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## Pallet Computer Desk

### • Introduction

Often you can get old wooden pallets for the asking as it costs businesses money to throw them away. Knocking them apart takes time and the quality of the recycled wood is usually very poor. Still the price is right and the pieces are short enough to fit in your old car.

This poor wood can be made into a solid, good looking computer desk. The construction is very similar to our wood worker's bench detailed under 'Freebies' on our web site.

You rip the wood into slats and drill holes for threaded rods through each piece. You then bolt and glue the stacks together into solid panels. You trim the panels and assemble them with lag bolts and blocks of wood. You smooth the outer surfaces with a hand plane or belt sander.

You spend a lot of time salvaging the wood and ripping the pieces but the finished desk is so solid it can last for 75 years. It even makes a good workbench after your student days are over.

One word of warning, some pallet wood is treated with anti-rot chemicals. Never work with wood that is has a greenish tint or smells like creasolt (dark brown stain). The dust put into the air when these woods are cut could be harmful to your health.

Here are three drawings, a photograph, and construction hints

Be sure to following the safety instructions that came with your power tools. Just before using them stop and think. Am I standing or reaching in a awkward way? Is the scrap and tools in the way? Is the work under good control?

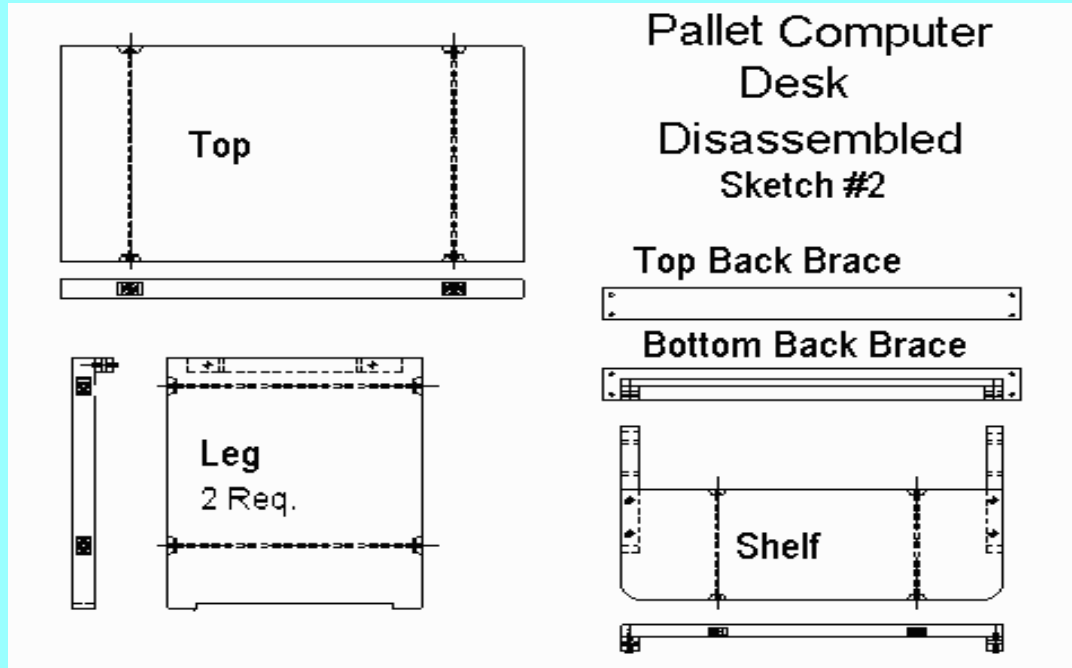
## • **Sketches and Photo**

### 1. **Pallet Computer Desk**

At the start of this note is a three view drawing of this desk. Note that it is made of four solid panels made by bolting long, thin boards together with threaded rod. The panels are then bolted together with threaded rods.

