

Instructions

Second-Generation

Pinball Cabinet Stencil Kit by Pinball Pal

Revision C – 25 April, 2009

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Introduction

Thank you for purchasing this stencil kit. We at Pinball Pal have created these stencils for the professional-quality restoration of pinball machine and arcade game cabinets. Many hours have been spent to accurately reproduce the exact factory patterns, and these patterns are precision-cut into the stencil material. While restoring a pinball machine cabinet is no easy job, these stencils will save many hours of labor and will help provide outstanding results.

These stencils are made from a new material that has many advantages over flexible vinyl stencils. They are over four times thicker than vinyl stencils, and they have a special very low tack adhesive, similar to a post-it note. If you have ever used vinyl stencils in the past, you will appreciate that these are much easier to apply and remove, and you don't have the danger of the vinyl stencil folding and sticking to itself (which ruined it). The new stencils reusable since they can now be removed without stretching or tearing them. The surface is clay-coated which helps prevent smears and runs. And because the stencil is semi-rigid, it is no longer necessary to cover them with the clear transfer tape, which saves time and trouble. Here's a summary of the advantages of this new material over vinyl stencils:

- Over 4 times thicker – no worries of stencil folding over on itself, destroying it.
- Semi-rigid structure is easier to handle and apply
- Very-low-tack adhesive makes stencil easily re-positionable
- No transfer tape needed for quicker and easier installation
- Clay-coated surface helps resist smears and runs
- Reusable due to low-tack adhesive and absorbent surface
- Easier to align – stencils are cut to size wherever the patterns permit
- Polyethylene substrate resists stretching unlike vinyl
- Easier to recreate authentic underspray and overspray effects
- Pinball Pal's “goof proof” support guarantees your success

These stencils are made from a semi-rigid polyester with a special very-low-tack adhesive on the rear. Because they have more structural integrity than flexible vinyl stencils, it is no longer necessary to cover the stencil with a clear “transfer tape”, as is necessary with flexible vinyl stencils. Once the cabinet is prepared for the stencil application, the backing paper is removed from the stencil and it is applied to the cabinet, using the supplied plastic squeegee. Then, the cabinet is ready to be spray painted with the color for the stencil. Because the stencils are self-adhesive, it is possible (and recommended) to apply the stencils to both sides and the front of the cabinet body simultaneously. Then, all three sides can be painted in one step. Of course, the head's stencils can also be applied at the same time, but some games use different colors for the base and stencil colors and this may affect the order of application of stencils and paint.

Please do this first

The stencil sets are shipped rolled in a cardboard box to avoid shipping damage and potential problems with over-sized flat shipping containers. If you are not going to use these stencils immediately, we recommend that you remove them from the shipping box and lay them flat. The white stencil material is attached to a heavy brown paper backing. By design, the stencil does not stick very well to this brown backing so you may find large areas of separation of the stencil from the brown backing. This is normal and you need not do anything about it, but we do recommend that you lay the stencils as flat as possible if they are not to be used for an extended period of time.

The following descriptions are applicable to all of our pinball cabinet stencil sets. The pinball cabinet body is painted a solid color, the head is also painted a solid color (not necessarily the same color as the cabinet body). Then, the two stencil colors are applied. The main instructions just refer to the base color and, first and second stencil colors. Be sure to refer to the appendix that applies to your particular game for specific details, color selection tips and any other special information that may apply to your particular game.

These instructions are not the definitive word on pinball machine cabinet restoration. Our primary focus is the application of these stencils successfully. We do not extensively cover the painting process, types of paint or color matching, since most of this is dependent on your particular preferences and circumstances, tools and local availability of materials. We will periodically update this document, which will always be available for downloading from the Pinball Pal web site: <http://pinballpal.com>. There is also a page there that answers frequently-asked questions about these stencils and other Pinball Pal products. We have longer-term plans for even more support information so check in to the web site frequently. If you have any comments or questions about the stencils or these instructions, we would appreciate your feedback.

