

GENERAL CHARACTERISTICS

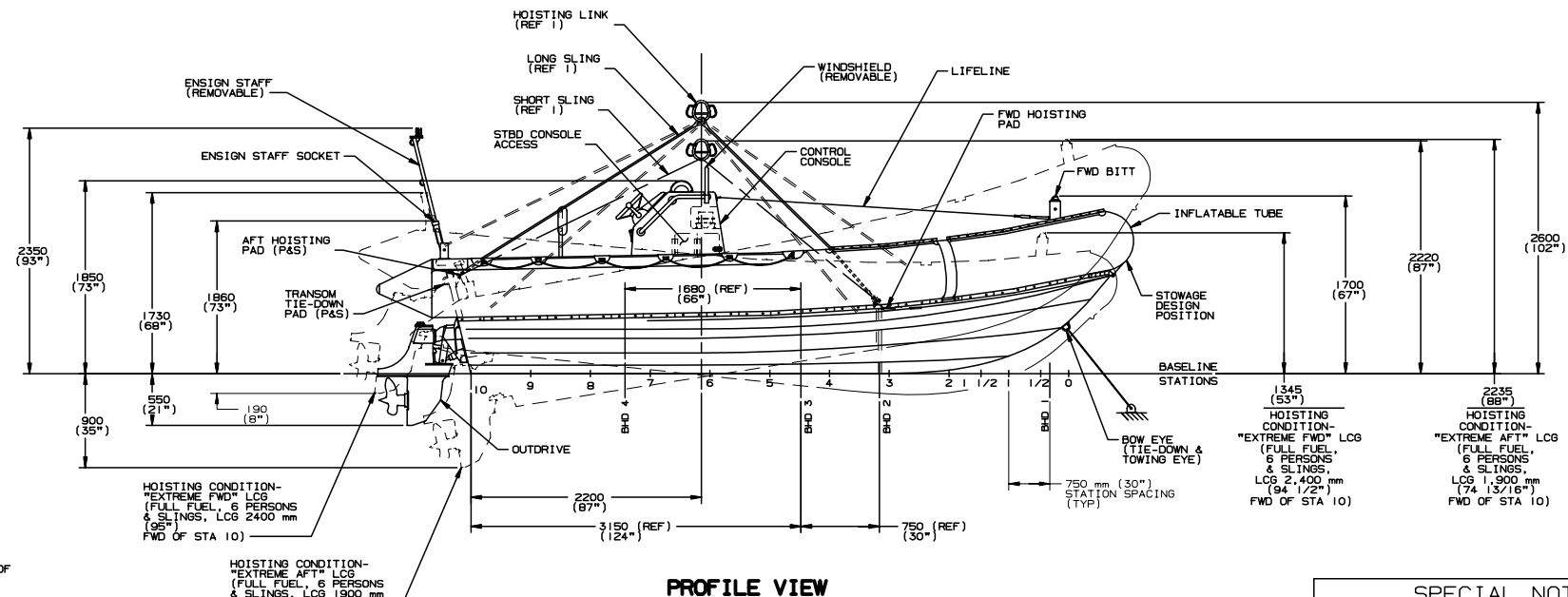
LENGTH OVERALL (GENERAL NOTE 1A)	7300 mm (287")
BEAM (GENERAL NOTE 2A)	2800 mm (110")
DESIGN DRAFT (TO BASELINE)	575 mm (23")
DESIGN HOISTING WEIGHT (MAX)	2540 kg (5,600 LBS)
DESIGN HOISTING LCG (MAX)	2200 mm (86 5/8") FWD OF STA 10
DISPLACEMENT, FULL LOAD (APPROX)	3500 kg (7,716 LBS)
FUEL CAPACITY	130 L (35 GAL)
CAPACITY (INCLUDING CREW)	18 PERSONS
CREW	3 PERSONS
HOISTING CAPACITY (INCLUDING CREW)	6 PERSONS

GENERAL NOTES

- BOAT ENVELOPE:
 - ALLOW AT LEAST 750 mm (30") CLEARANCE ON ALL EXTERIOR DIMENSIONS FOR ACCESS AND MAINTENANCE OF THE BOAT.
- CLEARANCES IN STOWAGE:

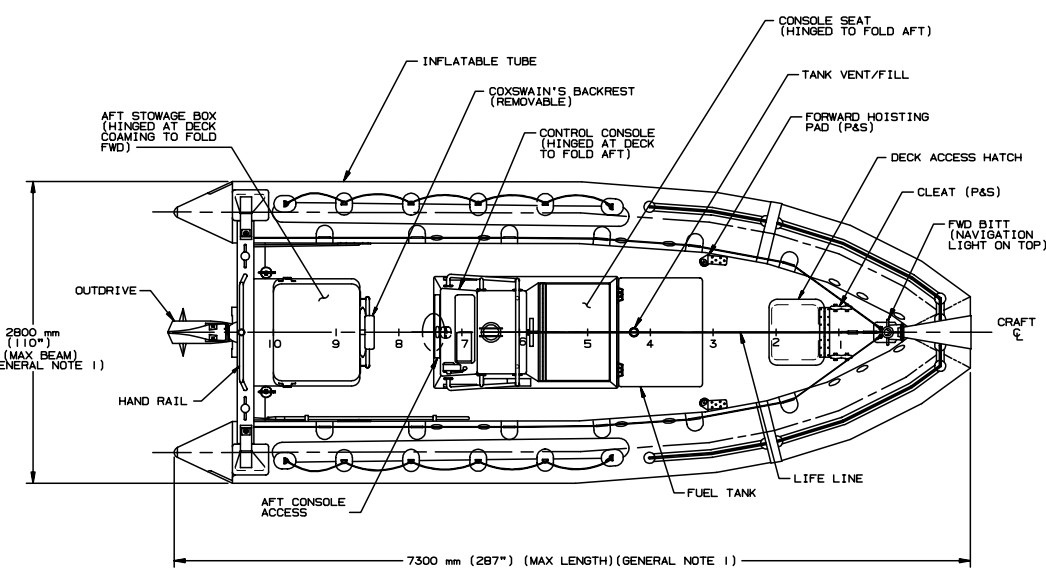
THE STOWAGE SHALL ALLOW ACCESS TO THE BOAT FOR SERVICING AND MAINTENANCE WHILE THE BOAT IS STOWED. THE STOWAGE DESIGN SHALL ENABLE ACCESS TO THE FOLLOWING AREAS:

 - FORWARD BILGE AREA ACCESS IS PROVIDED THROUGH AN ACCESS HATCH IN THE DECK BETWEEN STATIONS 1 AND 2.
 - ENGINE SPACE IS COVERED BY THE CONTROL CONSOLE WHICH PIVOTS AFT. IF THE SHORT SLING IS USED, THE CONSOLE CANNOT BE PIVOTED UNLESS THE SLING IS RELEASED FROM TENSION. AVOID USING THE SHORT SLING WHEN IT CANNOT BE RELEASED FROM TENSION.
 - THE CONTROL CONSOLE HAS THREE ACCESSES:
 - FWD SEAT WHICH HINGES UP ALONG IT'S AFT EDGE.
 - STBD ACCESS WHICH OPENS AFT.
 - AFT ACCESS WHICH OPENS TO PORT.
 - THE AFT BILGE AREA IS ACCESSED BY PIVOTING THE AFT STOWAGE BOX FORWARD.
- HULL CHOCKS/GRIPES:
 - IN GENERAL, ALL HULL CHOCKS SHALL BE CONTOURED TO THE HULL. SOME TEMPLATING MAY BE NECESSARY. THE FACES OF THE CHOCKS SHALL BE COVERED WITH RESILIENT WEATHERPROOF MATERIAL SUCH AS SYNTHETIC RUBBER, THICKNESS AND DUROMETER SUITABLE FOR PROTECTING THE BOAT AS IT IS HOISTED INTO THE STOWAGE.
 - TYPICAL CHOCK ARRANGEMENT WOULD CONSIST OF TRANSVERSE BILGE CHOCKS IN WAY OF BULKHEAD 3 AND BULKHEAD 4. NOTE THAT A KEEL REST IS NOT REQUIRED.
 - SUPPORTS (SUCH AS GRIPES) AROUND THE INFLATABLE TUBE SHALL BE AVOIDED SINCE TUBE PRESSURE VARIES WITH THE TEMPERATURE AND OPERATOR MAINTENANCE. ANY SUPPORT IN WAY OF THE TUBE SHOULD ONLY BE USED FOR TEMPORARY SUPPORT. SUPPORTS IN WAY OF THE INFLATABLE TUBE SHOULD BE OF SUFFICIENT AREA THAT A PRESSURE NO GREATER THAN 20 kPa (3 PSI) IS APPLIED TO THE TUBE.
 - THE BOAT HAS ONE BOW TIE-DOWN EYE ON CENTERLINE AT STATION 0 AND TWO TRANSOM TIE-DOWN EYES ON THE AFT FACE OF THE TRANSOM PORT AND STARBORD. THE TIE-DOWNS ARE SUITABLE FOR SECURING THE BOAT IN ITS STOWAGE.
 - THE CAPABILITY TO REMOVE THE SLINGS WHEN THE BOAT IS STOWED IS PREFERABLE FOR ACCESS AND MAINTENANCE, AND THIS CAPABILITY SHALL BE INCORPORATED IN THE DESIGN OF THE STOWAGE WHENEVER PRACTICABLE. THE BOAT MAY BE STOWED WITH THE SLINGS UNDER CONSTANT LOAD WITHOUT DAMAGE TO THE BOAT OR SLINGS.

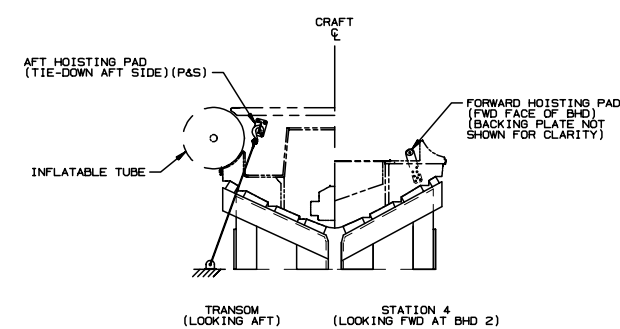


PROFILE VIEW

SPECIAL NOTE
 THE SHORT SLING IS TO BE INSTALLED ON THOSE BOATS TO BE STOWED AT SINGLE ARM DAVITS ABOARD FFG-7, CV, CVN-68, AOE AND LPD-4 CLASS SHIPS AND ABOARD LPD-12. FOR BOATS STOWED ABOARD OTHER SHIP CLASSES WITH SINGLE ARM DAVITS, THE LONG SLING IS TO BE INSTALLED.



PLAN VIEW



SECTIONS AT BULKHEADS 3 & 4

REF NO.	DOCUMENT TITLE	DOCUMENT NO.
1	KEVLAR HOISTING SLINGS FOR 7M/24FT RIB APPLICABLE TO CG, DDG, DD & FFG CLASS SHIPS	7m RB-601-5106602

DATA LIST

INSTALLATION CONTROL DRAWING

NAVAL SURFACE WARFARE CENTER CADREPOK DIVISION COMBATANT CRAFT DEPARTMENT SUPPLYCRAFT APPROVAL SUPPLYCRAFT NO. 2435-2698	DEPARTMENT OF THE NAVY NAVAL SEA SYSTEMS COMMAND WASHINGTON, DC 20382 7 METER (24FT) RIB INFLATABLE BOAT INSTALLATION CONTROL DRAWING SHEET CASE CODE: CRWT H 537 1 7m RIB 563 5106624 SCALE: 1:20 SHEET 1 OF 1
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 DISTRIBUTION UNLIMITED

7 METER (24FT) RIB INFLATABLE BOAT - INSTALLATION CONTROL DRAWING

CENTER OF FWD PAD MEASUREMENT

BOAT	"A"
9821	1280
9701	1265
9702	1232
9703	1262
9704	1257
9705	1257
9706	1257
9707	1274

MILLIMETERS

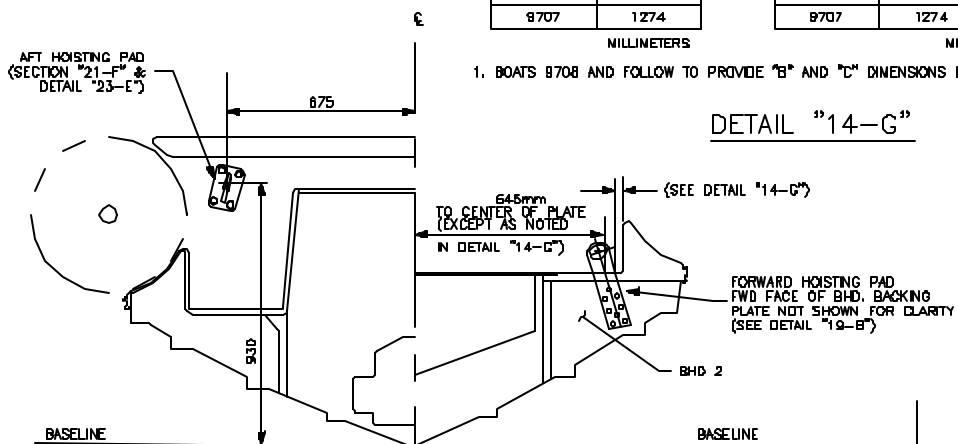
DIM OUTBD PAD EDGE TO RISER

BOAT	"B"-PORT	"C"-STBD
9821	55	40
9701	53	42
9702	67	60
9703	53	41
9704	47	57
9705	53	49
9706	56	45
9707	1274	43

MILLIMETERS

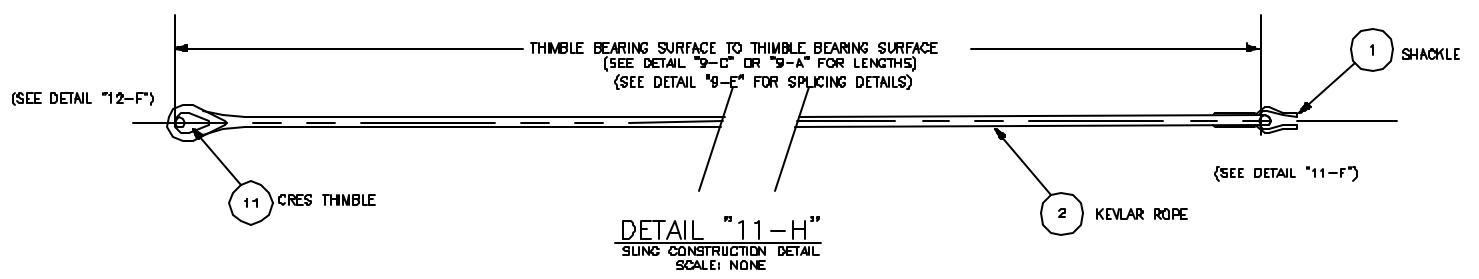
1. BOATS 9708 AND FOLLOW TO PROVIDE "B" AND "C" DIMENSIONS BETWEEN 25mm AND 60mm.

DETAIL "14-G"



SECTION "15-F"
TRANSOM, LOOKING AFT

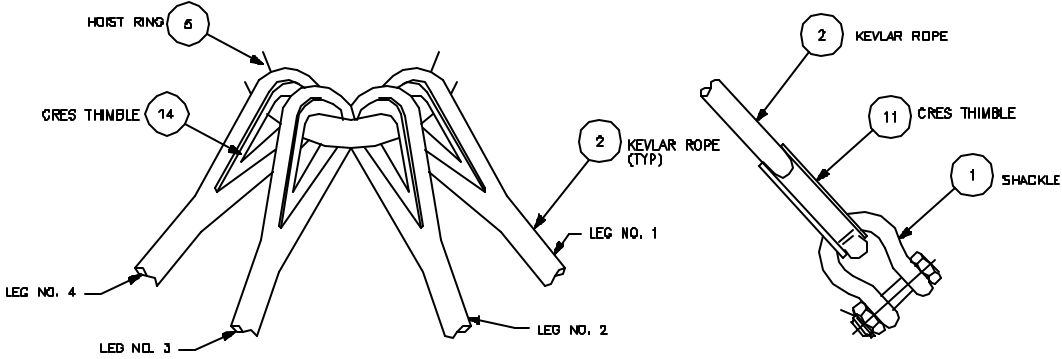
SECTION "14-F"
STATION 4, LOOKING FORWARD



DETAIL "11-H"
SLING CONSTRUCTION DETAIL
SCALE: NONE

SPLICING INSTRUCTIONS

- PULL CORE OUT FROM END OF ROPE A DISTANCE OF ONE (1) SHORT SECTION. HOLD END OF SLEEVE DOWN ON CORE AND MILK EXCESS SLEEVE BACK ABOUT FIVE (5) FEET.
- MEASURE TWO (2) FID LENGTHS, 28 INCHES, (STD FID LENGTH IS 14 INCHES - APPROX 40 X DIA) FROM END OF SLEEVE AND MARK SLEEVE. FORM DESIRED DESIRED EYE SIZE AND PLACE SECOND MARK ON SLEEVE OPPOSITE THE FIRST MARK. TIGHTLY TAPE SLEEVE ON THE EYE SIDE OF THESE MARKS (THE CORE AND SLEEVE MUST NOT MOVE IN RELATION TO EACH OTHER BETWEEN THESE MARKS). TIE A SLIP KNOT APPROXIMATELY TEN (10) FEET FROM SECOND SLEEVE MARK.
- EXTRACT CORE FROM SLEEVE AT FIRST MARK. INSERT SLEEVE INTO CORE FOR A DISTANCE OF ONE (1) SHORT FID SECTION FROM FIRST MARK TOWARD END OF CORE. SLEEVE END SHOULD BE TAPERED AND SEWN IN-PLACE.
- EXTRACT CORE FROM SLEEVE AT SECOND MARK AND PULL OUT FROM DIRECTION OF KNOT BUNCHING SLEEVE TOWARD KNOT. PLACE CORE MARK 1 A DISTANCE OF ONE (1) SHORT SECTION FROM POINT OF EXTRACTION AND CORE MARK 2 A DISTANCE OF THREE (3) FID LENGTHS FROM CORE MARK 1.
- INSERT CORE TAIL INTO CORE AT MARK 1 AND BRING OUT AT MARK 2. TAPER CORE TAIL. ALIGN SLEEVE MARKS 1 AND 2. SMOOTH CORE FROM MARK 1 TO MARK 2 ALLOWING CORE TAIL TO DISAPPEAR AT MARK 2. SEW FROM CORE MARK 1 TO END OF TAPERED CORE TAIL. DO NOT PULL THREAD HARD, DISTORTING BRAID.
- SMOOTH SLEEVE FROM KNOT TOWARD EYE ALLOWING THE CORE TO FEED BACK INTO THE SLEEVE. DO NOT ALLOW THE CORE TO ROLL OR TWIST AS IT GOES BACK INTO THE SLEEVE. REPEAT THIS PROCESS UNTIL SLEEVE MARKS 1 AND 2 ARE ALIGNED AND THE EYE IS THE CORRECT SIZE.
- WHIP THE THROAT.



DETAIL "12-F"
HOIST RING END DETAIL
SCALE: 1:2

DETAIL "11-F"
SHACKLE END DETAIL
SCALE: 1:2

DETAIL "9-E"
SLING SPLICING DETAILS

MOD KIT SLING LENGTHS - MM				
SLING TYPE	LEG NO.1	LEG NO.2	LEG NO.3	LEG NO.4
SHORT	FWD 2200	FWD 2200	AFT 2610	AFT 2610
LONG	FWD 2415	FWD 2415	AFT 2820	AFT 2820

- NOTES:
- SLING LENGTHS ARE FINISHED, UNDER LOAD DIMENSIONS. DIMENSIONAL TOLERANCE SHALL BE +/- 25 mm.
 - MOD KIT A, SLINGS SHALL BE LONG TYPE. MOD KIT B, SLINGS SHALL BE SHORT TYPE.

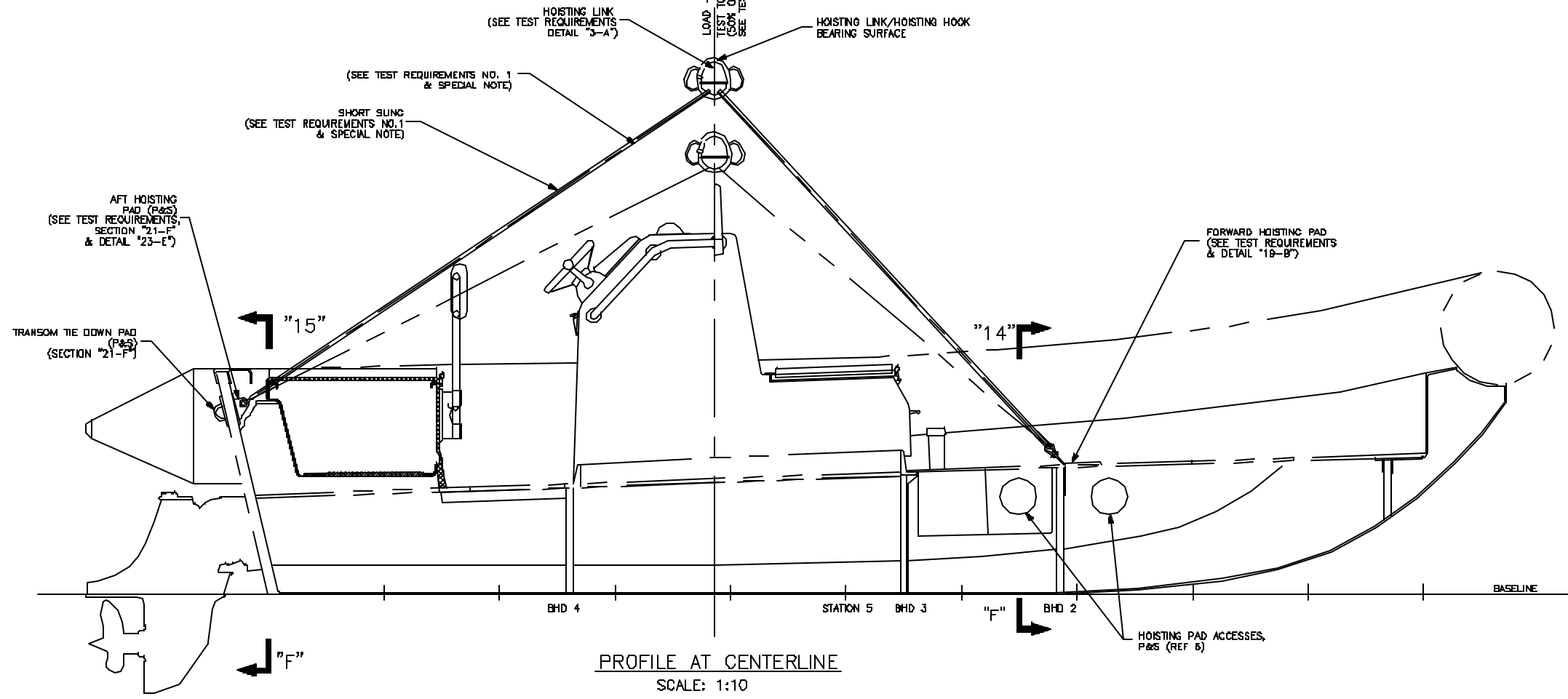
DETAIL "9-C"
MOD KIT SLING LEG LENGTH TABLE
SCALE: NONE

SLING LENGTHS - MM*				
SLING TYPE	LEG NO.1	LEG NO.2	LEG NO.3	LEG NO.4
LONG	FWD 2493	FWD 2493	AFT 2772	AFT 2772

* (DIMENSIONAL TOLERANCE SHALL BE +/- 25 mm)

DETAIL "9-A"
SLING LEG LENGTH TABLE
SCALE: NONE

LOAD - 2540 KILOGRAMS
TEST TO 3010 KILOGRAMS
(CON OVERLOAD TEST)
SEE TEST PROCEDURE NO. 3)

