



DAKE / JOHNSON VERTICAL BAND SAW

Model V-24 VH-24

INSTRUCTION MANUAL
After 6/2007 or serial number 1032561



VH-24 Pictured

MODEL: V-24 _____

SERIAL NUMBER: _____

DATE PURCHASED: _____

Need band saw blades? Call Dake

DAKE (Division of JSJ)
724 Robbins Road
Grand Haven, Michigan 49417
616.842.7110 Phone 800-937-3253
616.842.0859 Fax 800-846-3253
Web: www.dakecorp.com

WARNING!

This machine must be wired by a qualified electrician. This machine is designed to be wired for the specified voltage with a tolerance of +/- 10%. If your voltage is outside this 10% it will require a transformer to obtain the correct voltage. Failure to do so may affect warranty, if damage occurs from improper wiring or electrical supply.

FOREWORD

These instructions cover the installation and operation of vertical band saw. We recommend that these instructions be retained by the department or individual responsible for the machine and kept in a readily accessible location for reference purposes.

SPECIFICATIONS

Model Number:

V-24/VH-24

Capacity:

Throat	Inches	23-1/2
Work Height	Inches	12-1/2

Table:

Work Table	Inches	26-3/8 x 26-3/8
Auxiliary	Inches	9 x 22-3/8
Height from Floor	Inches	42
Travel-Manual or Hydraulic	Inches	10
Tilt-Left	Degree	10
Tilt-Right	Degree	30
Table Weight Capacity	Lbs.	850

Blade:

Width Minimum	Inches	1/8
Width Maximum	Inches	1
Length Minimum/Maximum	Inches	178/187
Length Minimum/Maximum	Inches	--
Wheel Diameter	Inches	24-1/2

Band Speed:

Low Range	FPM	50 to 425
High Range	FPM	425 to 4250
Drive Motor	HP	2.2

Welder Capacity:

Inches	1/8 – 1
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**VH models equipped
with hydraulic table**

Hydraulic Motor:	HP	1/3
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Height of Machine:

Inches	90
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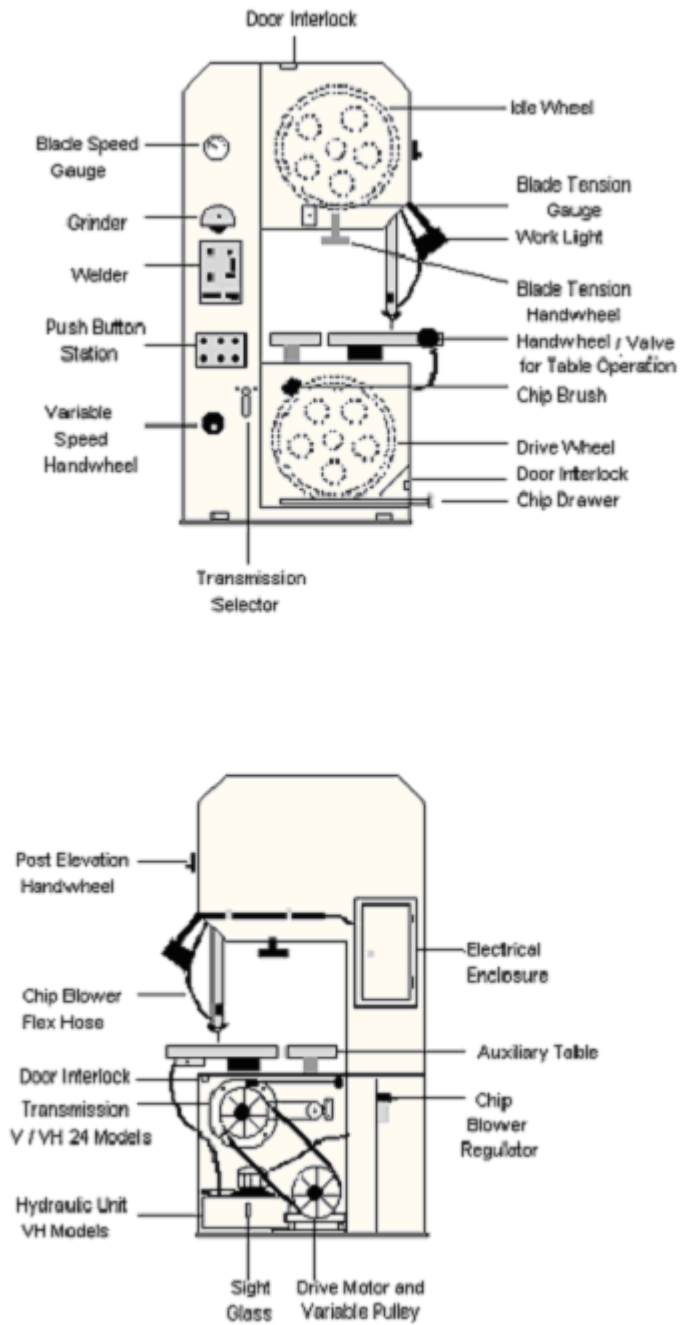
Floor Space:

Inches	60 x 60
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Shipping Weight:

Manual Table	Lbs.	2025
Hydraulic Table	Lbs.	2225

V-24 VH-24 Features



MACHINE UNPACKING AND INSTALLATION

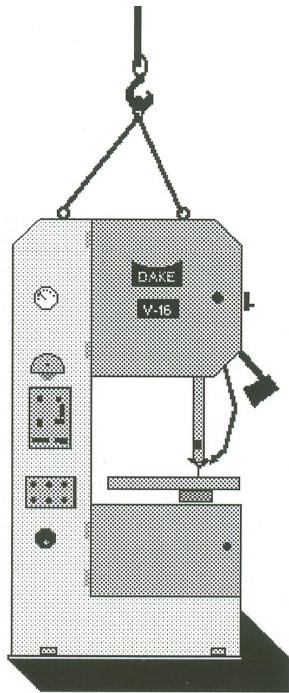


Figure 1

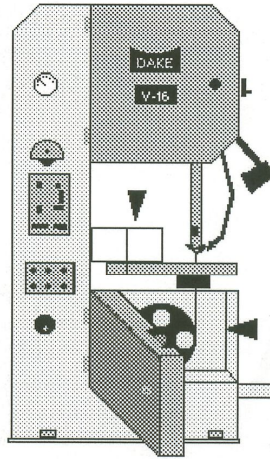


Figure 2

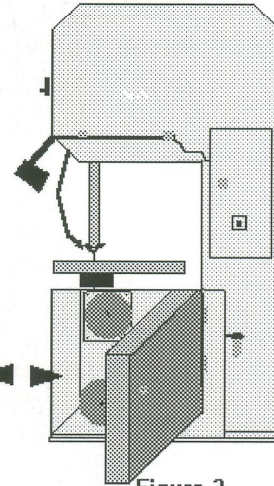


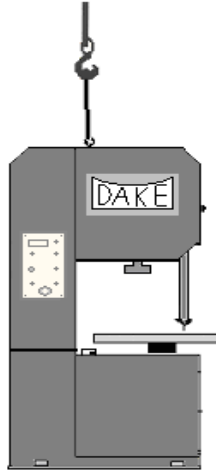
Figure 3

UNLOADING: Remove the shrink-wrap covering the machine, carefully as not to damage painted surfaces, electrical or hydraulic parts. **Carefully inspect the machine for physical damage. If damage is noted, notify the truck line at once. They may require inspection, and that a claim be filed.** Check that all standard accessories are with the machine. Some accessories may be boxed or placed behind access doors or chip drawer. (See figure 2 & 3) The band saws are provided with lifting eyes that screw into the top of the machine. These lifting eyes may be located in any of the compartments shown by arrows in figure 1 & 2 above. Particular care should be taken in selecting areas of the machine for handling, as electrical components and adjustment knobs can be marked up or damaged. **WARNING: Machine table may NOT be used as a lifting point. Damage to the saw and alignment problems could result.** Remove the mounting bolt nuts from the machine. Using the lifting eyes, remove the machine from the skid and put in place. (See figure 1)

WARNING!!!

The machine table must **NOT** be used as a lifting point. Damage to the saw could occur.

UNLOADING: Remove the shrink-wrap covering the machine, careful not to damage painted surfaces. **Carefully inspect the machine for physical damage. If damage is noted, notify the truck line at once. They may require inspection, and that a claim be filed.** Check that all standard accessories are with the machine. Some accessories may be boxed or placed behind the rear access door. The band saw is provided with a lifting eye that is screwed into the top of the machine. This lifting eye may be located in the rear compartment. Particular care should be taken in selecting areas of the machine for handling, as electrical components and adjustment knobs can be marked up or damaged. Remove the mounting bolts holding the machine to the skid, using the lifting eye, remove the machine from the skid and set in designated area.

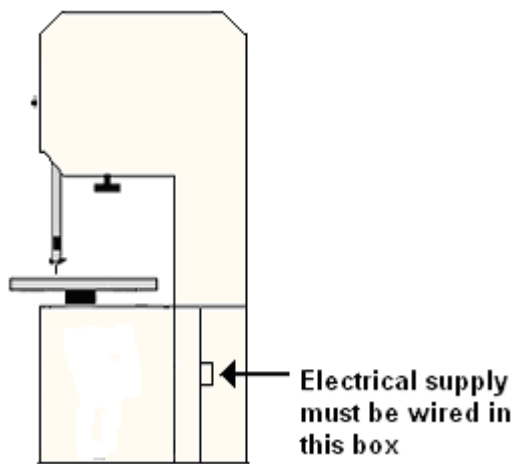


INSTALLATION: Location of the machine should be taken into consideration with the ability to move large work pieces. The machine is provided with holes in the base to anchor the unit to the floor. Shims should be used to properly level the unit. The saw is shipped with an anti-rust protective coating on machined metal surfaces. These surfaces should be cleaned with the appropriate solvent and then coated with a light film of oil to prevent rust from forming.

ELECTRICAL:

To wire this machine there is a small box on the back side of the machine, this is where the machine is wired in (see illustration below).

The machine is wired to be operated with an input voltage of 230, 3 phase, 60 htz (+/- 10%) or with a Dake external step down transformer from 460v to 230v Part number 300674. If any adjustments or changes are needed a qualified electrician should perform them. See detailed information as provided in a circuit diagram #80587.



warning!!!

Power must be locked out before opening any electrical panel.

WARNING!

This machine must be wired by a qualified electrician. This machine is designed to be wired for the specified voltage with a tolerance of +/- 10%. If your voltage is outside this 10% it will require a transformer to obtain the correct voltage. Failure to do so may affect warranty, if damage occurs from improper wiring or electrical supply.

Prior to performing any cutting with the machine, it is recommended that the personal become familiar with the various controls and accessories.

PRECAUTIONS

- No loose clothing.
- Eye protection must be worn.
- All guards must be in position.
- Table load capacity should be noted and not exceeded.
- Extra supports may be required for large material or components.
- Irregular shapes and small objects should be secured by means of a clamp or suitable fixture.
- Machine and surrounding should be kept free of tools, scrap and foreign objects.
- Machine should be locked out before making any adjustments.
- Gloves must be used when uncoiling, coiling and installing band saw blades.
- Store band saw blades in an area near the machine. This will allow operating personal to use the proper blade for each operation.
- Machine is furnished with electrical door interlocks. These interlocks should periodically be checked for proper operation.

BLADE INSTALLATION

WARNING!!!

Gloves must be worn when changing the blade.

WARNING!!!

Electrical supply must be locked out when changing the blade.

Blade selection is based on the many factors and complexity of the work to be cut.

The blade placed on the band wheels with teeth facing toward the operator and down toward the top of the worktable. Tension the blade to remove slack. Rotate the wheels by jogging the machine to ensure tracking is correct, and blade will not “pop” off when machine is started. If tracking is incorrect, adjust before starting machine.

BLADE TRACKING

Note: This alignment is factory set, but may need an adjustment after replacing the blade.

This machine has a bottom wheel that drives the saw blade and a top idle wheel that is adjustable to facilitate blade tracking. The edges of the wheels are fitted with a composite material to accommodate the tooth set.

First remove the blade tension by loosening the black hand wheel. The idle wheel may be adjusted by loosening the silver knurled locking collar and turning the black knob in the center of the wheel. Turning the knob in a **clockwise** manner runs the blade toward the **back** edge of the band wheel. A **counter clockwise** movement will move the blade toward the **front** edge of the band wheel (see picture on below).

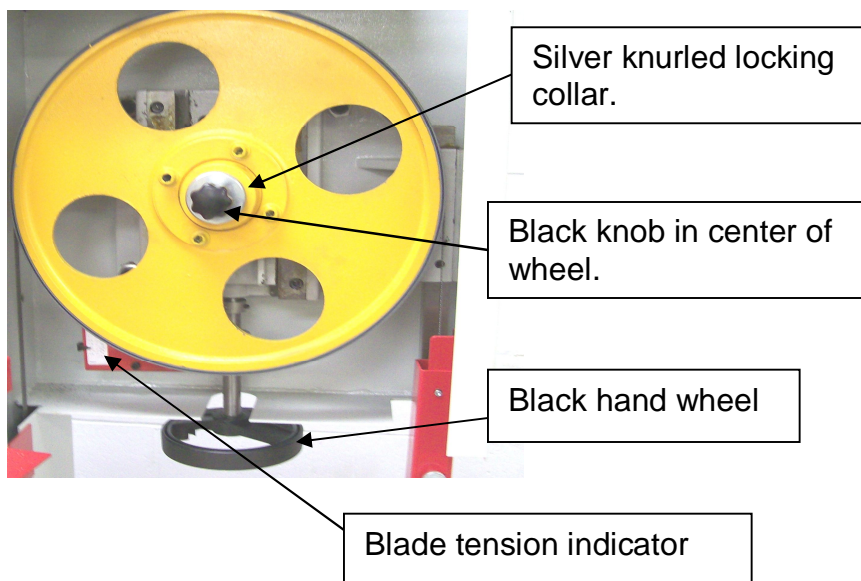
WARNING!!!

