

CATALINA 400 FURLING MAST HAND BOOK

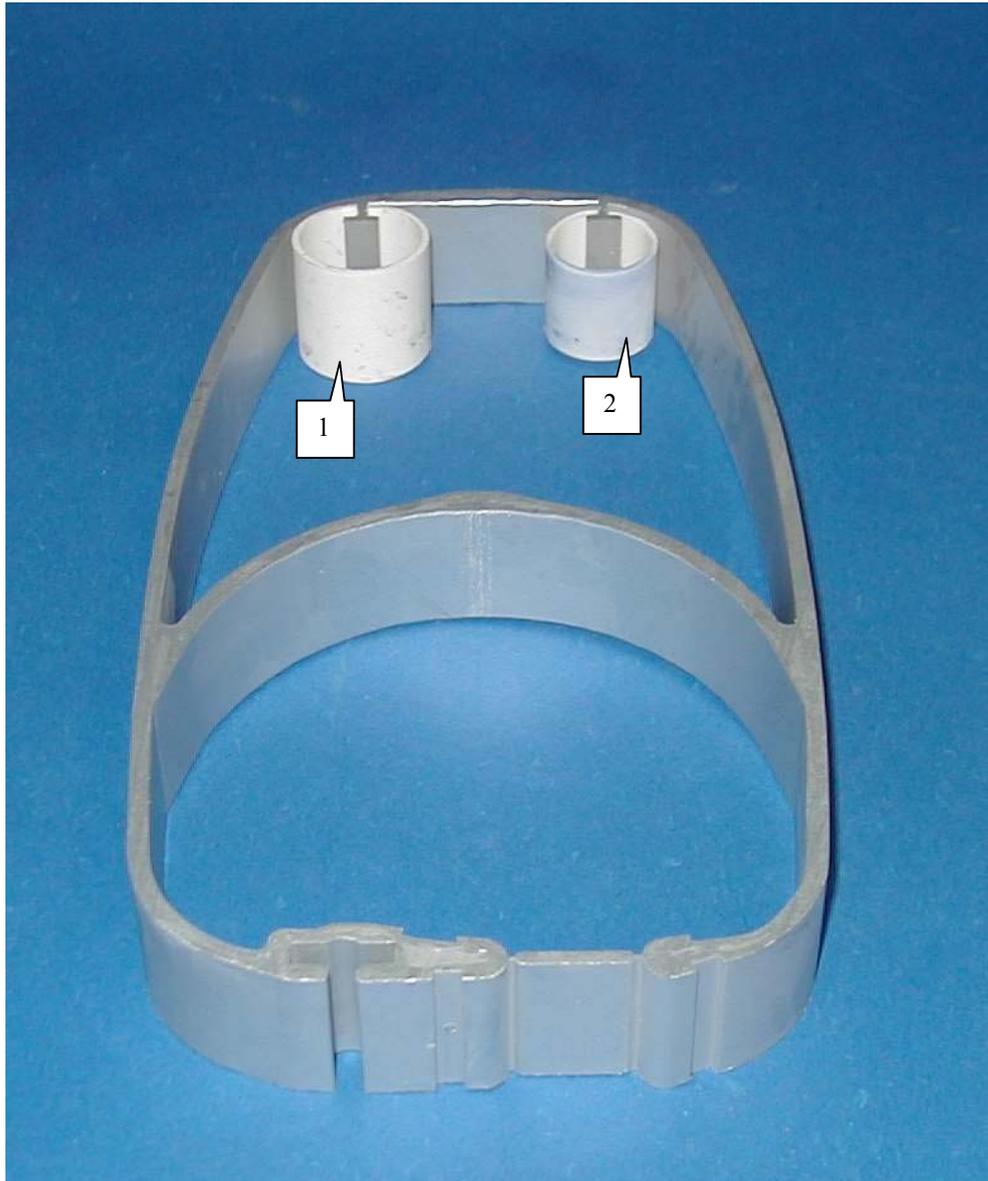


MADE BY

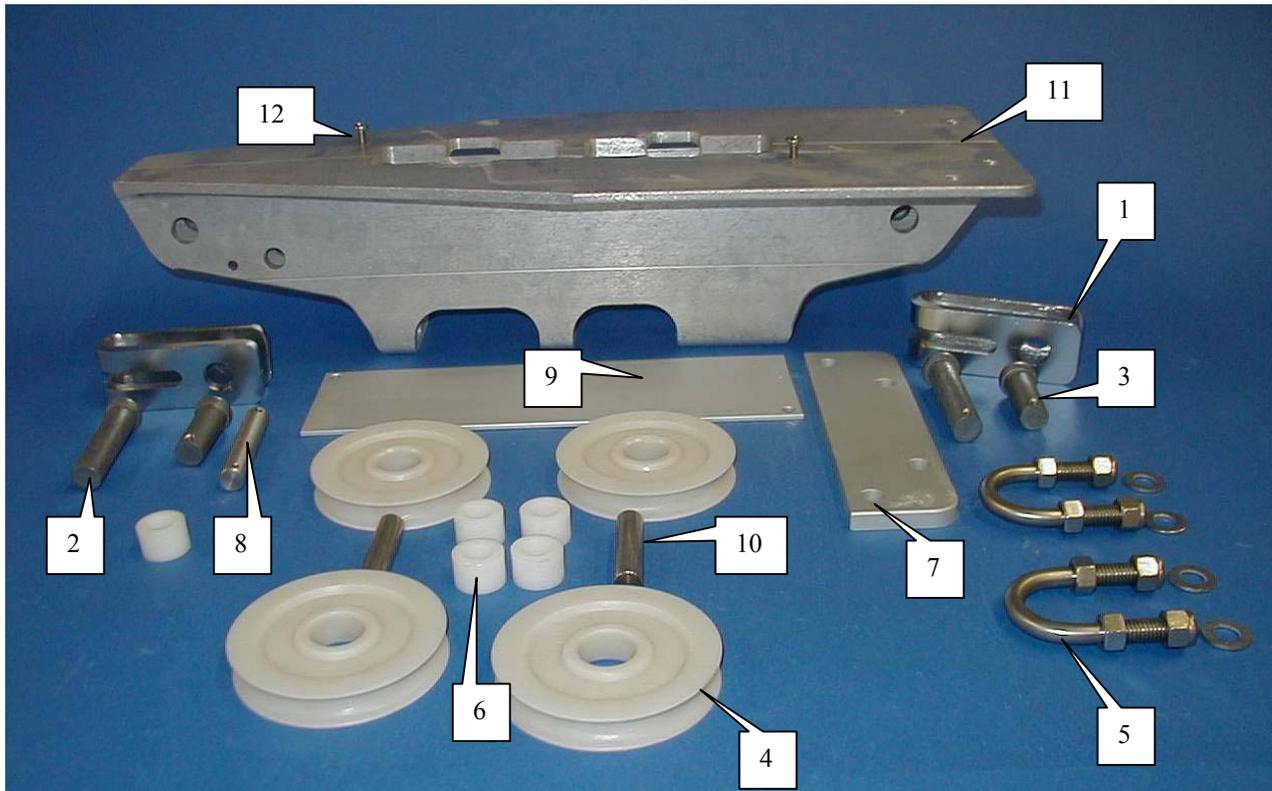
CHARLESTON SPAR

3901 PINE GROVE CIRCLE
CHARLOTTE, NC 28206
(704) 597-1502
FAX (704) 597-0961
WWW.CHARLESTONSPAR.COM

MAST FURLING SECTION F760-E



NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	PVC 1" TO TOP 10' LONG	27902253003	5
2	PVC ¾" TO MIDDLE 10'	27902293003	2



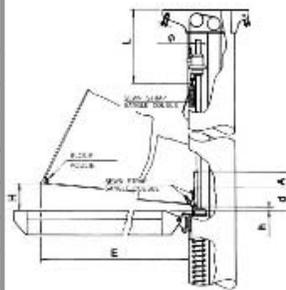
WELD IN MAST HEAD

MHD-M-CF-D

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	TOGGLE 5/8 HOLE	41410501661	2
2	CLEVIS PIN 5/8 X 2 ½	40020216635	2
3	CLEVIS PIN 5/8 X 1 ½	40020216381	2
4	ACETAL SHEAVE 85 X 15 mm	48530851515	4
5	BAIL - SPIN	30015076504	2
6	DELRIN BUSHING D 21 X 12	40502021012	5
7	DOUBLER PLATE	30013167403	1
8	CLEVIS PIN S/S ½ X 2 ½	40020212699	1
9	MAST CAP 76 X 260	30013097403	1
10	CLEVIS PIN 12 X 50.5	40020212051	2
11	MASTHEAD MEDIUM SIZE D	30010015201	1
12	10-24X 3/8 PANHEAD S/ S		2
13	S/S COTTER PIN 1/8 X 1		4
14	S/S COTTER PIN 3/32 X 1		2

► SAILMAKERS INFORMATION

Sections	L	h	H	Ø tube intérieur Ø futing mm	Ringue Ball rope mm	d	A	Coulisieux Voile de cap Sliders - Storm sail
	mm	mm	mm			mm	mm	
I 265 E	350	40	(6%xE)+h	Ø 33	Ø 6,5 fini / finish	20	130	800 - 400 - N° 30
I 365 E	350	40	(6%xE)+h	Ø 33	Ø 6,5 fini / finish	20	130	800 - 400 - N° 30
F 560 E	450	70	(6%xE)+h	Ø 33	Ø 7 fini / finish	70	200	800 - 400 - N° 30
F 760 E	480	90	(7%xE)+h	Ø 33	Ø 7 fini / finish	90	250	800 - 400 - N° 30
F 980 E	500	90	(7%xE)+h	Ø 33	Ø 7 fini / finish	90	250	800 - 400 - N° 30
F 1410 E	500	90	(7%xE)+h	Ø 33	Ø 7 fini / finish	90	250	800 - 400 - N° 30
F 1980 E	550	50	(7%xE)+h	Ø 45	Ø 7 fini / finish	115	250	CGV 23 - HA 91
