



Operating Instructions and Parts Manual Model JWS-25X Shaper



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Warranty and Service

JET warrants every product it sells against manufacturers' defects. If one of our tools needs service or repair, please contact Technical Service by calling 1-800-274-6846, 8AM to 5PM CST, Monday through Friday.

Warranty Period

The general warranty lasts for the time period specified in the literature included with your product or on the official JET branded website.

- JET products carry a limited warranty which varies in duration based upon the product. (See chart below)
- Accessories carry a limited warranty of one year from the date of receipt.
- Consumable items are defined as expendable parts or accessories expected to become inoperable within a reasonable amount of use and are covered by a 90 day limited warranty against manufacturer's defects.

Who is Covered

This warranty covers only the initial purchaser of the product from the date of delivery.

What is Covered

This warranty covers any defects in workmanship or materials subject to the limitations stated below. This warranty does not cover failures due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and-tear, improper repair, alterations or lack of maintenance.

Warranty Limitations

Woodworking products with a Five Year Warranty that are used for commercial or industrial purposes default to a Two Year Warranty. Please contact Technical Service at 1-800-274-6846 for further clarification.

How to Get Technical Support

Please contact Technical Service by calling 1-800-274-6846. **Please note that you will be asked to provide proof of initial purchase when calling.** If a product requires further inspection, the Technical Service representative will explain and assist with any additional action needed. JET has Authorized Service Centers located throughout the United States. For the name of an Authorized Service Center in your area call 1-800-274-6846 or use the Service Center Locator on the JET website.

More Information

JET is constantly adding new products. For complete, up-to-date product information, check with your local distributor or visit the JET website.

How State Law Applies

This warranty gives you specific legal rights, subject to applicable state law.

Limitations on This Warranty

JET LIMITS ALL IMPLIED WARRANTIES TO THE PERIOD OF THE LIMITED WARRANTY FOR EACH PRODUCT. EXCEPT AS STATED HEREIN, ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

JET SHALL IN NO EVENT BE LIABLE FOR DEATH, INJURIES TO PERSONS OR PROPERTY, OR FOR INCIDENTAL, CONTINGENT, SPECIAL, OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF OUR PRODUCTS. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

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Product Listing with Warranty Period

90 Days – Parts; Consumable items; Light-Duty Air Tools
1 Year – Motors; Machine Accessories; Heavy-Duty Air Tools; Pro-Duty Air Tools
2 Year – Metalworking Machinery; Electric Hoists, Electric Hoist Accessories; Woodworking Machinery used for industrial or commercial purposes
5 Year – Woodworking Machinery
Limited Lifetime – JET Parallel clamps; VOLT Series Electric Hoists; Manual Hoists; Manual Hoist Accessories; Shop Tools; Warehouse & Dock products; Hand Tools

NOTE: JET is a division of JPW Industries, Inc. References in this document to JET also apply to JPW Industries, Inc., or any of its successors in interest to the JET brand.

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Warnings

1. Read and understand the entire owner's manual before attempting assembly or operation.
2. Read and understand the warnings posted on the machine and in this manual. Failure to comply with all of these warnings may cause serious injury.
3. Replace the warning labels if they become obscured or removed.
4. This shaper is designed and intended for use by properly trained and experienced personnel only. If you are not familiar with the proper and safe operation of a shaper, do not use until proper training and knowledge have been obtained.
5. Do not use this shaper for other than its intended use. If used for other purposes, JET disclaims any real or implied warranty and holds itself harmless from any injury that may result from that use.
6. Always wear approved safety glasses/face shields while using this shaper. Everyday eyeglasses only have impact resistant lenses; they are not safety glasses.
7. Before operating this shaper, remove tie, rings, watches and other jewelry, and roll sleeves up past the elbows. Remove all loose clothing and confine long hair. Non-slip footwear or anti-skid floor strips are recommended. Do **not** wear gloves.
8. Wear ear protectors (plugs or muffs) during extended periods of operation.
9. Some dust created by power sanding, shaping, grinding, drilling and other construction activities contain chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
 - Lead from lead based paint.
 - Crystalline silica from bricks, cement and other masonry products.
 - Arsenic and chromium from chemically treated lumber.
10. Your risk of exposure varies, depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area and work with approved safety equipment, such as face or dust masks that are specifically designed to filter out microscopic particles.
11. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
12. Make certain the machine is properly grounded.
13. Make all machine adjustments or maintenance with the machine unplugged from the power source. A machine under repair should be RED TAGGED to show it must not be used until maintenance is complete.
14. Remove adjusting keys and wrenches. Form a habit of checking to see that keys and adjusting wrenches are removed from the machine before turning it on.
15. Keep safety guards in place at all times when the machine is in use. If removed for maintenance purposes, use extreme caution and replace the guards immediately.
16. Check damaged parts. Before further use of the machine, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
17. Provide for adequate space surrounding work area and non-glare, overhead lighting.
18. Keep the floor around the machine clean and free of scrap material, oil and grease.
19. Keep visitors a safe distance from the work area. Keep children away.
20. Make your workshop child proof with padlocks, master switches or by removing safety keys.



Warnings

21. Give your work undivided attention. Looking around, carrying on a conversation and “horse-play” are careless acts that can result in serious injury.
22. Maintain a balanced stance at all times so that you do not fall or lean against the blade or other moving parts. Do not overreach or use excessive force to perform any machine operation.
23. Use the right tool at the correct speed and feed rate. Do not force a tool or attachment to do a job for which it was not designed. The right tool will do the job better and safer.
24. Use recommended accessories; improper accessories may be hazardous.
25. Maintain tools with care. Keep cutter sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
26. Check the cutter for cracks or missing teeth. Do not use a cracked cutter or one with missing teeth or improper set. Make sure the cutter is securely locked on the arbor.
27. Keep hands clear of the cutter area. Do not reach past the cutter to clear parts or scrap with the shaper running. Avoid awkward operations and hand positions where a sudden slip could cause your hand to contact the cutter.
28. Do not attempt to shape boards with loose knots or with nails or other foreign material, on its surface. Do not attempt to shape twisted, warped, bowed or “in wind” stock unless one edge has been jointed for guiding purposes prior to shaping.
29. Do not attempt to shape long or wide boards unsupported where spring or weight could cause the board to shift position.
30. Always use safety devices for all operations where they can be used.
31. Be sure to check the direction of spindle rotation before use.
32. Turn off the machine before cleaning. Use a brush or compressed air to remove chips or debris — do not use your hands.
33. Do not stand on the machine. Serious injury could occur if the machine tips over.
34. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
35. Remove loose items and unnecessary work pieces from the area before starting the machine.

Familiarize yourself with the following safety notices used in this manual:

CAUTION

This means that if precautions are not heeded, it may result in minor injury and/or possible machine damage.

WARNING

This means that if precautions are not heeded, it may result in serious injury or possibly even death.



Safety Rules

Short stock – Never shape stock less than 12 inches in length without special fixtures. Where practical, shape longer stock and cut to size.

12 inch rule – When shaping, never allow your hands to come closer than 12 inches to the cutters.

Hand safety – Never pass the hands directly over, or in front of, the cutters (Figure A). As one hand approaches the 12 inch radius point, remove it (or the push stick) in an arc motion and reposition hands 12 inches beyond the cutters.

Blind cut – When blind cutting, the workpiece is positioned on top of the template. This keeps the cutter(s) cutting only the underside of the workpiece and provides a "distance" guard for the operator.

Cutter Clearance – With the power disconnected, always rotate the spindle by hand with any new set-up to ensure proper clearance with the cutters. At the same time, check to be sure the cutterhead is turning in the correct direction.

Stock feed – Feed stock opposite to the direction of the cutter rotation (Figure B). Never back stock out of the cutter once the cut has been started. Instead, pull the stock straight out away from cutter and begin the cut again.

Guide pin – Whenever possible, use a guide pin when performing pattern shaping and collar shaping operations.

Tool maintenance – Clean and sharp tools give safer and better performance. Dull tools can cause kickbacks and excessive chatter. Before making a cut, always check the condition and adjustment of the tools. Never use a tool that is not balanced and rated for the selected RPM.

Spindle speed – Do not operate tools at speeds higher than rated by the manufacturer.

