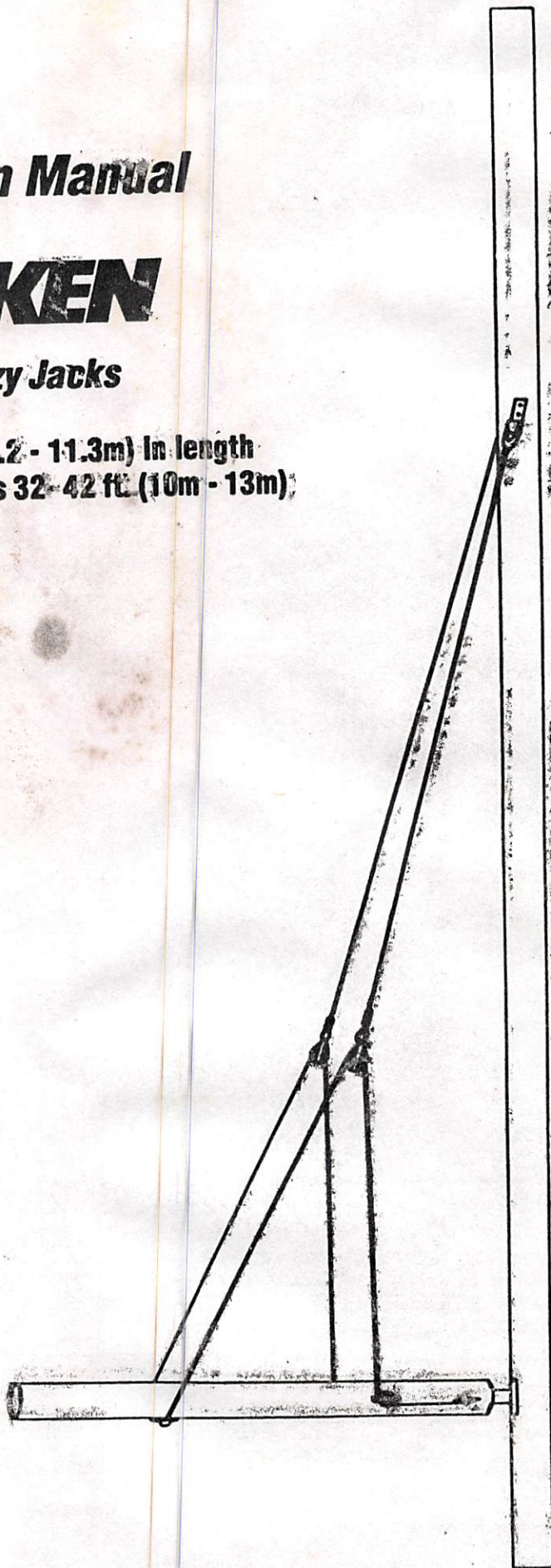


Instruction Manual

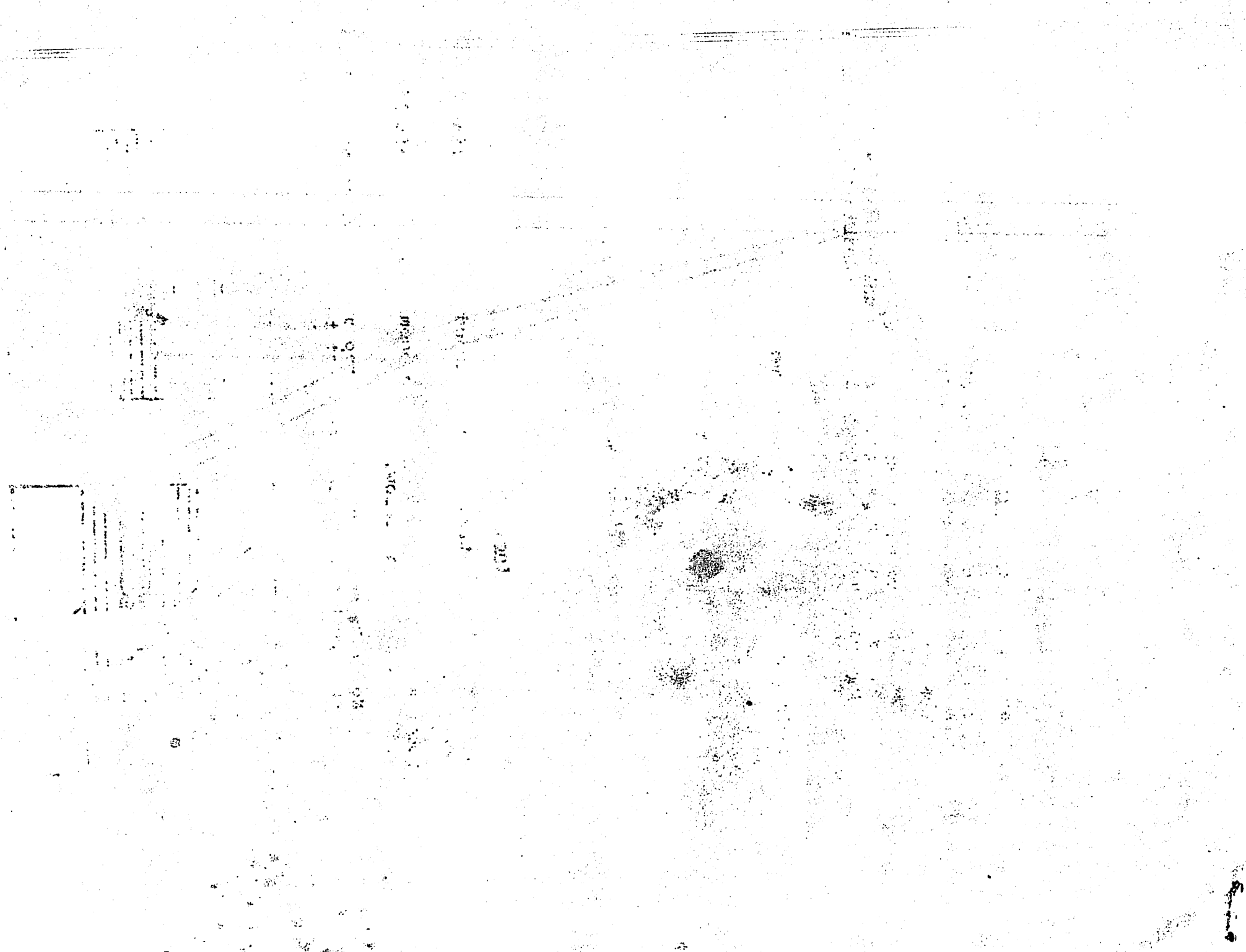
HARKEN

253 Lazy Jacks

**For boats 27 - 37 ft. (8.2 - 11.3m) in length
with mainsail luff lengths 32 - 42 ft. (10m - 13m)**



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Changes to Instructions
For 252 and 253 Harken Lazy Jack

10-32 Machine Screws Now Included

10-32 machine screws are now included with Lazy Jack Kits. These can be used wherever stainless steel rivets are specified.

Note Regarding Rivets: Do not try to install the system using the stainless steel rivets unless you have a professional two handled rivet gun capable of popping the enclosed rivets.

Tools required using machine screws:

10-32 Tap Set
#21 or 5/32" Drill Bit
Flat Bladed Screwdriver

Instructions:

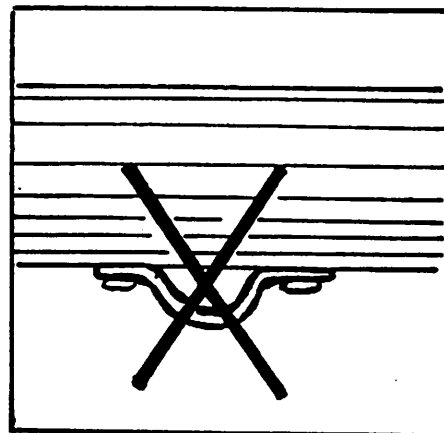
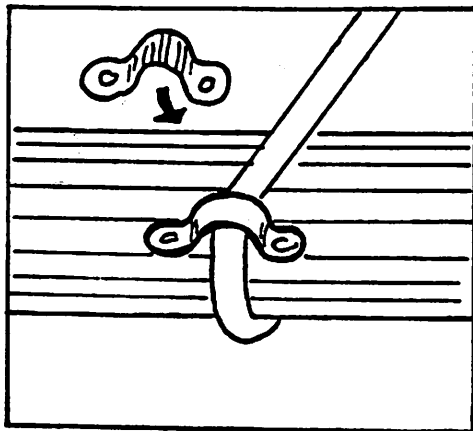
Drill holes, tap threads and install screws using blue Loctite.

Additional Eyestraps Included

An additional eyestraps is now included for the aft line of the Lazy Jacks.

Mount a strap on each side of the boom to hold the aft line in place. See diagram below.

Note: Do not mount the eyestraps on the bottom of the boom as directed on pages 8 and 9 of the manual.



#253 HARKEN LAZY JACKS INSTRUCTION MANUAL

If you have any questions or comments please contact:

Harken Yacht Equipment
1251 East Wisconsin Avenue
Pewaukee, WI 53072

Telephone (414) 691-3320

Parts List

- 2 wire assemblies including blocks and mast tangs
- 1 60' (18.3m) length of 5/16" (8mm) line with eye splice
- 3 stainless steel eye straps
- 1 big bullet cheek block
- 1 4" (101mm) aluminum cleat
- 17 3/16" (4.76mm) stainless steel rivets (includes 3 extra)
- 3 #10 x 1 1/4" (32mm) flat head sheet metal screws (1 extra)

Tools Required

rivet gun - Please note: Stainless steel rivets require a heavy duty rivet gun. It may be necessary to rent a rivet gun if you do not have a heavy duty model.

marker or pencil
set punch
hammer
electric drill
11/64" (4.5mm) drill bit
13/64" (5mm) drill bit
long extension cord
phillips screwdriver
tape measure long enough to measure luff length
pliers or vice grips

Altering Sail Cover

Take your sail cover to a sailmaker to have slits cut in the cover for the Lazy Jacks. Slits should have velcro or snap closures to make it easy to cover the mainsail. Mark your cover after installation or bring Chart B and the drawing on page 9 so the slots can be positioned correctly. Note: Chart B was changed on 9/88 so be sure to bring your chart. Do not rely on sailmakers chart which may be from an old manual.

Determining the Location Of Mast Tang

Measure the mainsail luff length or find the P dimension of the mast. Locate this measurement in the left column below and circle the number in the right column. See drawing, page 5.

