KINGSKIWI INTERNATIONAL

KINGSKIWI EST. 2004 WE ARE MARINE

FISH AGGREGATION DEVICE

FAD

PROFILE

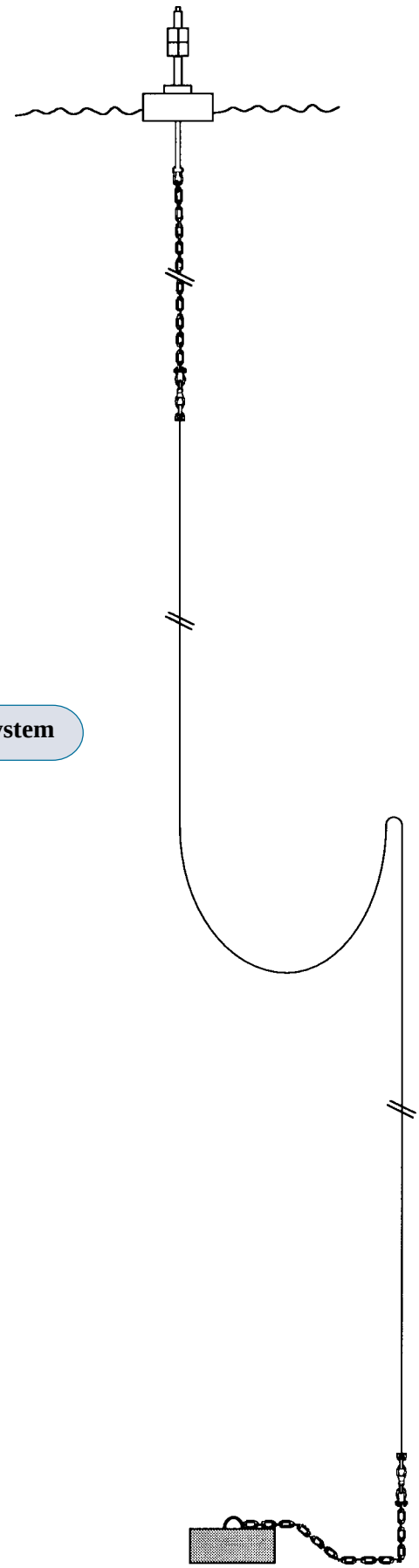
KINGSKIWI INTERNATIONAL

We aim to be the best supplier to the Marine Industry in the South Pacific;

- We will provide service in the best possible manner, with the best possible merchandise
- We will simplify every detail of every transaction
- We will satisfy every customer with every purchase
- We will eliminate all delays
- We will only provide goods and services that will pay our customers to buy
- We will treat our peers with kindness and our competitors with respect
- We will work as a co-operative whole, because all at it, always at it, will WIN success
- We guarantee absolute satisfaction to every customer in any transaction, **NO EXCEPTIONS**

NOTES

The SPC steel spar buoy FAD system



STEEL SPAR BUOY

ADVANTAGES

Most Pacific island countries have steel fabrication workshops equipped to build this raft.

The specified steel plate and the pipe used in the spar are commonly available.

The design allows for incorporation of location aids, including a simple, combination three-plane radar reflector/dayshape and a battery-powered flashing light that fits into the pipe mast.

The buoy is very resistant to accidental or deliberate damage. The position and weight of the upper mooring chain make it very difficult to haul the mooring to reach the vulnerable rope section.

The buoy can support the weight of a man, allowing for easy servicing of the navigation light.

Little maintenance is required for the steel hull.

Hull compartmenting reduces the likelihood of a single leak flooding the buoy.

Added flotation, in the form of buoyant foam filling, is not required.

DRAWBACKS

Material costs are relatively high; in some areas the skilled labour required for construction will increase costs significantly.

Battery-powered lights are expensive and are easily vandalised or removed.

Batteries must be replaced regularly.

Inspection and servicing of the upper mooring require a diver or the availability of a vessel with lifting gear.

A relatively large vessel is required to transport the buoy to the deployment site.

The robust appearance of the buoy increases the likelihood that fishing craft will tie off to it.

The hull requires coating with marine-grade paints to minimise corrosion.

THE SPC INDIAN OCEAN FAD RAFT

In 1990, reports circulated in the Pacific about an innovative, light-weight FAD raft in use in some French territories in the Indian Ocean. The raft, specifically designed for deployment in areas where strong currents are common, consisted of a string of hard plastic, pressure-resistant floats strung on a length of steel wire rope. The low drag and buoyancy of this type of raft was said to place less strain on the mooring under the effect of strong surface currents. In extreme currents, the raft was said to submerge without damage and resurface when currents eased.

SPC trials with modified versions of this design, incorporating inverse catenary curve moorings, indicated that this type of raft performed very well. The string of floats followed wave action closely and appeared to transfer very little dynamic action to the mooring, eliminating the slamming and jerking that is typical of single-hull rafts. No tendency for the rafts to submerge was apparent.

Several technical problems were encountered during these trials. The pressure-resistant floats tended to shatter easily when struck by a boat or when the breakdown of cushioning placed between them allowed them to come in contact with one another; they were readily abraded by the wire rope on which they were strung, and they proved to be both difficult to obtain and expensive.

Further trials were made with rafts rigged from strings of floats of other types. It was found that purse-seine net floats were ideal for this purpose, being relatively inexpensive, commonly available (at least in areas where purse-seine vessels operate) and extremely resistant to impact and abrasion. In combination with the use of a PVC-covered wire rope (developed as a foot rope for trawl nets) on which the floats were strung, a low-cost and robust raft was developed which retained the desirable characteristics of the Indian Ocean original.