Cutter selection – Use only those cutters designed to be used on the machine, and mount only safety type cutters on the spindle.

Stock condition – The danger of kicked-back stock can occur when the stock has knots, holes, or foreign objects such as nails. Warped or in-wind stock should first be jointed on one surface before attempting to use it on the shaper.

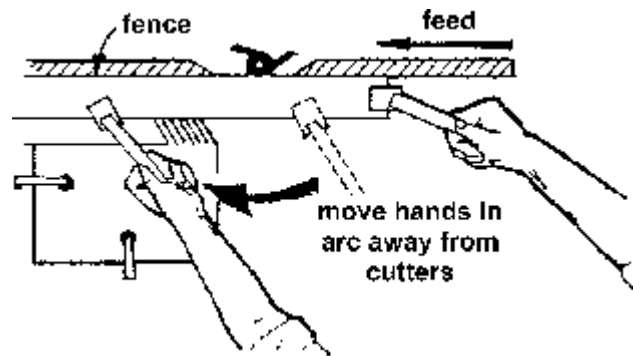


Figure A

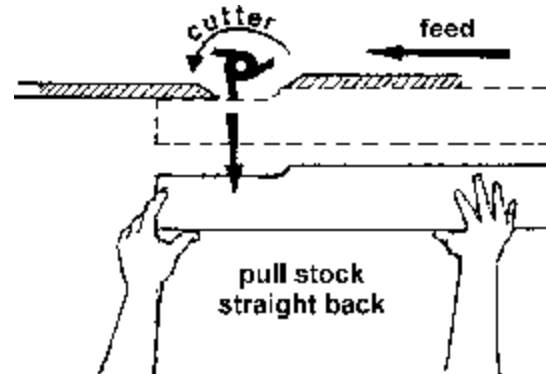


Figure B

Introduction

This manual is provided by JET covering the safe operation and maintenance procedures for a JET Model JWS-25X Shaper. This manual contains instructions on installation, safety precautions, general operating procedures, maintenance instructions and parts breakdown. This machine has been designed and constructed to provide years of trouble free operation if used in accordance with instructions set forth in this manual. If there are any questions or comments, please contact either your local supplier or JET. JET can also be reached at our web site: www.jettools.com.

Specifications

Model Number.....	JWS-25X
Stock Number.....	708309
Motor.....	3HP, 230V, 60Hz, 1 Phase
Table Size (L x W).....	25-1/2" x 25"
Table Height from Floor.....	33"
Spindle Size (Standard).....	1/2", 3/4" Standard
Router Bit Collet Size (Optional)	1/4", 1/2"
Spindle Capacity Under Nut:	
Provided spindles	(1/2" Spindle) 2-13/64", (3/4" Spindle) 3-3/16"
Optional spindles	(1" Spindle) 3-3/16", (30mm Spindle) 2-15/32"
Spindle Travel	3-1/2"
Spindle Speeds (RPM)	7500, 10000, reversing
Table T-Slot (W x T)	3/4" x 3/8"
Table Opening Diameter.....	6-9/32"
Insert Opening Diameters.....	2-9/16", 4-21/64"
Fence Size x 2.....	4-3/4" (H) x 14-1/2" (L)
Dust Collection Minimum CFM Required 4" Port	600
Overall Dimensions	32-1/4" (L) x 28-1/4" (W) x 42-3/8" (H)
Weight.....	381 lbs (Shipping), 331 lbs (Net)

Optional Accessories

708383	1/4" Router Collet
708384	1/2" Router Collet
708388	1/2" Spindle
708387	3/4" Spindle
708318	1" Spindle
708382	30mm Spindle

The specifications in this manual were current at the time of publication, but because of our policy of continuous improvement, JET reserves the right to change specifications at any time and without prior notice, without incurring obligations.

Pre-installation

For maximum performance and safety from your spindle shaper, clean and check it carefully before installation.

Inspect the packing crate for physical or water damage. Immediately contact the shipper if any damage is noted.

Remove box and wood crating completely from around shaper. Check that all parts are present and undamaged. Check the specification plate on the shaper to confirm that the correct model shaper has been shipped to you.

Check that all shipping packaging is removed from the shaper, particularly in and around all moving parts. Remove all tape, wire, tags and any other foreign materials.

Clean the shaper using products suitable for removing protective coatings. Do not use solvents on plastic parts of electrical cord or damage may result.

Before lifting the machine, remove all foot bolts locking it to the shipping base.

Transport the machine to the installation site using a hand truck or dolly suitable for the weight.

The shaper should be placed in an area with a sturdy level floor, good ventilation and sufficient lighting. Leave enough space around the machine for mounting extension wings and rail assemblies, and loading and off-loading stock and general maintenance work.

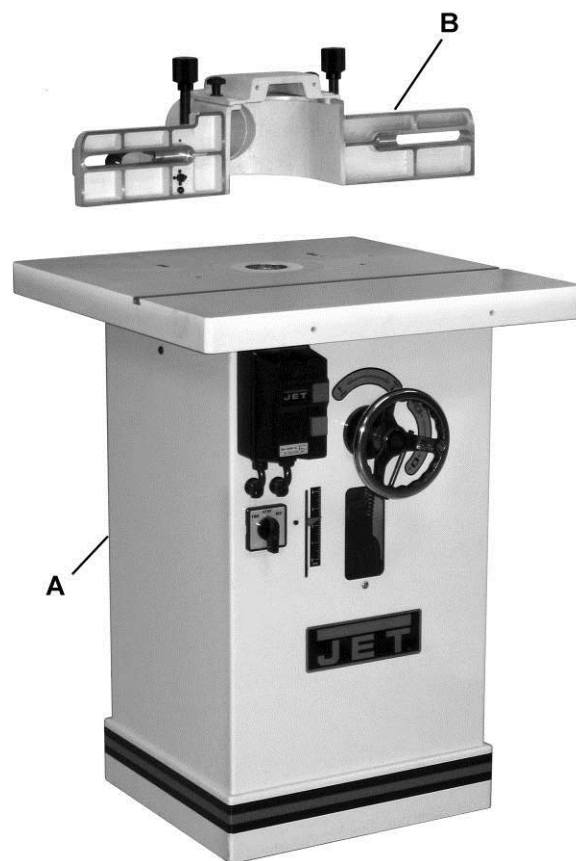
Level the machine in both directions using metal shims, if needed. Check that all four corners are properly supported. If machine is not to be bolted to the floor, make sure it rests solidly after leveling.

Shipping Contents

Compare the contents of your container with the parts listings and illustrations on this and following page to make sure all parts are intact. Missing parts, if any, should be reported to your distributor. Read the instruction manual thoroughly for assembly, maintenance and safety instructions.