What is Included in This Package

A complete set of stencils for one pinball machine cabinet body and head are included. The stencils are separated into individual pieces for each surface. Here is an itemized list of what you should receive:

- Stencil for cabinet left side, first color
- Stencil for cabinet right side, first color
- Stencil for cabinet front, first color
- Stencil for cabinet left side, second color
- Stencil for cabinet right side, second color
- Stencil for cabinet front, second color
- Stencil for both sides of head, first color
- Stencil for both sides of head, second color
- White plastic squeegee
- Printed instructions

If your stencil set is for other than a pinball machine, the number of stencil pieces and their application may vary. Refer to the game-specific appendix at the end of these instructions for any additional information relating to your particular stencil set.

Quick Summary

For those of you that hate to read instructions, here is a very quick summary of the stencil application process:

- Prepare the cabinet and head. All existing hardware should be removed, any flaking paint must be removed, all holes and scratches filled and sanded smooth, any loose joint repaired. A primer coat is not required but is recommended.
- Apply the base color to the cabinet body and head. Make sure that the base color paint is thoroughly dry.
- Apply the stencils for the first stencil color to the cabinet body. Each stencil section is labeled with its position and color. In most cases, the stencil is cut to the size of the cabinet surface that it is being applied to. In other cases, the stencil pattern requires that the stencil extend past the edge of the cabinet. In these cases, the extensions stop before the corner and in other cases, the extensions extend around a corner. In the latter case, there will be a small ½ inch square cut in the stencil extension. Wherever these squares are used for alignment, the corner of the square closest to the cabinet should just touch the corner of the cabinet. Wherever these squares are midway along the side of a stencil, the edge of the square closest to the cabinet should just touch the edge of the cabinet.
- You may find it easier to lay the stencil face-down on a flat surface and carefully peel off the backing paper rather than pull the stencil up off of the backing paper. Depending upon the particular stencil pattern, there may be large unsupported areas that need to be handled with some care during installation. Since the stencil is easily re-positionable, it's easy to straighten them out on the cabinet. If any unsupported areas are causing a problem, simply attach them temporarily to the main stencil with masking tape, and remove the tape after the stencil is on the cabinet.
- Use the supplied plastic squeegee to attach the stencil firmly to the cabinet.
- Shoot the first stencil color.
- Before the paint is completely dry, carefully peel off the stencil.
- Make sure that the first stencil color is completely dry, then repeat the procedure for the second stencil set.

The remainder of this document contains more details describing the steps above.

Tools, Supplies and Skills Required

There are no additional tools required to apply or remove the stencils. We supply a small plastic squeegee that is used for working down the stencil adhesive, and no other tools are required for this part of the cabinet restoration. Of course, you will need spray painting equipment (or cans of spray paint) to apply the stencil colors, and you will need assorted woodworking tools and supplies to repair any cabinet damage.

Paint reveals, it doesn't conceal. Any un-repaired cabinet damage will be more visible after painting, so for best results you should spend the time and effort to fix any flaws, loose joints, flaking paint and other defects. The extent of the existing damage will determine if any special tools or supplies are required. You may need nothing more than some sandpaper and a little filler, or you may have to fabricate patches and braces to get the cabinet back in shape.

If you don't have the skills or patience to do a satisfactory prep job, it is unlikely that you will be satisfied with the final result. There's nothing wrong with experimenting with new techniques, or just "winging it", but you should be prepared to temper your expectations if you take shortcuts along the way. On the other hand, if you go slowly and carefully inspect your work as you go, you should have very little trouble obtaining professional-quality results.

Area Preparation

You will need a fairly large workspace for refinishing a pinball machine cabinet. Preparing the cabinet will generate large amounts of dust, and the paint must be applied in a relatively dust-free environment, of course. A dedicated paint booth is ideal, but as long as the dust is kept down (and the fumes don't become a safety or health issue), an improvised setting should work satisfactorily.

Cabinet Preparation

Attention to detail when prepping the cabinet will pay off at the end. Any flaws in the surface of the cabinet will be highlighted by a fresh coat of paint so it's important to spend the time to get this part right. In addition to filling all of the scratches and dents, you must remove any unsound paint or wood. This is especially important because the stencils adhere to the cabinet with a removable adhesive. If there are any loose spots in the finish, they may get lifted when the stencil is removed. If this does happen, you can usually just push the loose bit back down, but it's better if everything is solid to begin with.