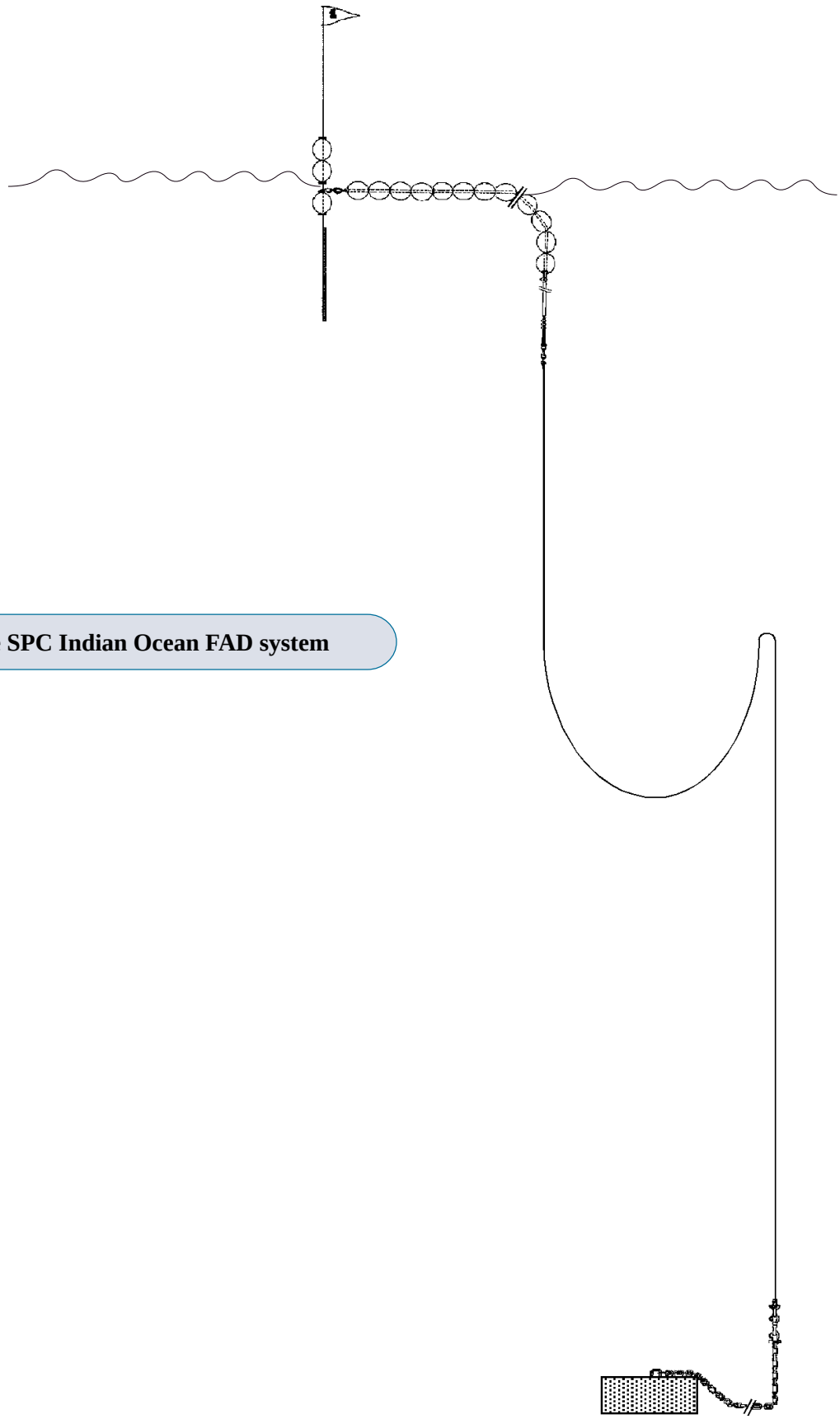
The raft is rigged by stringing 50 purse-seine floats on a 30 m length of 16 mm steel wire rope with a covering of PVC. The purse-seine floats used in the SPC model are C6000 types manufactured by Casamar and have a buoyancy of 7 kg each. The 16 mm, 7-strand wire rope has an 8 mm thick coating of PVC bonded to it, making an outer diameter of 32 mm which fits snugly through the hole in the floats. The PVC is watertight.

In order to form eye splices at either end of the cable to make connections to the main mooring and mast, the steel wire core has to be exposed. To prevent corrosion, the exposed cable is wrapped with waterproof grease tape. The eye splices are formed around galvanized steel thimbles and secured with cable clamps. Narrow (25 mm) strips cut from disused automotive inner tube may also be stretched and wrapped tightly over these connections, in the manner of whipping, to protect the greased tape from wear and to further inhibit corrosion.

Because this type of raft cannot capsize, it is not necessary to provide a stabilising counterweight beneath it. Instead, the 15 m section of the PVC-covered wire rope that extends beyond the length required to accommodate the 50 floats is left to hang vertically. This serves to provide protection from fishing gear and vessels, in place of the usual upper mooring chain.

It is recommended that this raft be inspected regularly for signs of wear or corrosion and for the integrity of the eye-splices. Required maintenance should be carried out promptly. Because the raft is less expensive to rig, two complete rafts may be prepared for each FAD unit and one of these held in reserve on deployment.

If the deployed raft requires maintenance work at any time, it can be unshackled from the mooring and the reserve raft fitted in its place. This substitution can be handled from a small boat, because the raft is easily hauled, float by float, to reach the shackle connecting to the main mooring. A reserve raft, or one for repair, can be towed to or from the FAD site if the servicing craft is too small to carry the whole raft on deck.



The SPC Indian Ocean FAD system

INDIAN OCEAN FAD RAFT

ADVANTAGES

Construction is simple, requiring only basic welding and rigging skills.

Wave-following action and low-drag profile transfer little stress to the mooring.

Buoyancy is assured for the life of the components.

The raft can be readily handled by relatively small craft for deployment and inspection.

Upper mooring chain is not required.

Replacement of a raft requiring maintenance, with a reserve unit, is relatively simple.

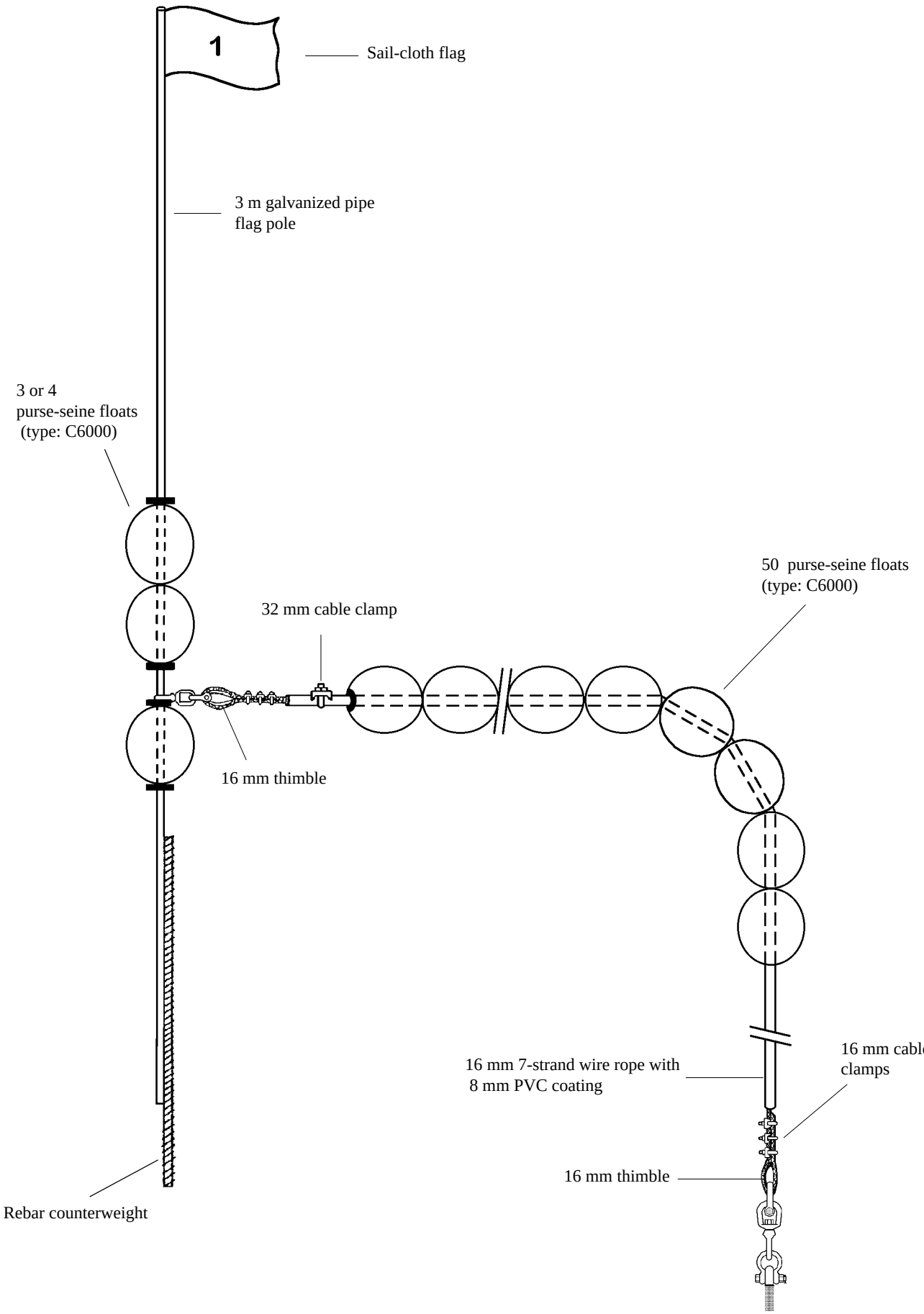
DRAWBACKS

The raft's low profile and simple marker pole make it more difficult to locate than a spar buoy.