Main Shaper Container

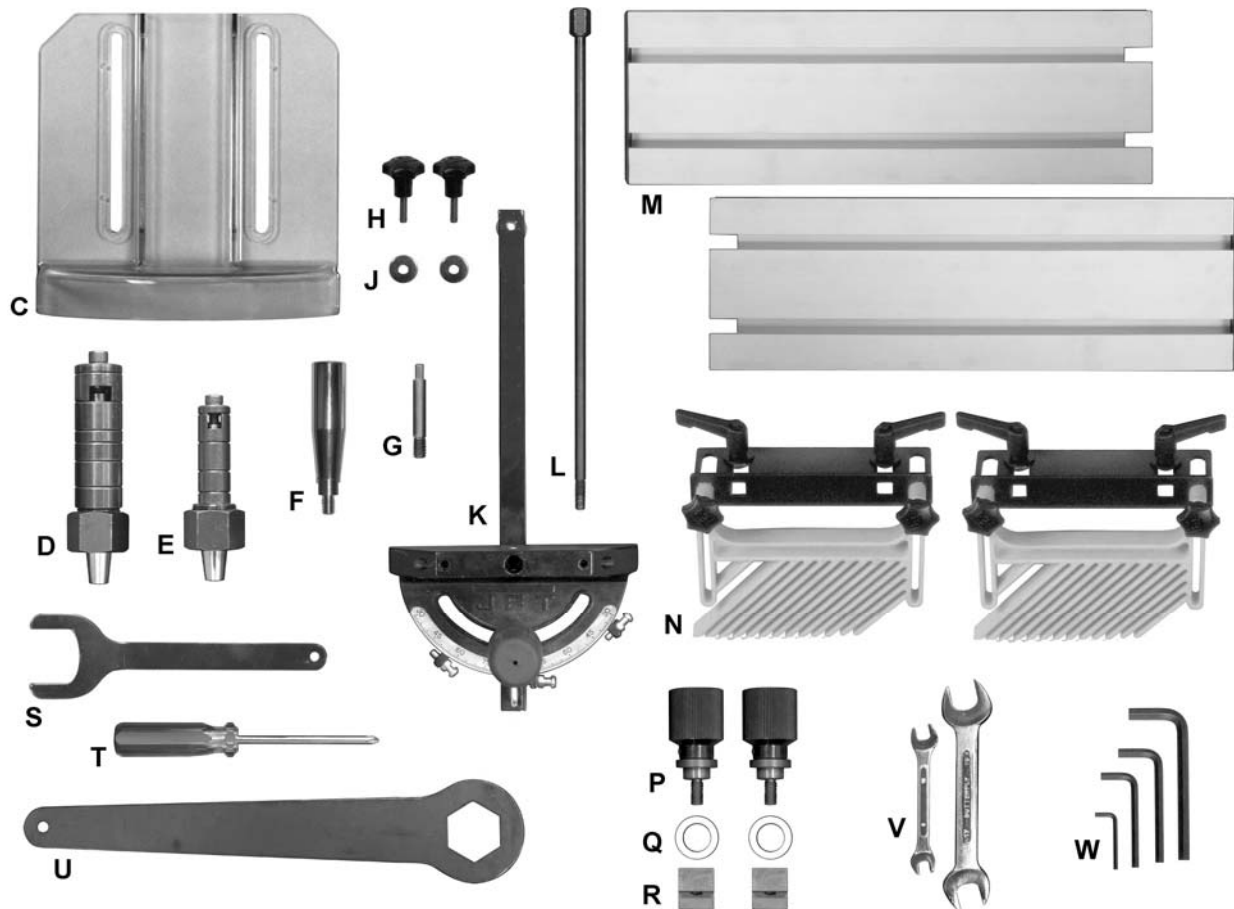
- 1 Cabinet and Base (A)
- 1 Fence Assembly Casting (B)



Main Shaper Container

Note: The letter designators identifying parts on this and following page are also used in the *Assembly* section of this manual for reference and assembly convenience.

Shipping Contents



Hardware

Hardware

Hardware and included tools consist of the following items:

- | | |
|-------------------------------|---|
| 1 Cutter Guard (C) | 2 Fence Lock Knob (P) |
| 1 3/4" Spindle Assembly (D) | 2 Plastic Flat Washer (Q) |
| 1 1/2" Spindle Assembly (E) | 2 Slide (R) |
| 1 Handwheel Handle (F) | 1 Spindle Wrench (S) |
| 1 Starting Pin (G) | 1 Crosspoint Driver (T) |
| 2 Lock Knob (H) | 1 Wrench (U) |
| 2 Flat Washer (J) | 2 Combination Wrenches – 12/14mm, 17/19mm (V) |
| 1 Miter Assembly (K) | 1 Hex Wrenches – 3-, 5-, 6-, 8mm (W) |
| 1 Draw Bar (L) | 1 Touch-up paint, small can (not shown) |
| 2 Fence (M) | |
| 2 Featherboard Hold-downs (N) | |

Assembly

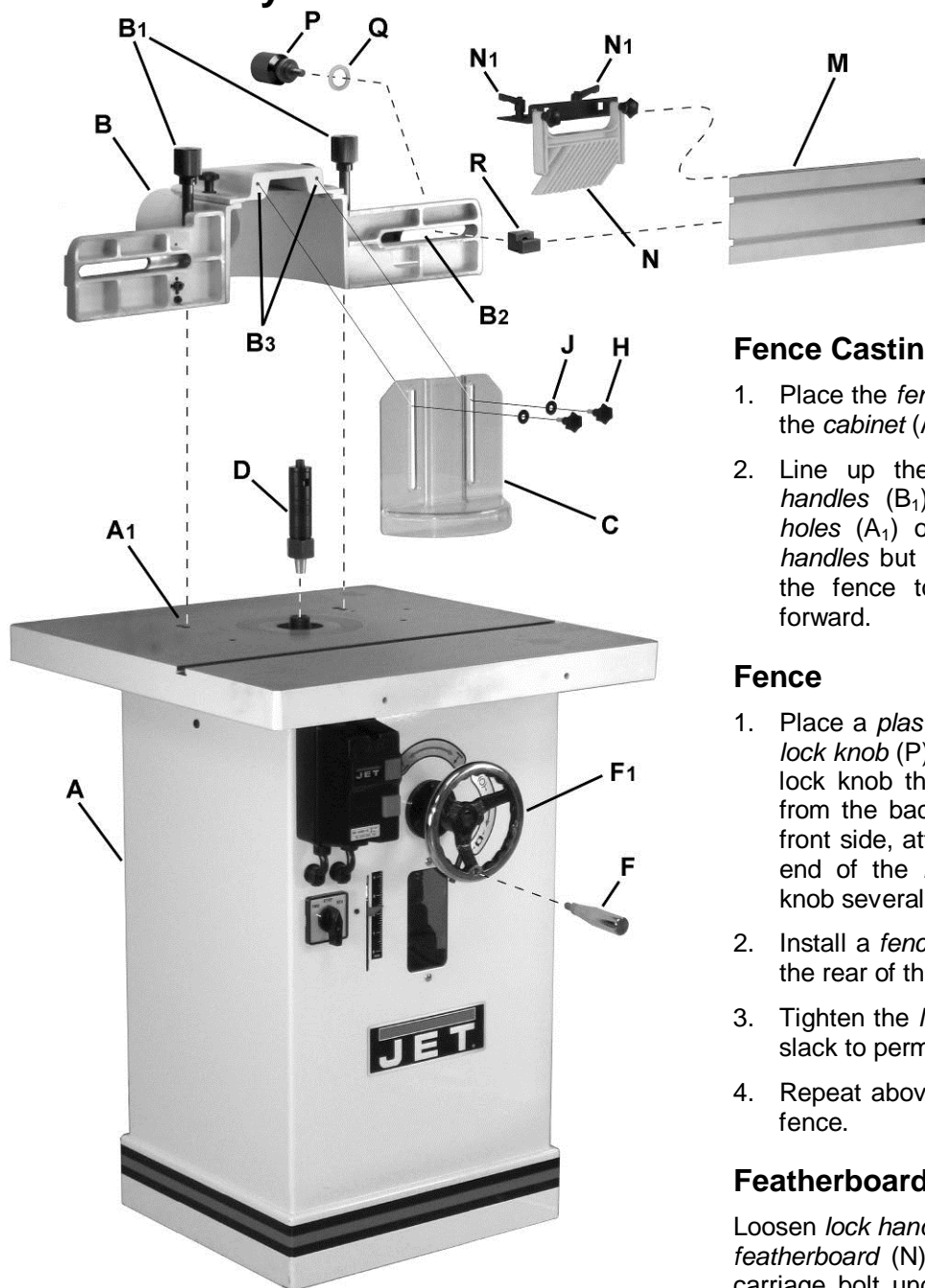


Figure 1

Fence Casting

1. Place the *fence casting* (B) onto the table of the *cabinet* (A).
2. Line up the threaded ends of the *lock handles* (B₁) with the *threaded mounting holes* (A₁) on the table. Tighten the *lock handles* but allow sufficient slack to permit the fence to be adjusted backward and forward.

Fence

1. Place a *plastic flat washer* (Q) on the *fence lock knob* (P). Insert the threaded end of the lock knob through the *slotted opening* (B₂) from the back of the *casting* (B). From the front side, attach a *slide* (R) to the threaded end of the *lock knob* (P) and tighten the knob several turns.
2. Install a *fence* (M) by engaging the track on the rear of the fence with the *slide* (R).
3. Tighten the *lock knob* (P), but allow enough slack to permit the *fence* (M) to slide.
4. Repeat above steps to install the remaining fence.

Featherboard

Loosen *lock handles* (N₁) and slide the rail of the *featherboard* (N) so the squared edges of the carriage bolt underneath the *lock handles* (N₁) engage in the *track* along the top of the *fence* (M).