Before performing the procedure below be sure the wheel safety doors are closed.

To rotate the wheel to find out where the blade is on the wheel, be sure both wheel doors are closed and push the power start button then turn the run / jog button to jog, now push and hold or push the jog button to rotate the blade slowly. This will help identify which way to adjust the wheel adjustment.

Correct tracking takes place when the blade runs approximately in the center of the wheel.

NOTE: The main casting with adjusting screws have been preset at the factory during assembly utilizing special fixtures. No adjustment should be attempted.



BLADE TENSIONING

The blade indicator is located inside the upper wheel compartment, on the lower left side of the idle wheel. (See picture above) The indicator has an arrow mounted on the horizontal plane, with a corresponding scale for blade tensioning. The scale has two legends, one reads inches from 0 - 1", and the second reads mm 0 - 25 mm. This allows tensioning either standard or metric blade widths.

With out tension on the blade, the indicator should read zero. As tension is applied to the blade the needle will move accordingly, and should be tightened until the correct blade width is indicated on this gauge. Example: Installing a 1/2" blade on the machine, tighten the hand wheel until the indicator's arrow is pointing to the 1/2"

mark on the scale. Before starting the machine, check the blade tracking by pushing the jog button for one or two seconds.

This indicator has been calibrated at the factory. If recalibration is ever needed follow the steps below:

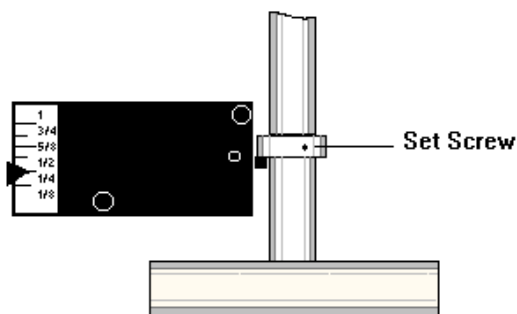


Figure 6

Using a blade tension gauge, (many times the company that you purchase blades from can furnish you with this gauge) tension the blade to the proper PSI. The PSI will vary from blade types (carbon, Bi-metal) and blade widths. This information can be obtained from your blade supplier. When proper tension is achieved, loosen the setscrew in the collar on the tensioning wheel shaft. (See figure 6 above) Adjust this collar up or down on the shaft until the arrow is pointing to the corresponding blade width. On the indicator. Tighten setscrew.

Note: *It is better to over tension the blade than to run it under tensioned.*

BLADE GUIDES

WARNING!!!

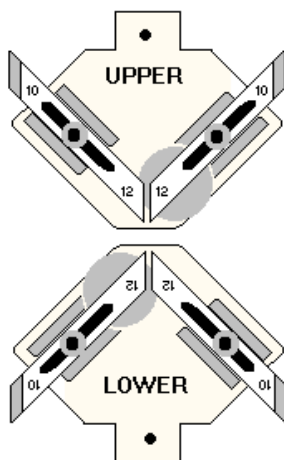
Gloves must be worn when handling or adjusting the blade guides.

WARNING!!!

Electrical supply must be locked out when adjusting or changing blade guides.

Your machine has come equipped with a set of interchangeable “V” type blade guides. A set of guides consist of two each left hand and two each right hand guide inserts. The standard guides furnished are 10 / 12 mm guides. Other sizes are optional, and can be purchased separately, or as a five piece set. The five-piece set includes 3 / 4 mm (1/8 - 1/4”) 6 / 8 mm (5/16 - 3/8”) 10 / 12 mm (standard set 1/2 - 5/8”) ***the blade width will dictate the size blade guide to be used.***

Note: *Never use blades larger than the rated capacity of the machine. Never use blades narrower than guide insert. Damage will occur to guide insert and blade. Blade insert must correspond with blade width.*

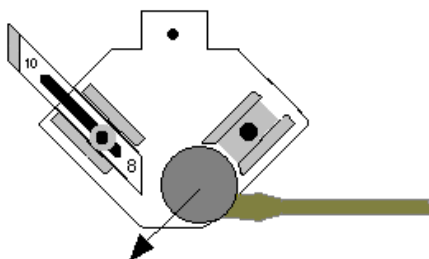


The blade should always be inspected before installing on the machine. Things to look for should be the smoothness on the sides and back edge of the weld, look for any missing teeth, or impacted chips. The blade guides may now be selected and inserted into both the upper and lower guide holders. Proper adjustment of these guides takes place when they form a complete “V” shape (see graphic above) and support the blade equally on each side. A couple of thousands on each side of the blade will provide the running clearance and support for contour sawing.

Note: Chips should be removed from the blade guides during each blade change or more frequently if required.

BLADE GUIDES

The back end roller that supports the back of the blade on each guide holder contains a hardened cap over a set of ball bearings. This should be checked periodically for free movement so it is allowed to rotate freely as the back of the blade comes in contact with the face of this roller. Noticeable friction in this assembly indicates it should be replaced. This can be done by removing the right hand guide insert, moving the left hand guide up away from the bearing face. Loosen the setscrew on the bottom of the guide holder and sliding the old bearing and shaft out and a new one in. Tighten the setscrew and re-adjust the guides. See graphic below.



The “V” type solid blade guides and holder assemblies as furnished standard with the machine and are recommended for the majority of cutting applications.

HIGH SPEED ROLLER GUIDES

Applications and Advantages:

Friction and abrasive cutting, filing operations, aluminum and woodcutting.

These guides eliminate having to change inserts when changing to blades of different widths.

Requirements for Installation:

These roller guides must be installed using a new 1/2" blade width band for proper alignment. The 1/2" band should be tracked within the approximate center line of the band wheels.

Note: Be certain band wheels are clean and are free of any foreign material build up before proceeding.

Tools / Hardware Required:

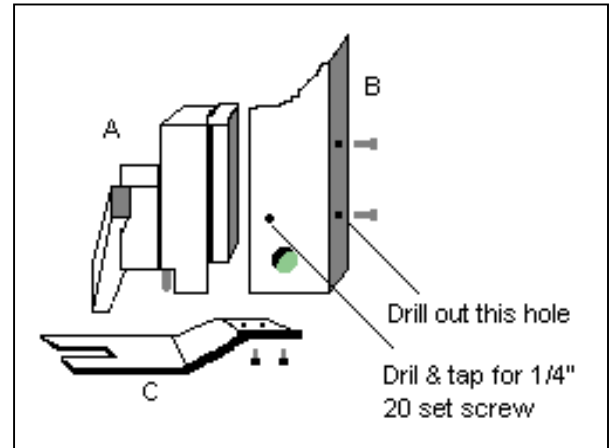
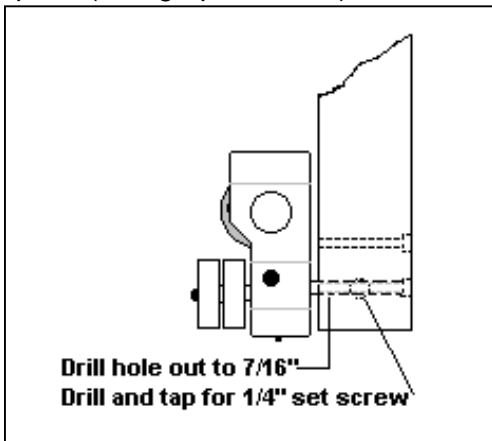
Drill - 7/16"

Drill and tap for 1/4" 20 set screw

1/4" 20 set screw 1/4 - 3/8" long

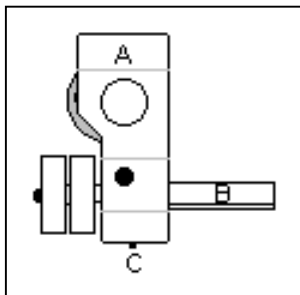
Upper Guide Installation:

1: Remove the existing guide holder assembly (part A) via the 2 countersunk socket head cap screws located on the backside of the moveable guide arm post. (Part B) Store the original guide holder assembly for future use. Remove the lower (red painted, part C) hold down foot located at the bottom of the movable guide arm post. (See graphic below)



2: With a 7/16" drill the bottom guide-mounting hole out. Drill from the front of the guidepost, to a depth of approx. 1". The hole should be just deep enough to stop short of breaking through the countersunk portion of the hole.

3: Drill and tap a hole for a 1/4" 20 set screw approx. 1/2 - 3/4" back from the front edge of the guidepost. This hole must be centered (intersect) with the 7/16" hole. As shown above.



4: Insert the mounting stud (B) into the guide casting (A). Keep the stud flush with the front of the casting. Keeping the mounting stud flat area on the bottom, tighten securely the set screw (C) on the bottom of the casting.

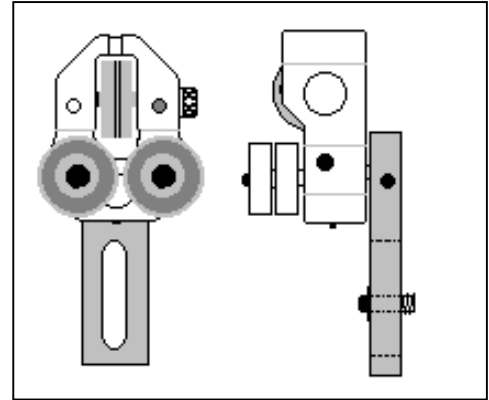
5: Insert this stud and guide assembly into the 7/16" hole in the guidepost. Make sure upper roller guide is plumb with the guidepost. Lightly tighten set screw you installed in the guidepost.

Lower Guide Installation:

6: Remove lower blade guide. Replace this guide with the high speed guide containing the mounting bracket with slotted hole, reusing existing nuts / bolts.

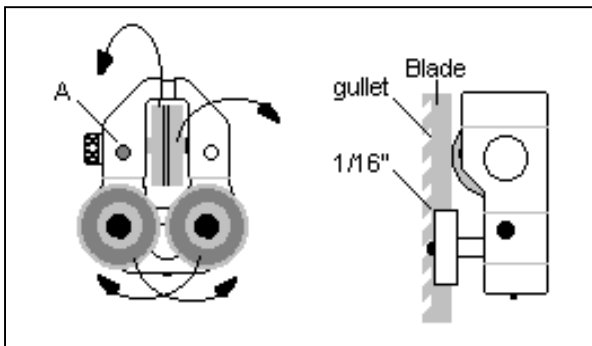
Position assembly upward along the slotted bracket, so that the guide body casting has enough clearance to allow the work table to be tilted for angle cutting. Tighten the socket head cap screw or nut.

Note: Make certain that if a socket head cap screw is used, it does not bottom out into the main saw casting item 1. Shorten the cap screw if necessary



7: Alignment of Upper / Lower Guides:

With blade properly tensioned and tracked, position the back-up roller by loosening the set screw (A) on the front of the guide casting, and move the knurled knob left to right until blade is in alignment with the groove in the bearing. Rotate the knurled knob until you have approx. 1/16" clearance from the back of the blade to the front edge of the back-up roller. Tighten set screw (A).



The two roller bearings below the back up bearing can be adjusted in and out, left and right. Loosen the set screws that retain the bearing stems into the casting. Using the single bearing assembly, position these bearings approx. 1/16" behind the deepest gullet of the blade.

The single bearing assembly along with the adjustability of the upper guide roller will service blades from 1/4" to 3/4". The double roller set is used only when blade of 1/2" to 1" are used. **Note: The adjustments are the same for both single and double bearing assemblies.**

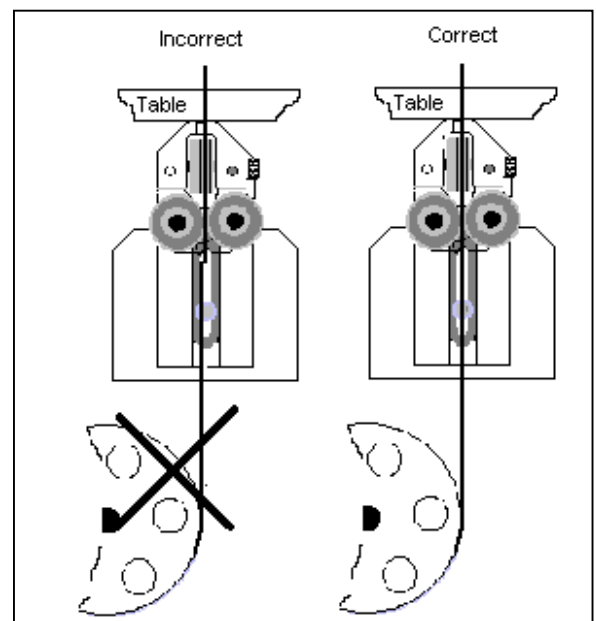
Rotate eccentric bearing stems until both blade and the back up bearing groove are parallel with each other. Set screws should be just snug up until actual alignment is confirmed.

Repeat this process for the lower guide assembly.

Note: Upper guide stud may be adjusted in or out in the guide post to allow proper clearance for blade, and for alignment with lower guide.

Align backup bearing as previously described for upper guide. Tighten both set screws when alignment is confirmed.

