber

Alfombrillas aislantes de goma ゴム絶縁マット 橡胶绝缘垫

A rubber insulating mat for added protection when working live or close to live parts. Fully insulating to reduce risk of short circuit up to AC 1,000V and DC 1,500V. Insulation standard: IEC 61112 DIN EN 61112.



Unit Per Sh.			
CODE	Size mm	Thickness mm	Weight
79 54 16	500 x 500		301 grm
17	1,000 x 1,000	1.0	1.2 kg
18	10,000 x 1,000		12 kg

Ref. Knipex No. 98 67 05 / 98 67 10 / 98 67 15

## Insulation Tapes

Cintas Aislantes 絶縁テープ 绝缘胶带

### Cotton

Cintas de Algodón Aislantes 締テープ 棉絕縁帶

For use in general insulation applications.  
25 mtr roll.



Unit Per Sp.					
CODE	Width mm	Meter Per Spool	CODE	Width mm	Meter Per Spool
79 54 21	13	25	79 54 23	25	25
22	19	25	24	32	25

### Mica

Cintas de Mica Aislantes マイカテープ 雲母绝缘带

For electrical and heat insulation. 25 mtr roll, 19 mm width.



79 54 27 Tape, mica, insulation, 19mm x 25mtr Rls.

### PVC

Cintas de PVC Aislantes

ビニールテープ P.V.C. 绝缘带

For electrical insulation in domestic and industrial installations, binding, pipe lagging, etc. Available in white, black, blue, red, yellow, green, yellow/green, grey and brown colours. 20 mtr per roll.



Unit Per Sp.					
CODE	Width mm	Meter Per Spool (mtr)	CODE	Width mm	Meter Per Spool
Black					
79 54 33	19	10	79 54 32	50	20
79 54 31	19	20			
White					
79 54 10	19	10	79 54 20	50	20
79 54 19	19	20			
Blue					
79 54 25	19	10	79 54 28	50	20
79 54 26	19	20			
Red					
79 54 29	19	10	79 54 34	50	20
79 54 30	19	20			
Yellow					
79 54 35	19	10	79 54 38	50	20
79 54 37	19	20			
Green					
79 54 39	19	10	79 54 43	50	20
79 54 40	19	20			
Yellow-Green					
79 54 44	19	10	79 54 46	50	20
79 54 45	19	20			
Grey					
79 54 47	19	10	79 54 49	50	20
79 54 48	19	20			
Brown					
79 54 50	19	10	79 54 60	50	20
79 54 59	19	20			

### Rubber

Cintas de Goma Autosoldable ゴム絶縁テープ

橡胶绝缘带

High dielectric strength, moisture proof, water proof, weather resistant, acid and alkali resistant, non corrosive, low temperature resistant, age resistant. For use in the splicing and termination of rubber and plastic insulated cable.



79 54 36 Rubber insulation tape, 20 mm x 10 mtr Rls.

**Empire**

Cintas Aislantes de Lino  
リノテープ 油布绝缘带

Varnished empire or lino tapes for insulation.  
60 mtr roll, if not specified 19 mm width will be furnished.



CODE	Width mm	Meter Per Spool	CODE	Width mm	Meter Per Spool
79 54 41	19	60	79 54 42	25	60

**Electric Teflon Tapes**

Cintas Aislantes (Eléctrico) de Teflón  
電気用テフロンテープ 电气用特氟隆绝缘带



All purpose insulation tape for electrical installations, i.e. condensers, alternators, etc. Tapes wider and thicker than those listed below are available upon request.

**How to order: CODE**

Electric teflon tape, WIDTH, THICKNESS mm

CODE	Thick mm	Meter Per Roll	CODE	Thick mm	Meter Per Roll
79 54 51	0.10	10	79 54 61	0.10	10
52	0.13		62	0.13	
53	0.18		63	0.18	
54	0.20		64	0.20	
55	0.25		65	0.25	
79 54 56	0.30	10	79 54 66	0.30	10
57	0.40		67	0.40	
58	0.50		68	0.50	

**Electric Sleeve Tubes**

Tubos Aislante (Empire, P.V.C., Cristal) チューブ 电气套管



Varnished cloth rolled tube (empire tube)  
length 1 mtr. P.V.C. vinyl tube in various  
colours. Length 50 mtrs. Glass tube  
white colour, Length 1 mtr.

**How to order: CODE**

Electric sleeve tube, KIND of TUBE, INSIDE DIAM mm

Unit Per Mtr.					
Empire Tube		PVC Tube		Glass Tube	
CODE	Inside Diam. mm	CODE	Inside Diam. mm	CODE	Inside Diam. mm
79 54 71	1	79 54 81	1	79 54 91	2
72	3	82	3	92	4
73	5	83	5	93	6
74	7	84	7	94	8
75	9	85	9	95	10
79 54 76	11	79 54 86	11		
77	13	87	13		
78	15	88	15		

**Heat Release Silicone Rubber Sheet**

Hoja de caucho de silicona de liberación de calor  
熱放射シリコンシート 热辐射硅片



An adhesive silicone rubber sheet to release heat from heat-generating devices such as control panels or other electrical devices efficiently without power consumption.

Suitable for electronic substrates that cannot use heat sink, just put it on electrical systems to prevent overheating. It helps not only saving electricity consumption but also improving the usage environment and extending its operation life. It is made with 3 layers (heat releasing lamia, aluminum lamia, heat conduction lamia) and available in 3 colours (white, black, ivory).