Chart A

If the mainsail luff length
or P dimension measures:

the tang location measured
from the top of the boom is:

31'7" to 32'	(9.47 - 9.61m)	22'6" (6.85m)
32'1" to 32'6"	(9.62 - 9.76m)	22'9" (6.93m)
32'7" to 33'	(9.77 - 9.91m)	23'1" (7.03m)
33'1" to 33'6"	(9.92 - 10.06m)	23'5" (7.13m)
33'7" to 34'	(10.07 - 10.21m)	23'10 (7.26m)
34'1" to 34'6"	(10.22 - 10.36m)	24'2" (7.36m)
34'7" to 35'	(10.37 - 10.51m)	24'6" (7.46m)
35'1" to 35'6"	(10.52 - 10.66m)	24'10" (7.56m)
35'7" to 36'	(10.67 - 10.81m)	25'2" (7.66m)
36'1" to 36'6"	(10.82 - 10.96m)	25'7" (7.79m)
36'7" to 37'	(10.97 - 11.11m)	25'11" (7.89m)
37'1" to 37'6"	(11.12 - 11.26m)	26'3" (8.00m)
37'7" to 38'	(11.27 - 11.41m)	26'7" (8.10m)
38'1" to 38'6"	(11.42 - 11.56m)	26'11" (8.20m)
38'7" to 39'	(11.57 - 11.71m)	27'4" (8.33m)
39'1" to 39'6"	(11.72 - 11.86m)	27'8" (8.43m)
39'7" to 40'	(11.87 - 12.01m)	28' (8.53m)
40'1" to 40'6"	(12.02 - 12.16m)	28'4" (8.63m)
40'7" to 41'	(12.17 - 12.31m)	28'8" (8.73m)
41'1" to 41'6"	(12.32 - 12.46m)	29'1" (8.86m)
41'7" to 42'	(12.47 - 12.60m)	<u>29'5" (8.96m)</u>

Installing Mast Tang and Wire Assembly

If you are installing the system with the mast up, you will need to take up the following parts in the bosun's chair or send them up with a messenger line. Follow all precautions to insure the safety of the person aloft. Make sure no one is standing where they could be hit with dropped tools.

WARNING! When drilling through mast, do not let drill bit contact the halyard that is holding you aloft! Limit depth.

tape measure
drill with 13/64" (5mm) drill bit
port and starboard templates (attached to page 4)
tape for template
tang assembly including wires and blocks
hammer
set punch
rivet gun

Please note, before going up the mast, insert the middle rivet into the tang. Squeeze the top and bottom of the tang together to insert the rivet. It may be necessary to use a pliers or vice grips.

P = 43'2"
BOOM TO MAST TOP
E = 13'6"
MAST TO END OF BOOM

9-18-52
JAN 18 1952
9-18-52

100

Installing Mast Tang and Wire Assembly (continued)

Measure up from the top of the boom to the height from chart A.

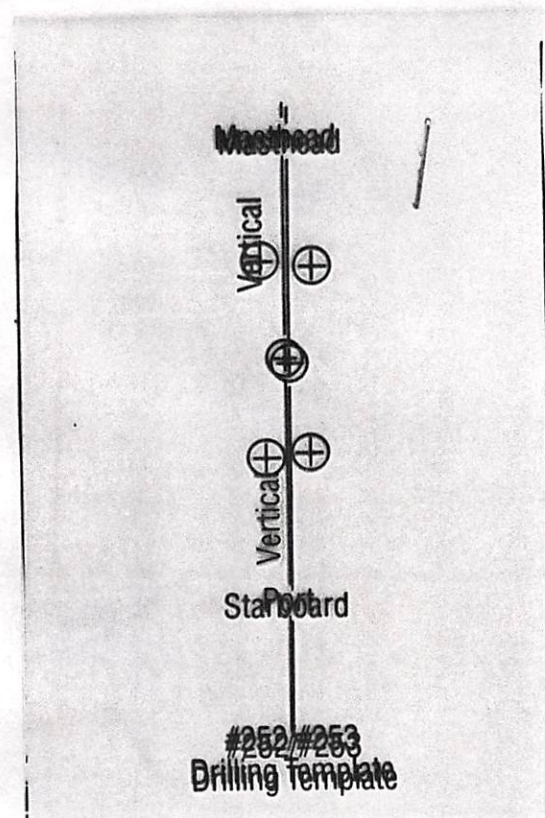
Movable Gooseneck

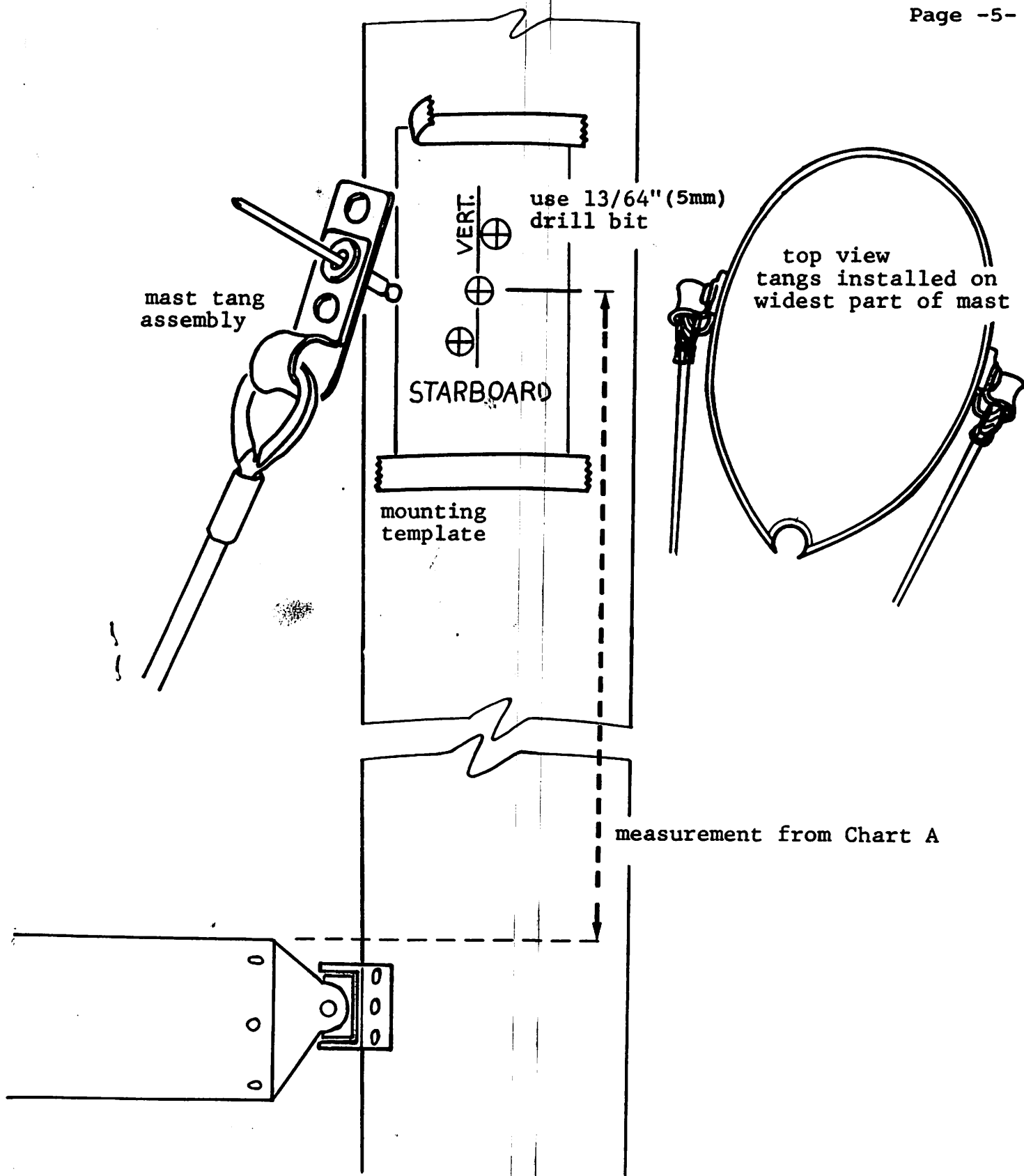
If the gooseneck is capable of moving up and down, measure from the top of the boom when the boom is positioned in its normal sailing position.

Mark the mast at this point.

Tape the template to the side of the mast so the middle hole is even with your mark. Line the template up so the vertical line is parallel to the sides of the mast. See drawing on the following page.

Use a set punch to mark the three tang holes. Remove the template and drill three 13/64" (5mm) holes. Rivet the tang to the mast beginning with the middle rivet.