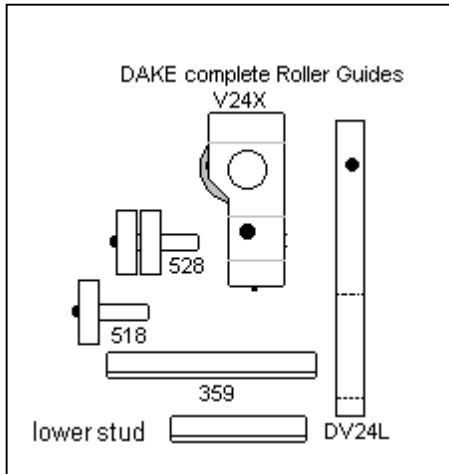
Re-adjust side rollers. (Graphic in previous column) Set the side clearance distance between rollers and saw blade, leaving about a .004 gap.



Note: If the adjustment setting for side clearance between roller and blade is not enough, the side rollers will cause the blade to miss-track or be pushed outward from the guide rollers.

Note: If blade alignment from band wheel to roller guides is necessary, do so by rotating eccentric shafts on the roller guides. Then lock them in place with the set screws.

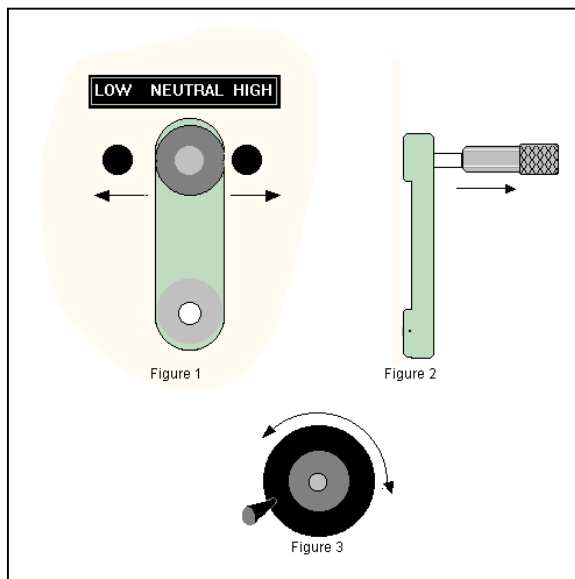
After all adjustments have been made, tighten all components tight.



BAND SPEED SELECTION

The saw blade is driven by a single speed transmission on the 16" machine and dual speed transmissions on the 24" and 40" machines. The shifting lever on the larger models has three positions. (Figure 1) The center being the neutral position, for set up. With the machine off, move the shift lever to the left for low speed range (50-500 FPM) and to the right for the high speed range. (500-5000 FPM) To shift the machine the shift lever handle must be pulled outward and then shifted left or right. (Figure 2)

WARNING: NEVER SHIFT WHILE THE MOTOR IS RUNNING. THIS WILL CAUSE EXTENSIVE DAMAGE TO THE DRIVE TRAIN. This gear box holds 2 liters of 634 or 635 Mobile oil.



Note: Occasionally the drive wheel may have to be jogged by hand to engage the transmission lever.

The variable speed is achieved through the use of a variable regulator. (Figure 3) This is turned clockwise or counter clockwise to obtain an increase or decrease in blade speed, in either range. Adjust until desired speed is reached as read on the blade speed gauge.

WARNING: DO NOT ADJUST THE VARIABLE SPEED CONTROL (FIGURE 3) SPEED UNLESS THE MACHINE IS IN OPERATION! FAILURE TO DO SO WILL CAUSE SEALS TO FAIL, AND RENDER THE UNIT INOPERABLE.

SAW BLADE SELECTION

There are numerous types of saw blades available depending upon the application. Tooth pitch, form, tooth set, and blade composite make up all contribute to the desired cut. Blade speeds and feed are also a factors. The complexity of the subject cannot be properly detailed in this manual, and it is suggested that you contact your local blade supplier for more detailed information and recommendations for the application.

Below is a chart that can be used as a **guide line** for blade selection and a percentage chart for determining the speeds and feeds for material after determining the Rockwell hardness.

The chart below shows material shape and sizes of square solid, round solid, and tubing, channel, and angle. The size range from 0" - 12" is diameter; the column under the shapes gives recommendation of a vari-tooth blade. Example: 4" round solid, will require a 3/4 pitch blade.

Note: For structurals and tubing, determine the average width of cut.

Blades must be broke in properly, for longest life and best cut finish. Break in cutting should be done at 1/3-1/2 normal cutting rate, for the 50-100 square inches.




NOTE: Below are the three most commonly used types of blades. The Bi-Metal blade is the most durable, for standard types of cutting applications. The teeth are made of high speed steel and welded to a backing material. The cutting edge contains 8% cobolt with a Rc of 64 to 68. (These blades are more difficult to weld than standard carbon.) The carbon blade is the least expensive with reduced blade life. The back of the blade is made of hardened material with a Rc of 31 to 37 and tooth hardness of 64 to 66. The carbide tipped blade has carbide inserts welded to the blade teeth with a Ra rating of 92

SPEEDS AND FEEDS

As important as proper blade selection, is proper feeds and speeds for the different materials to be cut. It is impossible to determine absolute rates for each material and machine, below is a chart that will give you staring points for most applications; keeping in mind these are only approximations.

The left hand column, labeled Material tells you the family, the column Alloy lists the types that are within that family of material. The top six columns give material dimensions. Below these column are listed the recommended FPM and SIPM for that material type. Example: Carbon steel with a alloy make up classified as 1030, with a diameter of 4" will be cut at 329 FPM and SIPM of 14, shown as fpm 329 sipm 14.

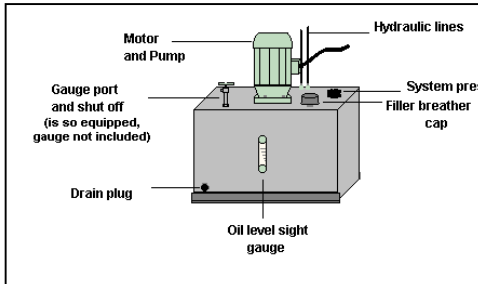
BAND SPEED SELECTION

	MATERIAL SHAPE	MATERIAL SHAPE	MATERIAL SHAPE
MATERIAL IN			
INCHES	TOOTH SELECTION	TOOTH SELECTION	TOOTH SELECTION
0	14 / 18	14 / 18	14 / 18
.1	14 / 18	14 / 18	14 / 18
.2	14 / 18	14 / 18	14 / 18
.3	10 / 14	14 / 18	10 / 14
.4	8 / 12	10 / 14	8 / 12
.5	8 / 12	8 / 12	6 / 10
.6	6 / 10	8 / 12	5 / 8
.7	6 / 10	6 / 10	5 / 8
.8	5 / 8	6 / 10	5 / 8
.9	5 / 8	5 / 8	5 / 8
1	5 / 8	5 / 8	4 / 6
1 1/4	4 / 6	5 / 8	4 / 6
1 1/2	4 / 6	4 / 6	4 / 6
1 3/4	4 / 6	4 / 6	4 / 6
2	4 / 6	4 / 6	3 / 4
2 1/4	4 / 6	4 / 6	3 / 4
2 1/2	3 / 4	4 / 6	3 / 4
2 3/4	3 / 4	4 / 6	3 / 4
3	3 / 4	3 / 4	3 / 4
3 1/4	3 / 4	3 / 4	3 / 4
3 1/2	3 / 4	3 / 4	3 / 4
3 3/4	3 / 4	3 / 4	2 / 3
4	3 / 4	3 / 4	2 / 3
5	2 / 3	3 / 4	2 / 3
6	2 / 3	3 / 4	2 / 3
7	2 / 3	2 / 3	1.4 / 2.5
8	1.4 / 2.5	2 / 3	1.4 / 2.5
9	1.4 / 2.5	2 / 3	1.4 / 2.5
10	1.4 / 2.5	1.4 / 2.5	1.4 / 2.5
11	1.4 / 2.5	1.4 / 2.5	1.4 / 2.5

(Optional) HYDRAULIC FEED TABLE

Machines equipped with a hydraulic feed table (VH models) have a pumping unit in the base. The system has an adjustable relief valve, which is factory preset at 400 p.s.i. This setting may be reduced to afford greater sensitivity for cutting soft or thin materials. Pressures may be lowered by turning the square nut located on the top right hand side of the reservoir. (See below graphic) The systems oil level must be checked periodically to assure the oil levels are maintained at the full level of the sight glass. This should hold 6 liters of DTE 26.

The feed table regulator will provide a smooth movement to the table. If the feed appears to be intermittent it is probably due to air in the system. This is normally exhausted by running the table in and out a few times.



WELDING INSTRUCTIONS

GENERAL DESCRIPTION

Note: Always wear eye protection when using this welder or grinder!

Your Dake vertical band saw is equipped with a “resistance-type” butt welder. The two clamp jaws of the welder hold the blade ends together. When the welding start knob is turned fully clockwise past the zero setting, electric current flows through the blade ends creating enough heat to soften and join them.

**Note: This welder is suitable to weld
Metal blades 3 x 0.5 - 25 x 0.8mm
bi-metal blades 6 x 0.9 - 25 x 0.9mm**

This welder should not be used for welding 2% and 3% tungsten-alloyed metal cutting blades or HSS blades.

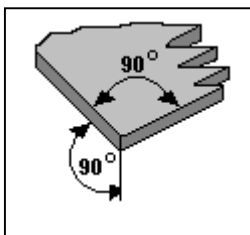
The approximate values for bi-metal blades are indicated in the matrix in the next column.

Note: * The weld current step and upsetting pressure step have to be increased with some saw manufactures. The saw blade has to be metallurgically clean and no tooth may enter into the welding seam.

BANDSAW mm	WELDING CURRENT step *)	UPSETTING PRESSURE step *)	UPSETTING WAY mm	ANNEALING COLOR	ANNEALING TIME SEC.
6 x 0.9	1 - 2	1	2.5	DARK RED	15
10 x 0.9	1 - 2	1	3.0	DARK RED	15
12 x 0.6	1 - 2	1	3.0	DARK RED	15
12 x 0.9	1 - 2	1	3.0	DARK RED	15
13 x 0.7	1 - 2	1 - 2	3.0	DARK RED	15
16 x 0.7	1 - 2	1 - 2	3.0	DARK RED	15
19 x 0.9	1 - 2	1 - 2	3.0	DARK RED	15
25 x 0.9	1 - 2	1 - 2	3.5	DARK RED	15

1. PREPARATION OF BLADE

Before welding the blade ends should be cleaned or rubbed with emery cloth on both sides of the blade to a length of 1”, until they are metallurgically clean over the entire width.



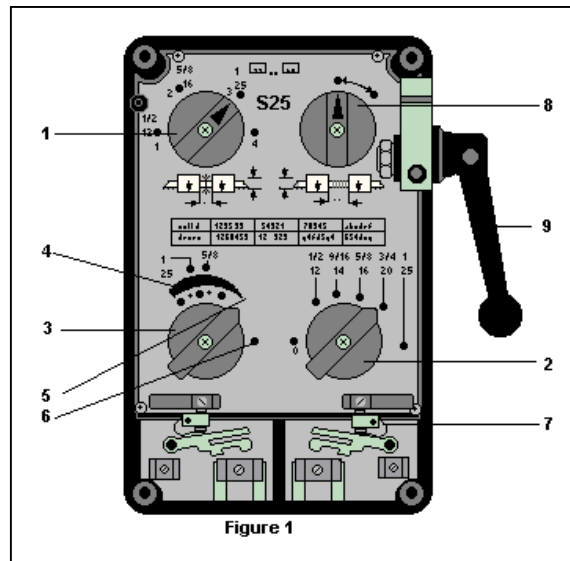
Cut the blade ends accurately and at right angles. (See graphic below) Check abutment against the stop for a cut at right angles. Proper welding can only be achieved if the blade ends are cut without a burr and at right angles. (Also see trouble shooting section)

2. ADJUSTMENT

The initial jaw gap and upset force must be cross sectional area of the blade being a wider or thicker blade to reach proper upset pressure produces the same unit thicker blade.

switch (1 figure 1), upsetting (1) and the upsetting way blade width to be welded. In material qualities and are only guide values, which commercial blades of 0.65 mm determine the correct settings and thickness. Particularly thin

be welded with a short upsetting way, high current and weak upsetting pressure. *Example: Blade width is 1/2". Current switch is set to 1/2" (number 1) position. The upsetting pressure switch is set to 1/2" (number 1) position. The upsetting way switch is set to the 1/2" position.*



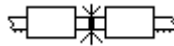
adjusted and proportioned to the welded. A greater jaw gap will allow welding temperature. A greater pressure in welding a wider or

Set the welding current pressure switch (2 figure switch (3 figure 1) to the view of the wide range of thickness scale values have been calculated for thick. Trial welds should for different steel qualities blades (0.4 mm) should

3. CLAMPING THE BLADE ENDS

Insert the blade ends in the clamping jaws so that the joist is exactly in the center of the jaws. To protect the jaws the blades should be inserted so the teeth are aligned at the front stops. Only blades without teeth should be aligned at the rear stops. Leave slack in the blade coil, the blade must be free so it can move easily during welding.

4. WELDING



Turn the upsetting switch (3 figure 1) past the position (5 figure 1) to welding (6 fig. 1) and lock it for about 3 seconds until the welding is completed. The current is switched off automatically.

Sparks spray out during welding, therefore stand at the side of the machine.

WARNING: BLADE WILL BE HOT!

5. ANNEALING



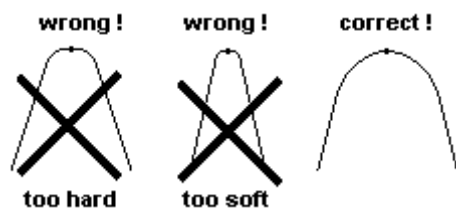
When the blade is heated in the butt welding process, the steel at the point of the weld "air hardens" and becomes brittle. The anneal on/off knob is used to anneal the weld by reheating it. This returns the blade close to its original condition.

