CANADIAN COAST GUARD

47 FOOT MOTOR LIFEBOAT

FENDER SYSTEM REPAIR MANUAL

Last edited: June 14, 2005
Produced by the Gilman Corporation
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CAT #MLBFND R/P 101

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ABOUT THE FENDER SYSTEM

Material and Construction

The fenders are constructed of extruded ionomer foam. Ionomer resins are high-grade thermoplastic polymers of the polyolefin family manufactured by DuPont under the brand name Surlyn® and by Exxon Chemical under the name Iotek®. In addition to exceptional resistance to environmental agents and chemicals, ionomer resins have the unique ability to link ionically between neighboring molecular chains with the same bond as the polymer chain itself. These molecular bonds give structures built of ionomer foam exceptional integrity.

Initially extruded as a continuous sheet, Softlite Ionomer Foam has a very strong, thick-walled, closed-cell structure. During the foaming process, uniform pigments, ultraviolet stabilizers, and antioxidants are integrated into the cell structures.

After extrusion, the continuous sheet is rolled up into a cylinder by continuous spiral winding under heat and pressure, causing each successive layer to weld to the previous, using the ionic cross-linkages to create an integrally structured homogeneous mass of tough, universally pigmented, flexible, closed-cell ionomer foam.

This cylindrical mass can be shaped to any exterior contour by heat-cutting. The MLB fenders are precision-wire cut to dimensional requirments before surface densification. After densification, sections are heat-welded and then molded to produce the seamless finish. Finally, front acess and slotted bolt holes, and as required, rear relief slots are cut. The resultant foam structure offers superior strength, energy absorption, compression resistance, water barrier characteristics, and structural integrity.

The final surface of the fenders is a skin of solid ionomer plastic (45.0 pounds per cubic foot). The cylinders are made intentionally oversized so that the outer layers can be compacted with heat and pressure to form this skin. The skin is tough, but smooth and flexible; it is the same material used for the covers of bowling pins and golf balls. The surface resists abrasions and cuts, is not rough on ship paint or metal, and is non-marking in any color. Since the skin is identical to the interior foam, the fender's integrity is unsurpassed.

Characteristics

Extruded, ionically cross-linked Softlite foam is considered the toughest, most durable, flexible, low-density, closed-cell foam on the market. In addition, during the extrusion process, uniform colors, ultraviolet stabilizer, and antioxidant are integrated into all the cell structures throughout the fender mass.

Softlite Ionomer Foam is especially well-suited for marine fenders because it offers toughness, durability, excellent resistance to environmental agents, e.g., solar radiation, salt, waves, etc., with low weight and density, while possessing great flexing strength and energy absorption capacity.

The fender is a uniform structure of thick-walled, closed-cell, universally pigmented 4.5 pound-per-cubic-foot Softlite Ionomer Foam. The structure is composed of a continuous spiral, alternating layers of low-density foam with high-density welds. There are no voids or cavities in the foam; such voids are impossible in the Softlite construction process.

The fenders retain their inherent characteristics at all temperatures from -85°F to +175°F. The fenders will not fracture or permanently distort when dropped on a hard surface, when struck by a vessel under operating conditions, or when working between two vessels or between a vessel and pier.

The irrelevance of inevitable surface damage to fender function is a significant advantage over old-style, composite material, foam-filled fenders.

HOW TO USE THIS MANUAL

1) Assess extent and location of fender system damage.

Measure the length of damaged fender. Replacement sections must begin and end between studs and span a minimum of two studs. Mark the nearest "between-stud" location from each end of the damage. This is the minimum replacement section length you will need.

The location of your damage will be identified by stud positions as well as distances from bow and stern centers and distances from stern corners (see fender system layout drawings, beginning on page 6).

2) Determine the appropriate repair kit for your requirement.

Go to the fender system layout drawings beginning on page 6. Review the drawings and select the layout drawing (bow, stern or lower rail) that covers the specific area of your damage. Each drawing identifies the applicable repair kit and is high lighted indicating the locations where the kit can be used.

There may be more than one kit that covers the specific location you are repairing so review all the layout drawings before making your kit selection. Pay particular attention to the kit descriptions. The Bow Nose Kit and Port & Starboard Molded Kits require that the entire replacement section length be used. The

Universal Straight section and Universal End section replacement sections may be cut to fit in shorter lengths for smaller damaged areas, keeping in mind that a minimum of two studs must be spanned.

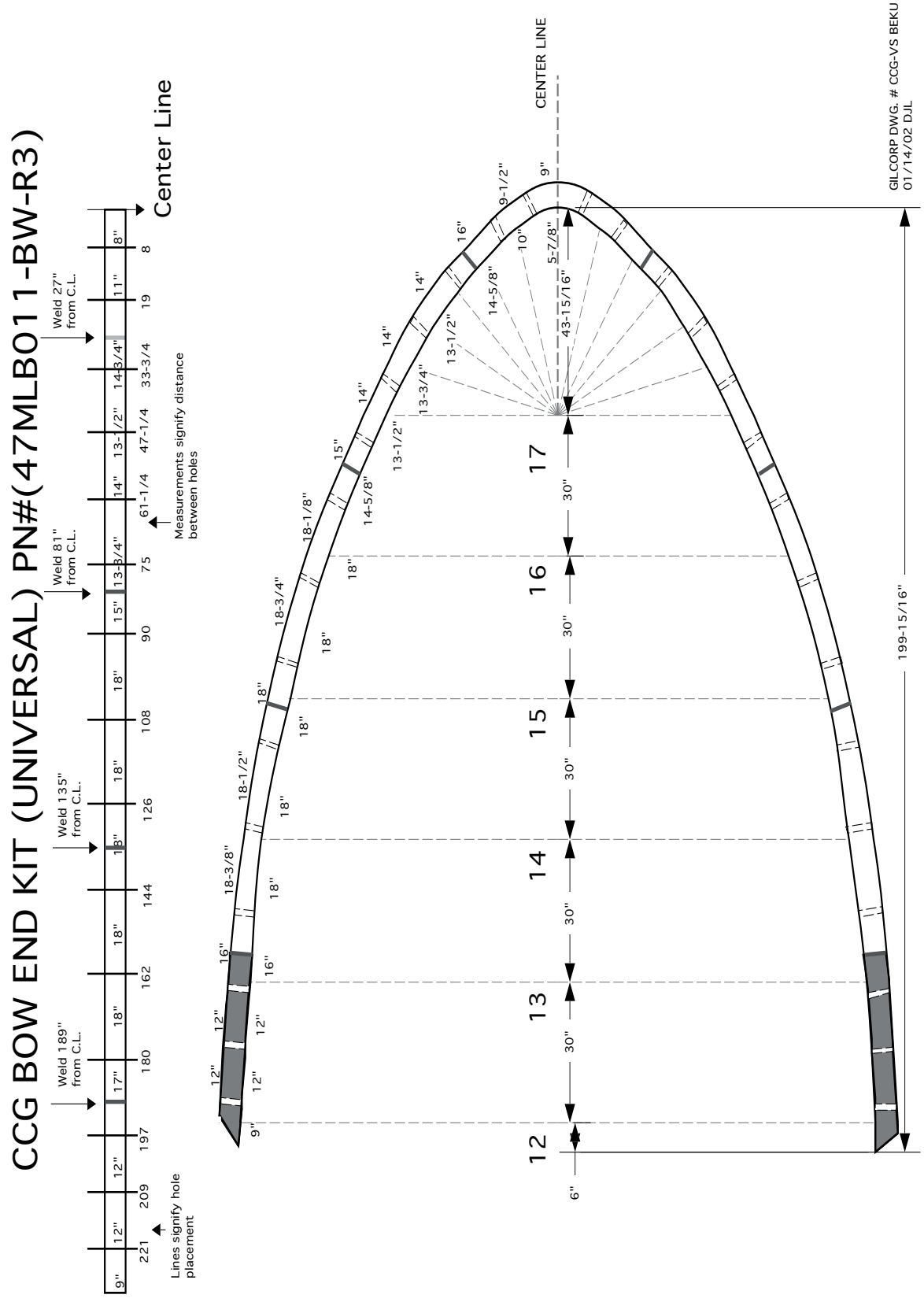
3) Determine the order point.

