

**CATALINA
310
FURLING MAST
HAND BOOK**



MADE BY

CHARLESTON SPAR

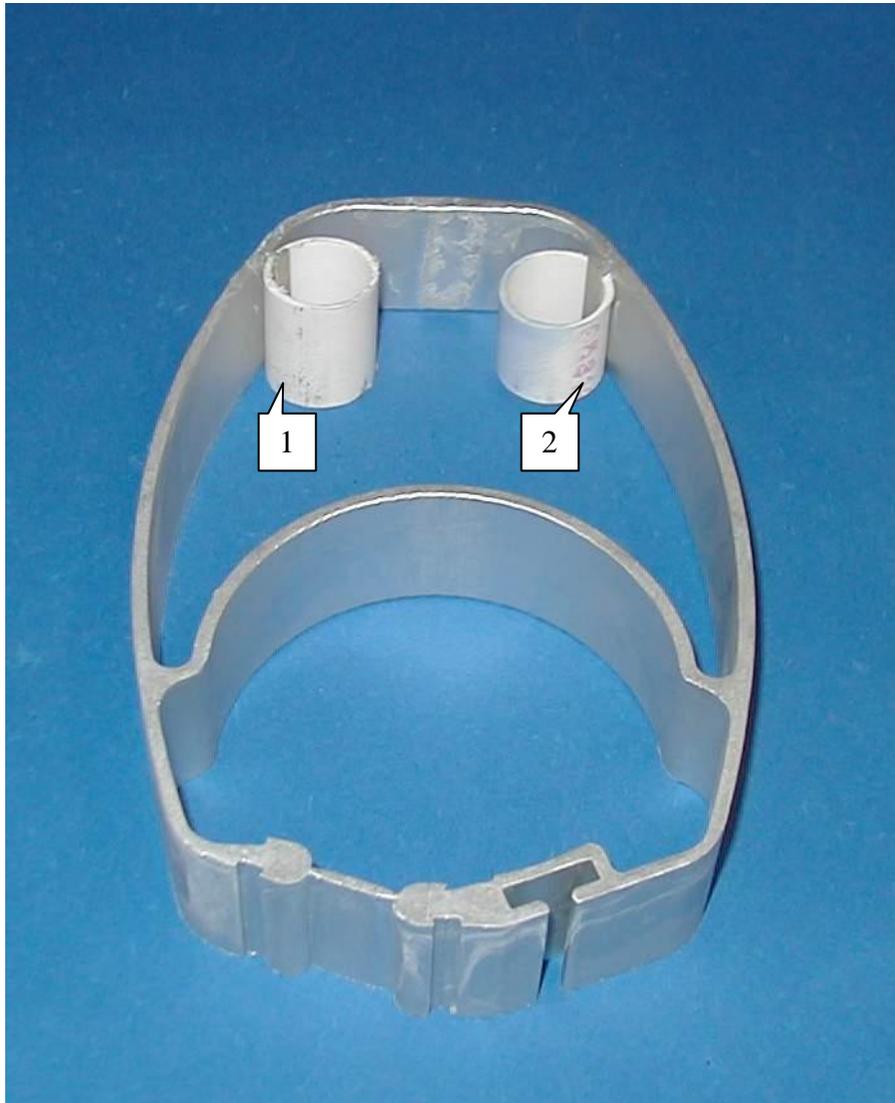
3901 PINE GROVE CIRCLE
CHARLOTTE, NC 28206

(704) 597-1502

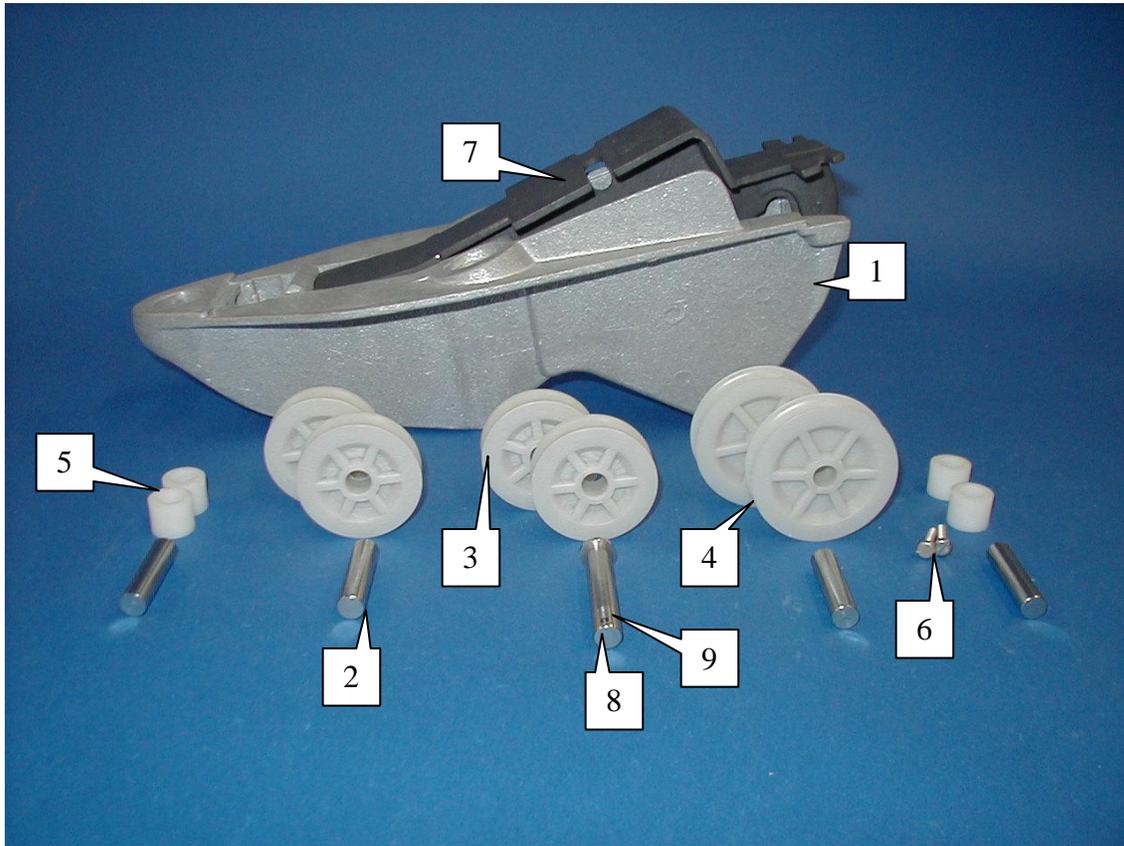
FAX (704) 597-0961

WWW.CHARLESTONSPAR.COM

MAST FURLING SECTION I365-E



NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	PVC 3/4" TO MIDDLE 10'	27902293003	2
2	PVC 3/4" TO TOP 10'	27902293003	5