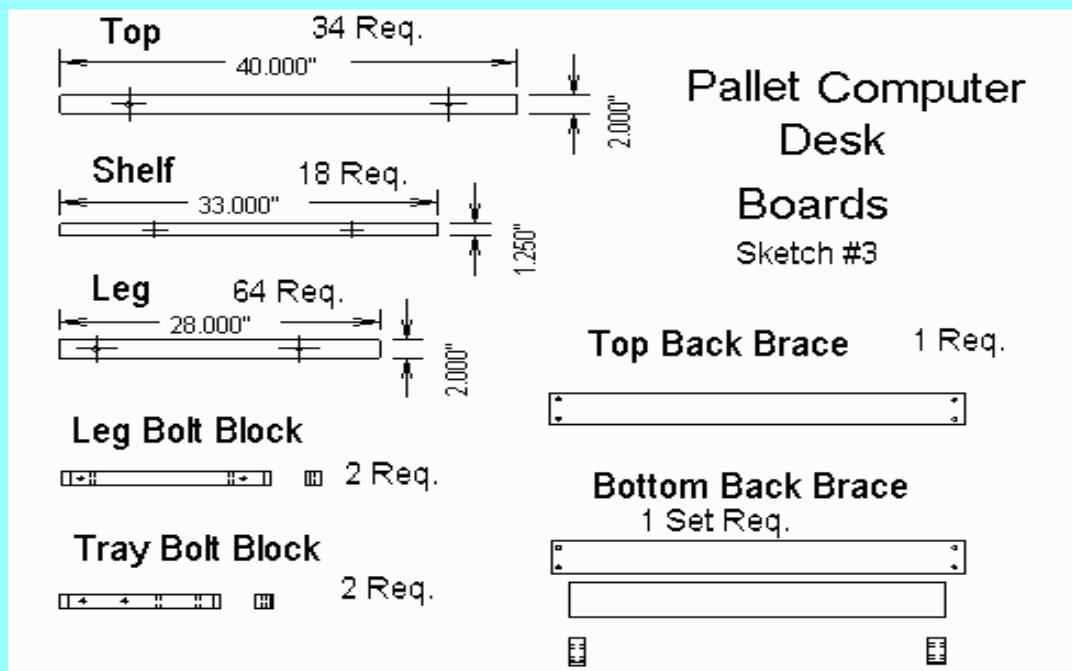
### 2. **Pallet Computer Desk Photo**

Above is a photo of the prototype for this desk. The basketball and the gas can are shown to give you an idea of the size.



### 3. Disassembled -- Sketch #2

This sketch shows all the pieces as they look when disassembled for travel. Although they are heavy, they can fit behind the front seat of the type of old cars commonly owned by students. The panels are the Top, two Legs, the keyboard shelf, the top back brace, and the bottom back brace. The bottom back brace is 'T' shaped and forms a small shelf.



### 4. Boards -- Sketch #3

This sketch shows all the board that you must cut to make this desk. It is best to rip the

boards as long as you can from your material and trim the entire panel off after you have glued it up.

## • **Materials**

You can build this desk with the following inexpensive materials:

### 1. **Wood**

All the wood was recycled from wooden pallets used for shipping by industry and from through out pieces of furniture.

### 2. **Hardware**

1. 6 -- 24 inch by 5/16 threaded rods -- \$10.50
2. 12 -- 3/8 flat washers -- \$ .50
3. 52 -- 5/16 flat washers -- \$ 2.00
4. 12 -- 5/16 nuts -- \$ .50
5. 2 -- 12 inch by 1/4 threaded rods -- \$ 2.50
6. 4 -- 1/4 flat washers -- \$ .25
7. 4 -- 1/4 nuts -- \$ .25
8. 36 -- 2.5 inch by 5/16 lag bolts -- \$ 12.00
9. 8 -- 1-1/4 inch by #8 flat head wood screws -- \$ .75

### 3. **Other Materials**

1. 16 oz -- Wood Glue -- \$4.00

### 4. **Omissions and Contingencies**

Allow %15 for tax, sandpaper etc. -- \$ 5.75

### 5. **Total -- \$ 39.00**

Well the price is right.

## • **Tools Required**

You will need the following tools:

## 1. **Saw**

Access to a table saw is best, but the job can be done with a radial arm saw, or a circular saw.

## 2. **Drill**

A drill and bits to drill a lot of .5 inches holes in wood.

## 3. **Work Bench**

This work is best done on a proper work bench with a wood vice. You can do the work on saw horses or even an old picnic table but you must be careful to clamp the wood well.

## 4. **Hammer**

You need a heavy claw hammer. Assorted other hammers and pry bars may also be helpful.

## 5. **Wrench**

A socket wrench works best.