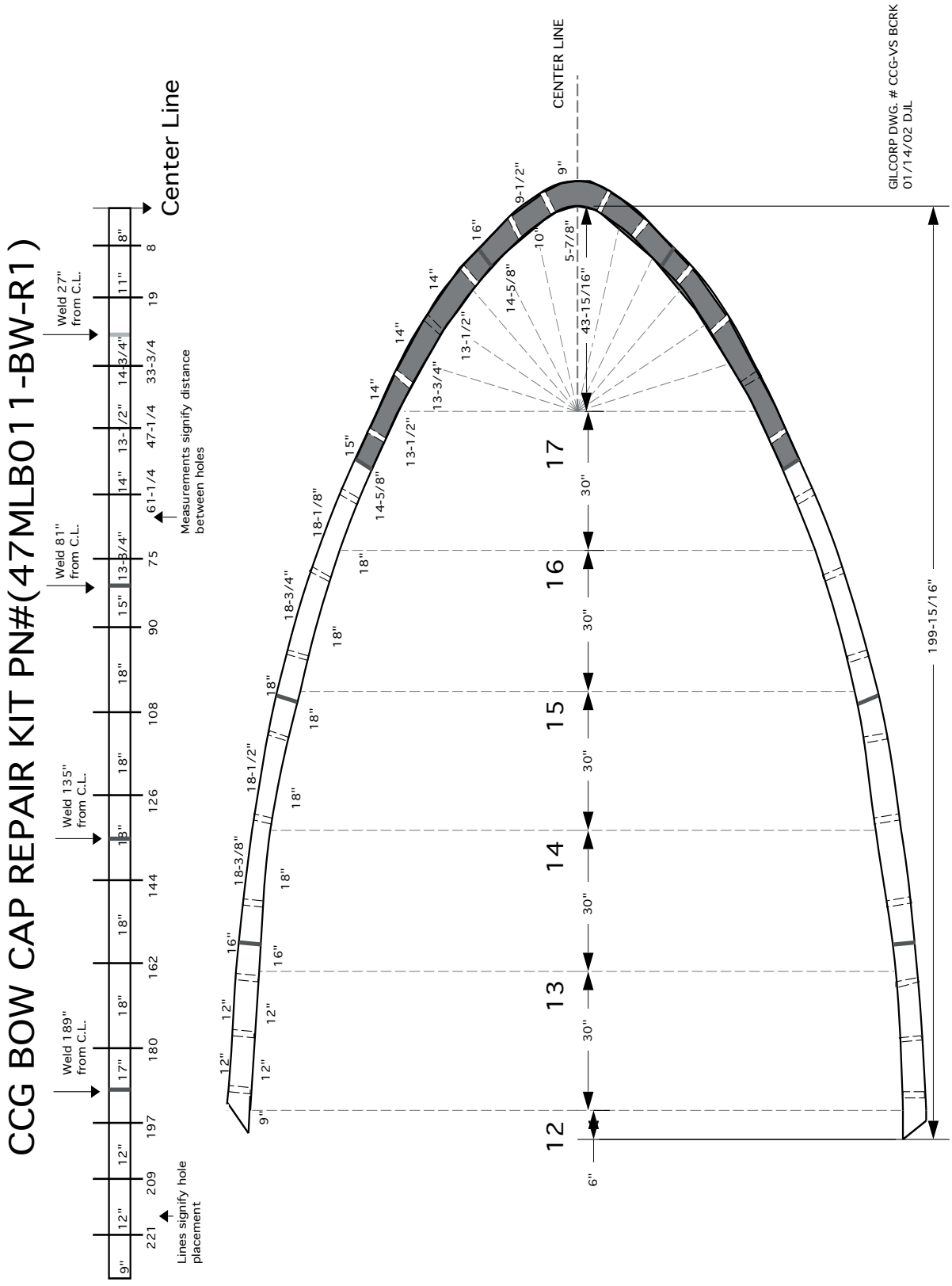
Before ordering from the manufacturer you should check to determine if your fender system is still under warranty.

4) Ordering

You can order complete systems or any of the repair & replacement kits listed in this catalogue from:

Gilman Corporation
40 Main Street - One Polly Lane - Box 68
Gilman, CT 06336
Phone: 860 887-7080
Fax: 860 886-5402
email: mail@gilmancorp.com


