

A HIGH SPEED, PORTABLE PRECISION CUTTING MACHINE FOR ALL TYPES OF SHEET MATERIALS

9-25-72

SERIAL #
40672

OWNER'S MANUAL
FOR THE MODEL

K-11



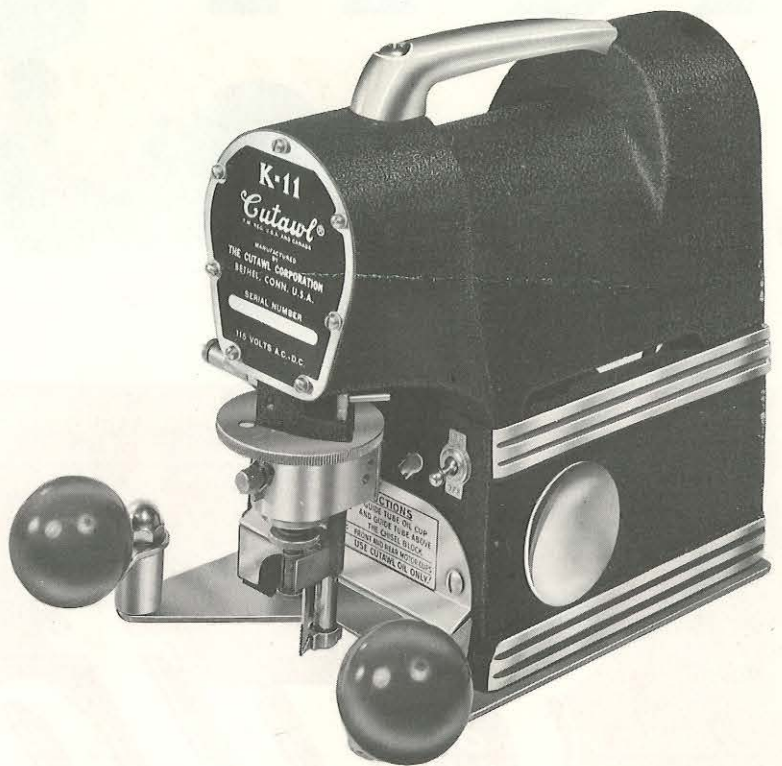
Cutawl®*

MACHINE

® * TRADEMARK REGISTERED IN U.S. AND CANADA

FORM NO. C-78B

MANUFACTURED BY THE *Cutawl* COMPANY, BETHEL, CONNECTICUT 06801



IMPORTANT NOTICE

Beginning with motor serial number 39816 (115 volt) and 34871 (220 volt) your Cutawl Machine motor has been replaced by a new ball-bearing motor which requires no lubrication. This motor has been extensively tested under the most rigorous conditions both in our plant and in the field, and has proven superior in all respects to the former one.

If your Cutawl Machine motor has a higher serial number than those given above, please pay no attention to any reference in this manual to "front and rear motor oil cups." These references will be found on:

Index
Page 5, picture
Page 7, picture
Page 9, paragraph C.

For the convenience of owners of older models, however, we will continue to include these mentions of lubrication instructions in our next few printings of this manual.

Part numbers have been assigned as follows:

PART No.	ITEM	PRICE
131K7	Ball Bearing Motor 115 Volts	35.00
131K7 GR	Ball Bearing Motor Group 115 Volts	36.50
131K8	Ball Bearing Motor 230 Volts	42.00
131K8 GR	Ball Bearing Motor Group 230 Volts	43.50
131K9	Motor Brush w/Spring for #131K7 and 131K8 Motor	.75
131K10	Motor Brush Cap for #131K7 and 131K8 Motor	.75

THE *Cutawl*® MACHINE

FOR:

PLYWOOD	CARDBOARD
PLASTICS	COMPOSITION
ASBESTOS	LEATHER
LINOLEUM	CLOTH
RUBBER	MASONITE®
FELT	WALL-BOARD
CORRUGATED	PAPER
CORK	THIN METALS
	etc...

FOR A COMPLETE LIST OF PARTS AND PARTS PRICES, REFER TO PARTS LIST C-62

A copy of Parts List C-62 was included when you purchased your Cutawl machine. Extra copies are available at no charge upon request.

The Model K-11 Cutawl Machine is the only model for which parts and service are now available. All previous models are obsolete and the manufacture of parts for these old machines has been discontinued.

TABLE OF CONTENTS

I - Description	1
II - Operation	1
A - General	1
B - Work Place	2
C - Holding the Workpiece	2
D - Selecting the Proper Blade	2
E - Blade Stroke and Clearance Adjustment	4
F - Adjusting the Guide Knobs	5
G - Speed Control	5
H - The Swivel Brake and Lock	6
I - Guide Tube Knee Action	6
J - Alignment of Blade in the Guide Foot	7
K - The Circle Cutting Attachment	7
L - Check List and Initial Operation of Machine	8
III - Lubrication	8
A - Guide Tube Oil Cup	8
B - Guide Tube	8
C - Front and Rear Motor Oil Cups	9
D - Plunger Shaft Oiler	9
E - Link, Counterweight and Slide Assembly	9
F - Chisel Block	9
G - All Other Moving Parts	9
H - Special Lubrication	9
IV - Service	9
A - General	9
B - Dealer Service	10
C - Factory Service	10
D - Trouble Shooting	10
E - Modifications	10
V - Guarantee	10

INSTRUCTIONS FOR OPERATING AND SERVICING THE MODEL K-11 CUTAWL MACHINE

Manufactured by

THE CUTAWL COMPANY
BETHEL, CONNECTICUT 06801

I - DESCRIPTION

The Model K-11 Cutawl Machine is a precision-built, portable cutting machine especially designed for cutting a large variety of sheet materials. It has many unique and valuable features not available in any other cutting machines: a wide selection of chisel and saw blades, independent cutting stroke and clearance adjustment, 360° swivel cutting action, self-contained work illumination. A typical example of Cutawl work is the set of "Flower Drum Song" made of Upson Board at Melodyland Theater in Anaheim, California. This is shown in figure 1.



Figure 1

This machine is powered by a heavy duty, 1/6 HP Universal (AC-DC) Motor for 115 volt or 230 volt. When used on AC, the frequency should be 50 to 60 cycles for maximum efficiency.

Although many of the moving parts have permanently sealed lubrication and require no attention, it is very important that those parts requiring periodic lubrication be serviced as specified in the lubrication section of this instruction book.

Your Cutawl Machine will give you many years of service if you exercise reasonable care in following these instructions on its use, lubrication and adjustment.