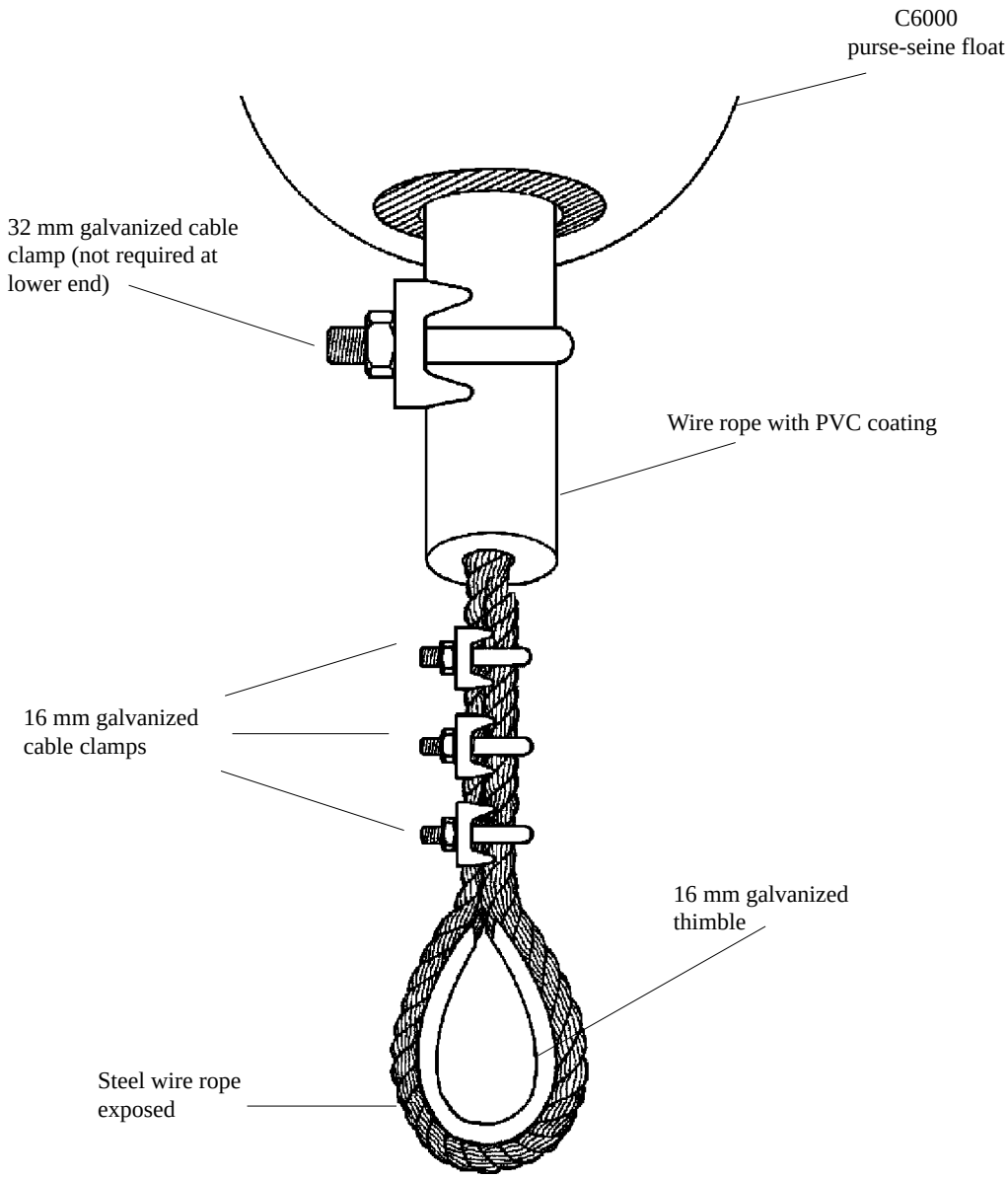
Fitting of location aids such as radar reflectors and lights is more difficult than for spar buoys.

Corrosion of the wire rope is possible and it is likely that this component of the raft will have a shorter service life than other parts.

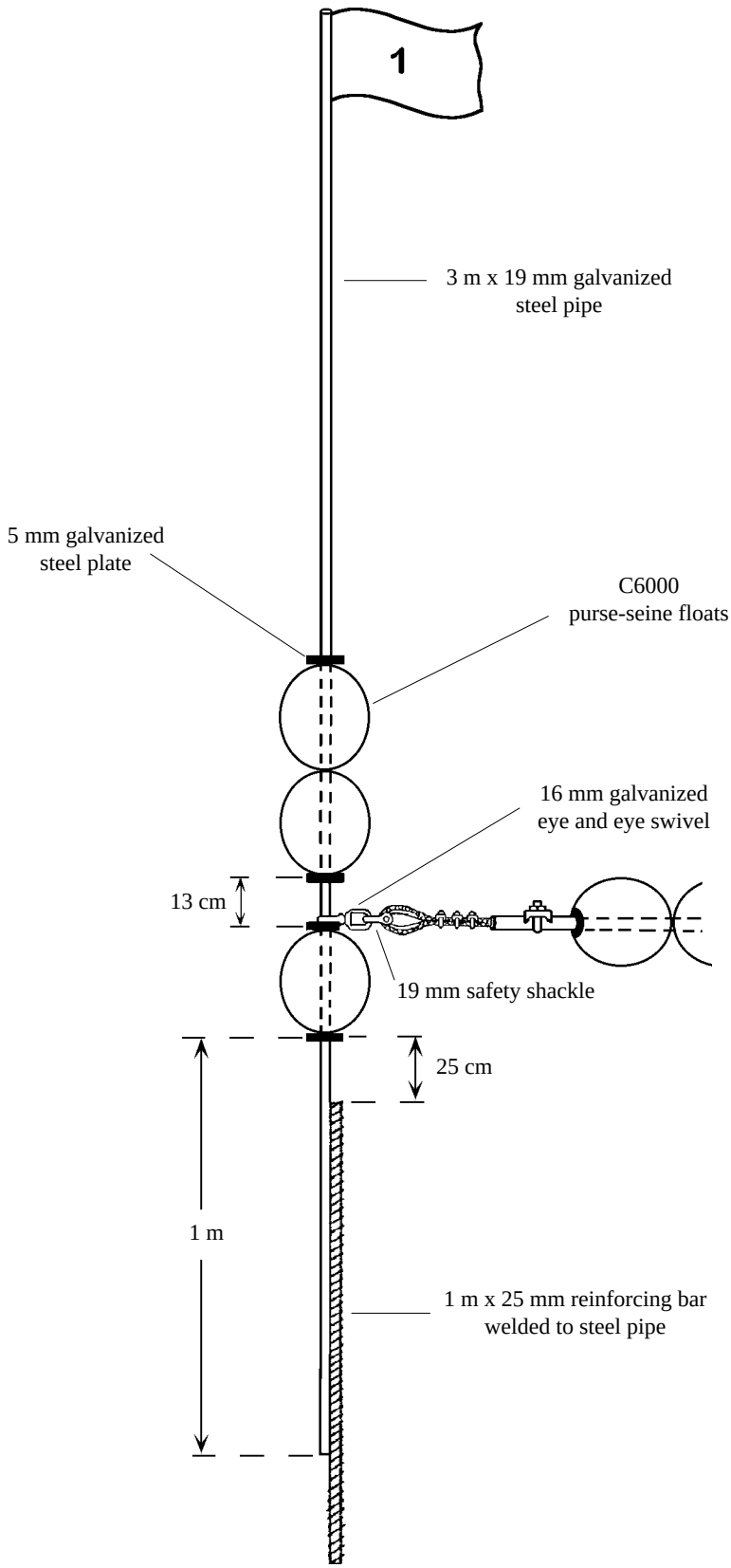
Detail of mast/mooring connection



Detail of eye-splice rigging at either end of float cable



Detail of mast arrangement



FAD MOORING COMPONENTS

THE CATENARY CURVE MOORING SYSTEM AND ITS COMPONENTS

Each of the SPC FAD systems incorporates an inverse catenary curve mooring. Catenary curve mooring can be considered to consist of three separate sections: the upper mooring, the catenary curve, and the lower mooring. Each section is important to the function of the mooring.