If you have a pinball cart, that is an excellent place to put the cabinet body during the painting process. The legs must be removed, of course, but you probably want the cabinet a foot or two off the ground to make it easier to work on. You may be able to rig up some milk crates or other sturdy boxes to firmly support the cabinet during its restoration. Before you put the cabinet on the cart or stand, you may wish to mask off the bottom of the cabinet to prevent overspray from getting on the underside of the cabinet.

Before repairing any damage, you should remove all of the hardware from the cabinet that will interfere with the paint job. You should remove the side rails, coin door, shooter assembly, and anything else that's in the way. You may or may not choose to paint the inside of the cabinet, but if you do, you will also have to remove all of the interior hardware and wiring.

Once the cabinet is stripped of all hardware, you may have the opportunity to see what the original colors looked like, by examining the areas that were beneath the side rails or around the coin door frame. The paint in these areas has been protected from fading and may be very close to the original colors used when the paint was first applied. Before you cover any of this paint, you should make sure that you have taken advantage of this opportunity to choose your paint colors.

The next steps should be familiar to anyone who has refinished furniture. First make sure that the cabinet is physically sound. Loose joints and corners should be re-glued and clamped. If necessary, additional braces may need to be installed inside the cabinet. Any loose paint and wood chips should now be scraped from the outside. It's much better to remove any suspicious material than to cover it over and have it chip away later. After the scraping is done, use a good quality wood filler to fill any voids and gaps. Then block sand the cabinet and re-fill until everything looks smooth. Make sure that you remove any sanding dust before you apply any wood filler, or else you may get poor adhesion of the filler to the cabinet that may cause problems later.

You can use the base color as a primer coat, but you may prefer to use a conventional spray-can primer instead. After priming, carefully inspect the cabinet for any imperfections. Minor ones can be sanded out of the primer layer. Spend the time to fix the bigger ones with more filler, sanded and then primed.

Some games have a pedestal for the head that is painted black, or possibly another color that is different than the cabinet body's base coat. Now would be the time to re-paint this area of the cabinet if you wish. Just mask off the area and spray or brush the color on. After the paint is dry, mask this paint so that it won't get re-painted by the new base coat or stencil colors.

Choosing Cabinet Colors

You need to choose which type of paint that you wish to use. Depending upon where you live, you have access to different paint suppliers. You may be more comfortable with one type of paint over another, and you may also be able to find some or all of the colors that you want in ready-to-go spray cans. Even if you could perfectly match the factory colors, you may choose not to. The machine will still be decades old, even after the cabinet has been refinished, so you may prefer to use colors that appear slightly aged - It's all up to you. Refer to the specific game information later in this document for specific color recommendations. We can't provide exact color matching information because of so many factors not under our control. If you have any information to share about color matching, particular color formulas or any other paint-matching tips, please let us know

at Pinball Pal and we will make these tips available on our web site. The page with all the accumulated color-matching information can be found here:

<http://pinballpal.com/colors.htm>

Applying the Base Coat

Now the cabinet should be ready for the base color. Some base coats are solid colors, but others have a splatter or webbing pattern on top of the base color. None of the games that we currently support need webbing but some have a splatter pattern so we'll discuss this briefly.

Applying a spatter effect

Many pinball machine cabinets received a paint spatter effect from the factory. This involved spraying the base coat with a contrasting color with a random pattern of paint droplets in a contrasting color. This has the effect of not only making the paint job look more complex and interesting, but it also helps to distract the eye from minor imperfections on the base coat or cabinet defects. The original spatter effect was probably achieved with an air-powered spray gun, but a similar effect can be obtained with nothing more than a toothbrush or an old paint brush.

The first thing that you need to do is determine the color of the paint spattering effect that you wish to use. Appendix A lists what we have observed for spatter color for the games that we have checked out. There's no guarantee that every game of a particular title received the same color of spattering, and there's always the possibility that someone reapplied a spattering pattern at some point in the past. Here's one easy way to tell: The factory spattering always went on after the base coat but before the stencil colors. So, the stencil colors should cover up any spattering and you should be able to see the bumps of the paint, but not the color. If the spattering is on top of the stencil colors, the spattering was added later.