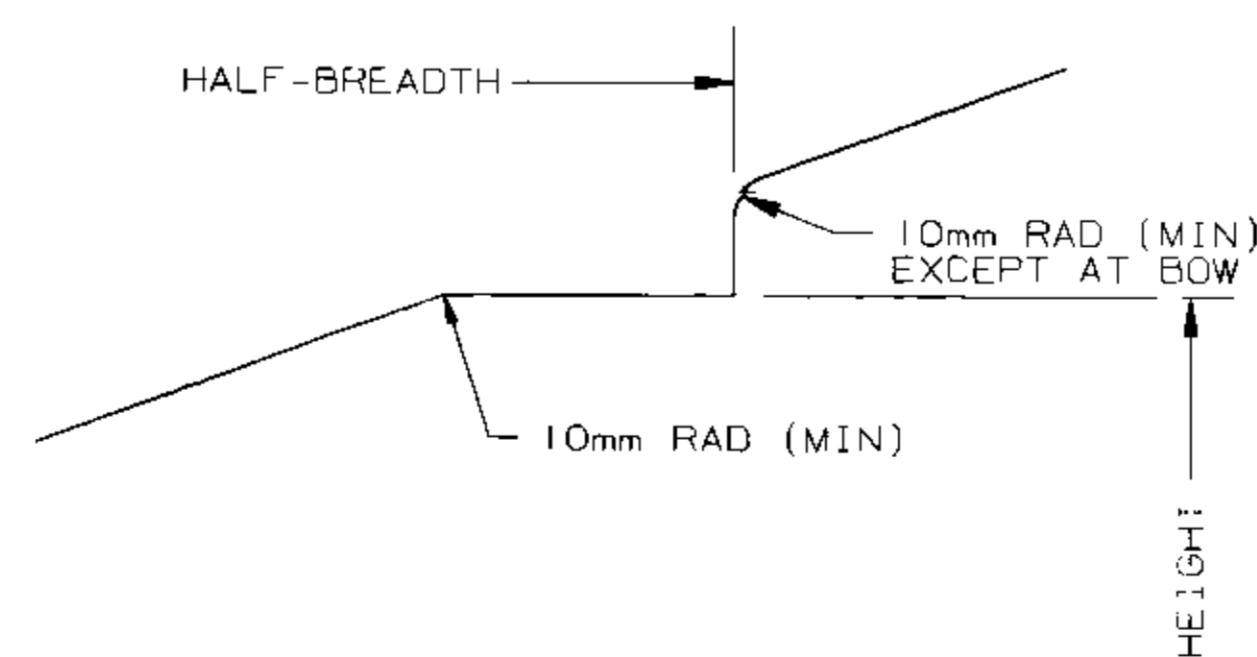


PROFILE AT CENTERLINE
SCALE: 1:10

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

TABLE OF OFFSETS													
STATIONS	0	1/2	1	1 1/2	2	3	4	5	6	7	8	9	10
HEIGHTS ABOVE BASELINE													
SHEER KNUCKLE	845	790	741	698	661	601	560	535	519	505	494	485	478
CHINE	814	748	689	635	589	513	463	435	425	←	←	←	←
750mm BUTT						443	365	329	316	←	←	←	←
500mm BUTT			649	504	400	270	221	199	191	←	←	←	←
250mm BUTT		567	405	289	210	120	96	87	83	←	←	←	←
125mm BUTT	646	427	281	185	122	57	44	39	←	←	←	←	←
KEEL	489	292	166	92	47	7	0	←	←	←	←	←	←
SPRAY RAIL #3	658	600	548	499	458	397	364	347	341	←	←	←	←
SPRAY RAIL #2		394	353	317	288	244	222	208	203	←	←	←	←
SPRAY RAIL #1			192	164	140	108	97	89	←	←	←	←	←
HALFBREADTHS FROM CENTERLINE													
SHEER KNUCKLE	340	505	634	736	815	923	980	1006	1015	←	←	←	←
OUTER CHINE	277	442	580	692	780	903	969	999	1010	←	←	←	←
INNER CHINE	254	409	540	645	729	843	905	932	944	←	←	←	←
SPRAY RAIL #3	144	303	433	541	628	752	819	852	866	←	←	←	←
SPRAY RAIL #2		113	231	334	415	529	580	600	602	←	←	←	←
SPRAY RAIL #1			48	133	204	294	316	321	←	←	←	←	←

NOTE: OFFSETS GIVEN IN MILLIMETERS TO OUTSIDE OF HULL



DETAIL "5-B"
TYPICAL SPRAY RAIL/CHINE
SCALE : NONE

REF NO.	DOCUMENT TITLE	DOCUMENT NO.
10	LABEL PLATES	7m RB-601-5105400
9	HOISTING ARRANGEMENT & DETAILS	7m RB-610-5105399
8	ELECTRICAL SYSTEM	7m RB-301-5105398
7	MACHY PIPING & STEERING ARR	7m RB-201-5105397
6	INFLATABLE TUBE ARR & DETS	7m RB-101-5105396
5	MISCELLANEOUS DETAILS	7m RB-101-5105395
4	GENERAL ARRANGEMENT & CONST	7m RB-101-5105394
3	OUTBOARD PROFILE & ARRANGEMENT	7m RB-101-5105393
2	CURVES OF FORM	7m RB-101-5105392

DATA LIST

CONTRACT DRAWING

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS. **SI-METRIC**

DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
WASHINGTON, DC 20362

7 METER RIGID INFLATABLE BOAT
LINES AND OFFSETS

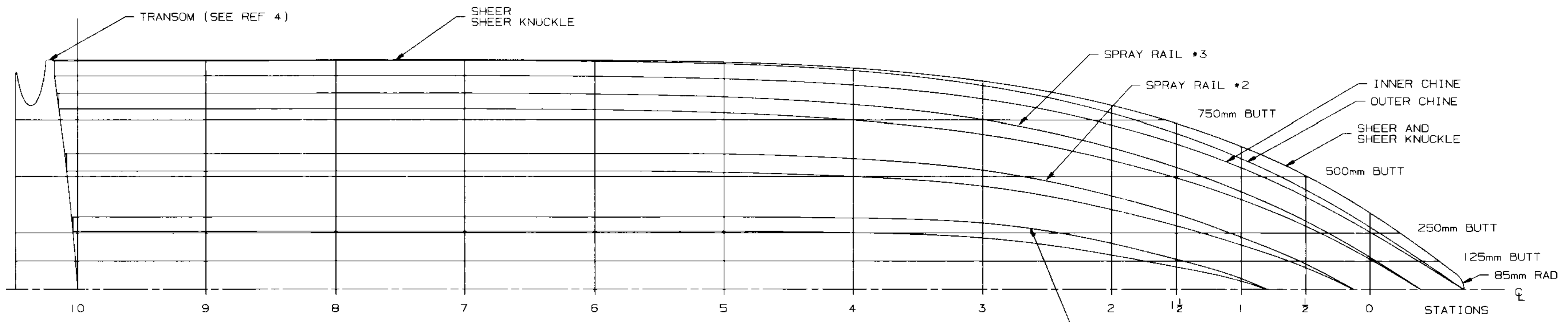
DEVELOPED BY: D.L. FOX
DRAWN BY: D.L. FOX
CHECKED BY: [Signature]
DATE: 10/19/92

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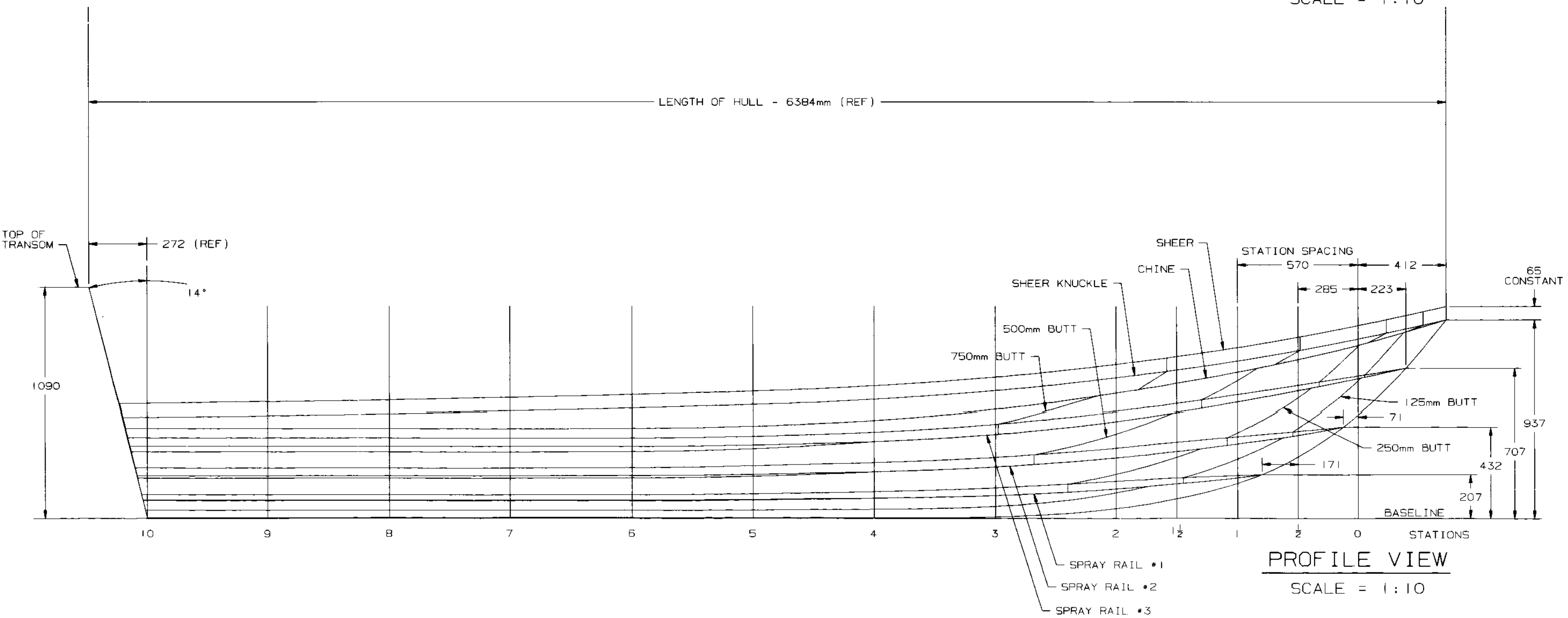
SIZE	CAGE CODE	CRAFT	SWBS	NAVSEA UMO NO.	REV
H53711	7m RB	101	5105391	-	-

SCALE: NONE SHEET 1 OF 2

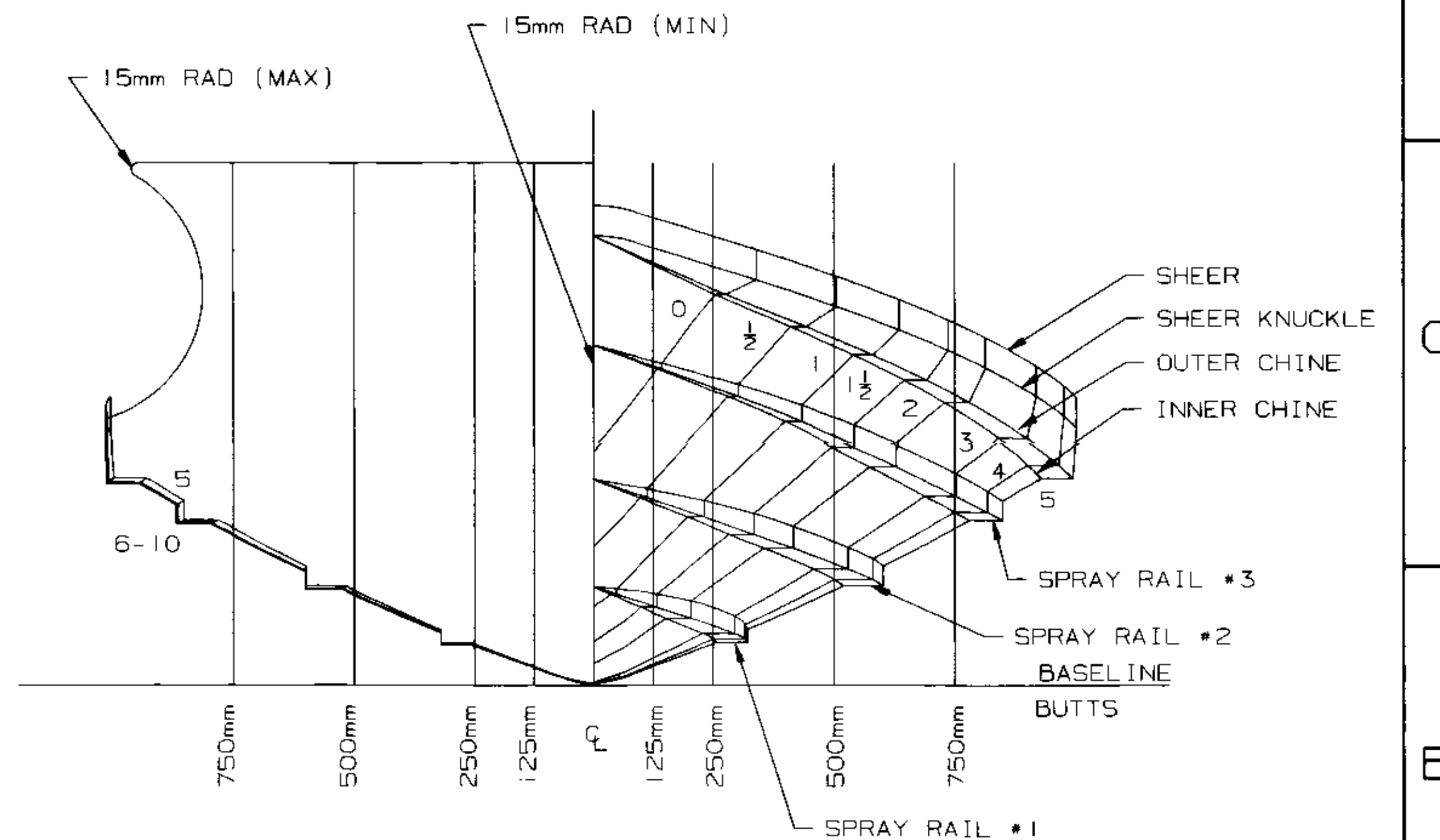
16 15 14 13 12 11 10 9



HALFBREADTH PLAN
SCALE = 1:10



PROFILE VIEW
SCALE = 1:10



BODY PLAN
SCALE = 1:10

NAVAL SEA SYSTEMS COMMAND	SIZE	CAGE CODE	CRAFT	SWBS	NAVSEA DWG NO.	REV
PREPARED BY <i>Jack Halpin</i>	H 53711	7m RB	101	5105391	-	
ISSUED BY <i>Jack Halpin</i>	SCALE: 1:10		SHEET 2 OF 2			

16 15 14 13 12 11 10 9

J. TAYLOR (10-27-1982)

GENERAL NOTES

- 1 THE CRADLE SHALL BE MARKED "SUITABLE FOR LAND TRANSPORT ONLY" STENCIL SHALL BE A MINIMUM OF 1 INCH HIGH AND IN CONTRAST COLOR LOCATED AS SHOWN ON THE DRAWING THE SHIPPING CRADLE SHALL INCLUDE STENCILED DIMENSION TO LOCATE BOAT POSITIONING ON THE CRADLE
- 2 UNLESS OTHERWISE NOTED, MATERIALS SHALL BE AS FOLLOWS.
 - 2.1 PLYWOOD (ITEM 7), SHALL BE ACX GRADE, 3/4 INCH THICK X 4 FEET WIDE X 8 FEET LONG
 - 2.2 ALL FASTENERS SHALL BE GALVANIZED STEEL CARRIAGE BOLTS, U-BOLTS AND NAILS SHALL BE PURCHASED IN REFERENCE 24.
 - 2.3 CARPET (ITEM 8), SHALL BE A MINIMUM OF 310 MILLIMETER WIDE X 2500 MILLIMETER LONG COVERED IN AREAS THAT ARE IN CONTACT WITH THE CRAFT
 - 2.4 WOOD PRESERVATIVE (ITEM 9), SHALL BE USED FOR TREATMENT TO LUMBER AND PLYWOOD AND SHALL MEET IN ACCORDANCE WITH THE AMERICAN WOOD PRESERVERS BUREAU STANDARD LP-22.
 - 2.5 THE WATERPROOF STORAGE COVER (ITEM 1), SHALL COVER THE ENTIRE TOPSIDE AREA AND MOST OF THE HULL COVER SHALL BE PROVIDED WITH BRASS GROMMETS (SIZE TO SUIT), SPACED AT 1220 MILLIMETERS (48 INCHES) MINIMUM COVER SHALL BE SECURED INPLACE USING NYLON ROPE LACED INTO THE GROMMETS
 - 2.6 SHRINK WRAP COVER (ITEM 2), SHALL BE INSTALLED BEFORE SHIPMENT SHIPPING COVER SHALL COVER THE ENTIRE BOAT DOWN TO A MINIMUM OF 75 MILLIMETERS BELOW THE WATERLINE PROVIDE VENTS TO PREVENT CONDENSATION BUILD-UP PROTECT A BOAT, ZIPPED VINYL ACCESS DOORS (ITEM 16) SHALL BE PROVIDED BETWEEN TRANSOM AND BACKREST AND ONE AT STBD SIDE FWD OF CONSOLE
 - 2.7 A SET OF TIE-DOWNS FOR EACH BOAT SHALL BE PROVIDED CONSISTING OF TWO 3 INCH (75 MILLIMETER) WIDE BY 30 FEET (10 METER) LONG NYLON STRAPS AND TWO WINCHES SEE REFERENCE 3 (INBOARD PROFILE AND ARRANGEMENT)
- 3 ALL SHARP EDGES POINTS, CLEATS AND OTHER SHARP OBJECTS ON THE BOAT THAT COULD CONTACT OR DAMAGE THE SHRINK WRAP FILM SHALL BE PADDED (ITEM 19) TO PREVENT PUNCTURE
- 4 SHIPPING INFORMATION WITH BOAT IN CRADLE

OVERALL LENGTH 7.24 METERS
 OVERALL WIDTH 2.75 METERS
 OVERALL HEIGHT FROM BOTTOM OF CRADLE TO TOP OF WINDSHIELD 2.61 METERS

CAGE NO	MANUFACTURER
OCW85	GANAHL LUMBER 1220 EAST BALL ROAD PO BOX 31 ANAHEIM, CA 92815-0031
OUUC1	A & I SUPPLY CO 1679 W 9TH ST LONG BEACH CA 90813
27815	REEF INDUSTRIES INC GRIFFOLYN DIVISION 9209 ALMEDA GENOA HOUSTON TX 77075-0000
58367	WILLARD MARINE INC 1250 NORTH GROVE STREET ANAHEIM CA 92806
75301	KETTENBURG MARINE BALBOA MARINE 2633 W COAST HWY NEWPORT BEACH CA 92663
W0044	PROTECT-A-BOAT FPM INCORPORATED 1260 EAST WOODLAND AVENUE DELAWARE COUNTY PA 19064

CAGE CODES STARTING WITH W ARE ASSIGNED FOR REFERENCE ONLY

FASTENER SCHEDULE (SEE REF 24)		
7 METER RIB CRADLE		
APPLICATION	FASTENER	QTY
LUMBER FASTENERS	1/2"-13 X 6" CARRIAGE BOLT	(16) EA
	1/2" - 13 X 5" CARRIAGE BOLT	(6) EA
	1/2" - 13 X 3 1/2" CARRIAGE BOLT	(14) EA
	1/2" - 13 X 3" CARRIAGE BOLT	(12) EA
	1/2" - 13 HEX NUT	(50) EA
	LOCK WASHER, 1/2"	(50) EA
TIE DOWN	1/2"-13 X 8" L SHOULDER EYE BOLT	(4) EA
	FLAT WASHER, 1/2"	(50) EA
WOOD FASTENING	# 6D NAIL	(1) LB
	# 10D NAIL	(8) LBS
	# 16D NAIL	(1) LB

ITEM NO	QTY REQ D	UNIT MEAS	CAGE NO	PART/D NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	REMARKS	WILLARD NO
1	1	EA	27815	T-105	WATERPROOF STORAGE COVER @ 2m X 5.5m	GRIFFOLYN	BLK/WHT REVERSIBLE	084-039
2	0.33	EA	W0044	WELD-RAP IV	SHRINK WRAP COVER, 36FT(11m) X 75FT(23m) 175 MICROMETER	POLYETHYLENE	WHITE W/ ULTRAVIOLET INHIBITOR	084-040
3	3	EA	OCW85	S4S	LUMBER 4 IN X 4 IN X 18 FT LONG, EXPOSED	WOOD		084-041
4	3	EA	OCW85	S4S	LUMBER 4 IN X 4 IN X 8 FT LONG	WOOD		084-042
5	2	EA	OCW85	S4S	LUMBER 2 IN X 4 IN X 10 FT L	WOOD		084-043
6	2	EA	OCW85	S4S	LUMBER 2 IN X 8 IN X 18 FT LONG, EXPOSED	WOOD		084-044
7	7	SHT	OCW85	ACX- GRADE	PLYWOOD 4 FT X 8 FT X 3/4 IN THK	WOOD		084-006
8	5	EA	COM L		CARPET 12 IN (310mm) X 8 FT (2500mm)	CLOTH		084-006
9	3	GAL	OCW85	MIL-W-18142	WOOD PRESERVATIVE, CUPRENOL	NAPHTHANATE		084-007
10	75	FT	COM L		SHOCK CORD 3/16" DIA		USED FOR BOAT COVER	084-033
11					DELETED			
12	1	SET	58367		CHAIN ASSEMBLY (IN HOUSE ASSEMBLY)		USED FOR TIE DOWN	084-045
13	3	EA	OUUC1		TURNBUCKLE 5/16 INCH X 4 1/2 INCH	GALV STEEL	FOR ITEM 12	084-081
14	6	EA	OUUC1		ANCHOR SHACKLE 1/4 INCH DIA (SCREW IN TYPE)	GALV STEEL	FOR ITEM 12	084-082
15	5(16.5)	m(FT)	75301		CHAIN PROOF COIL, 1/4 INCH DIA @.35mm	GALV STEEL	FOR ITEM 12	084-085
16	2	EA	W0044	PAB-800	VINYL ACCESS DOOR, ZIPPED 48 INCH (1220mm)	VINYL	FOR ITEM 2	084-025
17	2	EA	W0044	PAB-750	WOVEN STRAPPING 3/4 IN (19mm) X 75 FT (23m)	NYLON	FOR ITEM 2	084-023
18	2	EA	W0044	PAB-704W	WHITE SHRINK FILM TAPE 4 IN (100mm) X 35 FT (10m)	NYLON	FOR ITEM 2	084-024
19	1	EA	W0044	PAB-495	PADDING	POLY FOAM	FOR ITEM 2	084-026
20	1	EA	OCW85	S4S	LUMBER 2 IN X 4 IN X 18 FT LONG	WOOD		084-052
21	1	EA	COM L		TIE DOWN WEB STRAP 1000 LBS RATCHET TYPE 1 IN WIDE W/ S-HOOK	NYLON	USED FOR STERN DRIVE	084-083

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
PARTS LIST	A	DELETED ITEMS 10 AND 11 ADDED ITEMS 13, 14, 15, 16, 17, 18, AND 19	14OCT93	B KAGY
GEN NOTES		MODIFIED NOTES 2 6 AND 2 7 TO INCLUDE CHANGES IN THE PARTS LIST		
FSTNR SCHED		UPDATED LIST OF FASTENERS		
11-D		RELOCATED FWD U-BOLT AND ADDED BOLT CALL-OUTS		
18-E		ADDED DETAIL 18-E		
FSTNR SCHED	B	UPDATED LIST OF FASTENERS	93NOV17	B KAGY
PARTS LIST		CHANGED DESCRIPTION OF ITEMS 3, 4, 5, AND 6 CHANGED QTY REQUIREMENT FOR ITEMS 5, 7, AND 9 ADDED ITEM 20		
ALL	C	UPDATED DWG PER AS BUILT CONFIGURATION	94FEB28	W CHRISTIE
PARTS LIST	D	CHANGE UNI NO. OF TURNBUCKLE AND ANCHOR SHACKLE	94MAY5	W CHRISTIE
FSTNR SCHED		CHANGE U-BOLT TO EYEBOLT		
PARTS LIST	E	ADDED ITEM 21 INCREASED QTY OF ITEM 15 FROM "15" TO "16 5" INCREASED QTY OF ITEM 18 FROM "1" TO "2"	95FEB8	W CHRISTIE
PARTS LIST	F	ADDED ITEM 10	97MAY25	W

27	DELETED	
26	SHIPPING CRADLE & COVER	583-5105612
25	CANOPY, CUSHIONS & COVERS	613-5105611
24	MISC FASTENERS	101-5105610
23	LABEL PLATES	601-5105609
22	DELETED	
21	DELETED	
20	MISC FABRICATED ITEMS	611-5105608
19	DELETED	
18	MISC PIPING SYSTEMS	501-5105604
17	FUEL & LUBE OIL SYS & ARR	260-5105603
16	DELETED	
15	MACHINERY & STEERING ARR	200-5105601
14	ELECTRICAL SYSTEMS	301-5105600
13	MISC CONST & INSTL DET	101-5105599
12	CONSOLE & MISC LAM CONST	169-5105598
11	DECK CONSTRUCTION	130-5105597
10	HULL CONST & OFFSETS	110-5105596
9	INFLATABLE TUBE ASSEMBLY	111-5105595
8	DELETED	
7	DELETED	
6		
5	DELETED	
4	HOISTING ARRANGEMENT	582-5105590
3	INBOARD PROFILE & ARR	101-5105589
2	OUTBOARD PROFILE & ARR	101-5105588
1	BOAT DRAWING INDEX	042-5105587
REF NO.	DOCUMENT TITLE	DOCUMENT NO.