All Cutawl dealers are qualified to perform inspection and routine service on these machines. Factory repairs can be done quickly at reasonable cost through your local dealer.

There are 4 important requirements to the successful operation of the Cutawl Machine:

- Correct adjustment of blade clearance (top of stroke adjustment)
- Proper choice of cutting blade
- Correct depth of stroke adjustment
- Regular and systematic lubrication.

CHECK THESE 4 REQUIREMENTS EVERY TIME YOU USE YOUR MACHINE.

II - OPERATION

A - General

There are three types of blades used with the Cutawl Machine:

- Chisel Blades
- Saw Blades
- Chisel Point Saw Blades

An assortment of 3 each of 6 of the most commonly used blades is included with every new Cutawl Machine. If you need a blade not included with the initial assortment, you may secure it from your dealer. Blades are sold only in packages of one dozen.

The chisel blades and chisel point saw blades are designed to go completely through the work and penetrate the surface below the work. Therefore, a fairly soft underlay (wallboard such as Homosote®, Upson Board®, corrugated board, or several thicknesses of heavy cardboard) must be placed under the work (see Figs. 2 or 5).

The saw blades cannot be allowed to hit or penetrate the surface under the work; therefore, the work must be elevated off the work surface when using saw blades, as shown in Fig. 4.

Your choice of blade will determine how you position the work piece.

B - Work Place

The best work surface for the Cutawl Machine is a flat heavy bench or table. For the most comfortable operation of the machine, the work surface should be about 38" high but the Cutawl can be operated on the floor (if the work is too big to fit on a table) or on any other flat surface. Fig. 6 shows two operators cutting a plastic sign that is too big to go on a table.

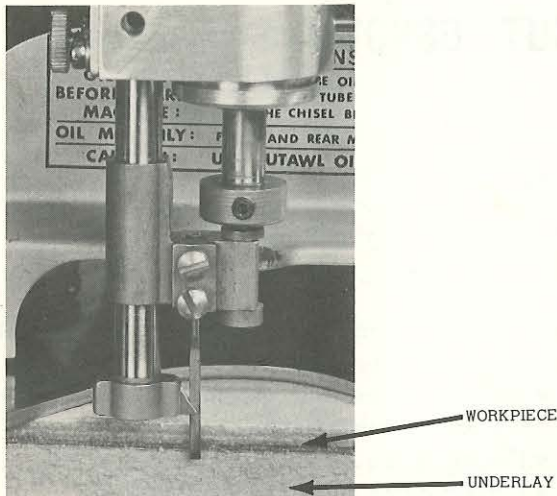


Figure 2

If a chisel or chisel point saw blade is used, cover the work surface with a sheet of wallboard such as Homosote® or Upson Board® or several layers of heavy, flat cardboard or corrugated board. This serves as an underlay for the work and prevents damage to the work surface and the blades.

If a saw blade is used, elevate the work piece off the work surface with supports placed so that they will keep the work level and firm and allow room for the blade to operate freely. See Fig. 4.

C - Holding the Work Piece

All material to be cut with the Cutawl Machine must be securely held on the work surface or supports. Most materials can be fastened onto the underlay or supports with small nails or brads. If no nail holes can be permitted, the work piece or pieces can be clamped or nested by means of special cut-outs prepared with the Cutawl Machine to match the outside shape of the material. You can also use double-faced tape (2 adhesive sides).

If several layers of material are being cut at the same time, it is very important that the entire stack of material be thoroughly secured. Be sure to fasten all sections of the work, including those which will be cut out to prevent them from getting in the way as they are cut.

The Cutawl Machine should be fully supported at all times. If part of the machine base plate extends beyond the edge of the work (and is not supported), you may get a cut that is not perfectly vertical due to imperceptible tilting of the machine. If your work piece is so small that it will not support the entire machine, you should provide a support for the machine of exactly the same height as the work piece.

D - Selecting the Proper Blade

On page 11 you will find a list of specific materials and recommended blades. These recommendations are the result of many years of research, testing and extensive customer experience. However, Cutawl Blade selection is not an exact science and you may wish to experiment with different blades after you have gotten the feel of the machine. These general principles will help you:

1. For the softest materials such as cloth, felt, tissue paper, etc., you should use the No. 7 or No. 11 Blades which give slicing as well as chisel action.
2. For medium soft materials such as Upson Board®, bond paper, cardboard, rubber, soft plastics, you should use a chisel type blade such as the No. 0 or No. 24. For Vinyl acetates use the No. 29.
3. For harder materials such as heavy plastic, plywood, Masonite®, flakeboard, laminated hardwood and other wood products, a saw blade, such as Nos. 13, 34 or 44 or chisel saw blade such as No. 22 (up to 3/8" thickness) is generally best except for very thin sheets.
4. For brittle materials such as hard fiberboard, thin acrylic-type plastics, stencil board, etc., use the No. 6 or No. 25 Blades which give piercing and punching action or the No. 29 Blade with piercing and sawing action.

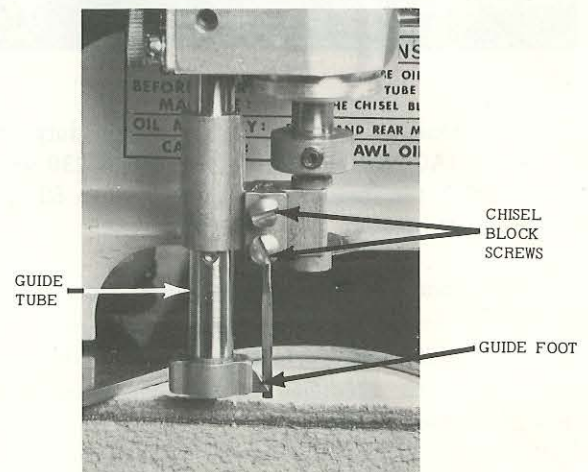



















Figure 3

Each blade is described briefly in the following table:

<p>No. 0</p> 	<p>For cutting all soft materials such as wallboard, cardboard, soft wood, felt, linoleum, etc. up to 1/2" thick maximum. Use the No. 24 Blade for thickness from 1/2" to 11/16".</p>	<p>No. 25</p> 	<p>For general cutting of hard materials such as fiber, stencil board, etc. for finer or more intricate work than the No. 22 Blade will do. Good for thicknesses up to 3/8".</p>
<p>No. 3</p> 	<p>Similar to No. 0 but for finer or more intricate work in soft materials up to 1/4" thick maximum.</p>	<p>No. 29</p> 	<p>For cutting thin, brittle plastics, and very fine designs in thin plywood under 1/4" thick that have a tendency to check or crack with other blades.</p>
<p>No. 6</p> 	<p>For cutting thin layers of hard and brittle materials.</p>	<p>No. 32</p> 	<p>For cutting board for steel rule dies and other wood. 2 point (.028" kerf) x 1/8".</p>
<p>No. 7</p> 	<p>For cutting very soft materials not less than 1" thick and up to 1-1/2" maximum.</p>	<p>No. 33</p> 	<p>Same as above except 3 point (.042" kerf) x 1/8".</p>
<p>No. 8</p> 	<p>Similar to No. 0 except with a 45° pointed blade for fine work in soft materials.</p>	<p>No. 34</p> 	<p>Same as above except 4 point (.056" kerf) x 1/8".</p>
<p>No. 11</p> 	<p>For making a very smooth cut in soft materials, especially layers of paper, up to 11/16" thick.</p>	<p>No. 42</p> 	<p>Same as above except 2 point (.028" kerf) x 3/16".</p>
<p>No. 13</p> 	<p>For general cutting of hard materials such as wood, composition, flakeboard and other materials too thick or too hard for other blades.</p>	<p>No. 43</p> 	<p>Same as above except 3 point (.042" kerf) x 3/16".</p>
<p>No. 22</p> 	<p>For cutting thin sheet metal, wood, plastic, very dense cardboard, etc. where the chisel point blades would tend to overheat. Good for thicknesses up to 3/8" in all materials except metal. Maximum thickness in sheet metal is 22 gauge for copper and aluminum, 27 gauge for zinc and brass, 30 gauge for galvanized iron and steel, 1/8" for lead.</p>	<p>No. 44</p> 	<p>Same as above except 4 point (.056" kerf) x 3/16".</p>
<p>No. 24</p> 	<p>For general cutting of all soft materials such as wallboard, cardboard, felt, cloth, etc. over 3/8" thick. For thicknesses less than 3/8", use the No. 0 Blade.</p>		

E - Blade Stroke and Clearance Adjustment

Three steps are required for proper installation and adjustment of the cutting blade:

1. Putting the blade in the chisel block:

All blades with round shanks have a flat on one side of the shank. Be sure that this flat faces the chisel block screws which hold the blade in place. Also be sure that the top of the blade is flush with the top of the chisel block. Tighten both chisel block screws very firmly.

2. Adjusting the stroke:

The reciprocating stroke of the machine can be adjusted for any one of 8 lengths of stroke from 1/8" to 3/4". This is done by means of a locknut and adjustment disc at the rear of the machine (See Fig. 7).

Chisel point blades (whether or not they have teeth) must penetrate the underlay beneath the work in order to cut clean through the bottom of the work. Therefore, the stroke adjustment for this type of blade must be 1/8" to 3/16" more than the thickness of the work. Saw blades which do not have a chisel point cannot be used with an underlay. With these saw blades, the work must be elevated off the work surface and the stroke should always be adjusted at 3/4" so that the maximum number of teeth move through the work.

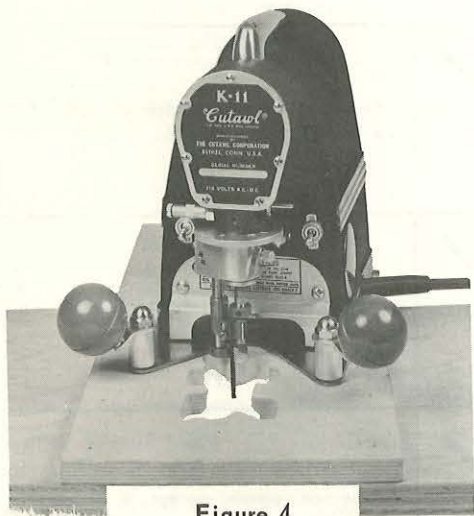


Figure 4

Estimate the stroke required and set the adjustment as follows (See Figs. 2, 3 and 7):

(a) Loosen locknut until the adjustment disc can be pulled up over the locating pin.

(b) Hold the large driven pulley so that it cannot move and then turn the adjustment disc counter-clockwise all the way to the 1/8" setting. This "standardizes" the adjustment for maximum accuracy.

(c) Finally, turn the adjustment disc to the desired stroke setting, push it down so that the locating pin is in the notch marked with the desired stroke and tighten the locknut firmly.

CAUTION: The locknut must be firmly tightened or the stroke adjustment will not remain constant and very undesirable noise, wear and damage will occur.

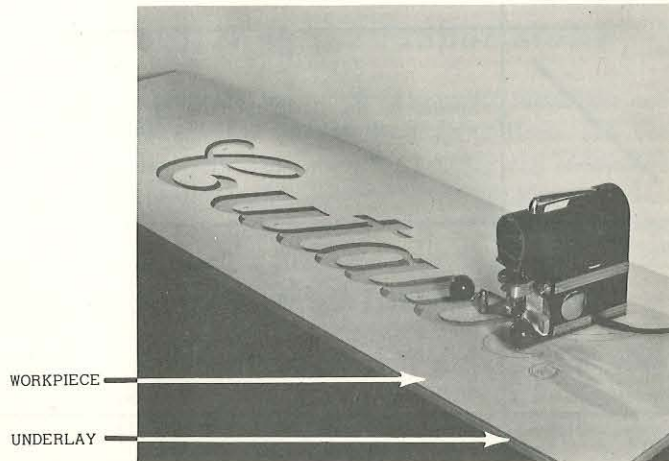


Figure 5

3. Adjusting the blade clearance

The blade clearance is that distance that the blade comes out of the work on the top of the stroke. There are many cases where the blade should not come out of the work at all and, therefore, in these cases the adjustment can be referred to as "top of stroke adjustment". The correct uppermost (or top of stroke) position is different for different blades and different materials, as follows:

(a) For Chisel Blades Nos. 0, 3, 8, 11 and 24, the bottom of the blade at the top of the stroke must completely clear the work as shown in Fig. 3.

(b) Chisel Blade No. 7 is used only for cutting a thickness of 1 inch minimum to 1 1/2 inches maximum of soft material, such as cloth, felt, tissue paper, etc. This blade was designed long enough so that it will never clear the work at the top of the stroke regardless of the stroke adjustment. However, the stroke should be adjusted so that the blade cuts completely through the material and 1/32" into the underlay at the bottom of the stroke.

(c) For Chisel Blades Nos. 6 and 25, the tip of the blade must just touch the work piece at the top of the stroke and go about 1/32" into the underlay at the bottom of the stroke.

(d) For Blades Nos. 22 and 29, the clearance adjustment is different for different materials. In the

case of softer materials, the tip of the blade should remain approximately 1/16" in the work at the top of the stroke and go about 1/16" into the underlay at the bottom of the stroke. This emphasizes the sawing action of the blade.