30001010285

OCI MASTHEAD WELD IN COMPLETE

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	OCI MASTHEAD	30001010283	1
2	STRAIGHT PIN 10 X 40.8	40020110040	4
3	ACETAL SHEAVE 50 X 14	48530501415	4
4	ACETAL SHEAVE 60 X 14	48530601415	2
5	ROLLERS 10 X 18 X 15	40503010015	4
6	4 X20 SCREW S/S	28600705020	2
7	OCI MASTHEAD COVER	30001090283	1
8	CLEVIS PIN 10 X 49	40020310049	1
9	S/S COTTER PIN 3/32" X 1"	28803032200	1





34001171263
12 MM EXIT COVER
4 PER MAST
(29002248110 S/S RIVET 4.8X11)



LARGE FAIR LEAD
43205508124
1 PER MAST
(29004164125 MONEL RIVET 6.4X12.5)



31011010074
ACMO D7 1/4-9/32 T BACKING PLATE
2 PER MAST
(29004164125 MONEL RIVET 6.4X12.5)



**ANCHOR LIGHT
HELLA 62171
43003031211**



**COMBO LIGHT
HELLA 62248
43009031211**



Model 2492

Ideal as navigation lamp on small boats.
Low power consumption. Seawater-proof, anti-magnetic.

Product description.....	Shock-proof, sturdy plastic housing and lamp housing UV-resistant
Minimum visible range.....	2nm, for vessels <20m
Bulb.....	Pre-fitted spherical incandescent bulb 12 V / 10 W, socket: BA 15s
Installation.....	6.3 mm flat-plug connectors, 2 flat female connectors 6.3 mm included
Cable entry.....	Through base plate
Protective system.....	According to IP 54 (DIN 40050)
Mounting.....	Direct attachment, 2 mounting screws 5/32"

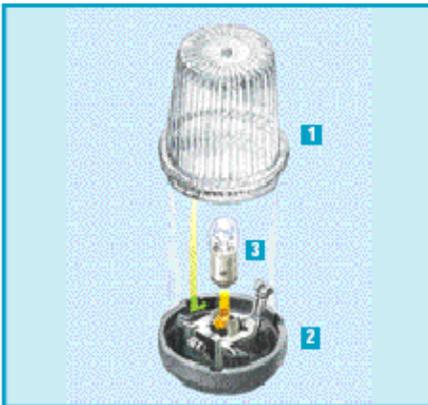


Model 8505

Deck floodlight with special housing combined with masthead lamp **62242**. Application for boats with lengths <12 m. The light distribution has been adapted to the special requirements on smaller sail boats using the FF reflector. The flexible mounting lugs allow simple and quick mounting on any mast profile. With halogen cool-beam reflector lamp (12V/20W) for deck illumination, with cover to protect bulb against damp and dirt. All metal parts stainless steel. Bulb easy to replace through opening in cover (with less guard).

Product description.....	Shock-proof and sturdy plastic
Bulb.....	Festoon bulb 12 V / 10 W and insert 12 V / 20 W included
Installation.....	Navigation lamp 2 flat-plug connectors 6.3 mm, deck lamp pre-wired, connection cable 110 mm
Protective system.....	According to IPX 4 (DIN 40050)
Max. output.....	Deck lamp 12 V / 20 W