DATA LIST

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS. SI-METRIC

WILLARD MARINE, INC
 1250 N GROVE STREET
 ANAHEIM, CALIFORNIA 92806
 CAGE 0 58367

DECIMALS	ANGLES	WHOLE MILLIMETERS
XX± 1 ± 50		UP TO 100 ± 1
XXX± 05		OVER 100 TO 300 ± 2
XXX± 01		OVER 300 TO 1000 ± 3
		OVER 1000 ± 4
WHOLE METERS ± 4		

APPROVED BY: [Signature] 2/18/95

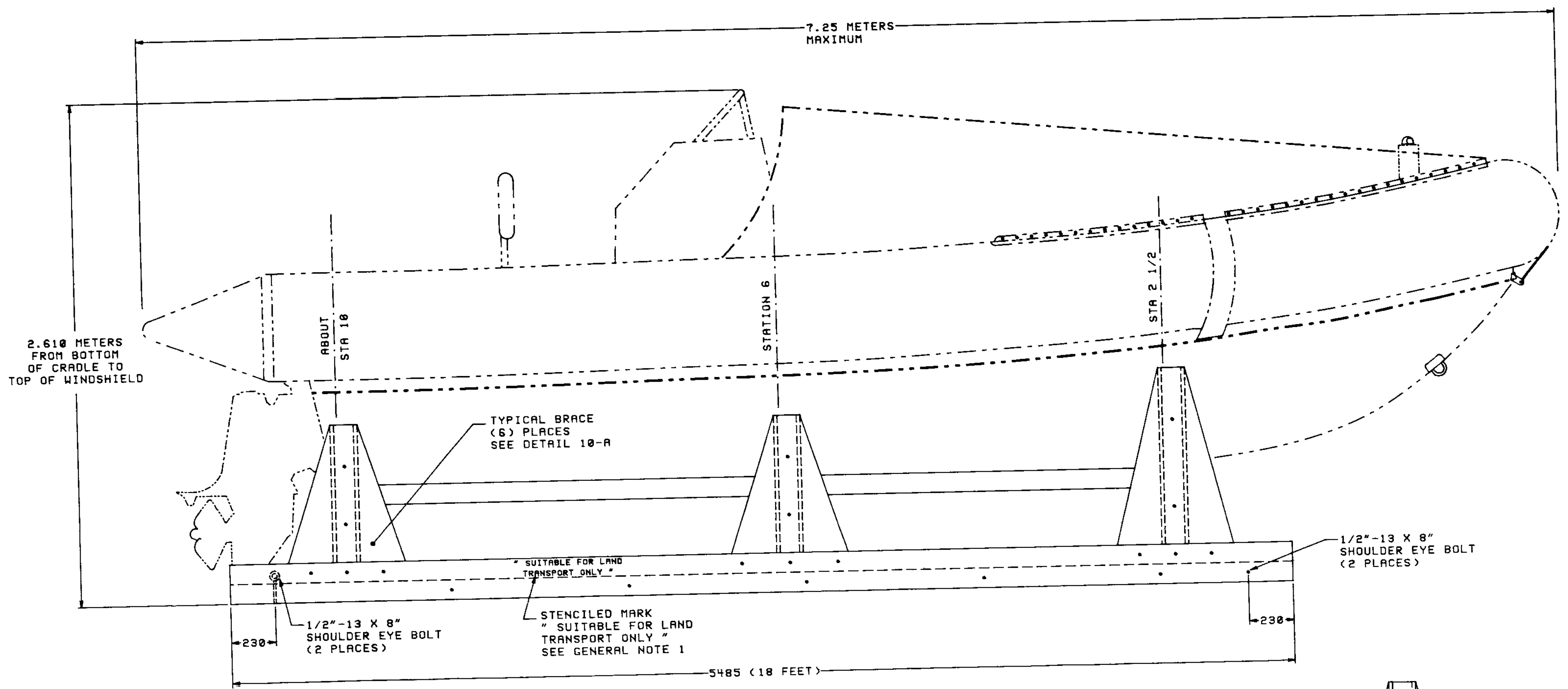
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 NAVAL SEA SYSTEMS COMMAND
 WASHINGTON, D.C. 20355

7 METER RIGID INFLATABLE BOAT
 SHIPPING CRADLE AND COVER

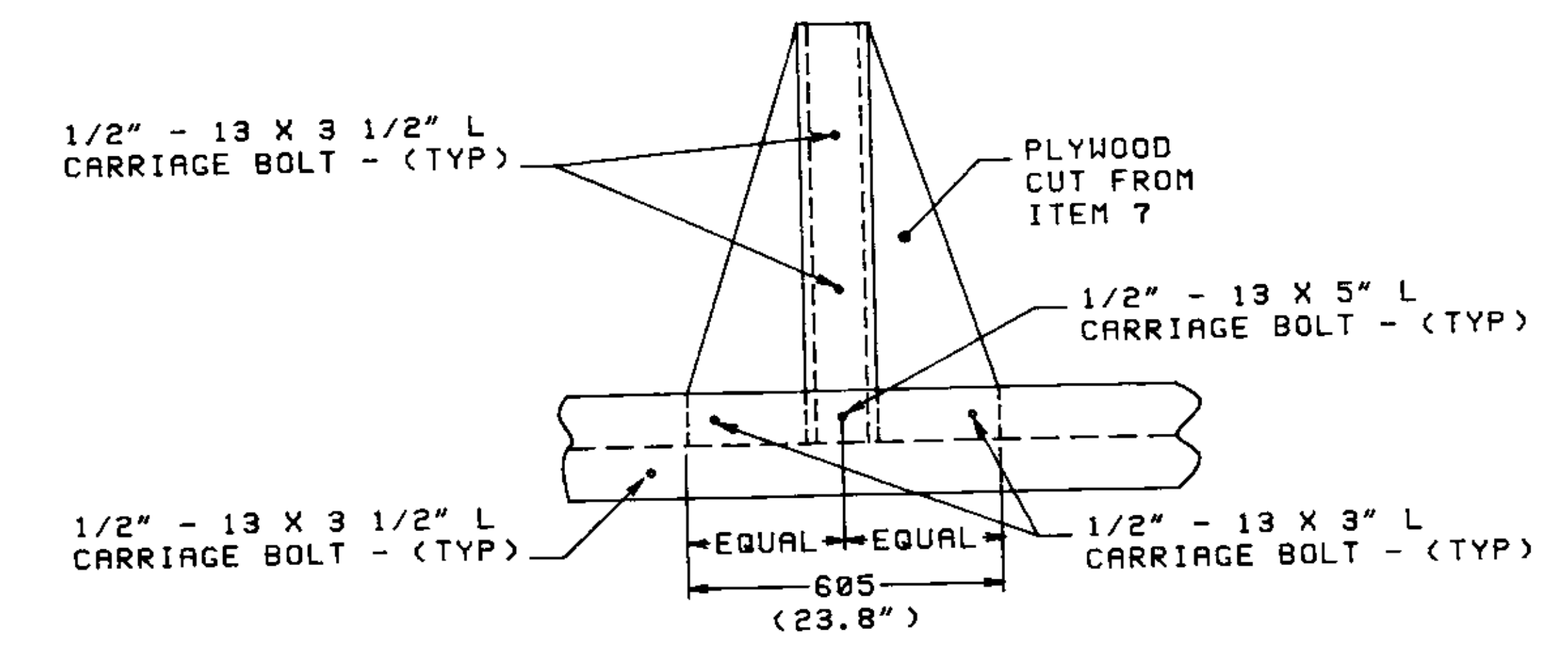
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SHIPPING CRADLE AND COVER
 7 METER RIGID INFLATABLE BOAT
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DETAIL 12-B
 PROFILE VIEW
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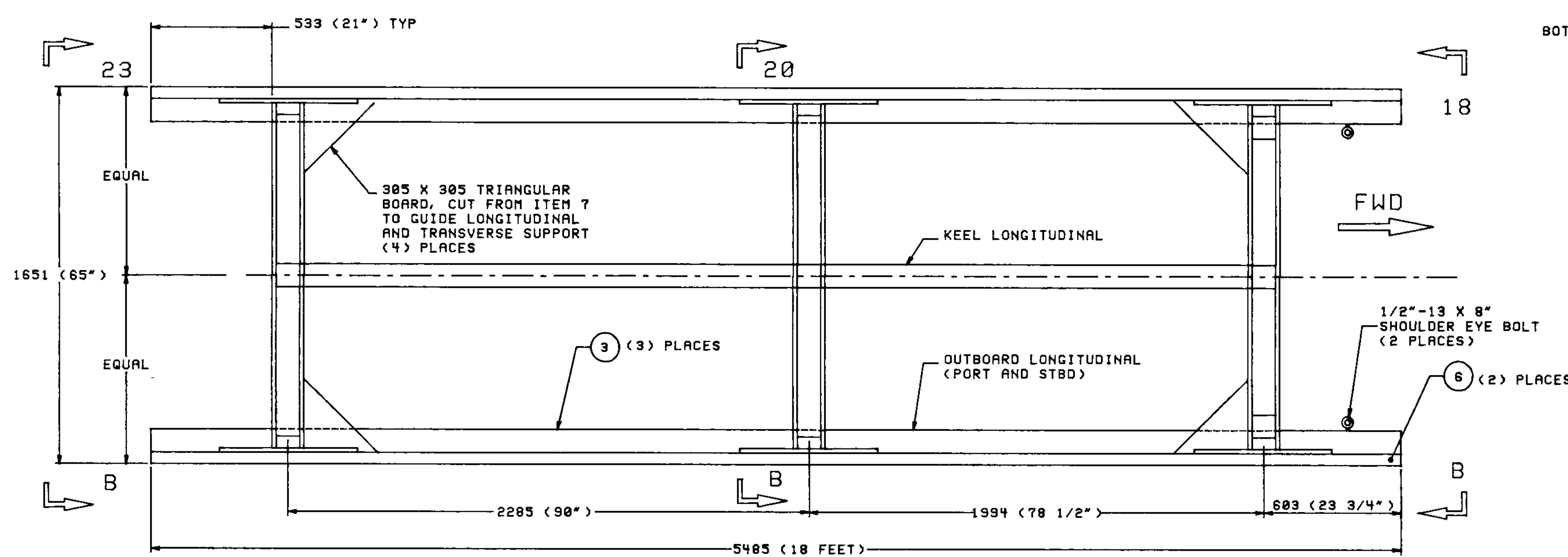


DETAIL 10-A
 TYPICAL BRACE DETAIL

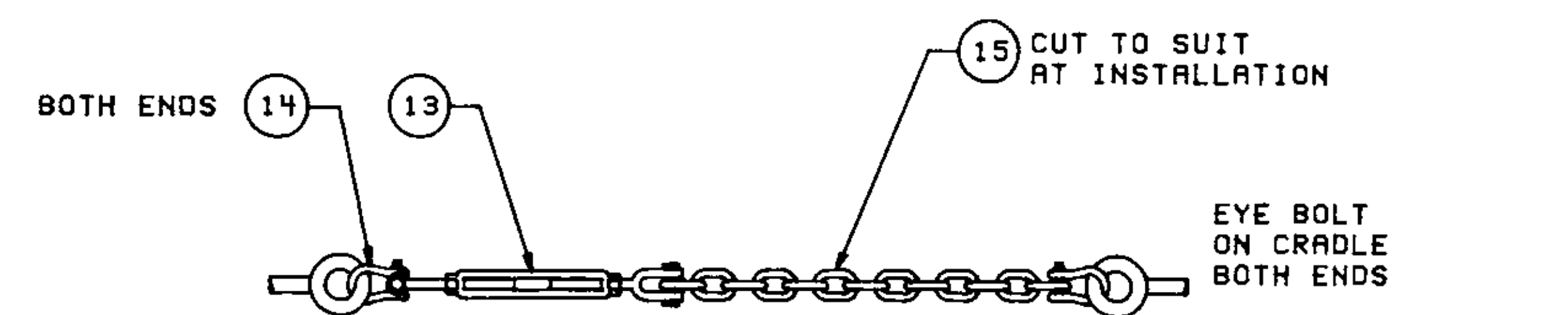
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		SHEET 2	

7 METER RIGID INFLATABLE BOAT
 SHIPPING CRADLE AND COVER
 H53711-210015

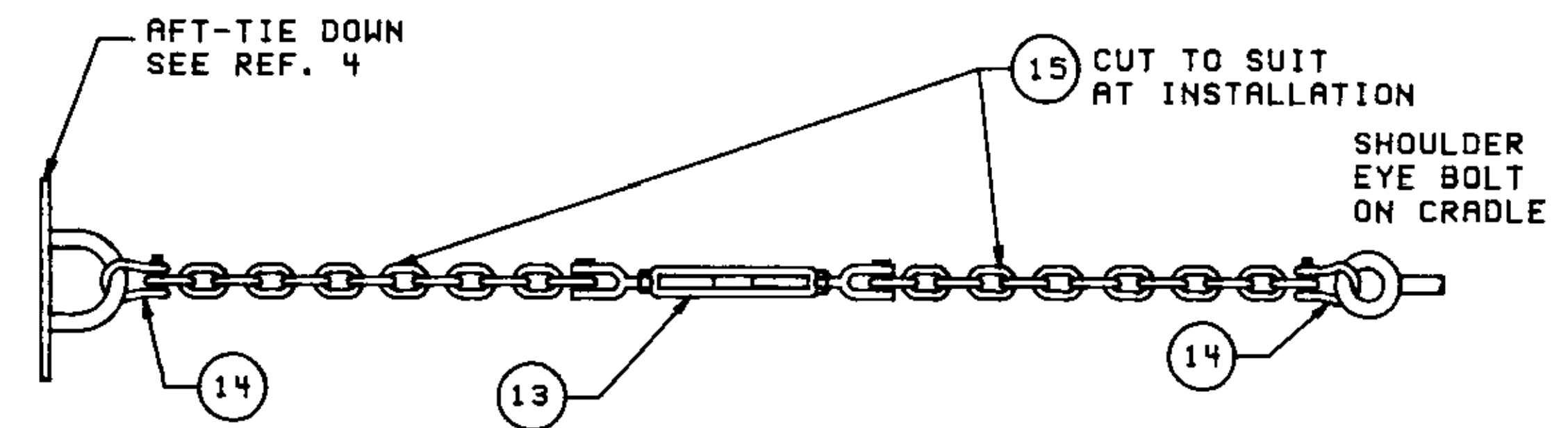
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DETAIL 21-E
 PLAN VIEW OF CRADLE
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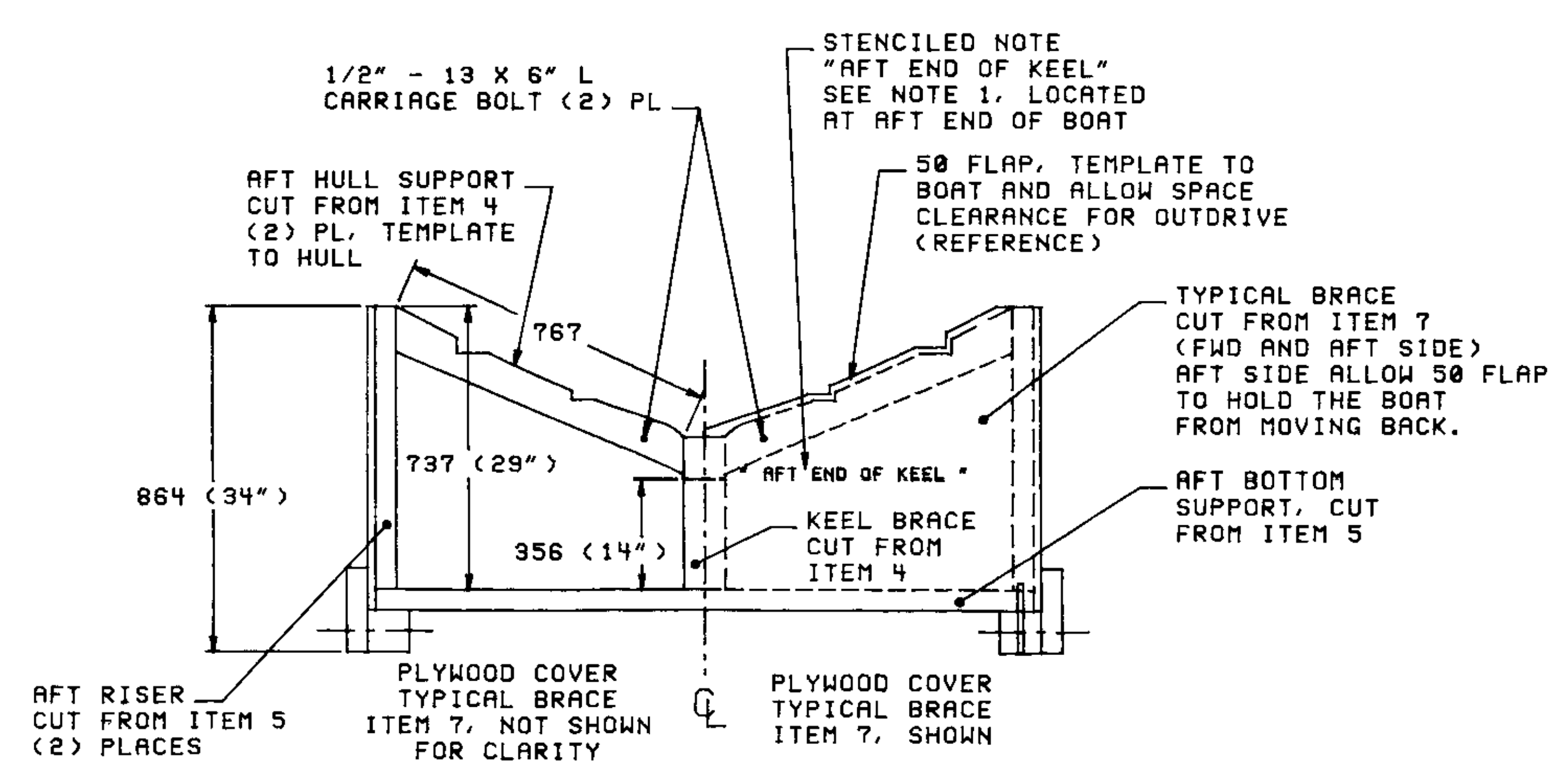


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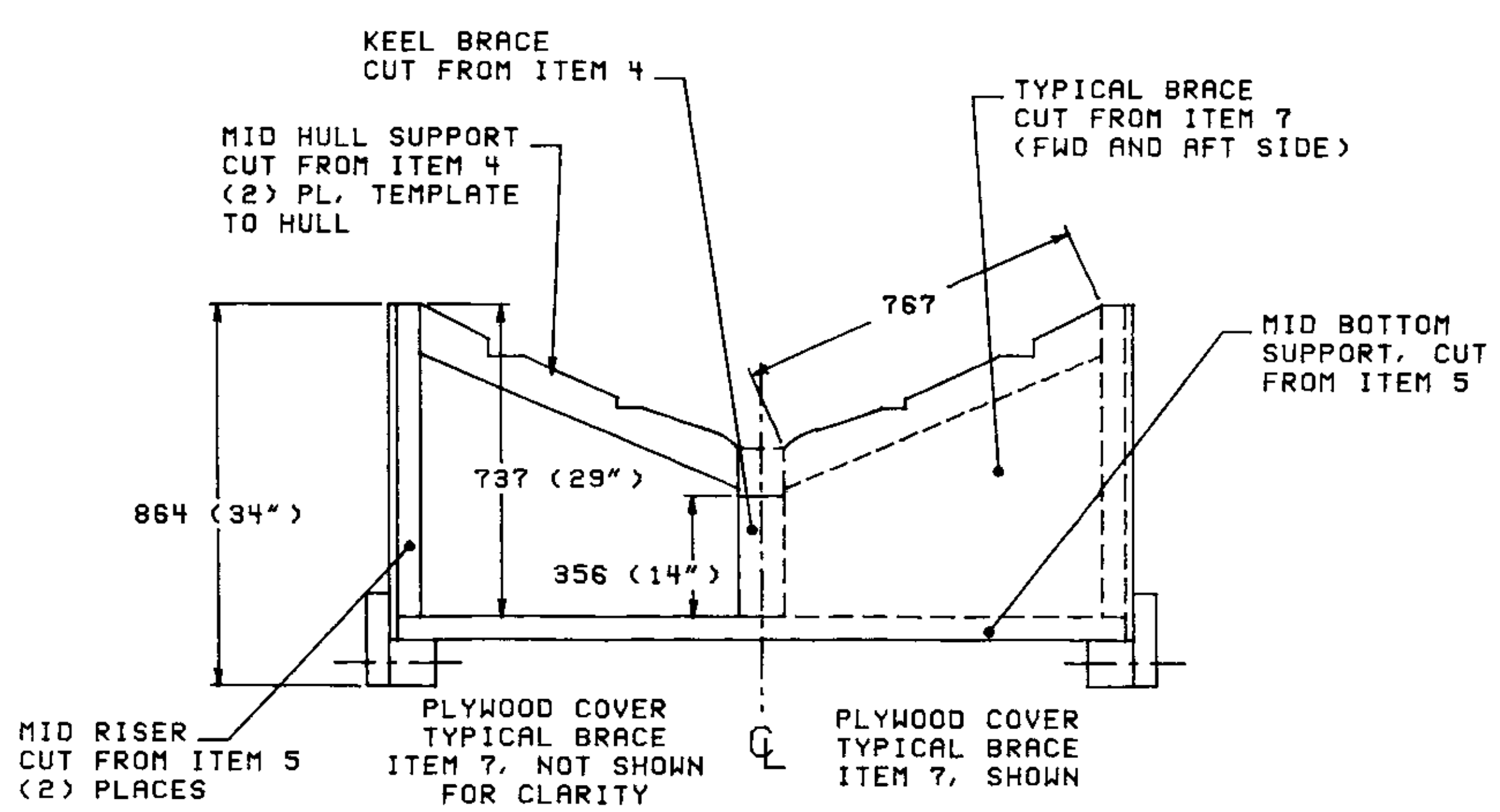


AFT CHAIN ASSEMBLY
 (2) REQUIRED

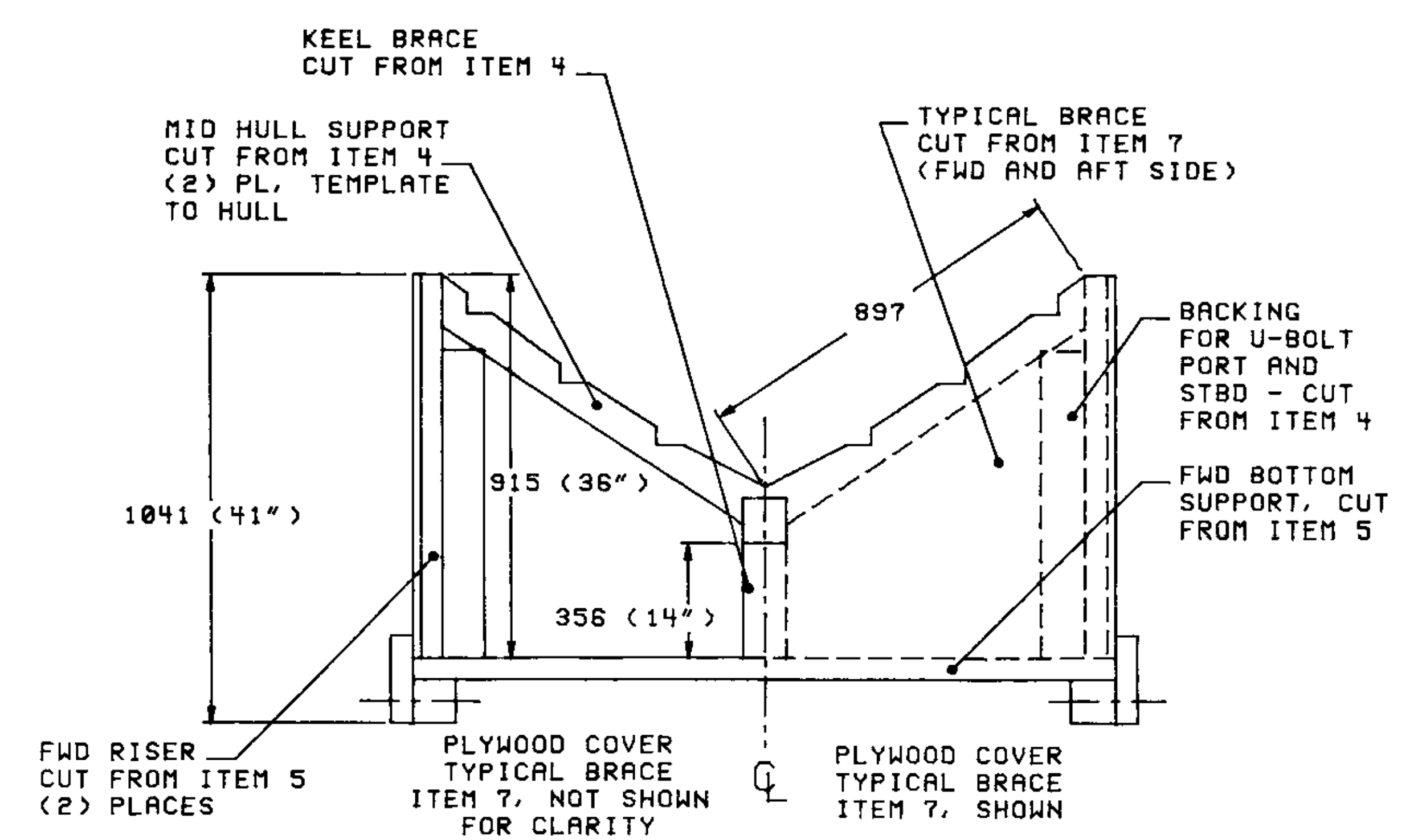
DETAIL 18-E (12)
 CHAIN ASSEMBLY
 SCALE: NONE



SECTION 23-B
 LOOKING FORWARD
 SCALE: NONE



SECTION 20-B
 FWD AND AFT
 SCALE: NONE



SECTION 18-B
 LOOKING AFT
 SCALE: NONE

SHIPING CRADLE AND COVER			
SIZE	CRADLE NUMBER	CRADLE	NOVEMBER DATE NO.
H153711	7m RB	583	15105612F
SCALE AS NOTED CONTRACT NUMBER: N00024-93-C-2001			SHEET 3

NAVAL SHIPS' TECHNICAL MANUAL
CHAPTER 583
VOLUME 2 – HANDLING AND
STOWING BOATS AND
SMALL CRAFT

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CHAPTER 583

VOLUME 2 – HANDLING AND STOWING BOATS AND SMALL CRAFT

SECTION 13

HANDLING AND STOWING BOATS ABOARD SHIP

583-13.1 GENERAL INFORMATION

583-13.1.1 PURPOSE. The purpose of this section is to:

- a. Provide and define the accepted terms used in conjunction with boat handling and stowage systems
- b. Provide guidance concerning preweight test inspections and testing requirements
- c. Amplify general safety requirements and operational procedures for boat davit and stowage systems
- d. Provide convenient reference information to personnel to reduce interpretation errors concerning the requirements of boat handling and stowage systems

583-13.1.2 BOAT DAVIT DESIGN TYPES. There are seven design types of boat davits currently in use for handling boats aboard Naval ships. Each of these design types comes in several different configurations. It is therefore important to properly identify the design type and configuration of the boat davit in question when using this manual for guidance. The design types and configurations are listed in [Table 583-13-1](#). In addition to the davit designs and configurations identified, some davits are further categorized by the number of boats that a particular davit installation handles and how the boats are stowed with respect to a davit system. These categories are:

Table 583-13-1. BOAT DAVIT DESIGN TYPES AND CONFIGURATION

Davit Design Types	Configuration
1. Overhead Suspended (Figure 583-13-2)	Double Arm, Fixed
2. Pivoted (Figure 583-13-3)	Single Arm Double Arm, Spanwire Double Arm, Strongback
3. Pivoted Link (Figure 583-13-4)	Double Arm, Spanwire Double Arm, Strongback
4. Pivoted Sheath Screw (Figure 583-13-5)	Double Arm, Spanwire
5. Radial (Figure 583-13-6)	Double Arm
6. Slewing (Figure 583-13-7)	Single Arm, Standard Single Arm, Non-magnetic Single Arm, Overhead
7. Trackway (Figure 583-13-8)	Single Arm, Double Arm, Spanwire Double Arm, Strongback

- a. Single Bank
- b. Double Bank

c. Triple Bank

d. Quadruple Bank

These design and configuration categories are further discussed in paragraph [583-13.2](#).