CCG BOW END KIT (UNIVERSAL) PN#(47MLB011-BW-R3)
Center Line
Weld 27" from C.L.
Weld 81" from C.L.
Weld 135" from C.L.
Weld 189" from C.L.
Measurements signify distance between holes
Lines signify hole placement
CENTER LINE
GILCORP DWG. # CCG-VS BEKU
01/14/02 DJL
199-15/16"
43-15/16"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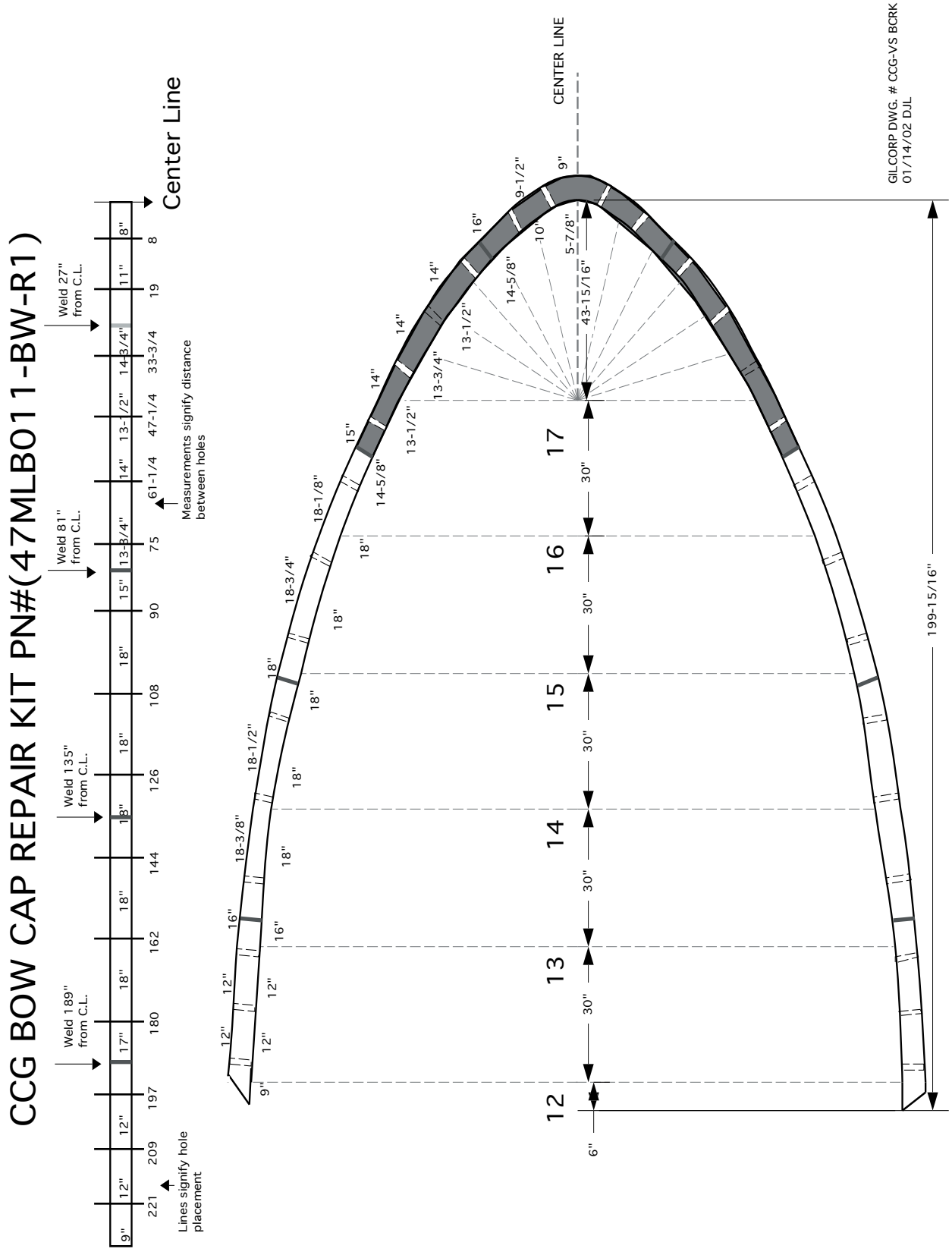
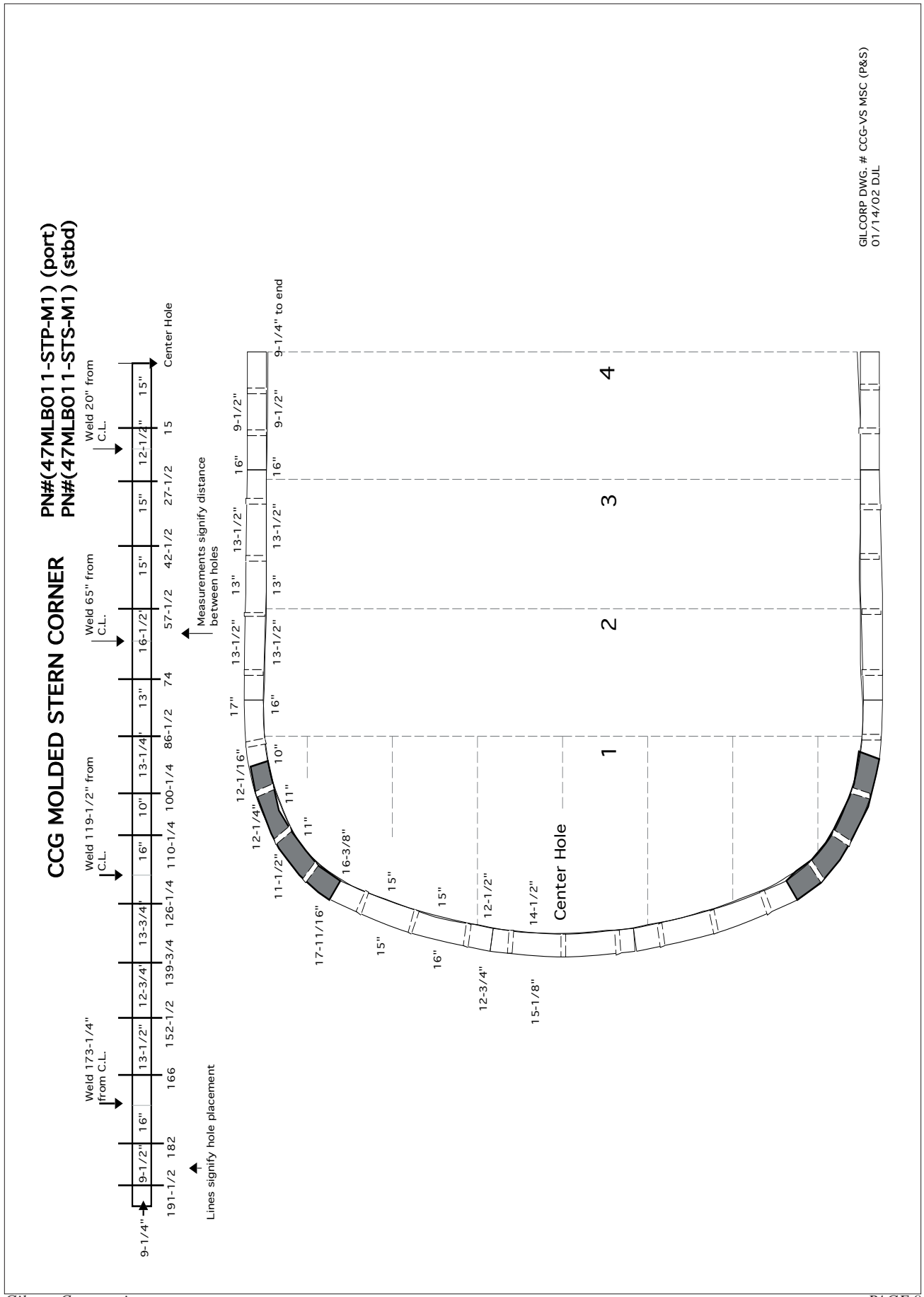
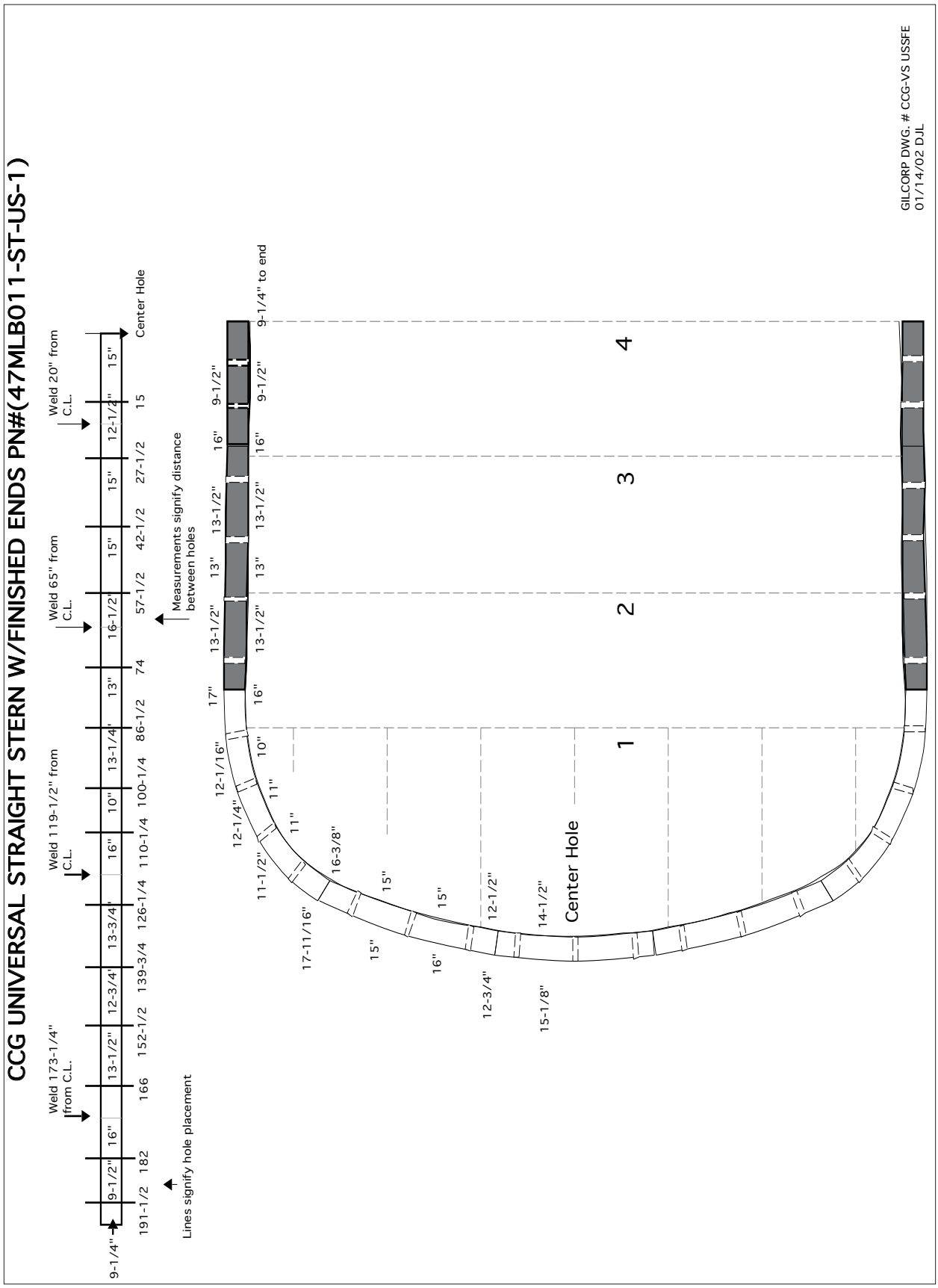
Center Line
Weld 189" from C.L.
Weld 135" from C.L.
Weld 81" from C.L.
Weld 27" from C.L.
Measurements signify distance between holes
Lines signify hole placement
CENTER LINE
GILCORP DWG. # CCG-VS BCRK
01/14/02 DJL
199-15/16"


CCG BOW CAP REPAIR KIT PN#(47MLB011-BW-R1)
Center Line
Weld 27" from C.L.
Weld 81" from C.L.
Weld 135" from C.L.
Weld 189" from C.L.
Measurements signify distance between holes
Lines signify hole placement
CENTER LINE
GILCORP DWG. # CCG-VS BCRK
01/14/02 DJL
199-15/16"
43-15/16"
30"
6"


CCG MOLDED STERN CORNER
PN#(47MLB011-STP-M1) (port)
PN#(47MLB011-STS-M1) (stbd)
Weld 173-1/4" from C.L.
Weld 119-1/2" from C.L.
Weld 65" from C.L.
Weld 20" from C.L.
Center Hole
Measurements signify distance between holes
Lines signify hole placement
9-1/4" to end
Center Hole
GILCORP DWG. # CCG-VS MSC (P&S)
01/14/02 DJL