In harder or brittle materials, such as plywood, Masonite®, fiberglass, etc., the chisel point action is more important in order to maintain a perfectly vertical cut; therefore, the blade should clear the work by 1/16" at the top of the stroke and penetrate the underlay about 1/32".

(e) For Saw Blades Nos. 13, 32, 33, 34, 42, 43 and 44, the tip of the blade cannot come out of the top of the work because of their extra length but the stroke adjustment should always be set at 3/4" so that the maximum number of teeth move through the work and the bottom of the blade always remains below the bottom of the work (See Fig. 4).

To make the clearance or top-of-stroke adjustment, place the Cutawl Machine at the edge of the work so that the blade can be moved by hand (by turning the large driven pulley in the back of the machine) up and down alongside the work and you can see how far it will go through the work and what the clearance is (see Figs. 2 and 3).

First, move the driven pulley (see Fig. 7) by hand in either direction until the blade point is in its uppermost position (at the top of the stroke).

Second, loosen the set screw in the plunger shaft collar (See Fig. 8). This will allow you to slide the plunger shaft up and down by hand to get the proper clearance adjustment. If you have an older Model K-11 (Serial Number below 33501 for 115 volt, or 34054 for 230 volt), the plunger shaft is threaded and you move it up or down by loosening the large locknut on the plunger shaft, then turn the small knurled screw (below the chisel block) to the left or right.



Figure 6

Now adjust the top of the stroke as required and firmly tighten the set screw (or locknut for older models). Note that the blade must never be allowed to rise above the

bottom of the guide foot. Operating the machine in this condition will ruin both the blade and chisel guide foot.

Rotate the driven pulley one complete turn by hand to recheck your stroke adjustment. If the new clearance adjustment is substantially different from its previous setting, the stroke may have to be readjusted.

Inasmuch as the correct clearance and stroke adjustment are absolutely essential for smooth and easy cutting, it is very important to get these adjustments right. Once you have become experienced in making these adjustments correctly, it will take less than one minute.

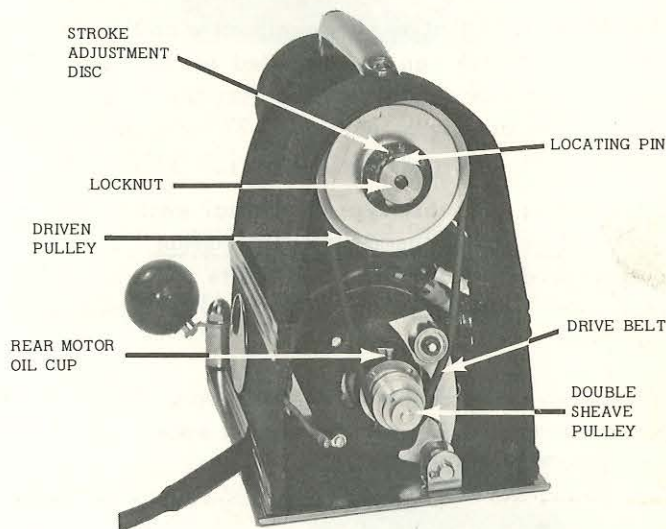


Figure 7

F - Adjusting the Guide Knobs

The two guide knobs shown in Fig. 9 are adjustable and a special open end wrench is provided to make this adjustment. These knobs are turned in towards the guide foot for shipping purposes and must be swung out before your Cutawl Machine can be used. Loosen the cap nuts with the wrench provided and turn the knobs to the approximate position shown in Fig. 9. Tighten the cap nuts. Further adjustment of the knobs can be made as you become more familiar with the machine. In some cases, you may find it more comfortable to remove the guide knob brackets and screw the knobs directly onto the studs. This position is useful when you want to apply firm thumb control to the swivel.

G - Speed Control

The standard AC Model K-11 Cutawl Machine is equipped with a double sheave drive pulley and solid state speed control switch, as shown in Fig. 9.

The switch has 3 positions: LO, OFF, HI, and produces 4 different blade strokes per minute as follows:

Switch Position	Using Small Side of Motor Pulley	Using Large Side of Motor Pulley
LO	2000	2700
HI	2800	3600

The solid state speed control switch is especially valuable in applications where the operator wishes to switch quickly to lower speeds when going around corners or cutting intricate sections and then switch back to full speed on the straight sections. On August 15, 1969 this switch was made a standard item on all new Model K-11 Cutawl Machines and the single speed switch is furnished only on AC-DC machines.

Any Model K-11 that is still equipped with the old single speed switch can be converted to the solid state speed control switch by ordering Part No. 133K8. Full instructions are given in Form C-77 for installing this switch.

Please note that this type of control switch will not work and cannot be used on direct current. It is good only on models using 115 or 230 volts AC. An AC-DC model can be supplied which has only 2 speeds: 2800 and 3600.

If you have any doubt as to the correct speed for a particular application, use the highest speed.

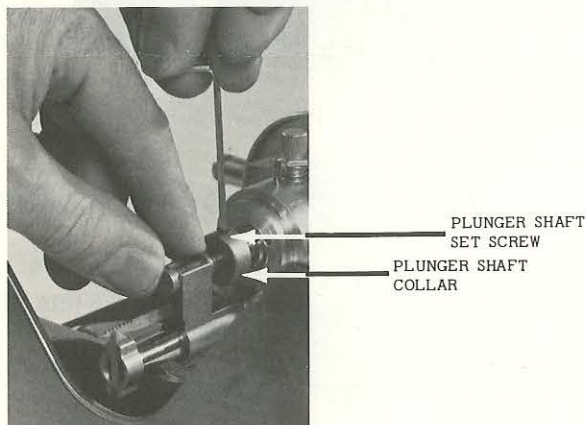


Figure 8

H - The Swivel Brake and Lock

One of the most valuable features of the Model K-11 Cutawl Machine is the 360° swivel cutting action. The swivel mechanism is locked in the forward position during shipment by means of the swivel lock (See Fig. 9). It can also be locked in a righthand position (for use with the Circle Cutting Attachment), or in a rear position. Lift up the swivel lock and you will note that the swivel mechanism can be moved freely in a complete circle to the left or right. This enables the cutting blade to follow every movement of the machine in any direction. For cutting straight lines backward or forward or sideways (in some cases), the swivel mechanism can be locked for easier control.