**Specification and Characteristic**

Material	Silicon Rubber
Purposes	Control Panel, Server, etc.
Thickness	30 µm (heat releasing lamia) 30 µm (aluminum lamia) 30 µm (heat conduction lamia)
Heat Emissivity	0.85<
Thermal Conductivity	0.7 (W/m·K)

CODE	Colour	Unit Per Sh.
79 54 69 70	Black	200 × 300 mm
		300 × 1,000 mm
79 54 79 80	White	200 × 300 mm
		300 × 1,000 mm
79 54 89 90	Ivory	200 × 300 mm
		300 × 1,000 mm

**Heat Shrink Plastic Tubing**

Tuberías de plástico de encogimiento por calentamiento  
ヒートシャーリングチューブ 热收缩套管



Used to insulate wires, or to bundle them together, providing abrasion resistance and environmental protection for stranded and solid wire conductors, connections, joints and terminals in electrical work. Shrink tubing will shrink one half of its nominal diameter, and less than 7% of its length, when heated.

Please specify colour of tubing, with nominal size, finish length, material of tubing.

Nom. Size	Min. Expanded I.D.	Max. Recovered I.D.	Nom. Size	Min. Expanded I.D.	Max. Recovered I.D.
3/64	0.046" (1.17mm)	0.023" (0.058mm)	1/2	0.500" (12.70mm)	0.250" (6.35mm)
1/16	0.063" (1.60mm)	0.031" (0.079mm)	3/4	0.750" (19.05mm)	0.375" (9.53mm)
3/32	0.093" (2.36mm)	0.046" (1.17mm)	1	1.00" (25.40mm)	0.500" (12.70mm)
1/8	0.125" (3.18mm)	0.062" (1.57mm)	1-1/2	1.500" (38.10mm)	0.750" (19.05mm)
3/16	0.187" (4.75mm)	0.093" (2.36mm)	2	2.000" (50.80mm)	1.00" (25.40mm)
1/4	0.250" (6.35mm)	0.125" (3.18mm)	3	3.00" (76.20mm)	1.50" (38.10mm)
3/8	0.375" (9.53mm)	0.187" (4.75mm)	4	4.00" (101.60mm)	2.00" (50.80mm)

**How to order: 79 - 54 - 96**

Tubing, heat shrink, plastic, NOMINAL SIZE, FINISH LENGTH, COLOUR (mtr)

**Insulation Putty****(Neoseal)**

Masilla Dieléctrica 絶縁バテ 绝缘油泥

An insulation sealing compound called "Neoseal". This is a common solution for sealing cable entrances through walls or floors...terminal boxes. Furnished in 1 kg pkts.



79 55 01	Putty insulation 1 kg	Pkt.
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## Electric Contact Restorer

Restaurador Contacto Eléctrico 接点復活剤 电接点还原剂

Used for electrical machinery. Cleans contact points with a protective oil film and immediately restores long-lasting, good contact. (Do not apply to relay contacts.) Contains no CFC's (Chlorofluorocarbons).

Unit Per Tin

CODE	79 55 05	79 55 06
grm	157	250

## Electric Contact Relay Cleaners

Limpiaadores Contacto Eléctrico "Contact Cleaner"

リレークリーナー 电气接点清洁剂

Cleaner for relay contacts. Simply spray it on contact points. It dissolves and removes film and dirt, to ensure reliable contact. Does not affect metals or resin. Contains no CFC's (Chlorofluorocarbons).

Unit Per Tin

CODE	79 55 10	79 55 11
grm	100	260

## Electrical Industry Formula

Fórmula de Industrial Eléctrico Limpiaador

"CRC" 2-26 フォーミュラ 电气工业配方

Prevents malfunction due to the deteriorating effects of moisture and corrosion; extends operational life and reduces down-time and maintenance. Displaces moisture, lubricates and penetrates. Restores and maintains the resistivity of insulating material and improves the conductivity of contacts, commutators, etc. 16 oz aerosols.



45 05 91	Electrical industry formula CRC 2-26, 16 oz tin	Tin
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## Insulation Varnishes

Barnices Aislantes 絶縁ニス 绝缘漆

For general use with insulation or electrical apparatus. Red and clear types available. Furnished in 300 cc spray tins or 4 ltr liquid cans.

How to order: CODE

Insulation varnish, COLOUR, CONTENTS

CODE	Colour	Contents	Unit
79 55 21	Clear	Spray, 300 cc	Tin
79 55 22		Liquid, 4 ltr	Can
79 55 23	Red	Spray, 300 cc	Tin
79 55 24		Liquid, 4 ltr	Can

## Electric Insulation Rubber Gloves

Guantos Aislante Eléctrico de Goma

絶縁ゴム手袋 电气绝缘橡皮手套

Rubber gloves with high dielectric strength.



Unit Per Pr.

CODE	Available to	Tested to
79 55 31	600V	3,000V
32	7,000V	20,000V

## 21. Megaphones & Loud Speakers

### Power Megaphones

Megáfonos Powere パワーメガホン Powere 扩音器

High power transistor megaphone for use with R14P (C) or R6P(AA) dry batteries. Megaphones have a well balanced, snug fitting pistol grip. Audible range is approx. 250 mtr or more (JEITA, EIAJ TT-4501A). Dry batteries are sold separately.



How to order: CODE

Megaphone, power, RATED OUTPUT POWER, FUNCTION

CODE	Rated Output Power	Batteries	Audible Distance (JEITA)	Size mm	Funcion
				Diam. x Length	
79 57 01	6W	R6P(AA) x 6	Voice: 250 mtr	154 x 250	-
	6W	R6P(AA) x 6	Voice: 250 mtr	154 x 250	w/Siren
	6W	R6P(AA) x 6	Siren: 315 mtr	154 x 250	w/Whistle
	15W	R14P(C) x 6	Voice: 250 mtr	210 x 346	-

## Reflex Horn Speakers

Altavoces reflex de bocina

リフレックスホーンスピーカー 反射式号角扬声器

Aluminium alloy made loud speakers for fixed installation. Its external speaker component finished with powder coating ensure the unit's weatherproof capability. Large input type speakers as well as spark proof speakers not listed here are also available if required.