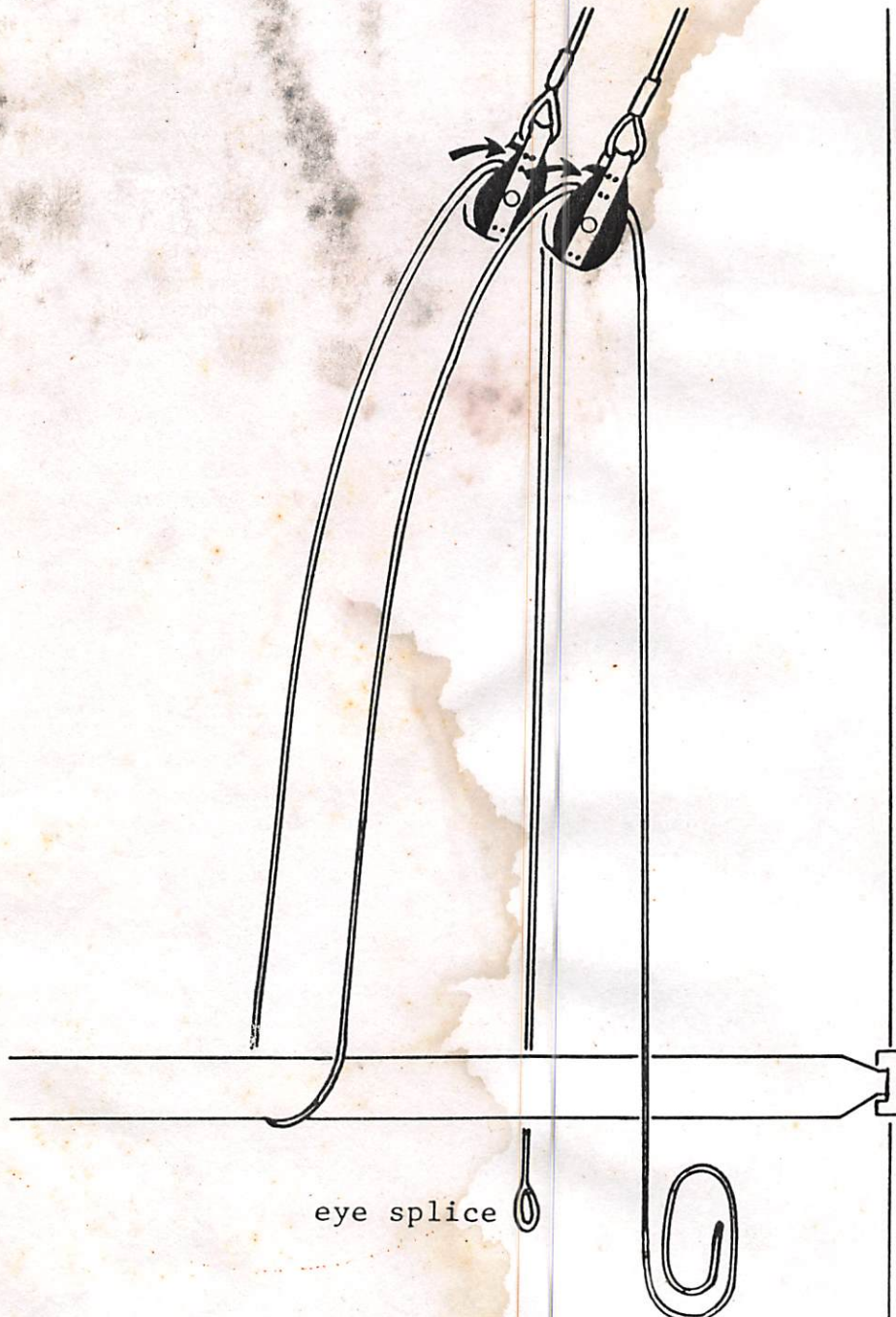


INSTALLING MAST TANGS

Stringing the Control Lines

Decide whether the adjusting block and cleat will be on port or starboard. The end of the line without the eye splice will be on the side of the boom where you will adjust the Lazy Jacks - the side where you will install the cleat.

With the middle of the control line draped under the boom, pass the ends of the line up and run each end of the line through the blocks that are suspended from the wire. The line should be run through the blocks from stern to bow as shown on the diagram below.



eye splice

this will be
adjusting side



Determining the Location of Boom Hardware

Measure the mainsail foot length or find the E dimension of the mast. Find this measurement in the left column below and circle the corresponding numbers in the right column. Put a mark on the boom at each measurement. See drawing, page 9.

Chart B - Location of Boom Hardware*

E Dimension or Sail Foot Length	Cheek Block and Dead End Location	Boom Cradle Strap Location
8'7" to 9' (2.57 - 2.71m)	1'11" (584mm)	5'6" (1.676m)
9'1" to 9'6" (2.72 - 2.86m)	2'1" (635mm)	5'10" (1.778m)
9'7" to 10' (2.87 - 3.01m)	2'2" (660mm)	6'2" (1.880m)
10'1" to 10'6" (3.02 - 3.16m)	2'3" (686mm)	6'6" (1.981m)
10'7" to 11' (3.17 - 3.31m)	2'4" (711mm)	6'10" (2.083m)
11'1" to 11'6" (3.32 - 3.46m)	2'6" (762mm)	7'1" (2.159m)
11'7" to 12' (3.47 - 3.61m)	2'7" (787mm)	7'5" (2.261m)
12'1" to 12'6" (3.62 - 3.76m)	2'8" (813mm)	7'9" (2.362m)
12'7" to 13' (3.77 - 3.91m)	2'10" (864mm)	8'1" (2.464m)
13'1" to 13'6" (3.92 - 4.06m)	2'11" (889mm)	8'4" (2.540m)
13'7" to 14' (4.07 - 4.21m)	3' (914mm)	8'8" (2.642m)
14'1" to 14'6" (4.22 - 4.36m)	3'2" (965mm)	9' (2.743m)
14'7" to 15' (4.37 - 4.51m)	3'3" (991mm)	9'4" (2.845m)
15'1" to 15'6" (4.52 - 4.66m)	3'4" (1.016m)	9'8" (2.946m)
15'7" to 16' (4.67 - 4.81m)	3'6" (1.067m)	9'11" (3.023m)

*Note - This chart is designed for sails of medium aspect ratio with full length battens. If you have high aspect sails or conventional battens, you may want to check sail containment before drilling holes in the boom. To do this, tape the boom hardware in place, reeve lines through system and lower sail. Move if necessary.

Installing Cheek block

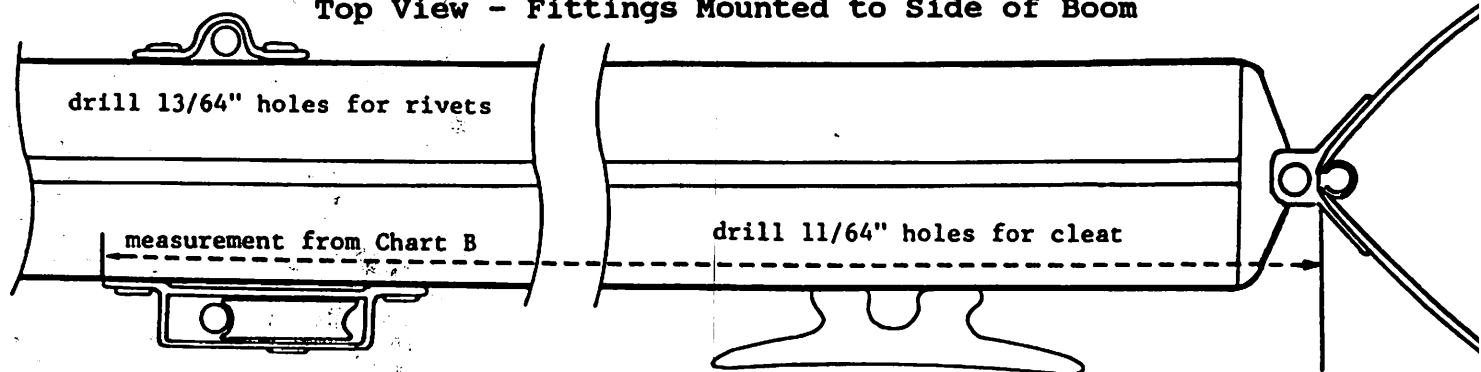
Hold the cheek block on the side of the boom so the aft end of the block is even with the forward mark. Use the cheek block as a template to mark the holes and use the set punch to start the holes.

Drill holes for rivets using a 13/64" (5mm) drill.

Note: Position cheek block so the sheave side of the block is towards the cleat. Please refer to the diagram on the following page. In most cases the cleat will be mounted forward of the cheek block near the forward end of the boom. If there is other hardware in the way such as a single line reefing system, mount the cleat aft of the block.

Rivet the block to the boom.

Top View - Fittings Mounted to Side of Boom



Sheave Side Of Block Is Towards Cleat

Installing Dead End Eyestraps

Use the eye strap as a template to mark the holes and start the holes using a set punch.

Drill Size - 13/64" (5mm).

Important: Put the eye strap through the line eye splice before riveting to the mast. Rivet the eye strap and line to the boom.

Mounting Adjusting Cleat

Mount the cleat near the forward end of the boom so the Lazy Jacks may be easily adjusted. Before mounting the cleat, swing the boom out as far forward as it will go to make sure the cleat does not hit the mast. If you have single line reefing or other obstructions forward of the block, mount the cleat aft of the block as pictured on page 9. Use the cleat as a template to mark the holes and using the set punch.

Drill size for screws - 11/64" (4.5mm).

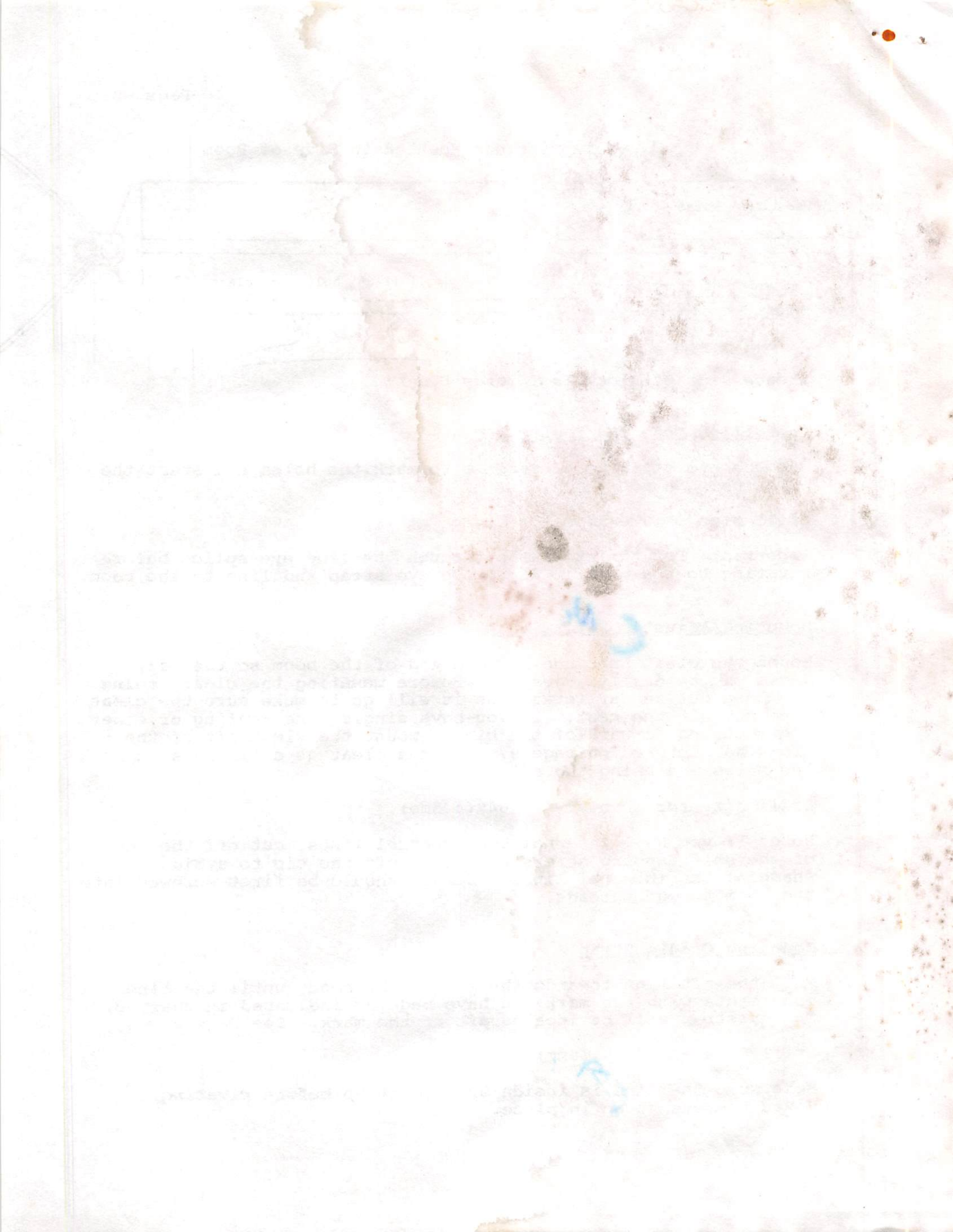
Note: If you have internal boom control lines, cut off the ends of the self tapping screws and round off the tip to avoid snagging the internal lines. Screws should be first screwed into the boom to cut threads.