Since the spatter dots are so small, color match is not critical. We've seen black, white, brown or gold and silver spattering. To apply the spattering, the thicker the paint the better. Straight out of the can should be fine. Get some scrap cardboard to practice with and either an old toothbrush or paintbrush. The stiffer the bristles, the better. If you're using a paintbrush, you may get better results if you cut the bristles down to an inch or less. Now simply dip the brush lightly in the paint, and drag your finger across the top of the bristles to flick the paint onto the surface. Experiment with distance, the amount of paint on the brush, and finger pressure to get a pattern that closely resembles the original. In most cases, less is more. You may be tempted to apply more spattering than on the original, but it's likely that the end result will look better with less rather than more spattering.

After the spattering is applied, be sure to give it plenty of time to dry before you apply the first stencil.

Base Coat Application

Apply the base color and let the paint dry completely. Remember that the stencil has a removable adhesive, so you really want that base coat to be completely dry. This is now your last chance to easily touch up any defects in the cabinet or base coat.

First Stencil Application

Once the base coat is completely dry, you will be ready to apply the stencils for the first color. Refer to the specific game information for color information and other game-specific details, if any.

The stencils are composed of two layers. The bottom layer is the brown paper backing for the second layer, the semi-adhesive polyethylene stencil.

Start with the stencil for the cabinet front. Each stencil section is labeled with its position and color. In most cases, the stencil is cut to the size of the cabinet surface that it is being applied to. In other cases, the stencil pattern requires that the stencil extend past the edge of the cabinet. In these cases, the extensions stop before the corner and in other cases, the extensions extend around a corner. In the latter case, there will be a small ½ inch square cut in the stencil extension. Wherever these squares are used for alignment, the corner of the square closest to the cabinet should just touch the corner of the cabinet. Wherever these squares are midway along the side of a stencil, the edge of the square closest to the cabinet should just touch the edge of the cabinet. If you have a helper, one of you can position the stencil and the other can squeegee it down.

The areas cut out of the stencil are where the stencil color will go when the cabinet is sprayed. We have manually removed all of the cut-out areas, but it is possible that an occasional cut-out may get by us. So at this point you should inspect the stencil and look for cut outs that may have been missed. If you find any, all you have to do is peel it off the cabinet. Also look out for loose cut-out pieces that may have found their way onto the cabinet and discard them.

Now that you've done the cabinet front, repeat the process for the left and right side of the cabinet body. Make sure that you are using the proper side and color. All stencil sections have a computer-generated label that identify them so there should be no room for confusion. The only difference between the front and the sides is that the sides are much larger and harder to handle by one person. You may need to add some masking tape to these two edges to ensure that no overspray gets around the stencil to places where it doesn't belong.

Once all three cabinet body stencils for the first color have been applied, make sure that the rest of the cabinet is masked to prevent any overspray from the first color getting on the base color or anywhere else you don't want it. Don't underestimate the spray paint's ability to get into places you don't want it, so a little extra masking or taping may prevent a big headache later.

Now you spray the first stencil color, just enough to cover all of the cut-outs in the stencils. The factory rarely applied a heavy coat for the stencil colors, so keep that in mind if you are looking for a realistic “vintage” look. Once the stencil color has started to dry, but before it has dried completely, gently peel off the stencil. If you plan to re-use the stencil, place it back on the brown backing paper (you did remember to keep it, didn't you?) If you pick up any wet paint from the stencil be careful that you don't get any back on the cabinet.

The process for painting the cabinet head is identical. Depending on the order of the paint colors on the head and body, you may want to apply the head stencils in a different order, or staggered ahead or behind. Check the game-specific information for details and hints. The stencils for the heads only cover the sides of the head, so you will need to do a good amount of masking to catch the overspray.

What about stencil overspray?

When the cabinet was stenciled at the factory, they used thin metal stencils that were placed roughly against the cabinet and quickly sprayed. There was often a gap between the stencil and the cabinet that resulted in areas of overspray around the edges of the stencil pattern. This effect may be obtained easily with these stencils by simply pulling the stencil away from the cabinet wherever the overspray effect is desired, and then shooting the desired amount of paint in the gaps.