CCG UNIVERSAL STRAIGHT STERN W/FINISHED ENDS PN#(47MLB011-ST-US-1)
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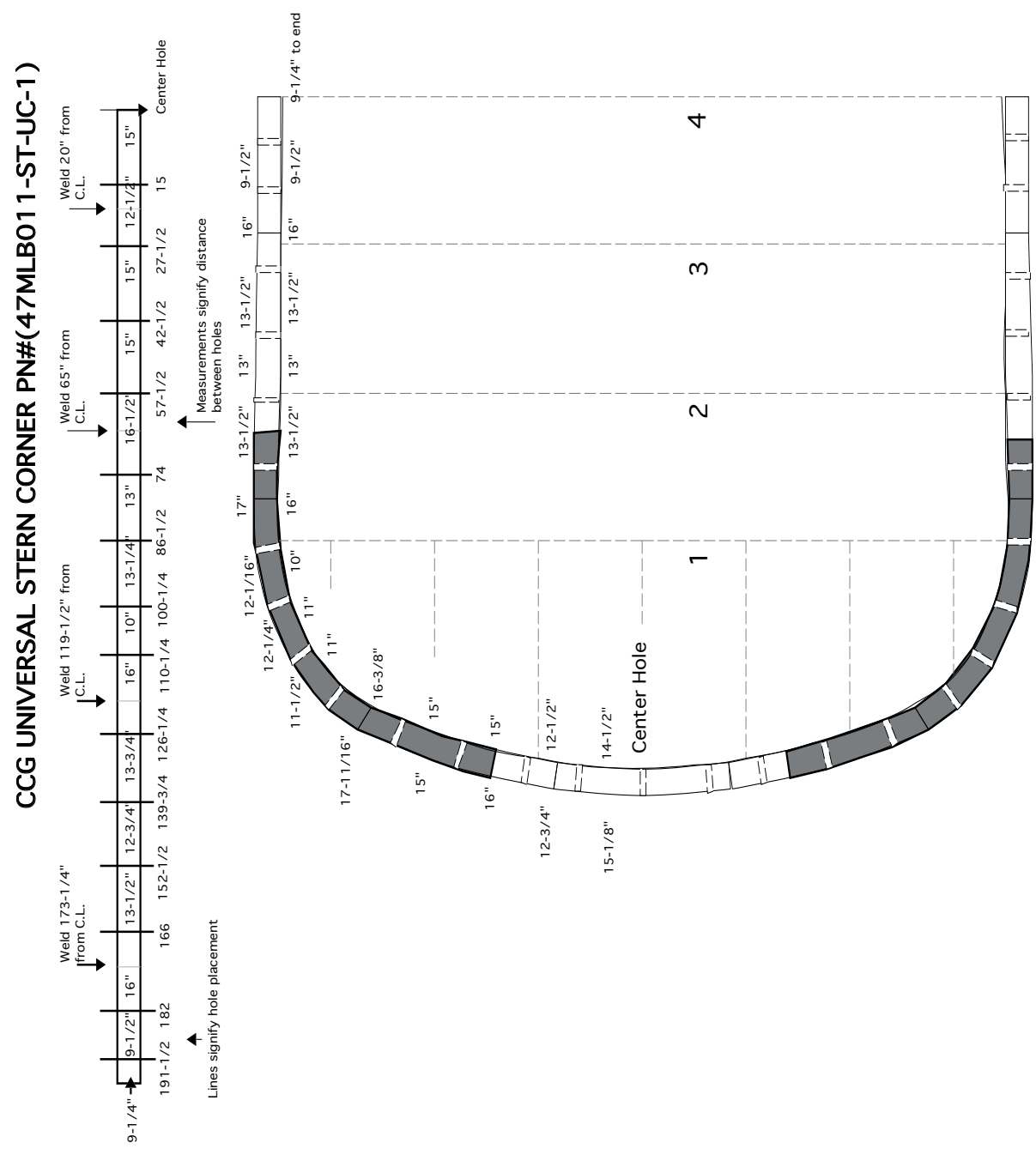
Weld 119-1/2" from C.L.
Weld 65" from C.L.
Weld 20" from C.L.
Center Hole
Measurements signify distance between holes
Lines signify hole placement
9-1/4"
9-1/2"
16"
13-1/2"
12-3/4"
13-3/4"
16"
10"
13-1/4"
13"
16-1/2"
15"
15"
12-1/4"
15"
9-1/4"
191-1/2
182
166
152-1/2
139-3/4
126-1/4
110-1/4
100-1/4
86-1/2
74
57-1/2
42-1/2
27-1/2
15
9-1/4" to end
9-1/2"
16"
13-1/2"
13"
13-1/2"
13"
13-1/2"
16"
13-1/2"
17"
16"
10"
11"
11"
16-3/8"
15"
15"
16"
12-3/4"
15-1/8"
17-11/16"
15"
11-1/2"
12-1/4"
12-1/16"
12-1/2"
14-1/2"
Center Hole
1
2
3
4
GILCORP DWG. # CCG-VS USSFE
01/14/02 DJL