F 2600 E	550	50	(7%xE)+h	Ø 45	Ø 6 fini / finish	115	250	CGV 23 - HA 91



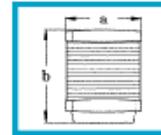
Signal Lamps



Model 2984

For permanent installation and hoisting. Seawater-proof and non-magnetic. Packing gland connection. Bayonet-lock on lamp housing for easy bulb change. Pre-fitted long-life bulb, 12 V. Can be used as white navigation lamp, white anchor lamp, red anti-collision lamp, auxiliary red and green lamp for sailboats. BSH approved.

Product description.....	Shock-proof, form-stable plastic cover and base plate, UV-resistant
Minimum visible distance.....	2 nm
Bulb.....	Pre-fitted long-life bulb, 12 V, socket BAY 15d
Installation.....	6.3 mm flat-plug connectors (2 female connectors 6.3 mm nickel-plated brass included)
Cable entry.....	Through base plate with packing gland PG 9
Protective system.....	Splash-proof and dust proof according to IP 55 (DIN 40050)
Mounting.....	Direct mounting with 3 stainless steel hex. head bolts and hex. nuts M5, special holder 63495 or bracket for hoisting 62837



a = 3 7/16"
b = 4 3/16"



Signal lamp/anchor lamp white	Signal lamp red	Signal lamp green
□ 62222	□ 62224	□ 62223
□ 62322		

Spare parts



- 1** □ Lamp housing
● 63424
- 2** Seal
○ 63237
● 63237
● 63237

- Bulb 12 V**
○ 78290 >10W
● 78292 25W
● 78292 25W
- Bulb 24 V**
○ 78291 >10W
● 78293 25W
● 78293 25W



43003031221
HELLA ANCHOR LIGHT

43009031221 HELLA COMBO LIGHT

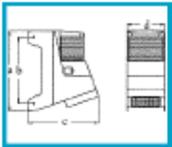
Deck Floodlights



Model 8504

Deck floodlight with special housing combined with masthead lamp Model 2984. Application for boats with length < 20 m. Available in choice of black or white. Glass lens, FF technology aluminum reflector with high-gloss vapor coating. All metal parts stainless steel.