After welding loosen the pressure clamps (7 fig. 1) and set the jaws to the wide annealing position by turning the upsetting pressure switch (2 fig. 1) counter clockwise. Re-clamp the blade so that the weld is in the center between the jaws. Operate the annealing switch (8 fig.1) until the weld becomes dark cherry red. This will take from 1 to 5 seconds depending on the blade width. Allow blade to cool until the blade returns to a dark color. Repeat this process at least three times. Some brittle alloys require more annealing than the standard carbon blades.

Note: It is difficult to weld and anneal bi-metal blades due to the make up of this type of blade. It will take some practice to successfully achieve a suitable weld.

WARNING: BLADE WILL BE HOT!

After annealing bend test your weld:



6. RE-FINISHING THE WELD

Welding burr (flash) can be removed by finishing with a grinding wheel above the welder. Grind in a longitudinal direction, other wise transverse fractures may occur. The proper finish of the blade after grinding, a tempered steel-blue coloring.

Note: Do not over grind, into the blade facing. Remove any burr on the back edge of the blade.

WELDER LAYOUT AND CONTROLS

7. WELDER MAINTENANCE

If the clamping areas of the jaws are dirty or deformed so they so not clamp evenly, good welds cannot be made. Any dirt or metallic debris must be removed from the jaws. The jaws should never be filed. It should only be polished with a proper cleaning material and if absolutely necessary polished with fine emery cloth held on a flat piece of bar stock. The uniformity of current flow and contact pressure can be checked by putting the welder in the annealing position and clamping a piece of blade stock with out a weld in the jaws. When the annealing switch is turned to the heating position the blade should heat uniformly over its entire width. (See fig. 2) If the heating is not uniform the clamping devices should be checked for dirt or misalignment.

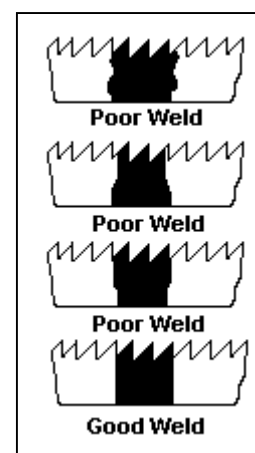


figure 2

8. POOR WELDS / TROUBLE SHOOTING

If the welded seam contains holes, the upsetting pressure should be increased, the welding current reduced or both settings changed. **We must emphasize once again that proper welds cannot be made if the blade ends are not cut square, and properly cleaned.** Welding of blades may take practice, do not be discouraged if your welds are not perfect at first.

Avoid overlapping when welding thin blades. If welder does not give suitable weld, check in coming voltage to the machine. If voltage is low, use next blade size setting. Example: 220 volt machine, incoming voltage is 208 volt, to weld 1/2" blade use 5/8" settings.

If incoming voltage is high reverse this procedure.

If incoming voltage is low, the welder transformer has taps that can be set to a 10% increase or decrease.

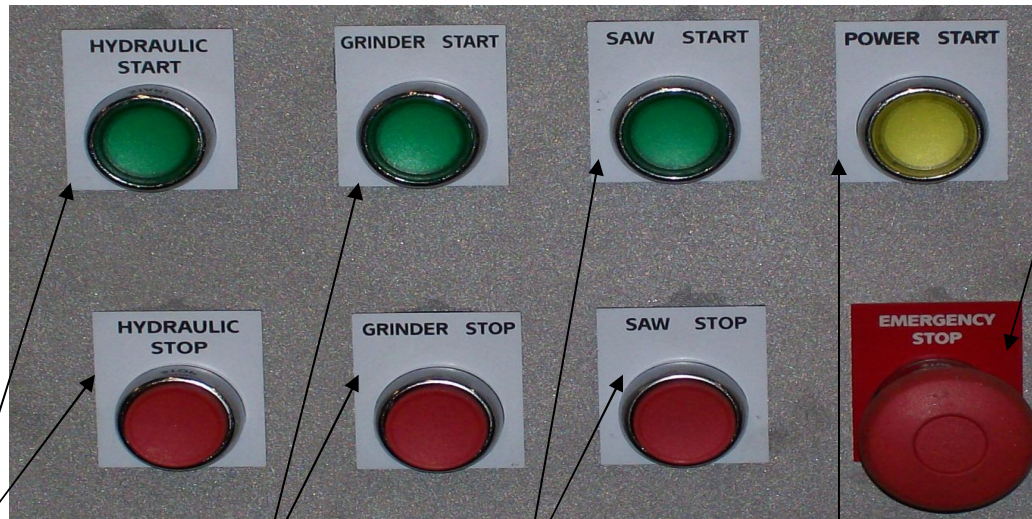
SHOCK HAZARD! ONLY A QUALIFIED ELECTRICIAN SHOULD ATTEMPT THIS. ALWAYS CONTACT DAKE BEFORE REMOVING THE WELDER.

If the welder does not shut off, after the welding cycle, or will not start the welding cycle, a limit switch adjustment is needed.

THE WELDER MUST BE REMOVED FOR THIS ADJUSTMENT. SHOCK HAZARD! ALWAYS CONTACT DAKE BEFORE REMOVING THE WELDER OF MAKING INTERNAL ADJUSTMENTS. A QUALIFIED ELECTRICIAN MUST DO THESE ADJUSTMENT.

Machine Operation

Look over the control panel to get familiar with the buttons before operating (see picture below).



This button is the emergency stop button.

(Optional hydraulics)

The green button will start the hydraulic pump and the red button will shut off the hydraulic pump when the button is pushed.

The green button will start the grinding wheel above the control panel. The red button will shut off the grinding wheel when the button is pushed.

The green button will start the saw blade motor and the red button when pushed will turn the motor off.

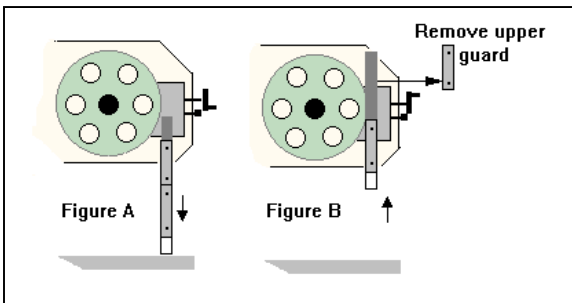
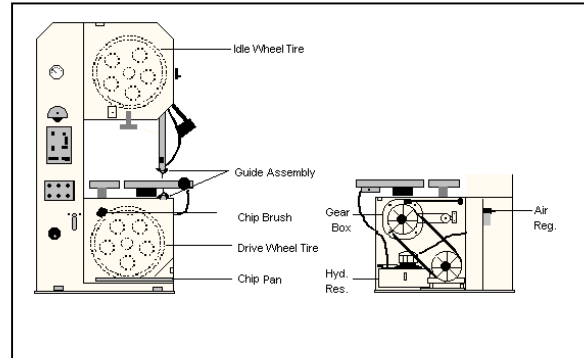
This yellow button will turn the power on. This is not the main power switch coming into the machine.

MACHINE OPERATION

MACHINE MAINTENANCE

The maintenance of the machine is naturally based on the usage rather than a time element. The following is a recommendation based-on-average usage, and adjustment to the frequency can be made on an individual basis. See below graphic for locations.

- Chip Pan - clean - as required.
- Band wheel tires - remove embedded chips - weekly.
- Blade guide assemblies - clean - weekly.
- Gear box - drain and refill - yearly
- Monitor Hydraulic Reservoir.
- Drain water from water trap on air regulator weekly.

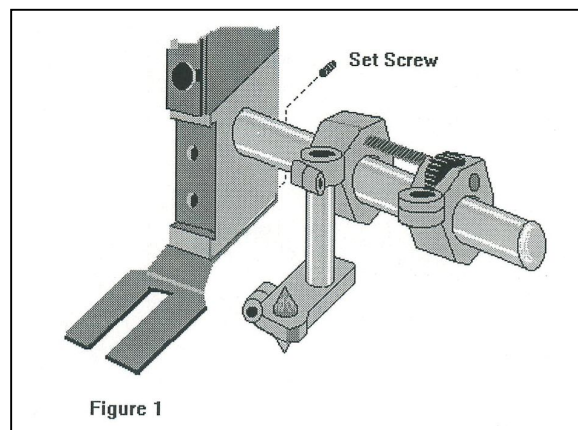


Note: If raising the guide post more than half way up from the table, and guide post cranks up hard, the upper blade guard must be removed. See figure A&B Blade will still be contained in the upper position.

USE OF STANDARD AND OPTIONAL ACCESSORIES

CIRCLE CUTTING (OPTIONAL) (figure 1) (Assembly part number 714801)

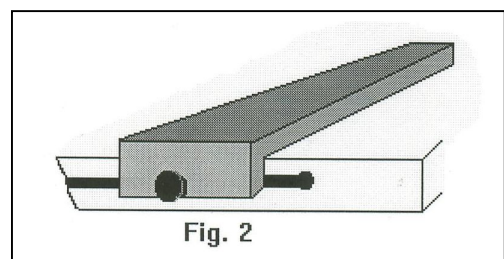
The device is used for cutting out perfectly round objects. Insert the round bar into the corresponding in the guide post, secure with set screw. Gross changes are made moving the cast assemblies on round bar, fine adjustments are done with the wheel.



hole
radius
the
thumb

RIP FENCE Standard all models (figure 2) (Part number 714805)

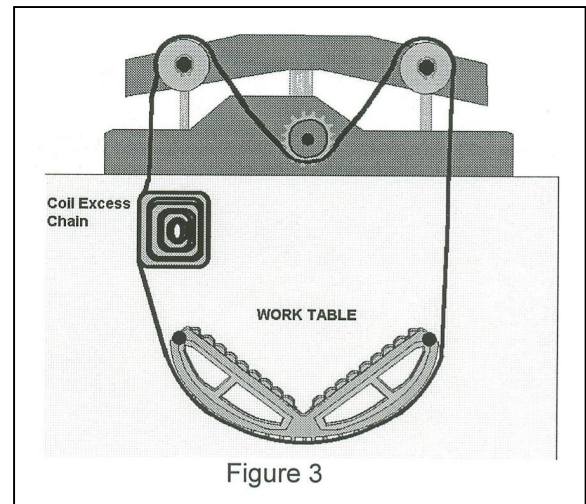
Used for cutting material in accurate straight lines. To attach, insert T-bolt provided in the T-slot in the front of the table. Slide into the desired position and tighten handle.



PROFILE CUTTING ATTACHMENT Standard on VH-24 models (figure 3)
(Part number 714821)

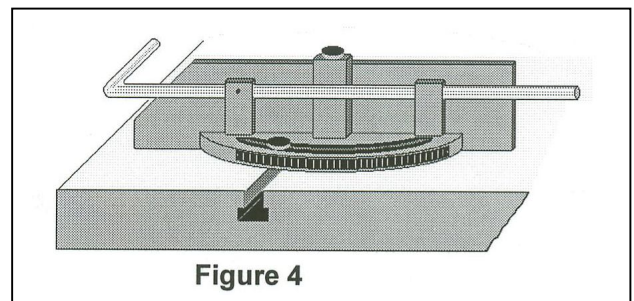
This device is used for cutting irregular shapes with the use of the hydraulic table. Set the chain up as shown in figure 3. Set the material in the holder and guide with the hand wheel on the right side of the table. The excess chain should be coiled out of the way, while operating the machine.

Note: *When chain is not engaged in the rear sprocket the angle of cut is controlled by guiding the handles on the holder.*



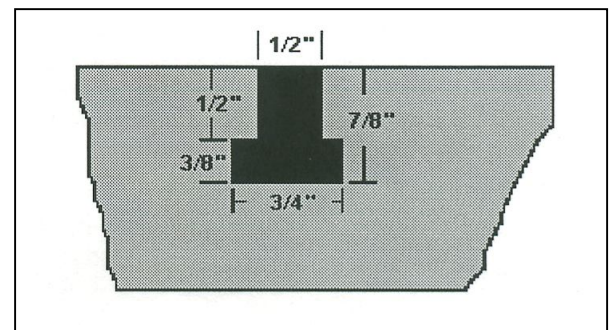
PROTRACTOR HEAD Standard (figure 4)
(Assembly Part number 714800)

Used for cutting angles 90 degrees to 45 degrees in relation to the blade. It is fastened to the table by means of T-bolts. The L-shaped bar is used for additional support of the work.



T-SLOTS

T-slots are machine into the work table for your use with fixturing or other accessories. The dimensions of these T-slots are furnished to the right.



How to program the digital speed display

(This is factory set and will only need to be programmed if the unit is replaced)

1. Press and hold the set button (top left corner) until the display shows Fun



2. Push the set button one time, the display will read rPS . If the display does not show rPS then push the “RST” button until the display shows rPS.
3. Press the set button one time, the display will read “P”.
4. Now, open the cover below the digital display and input the numbers 25400
5. Press the set button then RST until the decimal is between the 4 and the 0, now press the set button and the display will read



6. Push the set button one more time and the display will read “99999” now, push the RST button until no decimal points are displayed.
7. Push set one more time, it should read “rd15”. If not push the RST button until it does read “rd15”.
8. Push set 4 more times. Now the display will read correctly.