Cutter Guard

Place *flat washers* (J) on two *lock knobs* (H). Insert lock knobs through the *slotted openings* on the *cutter guard* (C) and secure to the *threaded mounting holes* (B₃) on the *fence casting* (B).

Handwheel Handle

Thread *handle* (F) onto the *handwheel* (F₁) and tighten with the *12mm wrench* (V) provided.

Electrical Connections

⚠WARNING Electrical connections must be made by a qualified electrician in compliance with all relevant codes. This machine must be properly grounded to help prevent electrical shock and possible fatal injury.

General Information

A power plug is not provided with the Model JWS-25X. You may either connect the proper UL/CSA listed plug or “hardwire” the machine directly to your electrical panel provided there is a *disconnect* near the machine for the operator. Consult electrical drawings on page 43 for further clarification of wiring setup.

This machine must be grounded. Grounding provides a path of least resistance to help divert current away from the operator in case of electrical malfunction.

Make sure the voltage of your power supply matches the specifications on the motor plate of the machine.

Extension Cords

If an extension cord is necessary, make sure the cord rating is suitable for the amperage listed on the machine's motor plate. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating.

The chart in *Table 1* shows the correct size cord to use based on cord length and motor plate amp rating. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

Amps	Extension Cord Length *					
	25 feet	50 feet	75 feet	100 feet	150 feet	200 feet
< 5	16	16	16	14	12	12
5 to 8	16	16	14	12	10	NR
8 to 12	14	14	12	10	NR	NR
12 to 15	12	12	10	10	NR	NR
15 to 20	10	10	10	NR	NR	NR
21 to 30	10	NR	NR	NR	NR	NR

*based on limiting the line voltage drop to 5V at 150% of the rated amperes.

NR: Not Recommended.

Table 1

Adjustments

⚠WARNING When changing tools, making adjustments, or doing clean-up and maintenance, always turn the machine off and unplug the machine from its power source.

Fence Assembly Movement

The adjustment controls of the fence assembly are as follows (refer to Figure 2):

- A – Fence Assembly Lock Knob – to secure fence assembly to table
- B – Lock Knob – to secure the outfeed fence
- C – Outfeed Ram Adjust – fine forward/backward adjustment for outfeed fence
- D – Lock Knob – loosening permits side to side adjustment of infeed or outfeed fence
- E – Lock Knob – loosening permits vertical adjustment of guard (F)
- G – Lock Knob – loosening permits backward/forward adjustment of guard (F)

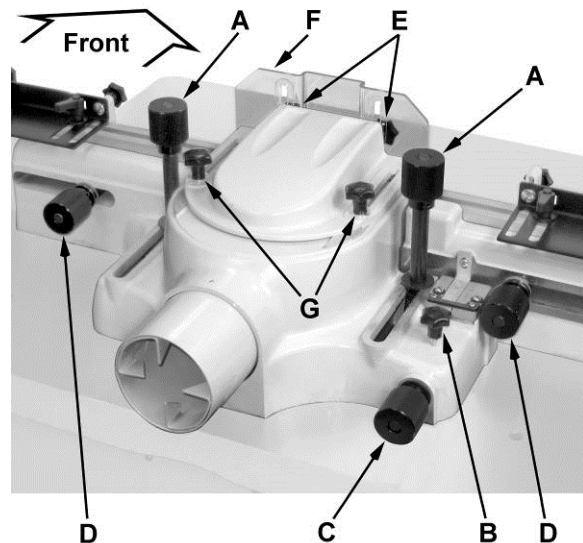


Figure 2

Handwheel

The handwheel controls the spindle height. To adjust (refer to Figure 3):

1. Loosen the *lock handle* (A).
2. Turn the *handwheel* (B) clockwise to lower the *spindle* (C) and counterclockwise to raise the spindle.

A *scale and indicator* (E) displays the spindle position and can be used for reference when making relative spindle height adjustments.

3. Tighten the *lock handle* (A).

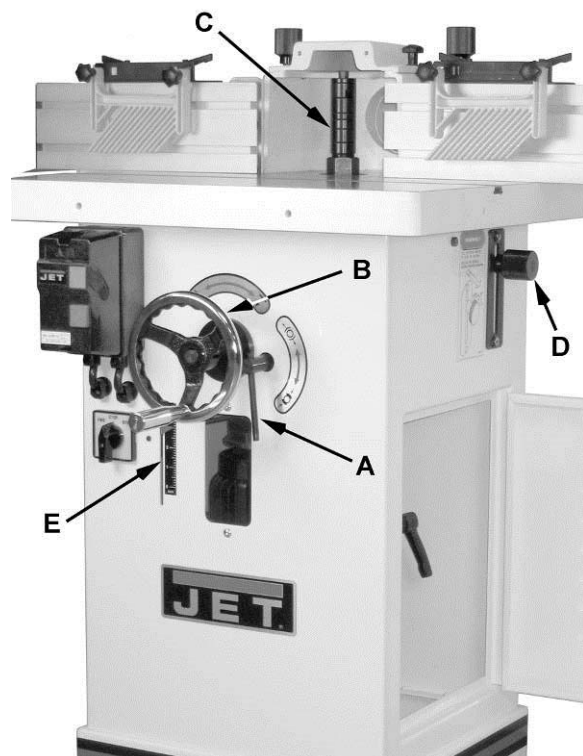


Figure 3

Changing Spindle Speed

Referring to Figure 4:

The JWS-25X Shaper is equipped with pulleys that allow you to change the spindle speed.

The *drive belt* (C) placed on the upper pulley position (A) provides a 7,500 RPM spindle speed. The belt placed on the lower pulley position (B) provides a 10,000 RPM spindle speed.

To change speed:

1. Disconnect the machine from the power source.
2. Open the door located on the right side of the cabinet.
3. Remove the belt tension by turning the *tension handle* (D) fully counterclockwise. This allows the *motor* (E) to swivel on its mounting hinge.
4. Move the *drive belt* (C) as desired to the A or B position (Figure 4 shows belt in A position).
5. Turn the *tension handle* (D) clockwise to re-secure the *motor* (E) and place tension on the drive belt.

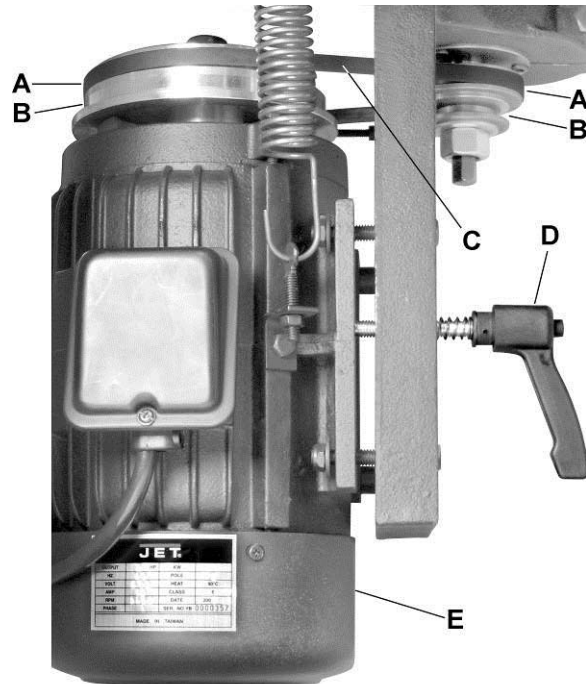


Figure 4

Belt Replacement

Replace the *drive belt* (C) as follows:

1. Disconnect the machine from the power source.
2. Open the door located on the right side of the cabinet.
3. Turn the *tension handle* (D) fully counterclockwise. This allows the *motor* (E) to swivel on its mounting hinge and removes sufficient belt tension to permit easy removal.
4. Remove the *drive belt* (C).
5. Replace belt.
6. Turn the *tension handle* (D) clockwise to re-secure the *motor* (E) and place tension on the drive belt.

Drive Belt Tension

The drive belt should have *sufficient tension to prevent slippage* when the machine is in operation. If the tension on the belt needs adjustment:

1. Disconnect the machine from the power source.
2. Open the door located on the right side of the cabinet.
3. Adjust *tension handle* (D) clockwise to increase belt tension or counterclockwise to decrease belt tension.