Unit Per Pc.				
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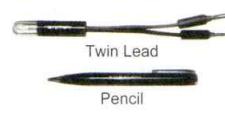
CODE	Rated Input Power Watts	OHM At Rated Input Power	Mouth Diam. mm	Material
79 57 11	5	2,000	172	Alum. Alloy, Stainless steel
	10	1,000	172	
	15	670	400	
	30	330	500	Alum. Alloy, Steel

## 22. Test Instruments

### Circuit Testers

Comprobador de Corriente サーキットテスター 电路探测器

Industrial quality tester for safe, easy testing of electrical circuits, spark-plugs, motors, fuses, etc. A built in neon lamp glows if the circuit is in order.



CODE	Type	Voltage	Unit Per Pc.
79 57 21	Twin Lead	80 - 550	
32	Pencil	80 - 600	

## Clamp Meters

Pinzas Voltímetro-amperimétricas  
クランプメーター 夹式仪器

Generally a current is measured by closing the clamp meter jaws over the conductor. The specially shaped mating heads of the clamp form a closed magnetic circuit with the cable passing through it.



Unit Per Set

CODE	79 57 30	
Model	DCM60R	
True RMS	Yes	
ACA	199.9/600A	±(2.0% + 5) 50-60Hz ±(2.9% + 5) 60-400Hz
ACV	199.9/600V	±(1.5% + 5) 50-400Hz
Ω	199.9Ω	±(1.9% + 3)
Continuity	Buzzer sounds at less than 100Ω	
Clamp Diameter/ Conductor Size	25 mm / 10 x 30mm	
Withstand Voltage	Less than AC 3,700 Vrms (Root Mean Square)	
Power Source	R-03 (UM-4 or AAA) 1.5V × 2 pc	
Size / Weight	L187 x W50 x H29mm / 210 grm	
Name of Mfr.	Sanwa Electric Instrument Co., Ltd.	

Unit Per Set

CODE	79 57 31	
Model	DCM400	
ACA	40/400A	±(1.9% + 5) 50-500Hz ±(2.5% + 5) 60-500Hz
ACV	400 / 600V	±(1.5% + 5) 50-500Hz
DCV	400 / 600V	
Ω	400Ω	± (1% + 2)
Frequency (A)	20 - 4k/10k Hz	
Frequency (V)	4k/40k/400k/ 1 MHz	± (0.1% + 1)
Continuity	Buzzer sounds at less than approx 40Ω	
Clamp Diameter/ Conductor Size	25 mm / 10 x 34mm	
Withstand Voltage	Less than AC 3,700 Vrms (Root Mean Square)	
Power Source	R-03 (UM-4 or AAA) 1.5V × 2 pc	
Size / Weight	L193 x W50 x H28mm / 230 grm	
Name of Mfr.	Sanwa Electric Instrument Co., Ltd.	

Unit Per Set

CODE	79 57 33	
Model	376	
True RMS	Yes	
Current AC via jaw	0.1 - 999.9A	
Voltage AC via iFlex™	0.1 - 2,500V	
Voltage AC	0.1 - 1,000V	
Voltage DC	0.1mV - 1,000V	
Resistance	0.1 - 60,000Ω	
Continuity	Less than 30Ω	
Jaw Opening	34 mm	
Power Source	R6P (UM-3 or AA) 1.5V × 2 pc	
Size mm	L249 x W85 x H45	
Weight	395 grm	
Name of Mfr.	Fluke (U.K.) Ltd.	

Remark : RMS denotes Remote Mean Square.

## Avo Meters (Testers)

Multimetros 回路計 万用表

These are matched, portable instruments; highly accurate for industrial electricity testing. They are designed to meet the requirements of most industrial test situations.

Carrying cases are available for all models. The specifications listed below are for your reference.



SP-18D



YX-361TR



CX-506a

### How to order: CODE

Avo meter, TYPE, MEASURING RANGE of DCV, ACV, DCA,  
ACA with MANUFACTURER'S NAME & MODEL

Unit Per Set

CODE	79 57 41	79 57 42	79 57 44
Model	SP-18D	YX-361TR	CX-506a
Type	Drop shock proof	Zero center & continuity LED	Universal polarity switching
Measuring Range	DCV	300m (5kΩ/V) 3/12/ 30/120V/600V. (20kΩ/V) ± 3% f.s.	0.1/0.5/2.5/ 10/50/250/1,000V (20kΩ/V) ± 2.5% f.s. 25kV(w/HV probe)
	ACV	12/30/120/300/ 600V (9kΩ/V) ± 3% f.s.	2.5/10V ± 4% f.s. 50/250/1,000V (9kΩ/V) ± 3% f.s.
	DCA	60μ/30m/0.3A ± 3% f.s.	50μ/2.5m/25m/ 0.25A(250mV) ± 2.5% f.s.
	Ω	2k/20k/2MΩ ± 3% of arc. 200MΩ ± 5% of arc.	2k/20k/200k/2M/ 20MΩ ± 3% of arc.
Power Source	R6P (1.5V) × 2	R6P (1.5V) × 2, 6F22(9V) × 1	R6(1.5V) × 2, 6F22(9V) × 1
Size mm	159.5 × 129 × 41.5	150 × 100 × 37	165 × 106 × 46
Weight grm	320	290	370

Name of Mfr.: Sanwa Electric Instrument Co.,Ltd.

## Compact System Digital Multi Testers

Multimetros Digitales コンパクトシステムデジタルマルチテスター  
简便数字多用電表

These compact system digital multi-testers cover all basic measuring functions of DC voltage, AC voltage, DC current, AC current and resistance.