Spare parts

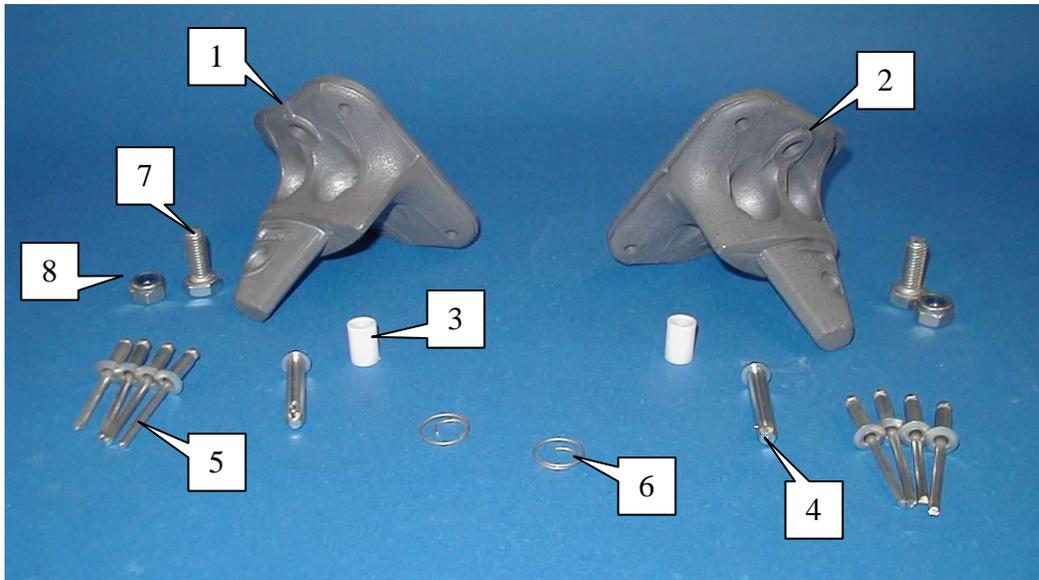


- 1 Lamp housing clear
63100
- 2 Seal
63243
- 3 Bulb 12 V
78235

Spare parts

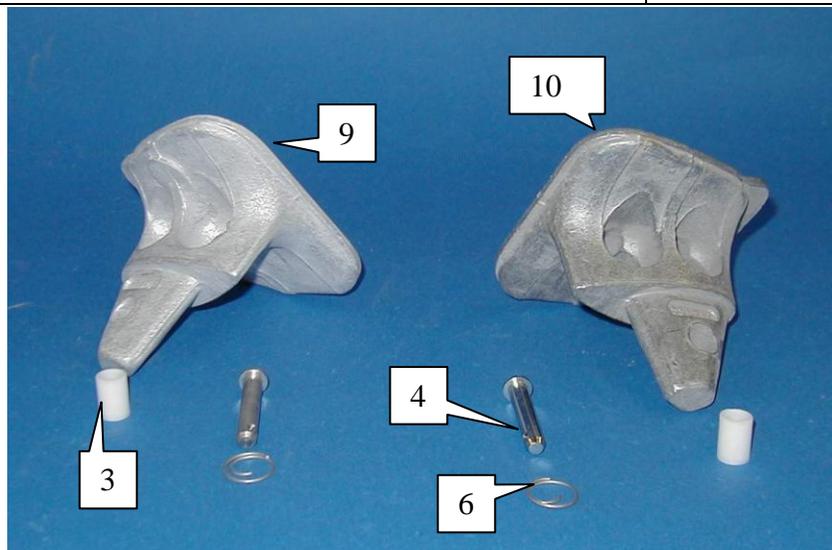


- 1 Lamp housing 63166
- 2 Festoon bulb 12v 10w 78300
- 3 Bulb 12V 78206

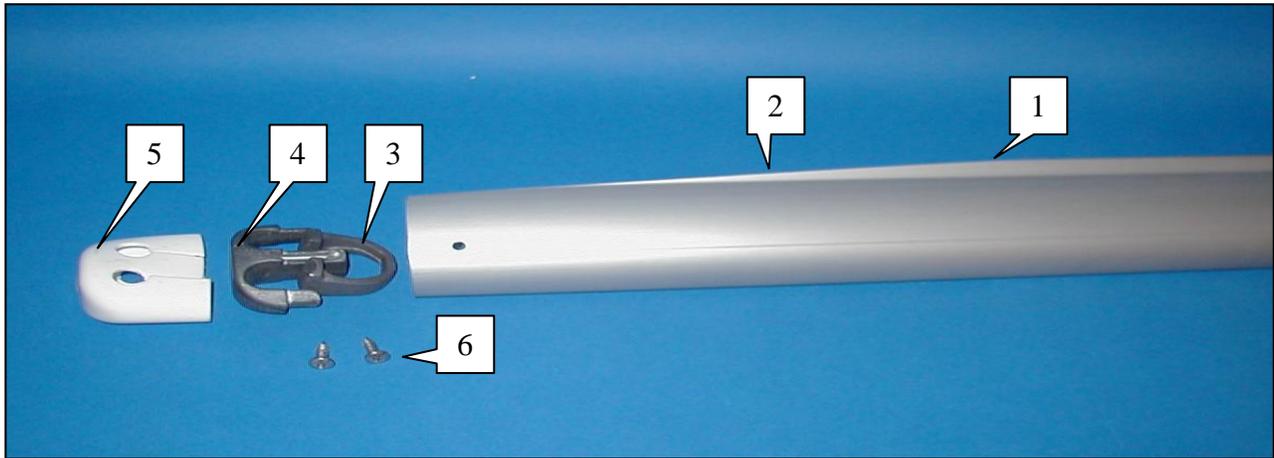


BF3 SPREADER BASE BOLT ON

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	BF3 SPREADER BASE PORT	32010302103	2
2	BF3 SPREADER BASE STARBOARD	32010302203	2
3	BF3 SPREADER BUSHING	40503012017	4
4	BF3 CLEVIS PIN 8 X 33.5	40020308034	4
5	S/S RIVET 6.4 X 18	29004164180	8
6	S/S SPLIT RING	28809000015	4
7	BOLT 3/8-16 X 1"		4
8	NUT 3/8-16 NUT AND LOCK WASHERS		4
9	BF3 SPREADER BASE WELD ON PORT	32000300101	2
10	BF3 SPREADER BASE WELD ON STARBOARD	32000300201	2