Second Stencil Application

Application of the second set of stencils is identical to the application of the first set. We need to say again that you should make sure that the paint on the cabinet is completely dry before applying the stencil to the cabinet. You cannot switch the order of the stencils because the pattern that you'll end up with will not match the original. Check the specific game information to see the order in which the stencils should be applied.

You can stencil the head along with the body, or as a separate project. If you plan things in advance, you may be able to minimize the number of times that you need to set up spraying a particular color.

Reassembly

Once both stencil colors have been applied to both the head and the body, you can remove all the masking materials and reassemble the cabinet. You may be able to re-use the twist nails that are used to hold on the side rails, or you can use new ones. We were able to find the right type of nail at the local Home Depot, but it was 1/8 inch too long. They were easy to cut to the proper size, however, and the price was right. The correct nails are available from The Pinball Resource and possibly other pinball parts suppliers.

Now is the perfect time to do what you can to shine up the coin door and other hardware. The ball shooter can be polished to a mirror finish on a buffing wheel, and 0000 steel wool and Mother's Mag polish can do a great job on the coin door. If you're not replacing the carriage bolts for the coin door, the least you can do is polish the heads or

give them a nice coat of black enamel paint. Early Bally games have a small rivet in the cabinet front to the left of the coin door. The rivet acts as a bumper for the coin door when it is swung all the way open, but the rivet is often rusted beyond hope. You can get a ¼ inch chrome snap-in cap at big hardware stores that just presses in the hole and looks great.

Once the paint has had plenty of time to dry, you can handle the cabinet as usual. Hopefully, you are admiring the results of your labor and patting yourself on the back for a job well done. If you can take a picture of your completed machine, please send it to us and we'll post it on our web site.

Appendix A: Specific Game Information

Bally Playboy

Playboy has a white or ivory base coat with deep purple and black stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	White/Ivory	Deep Purple	Black

The original base color was close to a pure white , which would have shifted towards an ivory over time. Which you use is a matter of personal preference. The purple is a very hard color to match. Over time, the original purple usually fades towards red or pink, so not only is it hard to get an idea of the original color, deep, highly saturated colors are harder to match. The second stencil color is a solid black, which is universally available.

Bally Star Trek

Star Trek's cabinet body has a yellow base coat with blue and orange stencil colors. The cabinet head has a blue base coat with orange and yellow base stencil colors.

	Base color	First stencil color	Second stencil color
Body	Yellow	Orange	Blue
Head	Blue	Yellow	Orange

Good matches for these colors are interior satin-finish (or eggshell finish) Glidden Evermore water-based latex:

Yellow: Sunny Side Up (37YY 61/877)

Blue: Cosmos (10BB 12/310)

Orange: Fiesta Orange (68YR 28/701)

Here's a web site describing a Star Trek cabinet that was restored using these stencils:

<http://arcadearchive.com/pinball/trek/>

Bally Kiss

Kiss has a white or ivory base coat with orange and black stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	White/Ivory	Orange	Black

The original base color was close to a pure white , which would have shifted towards an ivory over time. Which you use is a matter of personal preference. The second stencil

color is a solid black, which is universally available. A very close match for the orange is “Allis-Chalmers Orange”. Allis-Chalmers is a manufacturer of heavy machine and farm equipment, so most paint shops should have the formula. Others have used “Chevy Engine Red” and Dupli-Color # DE1607 Chevrolet Red/Orange, which are available in spray cans.

Bally Fathom

Fathom has a dark blue base coat with teal and green/yellow stencil colors. Fathom is unique that the two stencil colors for the cabinet body and head are applied in reverse order. The base color for both is dark blue. The cabinet body’s first stencil color is yellow/green and the second color is teal. The cabinet head’s first stencil color is teal and the second color is yellow/green.