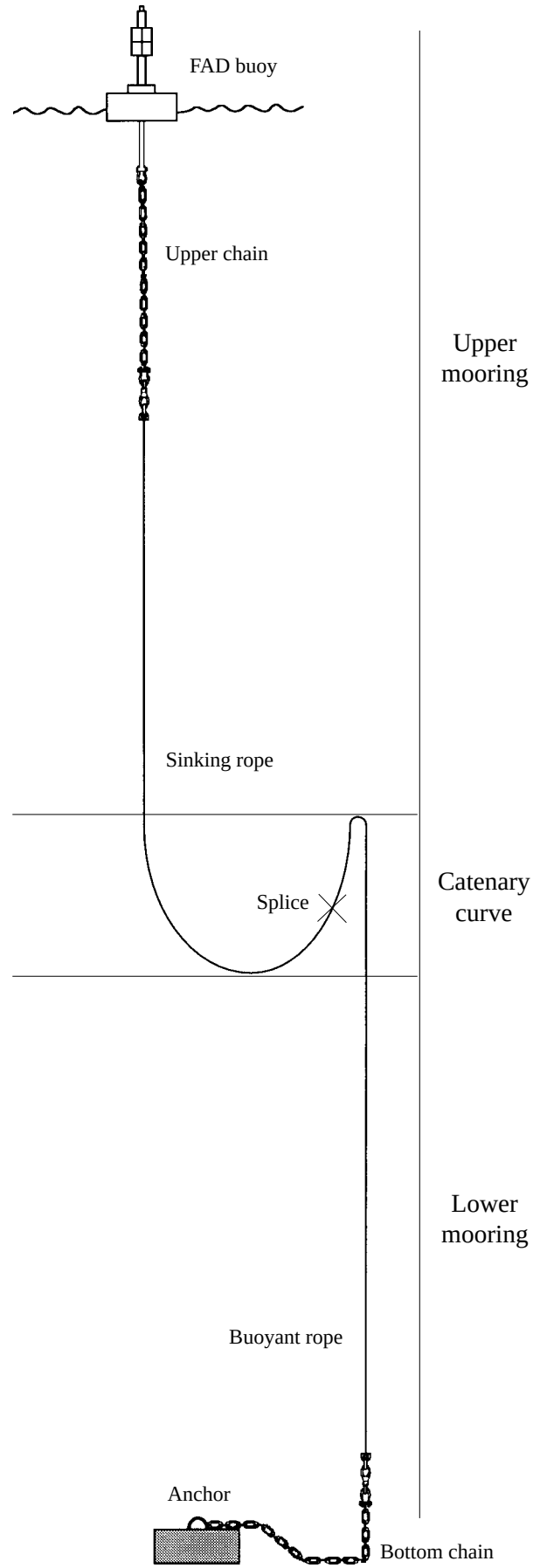
The upper mooring section consists of a chain, or wire rope, sinking nylon rope and connecting hardware. The chain or wire rope protects the mooring from damage by fishing craft and surface fishing gear. It also adds strength to the upper mooring, which is most affected by the forces of the wind, waves and current.

The nylon rope stretches and recoils in response to forces produced by waves. A swivel, placed between the chain or wire and the sinking nylon rope, responds to the motion of the buoy and prevents twisting of the chain, or wire, and mooring rope.

The catenary curve section forms around the point where the nylon rope and polypropylene rope are spliced together end to end. The offsetting sinking and buoyant properties of the two ropes cause the curve to form.

The sinking property of the nylon rope is used to maintain the catenary curve at a safe depth. Formation of the catenary curve builds scope into the mooring. This extra rope absorbs much of the energy produced by rough seas and thus protects the mooring.

The lower mooring section consists of buoyant polypropylene rope, chain, and connecting hardware. The buoyancy of the rope must be sufficient to lift it and the connecting lower hardware away from the seafloor and so prevent the rope from abrading. Forces exerted on the buoy and mooring by wind, waves and currents near the surface are transferred down the mooring to the chain, which rises and sinks in response. A swivel placed between the polypropylene rope and the chain prevents twists in the chain and mooring rope.



Apart from rigging technique, the lifespan of any FAD depends to a great extent on the quality of the components used to construct it. Ensuring that components are made from suitable materials and that their individual quality is satisfactory will contribute to longer FAD life.

Once a FAD is deployed, it is normally only possible to inspect and maintain the upper 15 m of the mooring, from the buoy to the upper chain/wire-rope connection, or only 1.5 per cent of the total length of a 1,000 m mooring.

This section describes the basic components of any catenary curve mooring and makes general and specific recommendations for components required for the SPC FAD systems.

The basic components of any catenary curve mooring, from the surface to the seabed, are: upper chain or wire, sinking rope (nylon), buoyant rope (polypropylene), bottom chain, and an anchor. Moorings also include connecting hardware, such as safety shackles, swivels and rope connectors, which link the parts of the system.

The specific recommendations given here are based on proven principles of mooring engineering, the known effects of the seawater environment on moorings, and a set of general principles derived through practical mooring experience.

The tables on pages 21 and 23 describe the components for the steel spar buoy and Indian Ocean FAD system respectively.