The swivel brake is controlled by the swivel brake adjustment screw (See Fig. 9). This brake applies pressure or "drag" on the swivel to control its movement in various types of materials. Generally, soft materials such as cloth, felt, cardboard and wallboard require minimum braking and the brake pointer should be turned towards SOFT. For hard materials such as Masonite® plywood, acrylic plastics, thin metals, etc., the brake should be set towards HARD. Your own experience will help you to determine the best adjustment for various materials. Please note that the pointer arm on the adjusting screw does not limit the number of times you can turn the screw. If the pointer is against the stop and you need more or less braking action, simply continue to turn the screw while the pointer arm remains against the stop.

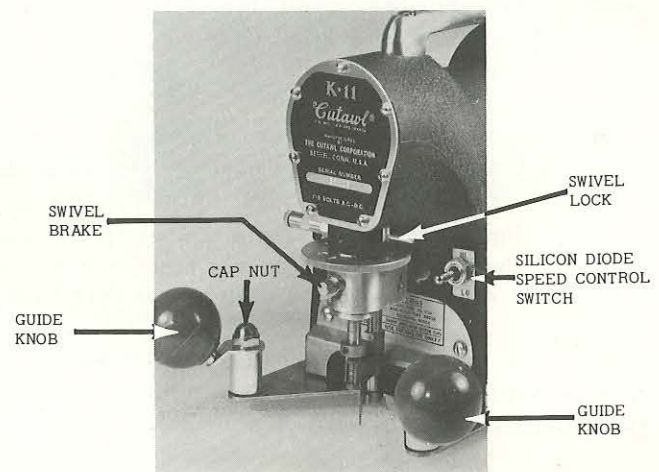


Figure 9

I - Guide Tube Knee Action

Although the Cutawl Machine operates from 2000 to 3600 strokes per minute, there is some pressure on the forward edge of the blade as the machine is moved over the work. For those blades which do not have a forward cutting edge, this pressure creates a slight drag on the blade. This drag is relieved by the knee action of the guide tube.

The guide tube is pivoted on a fulcrum at point A (See Fig. 10). A pair of springs hold the guide tube perfectly vertical when there is no pressure on the blade. When pressure develops on the blade, the guide tube moves back to relieve the drag and moves forward again when the drag is reduced. The amount of knee action of the guide tube can be adjusted or eliminated by turning the knee action adjusting screw. Generally, when you are cutting material over 3/8" thick, the guide tube should be rigid with no knee action. Turn the knurled screw tightly to the right to eliminate the knee action. For materials less than 3/8" thick, the knee action is generally desirable. Maximum knee action is obtained by turning the knurled screw to the left.

J - Alignment of the Blade in the Guide Foot

The cutting blade must ride directly in the center of the guide foot at all times. An adjustment is provided to compensate for any wear or mis-alignment which might occur. The initial adjustment is made on every new Cutawl Machine at the factory but it should be checked each time a new blade is put on the machine.

To check this alignment, turn the machine up as shown in Fig. 11. Lock the swivel mechanism in the forward position and put a straight blade in the chisel block, being sure to tighten both chisel block screws firmly. Turn the driven pulley until the blade is in its uppermost position. Now take the set screw key furnished with your machine (or any other suitable tool) and depress the guide foot by pushing down on either side of the guide foot with the end of the set screw key, as shown in Fig. 11. Watch the blade as you do this to see if it has a tendency to move to the left or right when the guide foot is depressed. If the blade remains directly in the center line of the guide foot, no adjustment is necessary but it would be a good idea to check the guide foot adjusting screws to be sure they are tight. Put the long end of the key in each one of the four holes (See Fig. 10) and turn it to the right until you feel it drop into the screw socket, then turn it very firmly.

If the blade moves to the left or right when you depress the guide foot, it is either bent or out of alignment. If it is bent, remove it and use a straight blade. If it is not bent, note in which direction it moves and realign it as follows:

1. Loosen the two top screws (one on each side see Fig. 10) one-half turn leaving the two bottom screws snug.
2. If the blade has moved to the left, you must tighten the upper left screw first. Do this gently but enough to move the guide foot.
3. Then tighten the upper right screw gently and check the alignment again by depressing the guide foot.
4. Now tighten all four screws very firmly and check the alignment once more.

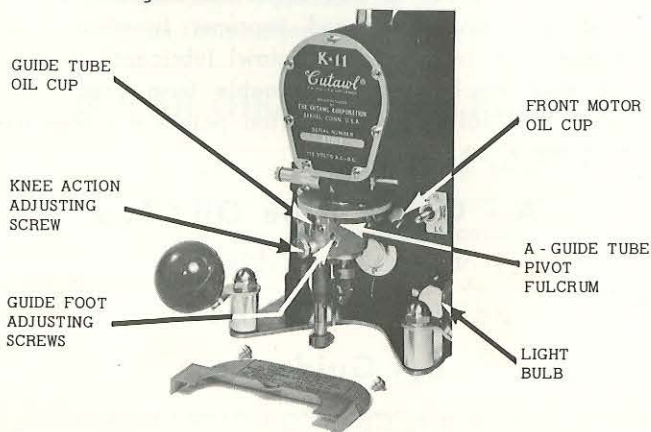


Figure 10

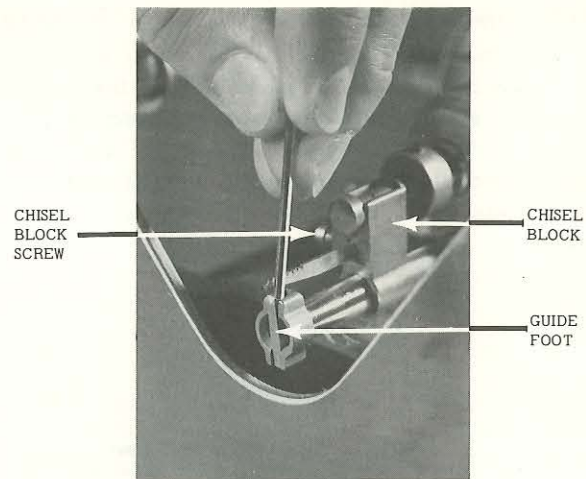


Figure 11

K - The Circle Cutting Attachment

As an extra option, a special attachment (Part No. 32K10GR) is available for the Model K-11 Cutawl Machine to enable the user to cut perfect circles. This is illustrated in Fig. 12.

It takes only a few seconds to attach this accessory to the machine. First, lock the swivel mechanism so that the blade cuts to the right. Then loosen the two cap nuts holding the guide knobs. Insert the righthand slot of the attachment under the right guide knob bracket first, then rotate it to the left and slip the lefthand slot under the left guide knob bracket. Tighten both cap nuts.