79 57 54 / 79 57 55



79 57 56

Unit Per Set

CODE	79 57 54	79 57 55	79 57 56
Model	CD771	CD772	CD800a
Type	4,000 count	AC True RMS & Wide current	4,000 count display
DCV	400mV 4/40/400/ 1,000V	400mV 4/40/400/ 1,000V	400mV 4/40/400/ 600V
ACV	4/40/400/ 1,000V	4/40/400/ 1,000V	4/40/400/ 600V
DCA	400μ/4,000μ/ 40m/400m/ 4/10A	400μ/4,000μ/ 40m/400m/ 4/15A	40m/400mA

(to be continued)

	Unit Per Set		
CODE	79 57 54	79 57 55	79 57 56
Model	CD771	CD772	CD800a
ACA	400μ/4,000μ/ 40m/400m/ 4/10A	400μ/4,000μ/ 40m/400m/ 4/15A	40m/400mA
Resistance	400/4k/40k/ 400k 4M/40MΩ	400/4k/40k/ 400k 4M/40MΩ	400/4k/40k/ 400kΩ 4M/40MΩ
Capacitance	50n/500n/5μ/ 50μ/100μF	50n/500n/5μ/ 50μ/100μF	50/500nF 5μ/50/100μF
Frequency	5/50/500/5k/ 50k/100kHz	5/50/500/5k/ 50k/100kHz	5Hz – 100kHz
Over Voltage Category	IEC61010 CAT.III 600V CAT.II 1,000V	IEC61010 CAT.III 600V CAT.II 1,000V	-
CE Mark	Applied	Applied	-
Power Source	R6P(1.5V)×2	R6P(1.5V) × 2	R6P(1.5V) × 2
Size mm	H166×W82× D44	H166×W82x D44	H176xW104x D46
Weight grm	360	360	340
Name of Mfr.	Sanwa Electric Instrument Co.,Ltd.		

	Unit Per Set		
CODE	79 57 60	79 57 67	79 57 68
Model	115	177	27II
Type	True RMS & 6,000 count	True RMS & 6,000 count	6,000 count & display mode
DCV	600mV 60/600V	600mV 6/60/600/ 1,000V	600mV 6/60/600/ 1,000V
ACV	600mV 6/60/600V	600mV 6/60/600/ 1,000V	600mV 6/60/600/ 1,000V
DCA	6A/10A continuous or 20A overload for 30 seconds maximum	60m/400mA 6A/10A	600μ/6,000μA 60mA/400mA/ 6A/10A
ACA	6A/10A continuous or 20A overload for 30 seconds maximum	60m/400mA 6A/10A	600μ/6,000μA 60mA/400mA/ 6A/10A
Resistance	600Ω 6k/60k/ 600kΩ 6M/40MΩ	600Ω 6k/60k/ 600kΩ 6M/50MΩ	600Ω 6k/60k/ 600kΩ 6M/50MΩ
Frequency	99.99/ 999.9Hz 9.999k/50kHz	99.99/ 999.9Hz 9.999k/ 99.99kHz	199.99/ 1999.9Hz 19.999/ 199.99kHz >200kHz
Capacitance	1,000nF 10μ/100μ/ 10,000μF	1,000nF 10μ/100μ/ 9,999μF	10/100nF 1/10/100μF 9,999μF
Safety Compliance	ANSI/ SA-S82.01-1988, CSA C22.2- 1010.1, IEC 61010 to 1,000V Overvoltage Category III, 600V Overvoltage Category IV	ANSI/ISA- S82.02.01, CSA C22.2- 1010.1, IEC 61010 to 1,000V Overvoltage Category III, 600V Overvoltage Category IV	IEC 1010-1 CAT III/MSHA Approved
Power Source	9V Alkaline battery	Alkaline battery	3 x AA battery
Size mm	H167xW96x D46	H185xW90x D43	H198xW100x D63.5
Weight grm	350	420	698.5
Name of Mfr.	Fluke (U.K.) Ltd.		

## Solar-powered Digital Multi Testers

Multimetros Digitales, de Energía Solar  
ソーラー式デジタルテスター 太阳能数字式多用途表

Pocket type and high performance,  
magnesium dioxide lithium secondary  
battery powered with amorphous solar  
battery to store solar energy.



Basic Futures:  
3-3/4 digits 4,000 count / 0.7% best  
accuracy / Range hold / Auto power off  
(15 min.) / Low power ohm (input voltage 0.4V) at continuity  
range / Power saving design.

### Specifications

Model	PS8a
Type	Solor powered
DCV	400m/4/40/400/500V
ACV	4/40/400/500V
Resistance	400/4k/40k/400k/4M/40MΩ
Continuity	Buzzer sounds at less than 10-120Ω
Bandwidth	40 - 400 Hz
Power Source	Amorphous solar battery + manganese dioxide lithium secondary battery
Size mm	H115 × W57 × D18
Weight grm	85
Name of Mfr.:	Sanwa Electric Instrument Co.,Ltd.
79 57 69	Digital multi tester, solar powered model PS8a
	Pc.

## Digital Multimeter

Multímetro digital  
デジタルマルチメーター 数字万用表



Pocketable high performance digital multimeter  
that has accurate electrical measurements plus  
temperature, frequency and duty cycle. Also  
easy to use with gloves.

Basic Futures:  
Ideal for Industrial / Commercial applications  
600 V Cat III safety rating.  
6,000 count white LED backlit display Over-voltage indicator  
Diode test, data hold, Auto Power Off

	Unit Per Set	
CODE	79 57 70	
Model	DMM2100	
AC Voltage	750 V, accuracy ± (1.0%+3)	
DC Voltage	1,000 V, accuracy± (0.5%+3)	
AC/DC Current	0.1μA to 20A, accuracy ± (1.2%+3)	
Resistance	0.1Ω to 60MΩ, accuracy, ± (1.5%+3)	
Capacitance	0.001nF to 9.999mF, accuracy ± (5.0%+5)	
Frequency	0.01Hz to 9.99MHz, accuracy ± (0.1%+2)	
Duty Cycle	1% to 99%, accuracy ± (0.1%+2)	
Temperature	20 to 1,000 °C, accuracy ± (2.5%+5)	
Diode Test / Continuity	Yes	
Battery	1.5V AA Battery x 2	
Size / Weight	180 x 90 x 45 mm / 319 grm	
Name of Mfr.:	Acision	

## Insulation Testers

Medidor Aislamiento 絶縁抵抗計 电阻表

### AC 0 - 600V

A solid state insulation tester. Constructed for the purpose of testing the insulation of household electrical appliances.