	Base color	First stencil color	Second stencil color
Body	Dark Blue	Yellow/Green	Teal
Head	Dark Blue	Teal	Yellow/Green

During Fathom’s production run, the exact color used for the first stencil color changed. Some cabinets were painted with a more yellow color and others (apparently the later games in the production run) were painted with a more greenish yellow. Maybe someone spilled some teal into the yellow? We’ll never know... In any case, it’s up to you to determine which color to use. Scott Farrar has put together a terrific web site that documents his Fathom cabinet restoration project and he goes into great detail describing the process:

http://www.scott.farrar.com/fathom_cabinet.htm

Note that Scott’s page applies the stencil colors in the same order for the body and head, which is incorrect. While his stencils may have compensated for the difference in general appearance, the factory-applied stencil color order is as we describe above.

Bally Capt. Fantastic

Capt. Fantastic has a white base coat with red and blue stencil colors. The head and body are identical. The base coat is followed up with gold spattering.

	Base color	First stencil color	Second stencil color
Body & Head	White	Red	Blue

The original base color was close to a pure white , which would have shifted towards an ivory over time. Which you use is a matter of personal preference. The stencil colors are medium red and medium blue, which should be fairly simple to match.

Williams Black Knight

Black Knight uses the same paint colors as many Williams pinball machines from that time period: black base coat with red and yellow stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	Black	Yellow	Red

The cabinet base color is solid black. A close match for the red stencil color is Krylon's Banner Red or Red Pepper. A close match for the yellow stencil color is Krylon's Sun Yellow. Both of these are available in spray cans at most large paint departments.

Williams Gorgar

Gorgar has a black base coat with red and white stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	Black	White	Red

The cabinet base color is solid black. A close match for the red stencil color is Krylon's Banner Red or Red Pepper. This is available in spray cans at most large paint departments. Any pure white could be used for the original white, or a slight off-white may yield a more realistic appearance.

Bally Eight Ball Deluxe

Eight Ball Deluxe has a black base coat with cream (or beige) and dark yellow (or gold) stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	Black	Cream	Dark yellow

The cabinet base color is solid black. The lighter stencil color (cream) goes on first. The second color is supposed to look like gold, so a dark yellow is probably the best match.

Gottlieb Black Hole

Black Hole was made with two different cabinets, one for the domestic U.S. market and another for export. The export version lacked the rotating disc in the backbox and had a simpler, single backglass. The lower cabinets and playfields were identical, but the export games also lacked the speech chip. The U.S. version has a deeper backbox with a swing-out door for the backglasses. The backbox of the export version is shallower and is the same dimensions as Haunted House. We offer stencil sets for both versions, since the patterns on the two backboxes is also slightly different. The paint colors are the same. The backbox and lower cabinet are both spattered with white paint. Note that the spattering is applied after the base coat but before the stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	Dark Blue	Black	White

The cabinet base is dark blue followed by spattering in white. The stencil colors are simply black and white. Note the comments earlier in this document about color matching choices, especially with regard to white. You may be more satisfied with an off-white paint color rather than a pure, bright white.

Bally Evel Knievel

Evel Knievel has a white base coat with gold speckling.

	Base color	First stencil color	Second stencil color
Body & Head	White	Red	Blue

The cabinet base is white followed by spattering in either brown or gold. The stencil colors are medium red and blue. Note the comments earlier in this document about color matching choices, especially with regard to white. The red and blue are both medium intensity colors that should be relatively easy to match. These are apparently the same shades of red and blue used by many other Bally games, such as Capt. Fantastic, \$6 Million Dollar Man, Power Play, and others.

Bally Wizard

Wizard has a yellow base coat with red and blue stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	Yellow	Red	Blue

The cabinet base is a medium yellow. The stencil colors are a medium red and blue. Because of the relatively saturated base color, it's hard to tell what the pure blue and red stencil colors were meant to be. The yellow base color affects the perceived hue of the red and blue stencil colors, so matching the color that's on a painted cabinet will not match after it is sprayed over a fresh yellow base coat. The red and blue are both medium intensity colors that are apparently the same shades of red and blue used by many other Bally games, such as Evel Knievel, Capt. Fantastic, \$6 Million Dollar Man, Power Play, and others.