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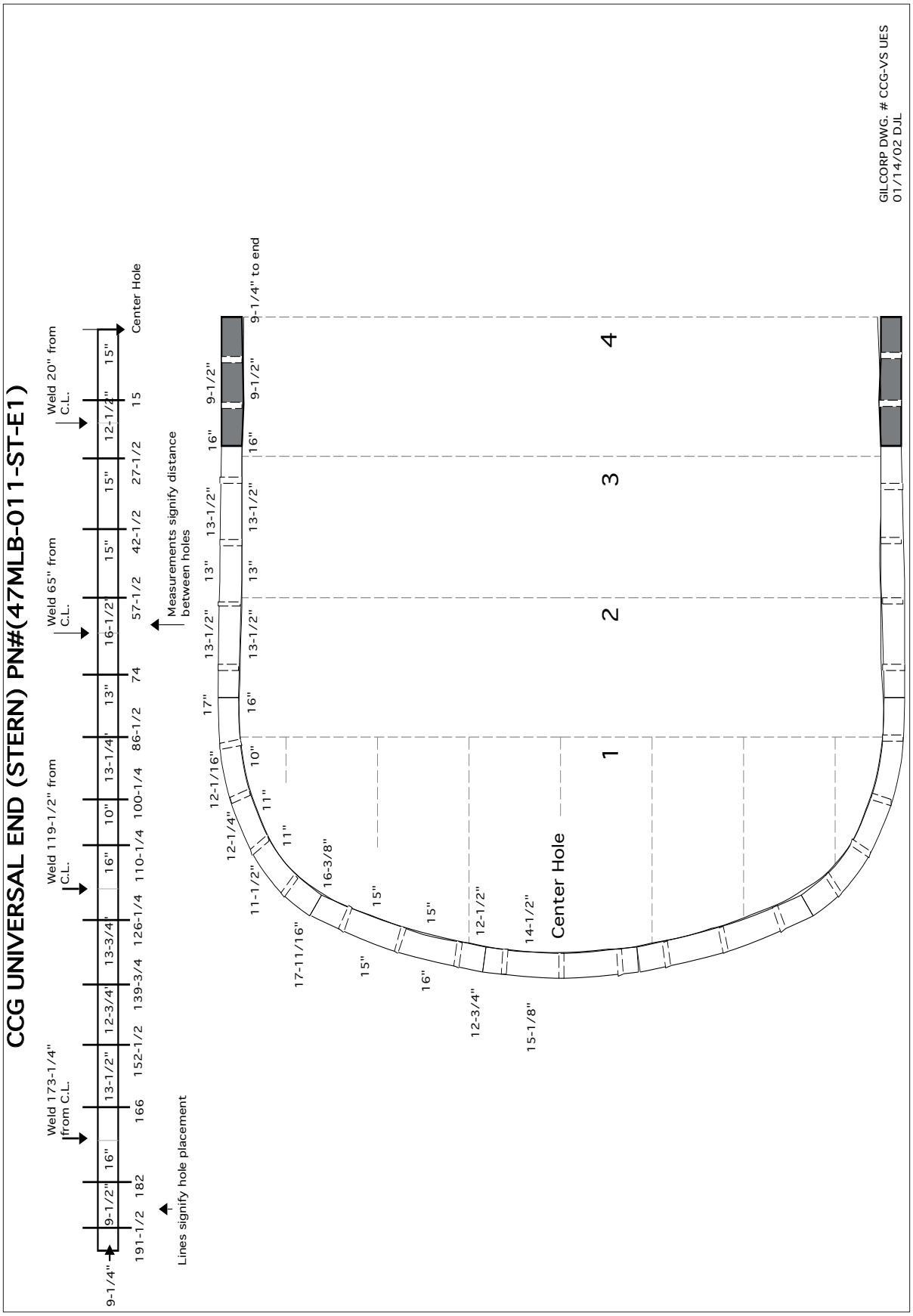
CCG UNIVERSAL END (STERN) PN#(47MLB-011-ST-E1)
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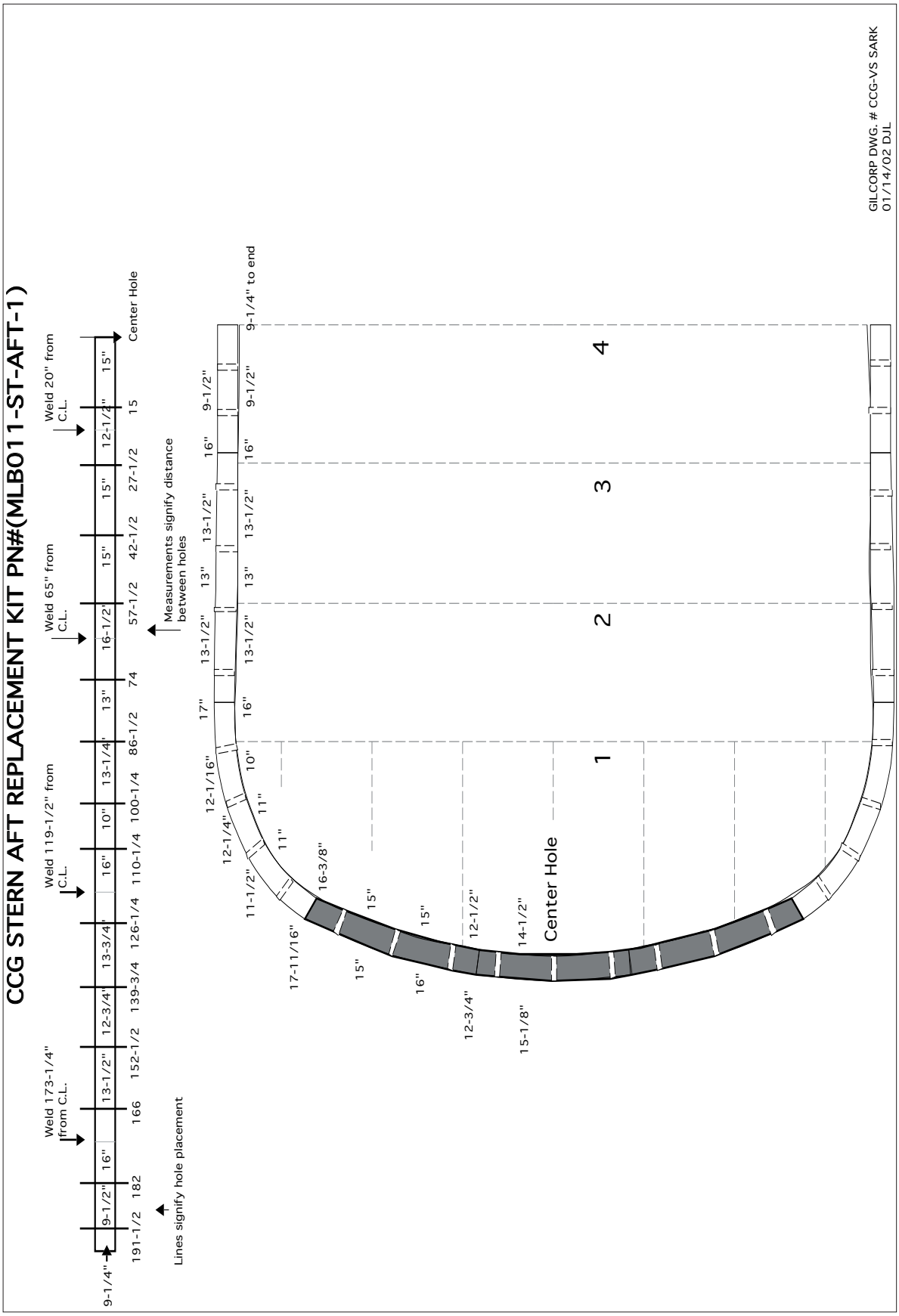
Weld 119-1/2" from C.L.
Weld 65" from C.L.
Weld 20" from C.L.
Center Hole
Measurements signify distance between holes
Lines signify hole placement
9-1/4"
9-1/2"
16"
13-1/2"
12-3/4"
13-3/4"
16"
10"
13-1/4"
13"
16-1/2
15"
15"
12-1/4"
15"
9-1/4" to end
191-1/2
182
166
152-1/2
139-3/4
126-1/4
110-1/4
100-1/4
86-1/2
74
57-1/2
42-1/2
27-1/2
15
9-1/2"
16"
13-1/2"
13"
13-1/2"
13"
13-1/2"
16"
9-1/2"
17"
16"
10"
11"
11"
16-3/8"
15"
15"
12-1/2"
14-1/2"
12-1/16"
12-1/4"
11-1/2"
17-11/16"
15"
16"
12-3/4"
15-1/8"
Center Hole
1
2
3
4
GILCORP DWG. # CCG-VS UES
01/14/02 DJL


CCG STERN AFT REPLACEMENT KIT PN#(MLB011-ST-AFT-1)
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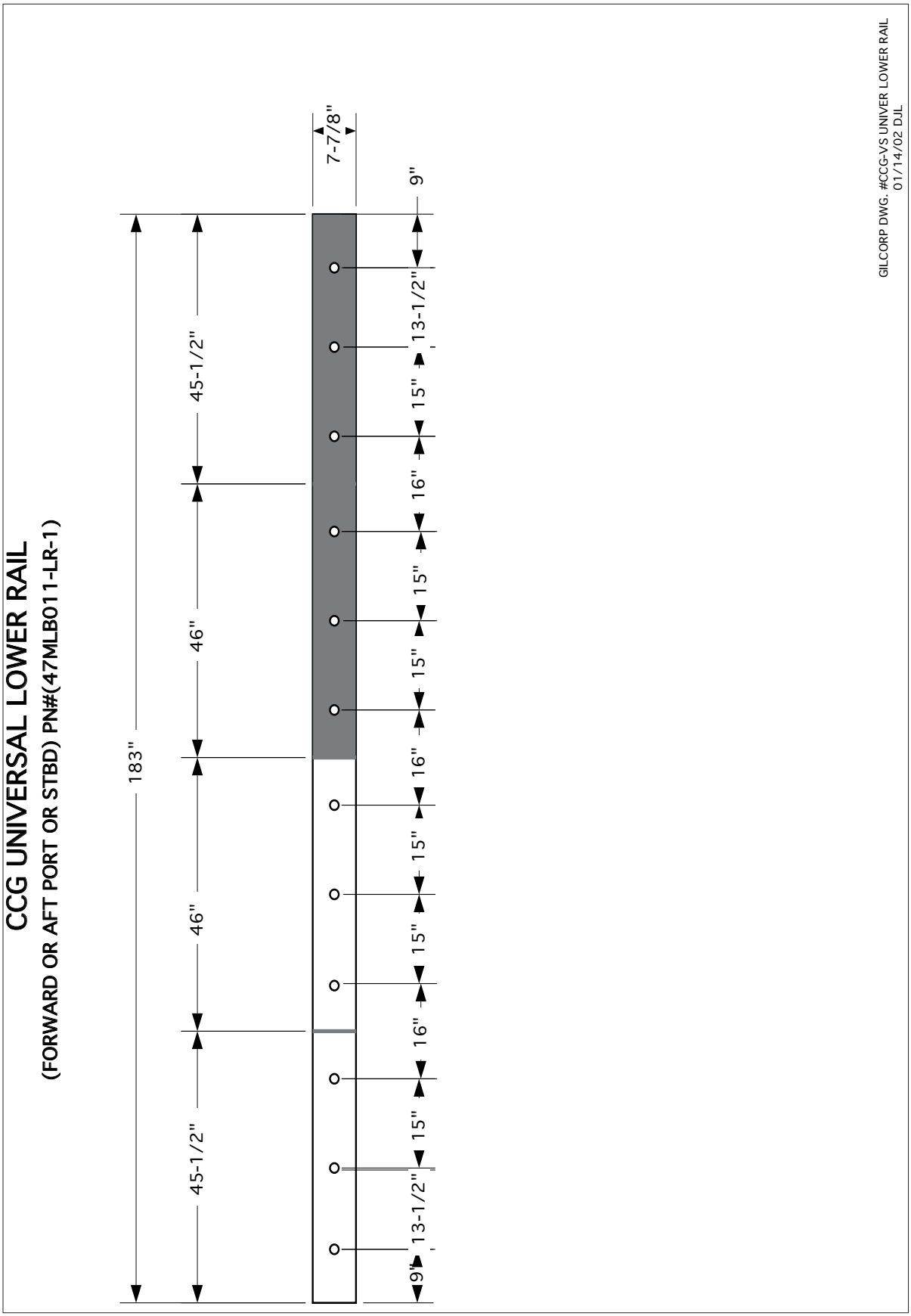
Weld 119-1/2" from C.L.
Weld 65" from C.L.
Weld 20" from C.L.
Center Hole
Measurements signify distance between holes
Lines signify hole placement
9-1/4"
9-1/2"
16"
13-1/2"
12-3/4"
13-3/4"
16"
10"
13-1/4"
13"
16-1/2
15"
15"
12-1/4"
15"
9-1/4"
191-1/2
182
166
152-1/2
139-3/4
126-1/4
110-1/4
100-1/4
86-1/2
74
57-1/2
42-1/2
27-1/2
15
9-1/4" to end
9-1/2"
16"
13-1/2"
13"
13-1/2"
16"
13-1/2"
13"
13-1/2"
16"
9-1/2"
17"
12-1/16"
12-1/4"
11-1/2"
10"
11"
11"
16-3/8"
17-11/16"
15"
16"
15"
12-3/4"
12-1/2"
15-1/8"
14-1/2"
Center Hole
1
2
3
4
GILCORP DWG. # CCG-VS SARK
01/14/02 DJL