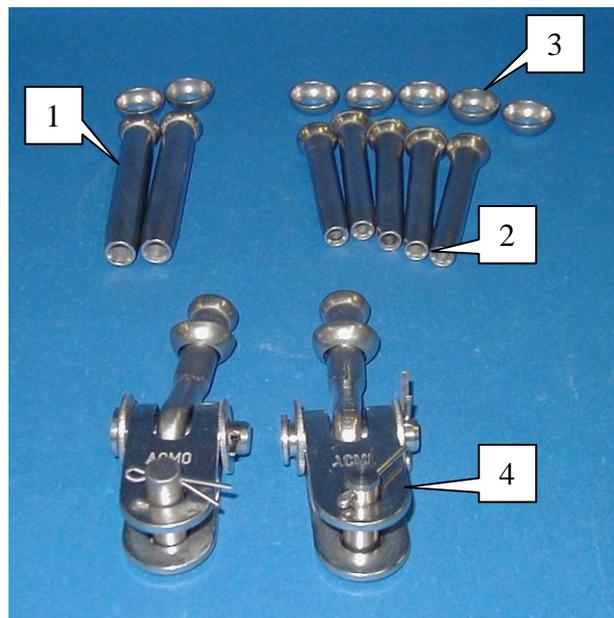


**BF3 LARGE WELD ON BASE
CHANGED TO BOLT ON BASE ABOVE 8-17-05**



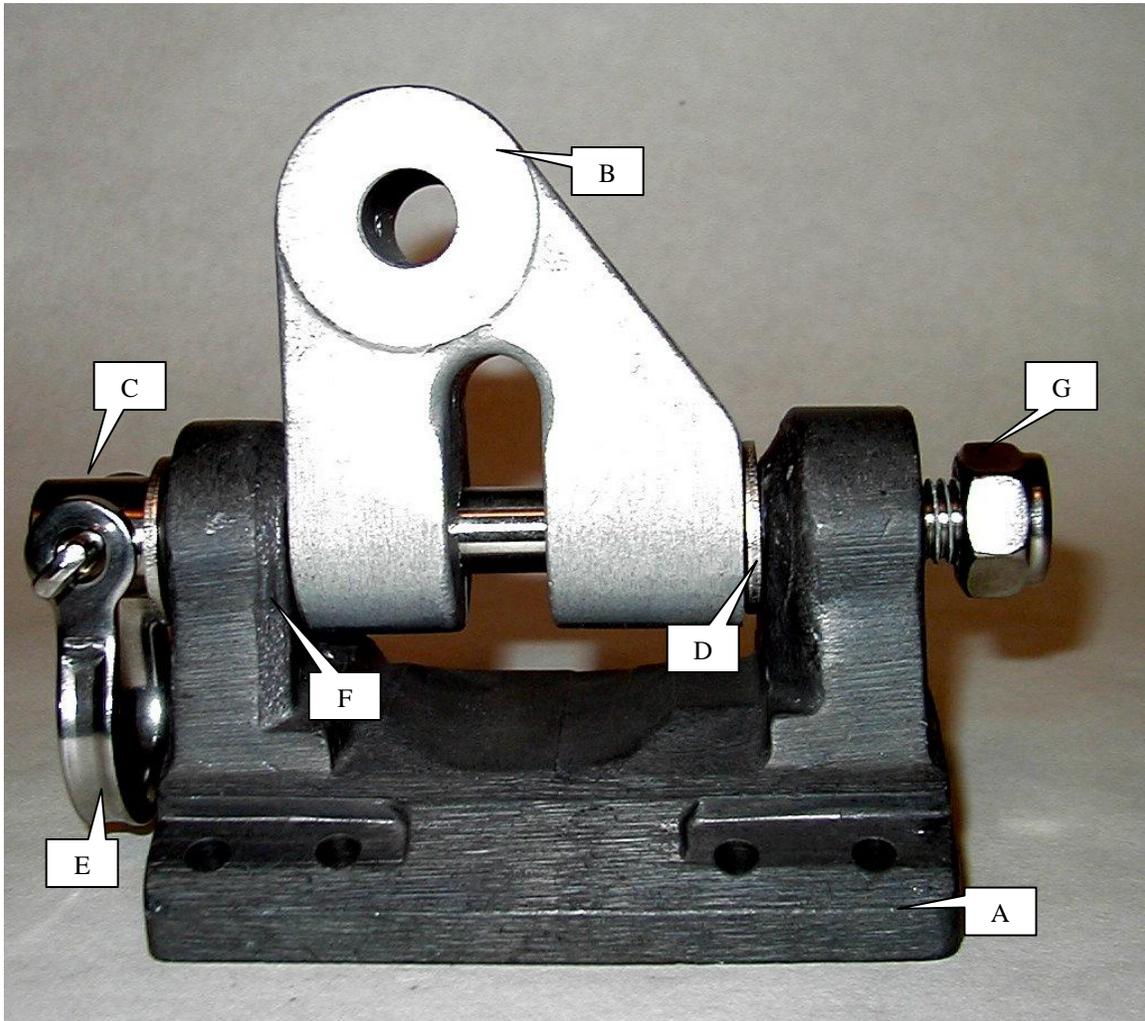
BF3 UPPER AND LOWER SPREADER

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	BF3 SPREADER UPPER 650 mm LONG 0 SWEEP	NONE	2
2	BF3 SPREADER LOWER 850 mm LONG 0 SWEEP	NONE	2
3	BF 3 SPREADER INSERT	32603040083	4
4	BF 3 SPREADER TIP	32603030083	4
5	BF3 PLASTIC PROTECTOR	32603050082	4
6	SCREW 10 X 1/2 PPTS 18-8 S/S	28606408009	8



RIGGING KIT

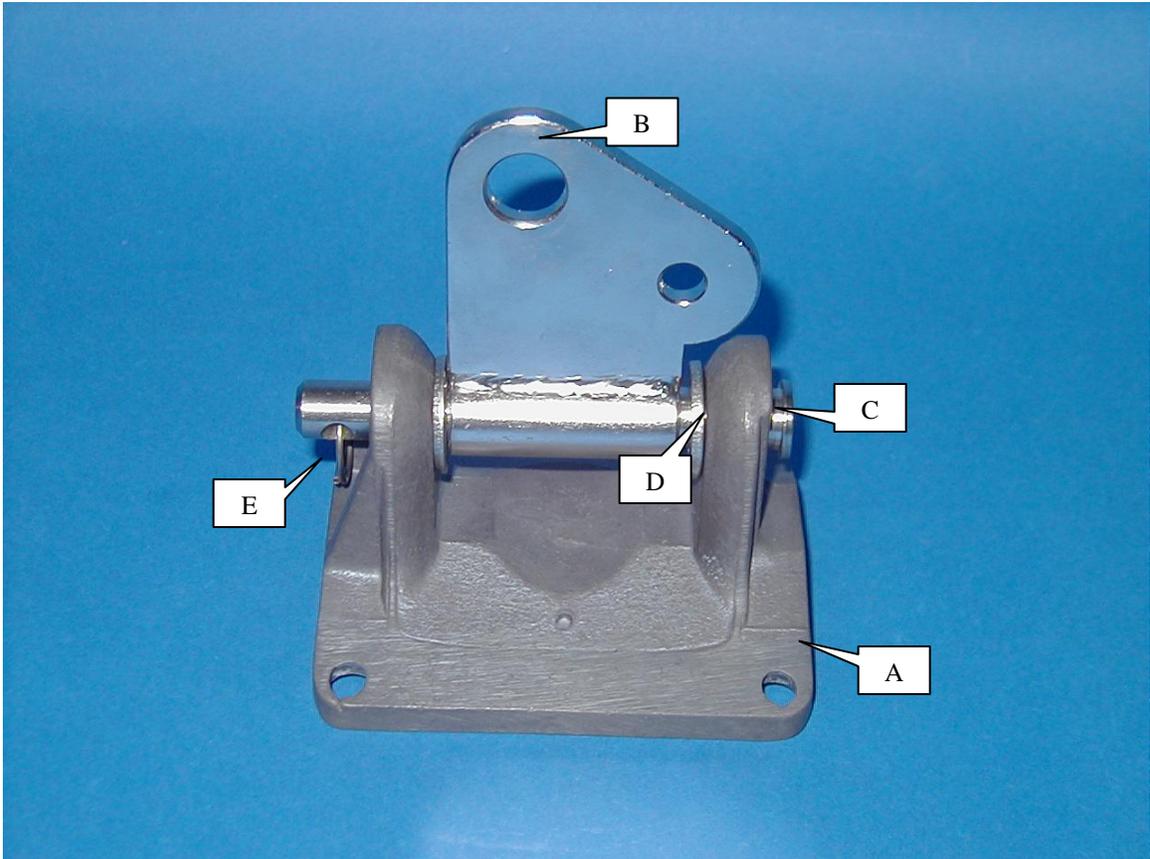
NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	STEM BALL TERMINAL 5/16" WIRE	44110104268	2
2	STEM BALL TERMINAL 1/4" WIRE	44110104266	5
3	S/S CUP WASHERS 26 X 16	31012114016	7
4	EYE TOGGLE 26 TOGGLE 1/2	44110105123	2