GENERAL PRINCIPLES FOR MOORING HARDWARE AND ROPE QUALITIES

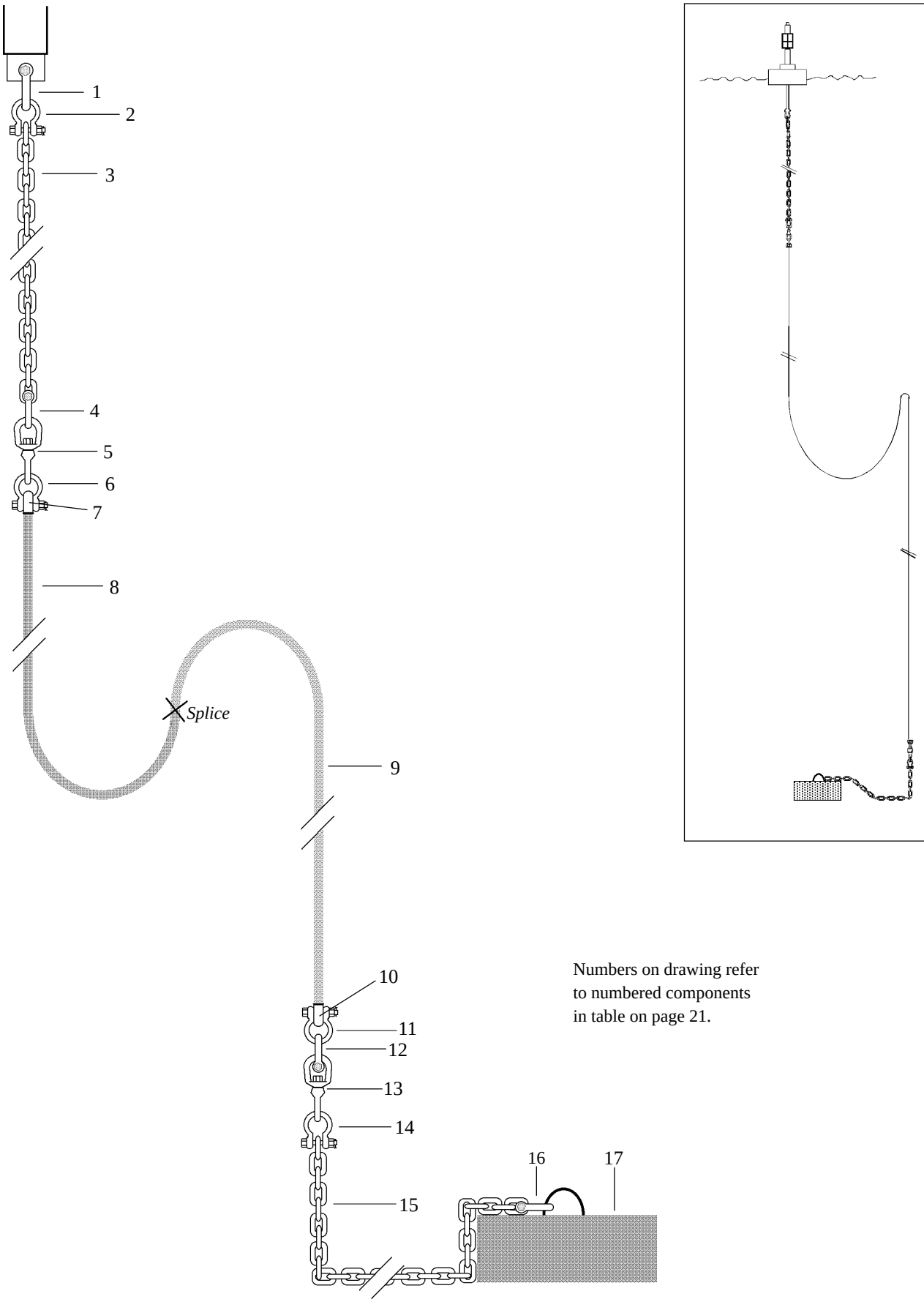
HARDWARE

- Load ratings for all hardware should be equal to or greater than that of the chain used.
- Components should be of the same grade of steel and hot-dip galvanized to prevent corrosion. Do not use components that include different metals.
- To cope with wear and corrosion, heavy-duty components should be used at all points where high wear is likely to occur, including the buoy-mooring and mooring-anchor attachments.

ROPES

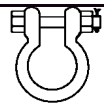
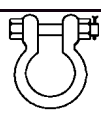
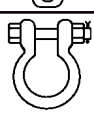
- Moorings should be rigged from plaited ropes (8- or 12-strand). Do not use twisted ropes.

Steel spar buoy FAD system mooring arrangement

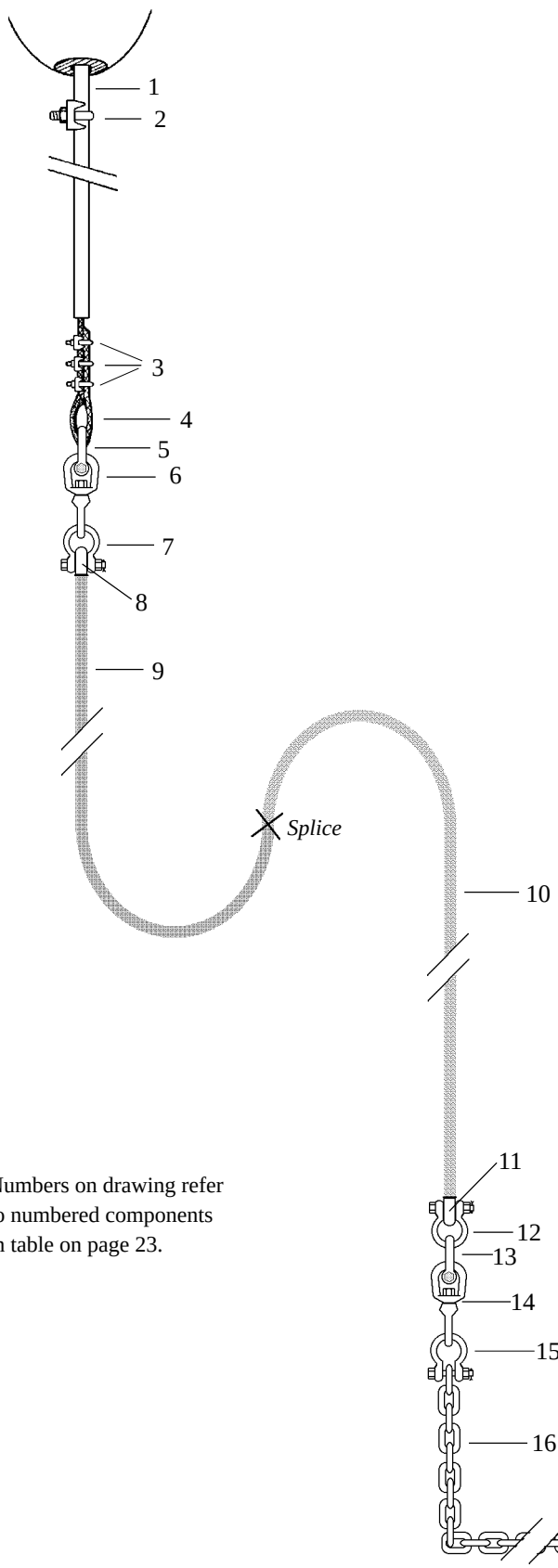


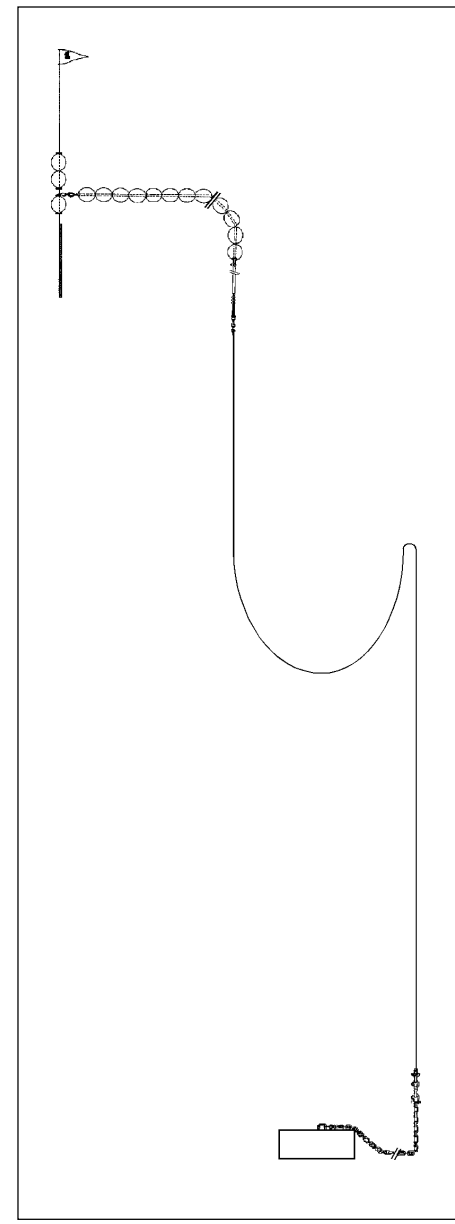
Numbers on drawing refer to numbered components in table on page 21.