CCG UNIVERSAL LOWER RAIL
(FORWARD OR AFT PORT OR STBD) PN#(47MLB011-LR-1)
GILCORP DWG. #CCG-VS UNIVER LOWER RAIL
01/14/02 DJL
183"
45-1/2"
46"
46"
45-1/2"
7-7/8"
9"
13-1/2"
15"
16"
15"
15"
16"
15"
15"
16"
15"
13-1/2"
9"

SURFACE REPAIR KIT

P/N 47 MLB-011-SR-1

DESCRIPTION

The MLB Surface Repair Kit is designed for general surface repairs of all types. You can learn to fill and smooth cuts, gouges, abrasions, and scrapes not requiring a section replacement by first viewing the instructional video and then following the instruction sheet. Some practice is usually required to get a feel for applying the correct amounts of heat and material. Practice samples are provided with each kit for that purpose.

Components:

(1)	Roller
(1)	12” x 12” Release material
(1)	Heat gun
(12)	Fill sticks
(25)	SF 30# material
(25)	SF 6# material
(1)	Knife
(1)	Practice sample
(1)	Instruction video
(1)	Instruction sheet

SURFACE REPAIR KIT

INSTRUCTIONS

EQUIPMENT NEEDED:
Heat gun
Razor knife
Hand roller
Hot and cold iron
Release material
6# density foam
30# density foam
Fill sticks

FILL STICK REPAIR:

Use this process to repair small gouges and deep scratches.

1. Clean surface area to be repaired. Be sure to dry the damaged area.

2. Using a heat gun, heat the fill stick until it starts to liquefy.

3. Apply melted fill stick to the damaged area until the area is over-filled.

4. Allow to cool solid, and trim flush using a razor knife.

5. Refer to the sample supplied in this kit for comparison.

   NOTE: For larger areas you may need to use a putty knife or flat tool to smooth surface.

FOAM REPAIRS:

Use this process to repair deep holes and tears.

1. Clean and dry damaged area by approved CCG cleaning methods.

2. Using a heat gun and the 6# density material, heat the damaged area and the 6# foam and fill in the void.

3. Use the hand roller to pack the foam into the void until it is filled approximately 0.25” over the skin surface.

4. Cut a patch of 30# density foam slightly larger than the damaged area. Heat the patch to the surface of the damaged area and roll smooth.

   NOTE: A cold flat iron or flat metal plate may be used to smooth the surface.

UNIVERSAL BOW END SECTION REPLACEMENT KIT

P/N 47 MLB-011-BW-R3

DESCRIPTION

The MLB Universal Bow End Section Replacement Kit will fit either the Port or Starboard side of the Bow from 8" forward of stud #13 to the trailing edge aft (see layout drawing, page 6.). This is a custom-fit fender that will not need to be cut, it is attached using standard attachment hardware.

Components:

(1) 41" Section with standard access holes
(3) S.S. washer/nut assemblies
(1) 6" Backer bar
(1) 10 oz. Tube of 3M-4200 Fast Cure Adhesive
(1) PVC marking guide
(1) Instruction video
(1) Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quantity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB-011-SR-1, is recommended for use with this repair procedure.

UNIVERSAL BOW END SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED:

Cutting device (Sawzall, hand saw, etc.)
0.75” Deep well socket with ratchet and extension
0.75” Shallow socket
Razor knife
Heat gun
Hand roller
Caulking gun
Rubber mallet or small wedge
Hardwood wedges 10” wide, 12” long with a taper of 2” to 0.125” thick

REMOVAL OF EXISTING FENDER SECTION:

1 . Using the PVC marking guide, mark 8” forward of stud #13 and cut.

2. Remove all hardware from the cut section.

3. Starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

4. Clean and prepare hull surface by CCG approved cleaning methods.

INSTALLATION OF THE BOW END KIT:

1. Apply recommened adhesive to the back of the new fender.

2. Use the 6” backer bar for extra holding power on stud #13 and fasten all studs with 0.5” nut and washer assemblies supplied with kit.

3. There may be a mismatch or space where the replacement fender meets the original system; by using a Surface Repair Kit P/N 47 MLB-001-SR-1, you will be able to fill any voids and seal the seam with a strip of 30# density foam.

UNIVERSAL BOW STRAIGHT SECTION REPLACEMENT KIT

P/N 47 MLB-011-BW-R2

DESCRIPTION

The MLB Universal Bow Straight Section Replacement Kit will fit on either the Port or Starboard side of the Bow from 9" forward of stud #7 to 9" aft of stud #12 (see layout drawing, page 7). This is a custom-fit fender that will not have to be cut; it is attached by using standard attachment hardware.

Components:

(1) 108" Section (two pieces) with standard access holes
(2) 6" Backer bars
(6) S.S. washer/nut assemblies
(1) PVC marking guide
(2) 10 oz. Tube 3M-4200 Fast Cure Adhesive
(1) Installation spline
(1) Instruction video
(1) Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quantity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB-011-SR-1, is recommended for use with this repair procedure.

UNIVERSAL BOW STRAIGHT SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED:

Cutting device (Sawzall, hand saw, etc.)
0.75” Deep well socket with ratchet and extension
0.75” Shallow socket
0.75” Open end or box wrench
Razor knife
Heat gun
Hand roller
Caulking gun
Rubber mallet or small wedge
Hardwood wedges 10” wide, 12” long with a taper of 2” to 0.125” thick

REMOVAL OF EXISTING FENDER SECTION:

1. Using the PVC marking guide, mark 9” forward of stud #7 and cut, also mark 9” aft of stud #12 and cut. Remove all hardware from cut section.

2. Starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

3. Clean and prepare hull surface by CCG approved cleaning methods.

INSTALLATION OF STRAIGHT SECTION FENDER:

1. Apply recommended adhesive to the back of the fender.

2. Starting from stud #7, install the fender using 0.5” nuts and washers supplied.

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NOTE: Use a 6” backer bar for extra holding power on stud #7 and #12.

3. Use the installation splint for extra leverage in drawing the fender tight to the hull.

4. There may be a mismatch or space where the replacement fender meets the original system; by using a Surface Repair Kit P/N 47 MLB-011-SR-1, you will be able to fill any voids and seal the seam with a strip of 30# density foam.

BOW (NOSE)
SECTION REPLACEMENT KIT

P/N 47 MLB-011-BW-R1

DESCRIPTION

The MLB Bow (Nose) Section Replacement Kit is designed to replace the fender system bow nose (see layout drawing, page 8.). The bow replacement section is thirteen feet, six inches long (13'6") and comes complete with miter cuts and access holes ready to install. Follow the steps in "How To Use This Manual" (page 4) to determine the extent of the damage and it's location. Because of the severe compound bow radius, we recommend that the full thirteen-foot length be installed. This will allow for the greatest leverage in wrapping around the bow radius and reduce stress at the mating ends. If less than the full thirteen-foot length is to be used, pay special attention to the warming and fit-up portion of the installation instructions. First, view the instructional video included in this kit then follow the instruction sheet.

Components:

(1)	13'6" Bow nose fender section with miters
(1)	Griddle and blanket/Chemfab
(12)	S.S. washer/nut assemblies
(4)	S.S. Installation alignment tubes
(2)	20" Joining bars
(1)	Installation splint
(1)	PVC marking guide
(2)	10 oz. Tubes 3M-4200 Fast Cure
(2)	6" Backer bars
(1)	Instruction video
(1)	Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quantity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB-011-SR-1, is recommended for use with this repair procedure.