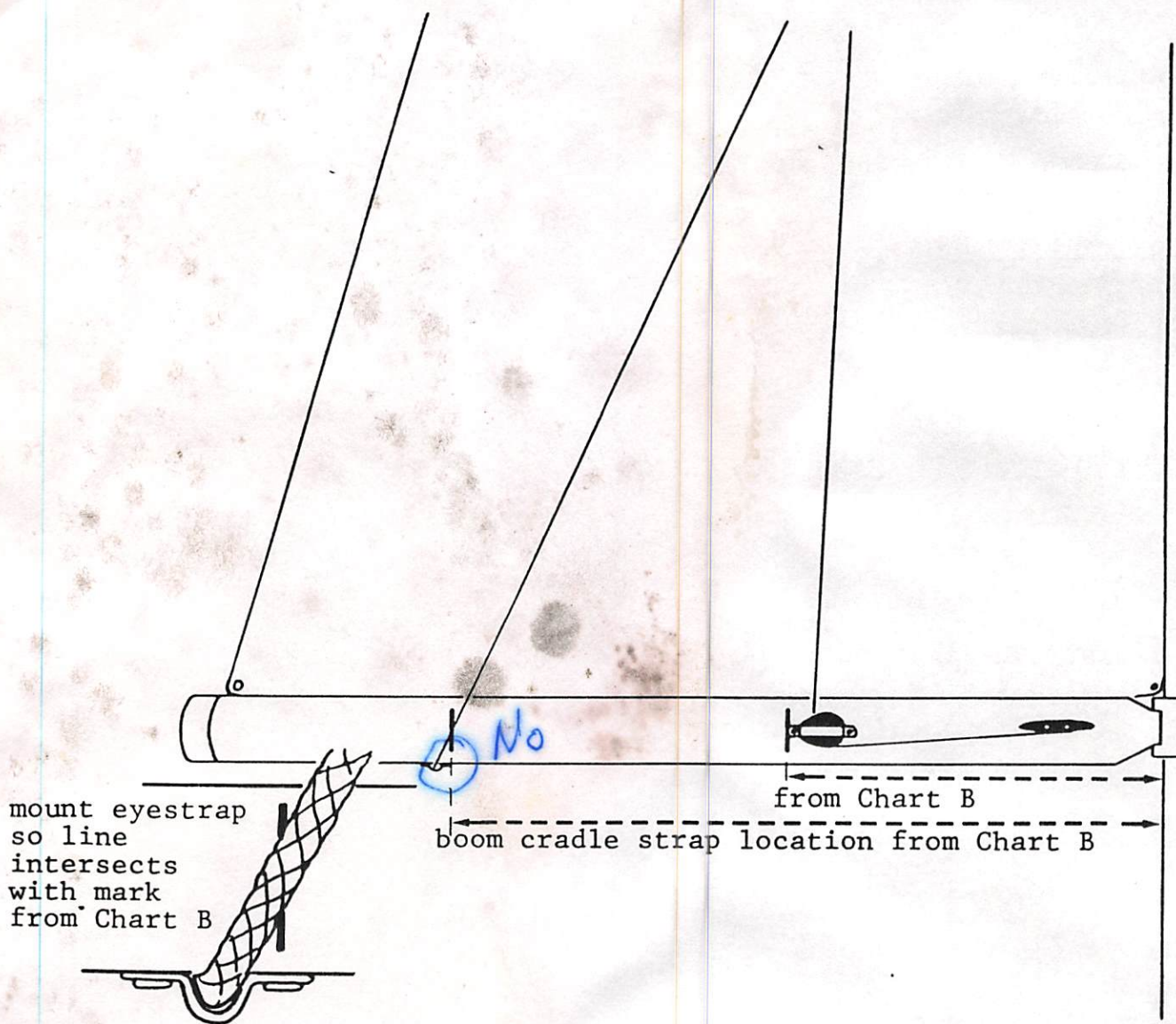
Mounting Cradle Strap

Pull the aft line towards the end of the boom, until the line intersects with the mark you have made as indicated in chart B. The eyestraps will be located aft of the mark. See Page 9.

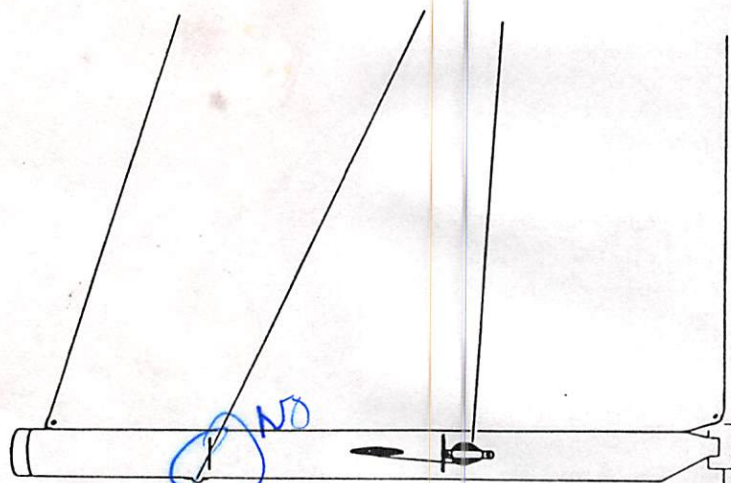
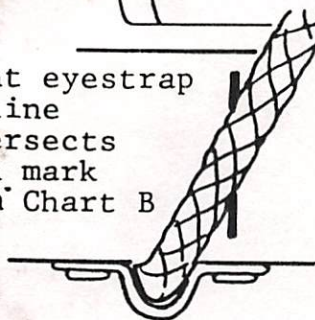
Drill Size - 13/64" (5mm)

Make sure the line is inside the eye strap before riveting. Rivet the eye strap in place.





mount eyestraps
so line
intersects
with mark
from Chart B



alternative cleat location-
sheave side of cheek block
is towards cleat

OH O

OH O

Adjusting Lazy Jacks

The Lazy Jacks may be set to the proper tension at the dock. Raise the mainsail and make sure the adjusting line is uncleaned at the boom. Tighten the mainsheet as tight as it will go to find the maximum distance that the boom would be lowered while under sail. Next tighten the adjusting line and slack it off 2" (50mm). The system should now be set at a reasonable tension so it will not interfere with sail shape, yet it will contain the sail when lowered onto the boom. Some further adjustment may be necessary.

Using Your Lazy Jacks - Precautions

Before sailing, make sure the Lazy Jacks will not catch on the spreaders. While at the dock, swing the boom out so the sail is against the spreader tips. Try lifting the boom and shaking it to see if the Lazy Jack lines are apt to swing behind the spreaders. When first sailing with the Lazy Jacks, look aloft while sailing downwind to see if the Lazy Jacks catch behind the spreaders. If they get snagged while sailing, release the snagged Lazy Jacks from behind the spreader before bringing the mainsail in towards the center. If this is not done, you run the risk of breaking your spreaders as the mainsail is cranked in.

If the Lazy Jacks are prone to snagging the spreader tips, there are 2 solutions. The easiest thing is to rig shock cords to pull the Lazy Jacks forward out of the way of the spreader tips. Rig a length of shock cord on each side of the sail. Dead end the shock cord at or near the gooseneck and run it up to the blocks which are suspended from the wires.

If this does not help, you will need to reposition the Mast Tangs so they are lower on the mast and do not interfere with the spreader tips.

Raising Sail

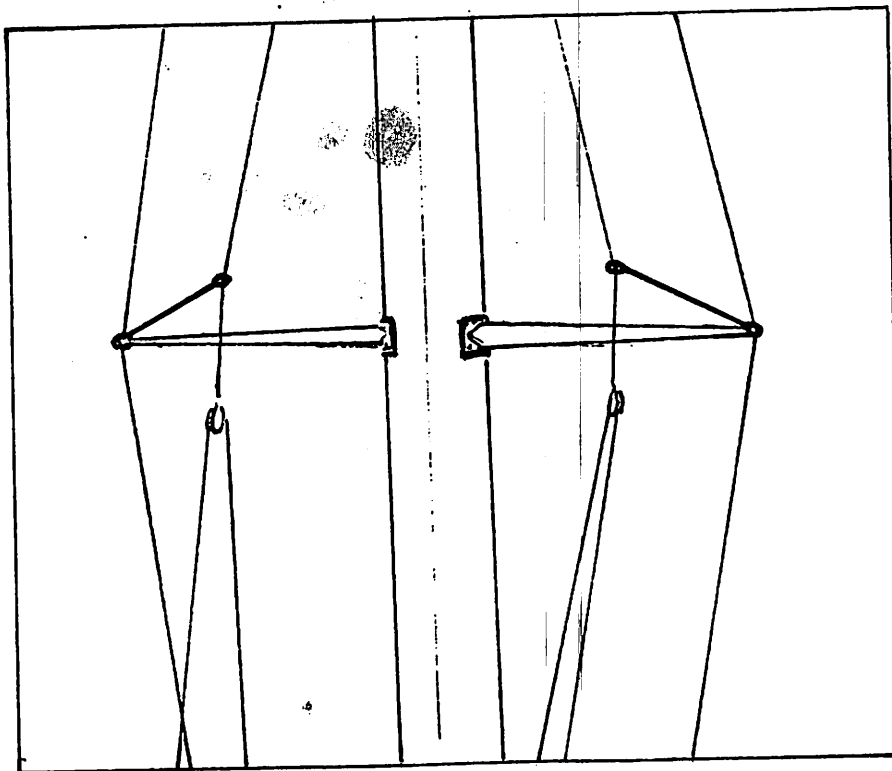
When hoisting sail check to make sure the sail does not get caught in the Lazy Jacks. The headboard or battens may catch between the mast and the Lazy Jacks or jam in the angle between the lines. If the halyard is forced, this could result in a broken batten, ripped sail or damaged Lazy Jack. To avoid this, look aloft as you raise the mainsail and stop if the sail gets caught. Also, make sure the boat is facing head-to-wind.

