

VINYL LINER MEASURING FORMS

Complete and accurate measuring forms will provide Pacific's design staff with all the necessary information to create a properly fitted vinyl liner. The forms are intended for use when measuring the majority of pool shapes. While forms for plotting triangulated points are readily available, customized forms for use with rare shapes are available upon request.

Forms are available in limited quantities. Please keep a master set and use photocopies from it when measuring pools for replacement vinyl liners. Another resource is our form-dedicated web-site, www.pacificpools.com/orderforms. Select the form(s) of your choice and print as many as you wish.

Please note that all interior pool dimensions are to be measured horizontally or vertically. All depths are to be measured from the bead receiver to the finished bottom.



PACIFIC INDUSTRIES, INC.
787 WATERVLIET-SHAKER RD. LATHAM, NY 12110
CUSTOMER SERVICE TEL: 800-562-0024 FAX 800-715 7665
DESIGN DEPARTMENT FAX 866-815-2647



INTRODUCTION

Inground, vinyl-lined pools have gained tremendous popularity over the past thirty years. As the number of vinyl-lined inground pools grows, so does the volume of vinyl liner service and replacement jobs. Professional pool service businesses have the opportunity to make vinyl liner service and replacement a profitable part their business.

Measuring a pool and installing a vinyl liner are usually simple and straightforward processes. This manual will serve as a guide for both of these procedures. Measuring an existing pool for a new vinyl liner that will fit properly does require skill and training. By using the information in this manual, installers will have a distinct advantage over their competitors because accurate, complete orders allow Pacific Industries, Inc. to provide a vinyl liner that fits properly, looks good and satisfies the consumer.

Pacific Industries, Inc. has committed considerable human and capital resources to improve our computer technology and automation and integration of the Customer Service, Design and manufacturing processes. In association with these improvements, using our measuring/order forms can eliminate errors and will ensure rapid order processing. As the accuracy of communication between our businesses improves, our partnership will grow.

Thank you for your continued support.



INFORMATION NECESSARY TO MAKE A VINYL SWIMMING POOL LINER

- Dimensional data: Define the pool's shape and bottom configuration, including all required dimensions listed on each measuring form. Please complete the entire form.
- Steps: Note the type. If vinyl is to cover the step, note the color and type of material to be used, provide all dimensions, location, corner types, and set-back. If the step is not covered by vinyl, note its location to allow for placement of a vertical wall seam.
- Vinyl: Indicate the pattern/color, type of bead/overlap, material thickness and white stripe option.
- Customer information: Name, address, phone number, shipping instructions, mark box name and any special instructions or comments related to the process.

TOOLS REQUIRED

The following tools and materials are needed to correctly measure a swimming pool:

- (2) 100' tape measures (Using different color tapes can be helpful.)
- Plumb bob (w/rubber tip) and/or telescopic pole with unit of measure markings
- White chalk, masking tape or duct tape
- Pencils and Pacific Industries' measuring forms
- String or mason's line.
- Flexible 6' rule or similar tool (for measuring the perimeter and point locations)
- (2) 18" x 3/8" steel rods.



MEASURING A POOL FOR A VINYL LINER

Before the procedure for measuring a pool for a vinyl liner is begun, a few important notes must be made:

1. The accuracy of the vinyl liner's fit is directly related to the completeness and accuracy of the pool's measurements.
2. Do not assume anything. Considerable amounts of time and money can be lost because assumptions were made. Dimensions vary among manufacturers and more often than not, the pool's dimensions are quite different than its original specifications.
3. Pacific Industries produces liners that are slightly smaller than the dimensions given to us in order to allow vinyl liners to stretch into place. Please measure, record and order all vinyl liners using the exact finished* dimensions of the pool.
4. The required dimensions on the measuring forms are those that are necessary to manufacture a vinyl liner for that shape. Pools designed as such are constructed with straight walls and sharply defined changes of plane. Many pools do not resemble their intended design. (See the "Common Measuring Problems" section of this manual). If irregularities are encountered, please make the appropriate notations on the measuring form. Feel free to contact our Design or Technical Support departments for advice on measuring a pool.

Log on to www.Pacificpools.com/orderforms for printable forms for most shapes.

*The dimension is the distance from the finished pool bottom to the receptor track or bead receiver.

*"Good liner installers and good carpenters share a common philosophy:
They measure twice and cut once."*



COMMON MISTAKES MADE WHEN MEASURING POOLS:

- Pacific Industries' measuring forms are not used.
- Measuring the length of slopes rather than their horizontal or vertical planes.
- Estimating dimensions without actually verifying the measurement.
- Failure to measure the length, width and depth of the pool in several locations.
- When recording an overall depth, the distance from the top of the coping to the receptor track is not subtracted.
- Assuming that an existing pool meets the standard pool specifications that were furnished by the original manufacturer
- Recording sectional dimensions that do not equal the total length or width of the pool
- Forgetting to measure and record the pool's diagonal dimensions. Few pools are square.
- Not measuring diagonals to their projected square corners when necessary.
- Recording dimensions in feet/inches and inches. Please record feet and inches only.
- Pacific Industries identifies a pool's hand direction by viewing the pool from its shallow end, using the matching order form eliminates confusion.
- Not recording actual dimensions and incorrectly measuring or omitting a corner radius.
- Forgetting to supply hopper configurations and measurements, particularly on Grecians.
- Forgetting to supply total perimeter of pools when required, such as with point to point drawings.
- Omission of break over end locations points and the distance between them on all freeform pools.
- Submitting orders in which the sum of the stair riser heights is not equal to the finished side wall height.
- Omission of essential step dimensions such as width, corner configurations, setback/flush, location, rod pockets/rod loops or hooks and loops preferences with VOS (vinyl over step).
- Chosen vinyl material thickness is not identified. White stripe option is ignored.
- Leaving the pool site before crosschecking all measurements to verify their accuracy.