BOW (NOSE)
SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED: Cutting device (Sawzall, hand saw, etc.)
0.75” Deep well socket with ratchet and extension
0.75” Shallow socket
Razor knife
Heat gun
Hand roller
Caulking gun
Rubber mallet or small wedge
Hardwood wedges 10” wide, 12” long with a taper of 2” to 0.125” thick

REMOVAL OF THE EXISTING BOW:

1. Locate the area, port and starboard between the sixth and seventh stud from center bow.

2. Measure 6” from the sixth stud aft and mark with the PVC marking guide.

3. Use a cutting device and cut along the marking guide (port and starboard).

4. Remove all retaining hardware from the bow cap (nuts on studs #1-6 port and starboard).

5. Remove the old bow cap using wooden wedges and mallet.Starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

6. Clean and prepare hull surface by CCG approved cleaning methods.

INSTALLATION OF THE BOW (NOSE):

1. Warm center of bow as shown in the instructional video.

2. Apply recommended adhesive to the back of the fender.

3. Starting from the center of the bow, install the fender on the studs and fasten using the 0.5” nuts and washers supplied.

   NOTE: Using 0.625” tubing will ease the hole lineup as shown on the video.

   NOTE: Use a super glue to adhere the nuts to the washers; it will save time and avoid frustration.

4. If the bow was adhered prior and the trailing edges are still installed on the hull, you will need to install a 6” backer bar (supplied) on the sixth attachment hole port and starboard.

5. Use the installation splint for extra leverage in drawing the fender tight to the hull.

6. If the bow was not adhered to the hull, you will use the 20” joining bar (supplied) on the sixth stud port and starboard.

7. There may be a mismatch or a space where the replacement bow meets the original system; by using a Surface Repair Kit P/N 47 MLB-011-SR-1, you will be able to fill any void and seal the seam with a strip of 30# density foam.

STERN CORNER (PORT ONLY) SECTION REPLACEMENT KIT

P/N 47 MLB-011-STP-M1

DESCRIPTION

The MLB Stern Corner, Port-Side Section Replacement Kit is designed to replace the fender system Stern corner, Port-side only (see layout drawing, page 9.). This Stern corner replacement piece is molded to specifically fit the Port-side corner and is forty-three inches (43") in length. The molded fit allows for the corner to be replaced without replacing the adjacent sections fore and aft, and comes complete; ready to install. First, view the instructional video included in this kit and then follow the instruction sheet.

Components:

(1)	43" Molded stern corner fender section (Port side ONLY)
(2)	Joining rods
(1)	PVC marking guide
(3)	S.S. washer/nut assemblies
(1)	10 oz. Tube 3M-4200 Fast Cure
(2)	6" Backer bars
(1)	Instruction video
(1)	Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quantity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB-011-SR-1 is recommnded for use with this repair procedure.

STERN CORNER (PORT ONLY) SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED:
Cutting device (Sawzall, hand saw, etc.)
0.75” Deep well socket with ratchet and extension
0.75” Shallow socket
Razor knife
Heat gun
Hand roller
Caulking gun
Rubber mallet or small wedge
Hardwood wedges 10” wide, 12” long with a taper of 2” to 0.125” thick

REMOVAL OF THE EXISTING STERN CORNER:

1. Lay new stern corner on top of the existing system to locate cutting points. Mark these points using the PVC marking guide.

2. Using the cutting device, cut along the marking guide (forward and aft).

3. Remove the retaining hardware (nuts & washers) from the cut section of fender.

4. Starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

5. Clean and prepare hull surface by CCG approved cleaning methods.

INSTALLATION OF THE MOLDED STERN CORNER

1. Apply recommended adhesive to the back of the replacement fender, as shown in the installation video.

2. Install using 0.5” nuts and washers and two 6” backer bars forward and aft as shown.

3. Use the Surface Repair Kit P/N 47 MLB-011-SR-1, to fill and seal any mismatches.

STERN CORNER (STARBOARD ONLY) SECTION REPLACEMENT KIT

P/N 47 MLB-011-STS-M1

DESCRIPTION

The MLB Stern Corner, Starboard-Side Section Replacement Kit is designed to replace the fender system Stern corner, Starboard-side only (see layout drawing, page 9.). This Stern corner replacement piece is molded to specifically fit the Starboard-side corner and is forty three inches (43") in length. The molded fit allows for the corner to be replaced without replacing the adjacent sections fore and aft, and comes complete; ready to install. First, view the instructional video included in this kit and then follow the instruction sheet.

Components:

(1)	43" Molded stern corner fender section (Starboard side ONLY)
(2)	20" Joining bars
(1)	PVC marking guide
(3)	S.S. washer/nut assemblies
(1)	10 oz. Tube 3M-4200 Fast Cure
(2)	6" Backer bars
(1)	Instruction video
(1)	Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quantity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB-011-SR-1, is recommended for use with this repair procedure.

STERN CORNER (STARBOARD ONLY) SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED:
Cutting device (Sawzall, hand saw, etc.)
0.75” Deep well socket with ratchet and extension
0.75” Shallow socket
Razor knife
Heat gun
Hand roller
Caulking gun
Rubber mallet or small wedge
Hardwood wedges 10” wide, 12” long with a taper of 2” to 0.125” thick

REMOVAL OF THE EXISTING STERN CORNER:

1. Lay new stern corner on top of the existing system to locate cutting points. Mark these points using the PVC marking guide.

2. Using the cutting device, cut along the marking guide (forward and aft).

3. Remove the retaining hardware (nuts & washers) from the cut section of fender.

4. Starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

5. Clean and prepare hull surface by CCG approved cleaning methods.

INSTALLATION OF THE MOLDED STERN CORNER

1. Apply recommended adhesive to the back of the replacement fender, as shown in the installation video.

2. Install using 0.5” nuts and washers and two 6” backer bars forward and aft as shown.

3. Use the Surface Repair Kit P/N 47 MLB-011-SR-1, to fill and seal any mismatches.

UNIVERSAL STRAIGHT STERN WITH FINISHED END SECTION REPLACEMENT KIT

P/N 47 MLB-011-ST-US-1

DESCRIPTION

The MLB Universal Straight Stern With Finished Section End Kit will fit on either the Port or Starboard side of the stern 6.75" aft of stud #6 forward to the trailing edge (see layout drawing, page 10). This is a custom-fit fender that will not have to be cut. It is attached using standard attachment hardware.

Components:

(1) 81.25" Section with standard access holes
(6) S.S. washer/nut assemblies
(1) PVC marking guide
(1) 6" Backer bar
(2) 12 oz. Tubes of 3M 4200 Fast Cure Adhesive
(1) Instruction video
(1) Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quanity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB-011-SR-1, is recommended for use with this repair procedure.

UNIVERSAL STRAIGHT STERN WITH FINISHED END SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED: Cutting device (Sawzall, hand saw, etc.)
0.75” Deep well socket with rachet and extension
0.75” Shallow socket
Razor knife
Heat gun
Hard roller
Caulking gun
Rubber mallet or small wedge
Hardwood wedges 10” wide, 12” long with a taper of 2” to 0.125” thick

REMOVAL OF EXISTING FENDER SECTION:

1. Using the PVC marking guide, mark 6.75” aft of stud #6 and cut.

2. Remove all hardware from cut section.

3. Starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

4. Clean and repair hull surface by CCG approved cleaning methods.

INSTALLATION OF STRAIGHT KIT:

1. Apply recommended adhesive to the back of the fender.

2. Install a 6” backer bar at stud #6 and install 0.5” nut/washer assemblies supplied.

3. There may be a mismatch or space where the replacement fender meets the original system; by using a Surface Repair Kit P/N 47 MLB-001-SR-1, you will be able to fill any voids and seal the seam with a strip of 30# density foam.

UNIVERSAL STERN CORNER SECTION REPLACEMENT KIT

P/N 47 MLB-011-ST-UC-1

DESCRIPTION

The MLB Universal Stern Corner Section Replacement Kit is designed to replace the fender system Port or Starboard Stern corners (see layout drawing, page 11.). This Stern corner replacement piece is longer than the Port and Starboard molded replacement sections at eight feet (8') in length. The mitered corner relief cuts allow the replacement section to fold around either stern corner and comes complete, ready to install. We recommend the full length be installed. This will allow for the greatest leverage in wrapping around the stern radius and reduces stress at the mating ends. If less than the full length is to be used, pay special attention to the warming and fit-up portion of the installation instructions. Follow the steps in "How To Use This Manual" (page 4) to determine the damage extent and location. Then view the instructional video included in this kit and follow the instruction sheet.

Components:

(1) 8' Stern corner fender section with miters
(2) Joining bars
(1) PVC marking guide
(1) Installation splint
(7) S.S. washer/nut assemblies
(4) S.S. Installation alignment tubes
(1) Griddle and blanket/Chemfab
(2) 10 oz. Tubes 3M-4200 Fast Cure
(2) 6" Backer bars
(1) Instruction video
(1) Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quantity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB-011-SR-1, is recommended for use with this repair procedure.