The sail is less apt to catch on the Lazy Jacks if the topping lift is used and the Lazy Jacks are somewhat loose. This way they will deflect out of the way easier when the sail makes contact with them.

USING SHOCK CORD TO PULL LAZY JACKS OUTWARD

Shock cord may be used to hold Lazy Jacks open to make it easier to raise sail.

1. Attach shock cord to the end of the lower spreaders. Hog rings work well for this purpose. Use rigging tape over hog rings.
2. Temporarily tie the other end of the shock cord to the lazy jacks at a length that holds the lazy jacks out, yet will not be too short and damage the spreaders when the boom is swung out.
3. Test the length by swinging the boom all the way out. If necessary, lengthen the shock cord before permanently attaching to the lazy jacks.

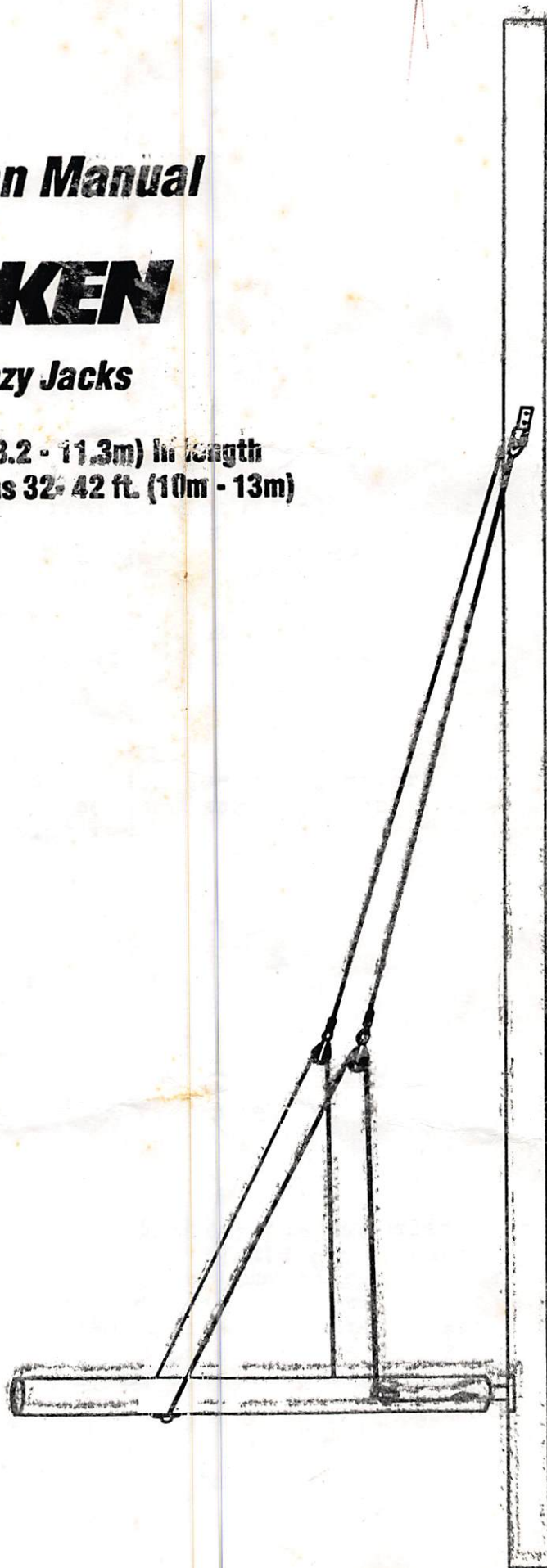


Instruction Manual

HARKEN

253 Lazy Jacks

**For boats 27 - 37 ft (8.2 - 11.3m) in length
with mainsail luff lengths 32- 42 ft (10m - 13m)**



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Parts List

- 2 wire assemblies including blocks and mast tangs
- 1 60' (18.3m) length of 5/16" (8mm) line with eye splice
- 2 stainless steel eye straps
- 1 big bullet cheek block
- 1 4" (101mm) aluminum cleat
- 15 3/16" (4.76mm) stainless steel rivets (includes 3 extra)
- 3 #10 x 1 1/4" (32mm) flat head sheet metal screws (1 extra)

Tools Required

rivet gun - Please note: Stainless steel rivets require a heavy duty rivet gun. It may be necessary to rent a rivet gun if you do not have a heavy duty model.

marker or pencil

set punch

hammer

electric drill

11/64" (4.5mm) drill bit

13/64" (5mm) drill bit

long extension cord

phillips screwdriver

tape measure long enough to measure luff length

pliers or vice grips

Altering Sail Cover

Take your sail cover to a sailmaker to have slits cut in the cover for the Lazy Jacks. Slits should have velcro or snap closures to make it easy to cover the mainsail. Mark your cover after installation or bring Chart B and the drawing on page 9 so the slots can be positioned correctly. Note: Chart B was changed on 9/88 so be sure to bring your chart. Do not rely on sailmakers chart which may be from an old manual.

Determining the Location Of Mast Tang

Measure the mainsail luff length or find the P dimension of the mast. Locate this measurement in the left column below and circle the number in the right column. See drawing, page 5.

Chart A

If the mainsail luff length
or P dimension measures:

the tang location measured
from the top of the boom is:

31'7" to 32'	(9.47 - 9.61m)	22'6" (6.85m)
32'1" to 32'6"	(9.62 - 9.76m)	22'9" (6.93m)
32'7" to 33'	(9.77 - 9.91m)	23'1" (7.03m)
33'1" to 33'6"	(9.92 - 10.06m)	23'5" (7.13m)
33'7" to 34'	(10.07 - 10.21m)	23'10" (7.26m)
34'1" to 34'6"	(10.22 - 10.36m)	24'2" (7.36m)
34'7" to 35'	(10.37 - 10.51m)	24'6" (7.46m)
35'1" to 35'6"	(10.52 - 10.66m)	24'10" (7.56m)
35'7" to 36'	(10.67 - 10.81m)	25'2" (7.66m)
36'1" to 36'6"	(10.82 - 10.96m)	25'7" (7.79m)
36'7" to 37'	(10.97 - 11.11m)	25'11" (7.89m)
37'1" to 37'6"	(11.12 - 11.26m)	26'3" (8.00m)
37'7" to 38'	(11.27 - 11.41m)	26'7" (8.10m)
38'1" to 38'6"	(11.42 - 11.56m)	26'11" (8.20m)
38'7" to 39'	(11.57 - 11.71m)	27'4" (8.33m)
39'1" to 39'6"	(11.72 - 11.86m)	27'8" (8.43m)
39'7" to 40'	(11.87 - 12.01m)	28' (8.53m)
40'1" to 40'6"	(12.02 - 12.16m)	28'4" (8.63m)
40'7" to 41'	(12.17 - 12.31m)	28'8" (8.73m)
41'1" to 41'6"	(12.32 - 12.46m)	29'1" (8.86m)
41'7" to 42'	(12.47 - 12.60m)	29'5" (8.96m)

43'2"

42.4

43

43.6

30'4"

Installing Mast Tang and Wire Assembly

If you are installing the system with the mast up, you will need to take up the following parts in the bosun's chair or send them up with a messenger line. Follow all precautions to insure the safety of the person aloft. Make sure no one is standing where they could be hit with dropped tools.

tape measure
drill with 13/64" (5mm) drill bit
port and starboard templates (attached to page 4)
tape for template
tang assembly including wires and blocks
hammer
set punch
rivet gun

Please note, before going up the mast, insert the middle rivet into the tang. Squeeze the top and bottom of the tang together to insert the rivet. It may be necessary to use a pliers or vice grips.

[illegible]

1. Explain the difference between a "strong" and a "weak" form of a vowel.

It is the opinion of the Board that the information furnished by the applicant is not sufficient to warrant the issuance of a license to the applicant.

... 10-10-1941 ...

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Installing Mast Tang and Wire Assembly (continued)

Measure up from the top of the boom to the height from chart A.

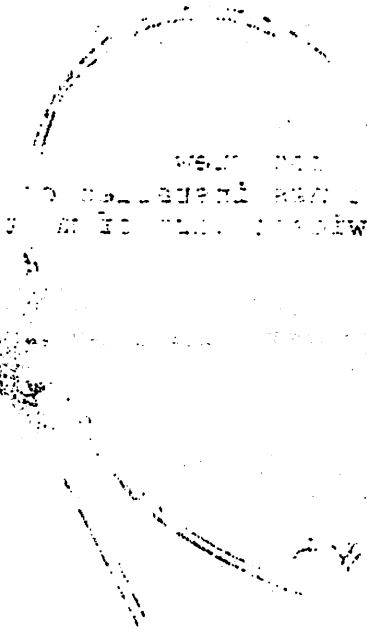
Movable Gooseneck

If the gooseneck is capable of moving up and down, measure from the top of the boom when the boom is positioned in its normal sailing position.