#### How to order: CODE

Insulation tester, AC 0 - 600V, TYPE with  
MANUFACTURER'S NAME & MODEL

Unit Per Set

CODE	79 57 71	79 57 72
Model	PDM509S	DM509S
Insulation Resistance	500V / 100MΩ 0.05 - 0.1 - 50 -100MΩ	500V / 1,000MΩ 0.5 - 1 - 500 -1,000MΩ
ACV	0 - 600V	
DCV	0 - 60V	
Power Source	Alkaline battery 6LR61 (9V) x 1	
Size mm	H144 x W99 x D43	
Weight grm	310	
Name of Mfr.	Sanwa Electric Instrument Co., Ltd.	

Unit Per Set

CODE	79 57 74	79 57 75
Model	1503	1507
Insulation Test Range	0.1 - 2,000MΩ	0.01MΩ- 10GΩ
Insulation Test Voltage	500V / 1,000V	50V / 100V / 250V / 500V / 1,000V
ACV	0.1 - 600V	
DCV	0.1 - 600V	
Standards	ANSI/ISA 82.02.01 (61010-1) 2004, CAN/CSA-C22.2 No.61010-1-04, and IEC/EN 61010-1 2nd Edition	
Over Voltage Category	Category IV 600V	
Power Source	Alkaline battery LR6 (1.5V) x 4	
Size mm	H203 x W100 x D50	
Weight grm	550	
Name of Mfr.	Fluke (U.K.) Ltd.	

### AC 2 - 600V

An all-transistor insulation resistance tester featuring simple push-button, operation. It has a voltmeter scale for measuring AC voltage in addition to insulation resistance. This portable instrument is used for insulation resistance measurement of electrical machines and devices, control and switching equipment, power line and cable wiring, as well as other applications.



#### How to order: CODE

Insulation tester, AC 2 - 600V/ohm rated with  
MANUFACTURER'S NAME & MODEL

Unit Per Set

CODE	79 57 76
Model	MY600
V/Ω Rated	50V/ 100MΩ 100V/ 200MΩ 125V/ 250MΩ 250V/ 500MΩ 500V/2,000MΩ 1,000V/4,000MΩ
Effective Measuring Range	0.1 - 4,000MΩ
ACV	2 - 600 V
DCV	2 - 600 V
Resistance	0-4,000Ω
Standards	EN61557 part1, 2, 4 and 10 EN61010 part 1
Over voltage category	CAT III 600V, CAT II 1,000V
Power Source	Alkaline battery LR6(1.5V) x 4
Size	156 x 97 x 46 mm
Weight	Approx. 490 grm
Name of Mfr.	Yokogawa Test & Measurement Corporation

## Digital Type Insulation Testers

Medidor Aislamiento Digital デジタル式絶縁抵抗計 数字式电阻表

Digital type insulation resistance tester.

Basic features:

Hot-line state (30V minimum) detection / large volt mark with the buzzer sound / Automatic data hold function / Bar graph just like analog meter / Large display with backlight.



#### How to order: CODE

Insulation tester, digital type, TYPE, VOLT/Ohm rated with  
MANUFACTURER'S NAME & MODEL

Unit Per Set

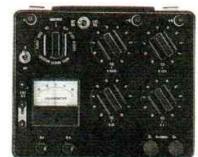
CODE	79 57 81
Model	MG500
MΩ	4M/40M/400M/4,000M ±(3%+4)
Test Voltage	500/250/125V
ACV/DCV	600V (AC/DC automatic detection) ±(3%+2)
Ω	4,000Ω (Buzzer and alarm indicator) ±(3%+3)
Ω	40Ω±(3%+10)
Battery	R6 × 6
Size mm	H170 × W142 × D57
Weight grm	600
Accessories	Test lead, Strap, Instruction manual

Name of Mfr.: Sanwa Electric Instrument Co.,Ltd.

## Portable Wheatstone Bridges

Puente Portátil (Wheatstone) de Resistencias

ホイートストンブリッヂ 直流精密抵抗測定器  
精密直流电阻測定器



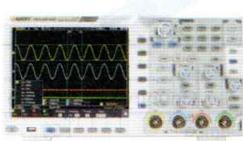
Portable Wheatstone Bridge is convenient for use for general resistance measurement from  $1\Omega$  to  $10\Omega$  with 4 digit accuracy. The built-in galvanometer has taut-band suspension, minimizing the effects of shock.

Since the power source is self-contained, operation is easy and simple. The instrument can be used for field tests, maintenance, and other resistance type measurements.

Specification	
Measuring Range	$1\Omega$ to $10\text{ Mohm}$ in four digit reading
Minim. Division	$0.001\Omega$
Accuracy	$\pm 0.1\%$ $100\Omega \sim 100\text{ k}\Omega$ $\pm 0.3\%$ $10\Omega \sim 1\text{ M}\Omega$ $\pm 0.6\%$ $1\Omega \sim 10\text{ M}\Omega$
Galvanometer Sensitivity	$0.9\text{ }\mu\text{A/div.}$
Power Source	$3 \times 1.5\text{ V R20 (UM-1) Dry Cell}$
Size	$H182 \times W226 \times D128\text{ mm}$
Weight	2 kg
79 58 01	Wheatstone bridge, portable $1\Omega$ to $10\text{ M}\Omega$
	Set

## Oscilloscopes

Osciloskopos オシロスコープ 示波器



An oscilloscope is an electro precision test instrument for detailed observation of the desired portion of complex waveforms. Wide range of models from different manufacturers. An outline of the basic specifications to determine the types of the oscilloscope is listed below. Before ordering, please write for, or ask for a catalogue for further information.