UNIVERSAL STERN CORNER SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED: Cutting device (Sawzall, hand saw, etc.)
0.75” Deep well socket with ratchet and extension
0.75” Shallow socket
0.75” Open end or box wrench
Razor knife
Heat gun
Hand roller
Caulking gun
Rubber mallet or small wedge
Hardwood wedges 10” wide, 12” long with a taper of 2” to 0.125” thick

REMOVAL OF THE EXISTING STERN CORNER:

1. From forward to aft, locate the sixth stud and measure 7” forward then mark with the PVC marking guide. Cut using the desired cutting device.

2. Locate the twelth stud forward to aft, and measure 5” aft of that, then mark with the PVC marking guide. Cut using chosen cutting device.

3. Remove all hardware from cut section.

4. Remove corner section by starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

5. Clean and prepare hull surface by approved CCG cleaning methods.

INSTALLATION OF THE UNIVERSAL 8' STERN CORNER SECTION

1. Warm the mitered portion of the stern corner per the installation video.

2. Apply recommended adhesive to the back of the fender.

3. Install a 20" joining bar from the 12th stud to the 11th stud and fasten with a 0.5" nut and washer.

4. Work the fender from aft to forward while installing required hardware.

5. Use a 6" backer bar on the sixth stud forward to secure.

6. If the prior system was installed without adhesive use a 20" joining bar to connect the sixth stud to the fifth stud as shown in the installation video. Cut the prior fender to length and install using recommended adhesive and hardware.

7. Use the Surface Repair Kit P/N 47 MLB-011-SR-1 to fill any voids and to repair any mismatches.

   NOTE: The installation splint may help to make hardware installation easier.

UNIVERSAL STERN END SECTION REPLACEMENT KIT

P/N 47 MLB-011-ST-E1

DESCRIPTION

The MLB Universal Stern End Section Replacement Kit will fit either port or starboard side of the stern 8.75" aft of stud #2 forward to the trailing edge (see layout drawing, page 12.). This is a custom-fit fender that will not have to be cut; it is attached using standard attachment hardware.

Components:

(1) 27.5" End section with standard access holes
(2) S.S. washer/nut assemblies
(1) PVC marking guide
(1) 6" backer bar
(1) 10 oz. Tube of 3M-4200 Fast Cure
(1) Instruction video
(1) Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quantity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB 011-SR-1 is recomended for use with this repair procedure.

UNIVERSAL STERN END SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED:

Cutting device (Sawzall, hand saw, etc.)
0.75" Deep well socket with ratchet and extension
0.75" Shallow socket
Razor knife
Heat gun
Hand roller
Caulking gun
Rubber mallet or small wedge
Hardwood wedges 10" wide, 12" long with a taper of 2" to 0.125" thick

REMOVAL OF EXISTING FENDER SYSTEM:

1. Using the PVC marking guide, mark 8.75" aft of stud #2 and cut.

2. Remove all hardware from cut section.

3. Starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

4. Clean and prepare hull surface by CCG approved cleaning methods.

INSTALLATION OF END KIT:

1. Apply recommended adhesive to the back of the fender.

2. Install a 6" backer bar at stud #2 and install nut/washer assembly supplied.

3. There may be a mismatch or space where the replacement fender meets the original system; by using a Surface Repair Kit P/N 47 MLB 011-SR-1, you will be able to fill any voids and seal the seam with a strip of 30# density foam.

STERN AFT
SECTION REPLACEMENT KIT

P/N 47 MLB-011-ST-AFT-1

DESCRIPTION

The MLB Stern Aft Replacement Section Kit will fit 9" aft of stud #10 port to 9" aft of stud #10 starboard (see layout drawing, page 13). This is a custom-fit fender that will not have to be cut; it is attached using standard attachment hardware.

Components:

(1)	10'10" Fender section with standard access holes
(9)	S.S. washer/nut assemblies
(1)	PVC marking guide
(2)	6" Backer bar
(2)	10 oz. Tube 3M-4200 Fast Cure
(1)	Instruction video
(1)	Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quantity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB-011-SR-1, is recommended for use with this repair procedure.

STERN AFT
SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED:

Cutting device (Sawzall, hand saw, etc.)
0.75” deep well socket with ratchet and extension
0.75” Shallow socket
Razor knife
Heat gun
caulking gun
Rubber mallet or small wedge
Hardwood wedges 10” wide, 12” long with a taper of 2” to 0.125” thick

REMOVAL OF EXISTING FENDER SECTION:

1. Using the PVC marking guide, mark 9” aft of stud #10 port and starboard and cut.

2. Remove all hardware from cut section.

3. Starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

4. Clean and prepare hull surface by CCG approved cleaning methods.

INSTALLATION OF AFT KIT:

1. Apply recommended adhesive to the back of the fender.

2. Install 6” backer bars at stud #11 port and starboard and install nut/washer assemblies supplied.

3. There may be a mismatch or space where the replacement fender meets the original system; by using a Surface Repair Kit P/N 47 MLB-011-SR-1 you will be able to fill any voids and seal the seam with a strip of 30# density foam.

UNIVERSAL LOWER RAIL SECTION REPLACEMENT KIT

P/N 47 MLB-011-LR-1

DESCRIPTION

The MLB Universal Lower Rail Section Replacement Kit will fit both port or starboard, forward or aft at 91.5" to the trailing edges (see layout drawing, page14.). This is a custom-fit fender that will not need to be cut. It is attached by using standard attachment hardware.

Compnonents:

(1)	91.5" Section (2 pieces) with standard access holes
(6)	S.S. washer/nut assembly
(1)	6" Backer bar
(2)	10 oz. Tubes 3M-4200 Fast Cure
(1)	PVC marking guide
(1)	Instruction video
(1)	Instruction sheet

NOTE 1: Titanium aluminum stud assemblies are also available from Gilman Corporation. Specify the required quanity with your order.

NOTE 2: Surface Repair Kit P/N 47 MLB-011-SR-1, is recommended for use with this repair procedure.

UNIVERSAL LOWER RAIL SECTION REPLACEMENT KIT

INSTRUCTIONS

EQUIPMENT NEEDED:

Cutting device (Sawzall, hand saw, etc.)
0.75" Deep well socket with ratchet and extension
0.75" Shallow socket
Razor knife
Heat gun
Hand roller
Caulking
Rubber mallet or small wedge
Hardwood wedges 10" wide, 12" long with a taper of 2" to 0.125" thick

REMOVAL OF EXISTING FENDER SECTION:

1. Using the PVC marking guide, mark 91.5" from trailing edge, forward or aft and cut.

2. Remove all hardware from cut section.

3. Starting at one end insert a wedge behind the fender system and drive it in with a mallet as far as it will go. Start a second wedge further up where the fender is pulling away from the hull and drive in with mallet; repeat until separation is complete.

4. Clean and prepare hull surface by CCG approved cleaning method.

INSTALLATION OF UNIVERSAL LOWER RAIL KIT:

1. Apply recommended adhesive to the back of fender.

2. Use the 6" backer bar for extra holding power on the last stud at the joint and fasten all studs with 0.5" nut and washer assemblies supplied with the kit.

3. There may be a mismatch or space where the replacement fender meets the oringinal system. By using a Surface Repair Kit P/N 47 MLB-011-SR-1, you will be able to fill any voids and seal the seam with a strip of 30# density foam.

DOCKING/MOORING LINE WEAR SLEEVE KIT

P/N 47 MLB-011-WSLEEVE

DESCRIPTION

The MLB Docking/Mooring Line Kit is designed to protect the fender system from line wear of all types. These easy-to-use PVC sleeves snap on over the fender at any straight location providing a tight friction fit. No mechanical attachment is required. Each wear sleeve comes with two (2) 1" Aluminum line attachment eyes for tethering to dock pilings or to the boat itself. The rigid PVC sleeve allows lines to ride up and down against the surface, protecting the fender system beneath from constant abrasion situations.

Components:

(2) 2' PVC Snap-on sleeves with (2) 1" line eyes
(1) 3' PVC Snap-on sleeve with (2) 1" line eyes

GENERAL FENDER SYSTEM CARE

1) Chemical resistance properties

- the fender system is impervious to most fuels and cleaning agents (See DuPont Ionomer Chemical Resistance Report in the Appendix). However, avoid spillage when possible.

2) Cleaning

- clean with any approved CCG cleaning fluid
- the original luster of the exterior fender skin can be periodically restored with the use of any standard shining agent, i.e. silicone solution, ArmorAll, etc.

3) Docking/Mooring line wear

- Docking/Mooring Line PVC Wear Sleeve Kits are available from the Gilman Corporation. These pop-on sleeves protect areas of constant wear from abrasion. See page 32.

4) Cautions

- Contact with heated tools, propane or other cutting torches, uninsulated exhaust pipes and steam lines may damage fender material.