Production description.....	Shock-proof and sturdy plastic
Bulb.....	Pre-fitted long-life bulb 12 V and 12 V / 55 W H3 bulb
Installation.....	Combined screw-flat-plug connection 6.3 mm deck lamp 6.3 mm flat-plug connectors
Protective system.....	According to IPX 4 (DIN 40050)
Max. output.....	Deck lamp 24 V / 70 W



a = 7 7/8"
 b = 9 3/16"
 c = 7 7/8"
 d = 4 1/4"

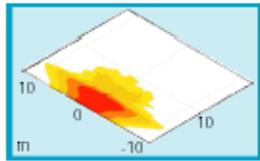
Masthead/deck combination	
<input type="checkbox"/>	62212
<input type="checkbox"/>	63212



Spare parts



- 1 Lamp housing
 - 63140
 - 63240
- 2 Bulb holder
- 3 Insert
 - 79560
- 4 Bulb
 - 78135 12W/55W
 - 78145 24W/70W
- 5
 - 78292 12V
 - 78293 24V



>1 LUX >5 LUX
 >2 LUX >16 LUX



**S/S LIGHT GUARD SER. 40
49031920864**



**31011048484
GIBB 840-8 BACKING PLATE
4 PER MAST
(29004164180 MONEL RIVET 6.4X17.5)**



**31011048104
GIBB 840-10 BACKING PLATE
2 PER MAST
(29004164180 MONEL RIVET 6.4X17.5)**



31011048464
 GIBB 840-6 BACKING PLATE
 2 PER MAST
 (29004164125 MONEL RIVET 6.4X12.5)



ALUMINUM SHEAVE BOX
 POLE TOPPING LIFT
 48701000011
 (29004164180 MONEL RIVET 6.4X17.5)



46412046133
 ALUMINUM FOLDING MAST STEP
 2 PER MAST
 (1/4-20X3/4 FLATHEAD)



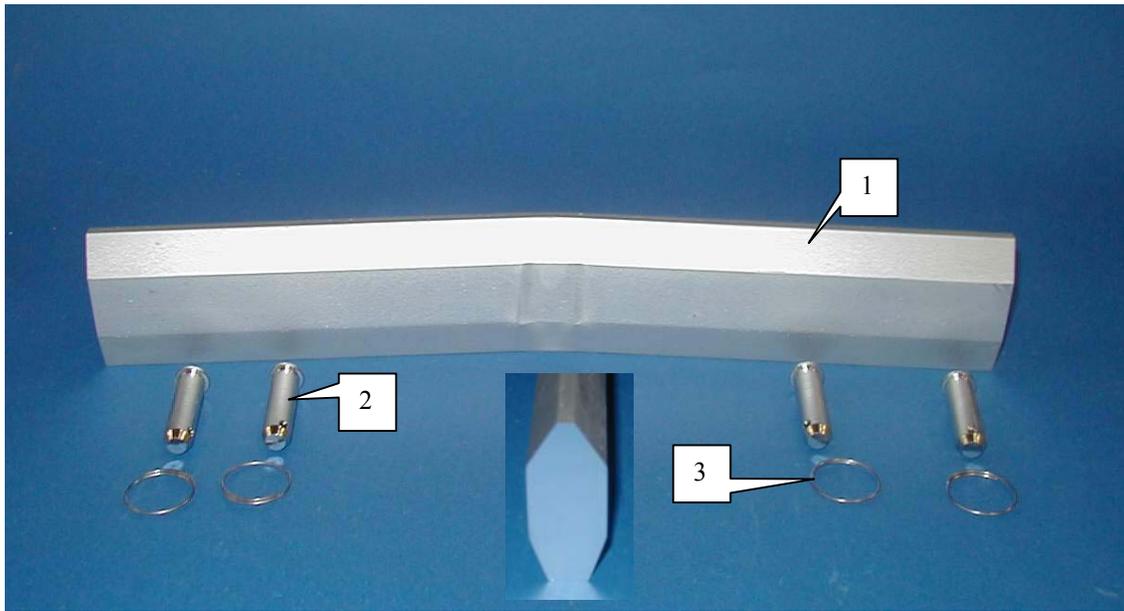
LARGE FAIR LEAD
 43205508124
 1 PER MAST
 (29004164125 MONEL RIVET 6.4X12.5)



34001171262
 18 MM EXIT COVER
 7 PER MAST
 (29002248110 S/S RIVET 4.8X11)