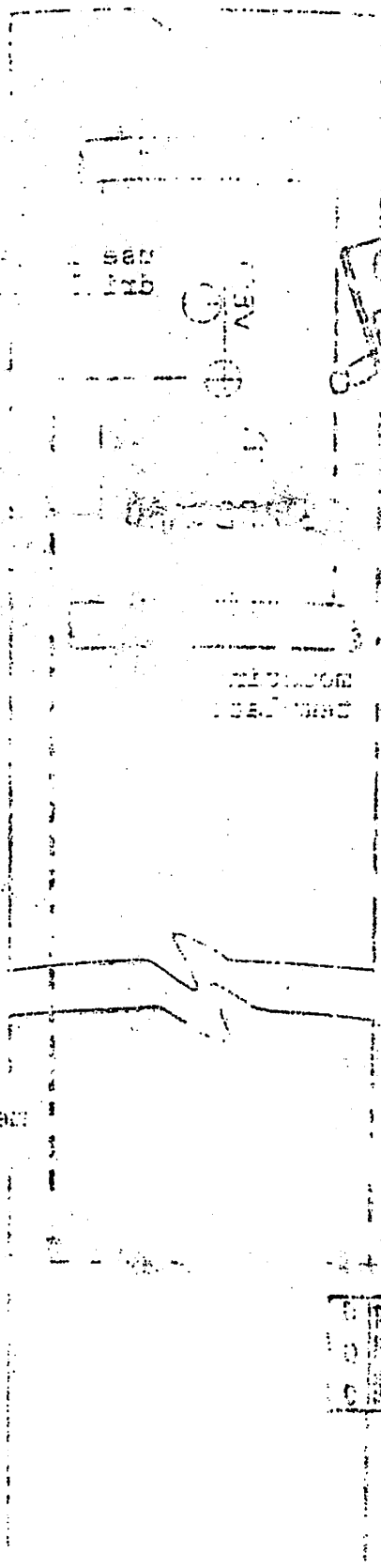
Mark the mast at this point.

Tape the template to the side of the mast so the middle hole is even with your mark. Line the template up so the vertical line is parallel to the sides of the mast. See drawing on the following page.

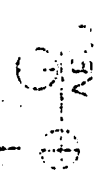
Use a set punch to mark the three tang holes. Remove the template and drill three 13/64" (5mm) holes. Rivet the tang to the mast beginning with the middle rivet.



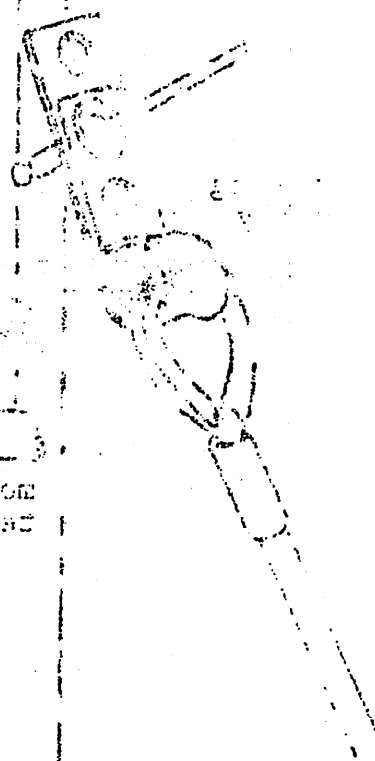
WEST 101
TO SOUTHWEST 101
FROM 101 TO SOUTHWEST



san
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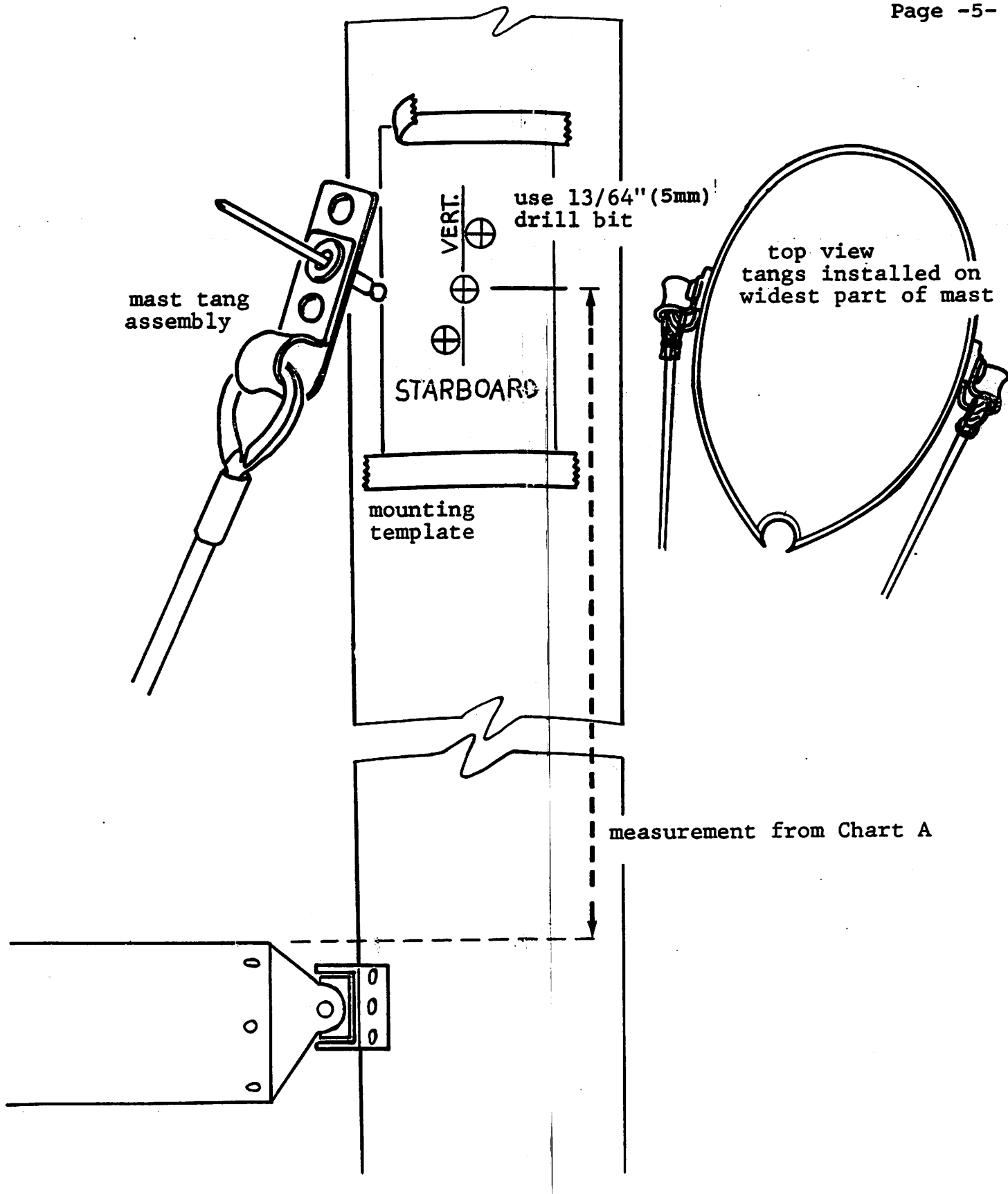
WINDSON
REAR WIND