583-13.1.3 BOAT STOWAGE TYPES. There are three boat stowage types; deck, dolly and davit. Specific information regarding stowages is provided in paragraph [583-13.7](#).

583-13.1.4 TYPICAL BOAT DAVIT FUNCTIONAL BLOCK DIAGRAM. A typical boat davit functional block diagram is depicted in [Figure 583-9-1](#). This diagram, while not exact for every boat davit configuration used in the Navy, is representative of the electromechanical davit as a system and reflects the general interrelationship of the components identified.

583-13.2 TERMS AND DESCRIPTIONS

583-13.2.1 GENERAL. The terms utilized in this section are listed and defined in the following paragraphs in alphabetical order. Where applicable, amplifying information is provided to assist personnel engaged in the supervision of operation or maintenance of the boat handling and stowage system.

583-13.2.2 BOAT HOISTING RIGID BAIL. A rigid hoisting fixture fabricated from round bar or pipe, and fitted to the boat for lifting at a single point with a single arm davit.

583-13.2.3 BOAT HOISTING SLINGS. Two or more wire rope, flat polyester or Kevlar straps. One end of each strap is attached to a common hoisting ring and the other end is attached to the boat hoisting fittings. Refer to Section 7 of Volume 1 of this Naval Ships' Technical Manual (NSTM) chapter for further information.

583-13.2.4 BOAT RELEASE GEAR. The hook or hooks used to facilitate attaching or releasing the boat hoisting shackle or device. The standard boat release gear used by the Navy on double arm davits is known as a Raymond release hook. The standard boat releasing gear used by the Navy on single arm davits other than the Slewing Arm Davit (SLAD) is the quick release hook. The hook used on most SLAD is the on-load release safety hook.

583-13.2.5 BOOM, BOAT. A horizontal spar, strut, or other long member extending from the hull of the ship, to which boats are moored.

583-13.2.6 BOOM, BOAT HANDLING. An inclined spar, strut, or other long member used to handle boats over the side of the ship for launch and retrieval.

583-13.2.7 DAVIT, DOUBLE ARM. A davit having two arms, falls, and hoisting hooks. With this type of davit, the boat is suspended from two points.

583-13.2.8 DAVIT, MECHANICAL. A davit requiring the application of an external force (other than gravity) to move the boat from the inboard position to the outboard position in preparation for launching.

583-13.2.9 DAVIT, OVERHEAD SUSPENDED. A gravity davit consisting of sheaves mounted beneath a sponson or other overhang. The boat is suspended by the falls. This davit type is only used on some aircraft carriers (CV) and helicopter landing (LHD) type ships. Refer to [Figure 583-13-2](#).

583-13.2.10 DAVIT, PIVOTED. A gravity davit consisting of an arm or arms which pivot around a single axis to move inboard and outboard. Refer to [Figure 583-13-3](#).

583-13.2.11 DAVIT, PIVOTED LINK. A gravity davit consisting of two arms which pivot around multiple axes through links to move inboard and outboard. Refer to [Figure 583-13-4](#).

583-13.2.12 DAVIT, PIVOTED SHEATH SCREW. A mechanical davit, the arms of which are generally in crescent form, which is mechanically operated in and out by means of a sheath screw. Refer to [Figure 583-13-5](#).

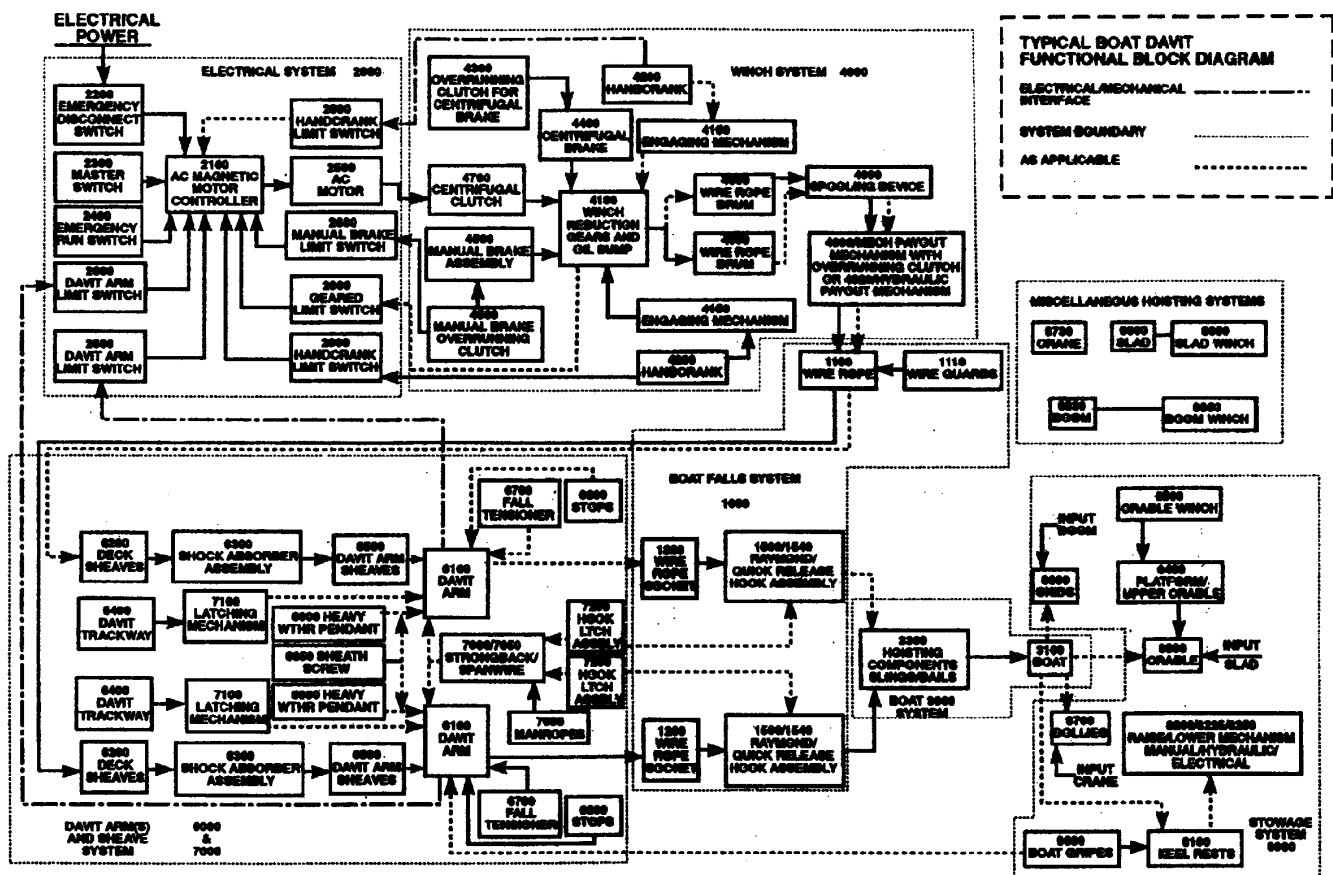


Figure 583-13-1. Typical Boat Davit Functional Block Diagram

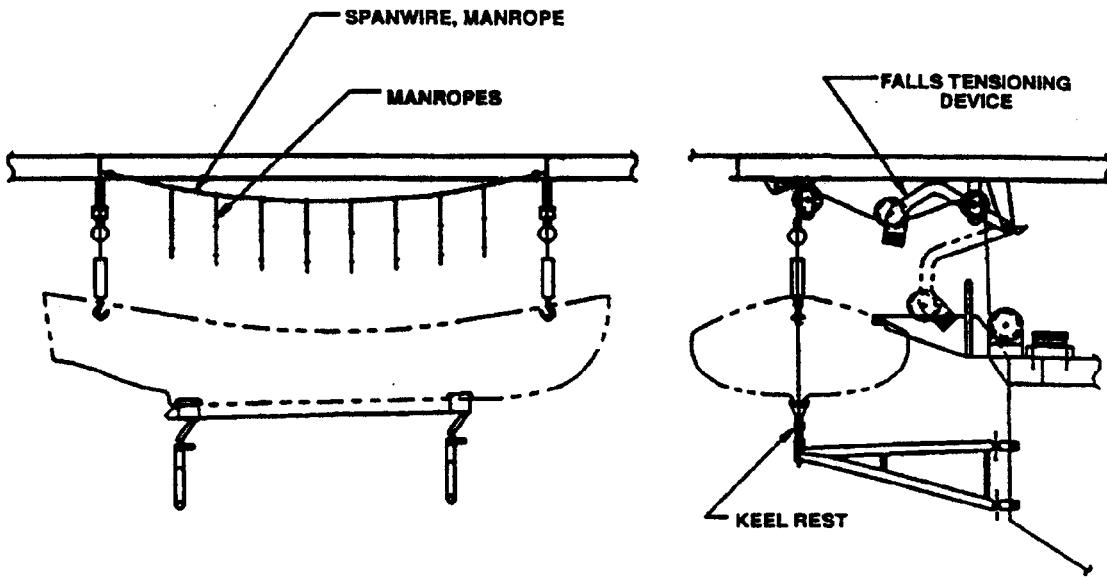


Figure 583-13-2. Overhead Suspended Davit

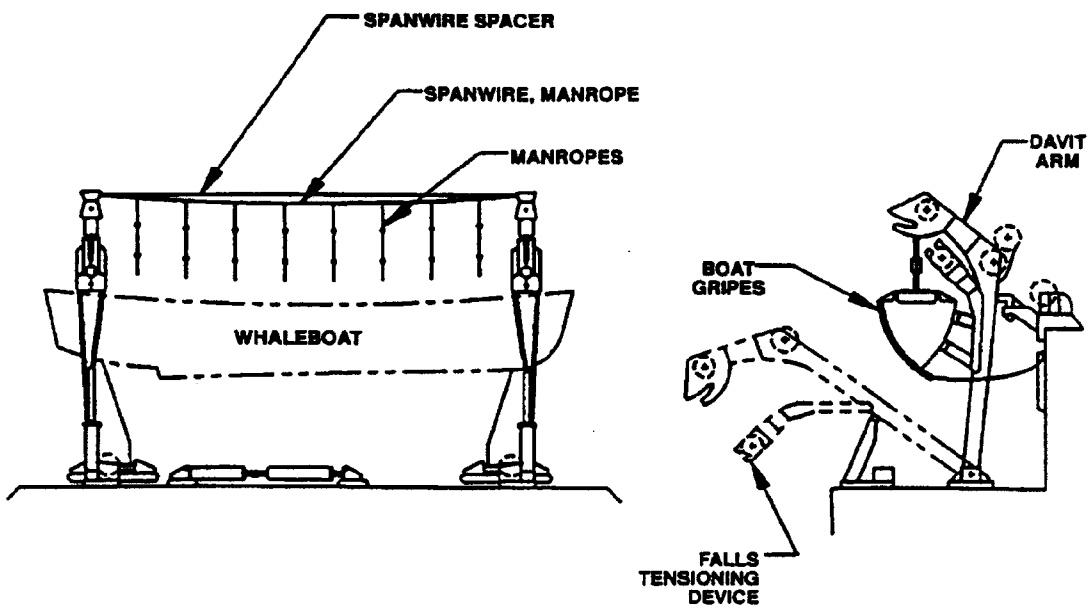


Figure 583-13-3. Pivoted Double Arm Spanwire Davit

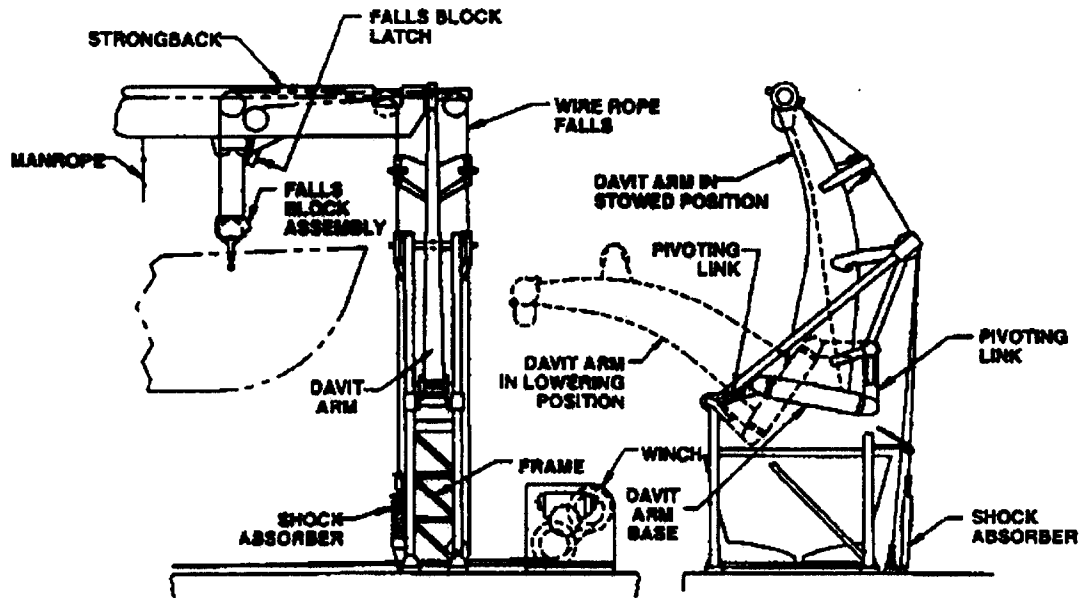


Figure 583-13-4. Pivoted Link Double Arm Strongback Davit

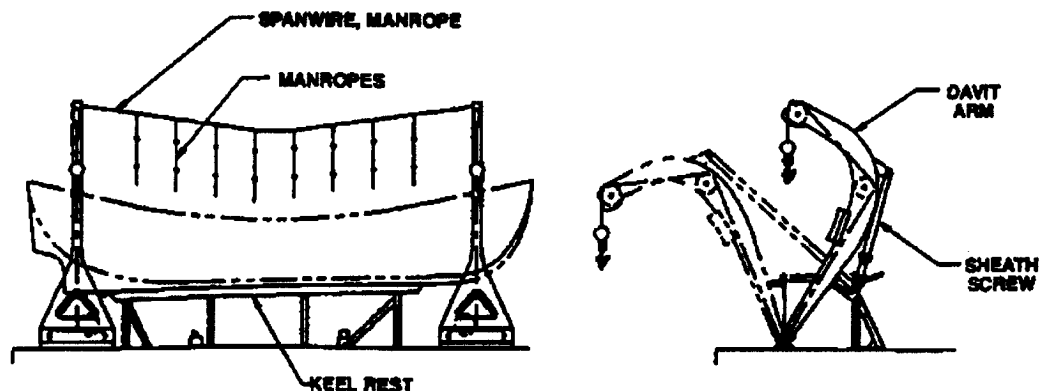


Figure 583-13-5. Pivoted Sheath Screw Davit

583-13.2.13 DAVIT, RADIAL. A mechanical davit consisting of a pair of vertical arms each extending from a pedestal. The boat is moved to the outboard position by partially rotating the arms. The boat falls on this type of davit may be of manila or double braided nylon rope handled by a deck winch or block and tackle. Refer to [Figure 583-13-6](#).

583-13.2.14 DAVIT, SINGLE ARM. A davit having one arm, fall, and hoisting hook. With this type davit, the boat is suspended from a single point.

583-13.2.15 DAVIT, SLEWING ARM (SLAD). A mechanical davit with a single arm. The davit arm is mounted on a pedestal and rotates about a vertical axis when moving the boat outboard and inboard in a slewing type motion. This type of davit handles a 24 foot Rigid Inflatable Boat (RIB). Refer to [Figure 583-13-7](#).

583-13.2.16 DAVIT, TRACKWAY. A gravity davit consisting of an arm or arms mounted on rollers that run on an inclined trackway or trackways that are mounted on the deck. The incline on the trackway(s) is sufficient

for gravity to cause the boat and arm(s) to move down the trackway(s) from the inboard position to the outboard position so that the boat may be lowered into the water. Refer to [Figure 583-13-8](#).

583-13.2.17 DOUBLE BANK. An arrangement for stowing two boats, one above the other.

583-13.2.18 FALLS. The apparatus that transmits winch controlled hoisting and lowering to the boat. A typical fall is shown in [Figure 583-13-9](#).

583-13.2.18.1 Assembly. The falls generally consist of, but are not limited to, the following equipment: hooks, blocks, links, sockets and wire or fiber rope. The rope is then reeved through the system (winch drum, sheaves, shock absorber assembly, etc.). For slewing and radial arm davits, swivels are installed as part of the falls.

583-13.2.18.2 Falls Twisting. Falls twisting will occur if the rope is allowed to twist when reeving the rope through the system during installation. Refer to paragraph [583-13.5.2](#).

583-13.2.19 FALLS TENSIONING DEVICE. A weighted sheave arrangement installed in the davit wire rope reeving arrangement. Its weight is enough to counterbalance and lift the hook(s) or falls clear of the boat and its crew when launching the boat. A typical falls tensioner device is shown in [Figure 583-13-10](#).

583-13.2.20 GRAVITY DAVIT. A davit that requires only the force of gravity to move a boat from the inboard launching position to the waterborne position.

583-13.2.21 GRIPE. An adjustable rope or belt assembly used to secure the boat when it is in the stowed position. Refer to [Figure 583-13-11](#).

583-13.2.22 HOOK, SAFETY, ON-LOAD RELEASE. The hook type is used on some SLAD and single-arm davits. Refer to [Figure 583-13-12](#).

583-13.2.23 HOOK, RAYMOND RELEASE. The Navy standard hook used for double arm davits is shown on NAVSEA dwg 803-5000491 and depicted in [Table 583-13-2](#).

Table 583-13-2. NAVY STANDARD RAYMOND RELEASE HOOK

Safe Working Load Per Hook	NSN	Minimum Shank Diameter
7000 lbs	4030-00-408-5484	7/8 in.
10000 lbs	4030-00-408-5485	1-1/8 in.
14000 lbs	4030-00-238-6192	1-3/8 in.