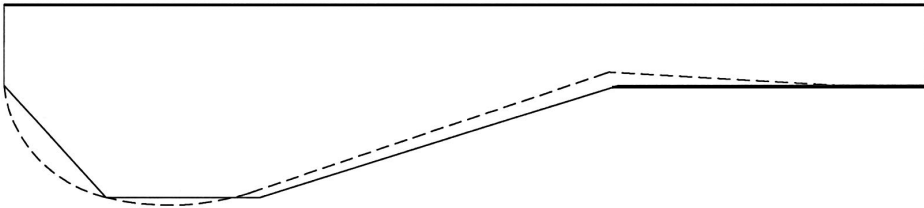
COMMON MEASURING PROBLEMS

Many existing pools differ from the drawings shown in dig specification books from which they were taken. It is important to know what some of these differences are and how to account for them on each measuring form.

If a side view of an existing pool was overlaid on the side view of the drawing that appears on the vinyl liner measuring form, it is probable that the two would not be identical. Discrepancies can affect the fit of the liner in two general ways.

In the illustration below, the solid line represents a measuring form while the hyphenated line indicates actual measurements.

1. Wherever the actual measurements are above the drawing, a vinyl liner will be loose and may have wrinkles.
2. Wherever the actual measurements are below the drawing a vinyl liner will be too tight.



Problems may occur in several places:

1. Slopes may be convex. In that case, specify the location and the amount Pacific's Design department should reduce material usage when designing the liner.
2. Intersections of angles may not be sharply defined and instead may be rounded. Let Pacific's Design department know where and how much they are rounded so the variation can be accounted for in the vinyl liner's design.
3. The pool bottom may be bowled. Points must be selected on the pool bottom that will approximate the actual end of the slope. If a note is made on the measuring form that the pool bottom is bowled, Pacific's Design department will account for it.

IMPORTANT:

If the hopper is bowled or rounded at the point where the slope and the hopper pad meet, the horizontal measurement must extend to the point where the horizontal floor truly starts and the coving ends. The danger of measuring to the imaginary intersection of the slope and the floor is that doing so can create excess material at the hopper pad where the pad and the slope meet (see point Z in figure 1). By measuring as shown in 'N', Figure 1, 'puckers' in the hopper can be eliminated.

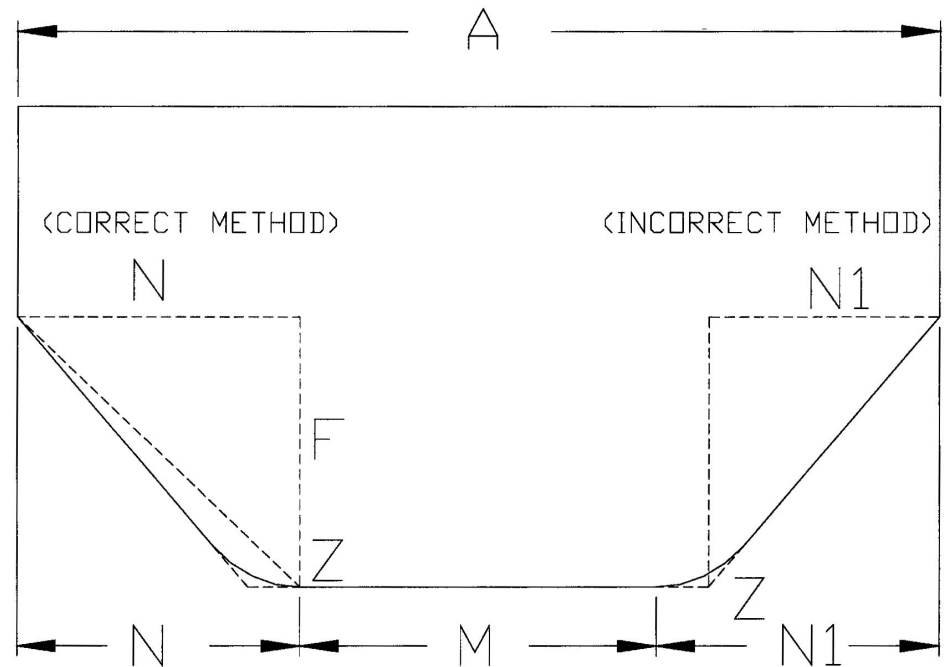


Figure 1

HOW TO USE THE TRIANGULATION METHOD

When preparing to measure a pool using the triangulation method, have the correct measuring form and determine the best placement of line X2-Y2.

(See Figure 2 below).

It is recommended that it be placed on either side of the length of the pool, roughly parallel with the centerline of the pool. Be certain to note which side of the pool the line has been placed. The line, or its extensions, must not intersect with any part of the pool. The X2-Y2 line should be kept a minimum of three feet from the edge of the pool; however 5 to 10 feet is ideal. Be sure to record the distance between X2 and Y2. A distance of 12' is the minimally accepted length but two thirds the length of the pool is recommended. Drive 3/8" stakes into the ground at each of the two points and attach measuring tapes to each when the measuring and recording process begins.