NG II / OCH AUTO REEF F220-F550
GOOSENECK BRACKET
12mm TOGGLE
 3451177OC27

NUM	DESCRIPTION	PART NUMBER	QUANTITY
A	NGII GOSENECK BRACKET	34515543083	1
B	TOGGLE 12mm HOLE	34531792183	1
C	S/S THREADED PIN 14 X 138	40022014138	1
D	S/S WASHER 14 mm	28601014000	2
E	BOW SHACKLE	46001151008	1
F	S/S BUSHING (NOT SEEN)	40502022014	1
G	S/S LOCK NUT 14 mm	28600514000	1
H	S/S POP RIVET 6.4 X 25	29003164250	8

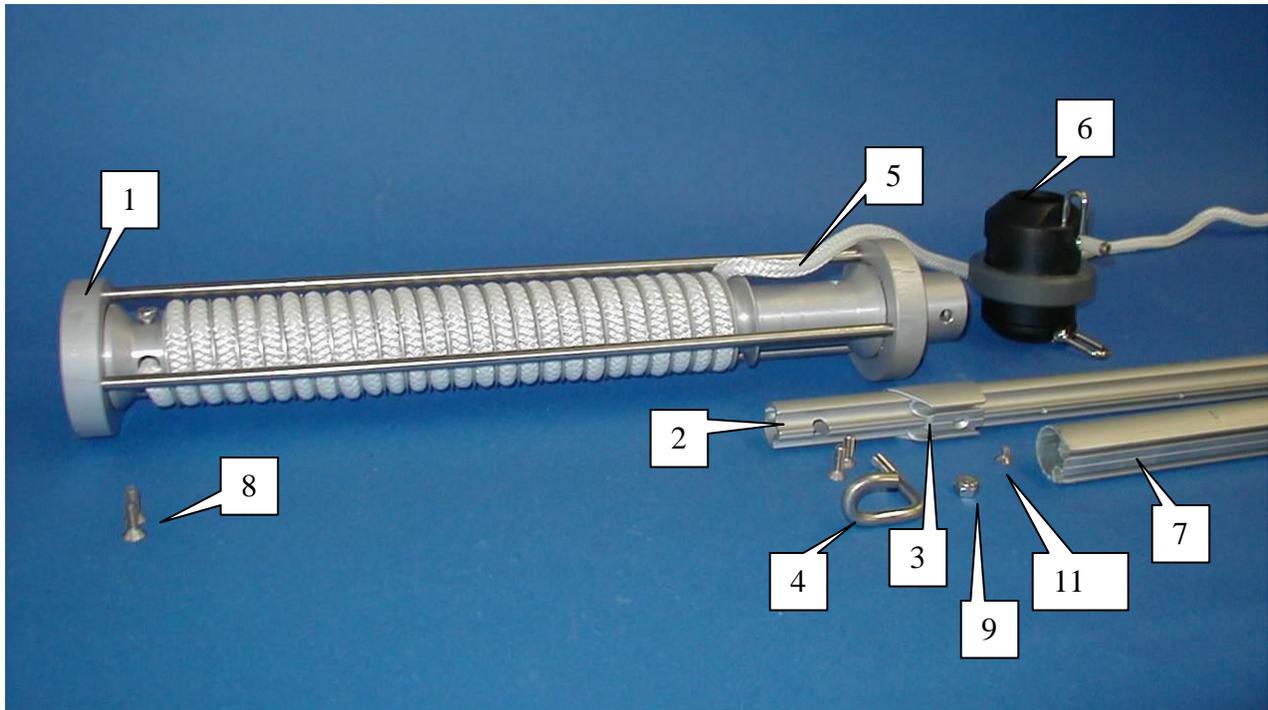
ITEM E NOT REQUIRED ON FURLING MAST



NGI / OCI
WIDE VANG BRACKET I265-I365 COMPLETE

181PF1

NUM	DESCRIPTION	PART NUMBER	QUANTITY
A	NGI WIDE VANG BRACKET	34515544203	1
B	D14/14 VANG TOGGLE POLISHED	35231790514	1
C	NGI CLEVIS PIN 12 X 85	40020212085	1
D	S/S WASHER 12 mm	28601012000	1
E	SPLIT RING	28809000020	1
F	S/S MONAL RIVET 6.4 X 25	29003164250	6



I265-E -I365E FURLING SCREW

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	I265-365E FURLING SCREW	42201602653	1
2	SPLICE FOR S30FOIL	42206304003	1
3	MAST GATE S30	42225940030	1
4	J HOOK	40021508050	1
5	CONTROL LINE DIA 10 X 18 METERS	43550100001	1
6	HOIST CAR I265-365	42203300005	1
7	S30 FOIL SECTION 12 METERS LONG	42205301203	1
8	1/4-20 X 3/4 FLATHEAD SCREW		4
9	8MM LOCK NUT	28600508000	1
10	TOP CAP FOR S30 FOIL	42207300001	1
11	5 X 12 FLATHEAD SCREW	28600805012	3
12	RIVET 4.8 X 18	29002248180	2



BOOM SECTION F220



► **BOOM**

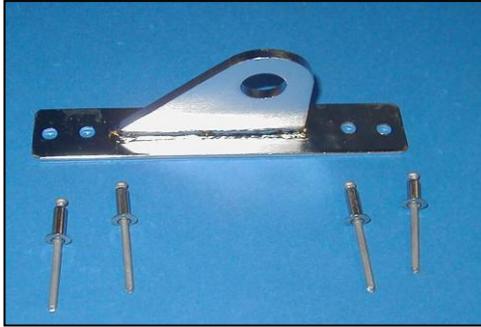
PROFILE	DIMENSIONS mm	I'X cm 4	I'YY cm 4	WEIGHT Kg / ml	THCKNESS mm	BOLT ROPE mm
F 220 	98 x 130	143	340	3,72	2,4	∅ 8 / ∅ 12

PLEASE NOTE THAT THE LUFF TRACK ON SOME F220 BOOM SECTIONS MAY REQUIRE °10-°12 MM BOLT ROPE . PLEASE VERIFY WITH YOUR SAILMAKER FOR CORRECT INFORMATION THAT THEY REQUIRE.