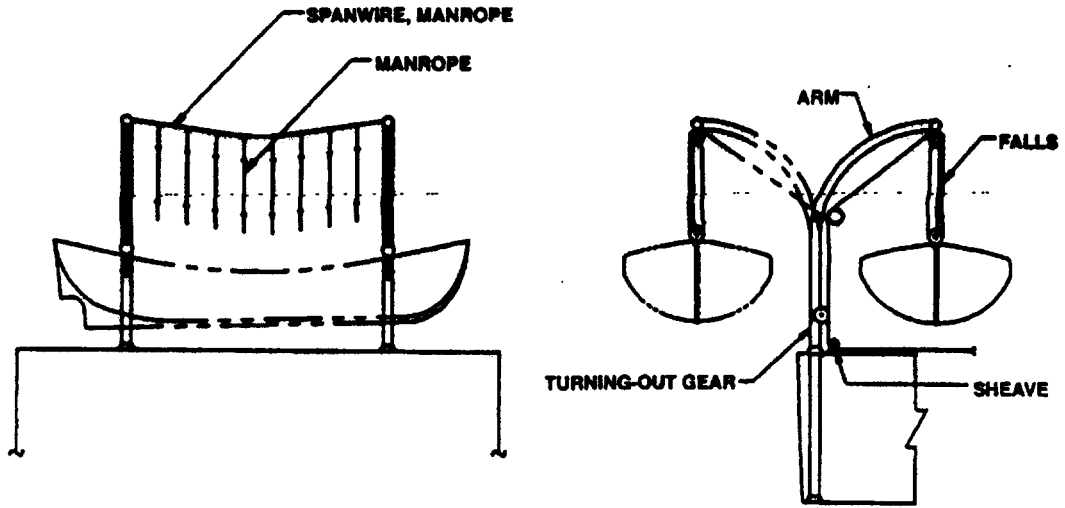


Figure 583-13-6. Radial Davit

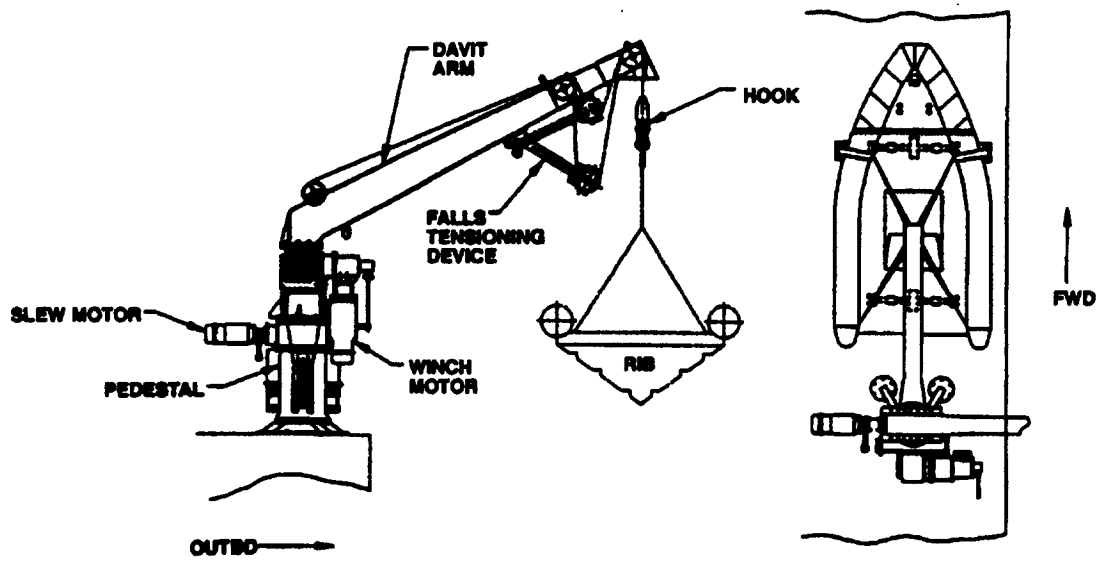


Figure 583-13-7. Slewing Single Arm Standard Davit

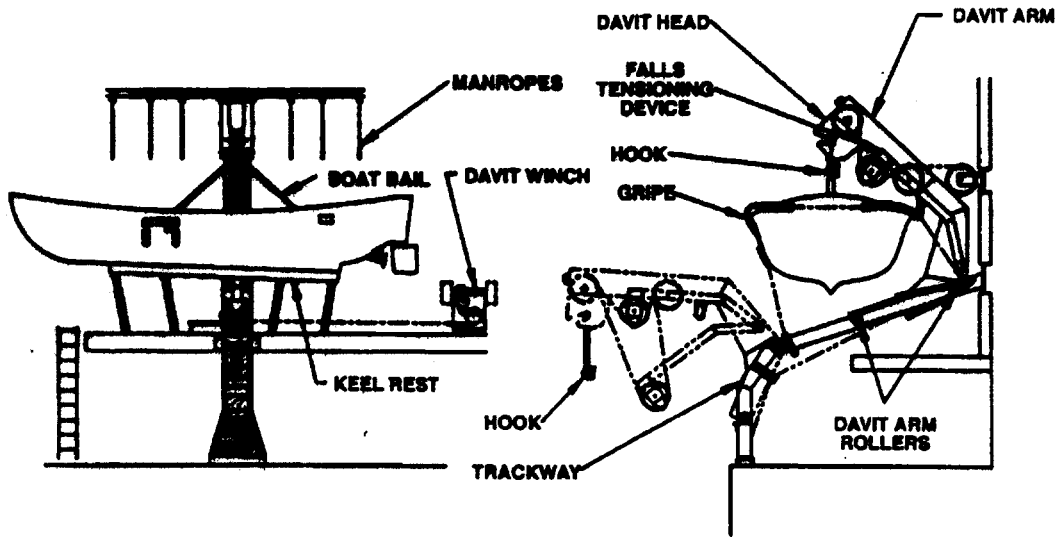


Figure 583-13-8. Trackway Single Arm Davit

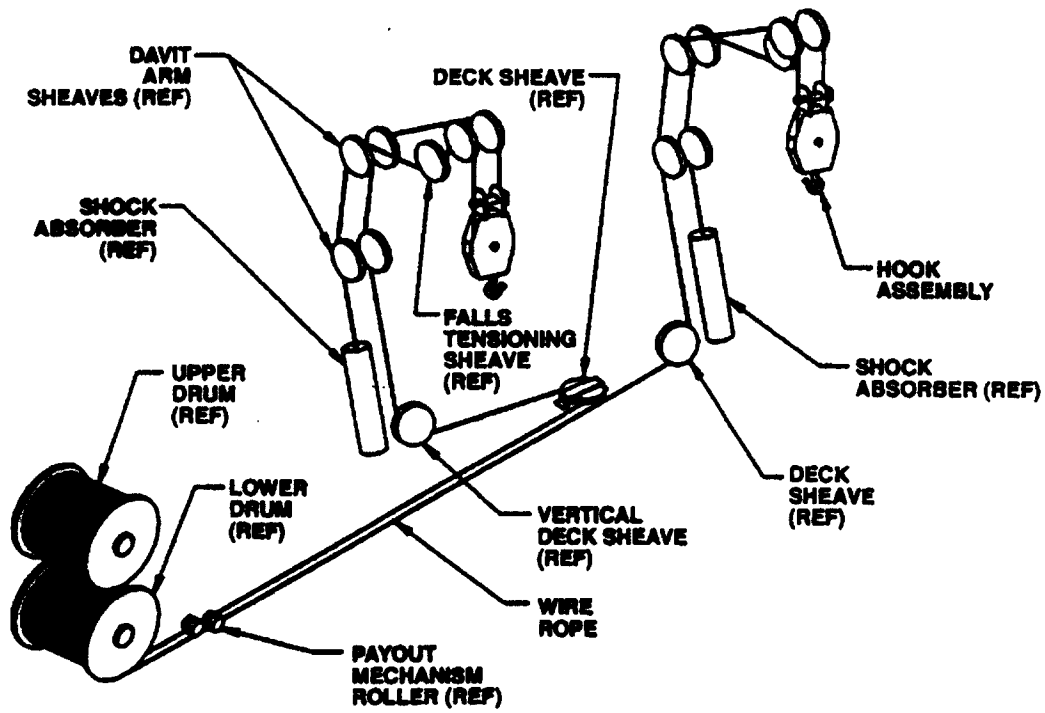


Figure 583-13-9. Wire Rope Falls

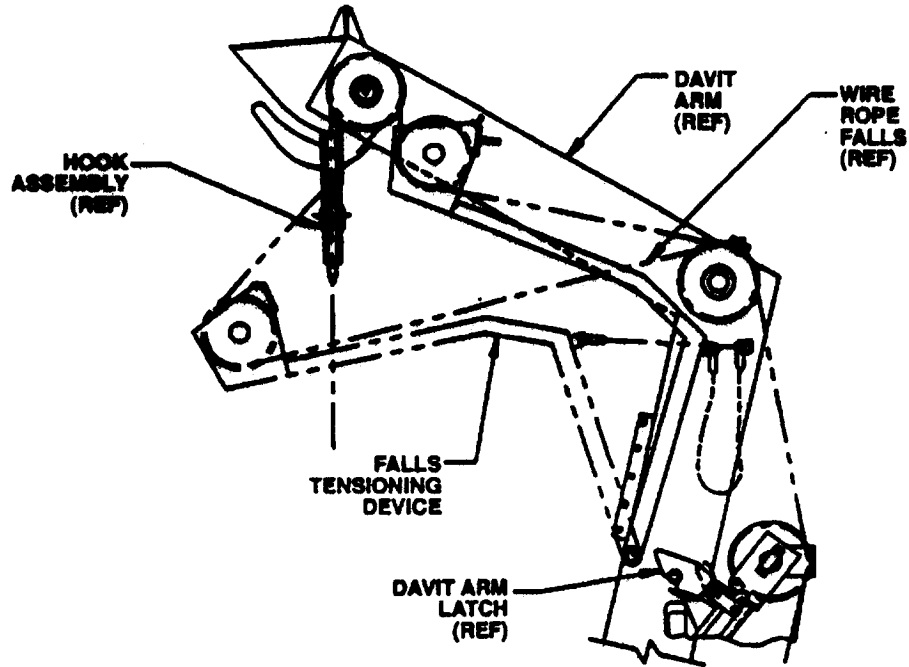


Figure 583-13-10. Falls Tensioner

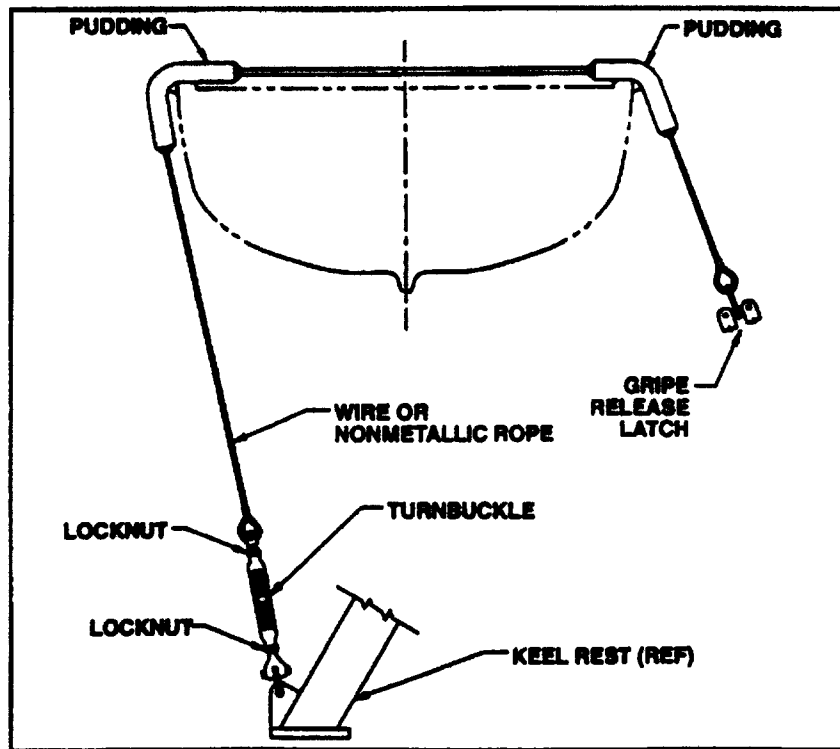


Figure 583-13-11. Boat Gripe Assembly

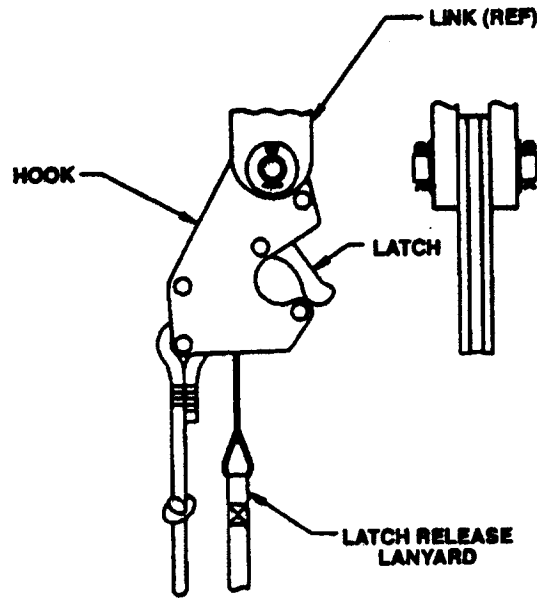


Figure 583-13-12. Hook, Safety, On-Load Release

583-13.2.23.1 Adaptation. These hooks have a straight shank with ample material for adaptation to suit the falls block design of any existing mounting configuration found in the fleet. The reason for the straight shank is that it is not practical to stock different hooks for each of the many different mounting configurations found in the fleet. The three hook capacities, shown in [Figure 583-13-13](#), will meet all existing fleet boat davit needs and will support maintenance replacement of all boat davit hooks in service, and all new construction, except for single arm type boat davits. When this hook is requisitioned by a ship, it will be necessary for the straight shank of the hook to be adapted by a shipyard or tender to suit the mounting configuration for that ship's boat davit. The hook shanks may be machined to the minimum diameter shown in [Figure 583-13-13](#), for adaptation to any existing mounting configuration without prior approval of NAVSEA.

WARNING

Welding repair to the surface of Navy standard Raymond release hooks is not permitted unless approved by NAVSEA and only in extreme emergency.

583-13.2.23.2 Installation and Testing. After final machining and installation, bare hook area shall be protected against corrosion by painting with an inorganic zinc paint system selected from **NSTM Chapter 631 Volume 2, Preservation of Ships in Service - Surface Preparation and Painting**. Final topcoat shall be white per FED Spec TT-E-489 or TT-E-490 to improve visibility during night operations. Care shall be taken during hook handling to ensure that no damage occurs that could disturb the close and freely working fit between mating surfaces of hook and tripper bill. After hook replacement is made, a system test is required in accordance with paragraph [583-13.2.47](#) of this chapter.

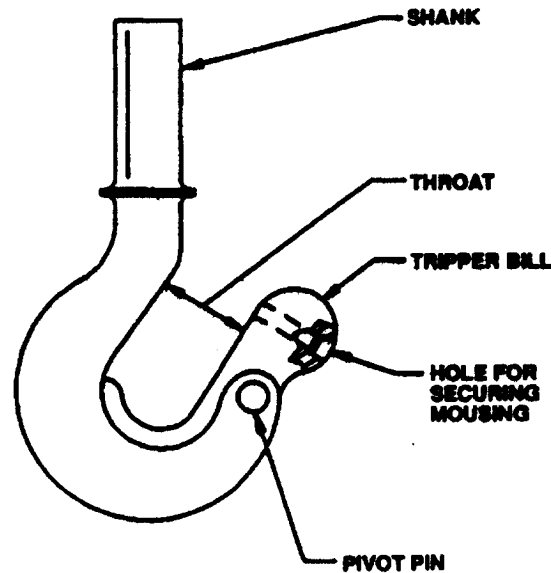


Figure 583-13-13. Hook, Raymond Release

NOTE

Use of similar commercial hooks has resulted in various problems that can cause the boat to be dropped. Visually compare the hook material and throat dimensions and angles against NAVSEA dwg 803-5000941. Replace with Navy standard Raymond release hook if discrepancies found. If modification to the existing mounting design is required, design approval of the modification shall be obtained from a naval shipyard, SUPSHIP, or NAVSEA activity.

583-13.2.24 **HOOK, SAFETY, OFF-LOAD RELEASE.** The standard Navy hook used to handle 26-foot Motor Whale Boat (MWB) having a single point rigid bail arrangement is shown on NAVSEA dwg 601-5489210 and depicted in [Figure 583-13-14](#). This hook is designed to permit quick engagement and secure locking during hoisting while still allowing quick release during launching. The NSN for this hook is 2040-01-117-5485.

583-13.2.24.1 **Hook, Safety, Off-Load Release.** This hook type is used on some single point pick-up davits handling RIB's and is shown in [Figure 583-13-15](#).

583-13.2.25 **LAUNCHING POSITION (Ready to Launch).** The position of the boat such that it is suspended by the hooks and can be made waterborne without further hoisting the boat.

583-13.2.26 **MANROPES.** Fiber or synthetic ropes made up with a series of overhand or figure-eight knots evenly spaced. The ropes are attached to the boat davit spanwire or strongback. The boat crew holds onto these for safety during hoisting and lowering of boats. These ropes are sometimes called monkey lines.

583-13.2.26.1 **Replacement.** Deteriorated manropes of manila or nylon may be replaced with polyester using NAVSEA dwg 803-5184124 for guidance.

583-13.2.27 **MONKEY LINES.** A term sometimes used in place of the preferred term MANROPES.

583-13.2.28 **PENDANT, BOAT HANDLING.** A fabrication, consisting of wire rope, wire rope sockets, a lifting ring and a remote release hook. The overall length of a pendant is about four feet (typically). Pendants are

used when handling boats by booms or cranes not equipped with remote release hooks.

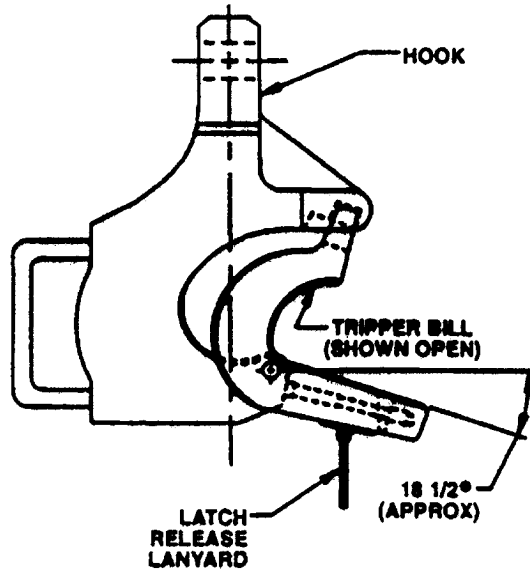


Figure 583-13-14. Hook, Quick Release

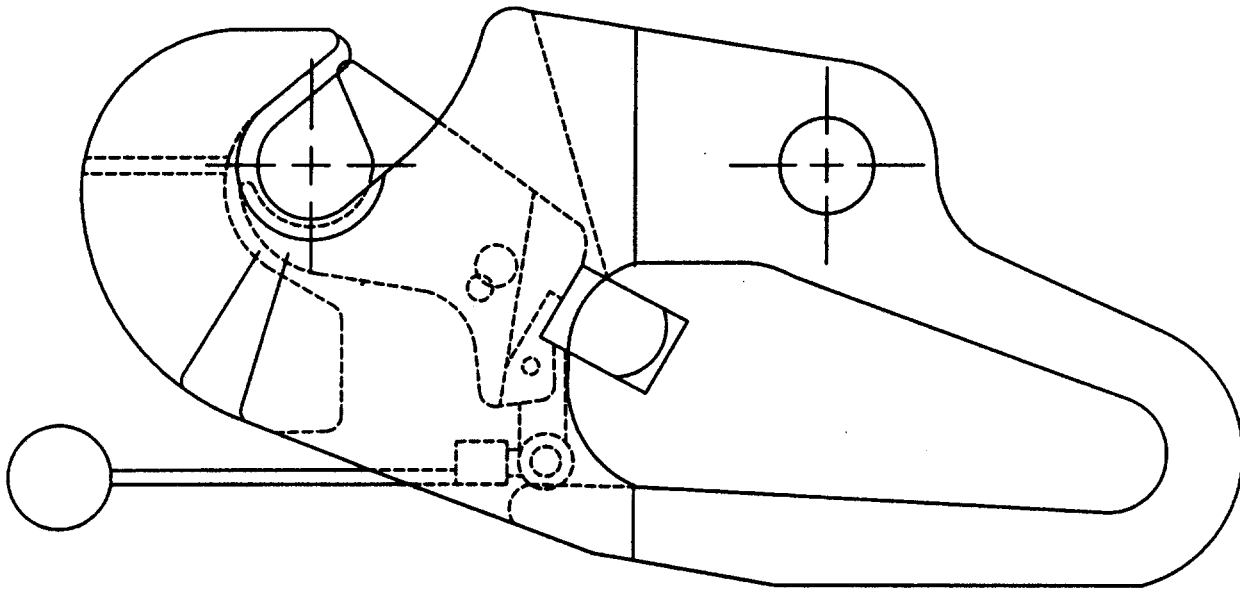


Figure 583-13-15. Standard Navy Hook for 26-Foot Motor Whale Boats (MWB)

583-13.2.28.1 Engagement and Disengagement. The boat handling pendant shall be designed for easy engagement, proper fit, and suspension from the crane or boom hook. The remote release hook shall be compatible with the boat sling thimble or lifting link. The hook shall have a small ring attached to its bill through which a shackle is passed. An 18-foot wire rope safety runner is connected to the shackle. A 50-foot (minimum length) tripping line, 3-inch circumference fiber rope (MIL-R-24537) shall be connected to the safety runner by a shackle so that the boat sling can be engaged and disengaged from the pendant hook when the boat is waterborne. The tripping line length is to allow remote operation of the tripping line from the ship's deck. In the event that the utilization

of a pendant would result in increased boom length, the remote release hook features discussed above shall be incorporated into the crane or boom primary hook or shall be furnished as a separate interchangeable hook.

583-13.2.29 **PREVENTER STAY.** An adjustable wire or fiber rope assembly used for additional safety or security when the davit arm(s) is in the stowed position. Refer to [Figure 583-13-16](#).

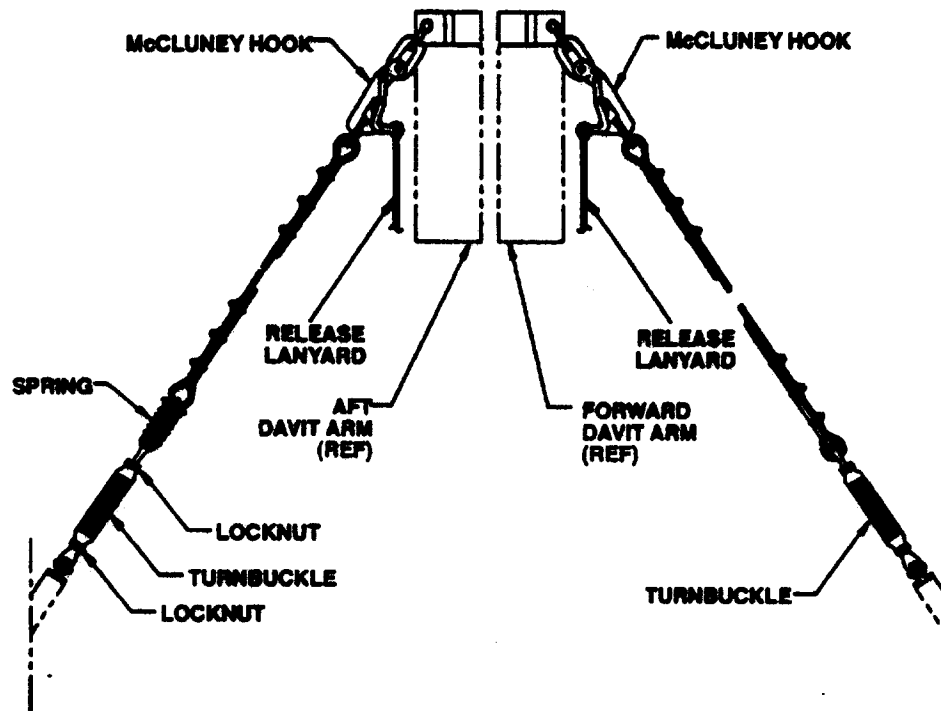


Figure 583-13-16. Preventer Stay

583-13.2.30 **QUADRUPLE BANK.** Suitable for stowage of four boats. Three boats are stowed between the davit arms. The fourth boat is gripped against the side of the ship.

583-13.2.31 **RATED LOAD.** The working capacity (at the hook(s)) to which the davit was constructed.

583-13.2.32 **READY LIFEBOAT.** The boat selected by ship's force as the boat that will be used in a man-overboard situation. Generally a 26 foot motor whaleboat (26 MWB), 26 foot personnel boat (26 PE), or 24 foot Rigid Inflatable Boat (RIB).

583-13.2.33 **SHOCK ABSORBER.** A spring loaded assembly to which the falls are attached to, or reeved around via a sheave. Refer to [Figure 583-13-17](#).

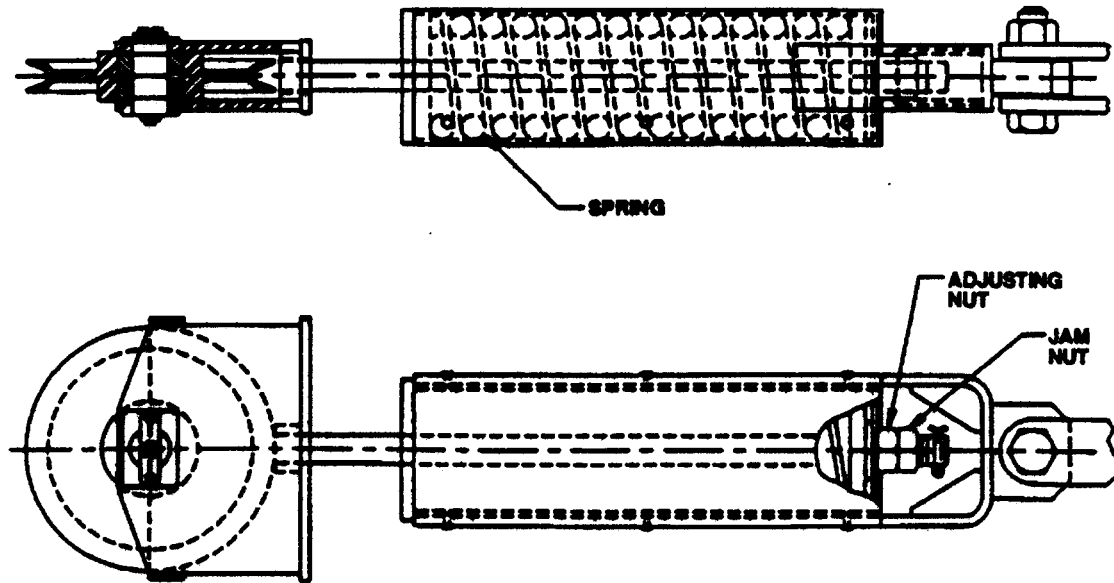


Figure 583-13-17. Shock Absorber

583-13.2.33.1 Purpose. The function of the shock absorber is to minimize shock loads that may occur during launching or hoisting a boat in rough seas. Typically the shock absorber permits up to 6 inches of movement (shock absorption) of the falls when loaded. In addition, a shock absorber assembly often incorporates a falls adjustment feature which permits a total adjustment of up to 6 inches (± 3 inches) at the boat hook(s) which is used for falls equalization after initial installation.

583-13.2.34 SHEAVE. A rotating wheel or pulley with a grooved rim.

583-13.2.34.1 Sheave Groove Diameter. The following calculations are provided to determine the maximum and minimum groove diameter for boat davit sheaves. Maximum diameter = Nominal wire rope diameter $\times 1.05 + .125$. Minimum diameter = Nominal wire rope diameter $\times 1.025$. Any sheave having a groove diameter smaller than the minimum diameter must be re-grooved or replaced.

583-13.2.35 SINGLE BANK. A single boat stowage arrangement.

583-13.2.36 SPANWIRE, MANROPE. A wire or fiber rope assembly connected to, and bridging, two davit arms. This is the wire or line to which the manropes are attached.

583-13.2.37 SPANWIRE, SPACER. A wire rope assembly which connects two davit arms together and prevents them from spreading apart. On davits where no manrope spanwire is provided, the manropes are connected to the spacer spanwire.

583-13.2.38 STOWAGE, DAVIT. A stowage arrangement where the boat is suspended from the davit hooks and supported by a keel rest.

583-13.2.39 STOWAGE, DECK. A stowage arrangement attached to the deck and capable of supporting the full weight of the boat(s).

583-13.2.40 STOWAGE, DOLLY. A wheeled, movable platform capable of supporting the full weight of the boat(s). This type stowage can transport the boats from one deck location to another.

583-13.2.41 **STRONGBACK, DAVIT ARM.** A structural load bearing member (SPAR) attached to and spanning between the davit arms.

583-13.2.42 **SWIVEL.** A mechanism which connects the wire or fiber rope and hook assembly together while allowing each to rotate independently.

583-13.2.42.1 **Use on Davits.** Swivels are only authorized for radial and slewing arm davits to compensate for alignment changes as the davit arm(s) rotates inboard and outboard.

583-13.2.42.2 **Removal.** Active swivels in hooks or any part of the boat falls system, except for radial and slewing arm davits, cause accelerated deterioration of wire ropes. Swivels also cause the falls to twist above the floating blocks and the hooks to spin when the weight of the boat is removed. Swivels shall be removed at the earliest opportunity. This may be at the next regular overhaul or when the falls are replaced.

583-13.2.42.3 **Modifications.** To maintain a properly working arrangement upon removal of swivels, substitution of suitable hard type links will be required in most cases. A hard type link may be defined as a connecting link that is not capable of rotation or swiveling about the vertical axis. Substituted hardware shall have a breaking strength to provide a safety factor of at least five based on the safe working load of the davit hook and shall be protected against corrosion by galvanizing or painting. Welding to deactivate existing swivel(s) shall not be used unless approved by a design activity. Care shall be taken to obtain correct orientation of hooks and tee-bar handles and proper fit and assembly to effect a proper working arrangement. Swivel removal shall be made only by a shipyard or tender following a design prepared or approved by the naval shipyard, SUPSHIP, or NAVSEA activity. The activity directing the modification to the hardware shall revise or initiate action to revise the subject equipment technical manual, as required, to reflect the change. After swivel removal, load testing of the davit shall be performed.

583-13.2.43 **TEST, DYNAMIC LOAD.** A test conducted using 125 percent of the rated load of the davit system.

583-13.2.44 **TEST, NO-LOAD OPERATION.** A test conducted on the davit system with empty hook(s).

583-13.2.45 **TEST, RATED LOAD.** A test conducted using 100 percent of the load for which the davit system was designed to handle at the hook(s).

583-13.2.46 **TEST, STATIC LOAD.** A test conducted using 200 percent of the rated load of the davit system.

583-13.2.47 **TEST, SYSTEM.** A series of tests consisting of a no-load operational test followed by static, dynamic, and rated load tests. These tests are then followed by a second no-load operational test.

583-13.2.48 **TRIPLE BANK.** An arrangement suitable for stowage of three boats. Two of the three boats are stowed on the deck between the davit arms, tiered one above the other. The third boat is gripped against the side of the ship at, or near, the rail and suspended by the boat falls. With this type of stowage, the boat davit arms are connected by a strongback that carries the boat being handled. When the third boat (which is stowed outboard) is not carried, this is sometimes called a double bank stowage.

583-13.2.49 **TWO-BLOCKED FALLS.** A condition where the boat falls are prevented from further movement either by design or obstruction. Continued hoisting against a two-block condition will result in over stressing or failure of davit components.

583-13.2.50 **WORKING LOAD.** A term sometimes used in place of the preferred term RATED LOAD.

583-13.2.51 WINCH, AUXILIARY DECK. A steel or aluminum case supporting a gypsy type drum (or drums) driven through a set of reduction gears by an electric motor. The winch is used for various deck functions such as warping, and boat handling on older ships to handle boats with radial davits using fiber rope falls.