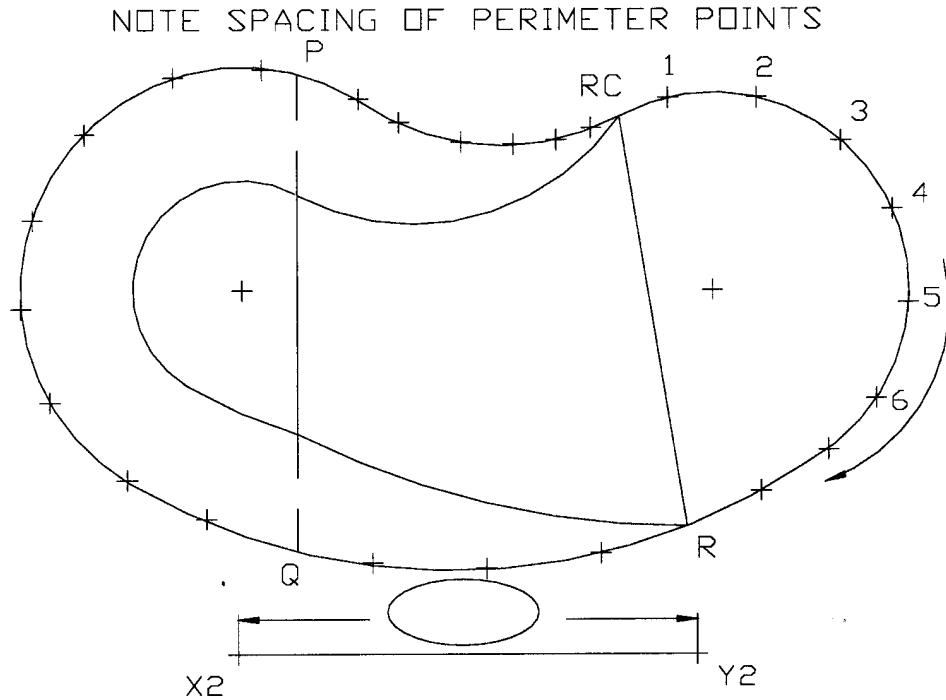


Figure 2

Once X2 and Y2 are established, proceed to the pool edge and mark the points R, RC, P and Q to indicate the start and end of the long slope. Mark and number points every 2 feet around the perimeter of the pool, keeping in mind that fewer points are required around a large radius. Points are only required at either end of a straight, uninterrupted line. Spacing may be reduced to 12"-18" between points on a tight radius, pronounced angle or reverse radius. Mark and number all point locations before measuring! See Figure 3.

Measure and record the distance from X2 to 1, X2 to 2 and X2 to 3, etc., around the entire perimeter of the pool. Then measure and record the distance from Y2 to each of the same numbered points. Be sure to include the distances from X2 and Y2 to R, RC, P and Q as well as the distances between R and RC and P and Q. It is possible for one person to accomplish this task with two measuring tapes. Using different color tape measures can help to avoid confusion.

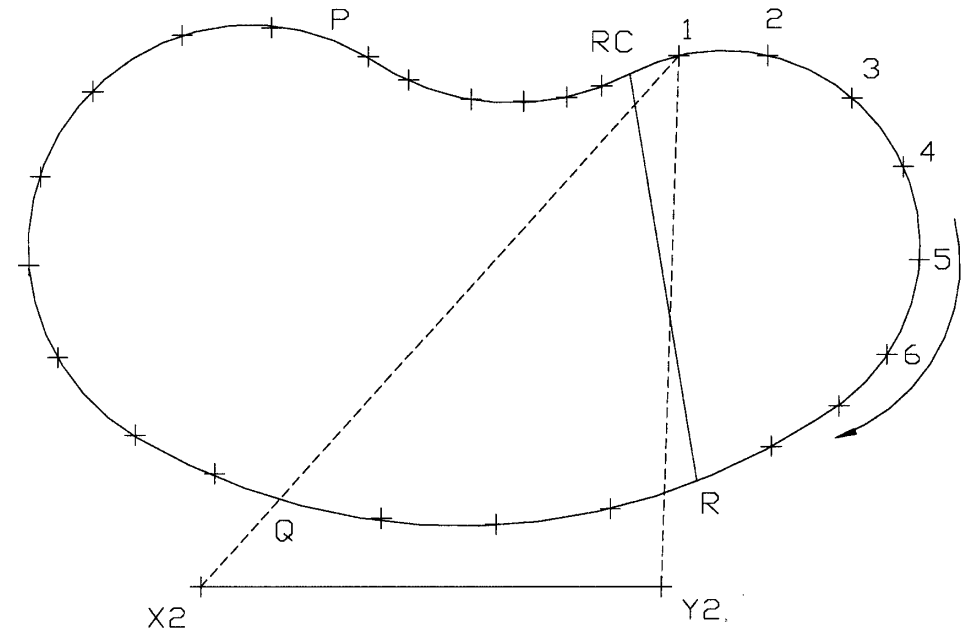
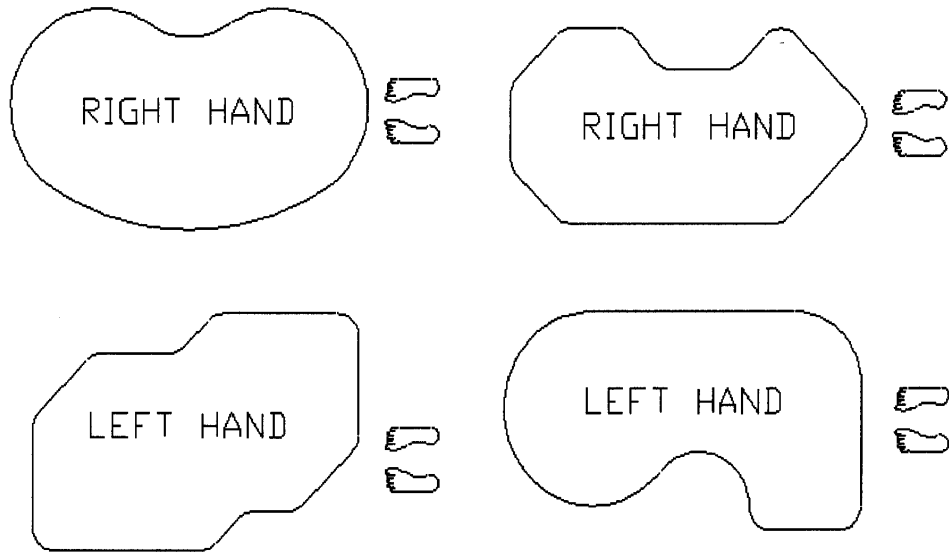


Figure 3

PACIFIC'S METHOD OF DETERMINING RIGHT AND LEFT HAND

Pacific's Design department determines the hand of a pool assuming it is viewed from the pool's shallow end. If the pool's direction curves to the right, the pool is a right-hand. Conversely, if the pool curves to the left, then it is a left-hand version. Drawing hopper lines will identify the deep end. See the illustration below.