PARTS BREAKDOWN AND PARTS LIST

TOP BRACKET & BLADE TENSION ASSEMBLY - FIGURE 1.1

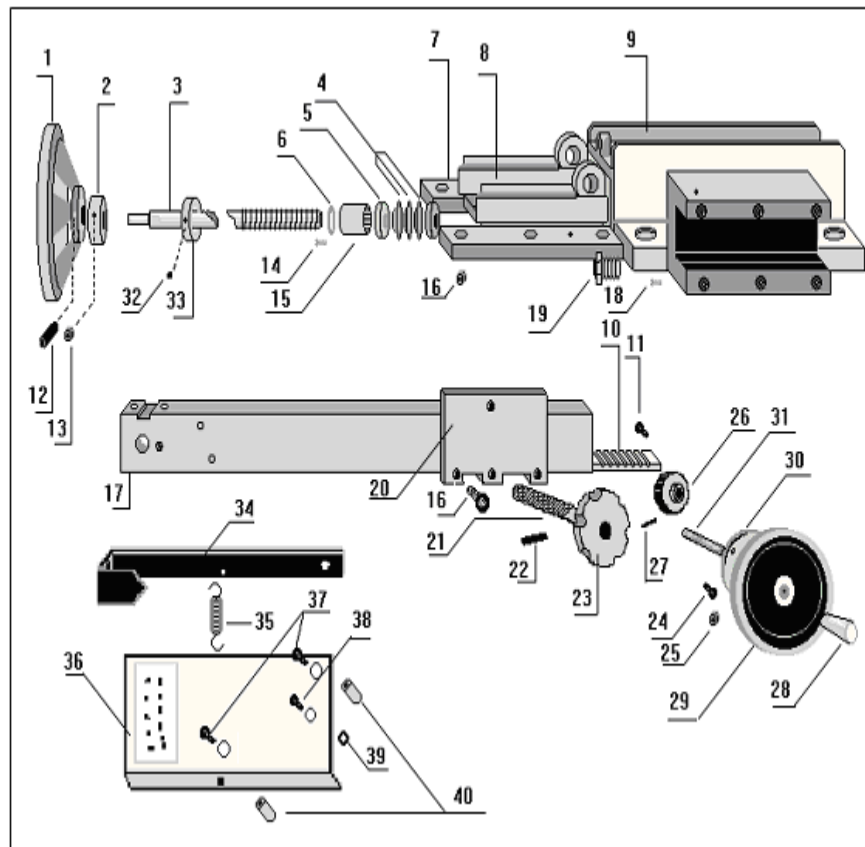


Figure 1.1

ITEM	PART NAME	PART NO.	V-24
1	Hand wheel	81529	1
2	Adjusting Wheel Collar	81531	1
3	Spindle	81533	1
4	Crown Spring	81535	6
5	Axial Bearing	81537	1
6	Spacer	81539	1
7	Lath Gib	81541	2
8	Carriage	81543	1
9	Carriage Lower Portion	81545	1
10	Rack	81547	1
11	Screw 4mm x 16mm	81548	2
12	Pin	81549	1
13	Set Screw 8mm x 10mm	81550	1
14	Flat Head Screw 4mm x 6mm	81551	2
15	Needle Bearing K25x30x39 2W	81553	1
16	Screw 8mm x 20mm	80521	11
17	Guide Post	81557	1
18	Set Screw 10mm x 20mm	81560	1
19	Threaded Sleeve	81558	4
20	Plate	81562	1
21	Handle Bolt	81563	1
22	Roll Pin	81654	1
23	Star Handle	81565	1
24	Cap Screw 6mm x 12mm	80625	3
25	Set Screw 6mm x 10mm 8 pitch	80529	1
26	Gear	81567	1
27	Roll Pin	81568	1
28	Handle	80501	1
29	Hand Wheel	80500	1
30	Flange	81569	1
31	Hand Wheel Adjusting Bolt	81570	1
32	Tension Collar Set Screw		1
33	Tension Indicator Collar		1
34	Tension Indicator Pointer Rod	81973	1
35	Indicator Pointer Return Spring	716500	1
36	Indicator Plate		1
37	Mounting Bolts		1
38	Pivot Bolt		2
39	Pivot Bolt Nut		1
40	Plate Spacers		2

Tracking band wheel assembly 1.2

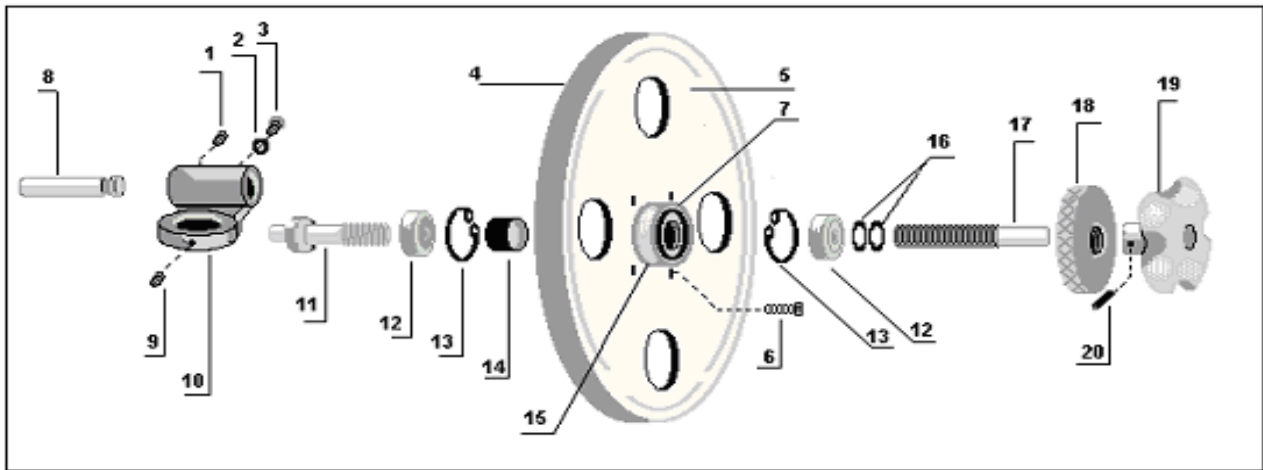


Figure 1.2

ITEM	PART NAME	PART NO.	V-24
1	Screw 8mm x 16mm	81572	2
2	Jam nut 8mm	91573	1
3	Set Screw 8mm x 25mm	81574	1
4	Nylon Bandage	714835	1
5	Upper Band Wheel	714835	1
6	Cap Screw 10mm x 30mm	81505	4
7	Flange	81576	1
8	Special Pin	81578	1
9	Set Screw 8mm x 16mm	81572	1
10	Adjuster Casting	81580	1
11	Shoulder Bolt	81582	1
12	Bearing 6306 2RS	81583	2
13	Snap Ring	5136-00	2
14	Spacer	81587	1
15	Flat Washer	81507	4
16	Shaft Nut	81588	1
17	Screw (Special) 20MM	81591	1
18	Nut (Special Knurled)	81593	1
19	Adjusting Hand Wheel	81596	1
20	Roll Pin	81594	-

Optional Hydraulic
CRADLE & TRUNION ASSEMBLY, HYDRAULIC
FIGURE 2.2

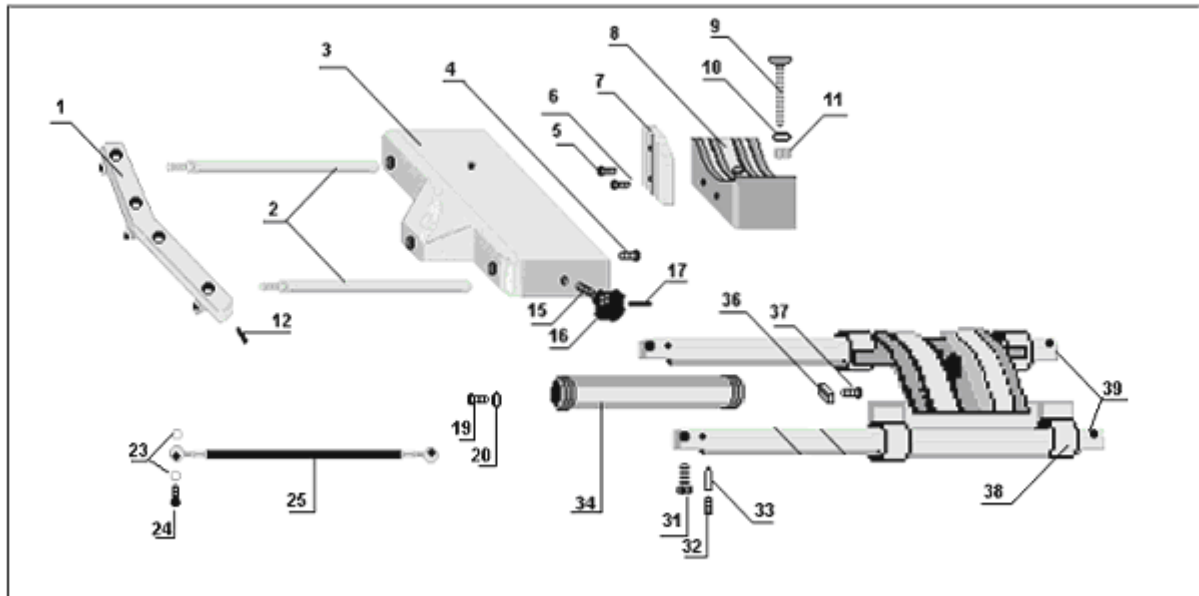


Figure 2.2

ITEM	PART NAME	PART NO.	V-24
1	Bracket	81702	1
2	Guide Rod	81703	2
3	Guide Casting	81704	1
4	Cap Screw 8mm x 25mm	81705	3
5	Cap Screw 6mm x 20mm	64179	2
6	Cap Screw	81707	1
7	Blade Guide Bracket Casting	81708	2
8	Table Cradle Lower part	81709	1
9	Special Rotation Bolt	81710	1
10	Flat Washer	81711	1
11	Nut	81712	1
12	Roll Pin 8mm x 10mm	81743	1
15	Needle Bearing K20x24x17	81552	1
16	Screw 8mm x 20mm	80521	9
17	Guide Post	81555	1
19	Threaded Sleeve	81558	4
20	Plate	81561	1
23	Star Handle	81565	1
24	Cap Screw 6mm x 12mm	80625	3
25	Set Screw 6mm x 10mm 8 pitch	80529	1
31	Hand Wheel Adjusting Bolt	81570	1
32	Tension Collar Set Screw		1
33	Tension Indicator Collar		1
34	Tension Indicator Pointer Rod	81973	1
36	Indicator Plate		1
37	Mounting Bolts		1
38	Pivot Bolt		2
39	Pivot Bolt Nut		1
40	Plate Spacers		2

LOWER WHEEL WITH FLANGE - 3.7

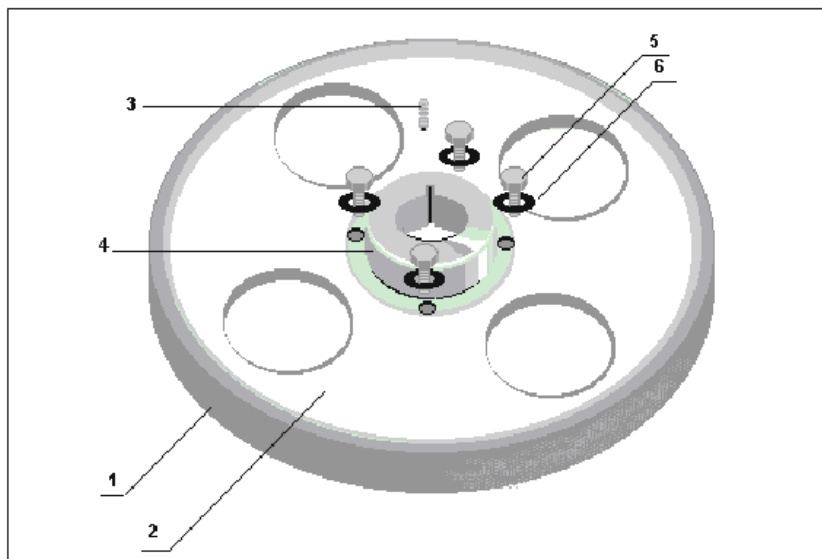


Figure 3.7

ITEM	PART NAME	PART NO.	V-24
1 & 2	Wheel with bandage new	714835	1
1 & 2	Reconditioned Wheel with new bandage	714835X	1
3	Set Screw	81863	1
4	Flange	81865	1
5	Washer 5/16" x 1/16" thick	43632	4
6	Cap Screw 8mm x 25mm	81575	4
Not shown	Wheel magnet	301834	1
Not shown	Proximity switch	301833	1