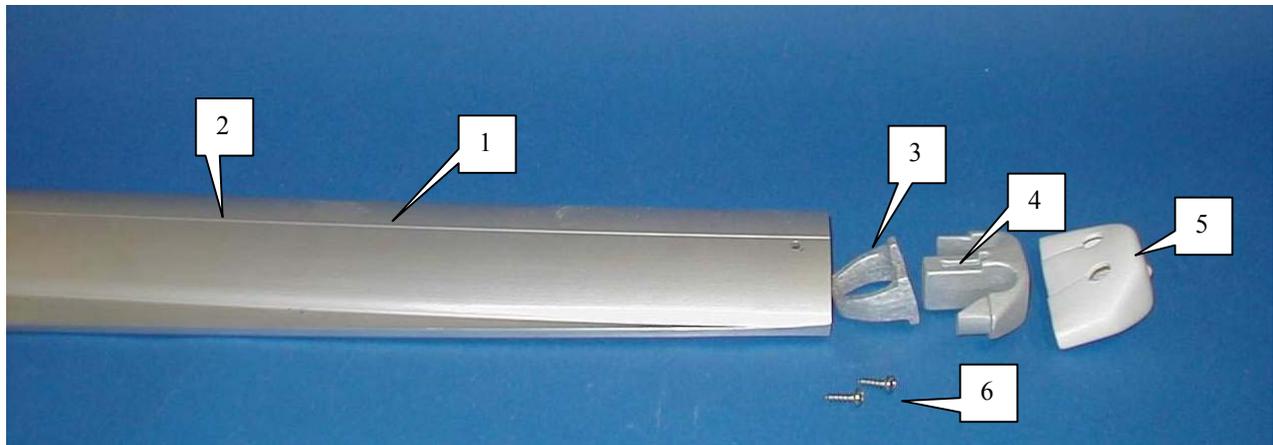


43205078075
 HAYLARD RESTAINER
 29002248140 S/S RIVET 4.8X14



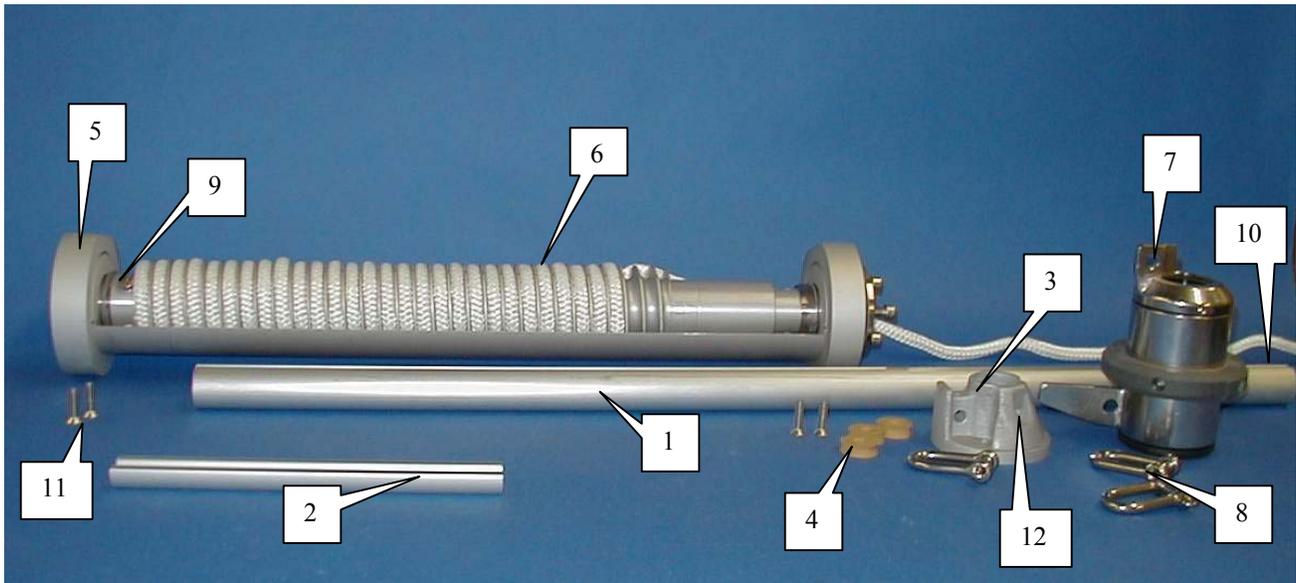
BF4 SPREADER BAR 2 PER MAST

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	BF4 ALUMINUM SPREADER BAR 405mm 5° LIFT	32101144053	2
2	BF 4 CLEVIS PIN 12 X 37.5	40020212037	8
3	S/S SPLIT RING	28809000020	8



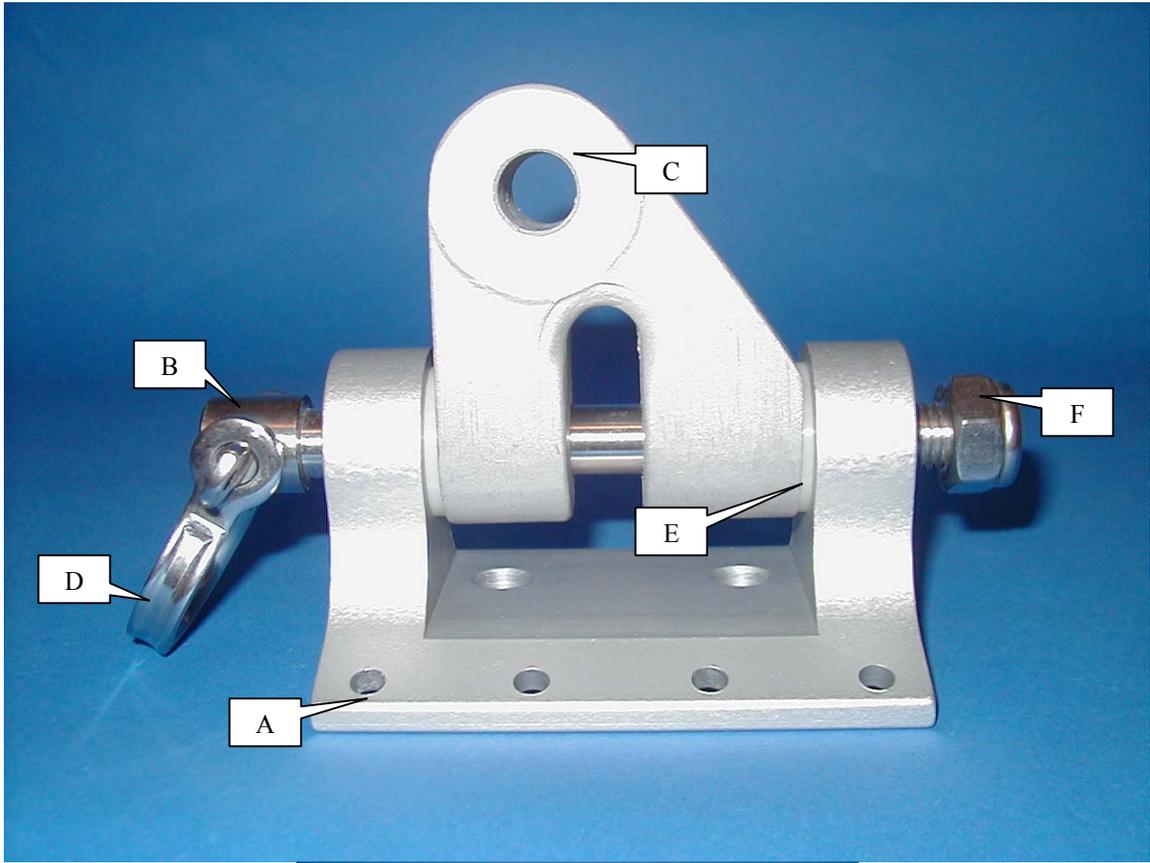
BF4 SPREADER SECTION

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	BF4 SPREADER UPPER 900 mm LONG 0° SWEEP	NONE	2
2	BF4 SPREADER LOWER 1155 mm LONG 0° SWEEP	NONE	2
3	BF4 SPREADER INSERT	32604040103	4
4	BF4 SPREADER TIP	32604030103	4
5	BF4 PLASTIC PROTECTOR	32604050102	4
6	SCREW	28606408009	8



F760-E FURLING SCREW

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	34 MM SECTION WITH SAIL FEED	42205341800	1
2	SPLICE SECTION FOR D34 10" LONG	42206343040	1
3	COUPLING CASTING	42209340005	1
4	RUBBER WASHERS	42217000280	3
5	FURLING SCREW F760-E COMPLETE	42201707603	1
6	CONTROL LINE 10 X 18 METERS	43550100001	1
7	HOIST CAR	42203341105	1
8	WICHARD SHACKLE 1214	46001121214	3
9	S/S PANHEAD SCREW 8X30	28600708030	1
10	FURLING FOIL D34 15 METERS LONG	42205341503	1
11	¼-20 X 1 FLATHEAD SCREW		4
12	¼-20 X 5/8 ROUND HEAD SCREW		2
13	MONEL RIVET 6.4 X 17.5 SPLICE FOR ROD	29004164180	4