Steel spar buoy system components

Components		Description	Size	Material	Minimum breaking strength
1		Safety shackle with stainless steel (SS) cotter pin	25 mm 1 in	Hot-dip galvanised low-carbon steel (Hdg-lcs)	25,000 kg 56,000 lb
2		Safety shackle with SS cotter pin	16 mm 5/8 in	Hdg-lcs	10,000 kg 22,000 lb
3		Long-link chain	15 m of 13 mm 50 ft of 1/2 in	Hdg-lcs	9,000 kg 19,000 lb
4		Safety shackle with SS cotter pin	16 mm 5/8 in	Hdg-lcs	10,000 kg 22,000 lb
5		Forged swivel (eye and eye)	22 mm 7/8 in	Hdg-lcs	22,700 kg 50,000 lb
6		Safety shackle with SS cotter pin	22 mm 7/8 in	Hdg-lcs	19,500 kg 49,000 lb
7		Rope connector (*Samson*; size 3)	19 mm 3/4 in	Nylite	
8		Sinking rope, 8–12 strand, plaited	19 mm 3/4 in 47 kg/220 m 14.3 lb/100 ft	Nylon	6,400 kg 14,200 lb
9		Buoyant rope, 8–12 strand, plaited	22 mm 7/8 in 45 kg/220 m 13.7 lb/100 ft	Polypropylene	5,200 kg 11,500 lb
10		Rope connector (*Samson*; size 4)	22 mm 7/8 in	*Nylite*	
11		Safety shackle with SS cotter pin	25 mm 1 in	Hdg-lcs	25,000 kg 56,000 lb
12		Safety shackle with SS cotter pin	19 mm 3/4 in	Hdg-lcs	14,000 kg 31,000 lb
13		Forged swivel (eye and eye)	19 mm 3/4 in	Hdg-lcs	16,200 kg 40,000 lb
14		Safety shackle with SS cotter pin	19 mm 3/4 in	Hdg-lcs	14,000 kg 31,000 lb
15		Long-link chain	15 m of 19 mm 45 ft of 3/4 in	Hdg-lcs	14,000 kg 31,000 lb
16		Safety shackle with SS cotter pin	22 mm 7/8 in	Hdg-lcs	19,500 kg 49,000 lb
17		Anchor	900 kg 2000 lb	Concrete block	Compress. strength 3,000 psi

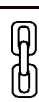
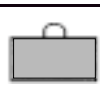
Indian Ocean FAD system mooring arrangement





Numbers on drawing refer to numbered components in table on page 23.

Indian Ocean FAD system components

Component		Description	Size	Material	Minimum breaking strength
1		Float cable	30 m of 32 mm 100 ft of 1 1/4 in	Steel wire rope with PVC coating	5,000 kg 11,000 lb
2		Cable clamp	32 mm 1 1/4 in	Hot-dip galvanised low-carbon steel (Hdg-lcs)	
3		Cable clamp (6 pieces)	16 mm 5/8 in	Hdg-lcs	
4		Thimble (2 pieces)	16 mm 5/8 in	Hdg-lcs	
5		Safety shackle with SS cotter pin	19 mm 3/4 in	Hdg-lcs	14,000 kg 31,000 lb
6		Forged swivel (eye and eye)	19 mm 3/4 in	Hdg-lcs	16,200 kg 40,000 lb
7		Safety shackle with SS cotter pin	19 mm 3/4 in	Hdg-lcs	14,000 kg 31,000 lb
8		Rope connector (*Samson*: size 3)	19 mm 3/4 in	*Nylite*	
9		Sinking rope, 8–12 strand, plaited	19 mm 3/4 in 47 kg/220 m 14.3 lb/100 ft	Nylon	6,400 kg 14,200 lb
10		Buoyant rope, 8–12 strand, plaited	22 mm 7/8 in 45 kg/220 m 13.7 lb/100 ft	Polypropylene	5,200 kg 11,500 lb
11		Rope connector (*Samson*: size 4)	22 mm 7/8 in	*Nylite*	
12		Safety shackle with SS cotter pin	25 mm 1 in	Hdg-lcs	25,000 kg 56,000 lb
13		Safety shackle with SS cotter pin	19 mm 3/4 in	Hdg-lcs	14,000 kg 31,000 lb
14		Forged swivel (eye and eye)	19 mm 3/4 in	Hdg-lcs	16,200 kg 40,000 lb
15		Safety shackle with SS cotter pin	19 mm 3/4 in	Hdg-lcs	14,000 kg 31,000 lb
16		Long-link chain	15 m of 19 mm 45 ft of 3/4 in	Hdg-lcs	14,000 kg 31,000 lb
17		Safety shackle with SS cotter pin	22 mm 7/8 in	Hdg-lcs	19,500 kg 49,000 lb
18		Anchor	900 kg 2,000 lb	Concrete block	Compressive strength 3,000 psi

FAD FISH AGGREGATION DEVICE

Fibre Rope - Specialised Options 12 S/T					
Product Code	Model	Dia	Coil Size	B/L	Weight / Coil
801		mm	m	kg	kg / m
18011160	SuperDan 12 S/T - Floating	16	1,000	4,500	116 / 1,000
18011204	SuperDan 12 S/T - Floating	20	900	6,900	161 / 900
18011254	SuperDan 12 S/T - Floating	25	500	9,900	130 / 500
18011324	SuperDan 12 S/T - Floating	32	220	16,800	101 / 220
18053186	Polyester 12 S/T - Sinking	18	500	7,400	117 / 500

Fibre Rope - Standard Options 3 S/T					
Product Code	Model	Dia	Coil Size	B/L	Weight / Coil
801		mm	m	kg	kg / m
18010168	PP Danline 3 S/T - Floating	16	250	3,800	32 / 250
18010208	PP Danline 3 S/T - Floating	20	250	5,800	48 / 250
18010243	PP Danline 3 S/T - Floating	24	250	8,100	72 / 250
18010283	PP Danline 3 S/T - Floating	28	250	10,700	98 / 250
18042166	Nylon 3 S/T - Sinking	16	250	4,780	39 / 250
18042203	Nylon 3 S/T - Sinking	20	250	7,230	60 / 250
18042246	Nylon 3 S/T - Sinking	24	250	10,200	87 / 250
18042286	Nylon 3 S/T - Sinking	28	250	13,500	119 / 250
18050164	Polyester 3 S/T - Sinking	16	250	4,100	49 / 250
18050204	Polyester 3 S/T - Sinking	20	250	6,300	76 / 250
18050244	Polyester 3 S/T - Sinking	24	250	9,100	109 / 250
18050284	Polyester 3 S/T - Sinking	28	250	12,200	148 / 250

FAD FISH AGGREGATION DEVICE

Fibre Rope - Mussel Culture Rope					
Product Code	Model	Dia	Coil Size	B/L	Weight / Coil
863		mm	m	kg	kg / m
18633014	PP Black Culture Rope 3 S/T - Floating	14	250	1,800	25 / 250

MUSSEL CULTURE ROPE

- UV stabilised to meet extreme conditions
- 3 strand fully balanced construction
- Proven spat collection and retention

Steel Wire Rope				
Product Code	Model	Dia	Coil Size	B/L
194		mm	m	kg
01940305	7x 19 RHOL 1620 SS	5	1.4	Stainless Steel
01940306	7x 19 RHOL 1620 SS	6	2.0	Stainless Steel
01940308	7x 19 RHOL 1620 SS	8	3.4	Stainless Steel
01940310	7x 19 RHOL 1620 SS	10	5.6	Stainless Steel
01983914	6x 9 RHOL 1570G Combination	14	4.3	PP + Galvanised
01983916	6x 9 RHOL 1420G Combination	16	6.2	PP + Galvanised
01799209	6x 19 RHOL 1420/1770G PVC Covered	13	5.5	PVC + Galvanised