If there is any doubt, include with the order a plan or 'Birdseye' view sketch to illustrate the shape of the pool and identify its shallow end.

STANDARD MEASUREMENTS

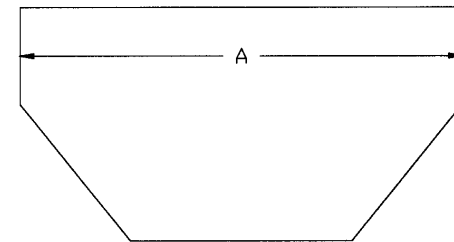
The standard measurements needed to produce vinyl liners are listed below. Many pool shapes, however, require dimensions specific to those pools. Use the Pacific Industries' vinyl liner measuring form that provides identification of those measurements required for each of the various pool shapes.

THE LETTER SHOWN BEFORE EACH DIMENSION DESCRIPTION MATCHES ALL PACIFIC INDUSTRIES' FORMS.

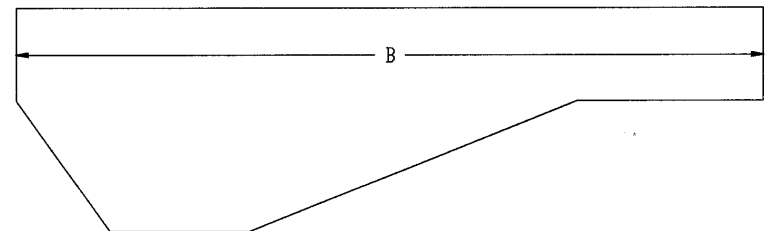


- A. POOL WIDTH:** Measurements should be taken at both ends and at the middle of the pool to detect any bowing of the sidewalls. Measurements should be within an inch of each other. The average of the measurements should be rounded to the nearest inch and entered on the measuring form. If the measurements vary more than 1", please mark the plan view of the measuring form accordingly.

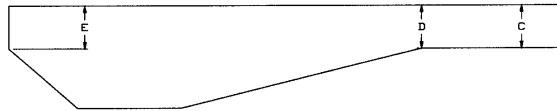
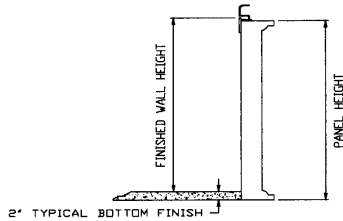
For example, if the measurements are 19' 11³/₄" at one corner, 19' 11³/₄" at the other corner and 20' in the middle, enter 20' on the form. Be certain to measure from receptor track to receptor track, not from the face or bull nose of the coping. Be certain the measuring tape is long enough to span the entire distance. Do not connect two or more tapes!



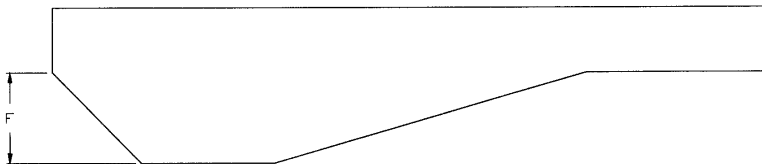
- B. POOL LENGTH:** Use the same procedure as describe in (A) but apply to the length as opposed to the width. Measure the length at each side and the middle of the pool.



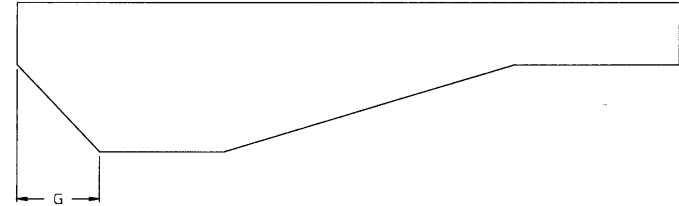
C, possibly D, and E. FINISHED WALL HEIGHT is the depth from the top of the liner track to point at which the pool bottom meets the vertical pool wall. It is often, but not always, about 2 inches less than the panel height. The finished wall height should be measured at each corner of the pool and at the transition between the shallow end and the long slope. Measurements should be within 1 inch of each other (if the shallow end is level). If so, the average measurement should be entered as the finished wall height dimension on the vinyl liner measuring form. Variations of more than 1 inch must be identified and their location should be noted on the plan view of the measuring form.



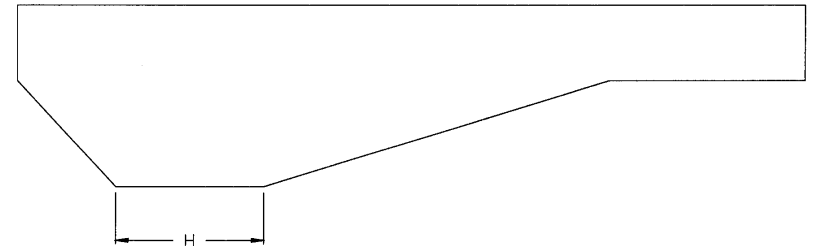
F. HOPPER DEPTH is the distance from the bottom of the finished wall height to the bottom of the hopper. This measurement should be taken at all corners of the hopper pad. If all of these measurements are within 1 inch of each other, record the shortest of them. If any dimensions vary more than 1 inch, each measurement and its location should be recorded on the plan view of the order form.



G. BACK SLOPE is the measurement of the horizontal plane of the slope, not the length of the slope. Place a measuring pole or suspend a plumb bob at the point where the pad and slope meet. Make sure the pole or plumb bob line is perfectly vertical. Measure and record the distance from the pole or line to the receptor track.