583-13.2.52 WINCH, BOAT DAVIT, ELECTROMECHANICAL. A steel or aluminum case supporting a grooved drum or drums driven through a set of reduction gears by an electric motor, handcrank or gravity to control boat handling.

583-13.2.53 WINCH, CONSTANT TENSION. A winch that keeps a set constant tension on a wire by automatically paying out and recovering slack.

583-13.3 BOAT DAVIT SAFETY DEVICES

583-13.3.1 GENERAL. Boat davit installations are provided with various safety and protective devices. These safety devices are visual, electrical, and mechanical in nature. All safety devices should be functional and operating in accordance with PMS requirements whenever the boat davit is operated. If safety devices are non-functional, bypassed, or otherwise unable to protect boat, boat davit and personnel from hazardous situations; the boat davit should be tagged OUT OF COMMISSION. Operation of a boat davit with one or more safety devices inoperative is not authorized without an approved Departure From Specifications in accordance with Type Commander directives. Paragraphs [583-13.3.2](#) through [583-13.3.14](#) describe various devices and their functions.

583-13.3.2 SAFE HOISTING POSITION STRIPES. These stripes are used as a visual aid. They indicate when the electric motor must be deenergized during hoisting in order to avoid a two-blocked condition. They shall be visible from the boat davit operator station. The stripes, usually red in color and 2 inches wide, shall be used on all types of boat davits except fixed overhead suspended davits. The stripes shall be provided on both arms and also on a fixed structure (4 stripes total) to indicate the position of both arms relative to each other and to the davit structure (as applicable). They shall coincide at a minimum distance of 8 inches from either the two-blocked position or the solidly compressed position of the buffer spring. The stripes may be painted to coincide at the stowed position so long as the minimum distance of 8 inches from the two-blocked position is maintained.

583-13.3.3 SLEWING POSITION STRIPES. These stripes are used as a visual aid to indicate when to deenergize the electric motor during slewing. The stripes, usually red in color and 2 inches wide, shall be used on all types of slewing arm davits (standard and non-magnetic). One stripe shall be provided on the boat davit arm and two on the fixed pedestal. All shall be visible from the boat davit operation station. One of the two fixed pedestal stripes shall indicate when the davit is slewed to the stowed position and the other fixed pedestal stripe shall indicate when the davit is slewed to the launch position.

583-13.3.4 EMERGENCY DISCONNECT SWITCH. This is a switch connected in the winch motor supply leads, between the motor and the motor controller. This switch is located at the boat davit operation station and turns off the motor when actuated by the boat davit operator. The switch is intended to allow the operator to prevent two-blocking of the davit if another control component fails to function properly or in an emergency situation.

583-13.3.5 HANDCRANK ELECTRICAL INTERLOCK SWITCHES. The control interlock switches are mounted on the winch. These switches prevent energizing of the winch motor when the handcrank(s) is installed. Installation of the handcrank opens the electrical contacts.

583-13.3.6 DAVIT ARM OVERTRAVEL ELECTRICAL INTERLOCK SWITCHES. These switches are located on the davit structure or at the shock absorbers. These switches, when actuated, deenergize the winch motor to prevent the davit arms from being driven beyond safe power hoisting position.

NOTE

These switches are intended to function as overtravel switches, not as stop switches. The safe hoisting position stripes are to be used to indicate when to deenergize the electric motor.

583-13.3.7 HOIST LIMIT SWITCHES. These control switches are usually of the geared type. This type of switch regulates the distance of boat hoist by deenergizing the winch motor after the winch has completed a set number of revolutions. This feature is to prevent a two-blocked falls condition.

583-13.3.8 SLEW OVERTRAVEL SWITCHES. These switches are lever operated and regulate the slewing of the davit arm. The switch deenergizes the slewing motor when the davit is slewed beyond the safe slewing position of the davit as indicated by the painted slew position stripes.

NOTE

These switches are intended to function as overtravel switches, not as stop switches. The slew position stripes are to be used to indicate when to deenergize the electric motor.

583-13.3.9 MANUAL BRAKE ELECTRICAL INTERLOCK SWITCH. The control interlock switch is located at the manual brake to prevent energizing the motor in the payout direction when the brake is set. This switch is intended primarily for protection of the winch gearing and shall not be used as a stop switch.

583-13.3.10 DOUBLE BREAK FEATURE. Electrical contacts subjected to momentary jogging service are prone to sticking or welding. This can cause uncontrolled operation of the winch. The double break feature is the arrangement of two independent contactors in the supply leads to protect against this danger. When the motor power supply is interrupted by the MASTER SWITCH the supply leads are opened in two places by contactors which are not interlocked. In the event that the MASTER SWITCH is moved to OFF and one contactor sticks, the second contactor should interrupt power.

583-13.3.11 SAFETY TYPE HANDCRANKS. These types of handcranks include an overriding mechanism. This mechanism functions in such a manner that, if the winch motor is energized while the winch is being manually cranked, no force is exerted on the crank handle from the winch side, and thus prevents back drive. This device is limited to use on non-reversing winches and may be used in place of handcrank electrical interlock switches on that type of winch. For the SLAD, the formlock clutch in the planetary gear systems of slewing and hoist drives prevents the back drive of slewing and hoist handcranks, and thus both drives can be power driven with the handcranks being engaged.

583-13.3.12 FALLS TENSIONING DEVICE. The function of the falls tensioning device is to keep the hook assembly above the seaman's head prior to boat hookup and after release. This reduces the danger to boat and crew from a swinging hook assembly. When the hook is cast off during launching, the falls tensioning device counterweighted sheave should cause the hook to rise clear of the boat and crew. Refer to [Figure 583-13-10](#).

583-13.3.13 FLUID BRAKE. A fluid brake is attached to the output shaft of the electric clutch on the SLAD Hoist Drive Motor. The purpose of this fluid brake is to regulate the speed of a descending boat and thus prevent any damage to the equipment or personnel.

583-13.3.14 CENTRIFUGAL BRAKE WITH OVERRUNNING CLUTCH. A centrifugal brake with over-running clutch is mounted on the high-speed shaft end of the winch reduction gear. In the event of overspeed during lowering, the brake drags thus regulating the speed of the descending boat.

583-13.4 GENERAL OPERATING PROCEDURES

583-13.4.1 GENERAL PRECAUTIONS. During operation of any boat handling system the following general precautions should be observed:

- a. See that all non-operating personnel are clear of the area prior to any boat handling operation.
- b. During gravity lowering do not turn on the winch electric motor when a boat and or davit arm is being lowered.
- c. Keep the number of personnel riding in a boat to the minimum manning required. Exceptions may be made for combat operations and survival situations where potential dangers to human life exist.
- d. Do not permit the davit arm to run into the outboard stop at full speed.
- e. For double arm davits, always release the stern hoisting hook before releasing the bow hoisting hook when launching a boat. When retrieving a boat, engage the bow hoisting hook before engaging the stern hoisting hook.
- f. Do not use overtravel switches as stop switches. When the painted safe hoisting position stripes coincide (refer to paragraph 583-13.3.2) the MASTER SWITCH for controlling the motor shall be moved to the OFF position immediately. If the davit arm(s) come(s) to rest before reaching stowed position, it should be hand cranked to the stowed position. In the event that the motor does not stop when the MASTER SWITCH is moved to OFF, the EMERGENCY DISCONNECT switch should immediately be moved to the OFF position.
- g. Ensure that personnel riding in the boat use manropes when lowering or raising the boat. The manropes are to be rigged outboard of the boat.
- h. Ensure that hoisting hooks are seating properly and secured before a boat is raised or lowered.
- i. For trackway type davits, ensure that the davit arm(s) latching mechanism(s) is (are) removed from the trackway(s) prior to hoisting or lowering the davit arm(s).
- j. Boats shall not be launched or recovered with water in the bilges in excess of that which would normally be removed by properly functioning bilge pumps. In the event excessive bilge water cannot be removed with installed pumps, the water should be removed through the hull drain plugs or with a portable pump before launching or recovering. Refer to Section 7 of Volume 1 of this NSTM chapter for precautions regarding boat hoisting fittings and slings.
- k. Follow night operation guidelines (refer to paragraph 583-13.4.6 for general guidance).

583-13.4.2 OPERATING RESTRICTIONS. The following operating restrictions shall be invoked on boat davits that handle boats whose hoisting weights (refer to Section 2 of Volume 1 of this NSTM Chapter 583) exceed the rated load of the davit:

- a. For other than emergency usage, launch and recover in sea state one or less.
- b. Inspect all running rigging, winches and foundations monthly for cracks, deformation and loose or missing fasteners and hardware using PMS requirements as guidance. Davit components should be structurally sound.
- c. A qualified safety officer should be present during boat hoisting and lowering.
- d. Embark and debark crew with the boat at the rail where possible and deemed safe by the safety officer.
- e. Minimize stress on the davit structure by lowering the davit arm(s) slowly to the stop(s). After the arm(s) rest(s) on the stop(s), continue lowering the boat at slow speed. When possible, avoid sudden application of the brake.

583-13.4.3 BOAT PREPARATION. A boat is ready to launch when:

- a. A crew of the watch has been mustered and each person is at their station and understands their duties. This includes personnel handling the steadying lines, tripping line, and sea painter.
- b. The boat is located in a stowage position with tension on the boat falls, or the boat sling ring is hooked to the crane whip.
- c. Forward and after steadying lines are rigged and coiled down, ready for paying out when the boat is hoisted out and lowered.
- d. The sea painter is secured abaft the bow of the boat on the inboard side and led clear. The sea painter must be adjusted so that when the boat is in the water, the boat tows from the sea painter, not the whip or falls.
- e. Boat fuel tanks are full (ready lifeboat).
- f. Lubricating oil reservoir is full and a reserve can of lubricating oil is in the boat.
- g. Required fire extinguishers are aboard.
- h. Life preservers, one for each crew member, are available so that the crew can don them before manning the boat. If this is not practicable, life jackets shall be secured in place, one under each position occupied in the boat when the boat is lowered.
- i. The bilges are dry
- j. The boat plugs are in place.
- k. Suitable light for blinker signalling is in place.
- l. All articles of boat equipment are ready to use.
- m. Two days supply of water and provisions for crew is in place (ready lifeboat).
- n. Manropes are available for all personnel manning the boat, except for the RIB handled by the SLAD.

NOTE

Emergency boarding ladders, manufactured locally according to [Figure 583-13-18](#), may be added as optional lifeboat equipment.

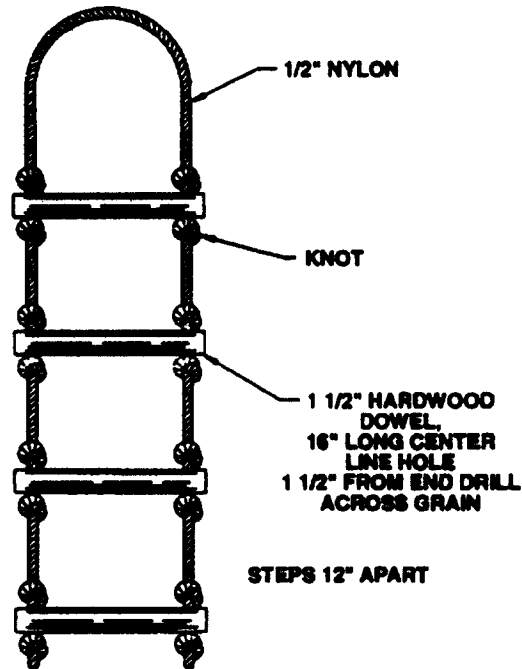


Figure 583-13-18. Emergency Boarding Ladder

583-13.4.4 GENERAL OPERATING PROCEDURES FOR BOAT DAVITS. The following are general operating instructions for launching and recovering boats using davits. Detailed operating instructions for boat davits can be found in the technical manuals supplied with the systems.

583-13.4.4.1 Launching Procedures.

1. Remove boat gripes from the boat.
2. Ensure that the boat hoisting hook(s) supports the weight of the boat. Disengage the boat stowage system from the boat.
3. Disengage davit arm(s) latching mechanism(s).
4. Move davit arm(s) to the outboard position.
5. Lower the boat to the water. The boat crew will start the boat engine so that the engine is running as soon as the boat is waterborne.

WARNING

When launching a boat using double arm davits, always release the stern hoisting hook before releasing the bow hoisting hook.

6. When the boat is waterborne, the boat crew will release the boat hoisting hook(s). Ensure that the boat hoisting hook(s) is clear of the boat crew after the hook(s) is released.
7. The boat crew will cast off the boat steadying lines.
8. The boat crew will cast off the sea painter.

583-13.4.4.2 Recovery Procedures.

1. Move davit arm(s) to the outboard position.
2. Cast sea painter overboard to allow the boat crew to secure the sea painter to the boat's bow.
3. Allow the boat to drift back and to align with the davit, then cast the boat steadying lines to the boat crew.
4. Lower the boat hoisting hook(s) to the boat crew.

WARNING

When recovering a boat using double arm davits, always engage the bow hoisting hook before engaging the stern hoisting hook.

5. The boat crew will pull down and attach the hook(s) to the boat.
6. Once the hoisting hook(s) is secured, hoist the boat to the davit arm(s). Use the boat steadying lines to keep the boat parallel to the ship.
7. Bring the boat and davit arm(s) to the inboard position and engage the davit arm(s) latching mechanism(s).
8. Engage the boat stowage system to the boat.
9. Place the boat gripes in position to secure the boat in stowage.

583-13.4.5 GENERAL OPERATING PROCEDURES FOR CRANE OR BOOM BOAT HANDLING. Crane and boom handling of boats is generally restricted to sea states of two or less when the ship is anchored. The crane or boom shall be provided with hooks which fit the boat lifting ring and allow for quick remote release of the boat when the boat becomes waterborne. If the crane or boom does not incorporate a remote release hook, a boat handling pendant or separate interchangeable release hook will be used. Cleats, padeyes and other fittings shall be provided for use of handling and steadying lines. Guidance concerning the operating procedures for cranes and booms may be found in **NSTM Chapter 589, Cranes** and **NSTM Chapter 573, Booms** .

583-13.4.6 NIGHT OPERATIONS. Boat handling operations that may be straightforward in the daylight, can become more difficult and complicated after dark. All ships must maintain the capability to launch, recover and stow boats at night. Night operations should be well planned ahead of time. In addition to the general operating procedures provided, the following preparations for night operations are recommended:

- a. Ensure personnel safety devices are used. Issue whistles, dye markers and chemical lights to all personnel requiring life jackets. Ensure ring buoy light is operational.
- b. Paint all attachment points and major fittings white to aid visibility under night lighting conditions.
- c. Ensure weather deck lighting is operational (refer to paragraph [583-13.8](#)).
- d. Attach chemical lights to critical handling lines (i.e. sea painter, steadying lines, etc.) as appropriate.

583-13.5 MAINTENANCE

583-13.5.1 PLANNED MAINTENANCE. Although boat handling and stowage systems are designed for use in the marine environment, planned maintenance is necessary for sustained safe, reliable performance.

NOTE

Prior to any attempt to operate, maintain or repair the boat davit system; all warnings, cautions and tagout procedures should be thoroughly reviewed and understood. Refer to the equipment technical manual, Planned Maintenance System (PMS) and OPNAVINST 3120.32.

Specific requirements for minimum maintenance and inspection are contained in the PMS for each system.

NOTE

Failure to accomplish PMS in accordance with currently installed Maintenance Requirement Cards (MRC's) is a major contributing factor to boat handling and stowage system failure.

583-13.5.1.1 Electrical Components. Particular attention should be paid to the electrical components mounted in exposed locations. Leakage of water into the enclosures of those components is one of the major causes of casualties.

583-13.5.2 INSTALLATION OF FALLS. When installing new falls or reinstalling old falls without swivels, the following procedure should be followed:

1. If provided, set the falls adjustment mechanism (usually contained within the falls shock absorber assembly) to the mid point.
2. Utmost care should be taken that twists will not be built into the rope when reeving the rope through the system.
3. After completing the installation, make all necessary safety checks, then lower the boat to the water and unhook.
4. If the falls twist above the floating blocks, provide support for the blocks, then disconnect the standing end of the falls. Turn the rope in the direction of lay, while manually working the turns back to the floating block. Continue until the block hangs true. Precautions should be taken to prevent injury to personnel due to fly back of the device used to turn the rope.
5. Reconnect the standing end of the falls.
6. If the falls again twist above the floating blocks, repeat steps 3 through 5 above until the blocks hang true upon release of the hooks from the boat.

NOTE

The foregoing procedure may need to be repeated at intervals until the rope has broken in or reached its maximum stretch.

583-13.6 WEIGHT TEST AND INSPECTION

583-13.6.1 GENERAL. The purpose, type and extent of boat davit weight tests and inspections vary with the reasons for testing the boat handling system. A biannual (21-27 months but, not to exceed 27 months) weight test generally only requires one cycle for each test. A complete weight test consists of following tests:

- a. 200% static test
- b. 125% dynamic test
- c. 100% rated load test (with a centrifugal brake test)

d. No-Load operational test

NOTE

The centrifugal brake test is required for those boat davits whose primary means of lowering a boat is by gravity alone. Davits whose primary means of lowering a boat is by power are not required to accomplish the centrifugal brake test.

The purpose of the annual test is to demonstrate:

- a. Ability of the davit and winch to handle the rated load at the rated speed.
- b. Ability of the davit and winch to withstand the additional dynamic loads imposed on the system when handling boats under unfavorable sea conditions.

Discrepancies found during the annual inspection and system testing that do not affect the safe operation or the load carrying capability of the system should be identified and recorded in the ship's Current Ships Maintenance Project (CSMP) for correction. These types of discrepancies are not cause for annual weight test failure. A new, modified, or repaired system may require two or more cycles of each test, depending on the type and extent of work done. Reference **General Specifications for Overhaul of Surface Ships**, NAVSEA S9AA0-AB-GOS-010, Section 583, for test requirements of modified or repaired systems.

The dynamic load test has been revised to reflect the results of a detailed analysis of boat davits using ship's motion load factors in accordance with DOD-STD-1399. The dynamic load test has been reduced to 125 percent of the boat davit rated load. Discrepancies found during the annual inspection and system testing that do not affect the safe operation or the load carrying capability of the system should be identified and recorded in the ship's Current Ships Maintenance Project (CSMP) for correction. These types of discrepancies are not cause for annual weight test failure. A new, modified, or repaired system may require two or more cycles of each test, depending on the type and extent of work done. Reference **General Specifications for Overhaul of Surface Ships**, NAVSEA S9AA0-AB-GOS-010, Section 583, for test requirements of modified or repaired systems.

583-13.6.2 BOAT DAVIT WEIGHT TEST REQUIREMENTS. Boat davits shall be weight tested after each new installation, biannually (21-27 months but, not to exceed 27 months), and after major repairs or modifications to load bearing components. Specific test weights are selected on a basis of the rated load of the boat davit and not the weight of the boat(s) handled by the boat davit. The specific test weight values to be used are located on either the Maintenance Index Page (MIP) of the PMS or in the Integrated Class Maintenance Plan (ICMP) for each boat davit he MIP shall be used as the first source of reference when selecting test weight values. If unavailable at the time of testing, the equipment technical manual or Ship's Information Book should be used as alternate sources to select the test weight value. At the successful completion of a system test, the davit system shall have a visible label plate indicating the following information:

- a. Activity that conducted the system test.
- b. Date when system test was conducted.
- c. Weights used for static, dynamic, and rated load tests.

583-13.6.3 BOAT DAVIT WEIGHT TEST PROCEDURES.

NOTE

When applicable, the ship specific Intermediate Maintenance Standard (IMS) shall be used to conduct the weight test of the boat davit systems.

583-13.6.3.1 Pre-Weight Test Inspection. An inspection shall be conducted, prior to the test, to ensure that the system is ready for testing. The inspection is intended to identify the adjustments and repairs necessary to ensure satisfactory operation under test conditions. It is recommended that the inspection be performed prior to scheduling crane services to perform the test(s) and again prior to starting the test(s). The inspection shall include the following, but a specific inspection plan should be developed for the boat davit.

- a. Preview ship's quarterly PMS logs to ensure it is current for the boat handling system. If PMS is not current, the system may not pass the inspection or tests.

NOTE

More specific system component inspection criteria is provided by the MRC's. Review the MIP for applicable MRC's.

NOTE

The numbers provided in parentheses following system components are for easy reference to [Figure 583-13-1](#) and [Table 583-13-4](#).

- b. Inspect at least two areas of each wire rope (1100) in the areas that travel most over the sheaves. Look for wear, corrosion, and broken wires.
- c. Inspect wire rope (1100) connection to wire rope drum (4600) for looseness of fit.
- d. Examine wire rope socket (1200) for looseness of fit.
- e. Measure the insulation resistance of the AC electric motor (2500).
- f. Inspect winch gear case (4100) for proper oil level.
- g. Inspect the centrifugal brake (4400) lining for wear, damage and oil contamination.
- h. Examine manual brake (4500) and fulcrum pin to ensure both are free of rust and that there is sufficient amount of brake lining material.
- i. Inspect centrifugal clutch (4700) for indication of oil and grease contamination.
- j. Examine hooks (1500/1540/1580) for any distortion, permanent deformation, or cracked welds.
- k. Examine limit switches (2600/2900) for proper operation and installation.
- l. Inspect all foundations for loose or missing parts, distortion, rust, deterioration, misalignment, and cracked welds.

NOTE

For overhead suspended boat davit designs, ignore inboard and outboard position statements.

NOTE

Unless otherwise specified by system technical manual or drawings, double arm davits shall have the test weights equally divided between the two boat falls.

583-13.6.3.2 Static Load Test (200 Percent Davit Rated Load).

CAUTION

Do not attempt to hoist or lower the static test weight with the davit winch.

1. Position the davit arm(s) fully outboard and the boat hook(s) approximately 10 feet above the water level.

CAUTION

In the event of a component failure, the load may drop uncontrollably. Maintain a safety rig on the test weight with a crane.

2. Suspend the test weight from the boat hook(s) for a period of 10 minutes.

NOTE

The manual brake shall hold the weight without applying additional weight or force to the brake lever.

3. At the completion of the ten minutes, remove the test weight from the boat hook(s) and inspect the davit, winch, and associated structures for any signs of permanent deformation. **NONE IS ALLOWED.**

583-13.6.3.3 Dynamic Load Test (125 Percent Davit Rated Load)

1. Position the davit arm(s) fully outboard and the boat falls approximately 10 feet above the water level.

CAUTION

In the event of a component failure, the load may drop uncontrollably. If possible, maintain a safety rig on the test weight with a crane.

2. Suspend the test weight from the boat falls.
3. Lower the weight under control of the manual brake to the water level or lowest point above the water level possible.
4. Power hoist and gravity lower the test weight at no specified speed through one complete cycle between the lowest point and the inboard position.

583-13.6.3.4 Rated Load Test (100 Percent Davit Rated Load).

1. Position the davit arm(s) fully outboard and the boat falls approximately 10 feet above the water level.

CAUTION

In the event of a component failure, the load may drop uncontrollably. If possible, maintain a safety rig on the test weight with a crane.

2. Suspend the test weight from the boat falls.

CAUTION

Do not apply manual brake suddenly when stopping the test weight.

3. Lower the test weight, under control of the manual brake, to the lowest point above the water level possible.
4. Power hoist and gravity lower the test weight through one complete cycle. A cycle is defined as movement from the lowest point above the water level possible to the davit arm(s) inboard stowed position and return.
5. Position the test weight approximately 3 feet below the davit arm(s).
6. Place a mark on the wire rope(s) with tape or equivalent at the point where the rope(s) enters the davit winch.
7. Using the davit winch lower the test weight 20 feet and mark the rope(s) again as in step 6.
8. Using a stopwatch to record the time, hoist the test weight until the mark placed on the rope(s) in step 6 is at the point where the rope(s) enters the davit winch.

CAUTION

Do not apply manual brake suddenly when stopping the test weight.

9. Using a stopwatch to record the time, lower the test weight by fully releasing the manual brake. Allow the lowering speed of the weight to be controlled by the centrifugal brake only. Manual brake release and starting of the stopwatch must be done simultaneously. When the second mark placed on the wire rope(s) in step 7 is seen leaving the davit winch, stop the stopwatch and apply the manual brake.

NOTE

Refer to the system technical manual to determine the rated speed of the davit winch centrifugal brake.

10. Using the formula provided in [Figure 583-13-19](#), determine the rated hoisting time and the minimum centrifugal brake payout time.
11. Compare the times recorded in steps 8 and 9 to the times calculated in step 10.
12. Any recorded time on the stopwatch greater than or less than 10 percent of the rated hoisting time calculated in step 10 is cause for failure.
13. Any recorded time on the stopwatch less than the minimum centrifugal brake payout time calculated in step 10 is cause for failure.

583-13.6.3.5 No-Load Operational Test. With no weight on the boat falls and the davit arm(s) at the inboard position, lower the falls to the lowest point above the water level possible and then hoist back to the inboard position (one complete cycle). Ensure that the falls tensioner(s) operates and no fouling of the wire rope occurs.

583-13.6.4 NEW ITEMS AND LOOSE GEAR WEIGHT TEST REQUIREMENTS. New hooks, blocks, sheaves, wire rope, fiber rope and other loose hardware or gear need not be load tested for strength after installation if the installed item has not been modified and has been purchased to military specifications or NAVSEA standard drawings and delivered to the ship through the Naval Supply System. In addition, installation of zinc poured sockets manufactured (poured) by qualified personnel (refer to **NSTM Chapter 613, Wire and Fiber Rope and Rigging**, paragraph 613-1.11.2.1) does not require a system test of the boat davit. Refer to paragraph [583-13.5.2](#) for falls installation procedures.