* Wheel bandage only is not available

**CONTROL VALVE ASSEMBLY
FIGURE 2.3**

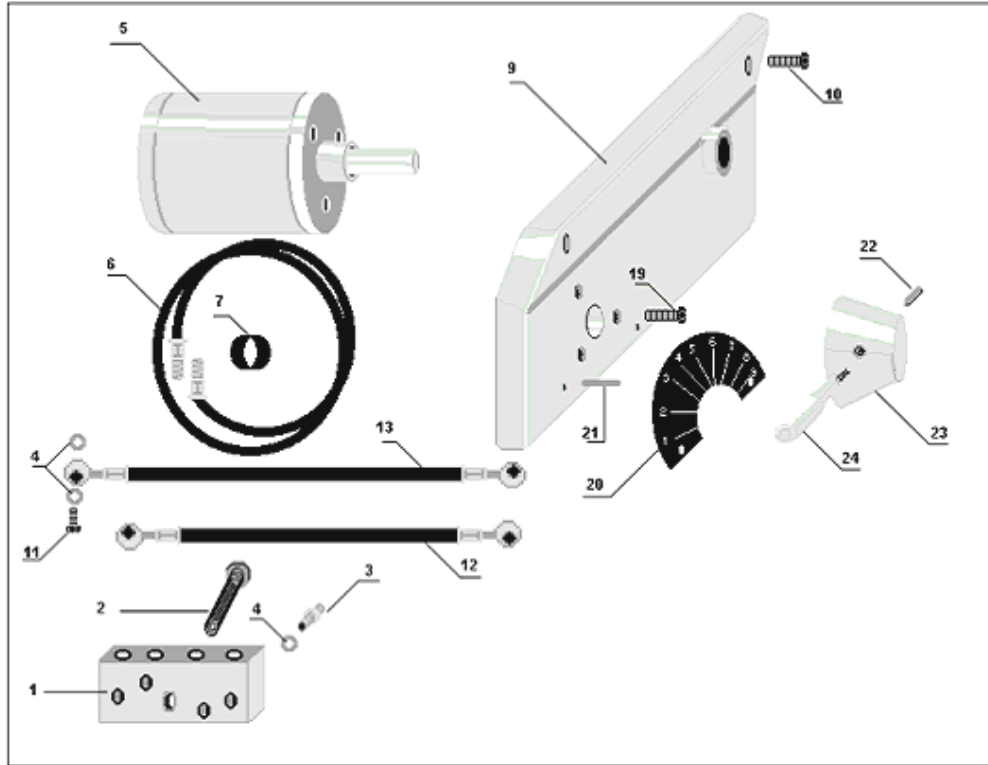


Figure 2.3

ITEM	PART NAME	PART NO.	V-24
1	Distributor Block	81734	1
2	Screw	81735	1
3	Connection	81736	1
4	Seal Washer	81720	6
5	Flow Control Assembly Complete	714832	1
6	Flexible Hyd. Hose – 714826 (52")	81739	2
7	Rubber Ring	81740	2
9	Mounting Plate Casting	80620	1
10	Cap Screw 8mm x 20mm	80521	2
11	Bored Screw	80580	8
12	Hydraulic Hose	81742	2
13	Hydraulic Hose	81743	2
19	Cap Screw 6mm x 20mm	81706	3
20	Gauge Plated	81747	1
21	Roll Pin	81748	1
22	Cone Pin	81749	1
23	Valve Handle Hub	81750	1
24	Handle	80662	1
N/A	Hydraulic reservoir assembly		1

PROFILE SAW ATTACHMENT, HYDRAULIC - FIGURE 2.4

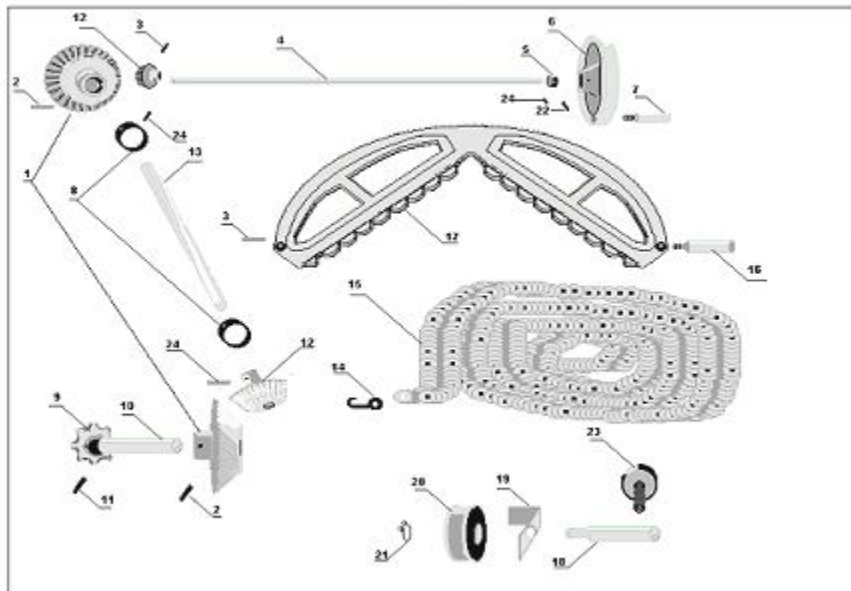


Figure 2.4

ITEM	PART NAME	PART NO.	V-24
1	Bevel Gear	81751	2
2	Roll Pin 4mm dia x 30mm	81713	2
3	Roll Pin	81752	5
4	Shaft	80664	1
5	Adjusting Collar	81753	1
6 /7	Handwheel	81802	1
8	Adjusting Ring	81754	2
9	Chain Sprocket	81755	1
10	Sprocket Shaft	81756	1
11	Roll Pin	81757	1
12	Bevel Gear	81758	1
13	Shaft	81759	1
14	Chain Link	80630	1
15	Chain 3940mm	81525	1
16	Handle	81760	2
17	Work Piece Holder w/ Handle	714863	1
18	Roller Shaft	81762	2
19	Roller Bracket	81763	2
20	Chain Pulley	81754	2
21	Snap Ring	81765	2
22	Set Screw 6mm x 10mm 8 pitch	80529	1
23	Trunion Locking Bolt	81526	2
24	Roll Pin	81718	3

TABLE ASSEMBLY MECHANICAL - FIGURE 2.7

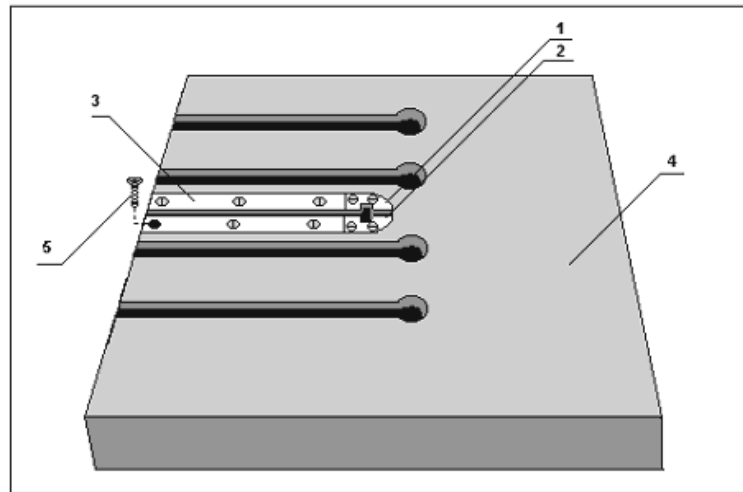


Figure 2.7

ITEM	PART NAME	PART NO.	V-24
1	Table Insert (Left Rear)	81597	1
2	Table Insert (Right Rear)	81598	1
3	Table Insert	81792	2
4	Table Casting	75678	1
4	Table Casting	75677	-
5	Cap Screw 4mm x 12mm	81701	10
	Round Table Insert	77186	-
N/A	Rip Fence	714869	-
N/A	Rip fence handle	300362	-
N/A	T-Nut	81504	-

Non- Hydraulic CRADLE & TRUNION ASSEMBLY , MECHANICAL - 2.8

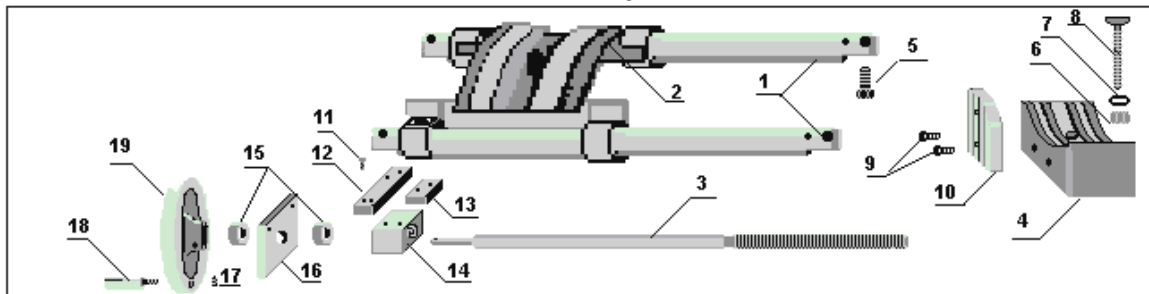
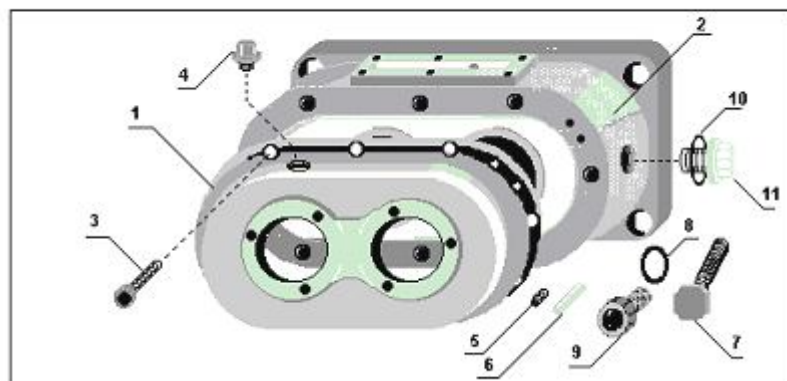


Figure 2.8

ITEM	PART NAME	PART NO.	V-24
1	Guide Shaft Rod	81733	2
2	Miter Tilt Bracket	81732	1
3	Spindle Screw Shaft	81812	1
4	Table Miter Tilt Bracket Lower Portion	81709	1
5	Cap Screw 10mm x 30mm	81726	4
6	Locking Nut	81712	1
7	Washer	87711	1
8	Special Rotation Bolt	81710	1
9	Cap Screw 6mm x 20mm	64179	2
10	Lower Guider Holder Casting	81708	1
11	Cap Screw		4
12	Screw Nut support Plate		1
13	Screw Nut Support Plate Spacer Plate		1
14	Screw Nut	81811	1
15	Axial Bearing	81801	2
16	Control Bracket Casting	81813	1
17	Set Screw 6mm x 10mm 8 pitch	80529	1
18 & 19	Hand wheel 12MM Bore	81802	1

TRANSMISSION ASSEMBLY - 3.1

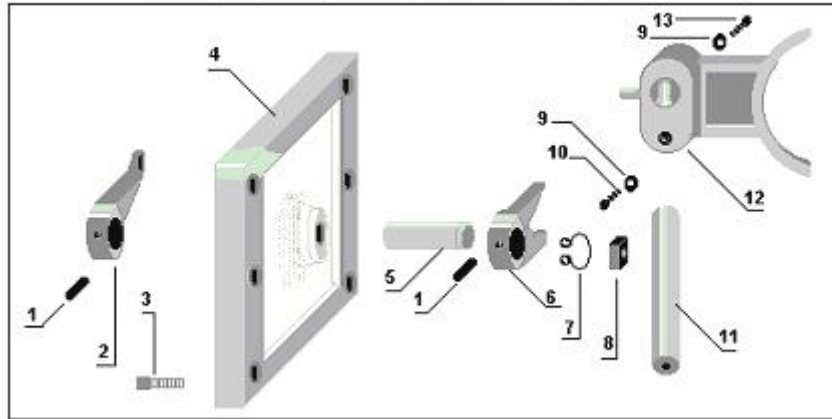


Use Pinnacle 460 or equivalent oil

Transmission Assembly – Figure 3.1

ITEM	PART NAME	PART NO.	V-24
1	Front Cover Plate	81819	1
2	Transmission Main Body Casting	81820	1
3	Cap Screw 8mm x 20mm	80521	8
4	Plug	81821	1
5	Set Screw 5mm x 7mm	81728	2
6	Alignment Roll Pin	81728	2
7	Hex Head Bolt	81822	4
8	Washer	81507	4
9	Threaded Adjustment Sleeve	81558	4
10	O-ring 1 x 1-3/16 x 3/32	81823	1
11	Oil Sight Glass	80571	1
	Complete Transmission Assembly V-24/VH-24	714845	1

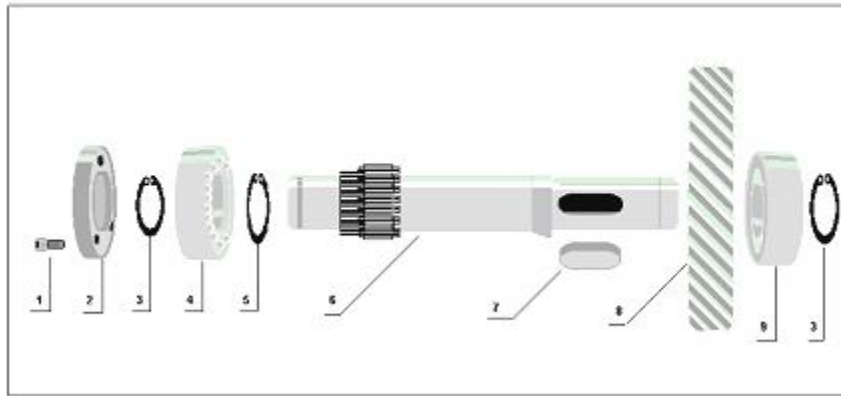
TRANSMISSION ASSEMBLY - 3.2



Transmission Assembly – Figure 3.2

ITEM	PART NAME	PART NO.	V-24
1	Roll Pin	81824	2
2	Lever	81825	1
3	Cap Screw 6mm x 20mm	81706	6
4	Cover Plate	81826	1
5	Special Bolt (Shift Lever)	81827	1
6	Gear Shifter Casting	81828	1
7	Snap Ring	81829	1
8	Guide Collar	81830	1
9	Nut	81831	2
10	Screw	81832	1
11	Shaft	81833	1
12	Gear Shaft Fork	81834	1
13	Screw	81835	1