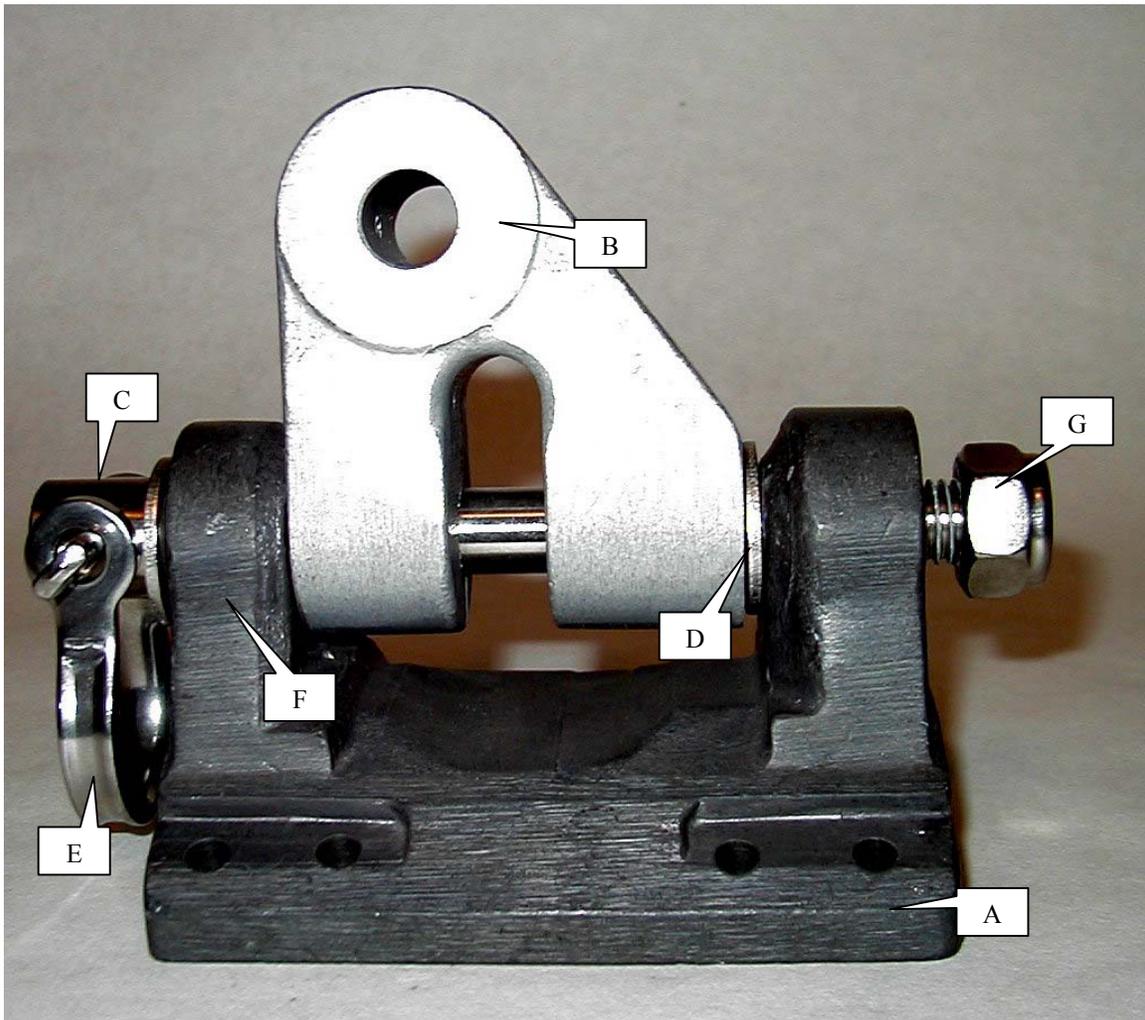


34511771686

F560-980E COMPLETE GOOSENECK BRACKET

NUM	DESCRIPTION	PART NUMBER	QUANTITY
A	F560-980E GOOSENECK BRACKET	34511770803	1
B	S/S THREADED PIN 14 X 138	40022014138	1
C	F195-460 TOGGLE ANO.	34531792193	1
D	BOW SHACKLE *	46001151008	1
E	S/S WASHER D 14	28601014000	1
F	A4 M14 NUT	28600514000	1
G	S/S RIVET D6.4 X 25	29003164250	8

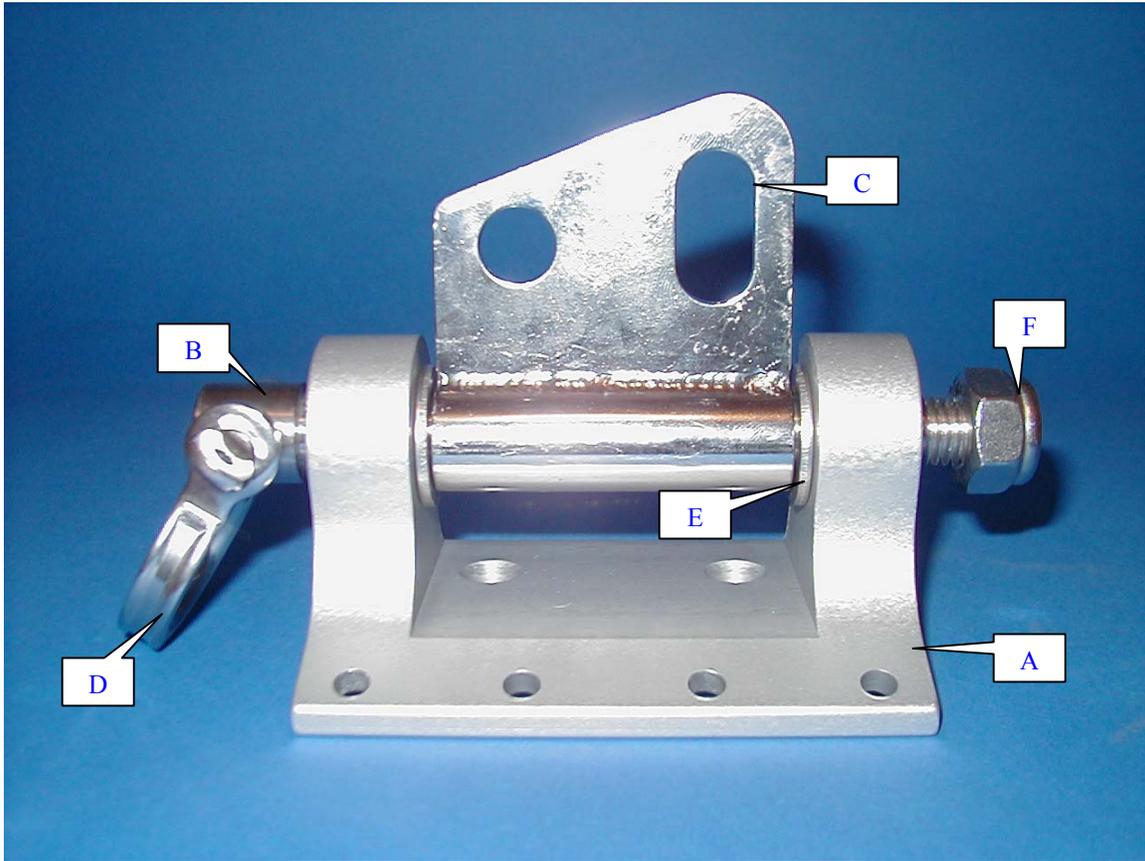
*** ITEM D SHOWN BUT NOT NEEDED**



**NG II / OCII AUTO REEF F810-F1700
GOOSENECK BRACKET
14mm TOGGLE
3451177OC28**

NUM	DESCRIPTION	PART NUMBER	QUANTITY
A	NGII GOSENECK BRACKET	34515543083	1
B	TOGGLE 14mm HOLE	34531792193	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