NOTE

A Material/Quality Deficiency Report shall be submitted for all new components received through the Naval Supply System which fail to conform to the applicable military specification or NAVSEA standard drawing.

<p>Rated Hoisting Time (sec) = $\frac{60 \text{ (sec/min)} \times \text{Measured Boat Falls Distance (ft)}}{\text{Rated Hoisting Speed (FPM)}}$</p> <p>Minimum Centrifugal Brake Payout Time (sec) = $\frac{60 \text{ (sec/min)} \times \text{Measured Boat Falls Distance (ft)}}{\text{Rated Speed of Centrifugal Brake (FPM)}}$</p> <p>A sample calculation is provided using a winch with a rated hoisting speed of 40 feet per minute and a measured boat falls distance of 20 feet.</p> <p>Rated Hoisting Time = $\frac{60 \text{ (sec/min)} \times 20 \text{ (ft)}}{40 \text{ (FPM)}} = 30 \text{ seconds}$</p> <p>Tolerance = $\pm 10\%$ of the Rated Hoisting Time = $\pm 0.1 \times 30 \text{ seconds} = \pm 3 \text{ seconds}$</p> <p>Test Criteria: PASS = 27 - 33 seconds FAIL = Hoisting Time > 33 seconds OR Hoisting Time < 27 seconds</p> <p>A sample calculation is provided using a winch whose centrifugal brake has a rate speed of 100 feet per minute and a measured boat falls of 20 feet.</p> <p>Minimum Centrifugal Brake Payout Time = $\frac{60 \text{ (sec/min)} \times 20 \text{ (ft)}}{100 \text{ (FPM)}} = 12 \text{ seconds}$</p> <p>Tolerance = \geq Minimum Centrifugal Brake Payout Time = $\geq 12 \text{ seconds}$</p> <p>Test Criteria: PASS = Payout Time $\geq 12 \text{ seconds}$ FAIL = Payout Time < 12 seconds</p>
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Figure 583-13-19. Centrifugal Brake Test Formula

583-13.6.4.1 Load Carrying Loose Gear Testing. Any load carrying loose gear procured or manufactured otherwise shall be tested prior to placing in service. Generally, this test is a static test equal to 200 percent Safe Working Load (SWL) of the part in question or 40 percent of the rated breaking strength of the wire rope used. For wire rope, a sample is tested to breaking strength. If any sheave, block or hook assembly is delivered to the ship that does not bear the manufacturer's test stamp (SWL, test data, factory abbreviation), it must be tested by a tender or shore facility in accordance with applicable requirements. There is no periodic load test requirement for preventers and pendants.

583-13.6.4.2 Post-Test Inspection. After performing the tests, tested gear shall be examined for and rejected if there are any signs of damage or permanent set introduced by the testing. Inspection for proper fit and function is required after installation of any repaired or replaced items.

583-13.6.5 BOAT DAVIT COMPONENT WEIGHT TEST REQUIREMENTS. Refer to **General Specifications for Overhaul of Surface Ships**, NAVSEA S9AA0-AB-GOS-010, Section 583, for test requirements of modified or repaired systems. Component weight test guidelines are provided and discussed in [Table 583-13-4](#). The numbers provided in parentheses following the system's components are for easy reference to [Figure 583-13-1](#).

5839-9.6.6 BOAT DAVIT WEIGHT TEST PROCEDURES USING WATER BAGS. This section is intended to provide guidelines for test activities to select, use, and care for water bag test weights for use on boat davit systems. Water bags used for testing of boat davits shall meet the following criteria:

- a. Each water bag assembly shall have its maximum load capacity printed on the outside of the bag.
- b. Each water bag, and its associated rigging gear, shall be design to a factor of safety of 6 to 1 based upon its maximum load capacity.
- c. Each water bag assembly shall have a certificate verifying that the water bag system was subjected to an initial load test (when procured from the OEM) to a minimum of 150% of the bags' maximum load capacity.

The following procedures were developed based on water bags designed and manufactured by Water Weights Inc. If another manufacturers' water bag system is to be used for a boat davit weight test the following procedures can still be used as general guidance. In this event, testing activity personnel should be familiar with that manufacturers' equipment instruction manual

583-13.6.6.1 DEFINITION OF TERMS. Definitions are provided as follows for terms directly associated with water bag test weights (see [Figure 583-13-20](#)) or where a particular term has a specific meaning within this section:

- a. Bag Skin. The actual water container manufactured from reinforced P.V.C, which is supported within the bag harness.
- b. Bag Harness. The complete assembly of various types of polyester slings, shackles and links, which cradle the bag skin.
- c. Bottom Gathering Sling. A polyester sling which fits around the attachments flange of the dump valve, to which the entire main vertical straps are anchored.
- d. Dump Valve Flange. A flange that is used to attach the dump valve to the bag skin. The flange is located at the bottom center of the bag skin.

- e. Dump Valve Rope. A polypropylene rope whose purpose is to open or shut the valve assembly when emptying the bag. One end of the rope is attached to the valve assembly inside the bag and test personnel tend the other end that passes through the dump valve rope pulley.
- f. Dump Valve Rope Pulley. A single sheave pulley block around which the dump valve rope passes. The pulley is attached to one of the auxiliary links that are part of the master link assembly.
- g. Filling Hose. A water hose fitted to the upper part of the bag skin, the other end of which connects to the water supply for the purpose of filling the bag.
- h. Filling Hose Flange. A flange that is used to attach the filling hose to the bag.
- i. Load Cell Shackle. An electronic load measuring device used to indicate the weight of each water bag during filling and dumping.
- j. Load Cell Readout. A readout electronic device that displays the weight of the water bag transmitted from the load cell shackle.
- k. Main Vertical Straps. Flat polyester support slings for the water bag which pass from the bottom gathering sling, around the bag to the top gathering round slings.
- l. Master Link. The main suspension link with which the whole bag assembly is suspended.

583-13.6.6.2 WATER BAG TEST WEIGHT SYSTEM. Water bags used for boat davit weight testing consist of four major components:

Water Bag

Load Sensor

Filling Hose Assembly

Dump Valve Assembly

NOTE

All water bags shall have documentation providing a certified factor of safety of 6 to 1 and a one time proof test, performed by the OEM, of 200% of the rated capacity of the bag.

The water bag test weight system, see [Figure 583-13-20](#), is a flexible bag that can be filled with water to act as the test weight. Water, supplied from the fire mains of a ship, is used to fill the water bag to the specified test weight. Dependent upon the weight value needed for the test, the amount of water supplied to the bag is controlled from the fire main valves. A wireless load cell shackle is connected between the water bag master link and the davit hook provides an accurate reading of the weight of the water bag as it is filled with water. Once the test is complete or a different test weight value is needed, filling the bag with more water through the fill hose or draining water from the bag by using the dump valve assembly can adjust the amount of water in the bag. Once testing is complete, the water bag can be completely drained and the water bag packaged for storage until again needed for a weight test. Since the water bags can be drained and packaged to a relatively small size, no support crane to support or position the bags onto the davit is needed.

- a. Water Bag. The water bag consists of the bag skin, bottom gathering slings, main vertical straps, and master link assembly. The bag skin is manufactured from Polymerized Vinyl Chloride (PVC) and contains the water. The main vertical straps provide support to the water bag and provide attachment points to the bottom gath-

ering slings. The bottom gathering sling provides an attachment of the dump valve assembly to the water bag. The auxiliary shackles connects the main vertical straps and thereby the water bag itself to the master link assembly. The master link assembly is the main attachment point for the entire water bag assembly to the davit hook.

- b. Load Cell Shackle and Readout. The load cell shackle and readout are wireless electronic devices that provides continuous feedback of the total weight of water and the water bag during testing on a digital readout. They are calibrated devices that periodically requires recalibration. Typically one load cell shackle is required per davit hook assembly (i.e. double arms boat davits require two load sensors, one per hook).
- c. Filling Hose Assembly. The filling hose assembly consists of the filling hose and the filling hose flange.
- d. Dump Valve Assembly. The dump valve assembly consists of the dump valves, dump valve rope and pulley. Its purpose to allow the water to drain from the water bag for the purpose of draining the bag for stowage or to alter the water weight of the bag. The dump valve rope controls the drainage of water from the water bag.

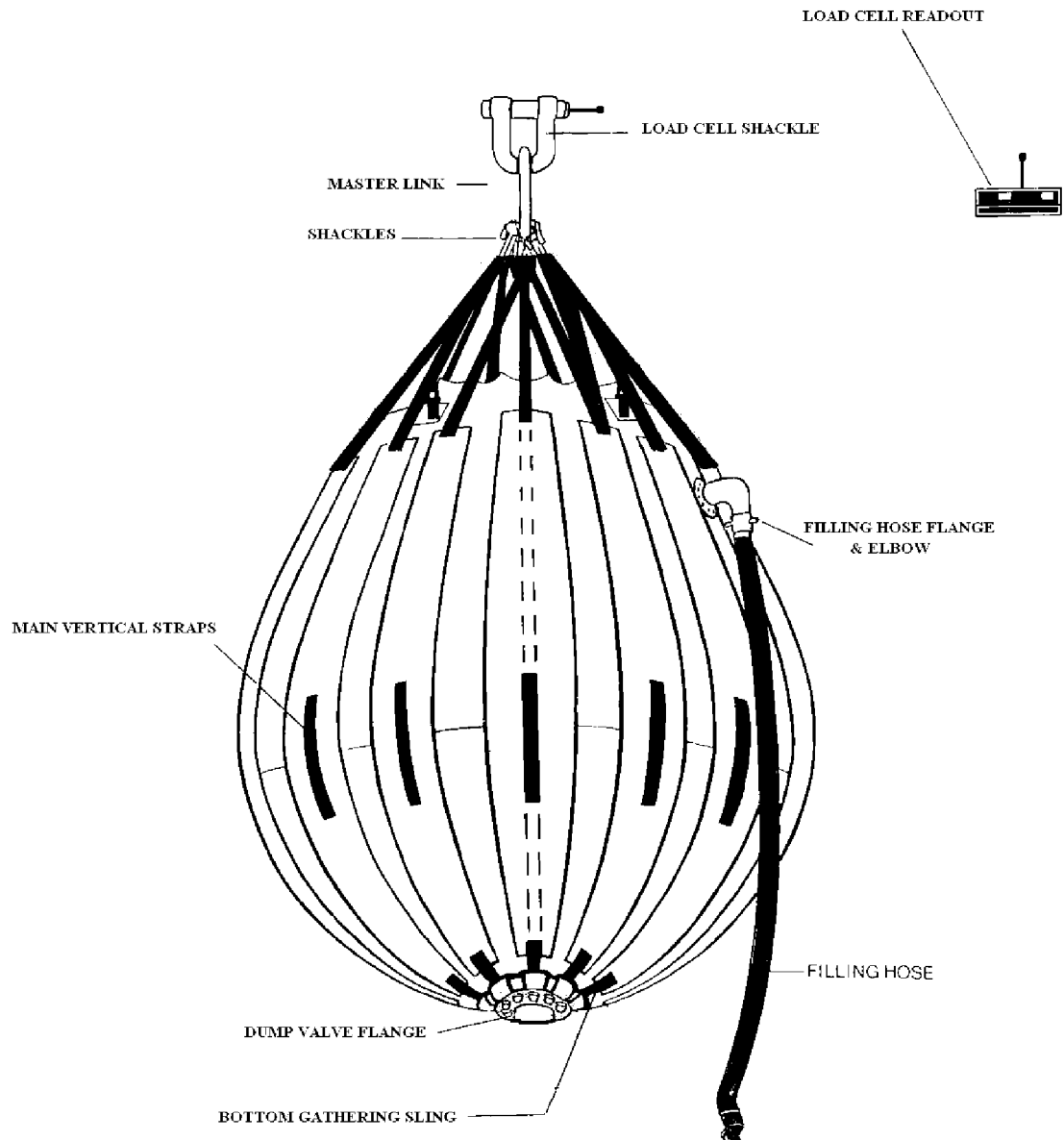


Figure 583-13-20. Water Bag Weight System

583-13.6.6.3 WATER BAG TEST PROCEDURES. The following procedures shall be used to perform boat davit weight tests using water bags. The procedures are separated into four separate parts:

Pre-Weight Test Inspection - The boat davit should be inspected prior to the actual weight test in accordance with the pre-weight test inspection guidance provided within NSTM Chapter 583.

Handling and Setup of Water Bags - Instructions to safely handle the water bags onboard the ship and onto the davit. Additionally, instructions provided to setup the water bags for the proper test weight value and safe rigging onto the davit hook and connection to the ship water main.

Conducting Boat Davit Weight Tests with Water Bags - Procedures to perform the boat davit weight test as well as the operation of the water weight system.

Packaging of Water Weights and Transport - Procedures to package the water bags to be transported back to storage at the test activity facilities.

- a. Pre-Weight Test Inspection. The boat davit shall be inspected prior to transportation of weight test equipment in accordance with [paragraph 583-13.6.3.1](#). Furthermore, to assist in determining the proper water bags to be used for the boat davit weight test, use Table 583-13-3 as a reference guide.

Table 583-13-3. Water Bag Selection for Boat Davit Weight Tests

General Boat Davit Type	Water Bags Needed for Davit Weight Test		
	Static Test	Dynamic Test	Rated Test
Davit handling a 7M/24FT Rigid Inflatable Boat (RIB) (Single arm trackway, pivoted, or slewing type)	Two 7,500 lbs capacity bags	One 7,500 lbs capacity bag	One 7,500 lbs capacity bag
Davit handling a 26FT Motor Whaleboat (MWB) (Double arm trackway or pivoted type)	Two 7,500 lbs capacity bags	Two 7,500 lbs capacity bags	Two 7,500 lbs capacity bags
Davit Handling a 33FT/11M Personnel (PE) Boat (Double arm trackway or pivoted type)	Two 12,000 lbs and two 7,500 lbs capacity bags	Two 12,000 lbs capacity bags	Two 12,000 lbs capacity bags
Davit handling a 36FT Landing Craft Personnel (LCPL) (Double arm trackway or pivoted type)	Two 12 LT* and two 7,500 lbs capacity bags	Two 12,000 lbs and two 7,500 lbs capacity bags	Two 12,000 lbs and two 7,500 lbs capacity bags
26FT/8M Personnel (PE) Boat	26FT/8M Personnel (PE) Boat Two 12,000 lbs capacity bags	Two 7,500 lbs capacity bags	Two 7,500 lbs capacity bags

* LT=Long Tons (2,200 lbs)

- b. Handling and Setup of Water Bags.

- (1) Ensure that all necessary water bags and the accessory equipment for the bags are ready to be transported to the ships' boat davit. A list of accessory equipment typical for a complete water bag set is listed below:
 - (a) Load Sensor
 - (b) Rigging Shackles
 - (c) Load Cell Shackle and Readout
 - (d) Filling Hose
- (2) Ensure that load cell shackle will properly fit within the boat davit hook(s).
- (3) Transporting the water bags from the pier to the ship can be accomplished by using a pier crane, ship-board crane or J-bar davit, or for some of the smaller water bags, hand carried onto the ship using a hand truck or dolly. Care must be taken to avoid damage to the bags and load measuring equipment when transporting them to the boat davit.
- (4) Ensure that the boat is removed from the davit prior to weight testing.
- (5) Unpack the water bag set onto the deck at a convenient location near outboard edge of the ship in preparation for attachment to the davit hoist hook(s).

- (6) Layout each water bag to be used for the weight test onto the deck and inspect the bag assembly for the following. The water bag should not be used for the weight test if any of the following inspections is not satisfactory:
 - (a) Inspect the bag skin for any tears or holes.
 - (b) Ensure that the dump valve rope is attached to the dump valve and that the rope passes through the dump valve pulley.
 - (c) Inspect the bottom gathering slings on the bag for proper attachment and any visible signs of damage.
 - (d) Inspect the bag harness and associated shackles and master links for damage or permanently deformed parts.
- (7) Ensure that the master link assembly is properly attached to the water bags.

NOTE

Ensure that a sufficient length of water hose is used and that it is properly routed as to not restrict free movement of the water bag as the weight test is performed.

- (8) Attach the water bag filling hose to a nearby water fire main with a 2-1/2" fire hose.
 - (9) When the water bag is hung from the davit hook over the side of the ship, turn the load cell readout device on and ensure that the digital identification numbers for the readout device and load sensor match. With no external load applied to the water bag, tare the water bags by pushing the "TARE" button on the remote readout device. Refer to the OEM load cell operator manual for detailed instructions.
- c. Conducting Boat Davit Weight Tests with Water Bags.
- (1) **200% Static Weight Test Using Water Bags**
 - (a) Ensure that the preparatory steps in paragraphs [583-13.6.6.3.a](#) and [583-13.6.6.3.b](#) have been accomplished.
 - (b) Attach a lead line(s) to the davit hoist hook(s), lower the davit arm(s) to the davit outboard stop. Continue to lower the hook(s) to the deck where the water bags are located using the lead line attached to the davit hoisting hook(s) to pull the hooks to the water bags.
 - (c) Attach the water bags and load cell shackle to the davit hook(s) referring to Table [583-13-3](#) for the arrangement of the water bags. Ensure that the load cell shackle is properly attached between the water bags and each davit hook.
 - (d) Attach the water filling hose to the filling hose flange for each water bag used. Insert this assembly into the top of each water bag.

NOTE

Care should be taken so as to avoid damaging the water bags or load sensors as the bags are positioned over the side of the ship.

- (e) Install steadying lines, as needed, to the water bag at either the forward or aft nylon pad eye located on the water bag.
- (f) Hoist the davit hook(s) as far as practical to assist in moving the water bags over the side of the ship. Use the lead line(s) attached to the davit hook(s) to control the swing of the water bags as they are moved over the side of the ship.
- (g) Lower the davit hook(s) and water bag(s) to a point where the bottom of the bag is approximately 10 feet above the water level.
- (h) Begin filling the water bag(s) by opening the fire main and monitoring load sensors' remote digital

readout. Secure fire main when the static test value is reached obtained (+5/-0% of required test value). Incremental load levels required for the static, dynamic and rated load tests are obtained by filling the water bags with the fire main or dumping water out of the bags through the installed drain valve located in the bottom of water bag. This feature is controlled by actuation of the dump valve rope, enabling accurate load increments.

- (i) Suspend the water bag(s) at the static test weight for a period of ten minutes.

NOTE

The manual brake shall hold the static weight without applying any external assistance to the davit winch brake system.

- (j) At the completion of the ten minutes drain the water from the water bags through the installed drain valve located in the bottom of water bag. This feature is controlled by actuation of the dump valve rope. Inspect the hoist hook(s), davit, winch, and associated structures for any signs of permanent deformation. NONE IS ALLOWED. Inspection of the hoist hook(s) will require that the empty water bags be brought onto the ships' deck and removal of the water bags from the davit hoist hook(s).
 - (k) If no other load tests are to be accomplished on the boat davit then prepare the water bags and accessory equipment for transport from the ship per [paragraph 583-13.6.6.3.d](#).
- (2) **125% Dynamic Weight Test Using Water Bags**
- (a) Ensure that the preparatory steps in [583-13.6.6.3.a](#) and [583-13.6.6.3.b](#) have been accomplished.
 - (b) Attach a lead line(s) to the davit hoist hook(s), lower the davit arm(s) to the davit outboard stop. Continue to lower the hook(s) to the deck where the water bags are located using the lead line attached to the davit hoisting hook(s) to pull the hooks to the water bags.
 - (c) Attach the water bags and load cell shackle to the davit hook(s) referring to Table [583-13-3](#) for the arrangement of the water bags. Ensure that the load cell shackle is properly attached between the water bags and each davit hook.
 - (d) Attach the water filling hose to the filling hose flange for each water bag used. Insert this assembly into the top of each water bag. n

CAUTION

Care should be taken so as to avoid damaging the water bags or load sensors as the bags are positioned over the side of the ship.

- (e) Install steadying lines, as needed, to the water bag at either the forward or aft nylon pad eye located on the water bag.
- (f) Hoist the davit hook(s) as far as practical to assist in moving the water bags over the side of the ship. Use the lead line(s) attached to the davit hook(s) to control the swing of the water bags as they are moved over the side of the ship.
- (g) Lower the davit hook(s) and water bag(s) to approximately 5 feet above the water level.
- (h) Begin filling the water bag(s) by opening the fire main and monitoring load cells' remote digital readout. Secure the fire main when the static test value is obtained (+5/-0% of required test value). Incremental load levels required for the static, dynamic and rated load tests are obtained by filling the water bags with the fire main or dumping water out of the bags through the installed drain valve located in the bottom of water bag. This feature is controlled by actuation of the dump valve rope, enabling accurate load increments.
- (i) Hoist and lower the test weight through one complete cycle at no specified speed. A cycle is defined

as movement from the lowest point above the water level possible to a position where the davit arm and test weight have traveled at least 3 feet off of the davit arm outboard stop (see [Figure 583-13-21](#)) with the exception of trackway type boat davits. For trackway type boat davits, the davit arm and test weight should travel to a position where the lower davit arm rollers are past the trackway knuckle, see [Figure 583-13-22](#).

- (j) If the 100% rated load test is to be accomplished following the 125% dynamic load test, then drain a sufficient amount of water from the water bags so as to achieve the rated load of the davit. Draining the water bags is accomplished through the installed drain valve located in the bottom of water bag. This feature is controlled by actuation of dump valve rope.

(3) 100% Rated Weight Using Water Bags

- (1) Ensure that the preparatory steps in [583-13.6.6.3.a](#) and [583-13.6.6.3.b](#) have been accomplished. If the 125% dynamic weight test has been previously accomplished then proceed to step 8 to fill/drain the water bags to the proper weight value for the rated load of the davit.
- (b) Attach a lead line(s) to the davit hoist hook(s), lower the davit arm(s) to the davit outboard stop. Continue to lower the hook(s) to the deck where the water bags are located using the lead line attached to the davit hoisting hook(s) to pull the hooks to the water bags.
- (c) Attach the water bags and load cell shackle to the davit hook(s) referring to [Table 583-13-3](#) for the arrangement of the water bags. Ensure that the load cell shackle is properly attached between the water bags and each davit hook.

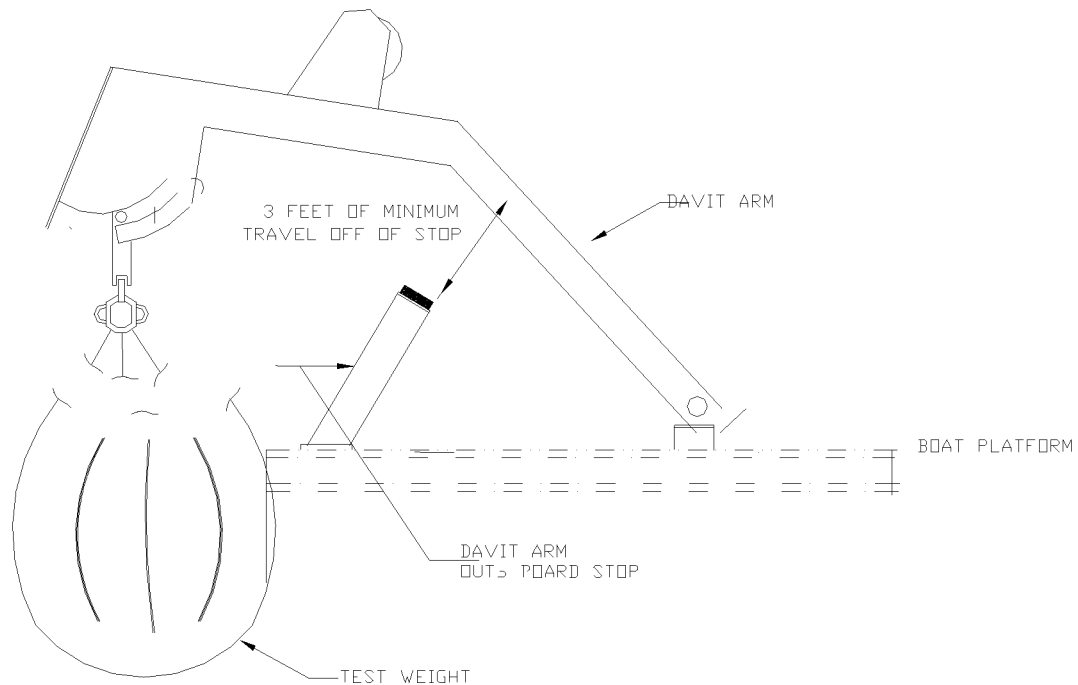


Figure 583-13-21. Upper Travel of Davit and Test Weight (Except Trackway Type)

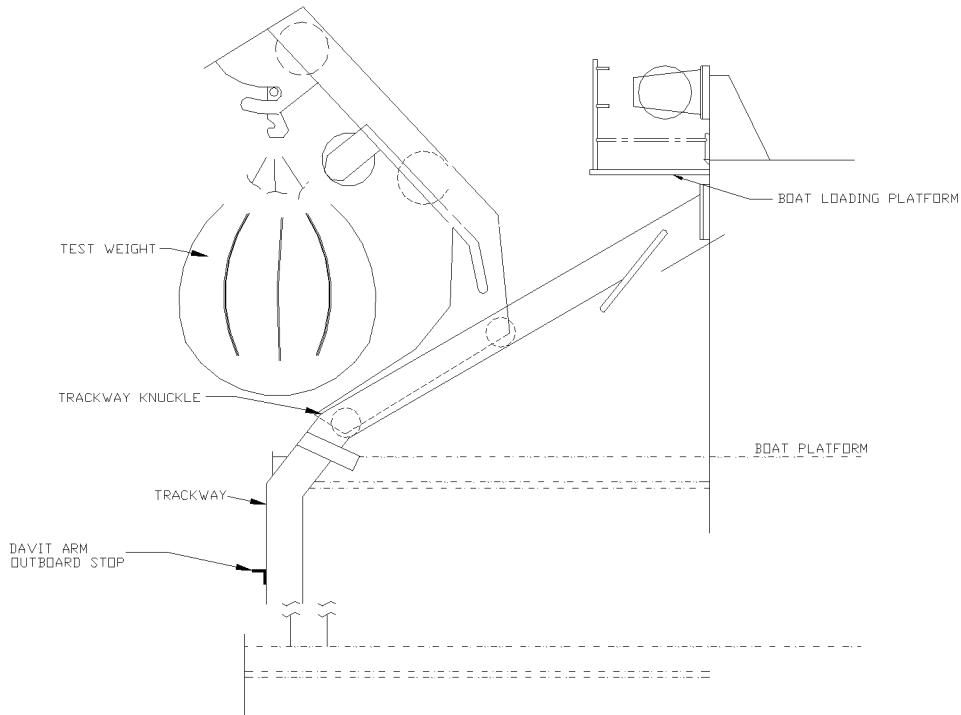


Figure 583-13-22. Upper Travel of Davit and Test Weight (Trackway Type)

- (d) Attach the water filling hose to the filling hose flange for each water bag used. Insert this assembly into the top of each water bag.