01940306

01799209

STEEL WIRE ROPE

- Stainless Steel Wire Rope: 316 Stainless Wire Rope preformed right hand ordinary lay, wire strand core
- Combination Wire Rope: Six Strand Combination Rope (IWRC or Fibre Rope core), preformed steel strands covered with Poly Propylene multifilament
- PVC Coated Wire Rope: Class A galvanised wire rope covered to require thickness with PVC, colour optional

FAD FISH AGGREGATION DEVICE

Floats						
Product Code	Model	Type	Size	Working depth	Buoyancy	Weight
706			mm	m	kg	kg
17060230	30G - 2	Centre Hole - Oval	290 x 437	200	20	3
17060208	10B - 8	Centre Hole - Spherical	290 dia	800	10.8	3.1
17068280	SHE - 70	EVA Purse Seine - Oval	220 x 250	Surface	6.5	1
17068285	SHE - 85	EVA Purse Seine - Oval	248 x 265	Surface	8.5	1.3


17060230
17068280
17060208

Swivels					
Product Code	Type	Size	SWL	Length	Weight
739		mm	ton	mm	kg
17393116	A16 FO Short Bow, Alloy Steel	16	2.4	150	0.87
17393119	A19 FO Short Bow, Alloy Steel	19	3.8	185	1.30
17393122	A22 FO Short Bow, Alloy Steel	22	5.3	230	2.20
17393223	A22 ST/W Large Eyes, Alloy Steel	22	5.3	260	2.75
17393125	A25 FO Short Bow, Alloy Steel	25	7.2	265	3.65
17390216	A16 SS Rigid, Stainless Steel	16	3.2	180	0.89
17390219	A19 SS Rigid, Stainless Steel	19	4.7	205	1.80
17390222	A22 SS Rigid, Stainless Steel	22	6.8	222	2.25
17390225	Rigid, Stainless Steel	25	8.3	278	4.10


17393116


17393119


17393223


17390219

Anchor Shackles - Green Pin					
Product Code	Description	Size	WLL	Inside L	Weight
232		mm	ton	mm	kg
02329016	Hi Load Bow Anchor Shackle	16	2.0	47.5	0.44
02329019	Hi Load Bow Anchor Shackle	19	3.25	60.5	0.79
02329022	Hi Load Bow Anchor Shackle	22	4.75	71.5	1.26
02329026	Hi Load Bow Anchor Shackle	25	6.50	84.0	1.88
02329029	Hi Load Bow Anchor Shackle	28	3.50	95.0	2.78

HI LOAD ANCHOR SHACKLES

- Safety anchor shackle with nut, bolt and stainless steel split pin
- 6:1 safety factor, galvanized finish
- Tested and certified

FAD FISH AGGREGATION DEVICE

Chains					
Product Code 260	Description	Finish	Size mm	MWL ton	Drum m
02605016	PWB Regular Link PC Chain	Galvanised	16	2,310	90
02605020	PWB Regular Link PC Chain	Galvanised	20	3,670	60
02605024	PWB Regular Link PC Chain	Galvanised	24	5,340	40
02609016	PWB Regular Link PC Chain	Self Colour (Black)	16	2,310	90
02609020	PWB Regular Link PC Chain	Self Colour (Black)	20	3,670	60
02609024	PWB Regular Link PC Chain	Self Colour (Black)	24	5,340	40

02605020

Accessories			
Product Code 899	Description	Size	Unit Size
18990002	Plastic Packaging Strapping - Blue	19 mm	300m / Box
18550460	#969 Nylite Spool & Shield - suite 19-22 mm Rope	#3	Each
18550461	#969 Nylite Spool & Shield - suite 22-27 mm Rope	#4	Each
17185012	G719K Tube Thimble with Gusset - suit 16 mm Rope	16 mm	Each
17185013	G722K Tube Thimble with Gusset - suit 19 mm Rope	19 mm	Each
17185014	G725K Tube Thimble with Gusset - suit 22 mm Rope	22 mm	Each
17185015	G730K Tube Thimble with Gusset - suit 26 mm Rope	26 mm	Each
18990005	Non Toxic FAD Hose - Heavy Duty	25 mm ID	Each
18990006	Galvanised Pipe - 1.6m Long	114 mm OD	Each
18990007	Steel Reinforcing Rebar x 6m Length	25 mm OD	Each

18990002

18550460

FLOATS

BUOYS

Purse Seine Floats						
Product Code	Model	Nett Buoyancy	Weight	Dimensions (mm)		
706		kg	g	L	OD	HD
17068265	SHE–10	0.95	180	170	110	20
17068270	SHE–40	3.8	585	208	185	37
17068275	SHE–50	5	786	225	202	40
17068280	SHE–70	6.5	1,000	250	220	42
17068285	SHE–85	8.5	1,314	265	248	48

17068265 17068270 17068275 17068280 17068285

EVA Floats						
Product Code	Model	Nett Buoyancy	Dimensions (mm)			Colour
706		kg	L	Dia.	Hole.	
17068315	SHBB-1	5.00	365	153	25	Yellow / White
17068316	SHBB-2	5.70	365	178	25	Yellow / White

PURSE SEINE FLOATS

- Ethylene Vinyl Acetate (E.V.A) floats are an ideal surface float
- Impact resistant - do not break, shrink or deform
- Do not absorb water, light weight with maximum surface buoyancy
- Weather and U.V. resistant

17068315 17068316

FLOATS

BUOYS

Mooring Buoys						
Product Code	Model	Filling	Dimensions (mm)		Weight	Colour
706			L	Dia.	kg	
17065800	Mooring Buoy	Foam Filled	450	220	3.2	Yellow / Orange

MOORING BUOYS

- Foamfilled standard pick-up mooring buoy
- Made in New Zealand

Trawl Floats							
Product Code	Model	Type	Body Dia.	Working Depth	Nett Buoyancy	Weight	Eye Dia.
706			mm	m	kg	kg	mm
17060183	8B-3	Centre Hole	240	300	6.1	1.2	23
17060208	10B-8	Centre Hole	290	800	3.15	10.8	28
17060230	30G-2	Centre Hole	290	200	20	3	40
17060245	6B-10 ORG	Centre Hole	170	1,000	2	0.76	20
17060250	7B-15 ABS	Centre Hole	200	1,500	2.75	1.6	23
17060263	7M-5	Double Lug	210	500	4.4	1.15	14.5
17060305	HS-300	Double Lug	300	500	12	3.2	—
17060308	HS-300I	Double Lug	300	800	10	4.1	—
17066040	Nokalon #551	Centre Hole	200	400	3.1	0.9	20
17066045	Nokalon #577	Centre Hole	200	1,300	2.4	1.6	20
17066018	Nokalon #629	Double Lug	230	1,800	4.0	2.8	20
17066025	Nokalon #511	Centre Hole	280	950	7.5	3.4	20

17060250

17060263

17060308

FLOATS

BUOYS

UBE Trawl Floats - Made in Japan							
Product Code	Model	Type	Body Dia.	Working Depth	Nett Buoyancy	Weight	Eye Dia.
706			mm	m	kg	kg	mm
17062428	*CT208B	Centre Hole	200	800	2.7	1.3	21
17062438	*CT308B	Centre Hole	300	800	10	4.7	28
17062440	*CT368B	Centre Hole	360	800	16	7.2	32
17062458	*CT458B	Centre Hole	450	800	31	14.1	38
17062608	*CT608B	Centre Hole	600	800	80	32	40
17063612	CT3612	Double Lug	360	1,200	15	8.7	28
17063615	CT3615	Double Lug	360	1,500	13.3	9.8	28

* Indent only.