Bally Eight Ball

Eight Ball has a white base coat with black and yellow stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	White	Orange	Black

The cabinet base is white, without any spattering or webbing. The stencil colors are a medium orange and black. The black is of course a pure black, and for the white you could choose a pure white for a factory-new appearance, or a shade of off-white for a more realistic look. The orange is not a very bright orange (like Bally’s KISS), so that should make it easier to match.

Bally Paragon

Paragon has a yellow base coat with red and blue stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	Yellow	Red	Blue

The cabinet base is yellow, with gold spattering. On our model game, the spattering was fairly heavy. The stencil colors are a fairly dark red and blue, but the typical factory paint job did not apply a completely opaque coat of the stencil colors. This has the effect of making the stencil colors appear lighter, since the lighter yellow base coat shows through. So to match the factory look, you should either match the darker stencil colors and apply a thinner coat (very tricky), or use slightly lighter colors and apply a normal opaque coat of paint. An opaque layer of the exact factory stencil colors may come out looking too dark. If in doubt, perform a test on a piece of scrap material. Another option is to add a small amount of the base color (yellow) to the stencil colors in order to lighten them (if desired).

Bally Centaur

Centaur has a black base coat with silver and red stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	Black	Red	Silver

The cabinet base is black, with no spattering. There’s not much red on the cabinet, but it goes on before the silver. The red is a medium red that should not be hard to match. The predominant stencil color is the second stencil color – silver. In photographs, the color may look to be a medium gray, but “in person” it’s obviously silver, not gray. Silver is generally not available as a house paint color, so it may be difficult to find, depending upon what paint suppliers you may have available to you. If you find a good match for this silver paint, please let us know and we will share this information with other Centaur owners. Unfortunately, we can’t provide information about paints that would apply to everyone (or even anyone else than us) due to differences in local availability, paint equipment, etc.

Williams Ten Strike Manikin Bowler

These stencils will fit the 5 foot Williams Ten Strike and Ten Pins manikin bowlers. The less common longer version has completely different artwork. The cabinet base color is a medium green, the first stencil color is red and the second stencil color is yellow. Good matches for the red and yellow may be the same colors suggested for Williams Black Knight, mentioned above.

	Base color	First stencil color	Second stencil color
Body & Head	Green	Red	Yellow

The color order is the same for the base cabinet and the head, so they can be prepared together. This stencil set has more pieces than those for a standard pinball machine, so please take note of these special instructions. In addition to stencil sections for the head and the base cabinet, there are smaller stencil sections for the bottom front of the head as well as two wrap-around pieces for the middle section just below the head. All stencil sections are labeled with the stencil color and order as well as their position. Note that there is no stencil for the front of the base cabinet. This is because there is no artwork on this surface – just a small solid band of red at the bottom. More on this below.

With the exception of the special masking for the cabinet front, the first and second stencil colors are applied the same way:

- Apply the stencils for the cabinet sides (labeled left and right). Where possible, the stencil is cut to the exact size of the surface to be painted. In some cases, this is not possible, depending upon the stencil pattern. In those cases, the stencil overhangs the cabinet on one or more sides, and there are small ½ inch box cut-outs in the corners are used to precisely locate the stencil on the cabinet. The rule is, where there is a ½ inch box in a corner, the corner of the cut-out box should just touch the corner of the cabinet. For the cabinet sides, the top edge of the stencil aligns with the top of the “bowling lane” part of the cabinet. Note that the red cabinet side stencils stop before the bottom of the cabinet. This is because the red pattern reaches the very bottom of the cabinet. Aligning the top edge of the stencil to the cabinet will result in the proper pattern being painted in the proper place.
- Once both cabinet side stencils have been applied, note the first stencil (red) is cut out all the way to the front edge of the cabinet, at the bottom. That defines the height of the red stripe that should be applied to the front of the cabinet. Use masking tape or excess stencil material that you can trim from this stencil set to mask off a line that connects the left and right side openings. The height of this stripe should be approximately 1 1/16 inch tall and the stripe starts at the bottom of the cabinet. Make sure that the stripe is exactly parallel to the bottom edge of the cabinet, even if it means that the stripe will not perfectly match the pattern on the side. This seam is hidden by the legs, so it will not be seen. When applying the second set of stencils (yellow), nothing goes on the cabinet front so it can be completely masked off.