WINDSON REAR WIND



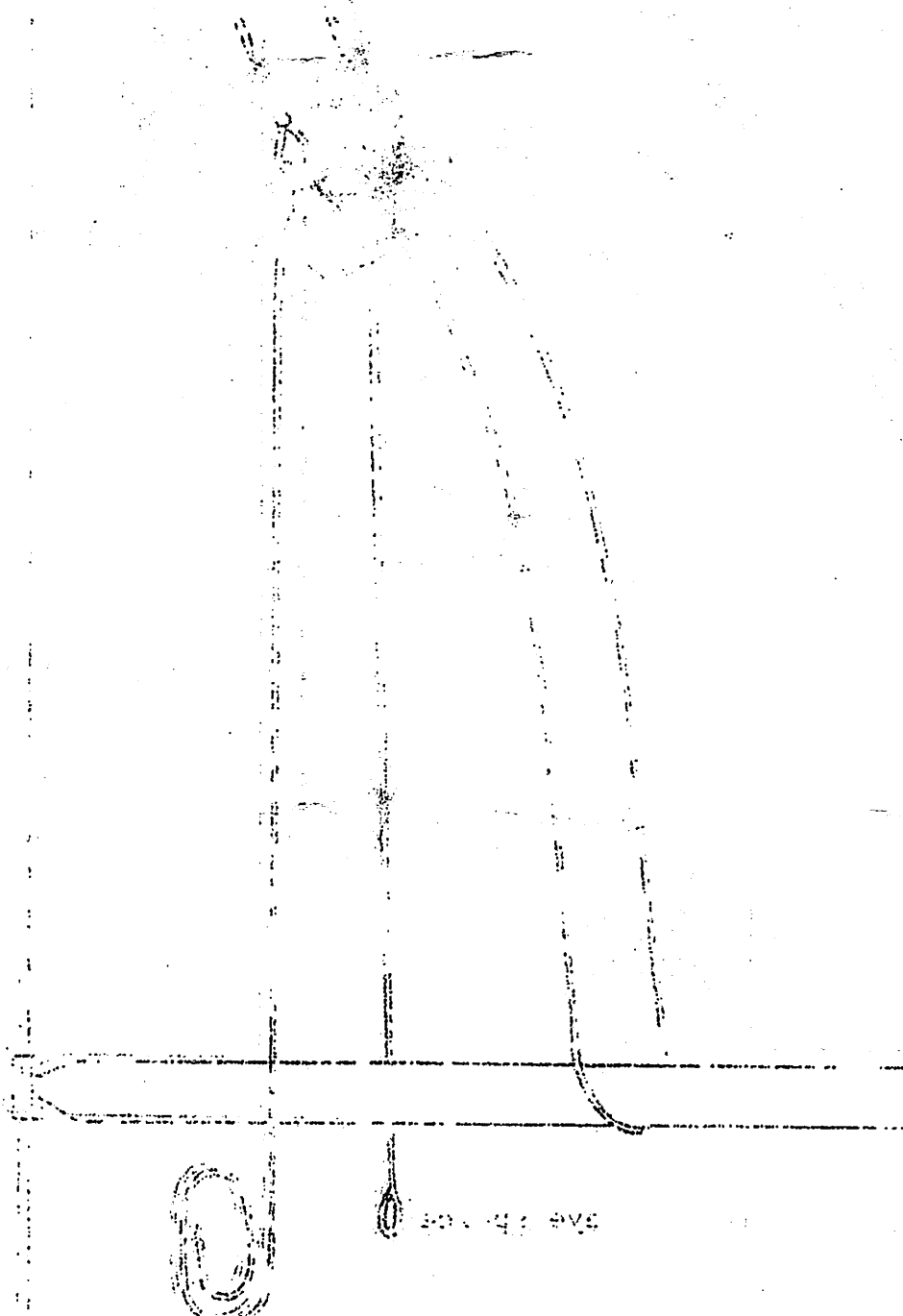
WINDSON REAR WIND



INSTALLING MAST TANGS

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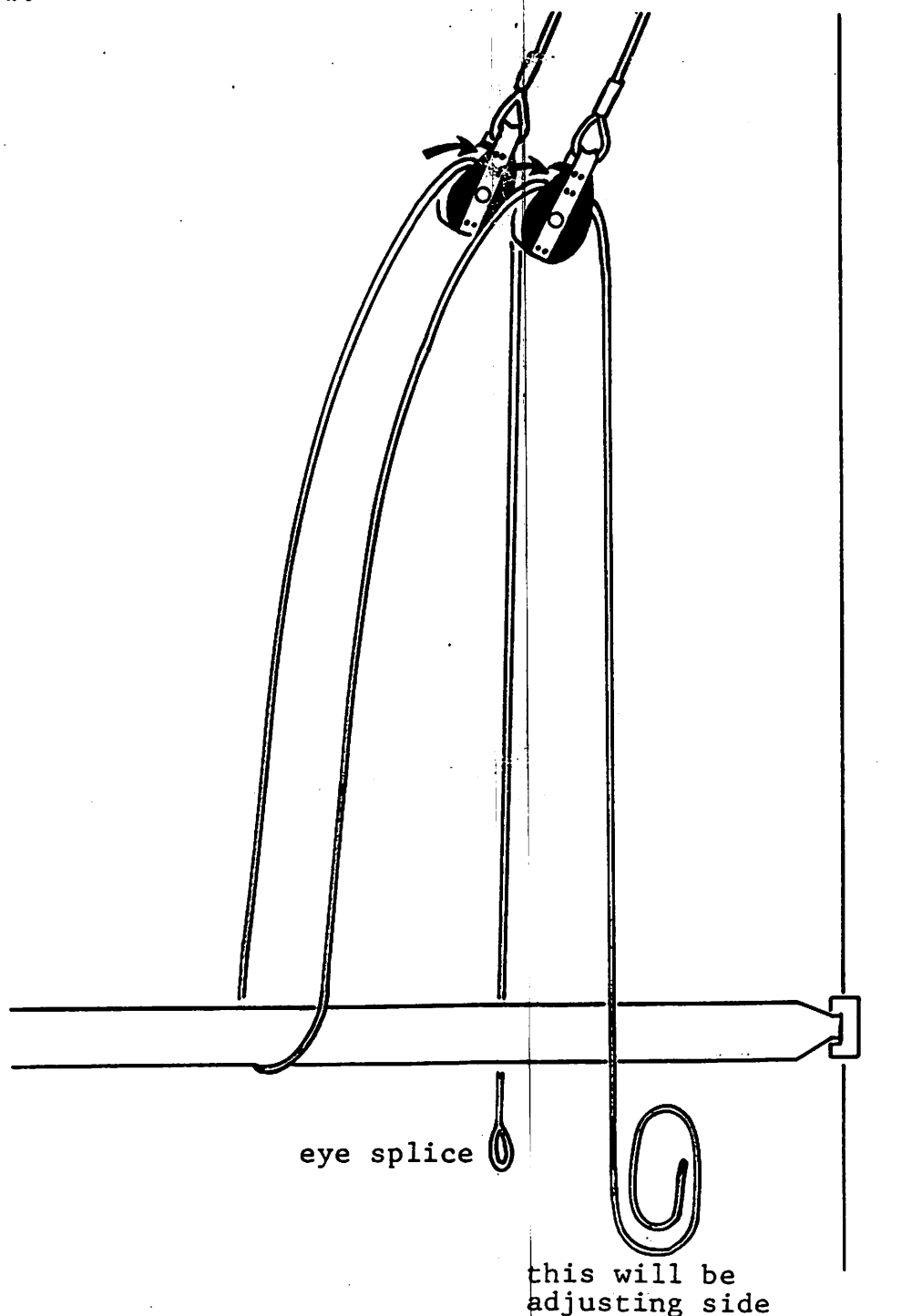
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Stringing the Control Lines

Decide whether the adjusting block and cleat will be on port or starboard. The end of the line without the eye splice will be on the side of the boom where you will adjust the Lazy Jacks - the side where you will install the cleat.

With the middle of the control line draped under the boom, pass the ends of the line up and run each end of the line through the blocks that are suspended from the wire. The line should be run through the blocks from stern to bow as shown on the diagram below.



UNIT 1: THE HISTORY OF THE UNITED STATES

The history of the United States is a long and complex one, spanning over 400 years. It begins with the first European settlers in the early 17th century, followed by the American Revolution in 1776. The country then grew in size and power, leading to the Civil War in 1861-1865. After the war, the United States emerged as a global superpower, playing a major role in the world during the 20th century.

UNIT 2: THE AMERICAN WEST

The American West is a region of the United States that is characterized by its rugged terrain, vast open spaces, and rich history. It was first explored by Spanish and French explorers in the 16th and 17th centuries. The region was then settled by American pioneers in the 19th century, who played a major role in the development of the country.

1848	1849	1850	1851	1852	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500	2501	2502	2503	2504	2505	2506	2507	2508	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524	2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2535	2536	2537	2538	2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551	2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2564	2565	2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578	2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591	2592	2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605	2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618	2619	2620	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632	2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645	2646	2647	2648	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659	2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672	2673	2674	2675	2676	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686	2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699	2700	2701	2702	2703	2704	2705	2706	2707	2708	2709	2710	2711	2712	2713	2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726	2727	2728	2729	2730	2731	2732	2733	2734	2735	2736	2737	2738	2739	2740	2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753	2754	2755	2756	2757	2758	2759	2760	2761	2762	2763	2764	2765	2766	2767	2768	2769	2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796	2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823	2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836	2837	2838	2839	2840	2841	2842	2843	2844	2845	2846	2847	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Determining the Location of Boom Hardware

Measure the mainsail foot length or find the E dimension of the mast. Find this measurement in the left column below and circle the corresponding numbers in the right column. Put a mark on the boom at each measurement. See drawing, page 9.

Chart B - Location of Boom Hardware

E Dimension or Sail Foot Length	Cheek Block and Dead End Location	Boom Cradle Strap Location
8'7" to 9' (2.57 - 2.71m)	1'10" (.55m)	6'10" (2.08m)
9'1" to 9'6" (2.72 - 2.86m)	2' (.60m)	7'3" (2.20m)
9'7" to 10' (2.87 - 3.01m)	2'2" (.65m)	7'7" (2.31m)
10'1" to 10'6" (3.02 - 3.16m)	2'5" (.73m)	8' (2.43m)
10'7" to 11' (3.17 - 3.31m)	2'7" (.78m)	8'4" (2.53m)
11'1" to 11'6" (3.32 - 3.46m)	2'9" (.83m)	8'9" (2.66m)
11'7" to 12' (3.47 - 3.61m)	2'11" (.88m)	9'1" (2.76m)
12'1" to 12'6" (3.62 - 3.76m)	3'1" (.93m)	9'6" (2.89m)
12'7" to 13' (3.77 - 3.91m)	3'4" (1.01m)	9'11" (3.02m)
13'1" to 13'6" (3.92 - 4.06m)	3'6" (1.06m)	10'3" (3.12m)
13'7" to 14' (4.07 - 4.21m)	3'8" (1.11m)	10'8" (3.24m)
14'1" to 14'6" (4.22 - 4.36m)	3'10" (1.16m)	11' (3.35m)
14'7" to 15' (4.37 - 4.51m)	4'1" (1.24m)	11'5" (3.47m)
15'1" to 15'6" (4.52 - 4.66m)	4'3" (1.29m)	11'9" (3.58m)
15'7" to 16' (4.67 - 4.81m)	4'5" (1.34m)	12'2" (3.70m)

Installing Cheek block

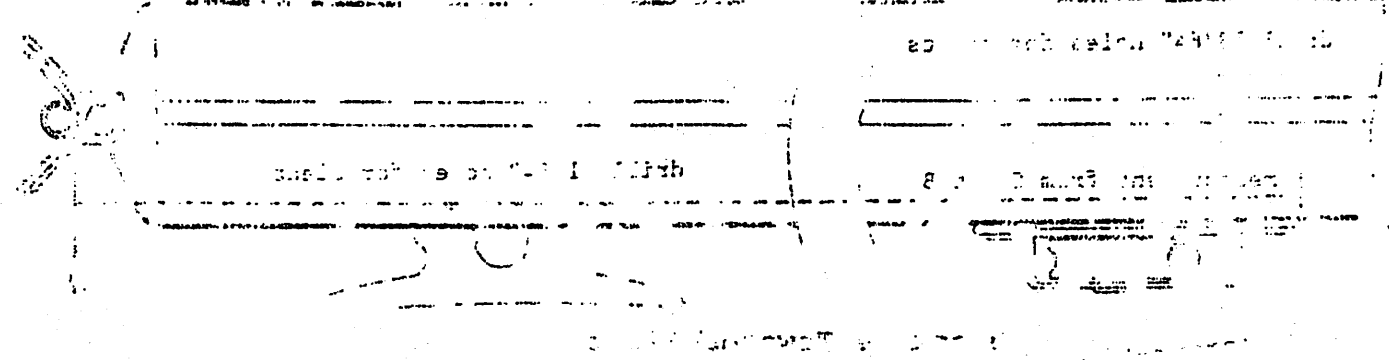
Hold the cheek block on the side of the boom so the aft end of the block is even with the forward mark. Use the cheek block as a template to mark the holes and use the set punch to start the holes.

Drill holes for rivets using a 13/64" (5mm) drill.

Note: Position cheek block so the sheave side of the block is towards the cleat. Please refer to the diagram on the following page. In most cases the cleat will be mounted forward of the cheek block near the forward end of the boom. If there is other hardware in the way such as a single line reefing system, mount the cleat aft of the block.

Rivet the block to the boom.