The Circle Cutting Attachment is calibrated in 1/4" increments for circle diameters from 3/4" to 48". The black scale covers up to 24" diameter and the red scale from 24" to 48" diameter. The attachment is shipped with the indicator slide and pivot pin upside down. Therefore, you will have to remove this slide by removing the two thumb screws. If your circle has a diameter of 24" or less, you must use the black scale. Attach the slide so that the black arrow on the slide is pointing to the black scale. If your circle is more than 24" in diameter, attach the slide so that the red arrow points to the red scale.

In cutting the circle, the adjustments to the machine are the same as in cutting any other pattern. The center of the circle should be determined and marked before cutting. If the material can be cut by lowering the moving blade directly into it, care should be taken to see that the pivot pin on the circle cutting attachment is lowered exactly into the center point of the circle. Once the pivot pin has been lowered into the center and the moving blade has completely pierced the work, the operator then grasps the attachment handle and pushes it around the circle in a clockwise direction. The operator should use his other hand on the guide knob or top

handle of the Cutawl Machine to equalize the force on the pivot pin. This is especially important when cutting softer materials so that the center hole of the circle will not tend to enlarge and cause an imperfect cut. If the material is especially soft, it may be necessary to reinforce the center hole with a thin layer of hard material or a complete harder overlay of the entire circle.

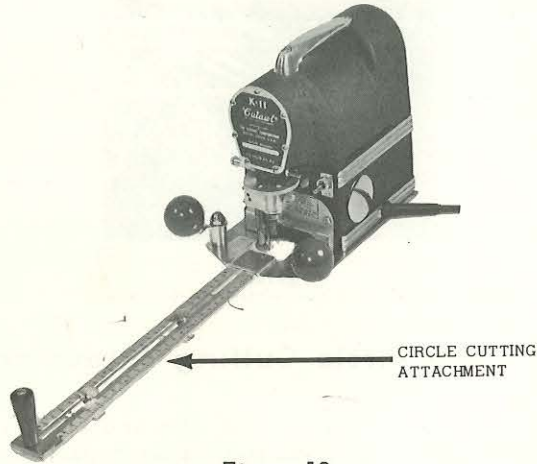


Figure 12

L - Check List and Initial Operation of the Machine

Before operating your new Model K-11 Cutawl Machine, you should have studied the preceding operation section very carefully. Here is a check list and a few helpful hints:

- a - Prepare a proper and safe work place
- b - Secure the work piece carefully
- c - Select the correct blade
- d - Adjust the stroke and clearance
- e - Adjust the guide knobs
- f - Check the speed setting
- g - Lock the swivel if cutting straight line
- h - Adjust the swivel brake
- i - Adjust knee action
- j - Check blade alignment in guide foot

You are now ready to begin cutting. If this is the first time you have ever used a Cutawl Machine, it would be wise to make a few practice cuts first. For display, cut-out letters and similar work, start at the top of the work and follow the pattern in the same way it was laid out. If you have had experience in sign lettering or posters, you will find that the Cutawl Machine works best when used as you use your brush.

Before connecting the machine to your power source, be sure the switch is turned OFF. Check the nameplate of the machine to see that your line voltage matches that of the machine. Also check to be sure that the ground wire is connected to ground either directly into your receptacle or through the pigtail on the adaptor plug.

Turn on the lights of the machine (lefthand switch on the front of the machine) to illuminate the cutting area.

If you are using a chisel blade or chisel pointed saw blade, raise the front of the machine up off the work surface about one inch (See Fig. 13) and turn the motor switch on. Then lower the moving blade into the work very slowly. It may be necessary to hold the swivel mechanism firm with your thumb, depending upon the type of material you are cutting.

If you are using a saw blade without a chisel point on it you must drill a hole at your starting position or start cutting at the edge of the material.

After lowering the moving blade into the starting position, you then just move the Cutawl Machine along by the guide knobs as you follow the pattern or guide line.

You can cut backward or forward, right or left, without changing the basic position of the machine (in reference to the pattern) because the blade will swivel into any direction that the machine is moved. This swivel unit action is obvious to understand and easy to control once you use the machine.

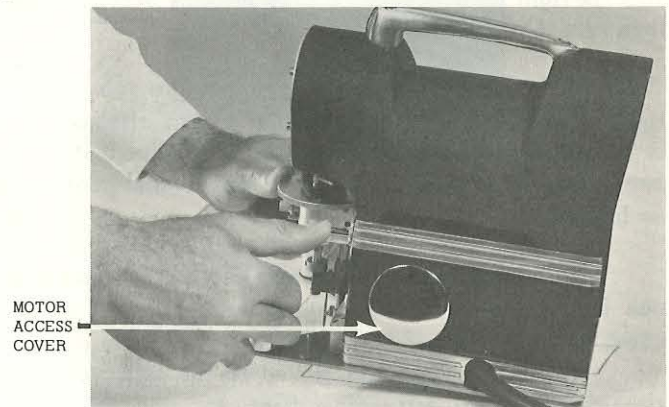


Figure 13

III - LUBRICATION

Regular and proper lubrication of the Cutawl Machine is essential. Neglect of this important maintenance will cause excessive wear and improper function of the machine. Use only genuine Cutawl lubricants furnished with your machine and obtainable from your Cutawl dealer. The following lubrication points are identified in figures 7, 10 and 14.

A - Guide Tube Oil Cup

Use 5 drops of Cutawl Oil (157K7A) every 20 hours of use.

B - Guide Tube

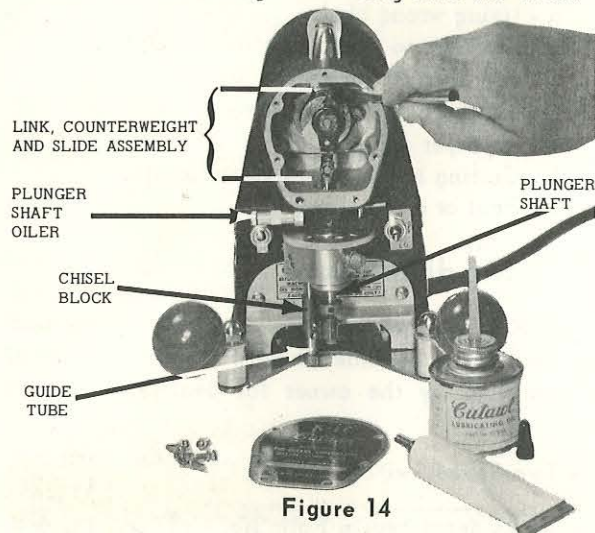
Put 1 or 2 drops of Cutawl Oil (157K7A) on the guide tube above the chisel block every 8 hours of use.