Coplanar Alignment

Follow steps 1–5 to determine if alignment is necessary. Steps 6–9 will guide you through the alignment if required.

Verifying that fences are coplanar

1. Remove the guard and spindle attachment.
2. Unlock knobs D_1 , D_2 and adjust the fence assembly (A) so it is positioned approximately at midpoint; then secure lock knobs D_1 , D_2 .
3. Place a straightedge (H) on the table against the infeed and outfeed fences (F_1 , F_2).
4. Unlock the ram dial lock knob (B).
5. With the ram adjust dial (C) adjust the position of the outfeed fence (G_2) while at the same time pressing against the straightedge (H) and attempting to bring both fences (G_1 , G_2) in-line with the straightedge.

Note: The outfeed fence casting (F_2) is adjustable while the infeed fence casting (F_1) is stationary and cannot be adjusted.

No adjustment is required if both fences (G_1 , G_2) are flush with the straightedge as shown in Figure 5. Proceed to the *Ram Dial Calibration* section on page 15.

Adjustment is required if the fences appear skewed (Figure 6). Continue with the steps below.

Coplanar Adjustment

6. Remove both fences (J_1 , J_2) and place the straightedge against the infeed and outfeed fence castings (Figure 7).

Read step 7 completely before attempting.

7. Maintain steady pressure of the straightedge against the fence castings (K, Fig. 7). At the same time, attempt to bring both fences into alignment as shown in Figure 8. This is accomplished by alternately making incremental adjustments to two setscrews (M, Fig. 9) on the front face of the casting (L, Fig. 9) with a 3mm hex wrench, followed by repositioning the casting with the ram adjust dial (Q, Fig. 9) as required.

Important: It is recommended that the adjustment setscrews (M, Fig. 9) be rotated in 1/16th increments or less at a time.

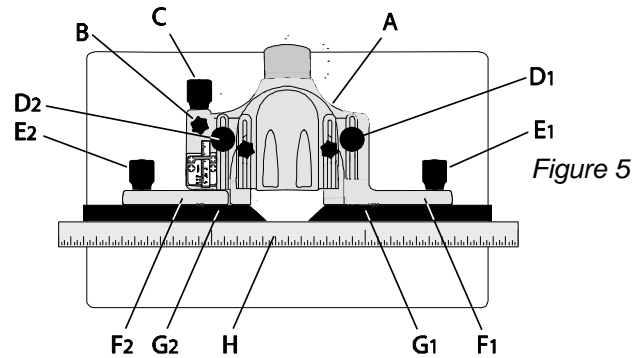


Figure 5

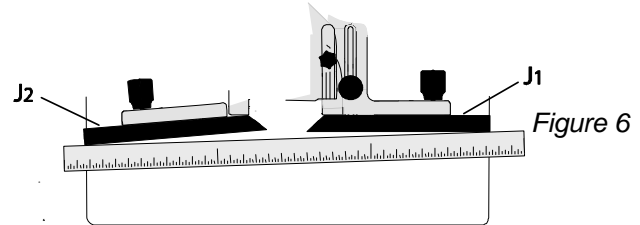


Figure 6

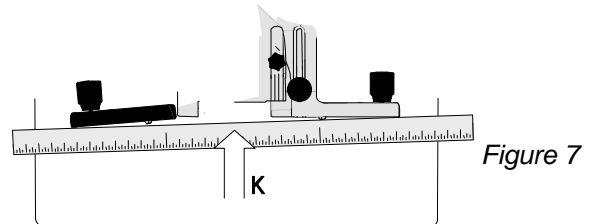


Figure 7

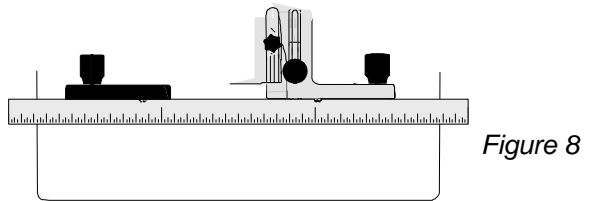


Figure 8

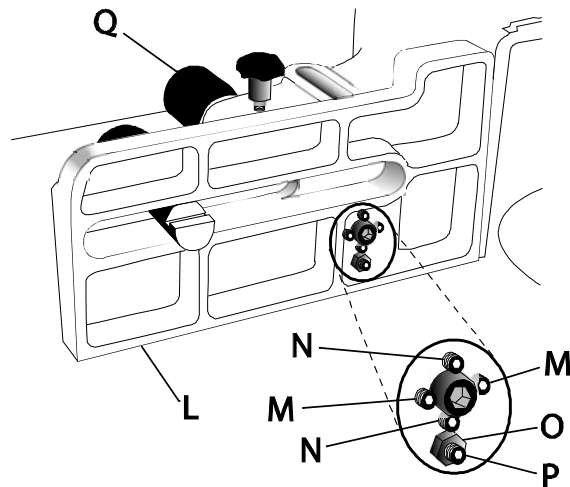


Figure 9

Fence perpendicular to table

The outfeed fence must also be perpendicular to the table. This can be checked as follows:

8. Place a square against the *casting* (L, Fig. 9) and table.
9. If adjustment is required, adjust *setscrews* (N, Fig. 9).

Alignment is complete when both fence castings are coplanar (in-line) as shown in Figure 8 and the outfeed fence is perpendicular to the table.

10. Replace both fences and secure.

Ram Dial Calibration

The cutter guard should be removed or raised to provide clearance.

Referring to Figure 10:

1. Loosen the *ram dial lock knob* (B).
2. Adjust the *outfeed ram dial* (A) fully clockwise.
3. With a *straightedge* (F) pressed against both *infeed* and *outfeed fences* (D, E, G) as reference, both fences should be in-line as shown and the *scale* (C) should indicate zero.

If step 3 can be successfully achieved, no calibration is required.

If the fences cannot be brought into alignment (L), adjust as follows:

4. Remove *fences* (D, E).
5. Using a 10mm wrench, loosen the *lock nut* (O, Fig. 9) that secures the *zero stop set-screw* (P, Fig. 9) on the *casting* (L, Fig. 9).
6. Loosen or tighten the *setscrew* (P, Fig. 9), as required, to bring fence castings into alignment as shown in M.

Note: *Ram Dial Adjust* (A) is fully clockwise (from step 2).

7. Tighten *lock nut* (O, Fig. 9).

If the *scale* (C) does not indicate zero:

8. Loosen two *screws* (J) that secure the *indicator* (H) and adjust until the zero on the *indicator* (H) is lined up with the zero on the *scale* (K).
9. Tighten screws (J).

Repeat steps 2 and 3 to verify that calibration is successful.

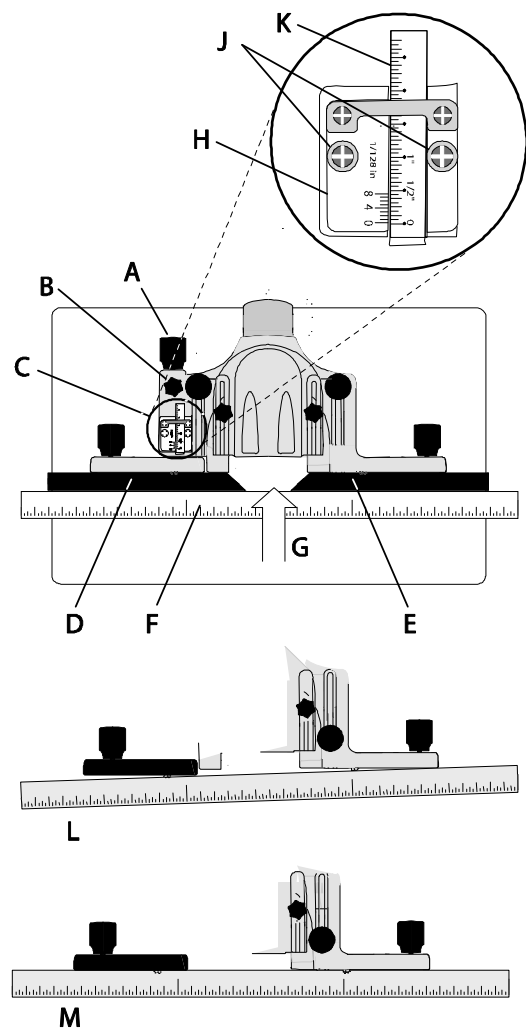


Figure 10

Spindle Assembly Installation

Referring to Figure 11:

The *spindle assembly* (B) is mounted to the *arbor* (H) and secured with a *draw bar* (N) and *spindle nut* (D). Use the following procedure to install the spindle assembly.