F220 INBOARD BOOM END

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	F220 INBOARD BOOM END	37010002203	1
2	FLAT WASHER NYLON D12/ 2.5 mm THICK	28602312025	2
3	COTTER PIN S/S 3.2 X 63 mm	28803032630	1
4	S/S CLEVIS PIN 12 X 62 mm	40020312062	1
5	ACETAL SHEAVE 50 X 14	48530501415	2
6	ALUM RIVET LARGE 4.8 X 14 X 14	29001248140	4
7	S/S HOLLOW PIN 10 X 90 FOR SHEAVES	40020710090	1
8	S/S HOLLOW PIN 10 X 82 FOR JAMMERS	40020710082	1
9	MONEL RIVET 6.8 X 12.5	29004164125	4



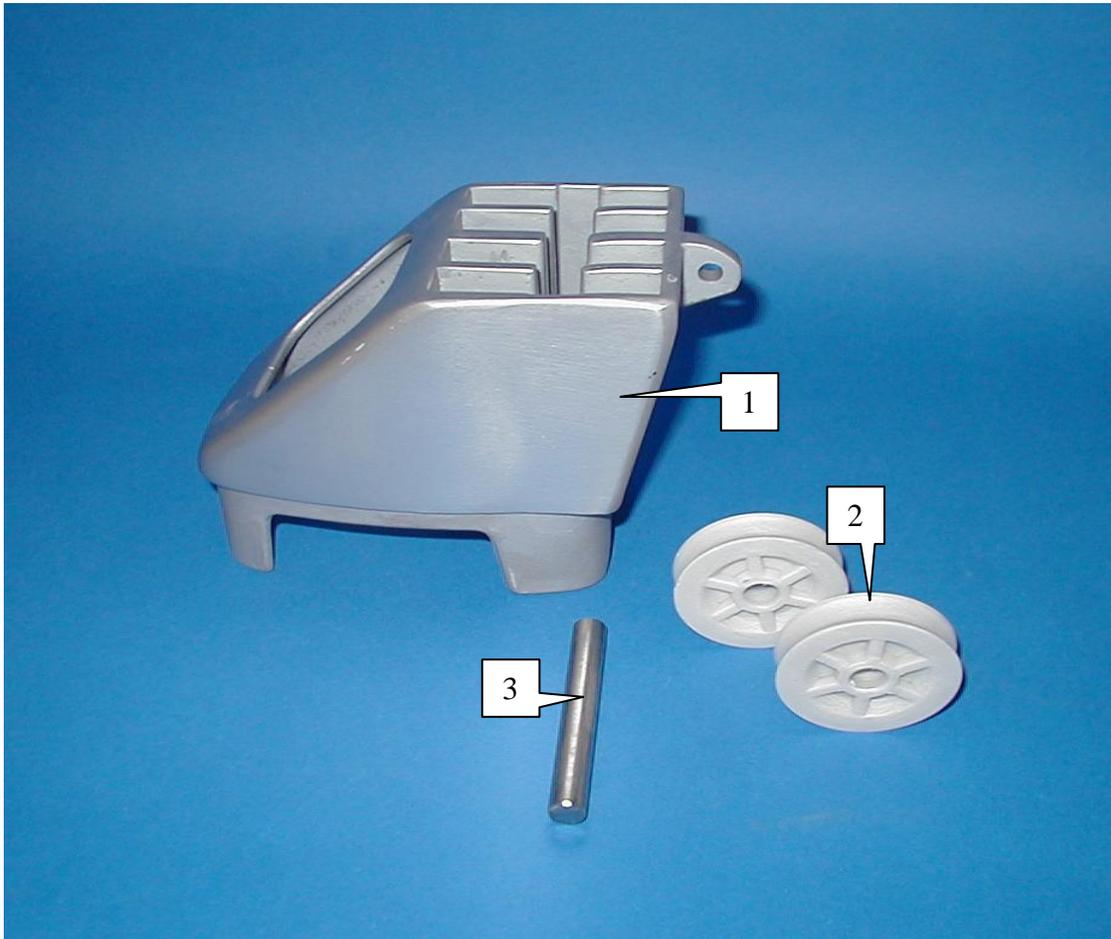
BOOM VANG LUG
35243202734
(29002248140 S/S RIVET 4.8X14)



BOOM BAIL AND RETAINING PLATE
47501318173
3 PER BOOM
(29002248140 S/S RIVET 4.8X14)

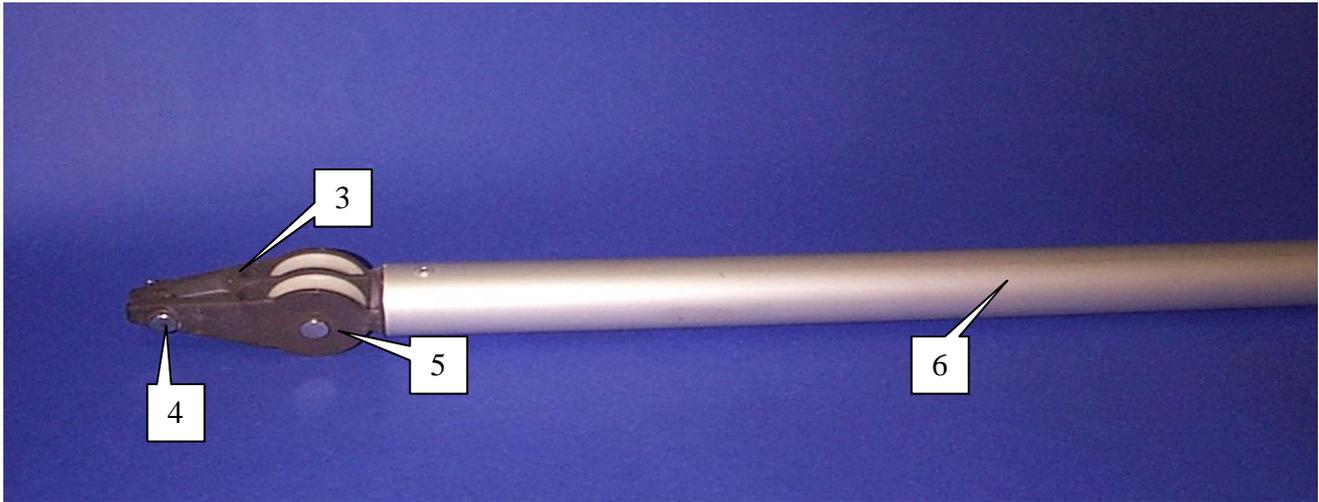


SPARCRAFT SINGLE BLOCK
97414



F220 OUTBOARD BOOM END

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	F220 OUT BOARD BOOM END	37030002203	1
2	ACETAL SHEAVE 50 X 14	48530501415	2
3	S/S STRAIGHT PIN 10 X 81	40020110081	1
4	MONEL RIVET 6.8 X 12.5	29004164125	4