## 6. **Chisel**

A common carpenters chisel but it must be sharp.

## 7. **Plane or Belt Sander**

If you want a smooth top you will need a plane with a sharp blade. If you do not have a plane now you can use a belt sander or leave it rough and promise to smooth it later.

# • **Construction Notes**

## 1. **Getting Wood**

This desk is intended to be made from recycled wood. The wood can come from shipping pallets, discarded furniture, or construction site waste. The prototype was made from 5 five pallets and two pieces of discarded furniture.

In my neighborhood, large trash is placed out at the curb once a month. I have often found this a good source of wood.

Scrap plywood can be cut into strips and used in this desk. This produces an interesting effect if mixed in with the other wood. The edge of the plywood is very difficult to plane, so it is best not to use plywood strips in top and keyboard shelf.

You can mix two-by and one-by material and even half inch slats. You can mix hard wood and soft wood. You can even use some painted wood intentionally leaving thin colored lines. Whatever looks good is good.

As recycled wood is generally of poor quality, you will need to collect a good amount before starting work on the desk. You will be left afterwards with a good supply of kindling wood.

## 2. **Taking Pallets Apart**

Pallets are strongly nailed together. It takes some practice to take the apart without cracking the wood.

Cut a good supply of scrap wood blocks. Two by Four stock about ten inches long works well.

Do not beat directly on the pallet wood with a hammer. Always place a short block of wood across the grain and beat on you scrap block.

Also use the blocks to hold the pallet up off the floor, so that you can drive the pallet pieces down. This is less likely to split the pieces than prying the up.

Any time a nail head comes up high enough to get the hammer claw on it, stop beating and pull out the nail. Again use scrap to protect the good wood. You will have to turn the pallet over many times.

Carefully save the nails in an old coffee can. You will reuse a few but this is mainly to keep the nails out of people's tires.

## 3. **Best Ends**

When you have a good pile of wood, go though the pieces and cut off one end square. This gets give you a reference end and lets you inspect the wood.

You can often save a piece that is spilt at the end by working glue into the crack.

Also sort the wood for length, saving the longest pieces for the top. Save your very best pieces for front edge of the top and shelf and good pieces for all the outside edges.

#### 4. **Best Edges**

If you have a plane and work bench, go through the pieces again planing one edge straight and smooth. This gives you a reference edge for cutting and will make smoothing the finished top much easier.

It will be much easier to get a beautiful flat surface on the top if it is free of all but the smallest knots. Put your best wood in the top and put the best edges up.

#### 5. **Cutting Strips**

Cut the wood into strips the correct width. The top and legs are the same width but the shelf is thinner. This is easy on a table saw but can be done with other power saws and a fence. Be sure to clamp the work well and set the saw depth properly so that you do not cut the support. Take your time with this step.

#### 6. **Drilling Holes**

Select three good pieces for use as drill patterns. Mark them with a 'P' and mark the top and reference end. Layout the holes for the threaded rods. The rods should be about 1/4 the way in from the ends of the finished panels. Drill small holes, just big enough for a scribe, straight through the patterns.

Drill the rest of the strips using the pattern and only the pattern to mark each one. Be careful to always have the reference end in the same direction and the best edge up. The holes should be a very loose fit on the threaded rods.

Lay out the strips with the good edge up to be sure you have enough. Be certain that you have enough strips to fill up the rods with plenty to spare. The stack compresses at least an inch when clamped down and you do not want the bolt heads to stick out. You can drill out the patterns for use as soon as you are sure that you are through with them.

You may want to trim the second ends now or wait until after the panels are glued up. It is very hard to get all the pieces straight during gluing so plan on trimming them afterwards if you can.

You may wish to build the feet into the leg panels but cutting the two outside slats one inch longer than the body of the panel. When glued you can trim only the upper edge and the feet. The bottom edge between the feet will be a little uneven but this does not show.

## 7. Chiseling Nut Recesses

Choose good pieces for the front and back of each panel. Two by material a good choice here. If all you have is one-by or thinner material, then glue several strips together.

With a shape carpenter's chisel, cut out a neat pocket around the hole large enough to easily handle the washer. If all you have is one straight chisel, you can make the rectangular recesses shown in the drawings with sloped ends.

The recess must be deep enough to completely contain the nut, two washers, and two full treads on the end of the rod. Make them as deep as you can without cutting through the slats.