⚠WARNING When changing tools, making adjustments, or doing clean-up and maintenance, always turn the machine off and unplug the machine from its power source.

1. Raise the *arbor* (H) all the way using the handwheel located on the front of the cabinet. Loosen two *lock knobs* (E) and slide *fence* (J) to rear. Remove *cutter guard* (K). Loosen two *lock knobs* (F) and slide *guard cover* (G) back.

Locking the Arbor

2. Locate the *spindle lock* directly above the cabinet door. Pull out and rotate 90° right or left, resetting the knob into the indent.

Turn the *arbor* (H) by hand until it locks, then verify that it will not rotate.

Installing the Spindle Assembly

3. Thread the *spindle nut* (D) onto the threaded end of the *spindle* (C) in the direction indicated by arrows (A₁, A₂). Tighten securely by hand.
4. Thread the *spindle assembly* (B) and *nut* (D) onto the *arbor* (H) and hand-tighten only.
5. Insert the *draw bar* (N) through the opening in the *shaft* (M) just below the *drive belt* (L). Turn clockwise, fastening and securing it to the *spindle*. Tighten the *draw bar* (N) with the 14mm wrench provided.
6. Tighten the *nut* (D) with the *spindle wrench* provided.

Shaper Cutter installation is described on the following page. **Note that at this time the arbor is still locked.**

Spindle Assembly Removal

Referring to Figure 11:

The arbor must be locked as described above in *Locking the Arbor*.

1. Remove the *draw bar* (N).
2. Loosen the *spindle nut* (D), then, using the *spindle wrench* provided, continue to turn until the spindle breaks free of the arbor.

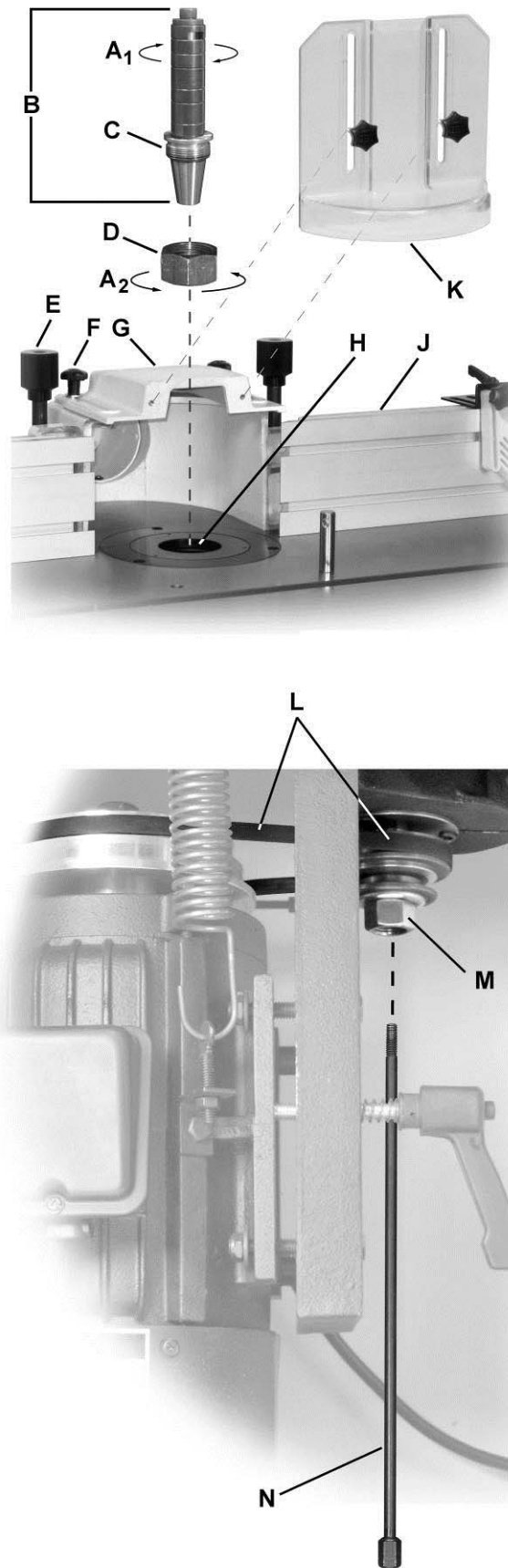


Figure 11

Shaper Cutter Installation

Note: *Spindle* installation is described in the previous section.

⚠WARNING When changing tools, making adjustments, or doing clean-up and maintenance, always turn the machine off and unplug the machine from its power source.

Locking the Spindle

1. Locate the *spindle lock* directly above the cabinet door. Pull out and rotate 90° right or left, resetting the knob into the indent.

Attempt to turn the *spindle assembly* (B, Fig. 11) by hand to verify that it is locked and will not rotate.

Installing the Shaper Cutter

Referring to Figure 12:

2. Using an 8mm hex wrench (provided), remove the *socket head cap screw* (F).
3. Remove the *washer* (E), *keyed collar* (C) and all or as many *collars* (B) as necessary.
4. Place the *shaper cutter* (A) (not included) onto the spindle, oriented in the proper direction.
5. Place the *collars* (B) and *keyed collar* (C) onto the spindle.

Note: *Collars* come in several widths and the stacked selection (B) must be such that the top of the *keyed collar* (C) sits slightly above the top of the *spindle* (D). This will ensure sufficient pressure to properly secure the *shaper cutter* (A) when installation is complete.

6. Replace the *washer* (E) and *socket head cap screw* (F). Tighten screw with the 8mm hex wrench provided.

Unlocking the Spindle

7. Pull out the *spindle lock* located above the door on the right side of the cabinet. Rotate 90° right or left, resetting the knob into the indent.

Using gloves to prevent injury from the shaper cutter, turn the *spindle assembly* by hand to verify that it turns freely.

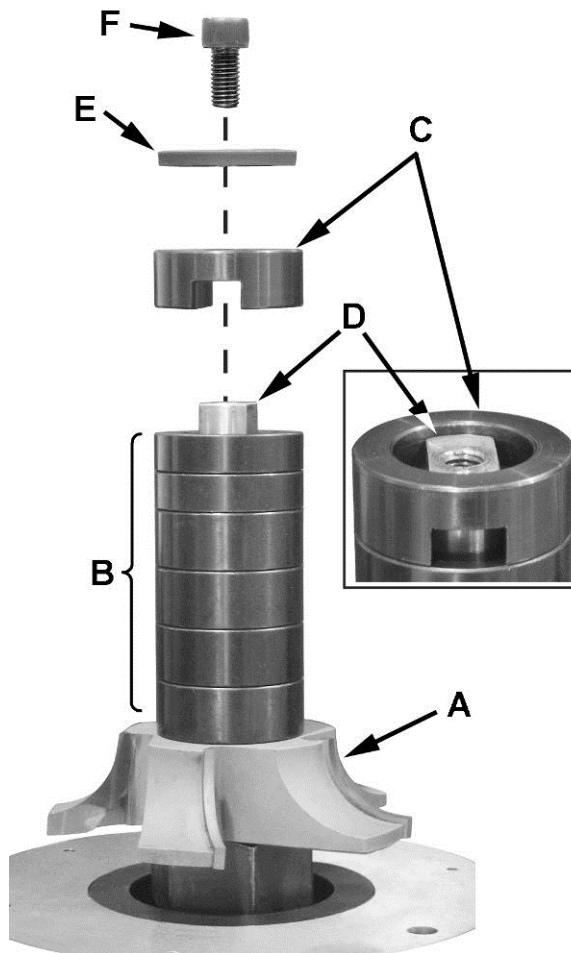


Figure 12

Featherboard Hold-downs

Referring to Figure 13:

The JWS-25X Shaper comes equipped with two *featherboard hold-downs* (A, B) mounted on the infeed and outfeed fences.