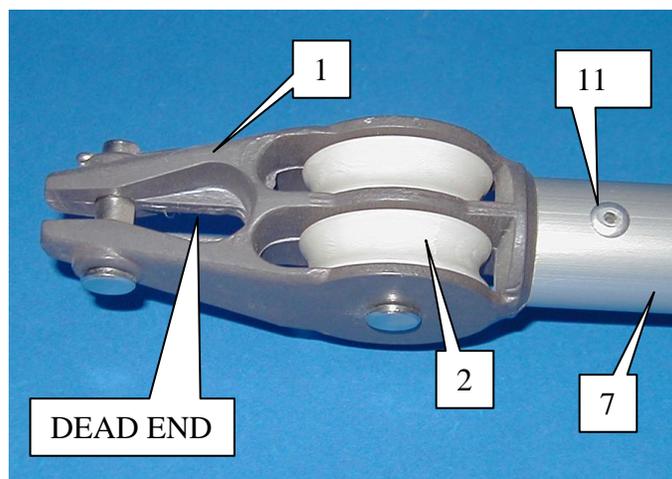


SMALL SIZE LONG VANG COMPLETE

37560010305

REMOVED 9-17-04

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	SMALL SIZE LOW VANG FITTING	37520010103	1
2	SHEAVE 50 X 14	48530601415	4
3	SMALL SIZE TOP VANG FITTING	37510010103	1
4	S/S CLEVIS PIN 10 X 31.5	40020310031	2
5	S/S CLEVIS PIN 10 X 45	40020310045	2
6	D45 LG 1330 ALUM VANG TUBE	37550451330	1
7	D33.6 LG 1330 ALU VANG TUBE	37550341330	1
8	D40LG 1330 PVC VANG TUBE	37550401330	1
9	VANG SPRING D30 LG1100	29213001100	1
10	8 mm GREEN ROPE 14 M LONG	43530080014	1
11	RIVET 4.8 X 12	29002248110	4



CATALINA 320 HANDBOOK

Thank you for the purchase of your new mast and boom from Charleston Spar-Sparcraft. This handbook is to familiarize you with cleaning, maintenance and servicing of your spars. You will find the pictures of the components with part numbers that are located in the service section particularly helpful.

I. Maintenance.

Regular maintenance will ensure that your spars remain trouble free and safe. At the beginning of the season, all moving parts, (sheaves, gooseneck toggles, vang's etc. should be cleaned and lubricated. Check also for signs of stress cracks if the vessel has been in extremely heavy weather or has taken a knock down.

Regularly wash the spars and fittings preferably with hot soapy water to remove salt and grime. Make sure that all sharp edges are fully taped for protection. At the end of the season, thoroughly wash and lubricate the fittings to ensure that they do not corrode during the winter. Secure all rigging away from the surface of the spars as there could be corrosion between the dissimilar metals or chafe caused by the wind.

Standing Rigging: Check Headstay and Backstay pin holes for elongation.

Check swaged terminals for signs of rust which leads to cracks.

Check wire for broken strands. This usually occurs first at bottom terminal.

Mast and boom cleaning procedure. Occasionally your anodized spar may need cleaning. The following is a restoration procedure.

1. Materials: There can be substitutions but a sample piece is advised to assure that the spar surface is not scratched.
2. "Mirlon" surface finishing pads, 6" x 9", grade VF, (www.mirka.com).
3. Dial Corporation's "Soft Scrub with Bleach", (www.softscrub.com).
4. Dial Corporation's Boraxo TMT, Borax Powdered Hand Soap.
5. "Corrosion Block" by (www.learchemical.com).

Procedure:

1. Rinse surface of spar to remove obvious abrasives, (sand and grit).
2. Wet surface of finishing pad. Apply mixture of Boraxo powder and Soft Scrub to create a loose paste.
3. With firm pressure in a linear direction, (along section), scrub surface. Concentrate on areas of discoloration with additional paste application.
4. Rinse with fresh water and repeat as needed to improve appearance.
5. Dry.
6. Using a dry lint free rag, to complete surface, apply "Corrosion Block".
7. Wipe with dry towel.

II. Furling Masts: NOTE – Tune mast with no pre-bend. Please use a wooden wedge in the cavity opening at the lifting strap when stepping to avoid damage.

1. Hand operated Sparcraft furling masts use furling systems equipped with endless screws. This system is the only one allowing for a safe guidance of the furling control while avoiding over furling and the only one which may be operated by a single person.
2. The diameter of the endless screw has been optimized in order to reduce furling stress under load. They are made of anodized aluminum and fitted on stainless steel roller bearings.
3. The furling rod is free-floating within the cavity with no interior tensioning cable. This type of design does not increase mast compression.
4. The furling rod is larger than the furling cavity opening and therefore can in no way pull out.
5. The headboard swivel has a top and bottom shackle. It is best to put the main halyard eye splice direct to the top shackle. The lower shackle receives the mainsail. The swivel is the guide for the furling rod in the upper section. It can be removed for maintenance.
6. The furling line is rolled onto the endless screw at the factory. It is held in by a socket-head cap screw at the base of the unit.
7. Sail installation:
 - a. Mast and boom in place, attach the head of the sail to the lower swivel shackle. Hoist the mainsail slowly and carefully assuring the bolt rope is guided into the furling rod. Fix the tack before full hoist. Adjust the halyard tension for a slight fold in the sail along the furling rod.
 - b. The outhaul line comes from the sheave in the aft boom end, thru the block in the outhaul car, thru the clew in the mainsail and attached to the shackle in the front of the outhaul car.
8. Setting the Mainsail: Note – With a solid strut, the leach is adjusted simultaneously with the foot.
 - a. Hold the boom in place by the topping lift or rigged vang. The solid strut will be pre-adjusted.
 - b. Pull the outhaul line until the sail is all the way out. Cleat off the line and go sailing. This will load the screw.
 - c. Setting the main in medium to heavy air. Head into the wind as necessary. Control the furling line to assure steady deployment. Using a winch as a brake in heavy air may be necessary.
9. Furling and Reefing the Mainsail:
 - a. The aft end of the boom should be up slightly to allow for even layers of the sail on the furling rod.
 - b. Ease the mainsheet.
 - c. Pull on the furling line while keeping tension on the outhaul line to ensure a tight wrap of the sail. Stop where desired for reefing.
 - d. Secure both lines.
10. Furling Mast Maintenance:
 - a. The maintenance of a furling mast is the same as the standard mast. Some of the mechanical parts require yearly verification. Remove the mainsail once a year for inspection. Check the halyard swivel for proper integrity. Check the screw mechanism for ease of

rotation. Listen and feel while rotating for roughness or binding. Flush screw and bearings with fresh water. If you have a question, please call Charleston Spar at 704-597-1502