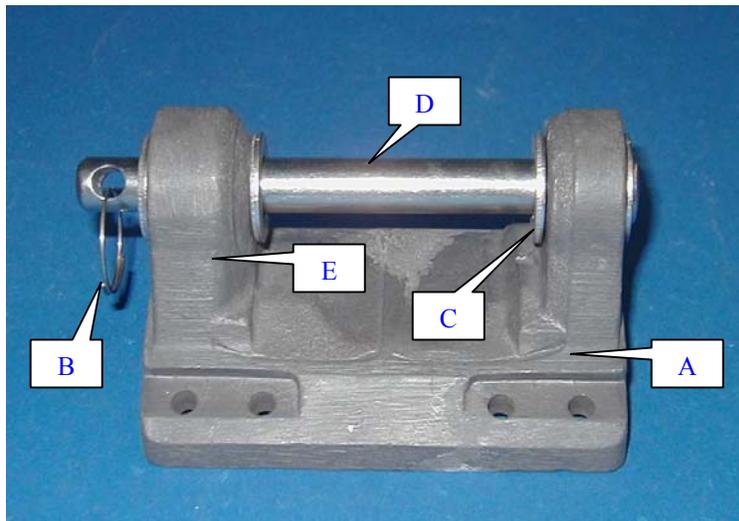
*** ITEM E SHOWN BUT NOT NEEDED
CHANGED TO BRACKET ABOVE ON PAGE 8 ON FURLING MAST
12-23-04**



35211811185

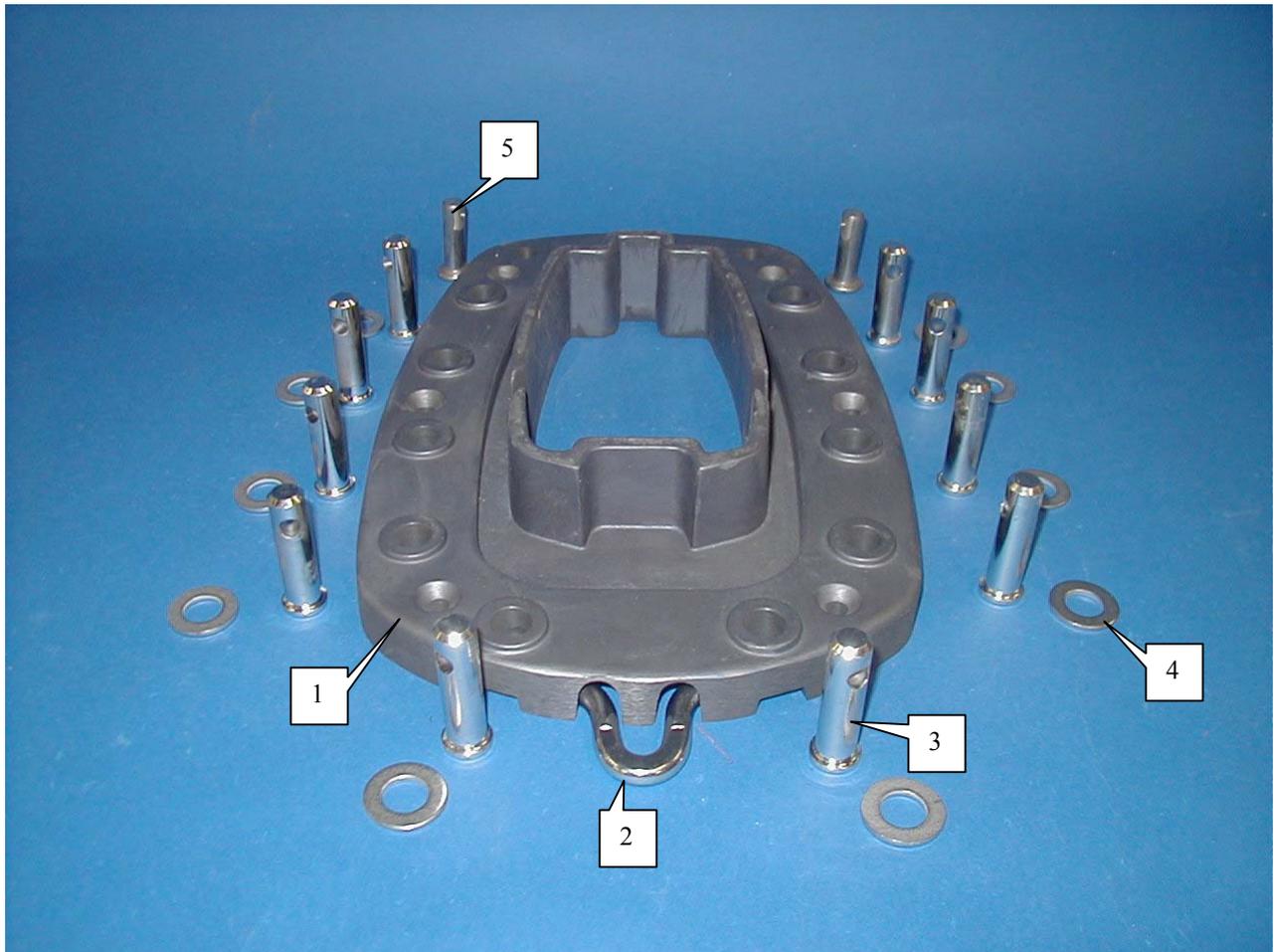
F560-980E VANG BRACKET COMPLETE

NUM	DESCRIPTION	PART NUMBER	QUANTITY
A	F560-980E GOOSENECK BRACKET	34511770803	1
B	S/S THREADED PIN 14 X 138	40022014138	1
C	D14/14 VANG TOGGLE POLISHED	35231790104	1
D	BOW SHACKLE D8	46001151008	1
E	S/S WASHER D14	28601014000	2
F	A4 M14 NUT	28600514000	1
G	S/S RIVET D6.4 X 25	29003164250	8