1. Loosen *lock handles* (C) and *lock knobs* (D).
2. Slide the hold-down guides to the desired position along the fence and tighten the *lock handles* (C).
3. Place the *workpiece* (E) on the table against the fence and under the *hold-down guide* (A).
4. Adjust the *featherboard stay* to put moderate pressure on the workpiece, then tighten the *lock knob* (D).

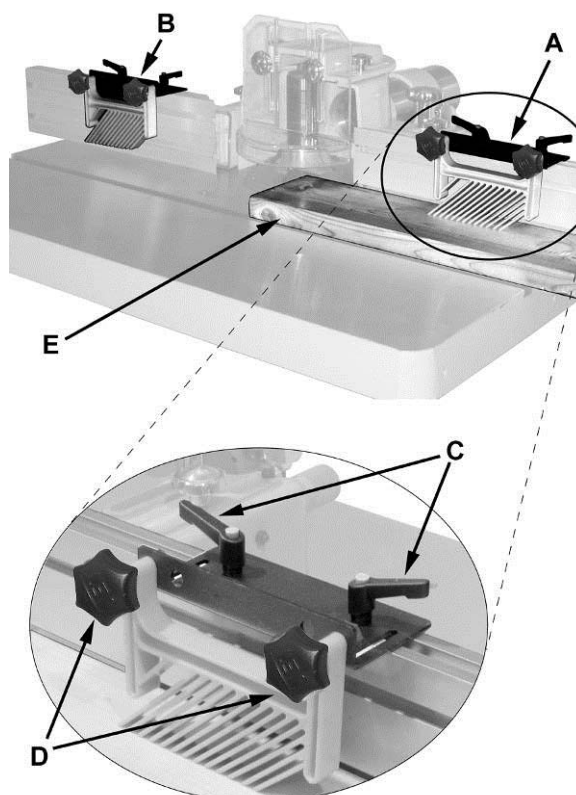


Figure 13

Precision Miter Gauge

Setting the miter gauge angle

To operate (refer to Figure 14):

1. Slide the miter gauge into one of the slots on the table top.

To adjust the *body* (A) of the miter gauge to the desired angle:

2. Loosen *lock handle* (B).
3. Turn the *body* (A) of the miter gauge to the desired angle as indicated on the *scale* (F).
4. Tighten the *lock handle* (B).

Calibrating the miter gauge

1. Place the miter gauge in one of the slots on the shaper table top.
2. Set the miter gauge to the 90° setting on the scale by loosening the *lock handle* (B), then turning the *body* (A) until the *indicator* (E) points to 90° on the *scale* (F).
3. Measure the accuracy of the gauge against the slot with a combination square.

If adjustment is necessary:

4. Adjust the *body* (B) until it is perfectly square (90°) to the *miter slot* on the table.

5. Tighten the *lock handle* (B).

Verify that the *scale indicator* (E) points to 90°. If adjustment is necessary:

6. Using a 2.5mm hex wrench (not included), loosen the *set screw* that secures the *scale indicator* (E) to the *miter bar* (C) and manually adjust the *indicator* until it points to 0°.
7. Tighten the *set screw*.

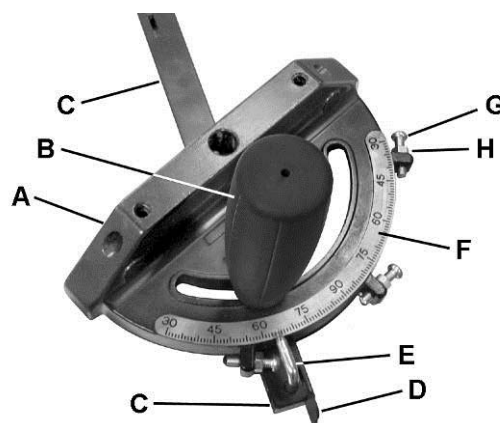


Figure 14

Preset settings

The precision miter gauge has preset settings at the 45° left, 90° and 45° right positions. To select one of these settings:

1. Release the *lock handle* (B, Fig. 14).
2. Flip the *plate stop* (D) up so it rests on the *miter bar* (C).
3. Adjust the *body* (A) until the *stop screw* (G) for the selected angle presses against the *plate stop* (D).
4. Tighten the *lock handle* (B).

Note: If any of the preset settings are not accurately indicated on the scale:

1. Verify first that the miter gauge is properly calibrated (see *Calibrating the miter gauge* above).

At each preset setting that *does not* correctly indicate the setting:

2. Loosen the *lock nut* (H, Fig. 14).
3. Adjust the *set screw* (G) until the correct setting is indicated.
4. Tighten the *lock nut* (H).

Operating Controls

Start/Stop

Referring to Figure 15:

The JWS-25X shaper is equipped with a pushbutton control system and reversing switch. The green *start* (A) and red *stop* (B) pushbuttons are mounted in a control enclosure on the front of the machine.

To start the machine

1. Unlock the spindle (see *Unlocking the Spindle* on page 17).

CAUTION Before starting the machine, make sure that the spindle is unlocked. Failure to comply can cause damage to the machine.

2. Set the *forward/reverse switch* (C) as required.

CAUTION Do not operate the forward/reverse switch while the motor is running. Wait until the spindle comes to a complete stop.

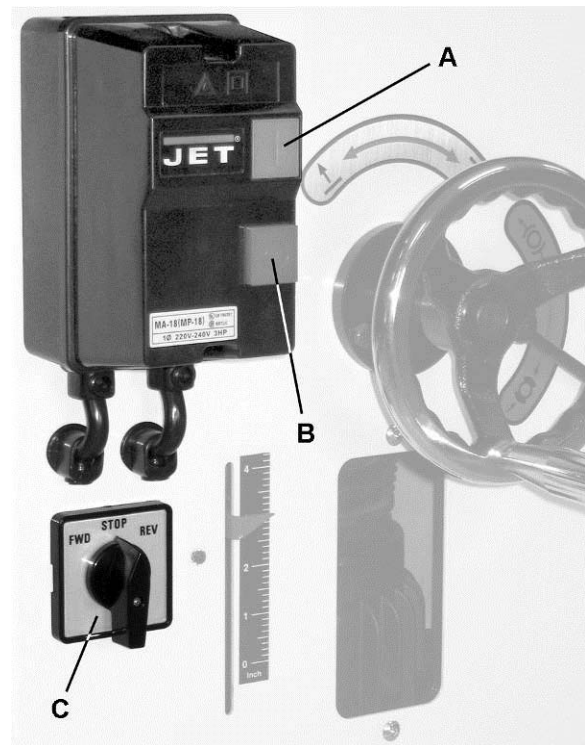


Figure 15

3. Press the green *start button* (A).

To stop the machine

4. Press the red *stop button* (B).

Note: The red stop button also acts as an overload reset button. If overload should trip, reset by depressing the red stop button.

Operations

Overview

Before applying power to the machine, Check the motor and switch wiring diagrams for proper voltage connections. Check that all mounting screws and bolts are tight.

Turn on the motor momentarily to check for proper rotation. The spindle should rotate counterclockwise when looking down on the spindle. Correct as required.

Run the machine for a short period of time to ensure that the moving parts are working properly with no excessive vibration. If a problem develops, correct it before turning the shaper over for general use.

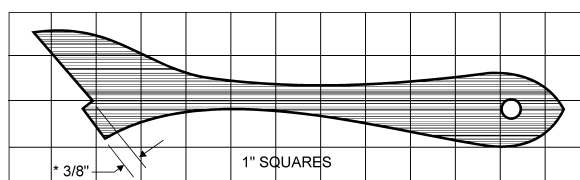
Safety Devices

Safety devices such as guards, fixtures, templates hold-downs, push sticks (Figure 16), feather boards and power feeders should be used whenever possible. Figure 16 shows a push stick which can be easily made from scrap wood.

Note: For the sake of clarity, the shaper guard has been omitted from most illustrations. All shaper operations must be done with the proper guard in place and any other device which insures the safety of the operator.

Grain Direction Considerations

Plan to shape the workpiece in the same direction as the grain when possible. Some open grain woods (such as redwood, fir and oak) will leave a rough, or slightly splintered edge when cut against the grain.



* This measurement may vary depending upon thickness of workpiece.

Figure 16

CAUTION

Deep cuts require excessive horsepower and pushing force to control the cut.