11. Furling Control Line Replacement:

- a. Remove the sail.
- b. Unroll the line from the screw.
- c. Loosen the locking screw.
- d. Remove old line and install the new one to the previous depth.
- e. Tighten the locking screw.
- f. Load the endless screw to a point where the line is horizontal leading to the block on the boom.
- g. Reinstall the mainsail.

III. Go Sailing, Have Fun and Enjoy Your CATALINA 320.

Sincerely, Charleston Spar



SPARCRAFT MAST WARRANTY BY CHARLESTON SPAR INC.

I. WARRANTY, TERMS AND CONDITIONS –

Ocean & Performance Series & Sparcraft One Design Masts, Booms, and Mast Products. CHARLESTON SPAR for SPARCRAFT MASTS warrants its products in normal usage to be free of defects in materials and workmanship for a period of one year from date of invoice to the original purchaser, subject to the conditions, limitations and exceptions listed below. Any part, which proves to be defective in normal usage during the warranty period, will be repaired or replaced by Charleston Spar.

A. CONDITIONS AND LIMITATIONS:

1. CHARLESTON SPAR for SPARCRAFT MAST LIABILITY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE GOODS OR PARTS DEFECTIVE IN MATERIALS OR WORKMANSHIP. Please note that CHARLESTON SPAR for SPARCRAFT MASTS usually does not supply standing or running rigging with mast orders; consequently, defects in rigging not supplied or manufactured by CHARLESTON SPAR are not covered by this warranty.

2. CHARLESTON SPAR for SPARCRAFT MASTS shall not be liable in any way for:

- a. Failures due to use of products in applications for which they are not intended, or on a boat other than intended.
- b. Failure due to considerable difference in displacement or stability from original design basis, or for more extreme use conditions from original design basis.
- c. Failures due to improper handling or storage after delivery, or for damages during commissioning or installation by others, or due to improper installation or tuning.
- d. Abnormal use or accident, including but not limited to accidental jibes, running aground or in ungrounding operations, or due to lightning strikes.
- e. Loss of boat use; dockage or boatyard storage; or for crew/passenger expenses or reimbursement.
- f. Ultra violet degradation, chafe, corrosion, or wear and tear.
- g. Breakage, damage, or failure while racing, unless CHARLESTON SPAR has expressly authorized limited racing coverage by separate written agreement.

3. Requests for warranty claims shall be in writing and should include sketch, pictures or detailed description of defective part or reason for claim. Fax or letter is acceptable to initiate claim and to establish age of product. FINAL CLAIM TO BE ON CHARLESTON SPAR AUTHORIZED FORM. CHARLESTON SPAR may request that part(s) be returned to the FACTORY. Return Authorization required for large objects. For SPARCRAFT MASTS not directly purchased through CHARLESTON SPAR, initial requests for parts or repair should be through your dealer/boat manufacturer. Installation labor associated with any warranty claim shall be according to CHARLESTON SPAR repair policies.

B. EXCEPTIONS:

1. This warranty is limited to six (6) months for any product that is being rented or leased (chartered), or which is installed on any vessel that is being rented, leased, or charter, with the exception of items in 1BII.

2. Electrical or hydraulic motors or controls; hydraulic or pneumatic cylinders, valves or seals; and electrical equipment shall carry a one year warranty unless the part's manufacturer carries a longer warranty.

3. CHARLESTON SPAR for SPARCRAFT MASTS shall not be liable for consequential damages to yachts, equipment or other property or persons due to any failure of CHARLESTON SPAR for SPARCRAFT MAST equipment. Some countries and states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation exclusion may not apply to you.

II. This warranty gives you specific legal rights, and you may also have other legal rights, which vary from state to state. Some states or countries do not allow limitations on how long an implied warranty lasts, so the above may not apply to you.

III. Due to ongoing design development and materials/parts procurement, CHARLESTON SPAR reserves the right to alter design and specifications without prior notice. Such changes shall not be taken as retroactive for any existing mast or parts.

IV. Pre-commissioning inspection, installation and tuning of your CHARLESTON SPAR MAST should be performed by an experienced rigger or sailor under his sole responsibility. Adequate time should be allowed between mast inspection and mast stepping. Any discrepancies or missing parts not listed, as backordered should be faxed in to Charleston Spar's attention "Pre-installation Inspection". Due to trucking schedules, masts are sometimes sent incomplete. Missing and/or backordered parts are sent by regular UPS service. Overnight delivery of parts is available for a surcharge.

V. The plastic packaging that masts are wrapped in is for protection during shipping. Condensation can occur and be trapped inside the packaging and possibly cause corrosion. Please do not leave masts stored for long periods in plastic wrap.

VI. Safety precautions should be taken when working on or up a mast. A second halyard or a safety line should be used when going aloft. Halyards, sheaves, bearings, external blocks, bails, lugs, shrouds and spreaders should be checked periodically AND REPLACED IF SHOWING SIGNS OF WEAR, CHAFE, OR AGE. Be aware of the dangers of masts coming into contact with power lines, particularly areas of boatyard/marinas.

VII. Masts and mast products are designed to be used in a sometimes harsh marine environment. It is common sense and prudent seamanship to inspect masts regularly and to practice good care and regular maintenance. Your CHARLESTON SPAR / SPARCRAFT MAST has most likely been either electrostaticly powder coat painted or anodized to produce a long lasting attractive finish. While these finishes are possibly the best available on the market, the sun and salt can eventually take a toll. Periodic cleaning, rinsing and lubricating can extend your use. Replacement sheaves and other mast parts are available for purchase through Customer Service after your warranty period has expired. CHARLESTON SPAR looks forward to servicing you.