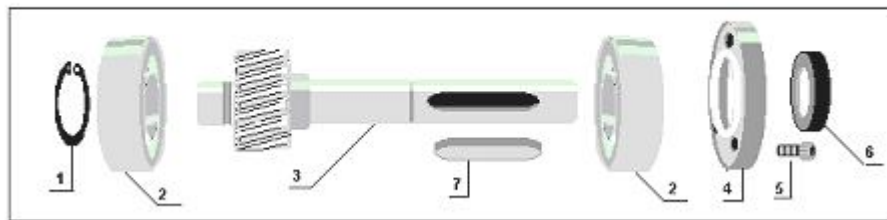
TRANSMISSION ASSEMBLY (GEARS) - FIGURE 3.3



Transmission, Gear Assembly – Figure 3.3

ITEM	PART NAME	PART NO.	V-24
1	Cap Screw	81707	3
2	End Cover	81836	1
3	Snap Ring	81837	2
4/9	Bearing SKF 6206-2RS	79465	2
5	Snap Ring	81839	1
6	Shaft	81840	1
7	Key	81841	1
8	Gear	81842	1

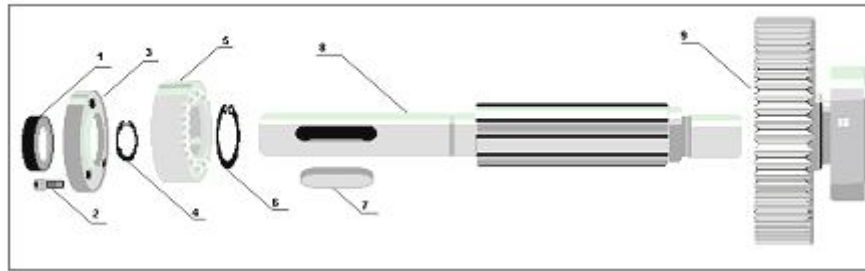
TRANSMISSION ASSEMBLY (GEARS) - FIGURE 3.4



Transmission Assembly (Gears) – Figure 3.4

ITEM	PART NAME	PART NO.	V-24
1	Snap Ring	81843	1
2	Bearing	80673	2
3	Shaft	81845	1
4	End Cover Plate	81849	1
5	Cap Screw	81707	3
6	Oil Seal	81846	1
7	Key	81847	1

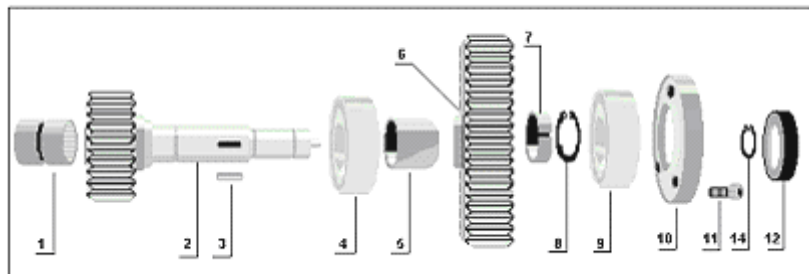
TRANSMISSION ASSEMBLY (GEARS) - FIGURE 3.5



Transmission Assembly (Gears) – Figure 3.5

ITEM	PART NAME	PART NO.	V-24
1	Oil Ring	81848	1
2	Cap Screw	81707	3
3	End Cover Plate	81849	1
4	Snap Ring	81837	1
5	Bearing BCA 5206K	81850	1
6	Snap Ring	81839	1
7	Key	81851	1
8	Spline Shaft	81852	1
	Thrust Bearing	81855	1
	Needle Bearing	300296	1
9	Gear	81853	1

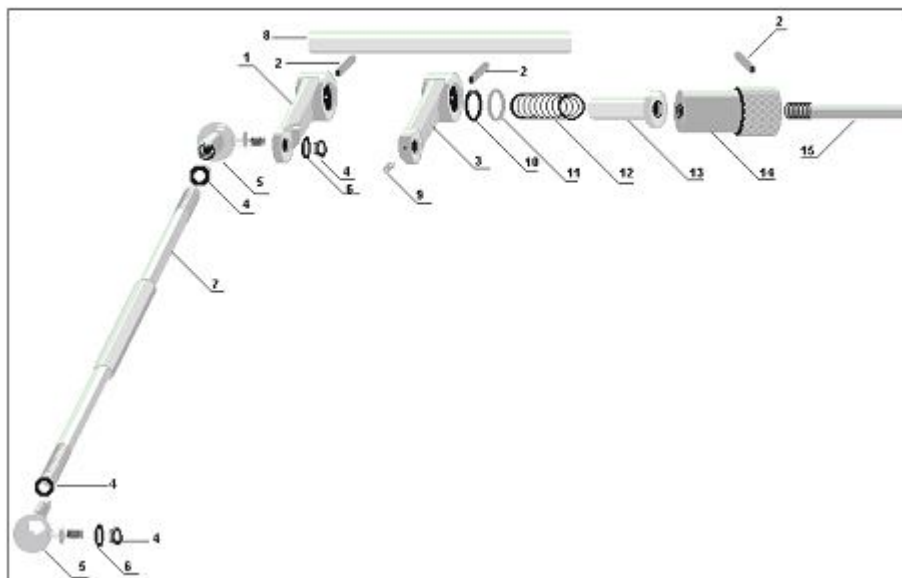
TRANSMISSION ASSEMBLY (GEARS) - FIGURE 3.6



Transmission Assembly (Gears) – Figure 3.6

ITEM	PART NAME	PART NO.	V-24
1	Needle Bearing	81854	1
2	Shaft	81855	1
3	Key	81841	1
4	Bearing	81838	1
5	Spacer Ring	81856	1
6	Gear	81857	-
6	Gear	81858	1
7	Spacer Ring	81859	1
8	Snap Ring	81843	1
9	Bearing	80673	1
10	End Cover Plate	80643	1
11	Cap Screw	81707	3
12	Oil Seal	81846	1
13	Set Screw	81741	1
14	Snap Ring	81860	1

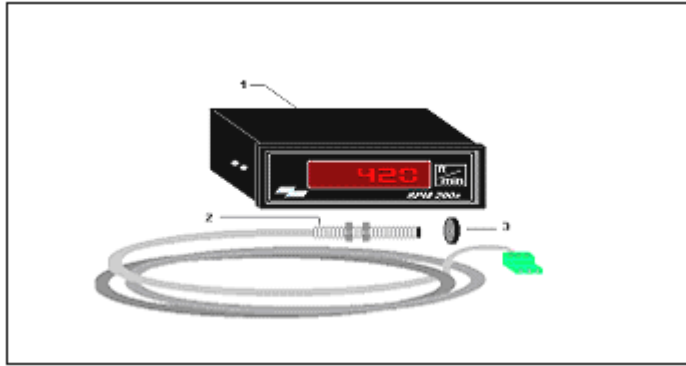
GEAR SHIFT ASSEMBLY - FIGURE 3.8



Gear Shift Assembly – Figure 3.8

ITEM	PART NAME	PART NO.	V-24
1	Lever Casting	81825	1
2	Roll Pin	81824	3
3	Lever Casting	80530	1
4	Jam Nut	81866	4
5	Ball Joint	81867	2
6	Washer	81507	2
7	Shaft	81869	1
8	Shaft	81872	1
9	Screw	81741	1
10	Snap Ring	81874	1
11	Washer	81875	1
12	Spring	81876	1
13	Collar	81877	1
14	Handle	81878	1
15	Special Bolt	81879	1

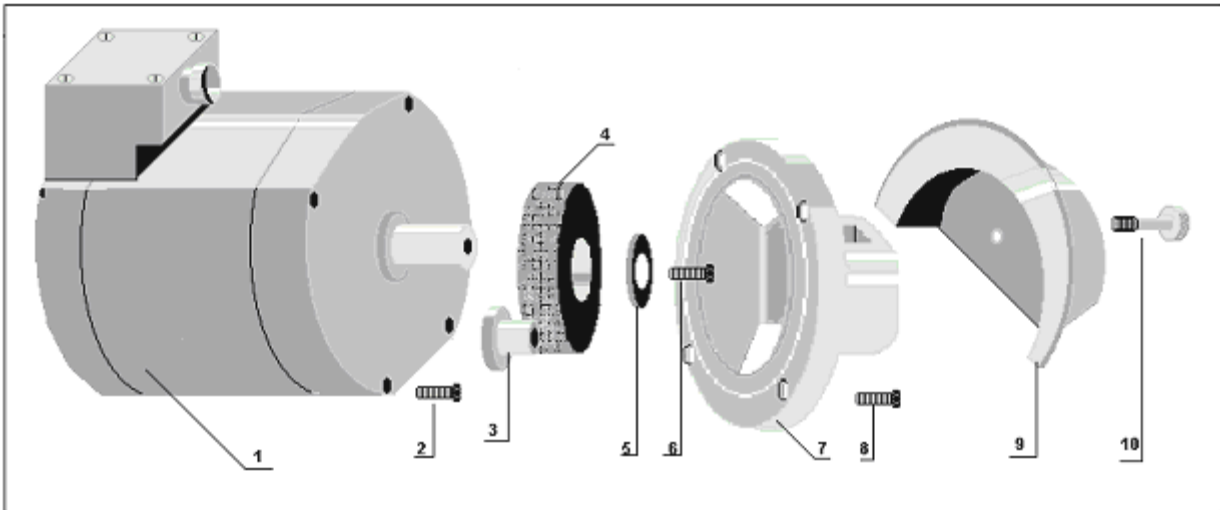
Digital Tachometer Assembly – Figure 4.3 / 4.4



Digital Tachometer Assembly – Figure 4.3 / 4.4

ITEM	PART NAME	PART NO.	V-24
1	Digital Display Unit	301832	1
2	Prox. Sensor with Cord	301833	1
3	Magnet for wheel	300226	1

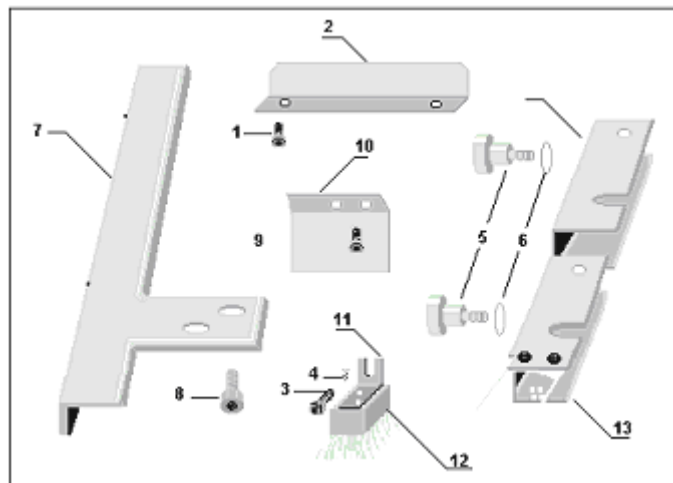
Motor and Grinding Wheel Assembly Figure 4.5



Motor and Grinding Wheel Assembly – Figure 4.5

ITEM	PART NAME	PART NO.	V-24
1	Motor 220/440 Volt 60 Hz.	80503	1
2	Cap Screw	81923	4
3	Adaptor Flange	80590	1
4	Grinding Wheel	80512	1
5	Washer	80518	1
6	Mounting Screw	80519	1
7	Wheel Cover Bracket	80515	1
8	Cap Screw	80516	3
9	Wheel Guard	80513	1
10	Wheel Guard Thumb Screw	80514	1

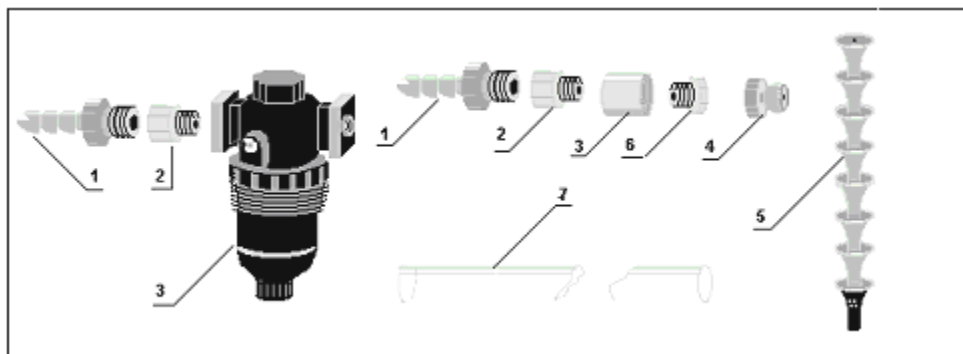
Blade Guard and Brush Figure 4.6



Blade Guard & Brush – Figure 4.6

ITEM	PART NAME	PART NO.	V-24
1	Screw	81924	2
2	Grinder Cover Guard	81925	1
3	Brush Mounting Bolt	81926	1
4	Wood Screw	81924	2
5	Knurled Thumb Screws	81526	2
6	Washer	80527	2
7	Blade Guard	80653	1
8	Cap Screw	80265	2
9	Mounting Screw	81926	2
10	Chip Wheel Guard	81929	1
11	Brush Holder	81930	1
12	Wire Chip Brush	81931	1
13	Upper Blade Cover	81932	1
14	Alignment Screws	81933	2
16	Cap Screw	80625	2
17	Lower Blade Cover w/ Plexiglas	78205	1
	Blade Guard V-24	80653	1