C - Front and Rear Motor Oil Cups

Use 2 drops of Cutawl Oil (157K7A) in each oil cup once a month (or after every 30 to 40 hours of operation).

D - Plunger Shaft Oiler

This is a pressurized wick fitting which allows the lubricant to flow at an even rate over a long period of time. Check this once every 6 months of operation and refill only with Cutawl Lubricant, Part No. 166K12A. Remove the cap screw and add enough grease to fill the fitting. When you replace the cap screw, the grease will be forced down through the fitting onto the wick.



E - Link, Counterweight and Slide Assembly

This assembly (See Fig. 14) should be inspected once every six months of operation and re-lubricated with Cutawl Lubricant, Part No. 166K12A. Access to this assembly requires removal of the nameplate. Brush a small amount (not more than a teaspoonful) of lubricant in and around all the moving parts. Never pack the chamber with grease.

F - Chisel Block

Put 1 or 2 drops of oil occasionally on the chisel block where it rides on the plunger shaft for easy swiveling.

G - All Other Moving Parts

All other moving parts such as the main bearings and idler bearing are permanently lubricated at the factory and must not receive any additional lubrication.

H - Special Lubrication

When the Cutawl Machine is used for cutting steel rule die board or other very hard materials which require the use of the Rigid Guide Foot (See par. IV-E), the saw

blade should be lubricated periodically during operation with Beeswax (Part No. 166K14). Simply rub the bar of Beeswax against the blade. For some materials such as hard plastics, a silicon based lubricant (such as Slipicone®) can be sprayed on the surface of the work piece.

IV - SERVICE

A - General

If you have a qualified repair department or serviceman, you may wish to order spare parts and have all Cutawl repairs and maintenance done in your own shop. In this case, order the parts required through your Cutawl dealer and be sure to specify the exact and complete part or assembly numbers as shown on the exploded parts diagram furnished with your machine. If you have mislaid your parts list, order Form No. C-62 from your dealer.

All routine maintenance can and should be done by the operator. If this responsibility is assigned to a specific individual, you will find that your Cutawl Machine will give you many years of excellent and uninterrupted service. Routine service consists of:

- 1 - Lubrication per Section III above.
- 2 - Cleaning.

Although the Cutawl Machine is ruggedly built to operate in severe and adverse conditions, it will last longer and perform better if it is kept clean. Don't let excess oil and grease accumulate on the machine. Wipe off sawdust and dirt after each use.

3 - Replacement of motor brushes.

The motor brushes should be checked periodically for wear. These are accessible through the round chrome motor access covers on either side of the machine (See Fig. 13). To check the brushes, unplug your machine first, then remove the access covers and unscrew the brush caps. Pull the brush out with its spring, being sure to note the position of the curvature on the bottom of the brush. You must replace the brush exactly the way you took it out. Motor brushes are 3/4" long when new. When they wear down to 1/4", they should be replaced.

4 - Replacement of drive belts (See Fig. 7).

Drive belts that are worn or frayed should be replaced. Although these are stocked by all Cutawl dealers, you should keep a spare one on hand.

5 - Replacement of light bulbs (See Fig. 10).

The Cutawl light bulbs are shock mounted to withstand

severe vibration and will not need replacement often. Before replacing a bulb, unplug the machine and lock the swivel mechanism in the forward position. Then remove the metal guard and take out the burned-out bulb by depressing it slightly and turning it to the left. When putting in the new bulb, be sure it is completely locked into position.

B - Dealer Service

Every Cutawl dealer has trained personnel who know how to operate the Cutawl Machine and make minor repairs. If you need help in the operation or routine maintenance of your machine, call or write the dealer from whom you purchased the machine. If you do not know who your dealer is, write directly to the factory.

All Cutawl dealers also carry a complete stock of blades, belts, lamps and other commonly used Cutawl items for your convenience.

C - Factory Service

If you have a service problem that the dealer cannot handle, he will arrange to have your machine returned to the factory. Factory service is available through all Cutawl dealers quickly, at reasonable cost.

D - Trouble Shooting

If your Cutawl Machine does not work properly, you may be able to correct the problem yourself by checking the following more common sources of trouble:

1 - Blade Overheating

Possible causes:

- a - Improper adjustment (See par. II-E).
- b - Cutting too much material at one time.
- c - Using wrong blade (See par. II-D).
- d - Too long a stroke adjustment.
- e - Too high speed.
- f - Moving machine so slowly that unnecessary blade friction develops.
- g - Bent or dull blade.

2 - Rough or uneven cutting

Possible causes:

- a - Improper adjustment (See par. II-E).
- b - Bent or dull blade.
- c - Using wrong blade (See par. II-D).

3 - Jumping or chattering of blade

Possible causes:

- a - Moving machine too fast.
- b - Improper adjustment (See par. II-E and II-H).
- c - Bent or dull blade.
- d - Improper alignment (See par. II-J).
- e - Badly worn guide foot, plunger shaft or chisel block.

4 - Blade Breakage

Possible causes:

- a - Using wrong blade.
- b - Cutting too much material at one time.
- c - Improper stroke adjustment (too long).
- d - Improper adjustment (See par. II-E and II-H).
- e - Improper speed.
- f - Cutting highly abrasive materials.
- g - Bent or dull blade.

E - Modification

The Model K-11 Cutawl Machine has several optional features which may be ordered with a new machine or may be installed by the owner (or dealer) at a later date:

1 - Two-Speed Switch

This feature is described in Form No. C-77 and in para. II-G of this instruction book. The complete modification kit with installation instructions can be ordered through your dealer.

2 - Rigid Guide Tube

This feature is a replacement for the standard guide tube. It was especially developed for use in cutting 1/2" and 3/4" steel rule die board (such as all maple or birch plywood, Benelex®, etc.). It is described in Cutawl Form No. C-74 and can be ordered through your dealer.

V - GUARANTEE

The Model K-11 Cutawl Machine is guaranteed by The Cutawl Company to be free of defects in material and workmanship for six months from date of shipment. Any defective parts or workmanship will be replaced free of cost provided the machine is returned with transportation charges prepaid to the factory at Bethel, Connecticut. The Cutawl Company will give fair and just consideration to any complaint but reserves the right of final decision. The registration card packed with the standard equipment supplied with your machine should be completed and mailed to the factory promptly.