- Apply the left and right head stencils. They are cut so that the edge of the stencil towards the front (right edge of left side stencil, left edge of right side stencil) aligns with the front-facing edge of the head's painted surface. The rear-facing edge is aligned via the small cut-out squares on the top and bottom, as described previously.
- Locate the piece of stencil with the “Head Bottom”, “Left Side – Middle” and “Right Side – Middle” labels. These stencil sections are also cut to exact size. The short, wide “Head Bottom” goes below the backglass. The “Left Side – Middle” section goes just below the head, and wraps around the cabinet from the left side to the front. The rear edge of the stencil is aligned with the rear edge of the cabinet and wraps around the front. Note that the pattern on the front may not necessarily be centered – that is by design as the pattern is rarely centered on the original cabinet. If you would prefer to center it, simply cut the front stencil section off and apply it manually. Apply the “Right Side – Middle” stencil section in the same manner as the left.
- That concludes the special instructions needed for the Ten Strike cabinet. The second stencil is applied in the same way, with the exception of the stripe on the cabinet front, which applies only to the first (red) stencil. There is no stencil for the yellow color (second stencil) for the front of the cabinet.

Bally Xenon

Xenon has a black base coat with blue and red stencil colors.

	Base color	First stencil color	Second stencil color
Body & Head	Black	Blue	Red

The cabinet base is black, with no spattering. The red and blue stencil colors appear to be close to a pure red and blue respectively. We have made some colorimeter measurements of an excellent-condition original Xenon cabinet, using a Pantone Color Cue device. These color measurements can be used in conjunction with the <http://easyrgb.com> web site to help find paint color matches in well-known brands of paint. See our web page describing the process at: <http://pinballpal.com/colors/>.

The colorimeter color measurements are represented in two different ways: on the sRGB scale and the iLab scale. The colors are the same, but the measurement scale is different.

Blue: sRGB: 0 117 154 iLab: 46.6 -22.3 -27.6
 Red: sRGB: 67 15 18 iLab: 32.3 44.4 39.9

The actual paint color used was likely to be very close or identical to the red and blue stencil colors used by many other Bally pinball machines. So you can refer to color matching tips for these other games (in this guide and elsewhere) and you'll likely have a very close match to the original red or blue.

Williams Wild Kingdom Gun Game

These stencils will fit the Wild Kingdom gun game. This is the most complex stencil set that we have produced to date. Wild Kingdom has three stencil colors rather than two, and there are many angular surfaces to be dealt with. Each stencil section is cut to exact size, so they are easy to apply, but there are many separate sections that need to be dealt with. Also, the largest section (the main side panels) are a few inches wider at the bottom than our cutting equipment can handle in one pass, so for these sections, there are small stencil extension pieces that need to be applied for certain colors. All of this is noted below.

Base color	First stencil color	Second stencil color	Third stencil color
Yellow	Orange	Green	Black

All stencil sections are individually labeled. You start with all the stencils for the first color, then paint, remove the stencils and repeat for the second and third color. First let's identify the stencil sections:

- 1) Front lower: This is the rectangular panel below the coin door panel, with the tiger head. This section has stencils for all three colors.
- 2) Front upper: This is the rectangular panel with the coin door. This section has stencils for just green and black.
- 3) Left side left: This is the large main side panel. It has stencils for all three colors. There are also small extensions for the green and black stencil colors. The extensions butt against the bottom front-most portion of the main stencil. Any gap between the main stencil and the extension should be covered over with masking tape. The extension stencil sections will be labeled "Left Extension".
- 4) Right side right: Handle the same as the left side left.
- 5) Left side right: This is the triangular side panel, inset slightly from the main side panel. It has a monkey's face. There are stencils for all three colors for this panel.
- 6) Right side left: Same setup as left side right.

When painting the base color, note that the backglass surrounding frame is painted black, not the yellow base color. No stencils are needed for this since it's delimited by straight lines following the seams in the cabinet. The black surround should be painted first, followed by the yellow base color. The coin door and its frame should not be painted, so you should either remove the coin door and frame or you can mask off the coin door and frame and then trim the stencils so that they fit around the coin door's protrusions.