## 8. Gluing Up

This is a good use for cheap glue. Also use up any old bottles of glue you have laying around. The glue area is large and the treaded rods supply most of the strength.

Lay out all your slats for a panel. Be sure they have the reference ends the same way and the best edge up.

Place one large washer, one small washer, and a nut on two threaded rods. Stick them through the front piece with the rods pointing up. Tack nail or clamp the piece so that the rods do not fall back through the holes and you stack up the slats on them. Apply a thin coat of glue to each surface and thread the pieces one at a time over the rods. Be sure to keep the reference end in the same direction.

Before you place the outside edge piece on, place washers and bolts on the rods and pull them down. You will probably need to back them off and place one more slat on the stack. If you can just barely get the nuts started with the outside pieces in place then you have the right number of slats.

Lay the panel down and tap the slats as straight as you can with a hammer and block of wood. Check the square. If the panel is way out of square then you may need to take the back nuts off so slats will move around more.

Pull the nuts down evenly, a turn here and a turn there. Some glue, but not too much,

should run from the cracks. If you have some long clamps, place them at the very ends of the panel and pull them down too.

In the end you should have two threads showing at each rod end. The end of the rod must not stick out of the recess. If the rods stick out then you need to get in one more thin slat before the glue dries.

The leg panels should be the same width and just a little narrower than the top panel. If you have a hack saw and file, you may want to shorten the leg panel rods by .5 inch.

The keyboard tray is made the same way but uses 1/4 inch rods and thinner slats. You do need to trim this panel after the glue is dry.

I like to scrape off excess glue with a putty knife when it is gummy about twenty minutes after the glue up.

## 9. **Trimming Panels**

If you have a circular saw it is easy to trim the panels after gluing. Simply measure them carefully and clamp on a straight edge for the saw.

You can trim the keyboard shelf with a table or radial arm saw. It is the most important to be trimmed properly.

Be extremely careful that you know exactly where the rods are when trimming.

## 10. **Bolting Blocks**

Cut two-by stock into two-by-two bolting blocks. You will need four long ones for the legs and short scraps for the bottom back brace. Pre-drill the blocks for the lag bolts.

## 11. **Back Braces**

Cut two pieces five inches or wider for the back braces. This is a good use for scarp plywood. These need to be three inches longer than the trimmed keyboard shelf.

Also cut a bottom shelf the same width as the keyboard shelf. Assemble the bottom brace in a 'T' with the shelf and the bolt blocks. Use nails and glue. Use additional nailing blocks if the shelf is made of plywood.

## 12. **Final Assembly**

Attach the bolt blocks to the inside of the leg panels and the keyboard shelf with glue, lag bolts, and washers. Drill pilot holes and always use a washer with any bolt against wood.

Be very sure that the bolt blocks are even against the trimmed end and square the the front edge. it is particularly important that the keyboard shelf blocks be exactly their same width ad the shelf at their extended ends.

Lay the top out upside down. Center the keyboard shelf on it. Install one leg panel with lags but **no glue** but do not tighten the bolts completely. Check that it is square to the front of the top.

Install the second leg panel using the keyboard shelf as width gauge. Again use no glue and leave the bolts a little loose.

Cut scrap blocks to hold the keyboard tray up the right amount and install the back set of lag bolts.

Screw the top back brace in place. Again not glue. Be sure that the legs are square before putting in the second set of screws. If you cannot push things around to get them square then loosen the lag bolts.

Install the bottom back back brace with lags and screws, but no glue. Check the square of the legs.

Turn the desk over and install the second set of lag bolts supporting the keyboard shelf. Be sure that the shelf is parallel to the top.

Tighten all the lag bolts.

### 13. **Planing**

The top will be much nicer if planed. This is not difficult if the top does not have too many knots and you have the tools to keep the plane blade sharp. You will probably need to place a heavy tool box on the bottom shelf while planing.

You can take a belt sander to the top if you prefer.

### 14. **Finish Optional**

Finish for this desk is completely optional. You may do nothing at all and simply let the

wood take color with age. You can stain the whole thing or you could even paint it. It is up to you.

## • **Conclusion**

Congratulations, you have complete a good, solid computer desk largely from recycled materials. You desk could easily be in use as a workbench a hundred years from now.