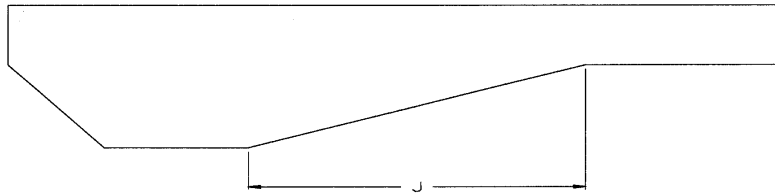


H. LENGTH OF HOPPER PAD is the horizontal distance from the back wall to its intersection with the hopper. Use the same procedure as outlined in (G) to mark the corners of the hopper pad but mark the coping in line with each pole or string position. Measure and record the distance between the marks on the coping.

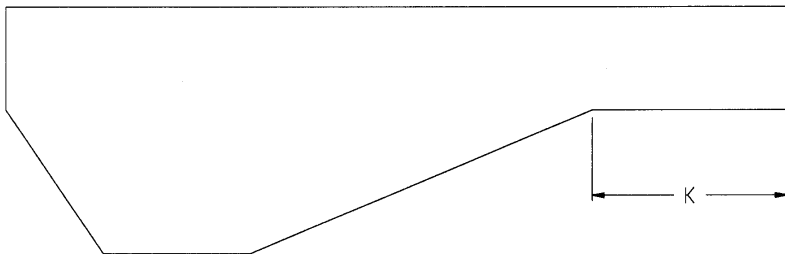


J. LONG SLOPE OR TRANSITION FROM SHALLOW END TO HOPPER PAD

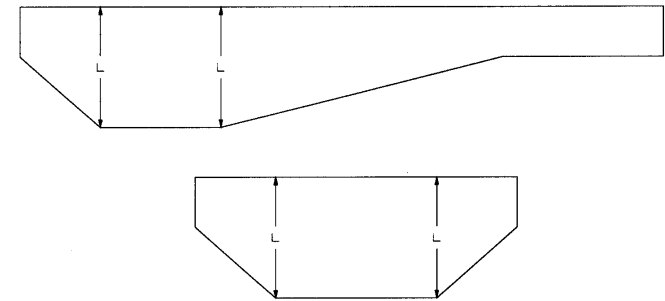
is the length of the horizontal plane of the slope, not the length of the slope. Place a measuring pole or plumb bob at the point where the shallow end and the slope meet. If a pole is used, make sure it is perfectly vertical. If a plumb bob is suspended over a line or telescopic pole, be certain that its line is vertical. Mark the coping where it intersects with the plane of the pole or plumb bob line. Repeat this procedure at the deep end where the long slope and the hopper pad meet. Then measure the distance between the two marks on the coping and record it on the form.



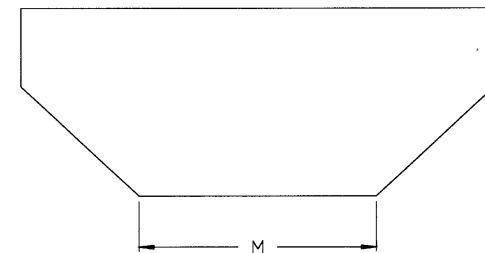
K. LENGTH OF SHALLOW END is the distance from the face of the shallow end wall to the beginning of the long slope or transition. Place a measuring pole or plumb bob at the point where the shallow end and the long slope meet. Be certain the pole or plumb bob line is vertical. Mark this point on the coping then measure and record the distance from the face of the shallow end wall to mark on the coping.



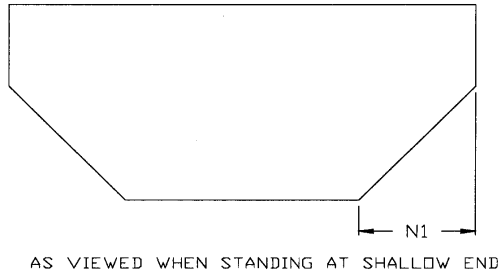
L. TOTAL DEPTH is the distance from the bottom of the hopper pad to the top of the liner track or bead receiver. This is a critical measurement and the most difficult to make accurately. This measurement should be taken at all corners of the hopper pad. Total depth can be taken using a measuring pole or using a string and plumb bob. Suspend two strings (mason's line is recommended) tightly across the width of the pool at the hopper corners. Then place either a vertical measuring pole or plumb bob into each corner of the hopper and record the distance from where the pole or plumb bob string intersects with the string across the pool. A pole level is strongly recommended. Subtract the height of the space between the cross-pool string and the receptor track from the total depth measurement. The difference is the actual depth of the hopper.



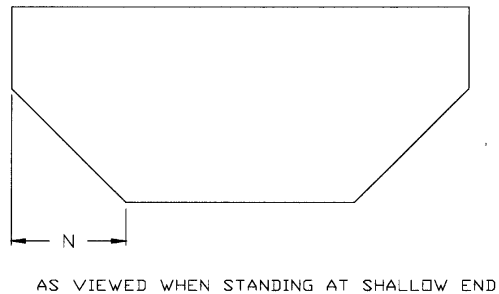
M. WIDTH OF HOPPER PAD is the distance across the hopper as viewed from the shallow end. Use the same measuring procedure as for the length of the hopper pad (H).



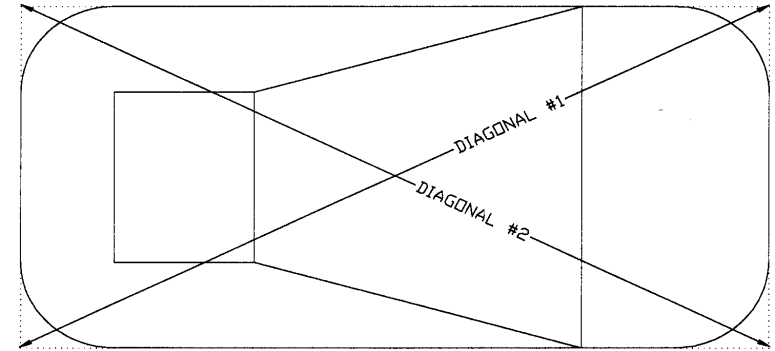
N1. SIDE SLOPE is the horizontal distance from the hopper pad to the right side wall. Use the same procedure as outlined for (G).