**RECOMMENDED BLADES FOR A FEW TYPICAL MATERIALS
WHICH CAN BE CUT WITH THE CUTAWL MACHINE**

Material in Sheet, Film or Cloth Form (Note 6)	Recommended Blade in order of preference	Maximum Thickness (Note 1)	Material in Sheet, Film or Cloth Form (Note 6)	Recommended Blade in order of preference	Maximum Thickness (Note 1)
Acetate	22, 29	3/8"	Mica	6, 25	1/8"
Acrylics	22, 29	3/8"	Micarta®	See Phenolics	
Aluminum	22	22 ga.	Mylar®	22	1/4"
Asbestos, hard	13, 22	3/8"	Naugahyde®	11	11/16"
Asbestos, soft	24, 0	1/2" (Note 2)	Nylon®	22	1/4"
Asphalt Tile	25, 22	1/4"	Paper, crepe	24, 11, 3	5/8"
Bakelite®	See Phenolics		Paper, kraft	24, 11	5/8"
Beaver Board	22, 3, 11	11/16"	Paper, tissue	11, 24, 3	5/8"
Benelex®	See Steel Rule Die Board		Particle board	13	3/4"
Bristol Board	0, 24	1/2" - 11/16" (Note 2)	Phenolics	6, 22	3/8"
Brass	22	22 ga.	Plasterboard	See Wallboard	
Canvas	7, 11	7 - 1-1/2" 11 - 11/16"	Plexiglas®	See Acrylics, also Data Sheet No. C-60	
Cardboard, hard	24, 22	5/16" - 3/4"	Plywood	22, 13	3/8" - 1-1/4" (Note 3)
Cardboard, soft	0, 24, 3, 11	1/2" - 11/16" (Note 2)	Polyethylene	11, 3	11/16"
Cellophane®	6, 25, 8	3/8"	Polystyrene	22, 25	1/4"
Cellulose acetate	22, 29	3/8"	Polyvinyl	22, 25	1/4"
Cellulose nitrate	22, 29	1/8"	Pressed board	22, 24	3/8"
Celluloid®	See cellulose nitrate		Rubber, sponge	11, 8, 0, 24	11/16" (Note 2)
Celotex®	24, 3, 11, 13	1-1/4"	Rubber, soft	24	5/8"
Copper	22	22 ga.	Rubber, hard	22	3/16"
Cork	7, 24	1" - 1-1/4"	Rugs	11, 0	1/2"
Cornell Board	24, 3, 11	11/16"	Scotchcal®	25	5/16" (Note 4)
Corrugated board	24, 0, 11	1/2" - 11/16" (Note 2)	Scotchlite®	29	5/16" (Note 4)
Cotton cloth	11, 7	5/8" - 1-1/2"	Steel, stainless	(See Note 5)	
Felt	7, 24, 11	11/16" - 1-1/2"	Steel, carbon	22	30 ga.
Fiberglas®	22, 29	3/8"	Steel rule die bd.	32, 33, 34, 42, 43, 44	3/4" (Note 3)
Fiber	22, 24	1/8" - 3/8"	Stencil board	6, 25, 0	1/4"
Fiberboard	22, 13	3/8" - 1-1/4"	Styrofoam®	22, 13	3/8" - 1-1/4"
Flakeboard	See particle board		Teflon®	22	1/4"
Foam rubber	24, 0	5/8" (Note 2)	Tenite®	See Cellulose acetate	
Foamed plastic	22, 13	1-1/2"	Upson Board®	0, 24, 11, 3	11/16"
Fomecor®	29, 22, 13	1-1/4"	Uvex®	See Acrylics	
Formica®	See Phenolics		Vinyl acetate	29, 22, 25, 6	1/4"
Gypsum Board®	See Wallboard		Vinylite®	See Vinyl acetate	
Hardboard	22, 13	3/8" - 1-1/4" (Note 3)	Vinyloid®	See Vinyl acetate	
Homosote®	24, 11, 13	11/16" - 1-1/4"	Wallboard	0, 24, 11, 13	1-1/4" (Note 2)
Insulite®	See wood fiberboard		Wood, soft	13, 32, 33, 34, 42, 43, 44, 22	1-1/4"
Iron	22	30 ga.	Wood, hard	13, 32, 33, 34, 42, 43, 44, 22	1-1/4"
Kodapak®	See cellulose acetate		Wood fiberboard	24, 11	11/16"
Lead	22	1/8"	Wood particle bd.	See Particle board	
Leather	24, 11	1/2"	Wood, laminated	See Plywood	
Lexan®	22, 29	3/8"	Wood, veneer	See Plywood	
Linoleum	0, 22, 25	1/4"	Wool cloth	11, 7	5/8" - 1-1/2"
Lucite®	See Acrylics		Zinc	22	27 ga.
Masonite®, Std.	See Hardboard				
Masonite®, Tpd.	13	3/4" (Note 3)			

Note 1 - Maximum thickness means total thickness whether it is a single sheet or several sheets.

Note 2 - Use No. 0 Blade for thickness up to 1/2" and No. 24 for thickness from 3/8" to 11/16".


Note 3 - For ordinary sign and display work using plywood and hardboard, the Nos. 22, 32, 33, 34, 42, 43 or 44 Blades can be used with the standard Guide Tube. For very accurate cutting as required in steel rule die work and other precision patterns, the Rigid Guide Tube must be used (see para. IV E2).

Note 4 - See Information Folder No. 50 published by 3M Co., Reflective Products Division, St. Paul, Minnesota.

Note 5 - Stainless steel up to 1/8" can be cut with special metal cutting blades. Write to the factory for further information.

Note 6 - Items identified with ® are the registered trade names of the following companies: Celanese Corp. - Celluloid, Celotex Corp. - Celotex, Dow Chemical Co. - Styrofoam, E.I. du Pont de Nemours & Co. - Cellophane, Lucite, Mylar, Nylon, Teflon, Eastman Chemical Products Co. - Tenite, Eastman Kodak Co. - Uvex, Kodapak, Fome Cor Corp. - Fomecor, Formica Corp. - Formica, Homosote Co. - Homosote, Masonite Corp. - Masonite, Benelex, Naugatuck Chemical Co. - Naugahyde, Owens-Corning Fiberglas Corp. - Fiberglas, Rohm & Haas Corp. - Plexiglas, Rowe Products, Inc. - Vinyloid, Sani-Gard Mfg. Co. - Insulite, 3M Co. - Scotchcal, Scotchlite, U.S. Gypsum Corp. - Gypsum Board, Union Carbide Corp. - Bakelite, Vinylite, Upson Co. - Upson Board, Westinghouse Electric Corp. - Micarta, Gen. Electric Co. - Lexan.

THE *Cutawl*[®] COMPANY

A DIVISION OF  BLACKSTONE INDUSTRIES, INC

BETHEL, CONNECTICUT 06801