1. Frequency band area : \_\_\_\_\_ MHz
2. Sensitivity : \_\_\_\_\_ mV/div. (1 div. = 10 mm)
3. Power source currency : Alternating current, or Direct current
4. Power source voltage : \_\_\_\_\_ volt
5. Frequency : \_\_\_\_\_ Hz (50 or 60)

### How to order: 79 - 58 - 10

Oscilloscope, with further information as

- (1) Frequency band area,
- (2) Sensitivity,
- (3) AC or DC,
- (4) Power source voltage,
- (5) Frequency, etc.

## 23. Ultrasonic Parts Cleaners

### Ultrasonic Cleaning Equipment

Equipos de limpieza por ultrasonidos

超音波洗净机 超声波清洁设备

It is difficult to remove for the dirt that builds up on cleaning equipment of a complicated design with manual labor.



This product removes the dirt clogging the metal filter by ultrasonic effect neatly quickly.

- The use of ultrasonic power is higher than conventional products therefore it cleans in a shorter time.
- The wave is uniform and prevents cleaning irregularities.
- The cleaning time can be set for various degrees of cleaning.
- There is a removable cleaning basket that makes cleaning easy.
- Its design has a protective lid and other safety devices.

Unit Per Set		
CODE	79 58 21	79 58 22
Power supply	AC 110 V, 50/60 Hz	AC 220V, 50/60 Hz
Ultrasonic power	480 W	
Power consumption	650 W	
Heater power	300 W	
Tank capacity	22 Ltr	
Cleaning time	Max. 20 minutes (1 minute increments)	
Operating environment temperature range	10–35 °C	
Material	Main body: Tank: Pipes, valves: Panel:	Stainless steel SUS304 Stainless steel SUS304 Stainless steel SUS304 Polypropylene
Ultrasonic frequency	38 kHz BLT self-oscillation	
Equipment dimensions	W568 × D365 × H284 mm	
Tank dimension	W498 × D295 × H150 mm	
Equipment weight	18 kg	

Note: This product is not designed for protection against explosion.

We are  
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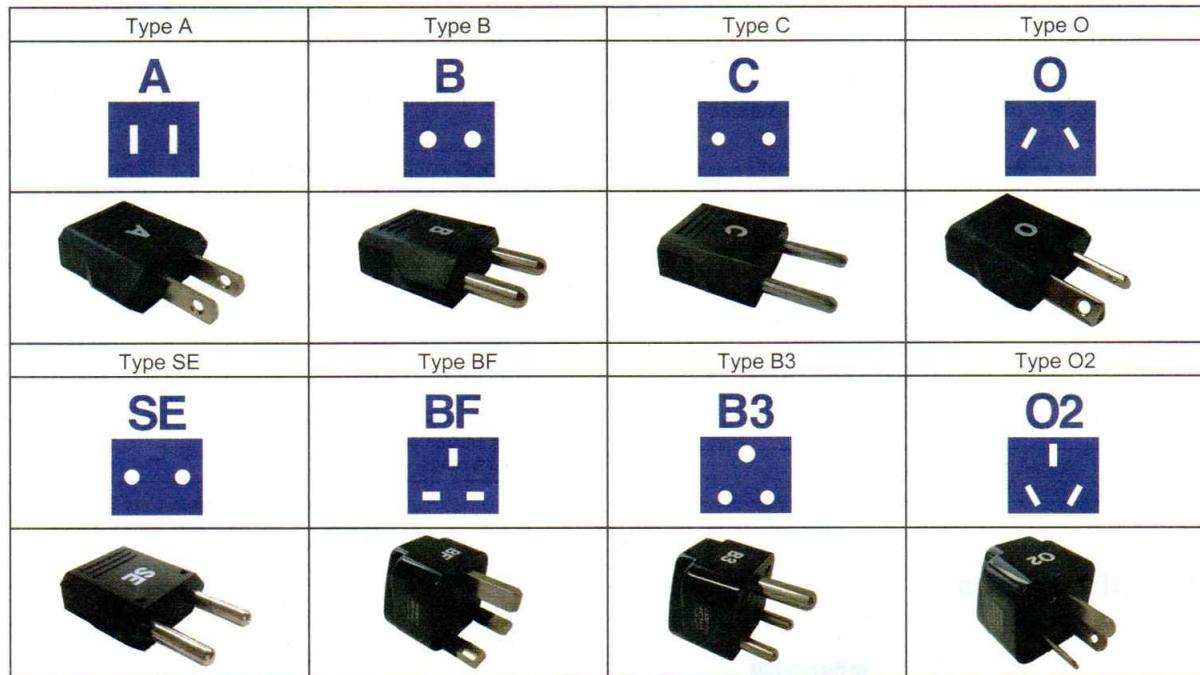
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## Electricity of the World Principal Nation



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Electrical Equipment

Country	Cycle	Voltage	Plug Type
<b>Asia</b>			
Bangladesh	50Hz	230V	A/B/C/BF/B3
Bhutan	50	230	C
Brunei	50	240	BF/B3
Cambodia	50	120/220	A/C/BF
China	50	110/220	All Types
Hong Kong	50	200/220	B/C/BF/B3
India	50	115/230/240	B/C/BF/B3/SE
Indonesia	50	127/220/230	A/B/C/BF/B3/SE
Japan	50/60	100	A
Laos	50	220	A/C/SE
Macao	50	115/127/220	A/B/C/BF/B3/SE
Malaysia	50	240	B/C/BF/B3/SE
Maldives	50	220	B/C/BF/B3
Mongolia	50	220	B/C/B3/SE
Myanmar	50	230	B/C/BF/B3/SE
Nepal	50	115/220	A/B/C/BF/B3/SE
N.Korea	60	100/200/220	A/B/C/BF/B3/O/SE
Pakistan	50	230	A/B/C/B3
Philippines	60	120/230/240	A/B/C/B3/O
Singapore	50	115/230	B/C/BF/B3
S.Korea	60	220	C/SE
Sri Lanka	50	230	B/C/BF/B3
Taiwan	60	110/220	A/C/O
Thailand	50	220	A/B/C/BF/B3
Vietnam	50	110/220	A/C/BF/SE
<b>Oceania</b>			
Australia	50Hz	240/250V	O
Fiji	50	120/240	A/B/C/O
Guam	50	120/240	A/BF/O
Kiribati	50	240	BF/O
Marshall Islands	60	110/220	A/C/O
Micronesia	60	110/220	A/C/O
Nauru	50	240	O
New Caledonia	50	220	B/C/B3/O/SE
New Zealand	50	230/240	O
Niue	50	220	O
Palau	50	110/220	A/O
Papua	50	240	O
New Guinea			