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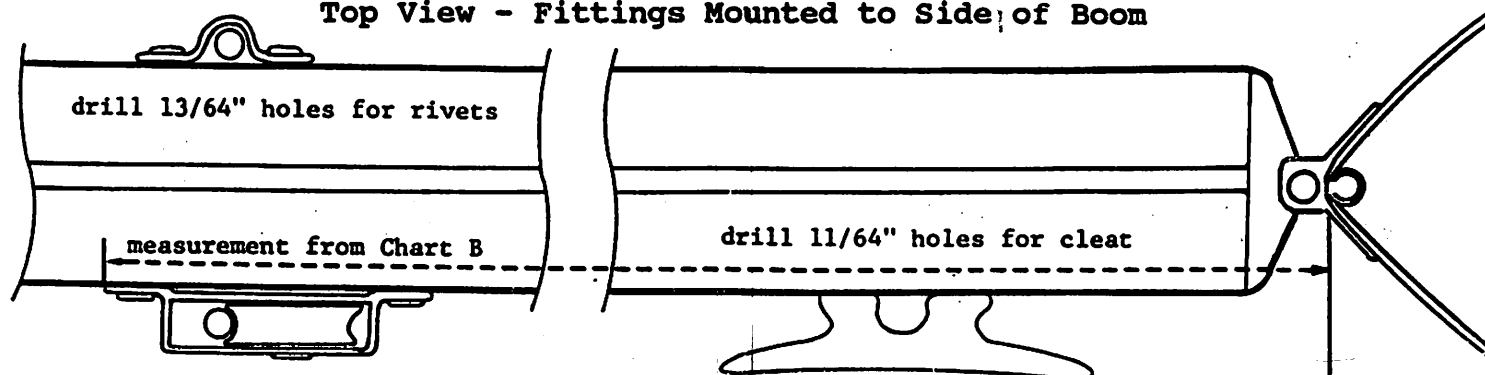
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Top View - Fittings Mounted to Side of Boom



Sheave Side Of Block Is Towards Cleat

Installing Dead End Eyestrapp

Use the eye strap as a template to mark the holes and start the holes using a set punch.

Drill Size - 13/64" (5mm).

Important: Put the eye strap through the line eye splice before riveting to the mast. Rivet the eye strap and line to the boom.

Mounting Adjusting Cleat

Mount the cleat near the forward end of the boom so the Lazy Jacks may be easily adjusted. Before mounting the cleat, swing the boom out as far forward as it will go to make sure the cleat does not hit the mast. If you have single line reefing or other obstructions forward of the block, mount the cleat aft of the block as pictured on page 9. Use the cleat as a template to mark the holes and using the set punch.

Drill size for screws - 11/64" (4.5mm).

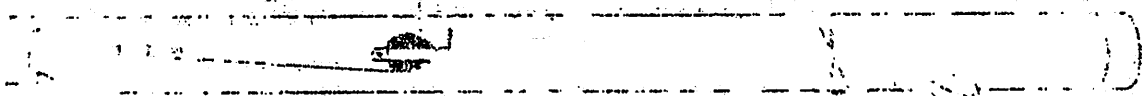
Note: If you have internal boom control lines, cut off the ends of the self tapping screws and round off the tip to avoid snagging the internal lines. Screws should be first screwed into the boom to cut threads.

Mounting Cradle Strap

Pull the aft line towards the end of the boom, until the line intersects with the mark you have made as indicated in chart B. The eyestrapp will be located aft of the mark. See Page 9.

Drill Size - 13/64" (5mm)

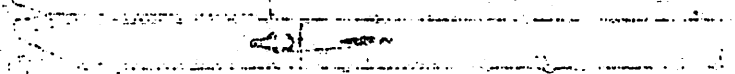
Make sure the line is inside the eye strap before riveting. Rivet the eye strap in place.



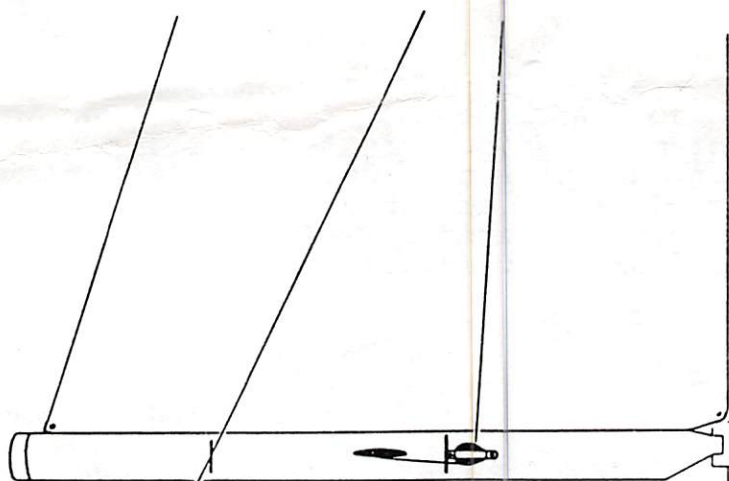
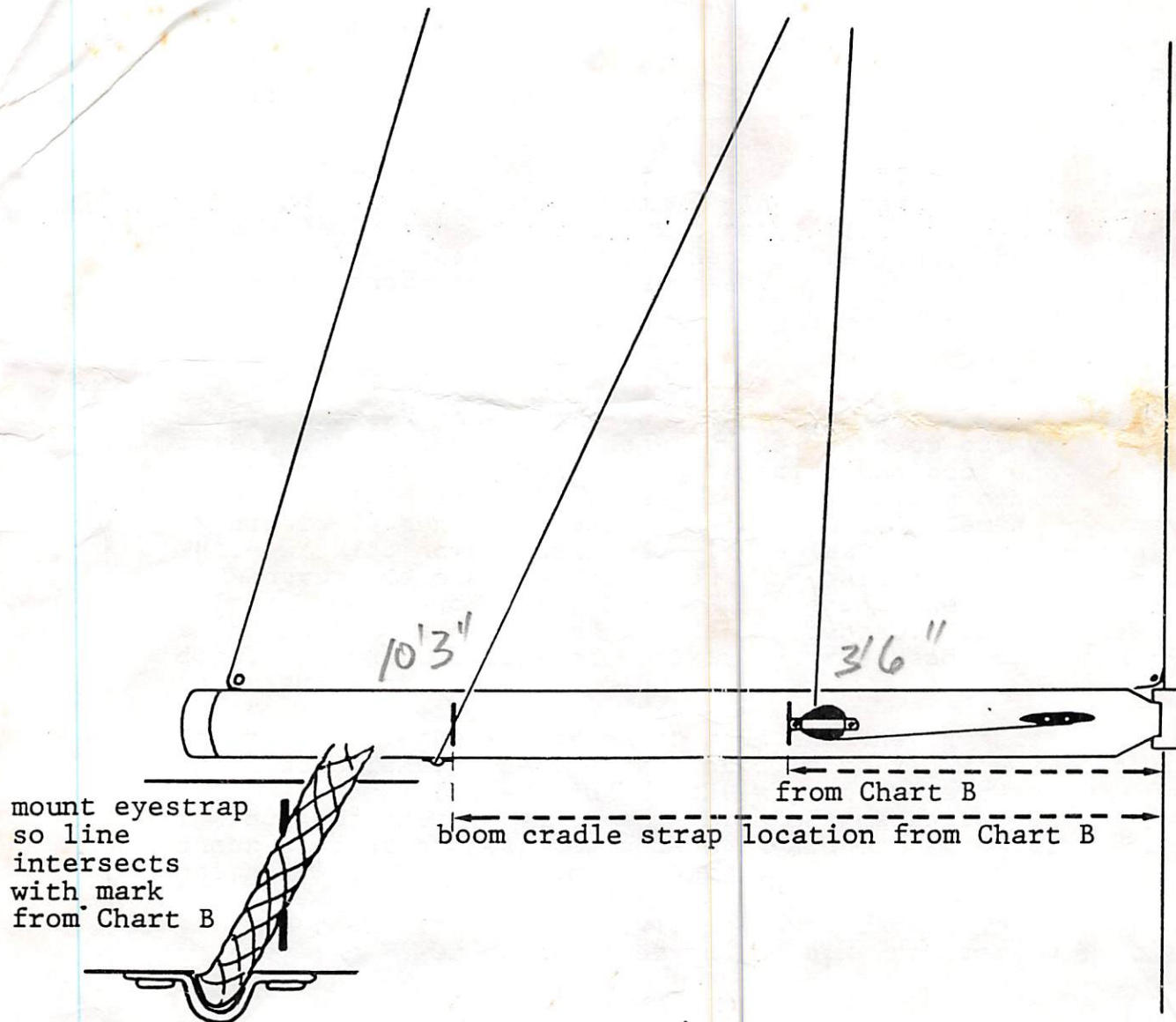
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alternative cleat location-
sheave side of cheek block
is towards cleat

Adjusting Lazy Jacks

The Lazy Jacks may be set to the proper tension at the dock. To adjust the Lazy Jacks, raise the mainsail and make sure the adjusting line is uncleated at the boom. Tighten the mainsheet as tight as it will go to find the maximum distance that the boom would be lowered while under sail. Next tighten the adjusting line and slack it off 2" (50mm). The system should now be set at a reasonable tension so it will not interfere with sail shape, yet it will contain the sail when lowered onto the boom. Some further adjustment may be necessary.

Using Your Lazy Jacks - Precautions

Before sailing, make sure the Lazy Jacks will not catch on the spreaders. While at the dock, swing the boom out so the sail is against the spreader tips. Try lifting the boom and shaking it to see if the Lazy Jack lines are apt to swing behind the spreaders. When first sailing with the Lazy Jacks, look aloft while sailing downwind to see if the Lazy Jacks catch behind the spreaders. If they get snagged while sailing, it is important to release the snagged Lazy Jacks from behind the spreader before bringing the mainsail in towards the center. If this is not done, you run the risk of breaking your spreaders as the mainsail is cranked in.

If the Lazy Jacks are prone to snagging the spreader tips, there are 2 solutions. The easiest thing is to rig shock cords to pull the Lazy Jacks forward out of the way of the spreaders tips. Rig a length of shock cord on each side of the sail. Dead end the shock cord at or near the gooseneck and run it up to the blocks which are suspended from the wires.

If this does not help, you will need to reposition the Mast Tangs so they are lower on the mast and do not interfere with the spreader tips.

Raising Sail

When hoisting sail check to make sure the sail does not get caught in the Lazy Jacks. The headboard or battens may catch between the mast and the Lazy Jacks or jam in the angle between the lines. This could result in a broken batten, ripped sail or damaged Lazy Jack. To avoid this, look aloft as you raise the mainsail and stop if the sail gets caught. Also, make sure the boat is facing directly into the wind when hoisting sail.

You may find that the sail is less apt to catch on the Lazy Jacks if the topping lift is used and the Lazy Jacks are somewhat loose. This way they will deflect out of the way easier when the sail makes contact with them.

Lazy Jacks are designed to neatly contain the mainsail on the boom when you are lowering or reefing the sail. Please contact us if you have any questions or comments.

Good Sailing! Harken Yacht Equipment (414) 691-3320