N. SIDE SLOPE is the distance from the hopper pad to the left sidewall. Use the same procedure as outlined for (G).



DIAGONALS are the distances from corner to corner used to determine whether the pool is square. A difference of more than two inches should be noted on the measuring sheet. Use a straight edge or chalk line to project and measure the true corner as shown below. If no diagonal dimensions are noted, it will be assumed that the pool is square.



NOTE: All measurements except D, E, F and L are of horizontal planes. Therefore, dimensions $G + H + J + K$ must equal B and dimensions $N + N1 + M$ must equal A. Since the depth dimensions E and F are components of the total depth L, $E + F$ must equal L. This simple addition serves to verify the correlation of all measurements taken. It does not, however, guarantee their accuracy. Two or more inaccurate sectional measurements that are added to other correct sectional measurements could equal the total width or length. Always allow sufficient time to measure and record accurately, and then review all of the information that has been gathered.

Remember:

- $G + H + J + K = B$
- $N + N1 + M = A$
- $E + F = L$

LINER INSTALLATION

Clean the pool walls thoroughly. Rusted and/or rough walls may require foam padding to prevent damage to the vinyl liner. Cover all panel joints and the bottom edge of the coping with fabric-based duct tape or painter's grade masking tape. Be sure to check all coping joints for sharp corners. Soften or cover any sharp projections with an appropriate material to prevent tearing of the vinyl liner during installation.

Take particular care in cleaning and smoothing the pool bottom. Inspect the pool bottom for any debris, protrusions or sharp objects and remove them before installing the vinyl liner. The customer's perception of an installer's workmanship will be largely dependent on how the bottom looks and feels.

Once the interior of the pool is properly prepared, the skimmer and return gaskets may be applied. If the pool has a main drain(s), a base gasket should be seated and fastened to each drain before the vinyl liner is installed.

Vinyl liners should be installed when the ambient temperature is 60° Fahrenheit or greater. Accommodations can be made to install a vinyl liner in cold weather by enclosing the pool with a temporary, heated structure, though only experienced installers should attempt such a procedure. The vinyl liner should be stored in a heated space for two or more days prior to installation in cold weather.

Check the vinyl liner box label and compare the dimensions on the graphic with those of the pool. If they match, detach the banding from the box and remove the lid. A large envelope with all the safety, warranty and pool care information will be in the box.

READ THE INSTRUCTIONS TO THE INSTALLER ON THE FACE OF THE ENVELOPE! If the homeowner is present, ask him/her to look at the liner to be certain it is the pattern/color that was requested. **REVIEW THE ENVELOPE'S CONTENTS AND INSTRUCTIONS WITH THE HOMEOWNER BEFORE LEAVING THE SITE!** If the homeowner is not available, return to the site when he/she is there to review the information.

It is legally essential that installers present the safety and care packet to all consumers and instruct them on the use and importance of its contents.

It should be noted that installing a vinyl liner is easier to accomplish when done by two or more people. Once it is determined that the vinyl liner is as ordered, notice the red arrow on

the top of the folded liner. Carry the box and liner to the center of the transition point of the shallow end, remove the vinyl liner from the box and place it on the floor of the pool with the red arrow facing the shallow end wall.

Unfold it toward the side walls. Grasp the bead and a few inches of the vinyl liner's shallow end wall and pull it toward the pool's shallow end corners. Since the vinyl liner is fan folded, it will unfold easily. (See the illustration I)

Gently adjust the vinyl liner's position as necessary. Do not kick it with abrasive footwear or toes with sharp nails.

Vinyl liners designed for vinyl over step (VOS) applications require locating and fitting of the step section(s) before any of the shallow end wall bead is put into place. The use of padded weights such as sand bags or water tubes is often necessary to hold VOS liners in position. If necessary, similar types of weights may also be used to hold the vinyl liner in place in other parts of the shallow end. If the pool has a step unit(s) that is not covered by vinyl, the vinyl liner may be attached to it using a variety of techniques. It is recommended that novice installers seek advice and training from experienced colleagues to learn such techniques. With the vinyl liner in proper position, insert the bead into the receiver track at the corners and at several points along the shallow end wall and shallow end side walls.

Next, find the corners and/or end of the opposite end of the vinyl liner. Remember to grasp the bead and several inches of the attached wall material with both hands. Doing so will prevent excessive stress on the bead to wall seam.

Unfold the vinyl liner as it is pulled toward the opposite end of the pool. **DO NOT** drag it against the coping, ladder sockets or any other potentially damaging surfaces.

Properly position the vinyl liner while eliminating as many wrinkles as possible. Once all of the liner's corners are aligned with the pool's corners, insert the bead into the coping at each corner. After all the vinyl liner corners are in place, proceed to the middle of the long and short walls and insert the bead into the coping. Continue to do so while working the material toward the corners in both directions. Doing so will prevent poor fitting and undesirable stress in all of the corners. (See the illustration II)