CHANGED TO ABOVE BRACKET ON PAGE 11 (12-23-04)

NUM	DESCRIPTION	PART NUMBER	QUANTITY
A	OCII GOOSENECK BRACKET	34515543083	1
B	S/S SPLIT RING	28809000020	1
C	S/S WASHER D 14	28601014000	4
D	CLEVIS PIN 14X 125	40020314125	1
E	S/S BUSHING (NOT SEEN)	40502022014	1
F	S/S POP RIVET 6.4 X 25	29003164250	8



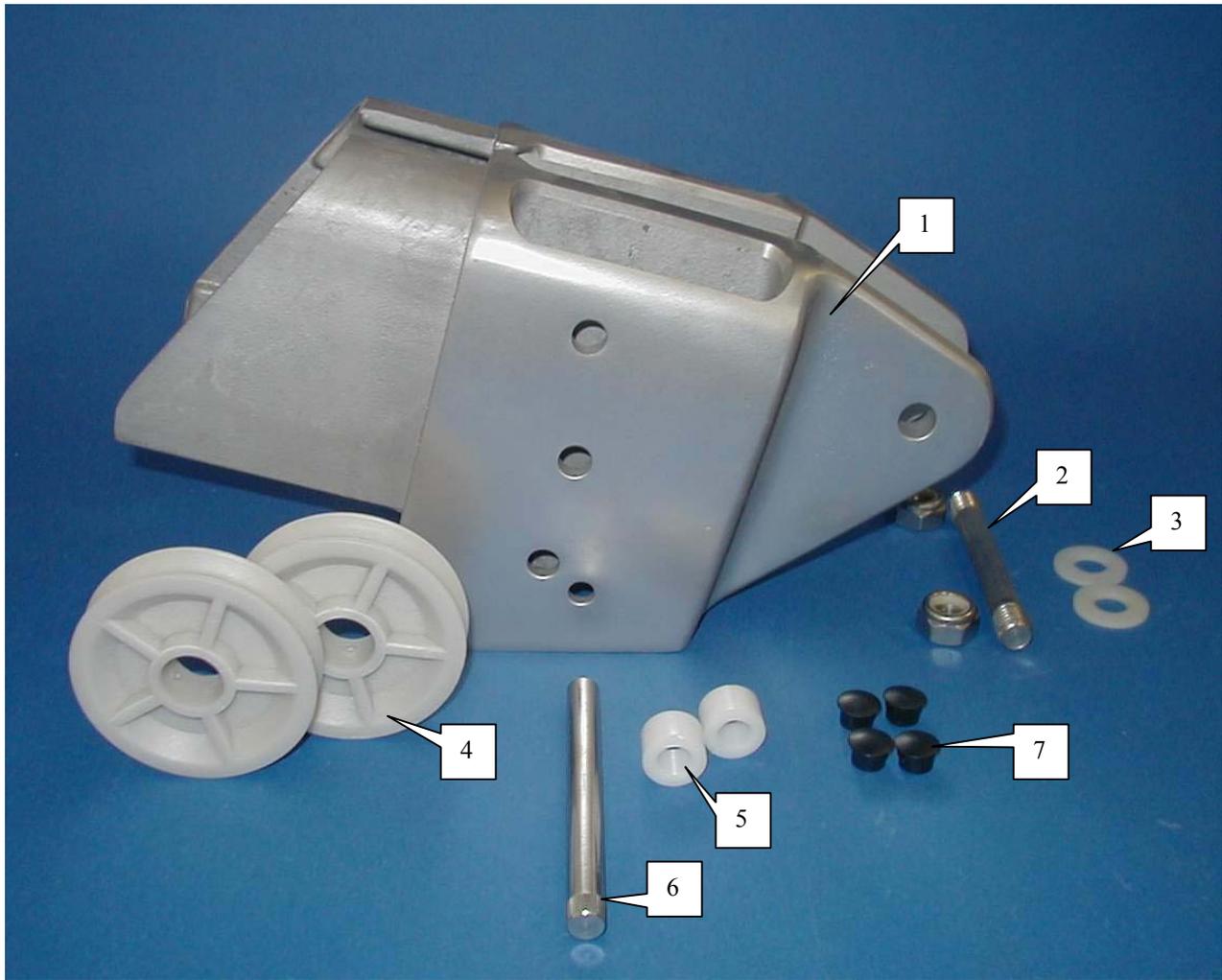
MAST STEP

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	MAST STEP 760-E	36031205803	1
2	S/S BAIL D10mm	47505558124	1
3	S/S CLEVIS PIN 14 X 39 FOR STEP	40020314039	10
4	S/S WASHER D14mm	28601014000	10
5	CLEVIS PIN 12 X 41	40020312041	2

BOOM SECTION F810



PROFILS PROFILES	DIMENSIONS mm	I XX cm 4	I YY cm 4	POIDS WEIGHT Kg / ml	EPAISSEUR THICKNESS mm	RALINGUE BOLT ROPE mm
F 810 	121 x 190	360	1000	5,44	2,6	Ø 10 / Ø 12