Country	Cycle	Voltage	Plug Type
Samoa	50	230	O
Solomon Islands	60	240	B/B3/O
Tonga	60	240	O
Tuvalu	50	240	O
Vanuatu	50	240	C/B3/O
<b>North America</b>			
U.S.A.	60Hz	120V	A
Canada	60	120/240	A/BF
<b>Europe</b>			
Albania	50Hz	220V	C/SE
Austria	50	230	C/BF/B3/O/SE
Belarus	50	220	C
Belgium	50	127/230	A/B/C/SE
Bosnia & Herzegovina	50	220	C/SE
Bulgaria	50	110/220	A/C/SE
Croatia	50	220	C/SE
Cyprus	50	240	C/BF/B3
Czech	50	230	C/SE
Denmark	50	230	C
Estonia	50	127/220	A/C/SE
Finland	50	120/230	A/B/C/SE
France	50	127/230	A/C/O/SE
Germany	50	127/230	A/C/SE
Gibraltar	50	230/240	B/C/BF/B3
Greece	50	230	B/C/B3/SE
Greenland	50	220	C
Hungary	50	220	B/C
Iceland	50	230	B/C/SE
Italy	50	125/220	A/C/SE
Ireland	50	230	A/B/C/BF/B3/SE
Kazakhstan	50	127/220	A/C/SE
Latvia	50	127/220	A/C/SE
Lithuania	50	220	C
Luxembourg	50	120/220	A/C/SE
Macedonia	50	220	C/SE
Malta	50	240	B/C/BF/B3
Moldova	50	127/220	A/C/SE
Monaco	50	127/220	A/B/C/SE

Country	Cycle	Voltage	Plug Type
Montenegro	50	220	C/SE
Netherlands	50	230	B/C/SE
Norway	50	230	C/SE
Poland	50	220	B/C/B3
Portugal	50	230	B/C/BF/B3/SE
Romania	50	220	C/SE
Russia	50	127/220	A/B/C/SE
Serbia	50	220	C/SE
Slovakia	50	220	B/C/SE
Slovenia	50	220	C
Spain	50	127/220	A/C/SE
Sweden	50	230	B/C/SE
Switzerland	50	230	A/B/C/SE
Turkmenistan	50	127/220	A/C/SE
U.K.	50	230/240	B/C/BF/B3
Ukraine	50	127/220	A/B/C/SE
Uzbekistan	50	127/220	A/C/SE

## Central/South America

Antigua & Barbuda	50Hz	230V	C/BF/SE
Argentina	60	220	C/BF/O/SE
Bahamas	60	120/240	A/C/BF/SE
Balbados	50	110/120/ 200	A/B/BF/B3
Belize	60	120/240	A/C/BF/B3
Bolivia	60	110/220	A/C/SE
Brazil	60	110/127/ 220	A/C/SE
Cayman Islands	50	120/240	A/C/BF/B3
Chile	50	220	C/BF/B3/SE
Columbia	50	120	A
Costa Rica	50	120/240	A/C/BF/O/SE
Cuba	60	110/220	A/B/C/BF
Dominica	50	230	B/BF/B3
Dominican Republic	60	110/220	A/C/BF
EI Salvador	60	110/220	A/BF/B3
Ecuador	60	115/120/ 220	A/C/B3/O
Grenada	50	230	C/BF
Guatemala	50	120/240	A/C/BF
Guyana	60	110/220	A/C/BF
Haiti	60	110/220	A/C/BF
Honduras	50	110	A
Jamaica	50	110/220	A/C/BF/B3
Mexico	50	120/127/ 230	A/C/SE
Nicaragua	60	120/240	A/BF
Panama	60	120/240	A/BF
Paraguay	50	220	A/C/SE
Peru	60	220	A/C/SE
Puerto Rico	60	120/240	A/C/BF
St. Christopher and Nevis	60	230	C/BF/B3
Saint Lucia	50	240	C/BF
Suriname	60	127	C/SE
Trinidad & Tobago	60	115/230	A/BF/O
Uruguay	50	220	C/BF/B3
Venezuela	60	120	A

## Middle East

Afghanistan	50Hz	220V	B/C/B3/SE
Bahrain	50	110/230	A/BF
Iran	50	230	C/BF/SE
Iraq	50	220	B/C/BF/B3/SE
Israel	50	230	C/O/SE
Jordan	50	220	B/BF/B3
Lebanon	50	110/220	A/C
Oman	50	230	B/C/BF/B3
Qatar	50	240	BF
Quwait	50	240	B/C/B3/SE
Saudi Arabia	50	127/220	A/B/C/BF/B3/SE
Syria	50	220	B/C/B3/SE
Turkey	50	220	B/C/B3/SE
U.A.E.	50	220/240	B/C/BF/B3
Yemen	50	230	C/B3