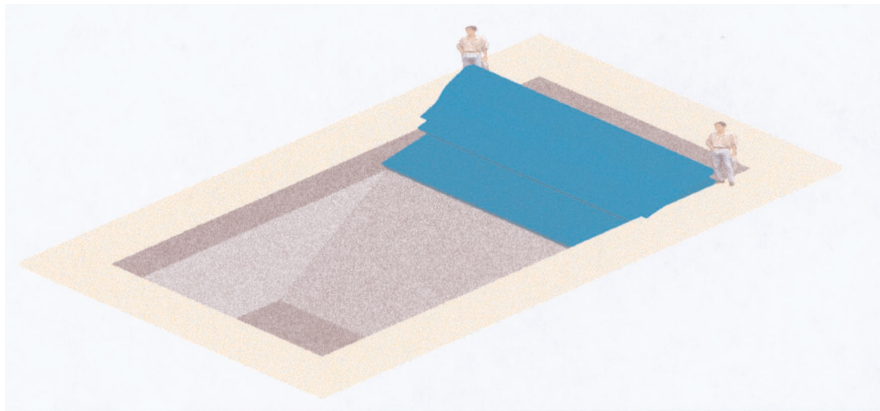


illustration I

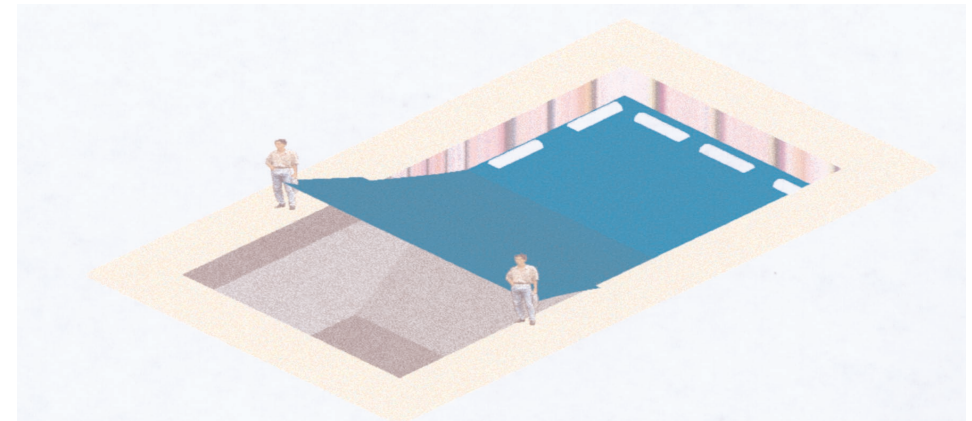


illustration II

FINAL POSITIONING OF THE LINER

An installer's primary goal at this point is to protect the properly positioned vinyl liner while eliminating all wrinkles. To accomplish this, there are several acceptable techniques for vacuuming a vinyl liner into place. The following are but two of those techniques:

- Remove about 6" of the bead from the receptor on one side wall near the break over. Insert the suction hose of a commercial vacuum between the vinyl liner and the wall to a depth of approximately 20" from the top of the pool. Create a seal around the hose to make the insertion point airtight. Use tape that will not damage the print on the liner. Seal all other openings into the pool, such as the skimmer cover and step cover, to prevent air leaks.
- Insert a vacuum hose into the top of the skimmer and then through the face of it and down about 20" between the pool and vinyl liner. Seal the top of the skimmer and all other openings leading to the pool.
- Turn the vacuum on and work out all wrinkles while adjusting the vinyl liner's position to match the pool configuration. Wrinkles can be removed by reaching over the wall and pulling on the vinyl liner sidewall material. Some installers enter the pool and use their stocking covered feet to kick it into place. This practice may result in damage to the vinyl liner causing the installer to become responsible for its replacement. Use caution at all time when handling a vinyl liner.
- Once the vinyl liner is positioned properly, fits well and all wrinkles have been removed, the main drain(s) cover(s) may be installed. The pool may then be filled with water while leaving the vacuum running. Once the water level is approximately one foot deep in the shallowest part of the pool, the vacuum may be shut off and the hose removed. If the hose was introduced at the receptor track, the tape should be removed and that portion of the vinyl liner bead should be inserted into the receptor track. The pool can then be filled to its operational level. Once that level is reached, the remaining gaskets and faceplates may be installed.
The current NSPI/ANSI Standard requires the installation of a safety rope with floats across the width of the pool parallel to and no less than one foot and no more than two feet from the point of the first slope change in water depths less than four feet six inches. Proper placement of **NO DIVING** labels should also occur at this time. See the safety packet enclosed with each Pacific vinyl liner and follow every instruction. Review all the information with the pool owner and leave it in their possession.



IT IS THE INSTALLER'S RESPONSIBILITY TO BE FAMILIAR WITH THE CURRENT NSPI/ANSI STANDARD.

WHAT TO DO IF THE LINER DOES NOT FIT

In the unlikely event the vinyl liner does not fit, **DO NOT FILL THE POOL WITH WATER** and **DO NOT CUT THE VINYL LINER OR ATTACH ANY FITTINGS!!**

First, determine that the vacuum is effective. Reassess the vinyl liner's position in the pool. Be sure the liner ends are not reversed. This is a common mistake made by installers of every experience level. Look at the floor of the vinyl liner, in most instances there are fewer seams in the shallow end. If repositioning is necessary, shut off the vacuum and move the vinyl liner accordingly.

- Check for unusual features of the pool that may have been omitted from the order form such as a cove in the shallow end or a straight step cut on a radius section of the wall.
- Compare the corners of the pool with those of the vinyl liner to be sure they are the same arc, shape and/or length.

If the vinyl liner requires modification, make a sketch of the pool on a copy of the pool's design and indicate on it the location and type of alteration needed.

**DO NOT WRITE ON THE VINYL LINER WITH A MARKER OR PEN!
DO NOT APPLY DUCT TAPE TO ANY OF ITS PRINTED SURFACES!**

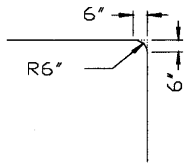
Contact the distributor from whom the vinyl liner was purchased. It is the distributor's responsibility to contact a Pacific Industries' Customer Service representative to arrange the rework or replacement of the vinyl liner. Keep it clean and dry. Dirt and moisture affect the integrity of vinyl, which in turn limits its potential for reuse. The product must be returned clean and dry in its original carton.