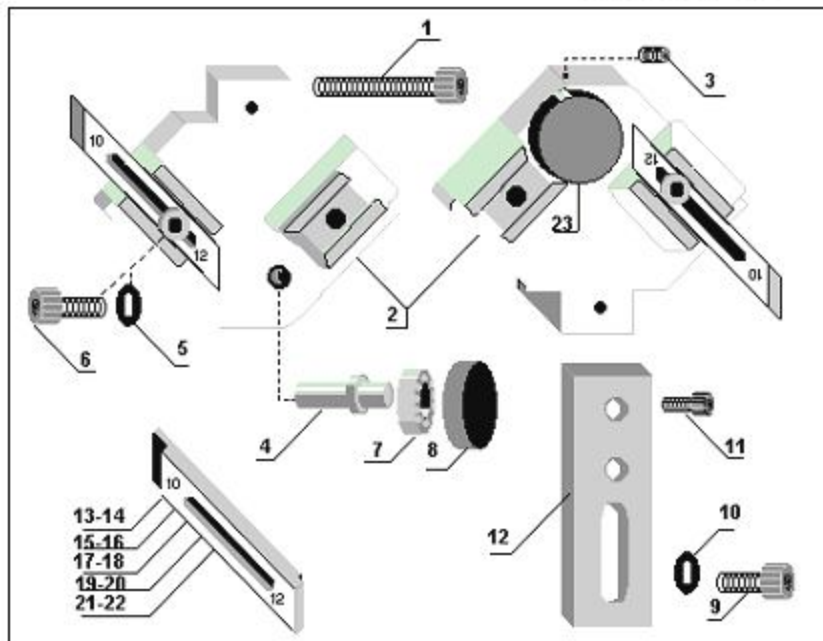
Chip blower Regulator Figure 4.7



Chip Blower & Regulator – Figure 4.7

ITEM	PART NAME	PART NO.	V-24
	Chip Blower Kit	300668	1
1	Hose Barb	35087	2
2	Reducer Fitting		2
3	Pre-Set Air Regulator	77269	1
4	Lock Line Pivot Fitting	77328	1
5	Flex Line Nozzle Assembly	77327/77326	1
6	Reducer Fitting		1
7	Plastic Air Hose		1
8	Coupling Fitting		1

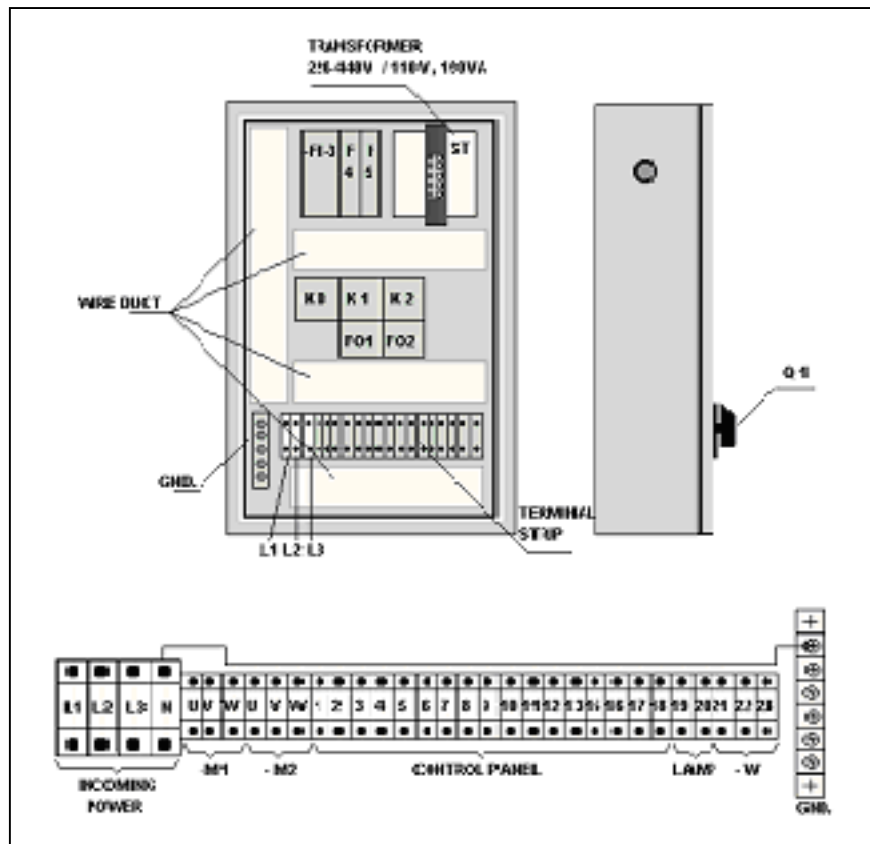
BLADE GUIDE ASSEMBLY - FIGURE 4.8



Blade Guide Assembly – Figure 4.8

ITEM	PART NAME	PART NO.	V-24
1	Cap Screw	81778	2
2	Blade Guide Holder	81935	2
3	Set Screw	81936	2
4/7/8	Rear Bearing Guide Assembly	80586	2
5	Washer	81938	4
6	Cap Screw	64179	4
9	Cap Screw	80521	1
10	Washer	43632	1
11	Cap Screw	81707	2
12	Lower Guide Mounting Plate	81941	1
13/14	Guide Inserts (Optional) 3mm/4mm	714816	2
15/16	Guide Inserts (Optional) 6mm/8mm	714817	2
16/17	Guide Inserts (Standard) 10mm/12mm	714818	2
17/18	Guide Inserts (Optional) 16mm/20mm	714819	2
19/20	Guide Inserts (Optional) 25mm/32mm	714820	2
	High Speed Roller Guides	81969	1 set
	Upper & Lower Guide Assembly (Items 1-8)	714838A	1

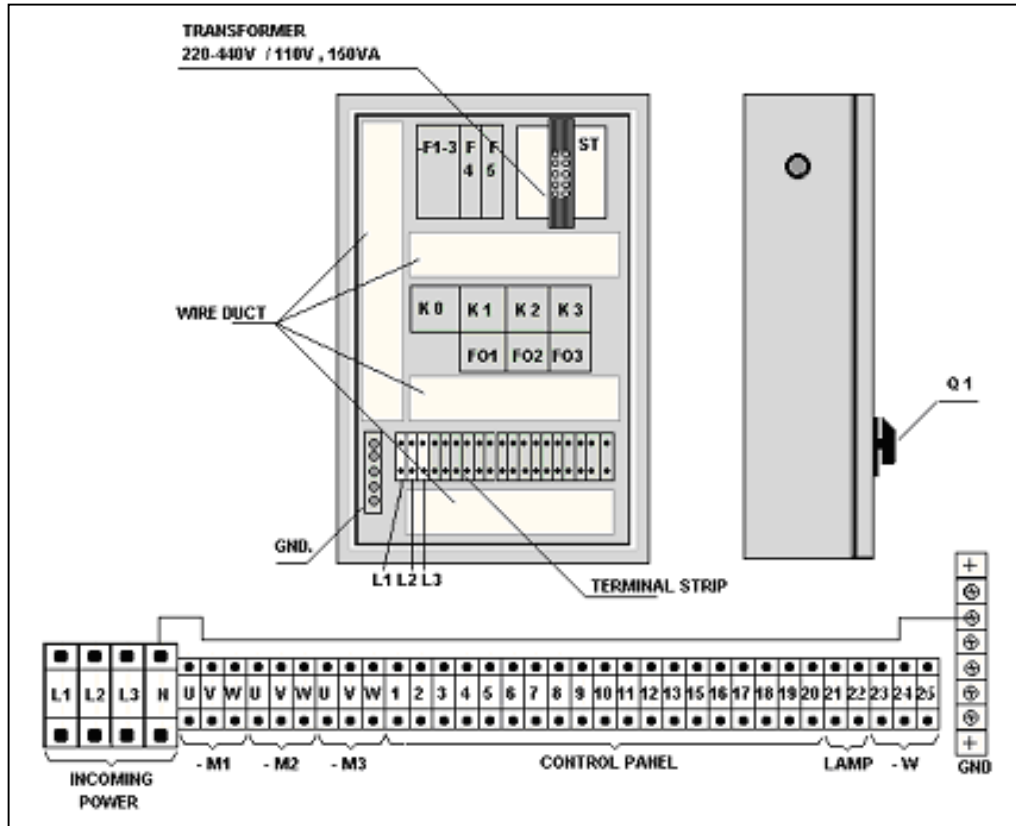
ELECTRICAL PANEL LAYOUT V-24



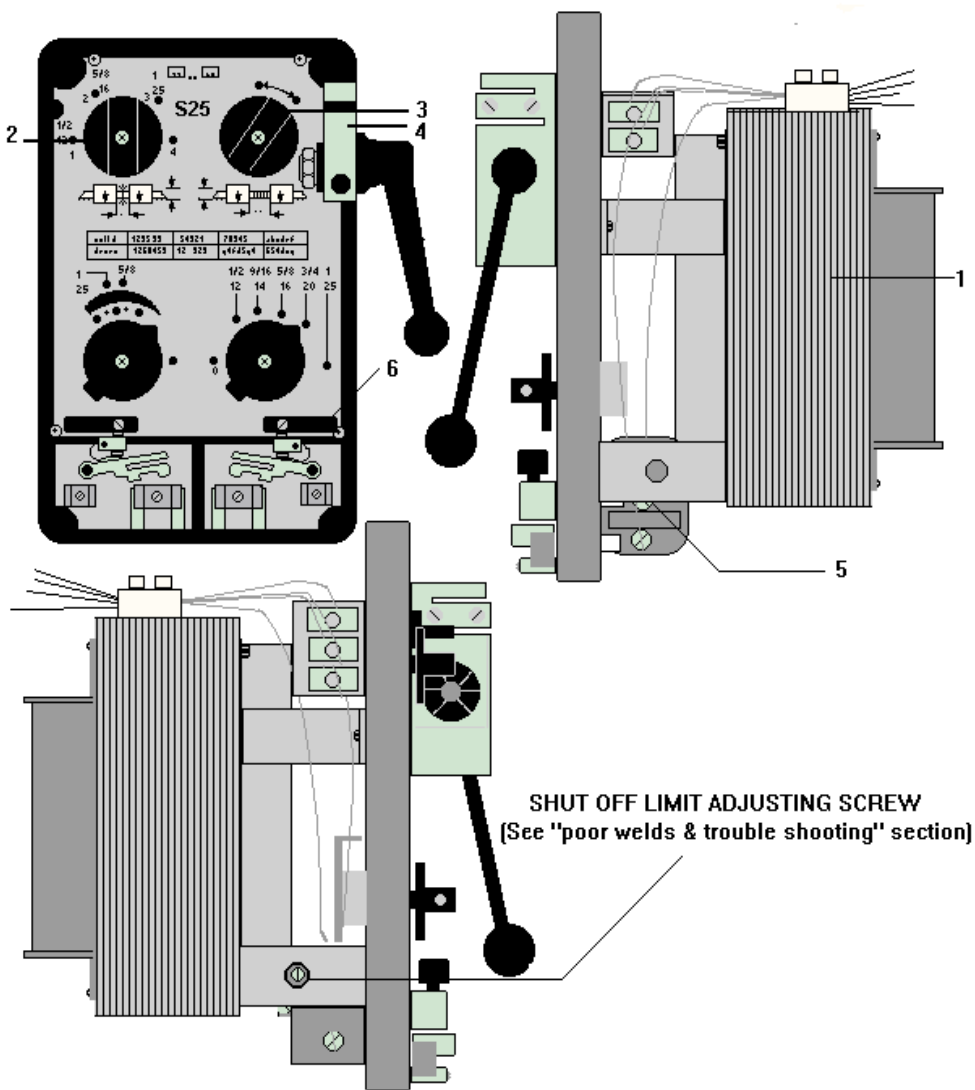
**Electrical Panel layout
V-24**

ITEM	PART NAME (NOT SHOWN)	PART NO.	V-24
ST	Transformer	81951	1
K1	Contactor	300123	-
	Relay Overload for K1, 3.2-5.0 Amps	300241	-
	Relay Overload for K1,	300119	1
K2	Contactor	300123	-
	Relay Overload for K2,	300121	1
K3	Contactor	300123	-

ELECTRICAL PANEL LAYOUT VH-24



ITEM	PART NAME (NOT SHOWN)	PART NO.	VH-24
ST	Transformer		1
K1	Contactor	300120	1
	Relay Overload for K1	300119	1
K2	Contactor	300121	1
	Relay Overload for K2	300121	1
K3	Contactor	300118	1



ITEM	PART NAME	PART NO.	V-24
	Welding Device 220 Volt	300516	1
1	Transformer S-25	77400	1
2	Weld Current Switch	80621	1
3	Anneal Switch	81964	1
4	Shear Blade Assembly - Top width 18 mm	80508	1
	Replacement Blades – Top width 18 mm	77274	1
	Shear Blade Assembly – Top width 15 mm	714815	1
	Replacement Blades – Top width 15 mm	300655	1
5	Microswitch ISK TYPM6	72451	2
6	Lever Jaw Clamp	76056	2
	Knurled Screw Blade Rest – Not Illustrated	78684	1
	Black Knob Only for item 2, 3 and two underneath	77531	4

Vibration during cutting

Failure to cut

Short life of saw blade

Curved cutting

Broken blade

•	•	•	•	•	Use of blade with incorrect pitch	Use blades with correct pitch, suited to workpiece width
•	•	•	•	•	Failure to break in saw blade	Perform break-in operation
•	•	•			Excessive saw blade speed	Reduce speed
			•	•	Insufficient saw blade speed	Increase speed
•		•	•	•	Excessive chip load	Reduce load
•		•	•		Insufficient chip load	Increase load
•		•	•	•	Wire chip brush improperly positioned	Relocate or replace
•		•	•		Blade improperly clamped by insert	Check and correct
•	•	•	•	•	Use of incorrect saw blade	Replace
•	•	•	•	•	Fluctuation of line voltage	Stabilize
•		•	•	•	Loose blade guides	Tighten
•		•		•	Back edge of blade running off of wheel	Adjust wheel to obtain clearance
	•	•	•		Saw blade teeth worn	Replace