CAUTION

Care should be taken so as to avoid damaging the water bags or load sensors as the bags are positioned over the side of the ship.

- (e) Install steadying lines, as needed, to the water bag at either the forward or aft nylon pad eye located on the water bag.
- (f) Hoist the davit hook(s) as far as practical to assist in moving the water bags over the side of the ship. Use the lead line(s) attached to the davit hook(s) to control the swing of the water bags as they are moved over the side of the ship.
- (g) Lower the davit hook(s) and water bag(s) to approximately 5 feet above the water level.
- (h) Begin filling the water bag(s) by opening the fire main and monitoring load cells' remote digital readout. Secure the fire main when the static test value is obtained (+5/-0% of required test value). Incremental load levels required for the static, dynamic and rated load tests are obtained by filling the water bags with the fire main or dumping water out of the bags through the installed drain valve located in the bottom of water bag. This feature is controlled by actuation of the dump valve rope, enabling accurate load increments.
- (i) Hoist and lower the test weight through one complete cycle at the rated speed of the davit. A cycle is defined as movement from the lowest point above the water level possible to a position where the davit arm and test weight have traveled at least 3 feet off of the davit arm outboard stop (see [Figure 583-13-21](#)) with the exception of trackway type boat davits. For trackway type boat davits, the davit arm and test weight should travel to a position where the lower davit arm rollers are past the trackway knuckle, see [Figure 583-13-22](#). Record the speed at which the rated load is power hoist prior to contacting davit arm. A measured hoist speed less than 10 percent of the rated hoist speed of the davit shall be cause for failure.
- (j) Position the test weights approximately 3 feet below the davit arm(s).

- (k) Place a mark on the wire rope(s) with tape or equivalent at the point where the rope(s) enters the davit winch.
- (l) Lower the test weight 20 feet and mark the rope(s) again as was done in step 11.
- (m) Using a stopwatch to record the time, hoist the test weight until the mark placed on the rope(s) in step 11 is at the point where the rope(s) enters the davit winch.

CAUTION

Do not apply manual brake suddenly when stopping the test weight.

- (n) Using a stopwatch to record the time, lower the test weight by fully releasing the manual brake. Allow the lowering speed of the weight to be controlled by the centrifugal brake only. Manual brake release and starting of the stopwatch must be done simultaneously. When the second mark placed on the wire rope(s) in step 12 is seen leaving the davit winch, stop the stopwatch and apply the manual brake.

NOTE

Refer to the system technical manual to determine the rated speed of the davit winch centrifugal brake.

- (o) Using the formula provided in [Figure 583-13-20](#), determine the rated hoisting time and the minimum centrifugal brake payout time. Compare the times recorded lowering speed to the times calculated speed.
 - (p) Any recorded time on the stopwatch less than the minimum centrifugal brake payout time calculated in step 15 is cause for failure.
 - (q) At the completion of the 100% rated load test, drain the water from the water bags. Draining the water bags is accomplished through the installed drain valve located in the bottom of water bag. This feature is controlled by actuation of the dump valve rope.
- (4) **No Load Operational Test**
- (a) With no weight on the boat falls and the davit arm(s) at the inboard position, lower the falls to the lowest point above the water level possible and then hoist back to the inboard position (one complete cycle). Ensure that the falls tensioner(s) operates and no fouling of the wire rope occurs.
- (d) **Packaging of Water Weights and Transport.**
- (1) Hoist the emptied water bags onto the deck. Disconnect the bags from the davit hook(s) and remove any lead lines that were attached to the davit hook(s).
 - (2) Pack, store and maintain the water bags and any accessory equipment in accordance with OEMs instructions. Transport the water bags from the ship to the pier a pier crane, shipboard crane or J-bar davit, or for some of the smaller water bags, hand carried onto the ship using a hand truck or dolly. Care must be taken to avoid damage to the bags and load measuring equipment when transporting them to the boat davit.

583-13.7 LOCATION AND DESIGN OF BOAT STOWAGES

583-13.7.1 GENERAL. There are three stowage types: deck, dolly, or davit.

583-13.7.2 GENERAL STOWAGE CONSIDERATIONS. Proper design of boat stowages involves several basic details that shall be thoroughly considered in order to prevent damage to ships' boats and to facilitate their handling.

- a. Stowages shall be designed and installed as low to the deck as practical. Boats which are davit handled shall be stowed such that the rake of the boat in stowage is the same as the rake of the boat during hoisting. The

boats shall be stowed with the bow pointed forward. The only exception is when the SLAD handles two boats. One boat is stowed facing forward and the other is stowed with the bow pointed aft to facilitate handling with the SLAD. When the boats are secured in the stowed position, no part of the davit(s) and boat(s) shall project outboard of the ship's shell.

- b. Chocks, cradles, keel rests, strongbacks, gripes, gunwale guards, and necessary fittings shall be provided as required. Chocks, cradles, keel rests, and attachments shall be designed to prevent the retention of water.
- c. Boat chocks shall be mounted from fixed supports or frames. Chocks shall consist of metal shoes to which wooden inserts are attached. Where possible, wooden inserts shall be bolted through. Chocks shall be contoured to suit the area of the hull they bear against and shall be of sufficient size to avoid localized pressure on the hull (i.e. 6 inches minimum width for wooden hull, 10 inches minimum width for metallic or plastic hulls).
- d. Chocks shall be contoured to match the boat hull with the ship on an even keel. Wooden inserts shall be a minimum thickness of 4 inches to permit refacing or replacement in the event of boat substitution. Chocks shall be located opposite frames, bulkheads, or areas in the boat where weights are concentrated. The face of the chocks shall be covered with synthetic rubber (MIL-R-900) having a minimum thickness of 1/4 inch.
- e. In general, chocks should be located such that there is no more than 10 feet between chocks or 6 feet of unsupported length at each end. Keel rests and boat chocks should have 90 percent minimum contact in stowed position.
- f. Boats shall be secured in their stowage utilizing gripes or strongbacks with gripe rods. Loads imposed by the gripe pads on the boat's hull shall be applied to frames or bulkheads, or shall be distributed over as wide an area as is necessary to prevent deformation during long stowage periods. Gunwale guards shall be attached to gripes where there is contact with the boat's gunwale. Gripe attachments to fittings on the boat shall be such that no damage or deformation will occur to the boat and connection points. Takeup devices on the gripes shall be marked to identify when the gripe is properly adjusted for a snug and tight fit. This mark is to serve as a guide to prevent overtightening which might cause permanent deformation to the gripe or boat hull. The takeup devices shall be provided with a locking feature to maintain set adjustment. The stowage arrangement shall provide safe access to the boat's batteries to facilitate charging in place.
- g. Portable and removable stowage fittings and equipment shall be provided with stowages close to the boat stowage locations where used.

Table 583-13-4. COMPONENT LOAD TESTING GUIDELINES

Component	Test Requirement(s)	Reason(s)
(1100) Wire Rope (1200) Wire Rope Socket	1. No-Load Operational test followed by a rated load test ¹ if all of the following conditions are met: a. Wire rope and socket were purchased to MIL Spec or NAVSEA standard drawing and delivered through the Naval Supply System. b. Either wire rope socket was poured by qualified personnel (refer to NSTM Chapter 613 , paragraph 613-1.11.2.1) or wire rope socket was pull tested to 40 percent of the minimum breaking strength of the wire rope. c. After installation of wire rope, three dead wraps remain on drum(s) at the full payout position (taking into account a 10 degree adverse list on the ship). d. Wire rope connection to drum(s) is in accordance with NSTM Chapter 613 , Section 1. 2. System test required if above conditions are not met.	Failure of rope or socket will result in catastrophic lowering of load. However, the four conditions listed are sufficient to negate the need for a system test.
(1500/1540/1580) Boat Release Gear (Raymond/Quick/ Automatic) Release Hook Assembly	1. Static load test. ² 2. Load test may be waived if hook was purchased to NAVSEA standard drawing and delivered through the Naval Supply System or test certificate is provided with hook proving the hook was load tested to 200 percent of hooks rated load.	1. Failure of hook(s) will result in catastrophic lowering of load. 2. Qualifications of socket pourer ensured by NSTM Chapter 613 . Quality of hook is ensured at time of procurement.
(2100) AC Magnetic Controller	No-Load Operational test.	Failure of controller will not result in catastrophic lowering of load.
(2200) Emergency Quick Disconnect Switch	No-Load Operational test.	Failure of switch will not result in catastrophic lowering of load.
(2300)	No-Load Operational test.	Failure of switch will not result in catastrophic lowering of load.
(2400) Emergency Run Switch	1. No-Load Operational test.	Failure of switch will not result in catastrophic lowering of load.
(2500) AC Motor	1. No-Load Operational test ³ if motor is purchased to MIL Spec and delivered through the Naval Supply System. 2. Dynamic and rated load tests if motor is repaired, overhauled or modified.	1. Failure of motor will not directly result in catastrophic lowering of load. Quality of motor is ensured at the time of procurement. 2. Testing is required to ensure motor can meet operational needs.
(2600 & 2900) Limit Switches	No-Load Operational test ⁴ .	Failure of limit switches will not result in catastrophic lowering of load.
(3300) Hoisting Components (Boat Slings/Bail)	Refer to Section 7 of Volume 1 of this NSTM chapter for testing requirements.	Load bearing components.

Table 583-13-4. COMPONENT LOAD TESTING GUIDELINES -

Continued

Component	Test Requirement(s)	Reason(s)
(4100) Winch, Reduction Gears, Oil and Sump (includes drive train piece parts)	1. No-Load Operational test if component (oil fill plug, access covers, etc.) is not load bearing. 2. System test if component (gear, bearing, key, shaft, etc.) is load bearing.	1. Failure of component will not result in catastrophic lowering of load. 2. Failure of component can result in catastrophic lowering of load.
(4150) Handcrank Engaging Mechanism	1. Partial manual No-Load Operational test ⁵ if engaging mechanism is purchased to MIL Spec or NAVSEA standard drawings and delivered through the Naval Supply System. 2. Partial manual No-Load Operational test ⁵ if handcrank is repaired, overhauled or modified.	1. Failure of mechanism will not result in catastrophic lowering load. Quality of mechanism is ensured at time of procurement. 2. Quality assurance of component is unknown. Dynamic load test verifies handcrank can withstand maximum hoisting loads.
(4200) Handcrank	1. Partial manual No-Load Operational test ⁵ if handcrank purchased to MIL Spec or NAVSEA standard drawings and delivered through the Naval Supply System. 2. Dynamic load test ⁵ if handcrank is repaired, overhauled or modified.	1. Failure of handcrank will not result in catastrophic lowering of load. 2. Quality assurance of component is unknown. Dynamic load test verifies handcrank can withstand maximum hoisting loads.
(4300) Overrunning Clutch for Centrifugal Brake	1. No-Load Operational test if clutch is purchased to MIL Spec or NAVSEA standard drawings and delivered through the Naval Supply System. 2. Rated load test if clutch is repaired, overhauled or modified.	1. Quality of clutch is ensured at the time of procurement. 2. Quality assurance of clutch after reassembly is unknown.
(4400) Centrifugal Brake	Rated load test.	Rated load test required to ensure centrifugal brake controls lowering speed within design requirements.
(4500) Manual Brake Assembly	System test.	Manual brake both regulates lowering and holds the load stationary and therefore is a critical control component.
(4550) Manual Brake Overrunning Clutch	System test.	Overrunning clutch is critical load bearing component that operates in conjunction with the manual brake.
(4600) Wire Rope Drum	System test.	Failure of wire rope drum can result in catastrophic lowering of load.
(4700) Centrifugal Clutch	Dynamic and rated load tests.	Dynamic and rated load tests ensure that the centrifugal clutch can perform lifting requirements.
(4800) Spooling Device	No-Load Operational test.	Failure of spooling device will not result in catastrophic lowering of load.
(4900) Mechanical Payout Mechanism with Overrunning Clutch	No-Load Operational test.	Failure will not result in catastrophic lowering of load.

Table 583-13-4. COMPONENT LOAD TESTING GUIDELINES -

Continued

Component	Test Requirement(s)	Reason(s)
(4920) Hydraulic Payout Mechanism	No-Load Operational test.	Failure will not result in catastrophic lowering of load.
(6100) Davit Arm(s)	1. No-Load Operational test if davit arm rollers are replaced, repaired, overhauled or modified (for trackway type davits only). 2. System test if davit arm load bearing parts, (bearing, pins, etc.) are replaced, repaired, overhauled or modified or if any structural repairs or replacement of the davit arm(s) are performed to restore strength integrity.	1. Failure of davit arm rollers will not result in catastrophic lowering of load. 2. Failure of davit arm load bearing parts or davit structural integrity will result in catastrophic lowering of load.
(6200) Deck Sheaves	1. No-Load Operational test if sheave or sheave component (pin, bearing, etc.) is a new replacement purchased to MIL Spec or NAVSEA standard drawings, delivered through the Naval Supply System and sheave mounting foundation to deck has not been repaired, overhauled or modified. 2. Static and dynamic load tests if sheave, sheave components, or sheave foundation do not meet the above requirements.	1. Quality of sheave or sheave component is ensured at time of procurement. 2. Quality of component or structural integrity of foundation is unknown.
(6300) Shock Absorber Assembly	1. No-Load Operational test if the sheave is purchased to MIL Spec or NAVSEA drawings, delivered through the Naval Supply System, and the shock absorber foundation and spring assembly have not been repaired, overhauled or modified. 2. Static and dynamic load tests if components or foundation do not meet the above requirements.	1. Quality of component is ensured at time of procurement. 2. Quality of component or structural integrity of foundation is unknown
(6400) Davit Trackway(s)	Static and dynamic load tests if any structural repair or replacement of the davit trackway(s) is performed to restore strength integrity.	Structural integrity of trackway(s) after repair is unknown.

Table 583-13-4. COMPONENT LOAD TESTING GUIDELINES -

Continued

Component	Test Requirement(s)	Reason(s)
(6500) Davit Arm Sheaves	1. No-Load Operational test if sheave or sheave component (pin, bearing, etc.) is purchased to MIL Spec or NAVSEA standard drawings, delivered through the Naval Supply System, and sheave mounting foundation to davit arm has not been repaired, overhauled or modified. 2. Static and dynamic load tests if components or foundation do not meet the above requirements.	1. Quality of sheave is ensured at time of procurement. 2. Quality of component or structural integrity of foundation is unknown.
(6600) Stops	Static load test if any structural repair or replacement is performed to restore strength integrity.	Failure of stops will result in catastrophic lowering of load. Quality of stops structural integrity is unknown.
(6700) Falls Tensioner(s)	1. No-Load Operational test if components are purchased to MIL Spec or NAVSEA standard drawings, delivered through the Naval Supply System and no structural repair or replacement of the falls tensioner(s) was performed to restore structural integrity. 2. Static and dynamic load tests if replaced load bearing parts or fall tensioner(s) structure do not meet the above requirements.	1. Quality of replacement parts are ensured at time of procurement. 2. Quality of parts or structural integrity of falls tensioner(s) is unknown.
(6800) Heavy Weather Pendant	Pull test to 40 percent of the breaking strength of the wire rope if either of the following conditions apply: a. Wire rope and socket were not purchased to MIL Spec and delivered through the Naval Supply System. b. Socket was not poured by qualified personnel (refer to NSTM Chapter 613 , paragraph 613-1.11.2.1).	Quality of wire rope and socket and the qualifications of the socket pourer are unknown.
(6850) Sheath Screw	Static and dynamic load tests.	Failure of sheath screw will result in catastrophic lowering of load.

Table 583-13-4. COMPONENT LOAD TESTING GUIDELINES -

Continued

Component	Test Requirement(s)	Reason(s)
(7000) Strongback	1. No-Load Operational test if components are purchased to MIL Spec or NAVSEA standard drawings, delivered through the Naval Supply System and no structural repair or replacement of the falls tensioner(s) was performed to restore structural integrity. 2. Static and dynamic load tests if any of the following apply: a. Sheaves or sheave components do not meet the above requirements. b. Bearing blocks (including shaft and associated bearings) are replaced, overhauled, repaired or modified. c. Any structural repair to restore strength integrity is performed to the strongback.	1. Failure of sheaves will not result in catastrophic lowering of load. Quality of sheaves and sheave parts is ensured at the time of procurement. 2. Quality of sheave or sheave component is unknown. Failure of bearing blocks or strongback structure can result in catastrophic lowering of load.
(7030) Manropes	No system test is required.	Manropes are pull tested at time of manufacture.
(7050) Spanwire	1. No-Load Operational test if wire rope socket were purchased to MIL Spec or NAVSEA standard drawings and socket was poured by qualified personnel (refer to NSTM Chapter 613 , paragraph 613-1.11.2.1). 2. Pull test to 40 percent of the breaking strength of the wire rope followed by an operational test if either of the above requirements are not met. 1. Quality of wire rope and socket ensured at time of procurement. Qualifications of socket pourer ensured by NSTM Chapter 613 . 2. Quality of wire rope, socket, or socket pour is unknown.	
(7100) Latching Mechanism	No-Load Operational test.	Manual brake and boat gripes provide sufficient securing strength in the event of latching mechanism failure.
(7200) Hook Latch Assembly	1. No-Load Operational test if any assembly parts are purchased to MIL Spec or NAVSEA standard drawings delivered through the Naval Supply System 2. Dynamic load test if latch assembly is overhauled, repaired or modified.	1. Quality assurance of parts are ensured at time of procurement. 2. Quality of latch assembly after repair is unknown.
(8100) Keel Rests	No load test required. ⁶	Ensure proper fit of boat.

Table 583-13-4. COMPONENT LOAD TESTING GUIDELINES -

Continued

Component	Test Requirement(s)	Reason(s)
(8200, 8225, 8250) Raise or Lower Mechanism (Manual, Hydraulic, Electrical)	Test operate Raise or Lower Mechanism.	Ensure proper operation of mechanism.
(8300) Cradle	No load test required. ⁶	Ensure proper fit of boat.
(8400) Platform or Cradle	No load test required. ⁶	Ensure proper fit of boat.
(8500) Cradle Winch	Test operate Cradle Winch.	Ensure proper operation of Cradle Winch.
(8600) Boat Grips	Pull test to 40 percent of the rated breaking strength of the rope used prior to placing gripe in service. Refer to paragraph 583-13.6.3.	Load carrying loose gear.
(8700) Dollies	No load test required. ⁷	Ensure proper fit of boat.
(8800) Skids	No load test required. ⁸	Ensure proper fit of boat.

NOTE:

These footnotes provide additional information regarding the testing guidelines provided.

1) Rated load test shall be conducted in accordance with paragraph 583-13.6.3.4 steps 1 through 4. The boat may be used in place of a test weight (support crane not necessary) for this particular test only.

2) For these particular components, an alternative to performing a static load test is to perform a pull test equal to 200 percent of the rated load of the davit. This pull test is to be performed on the boat falls.

3) No-Load Operational test shall be conducted in accordance with paragraph 583-13.6.3.5 with the following additional requirement:

a. During hoisting portion of operational test measure the motor RPM, input volts (phase to phase), and motor amps (phase to phase). Ensure measured values are in accordance with the motor nameplate data.

4) No-Load Operational test shall be conducted in accordance with paragraph 583-13.6.3.5 while actuating limit switch and checking for proper operation.

5) Partial manual No-Load and Dynamic load tests shall consist of hand cranking the davit arm(s) from the full out-board position to the inboard stowed position. Dynamic test to include appropriate test weight.

NOTE

For SLAD, this specific dynamic load test shall either slew the davit arm (with the dynamic test weight) from out-board to the inboard position, or hoist the dynamic test weight a minimum distance of 15 feet, depending on the particular handcrank component.

7) Using a crane, the boat shall be placed on the dolly to ensure proper fit of the boat within the dolly. 8) Using the boom, the boat shall be placed in the skids to ensure proper fit of the boat within the skids.

583-13.7.3 DECK AND DOLLY STOWAGE. Deck and dolly stowages shall comply with standard or type drawings that apply to the particular boats involved. For hull type drawings refer to NS S0300-AO- IDX-010/ SATDI. For boats not covered by standard or type drawings, stowage designs shall be developed as required using the guidance contained in this section. Deck and dolly stowed boats shall have their weight supported at the keel rest running the full length of the keel. For boats not having structural type keels, full length support shall be installed under longitudinal strength members of the boat.

583-13.7.3.1 Double Banked Stowage (Crane or Boom). For double banked dolly and deck stowages, where the boats are handled by a crane or boom, the cradle for the upper boat shall be designed for quick removal to

facilitate unstowing the lower boat. The upper boat and cradle of a double banked dolly stowage shall not require removal in order to transport the dolly to the launch area.

583-13.7.3.2 Double Banked Stowage (Davit). For double banked deck stowages where boats are handled by a davit, the upper boat shall be supported independently of the lower boat. The upper cradle shall pivot out of the way and stow without interfering with the handling of the lower boat. Means shall be provided to stop, latch, and prevent overtravel of the upper cradle when in the stowed position.

583-13.7.3.3 Dolly Stowage. Dollies shall be capable of being secured to prevent damage and movement due to ship's motion. They shall be located such that when moved to or from a launch area, adequate space for line handlers is available. Deck fittings necessary for proper control of the dolly en route to and from the launch area shall be provided.

583-13.7.4 DAVIT STOWAGE. Longitudinal hull support shall be provided for all davit stowed boats except the 26 MWB. The length of these supports shall extend over at least 40 percent of the boat's nominal length with at least 30 percent of the support length located aft of the boat's center of gravity. This support shall be a keel rest for boats having structural type keels. For boats with no keel, the supported length shall consist of rests located under longitudinal strength members in the boat. Bilge rests, when furnished in combination with center-line support, shall not be provided on the outboard side of the stowage.

583-13.7.4.1 26 MWB. No under-hull support shall be provided for stowage of a 26 MWB when suspended from two lifting points. Where stowage arrangements require the motor whaleboat to be suspended from a single lifting point, keel restraint shall be furnished to prevent pitching movement.

583-13.7.4.2 Gripes. Roll, heave, and surge gripes or other suitable means shall be employed to secure the boat against inboard chocks to prevent the boat from shifting in the stowage under any loading condition. Gripe releases shall be of the quick disconnect type and readily accessible.

583-13.7.4.3 Keel Rests and Restraints. Keel rests and restraints, when provided at stowages designated for rescue operations, shall be designed to quickly drop away from the keel. Rubber padding shall be provided at keel rest lower stops.

583-13.7.5 BOAT STOWAGE MODIFICATION. Modifications to boat stowage configurations must be in accordance with an approved Alteration Equivalent to Repair (AER) or Ship Alteration (SHIPALT) prior to starting work.

583-13.7.5.1 26 PE Stowage Modifications. Several ship classes with 26 PE allocations have experienced boat stowage interference problems when replacing 26 PE MK 3 and older boats with 26 PE MK 4 or later type boats. A general guidance plan has been distributed as enclosure (1) to COMNAVSEASYS COM letter serial 300/10073 dated 19 April 1989 to assist commands planning replacement of 26 PE. Ships planning 26 PE replacement should contact a naval shipyard, SUPSHIP or SIMA to evaluate modifications required. The guidance plan does not relieve the requirement of obtaining an alteration approval (AER, SHIPALT) prior to starting work.

583-13.8 ILLUMINATION

583-13.8.1 Weather deck lighting for boat handling and stowage system operations should be positioned to illuminate critical areas. Those areas include the operator's control stand, all visual safety and operational aids (i.e. hoisting or slewing position stripes, latch indicators, etc.) and those positions where the hoisting hook is attached to or released from the boat. Glare conditions to the operator's normal field of view shall be avoided. The lighting fixtures should be located so as not to obstruct or be subject to damage during boat handling and stowage evolutions. Detailed requirements for fixtures, switches and control of lighting systems is contained in **NSTM Chapter 330, Lighting** .

APPENDIX A**TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER)****NOTE**

Ships, training activities, supply points, depots, Naval Shipyards, and Supervisors of Shipbuilding are requested to arrange for the maximum practical use and evaluation of NAVSEA technical manuals. All errors, omissions, discrepancies, and suggestions for improvement to NAVSEA technical manuals shall be reported to the Commander, NAVSURFWARCENDIV, 4363 Missile Way, Port Hueneme, CA 93043-4307 in NAVSEA/SPAWAR Technical Manual Deficiency/Evaluation Report (TMDER), NAVSEA Form 4160/1. To facilitate such reporting, print, complete, and mail NAVSEA Form 4160/1 below or submit TMDERS at web site <http://nsdsa.phdnswc.navy.mil/tmder/tmder-generate.asp?lvl=1>. All feedback comments shall be thoroughly investigated and originators will be advised of action resulting therefrom.

TMDER / MAILER