Vinyl liners returned in poor condition cannot be reworked.

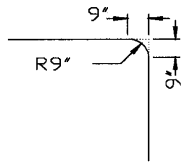
(See technical attachments.)



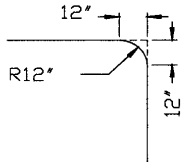
TYPICALLY ENCOUNTERED RADIUS CORNERS



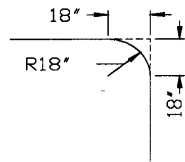
PERIMETER OF THIS CORNER IS 9"
THIS IS A 6" RADIUS CORNER



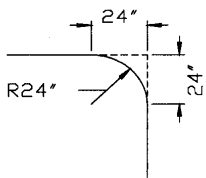
PERIMETER OF THIS CORNER IS 14"
THIS IS A 9" RADIUS CORNER



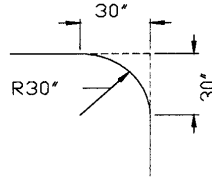
PERIMETER OF THIS CORNER IS 19"
THIS IS A 12" RADIUS CORNER



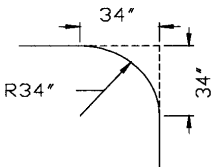
PERIMETER OF THIS CORNER IS 28"
THIS IS AN 18" RADIUS CORNER



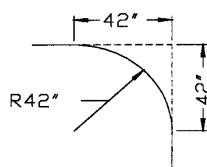
PERIMETER OF THIS CORNER IS 38"
THIS IS A 24 INCH RADIUS CORNER



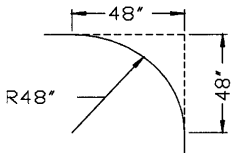
PERIMETER OF THIS CORNER IS 48"
THIS IS A 30" RADIUS CORNER



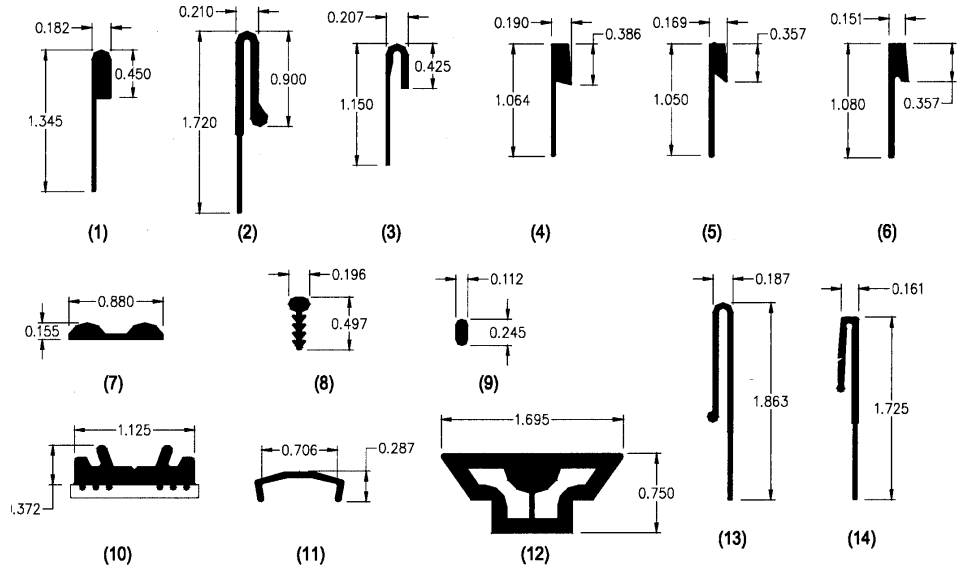
PERIMETER OF THIS CORNER IS 53"
THIS IS A 34" RADIUS CORNER



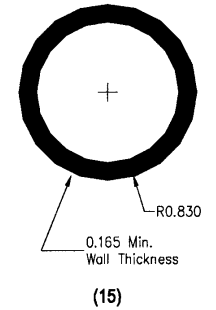
PERIMETER OF THIS CORNER IS 66"
THIS IS A 42" RADIUS CORNER



PERIMETER OF THIS CORNER IS 75"
THIS IS A 48" RADIUS CORNER



| Item | Area (in ²) | Description | Material | White | Blue |
|------|-------------------------|--------------------------------|----------|-----------------|--------|
| 1 | 0.1138 | EW | FPVC | VY0006 | VY0009 |
| 2 | 0.1727 | J Hook Type 1 | FPVC | VY0008 | VY0003 |
| 3 | 0.0870 | J Hook Type 2 | FPVC | VY0013 | VY0012 |
| 4 | 0.0920 | Standard Above Ground | FPVC | VY0004 | VY0005 |
| 5 | 0.0914 | Performance | FPVC | VY0015 | VY0016 |
| 6 | 0.0823 | Pacific | FPVC | VY0001 | VY0000 |
| 7 | 0.1165 | Chafing Strip (safety cover) * | FPVC | PH702 - NEUTRAL | |
| 8 | 0.0486 | Liner Lock ** | FPVC | PH102 | |
| 9 | 0.0247 | Spline | FPVC | PH110 | PH111 |
| 10 | 0.2654 | Faceplate | RPVC | | |
| 11 | 0.0617 | Cover strip | RPVC | | |
| 12 | 0.6259 | Dead End Block | RPVC | | |
| 13 | 0.1466 | Home & Roam | FPVC | VY0014 | |
| 14 | 0.1313 | Duobead | FPVC | VY0017 | VY0018 |
| 15 | 0.7750 | A/G Ladder Poles | RPVC | *** | |



* CAT. # FOR BLACK - VY0011
 ** 48" LONG LENGTHS
 *** POLES IN WHITE
 PH106 - 53.5" LONG POLE
 PH107 - 12" LONG POLE
 file: beads.dwg

reprint date 2-24-2003