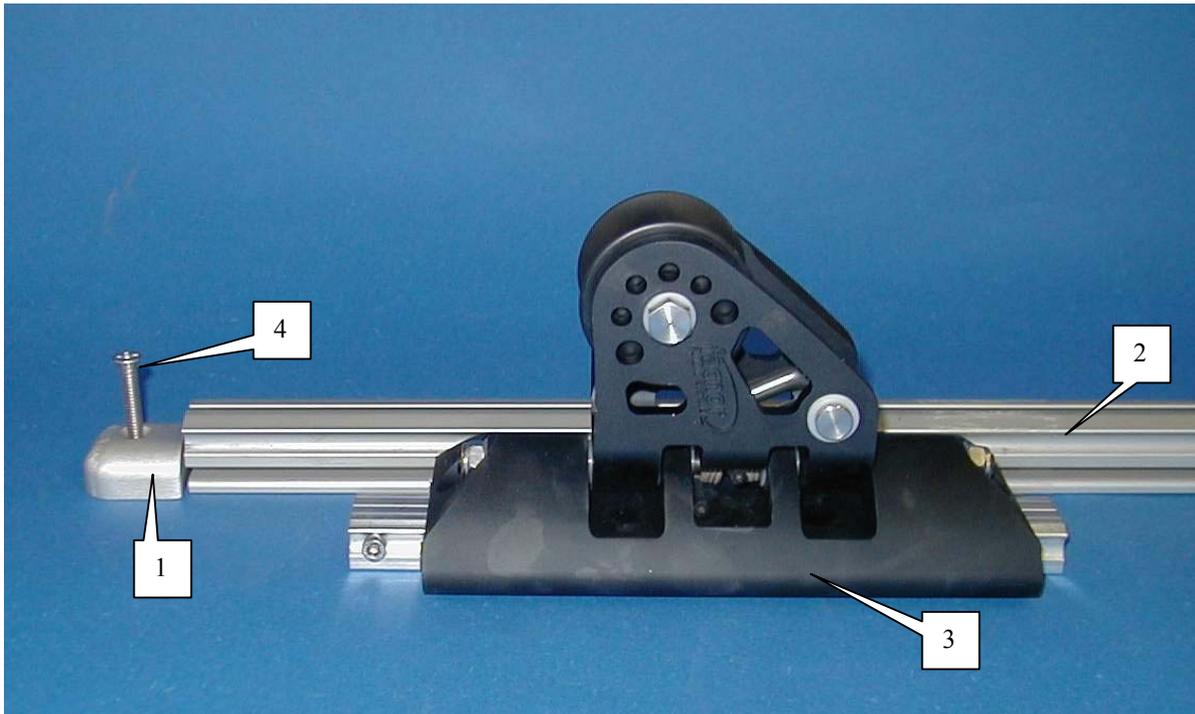


F-810/1700 INBOARD BOOM END

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	F810-1700 INBOARD BOOM END	37010008103	1
2	S/S THREADED PIN 14 X 102 WITH/ NUTS	40020514102	1
3	NYLON WASHER 14 / 2mm THICK	28602314020	2
4	ACETAL SHEAVE 85 X 20	48510852025	2
5	BUSHING 12mm ID	40502021012	2
6	KNURLED PIN 12 X 122 FOR SHEAVES	40021012122	1
7	PLASTIC COVER	41203501011	4
8	MONEL RIVET 6.4 X 17.5	29004164180	8



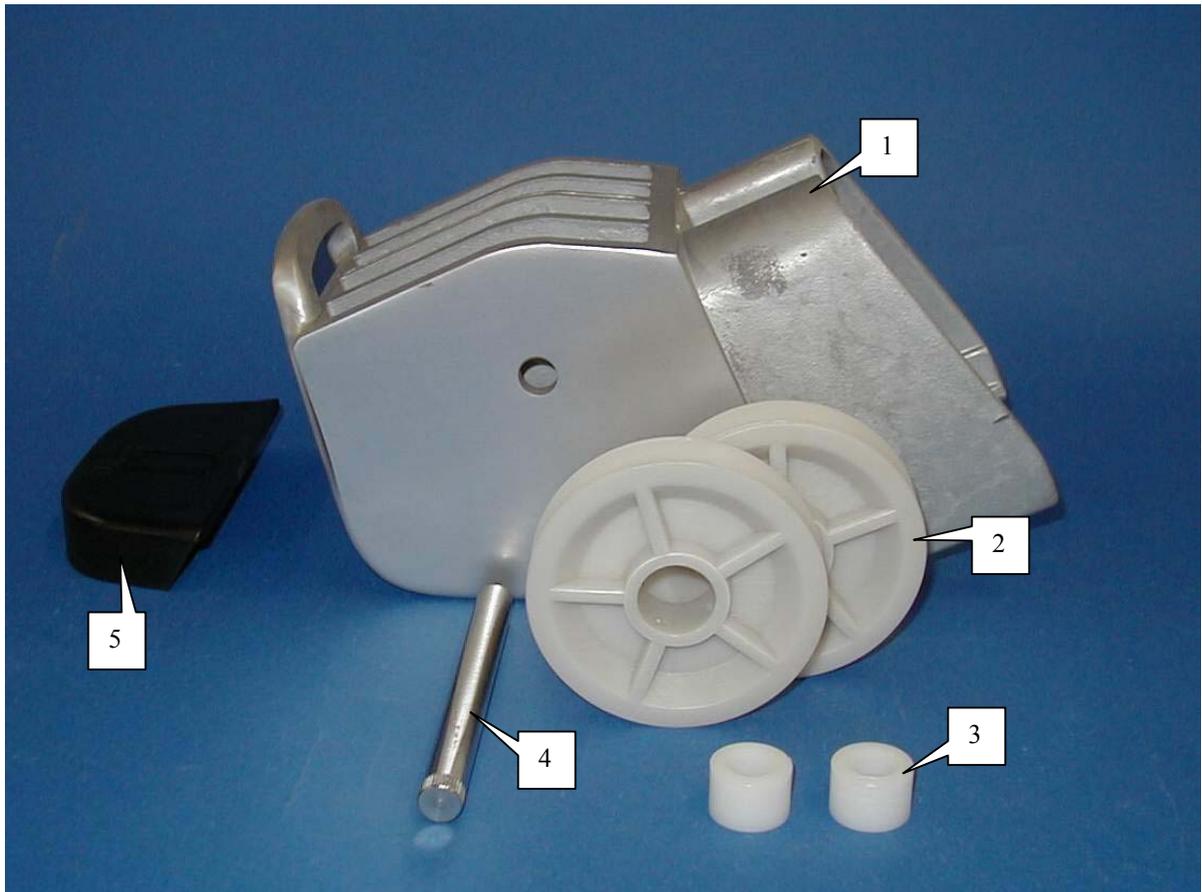
OCII S/S BAIL 47505558124
 OCII PLATE 47550553407
 29004164180 MONAL RIVET 6.4X17.5
 3 PER BOOM



REMOVED 9-22-02

FACNOR SIZE II SYSTEM

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	SIZE 1 & 2 ALUMINM END STOP	33513123456	2
2	SIZE 2 TRACK 4 METERS LONG	45003162290	1
3	FACNOR CAR SIZE II	54020400850	1
4	1/4-20 X 2" S/S FLATHEAD SCREW		2



F810-1700 OUTBOARD BOOM END

NUM	DESCRIPTION	PART NUMBER	QUANTITY
1	F810-1700 OUTBOARD BOOM END	37030008103	1
2	ACETAL SHEAVE 85 X 20	48510852025	2
3	BUSHING 12mm ID	40502021012	2
4	KNURLED PIN 12 X 117	40021012177	1
5	F810 REAR BOOM PLUG	37021008100	1
6	MONEL RIVET 6.4 X 17.5	29004164180	8

CATALINA 400 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 400.

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 IBII.

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.