17062440


17063612


17063615

Longline Floats						
Product Code	Model	Body Dia.	Working Depth	Nett Buoyancy	Weight	Eye Dia.
706		mm	m	kg	kg	mm
17060259	4M–10	120	1,000	0.71	0.31	11
17060262	5M–12	150	1,200	1.65	0.64	11
17065408	HF 240B	240	300	6	1.3	—
17065415	HF 300B	300	300	11.9	2.3	—
17065412	HF 360B	360	300	20	4.2	—
17065420	HF 360C	360	300	20	4.2	—
17065410	10A–3	300	300	14.5	2	20
17065411	12A–3	360	300	24.7	4.45	25


17060259


17060262


17065420


17065408


17065410
17065415


17065411
17065412

SWIVELS

STAINLESS STEEL

Stainless Steel Swivels - 5:1 Safety Factor							
Product Code 739	Model	Size mm	S.W.L.	Type	Length mm	Weight kg	Material
17390210	A 10 SS	10	1.1 T	Rigid	102	0.20	Stainless Steel
17390213	A 12 SS	13	1.6 T	Rigid	140	0.36	Stainless Steel
17390216	A 16 SS	16	3.2 T	Rigid	180	0.89	Stainless Steel
17390219	A 19 SS	19	4.7 T	Rigid	205	1.80	Stainless Steel
17390222	A 22 SS	22	6.8 T	Rigid	222	2.25	Stainless Steel
17390225	A 25 SS	25	8.3 T	Rigid	278	4.10	Stainless Steel
17390232	A 32 SS	32	12 T	Rigid	350	8.15	Stainless Steel
17390238	A 38 SS	38	18 T	Rigid	390	13.00	Stainless Steel

Flexible Stainless Steel Swivels - 5:1 Safety Factor							
Product Code 739	Model	Size mm	S.W.L.	Type	Length mm	Weight kg	Material
17390112	A 12 SSF	13	1.6	Flex	160	0.56	Stainless Steel
17390116	A 16 SSF	16	3.2	Flex	200	1.20	Stainless Steel
17390119	A 19 SSF	19	4.7	Flex	235	2.00	Stainless Steel
17390122	A 22 SSF	22	6.3	Flex	255	2.90	Stainless Steel
17390125	A 25 SSF	25	8.3	Flex	320	4.70	Stainless Steel
17390132	A 32 SSF	32	12.0	Flex	360	9.20	Stainless Steel
17390138	A 38 SSF	38	18.0	Flex	410	14.60	Stainless Steel
17390145	A 45 SSF	45	28.0	Flex	515	24.00	Stainless Steel

SWIVELS

FORGED

Forged Swivels - 5:1 Safety Factor							
Product Code 739	Model	Size mm	S.W.L.	Type	Length mm	Weight kg	Material
17393101	A 10 ST	10	0.6	Short Bow	123	0.23	Alloy Steel Blue
17393102	A 12 ST	12	1.1	Short Bow	140	0.40	Alloy Steel Blue
17393116	A 16 FO	16	2.4	Short Bow	150	0.87	Alloy Steel Blue
17393119	A 19 FO	19	3.8	Short Bow	185	1.30	Alloy Steel Blue
17393122	A 22 FO	22	5.3	Short Bow	230	2.20	Alloy Steel Blue
17393125	A 25 FO	25	7.2	Short Bow	265	3.65	Alloy Steel Blue
17393128	A 28 FO	28	9.0	Short Bow	280	4.30	Alloy Steel Blue
17393132	A 32 ST	32	12.5	Short Bow	305	7.20	Alloy Steel Blue
17393138	A 38 ST	38	15.4	Short Bow	340	9.90	Alloy Steel Blue

17393101

17393116

Forged Swivels - 5:1 Safety Factor							
Product Code 739	Model	Size mm	S.W.L.	Type	Length mm	Weight kg	Material
17390010	A 10 ST	10	0.6	Short Bow	123	0.23	Galvanised
17390012	A 12 ST	12	1.1	Short Bow	140	0.40	Galvanised
17390016	A 16 ST	16	1.5	Short Bow	180	0.76	Galvanised
17390019	A 19 ST	19	2.4	Short Bow	200	1.30	Galvanised

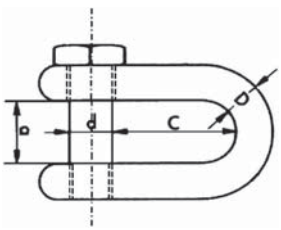
SHACKLES

GREEN PIN HI-LOAD

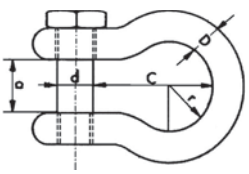
Green Pin Hi-Load - Dee Trawl Shackles					
Product Code 231	WLL (ton)	Body Dia D (mm)	Pin Dia d (mm)	Inside Width a (mm)	Inside Length C (mm)
02314216	2.00	13	16	22	43
02314219	3.25	16	19	27	51
02314222	4.75	19	22	31	59
02314225	6.50	22	25	36	73
02314228	8.50	25	28	43	85
02314232	9.50	28	32	47	90
02314235	12.00	32	35	51	94
02314238	13.50	35	38	57	115
02314242	17.00	38	42	60	127

DEE TRAWL SHACKLES

- High tensile steel
- Galvanised finish
- 6:1 Safety factor
- Square head pin



Green Pin Hi-Load - Bow Trawl Shackles						
Product Code 231	WLL (ton)	Body Dia D (mm)	Pin Dia d (mm)	Inside Width a (mm)	Inside Length C (mm)	Width of Bow 2r (mm)
02314322	4.75	19	22	31	76	51
02314326	6.50	22	25	36	83	58
02314328	8.50	25	28	43	95	68
02314332	9.50	28	32	47	108	75
02314335	12.00	32	35	51	115	83
02314338	13.50	35	38	57	133	92
02314342	17.00	38	42	60	146	99
02314351	25.00	45	50	74	178	126



TUBE THIMBLES

TUBE THIMBLES

Tube Thimbles						
Product Code	Model	Thimble Type	Dimensions Inside (mm)			Weight
718			Max Wire	W	H	kg
17185010	G715 K	with Gusset	12	15	95	0.52
17185011	G717 K	with Gusset	14	17	100	0.55
17185012	G719 K	with Gusset	16	19	112	0.65
17185013	G722 K	with Gusset	18	22	125	0.9
17185014	G725 K	with Gusset	22	25	150	1.26
17185015	G730 K	with Gusset	25	30	170	2.02
17185016	G735 K	with Gusset	32	35	190	2.5

Tube Thimbles						
Product Code	Model	Thimble Type	Dimensions Inside (mm)			Weight
718			Max Wire	W	H	kg
17185024	G712	without Gusset	10	84	23	0.21
17185025	G715	without Gusset	12	95	27	0.4
17185026	G717	without Gusset	14	100	27	0.48
17185029	G722	without Gusset	18	125	35	0.71
17185031	G725	without Gusset	22	150	45	1.21

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WEATHER WEAR

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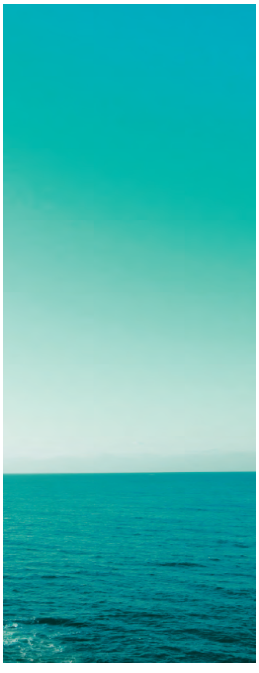

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