Country	Cycle	Voltage	Plug Type
Africa			
Algeria	50Hz	127/220V	A/C/BF
Angola	50	220	B/C/B3
Benin	50	120/220	A/B/C/B3/SE
Botswana	50	220	B/C/BF/B3
Burkina Faso	50	220	B/C/SE
Burundi	50	220	B/C/B3/SE
Cameroon	50	127/220	A/C/BF
Canary Islands	50	127/220	A/C
Central Africa	50	220	B/C/B3/SE
Chad	50	220	C
Congo, Democratic Republic	50	220	C
Congo, Republic	50	220	B/C
Cote D'Ivoire	50	220	B/C/B3
Djibouti	50	220	C
Egypt	50	220	C/BF/B3/SE
Ethiopia	50	220	C
Gabon	50	220	C/BF/SE
Gambia	50	230	C/BF/B3
Ghana	50	220/230/ 240	C/BF/B3
Guinea, Republic	50	220	B/C
Guinea, Republic of Equatorial	50	220	B/C/BF
Kenya	50	240	B/C/BF/B3
Lesotho	50	220	C/B3
Liberia	50	120/240	A/C/B3/SE
Libya	50	127/230	A/C/B3
Madagascar	50	110/220	A/C/B3
Malawi	50	230	C/BF/B3
Mali	50	220	C/SE
Mauritania	50	220	C/SE
Mauritius	50	230	B/C/BF/B3/SE
Morocco	50	115/127/ 220	A/C/SE
Mozambique	50	220	C/B3/SE
Niger	50	220	B/C/B3/SE
Nigeria	50	230	B/C/BF/B3
Rwanda	50	110/220	A/C/SE
Saint Helena	50	240	C/BF/B3
Senegal	50	127/220	A/C/B3/SE
Seychelles	50	230	C/BF
Sierra Leone	50	230	B/C/BF/B3
Somalia	50	110/220/ 230	A/C/BF/B3
South Africa	50	220/230/ 250	B/C/BF/B3
Sudan	50	220/240	C/BF/B3
Swaziland	50	230	B/C/B3
Togo	50	220	B/C/BF
Tanzania	50	230	C/BF/B3
Tunisia	50	127/220	All Types
Uganda	50	240	C/BF
Zambia	50	230	B/C/BF/B3
Zimbabwe	50	220	C/BF/B3

## Conversion Table

[Length]	m	km	in	ft	yd	mile
m	1	$1 \times 10^{-3}$	39.37	3.28	1.093	$6.214 \times 10^{-4}$
km	$1 \times 10^3$	1	$3.937 \times 10^4$	3,280	1,093	0.621
in	0.0254	$2.54 \times 10^{-5}$	1	1/12	1/36	$1.58 \times 10^{-5}$
ft	0.305	$3.048 \times 10^{-4}$	12	1	1/3	$1.894 \times 10^{-4}$
yd	0.914	$9.144 \times 10^{-4}$	36	3	1	$5.682 \times 10^{-4}$
mile	1,609	1.609	63,360	5,280	1,760	1

[Mass (Weight)]	g	kg	t	lb	oz
g	1	$1 \times 10^{-3}$	$1 \times 10^{-6}$	$2.204 \times 10^{-3}$	0.0352
kg	$1 \times 10^3$	1	$1 \times 10^{-3}$	2.204	35.27
t	$1 \times 10^6$	$1 \times 10^3$	1	2,204	35,270
lb	453.6	0.4536	$4.536 \times 10^{-4}$	1	16
oz	28.35	0.02835	$2.835 \times 10^{-5}$	1/16	1

[Volume]	cm <sup>3</sup> (cc or ml)	m <sup>3</sup>	l	in <sup>3</sup>	qt	pt	fl-oz	ft <sup>3</sup>	gal
cm <sup>3</sup> (cc or ml)	1	0.000001	0.001	0.061	0.00088	0.0018	0.035	-	0.00022
m <sup>3</sup>	1,000,000	1	1,000	61,024	880	1,760	35,195	35.314	220
l	1,000	0.001	1	61.024	0.880	1.760	35.195	0.035	0.220
in <sup>3</sup>	16.387	0.000016	0.016	1	0.014	0.029	0.577	0.00058	0.0036
qt	1,136.52	0.0011	1.137	69.355	1	2	40	0.033	0.25
pt	568	0.00057	0.568	34.677	0.5	1	20	0.017	0.125
fl-oz	28.413	0.000028	0.028	1.734	0.025	0.05	1	0.0008	0.00625
ft <sup>3</sup>	28,316	0.0283	28.316	1,728	29.922	59.844	958	1	7,481
gal	4,546	0.0045	4.546	277	4	8	160	0.134	1

[Pressure]	bar	kgf/cm <sup>2</sup>	lbf/cm <sup>2</sup>	mmHg (0°C)	Pa (SI)
bar	1	1.020	14.50	750.1	100,000
kgf/cm <sup>2</sup>	0.9807	1	14.22	753.6	98,066
lbf/cm <sup>2</sup>	0.0689	0.0703	1	51.72	6,895
mmHg (0°C)	0.00133	0.0013	0.0193	1	133.3
Pa (SI)	$1 \times 10^{-5}$	$1.02 \times 10^{-5}$	$1.45 \times 10^{-4}$	$10.2 \times 10^{-4}$	1

[Stress]	Pa (SI)	MPa	kgf/mm <sup>2</sup>	kgf/cm <sup>2</sup>
Pa (SI)	1	$1 \times 10^{-6}$	$1.01972 \times 10^{-7}$	$1.01972 \times 10^{-5}$
MPa	$1 \times 10^6$	1	$1.01972 \times 10^{-1}$	$1.01972 \times 10$
kgf/mm <sup>2</sup>	$9.80665 \times 10^6$	9.80665	1	$1 \times 10^2$
kgf/cm <sup>2</sup>	$9.80665 \times 10^4$	$9.80665 \times 10^{-2}$	$1 \times 10^{-2}$	1

[Force]	kW	kgf · m/sec	HP
kW	1	102.0	1.341
kgf · m/sec	0.009807	1	0.01315
HP	0.7457	76.04	1