Deep cuts can also cause the wood to splinter or split and may lead to lost control or personal injury. Preband shaper the stock whenever possible to 1/16 inch of finished size. When an edge finish is unsatisfactory, take two or more cuts with the final cut no more than 1/16 inch deep.

In the case of shaping across the grain, the trailing board edge will often splinter. To correct this, the best solution is to make the board 1/4 inch oversize in width, shape the board, and simply trim off the excess.

Cutter Rotation

Counterclockwise Setup – With the cutter installed as shown in Figure 17, feed the workpiece from *right to left*.

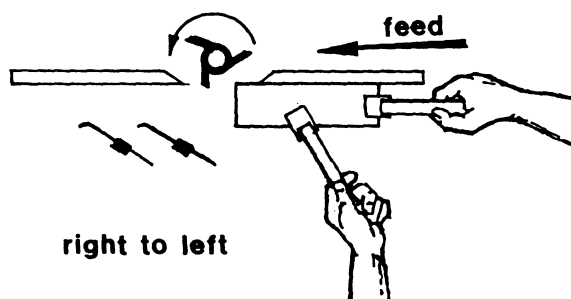


Figure 17

Clockwise Setup – With the cutter installed as shown in Figure 18, feed the workpiece from *left to right*.

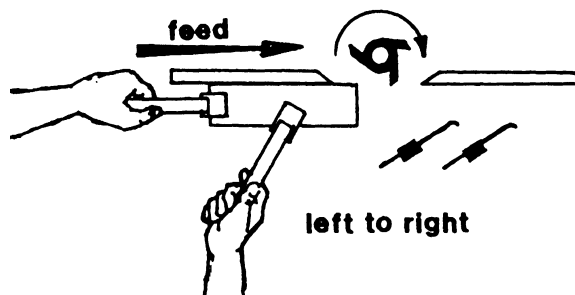


Figure 18

Using the Fence

Using the fence is the safest and most satisfactory method of shaping, and should always be used when the work permits. Almost all straight work can be used with the fence.

For average work, where a portion of the original edge of the work is not to be touched by the cutter, both the front and rear fences are set in a straight line as shown in Figure 19.

When the shaping operation removes the entire edge of the work, e.g. in jointing or making a full bead, the shaped edge will not be supported by the outfeed fence when both fences are in line, Figure 20. In this case, the stock should be advanced to the position shown in Figure 18 and stopped. Turn off the machine and move the outfeed fence forward to contact the workpiece, Figure 21. Remove the workpiece, start the motor, and then continue the operation.

⚠ WARNING Always remove workpiece before starting the machine! This will prevent kickback and potential serious injury.

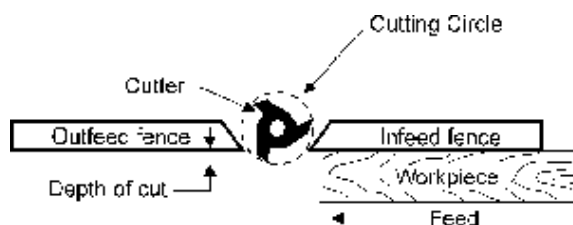


Figure 19

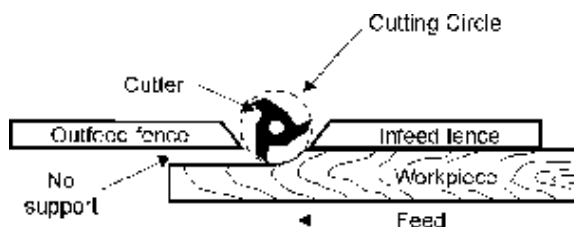


Figure 20

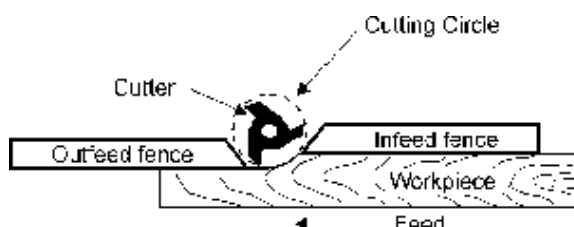


Figure 21

"Z" Dimension

Before making a template (or using the edge of the workpiece) for shaper cutting, the "Z" dimension must be established in order to determine the shape and size of the finished stock. The "Z" dimension is the difference between the innermost part of the cutter edge and the outside diameter of the ball bearing follower (collar). See Figure 22.

Note: The "Z" dimension can be either positive or negative.

The "Z" dimension is positive if the cutter is larger than the collar bearing.

The "Z" dimension is negative if the cutter is smaller than the collar bearing.

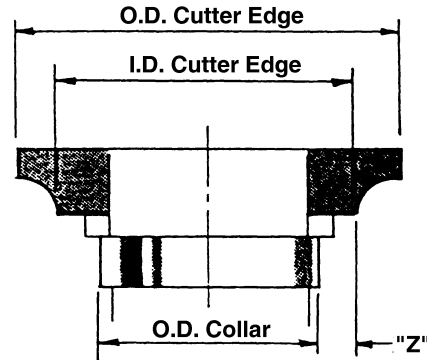


Figure 22

Depth of Cut

The depth of cut is the distance from the outside circumference edge of the collar (which the work rides against) to the outside edge of the cutter. The depth of cut is determined by the position of the fence relative to the cutterhead and/or by the use of shaper collars (see Figure 23).

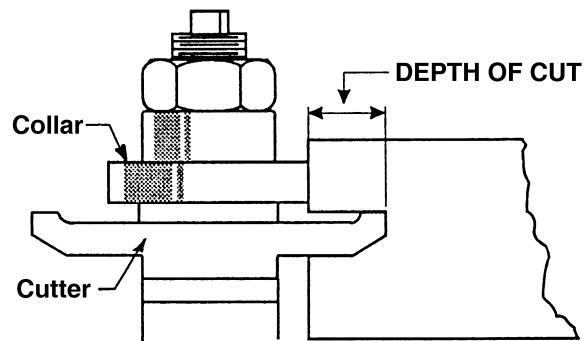


Figure 23

Straight Edge Shaping

Straight edge shaping is always performed with the workpiece against the fence. Use only push sticks and hold downs to keep the workpiece on position.

⚠ WARNING Do not use a miter gauge to feed material along the fence face. The workpiece can bind and cause kickback. Failure to comply may cause serious injury!

To set up:

1. Disconnect or unplug the machine from its power source.
2. Check to see that the fence faces are parallel, properly in line or offset if necessary, and securely tightened.
3. Rotate the cutters and inspect for clearance.
4. Lock the spindle.
5. Install all necessary guards.
6. Reconnect power to the machine.
7. Take a trial cut on a piece of scrap the same thickness as workpiece.

Note: Only a short cut is necessary to determine if the profile, depth, and height of cut is correct.

Edge Shaping

When edge shaping, never attempt to hand guide any stock less than 12 inches long, or narrower than 3 inches without the use of a special guide as shown in Figure 24.

CAUTION When edge shaping, the workpiece must be at least 12 inches long unless a special guide is used.

1. Use the hold-ins and hold-downs as shown in Figure 24 to firmly hold the workpiece down and against the fence. If workpiece is too wide for the hold-ins to be used, clamp a scrap board to the table to substitute for the hold-ins.
2. Check the rotation of the cutter. Be sure to feed workpiece against rotation of the cutter.
3. Feed the workpiece slowly and steadily with firm, even pressure to make a smooth cut.

Important: The rate of feed depends on depth of cut and experience of operator.

End Shaping

When end shaping narrow stock, it is important that at least one half of the workpiece end be in contact with either the in-feed or out-feed fence. Use a guide similar to the one shown in Figure 25 which tightly clamps the scrap piece to the workpiece and provides the necessary width.

WARNING End shaping a narrow workpiece without a special guide could result in the workpiece rocking into the cutterhead, causing personal injury.

Shaping All Sides

Because cross grain shaping is more likely to create chipping out and splinters on some woods, it is good practice to first shape the cross-grain sides. Any chipping that does occur is taken care of by the with-grain cuts, as shown in Figure 26.

On-Edge Shaping

If the shaper fence does not firmly support wide stock, use the T-slots in the fence to attach a special rigid high fence as shown in Figure 27.

Note: Be sure the screw holes are countersunk in the special fence to avoid interference with the workpiece.

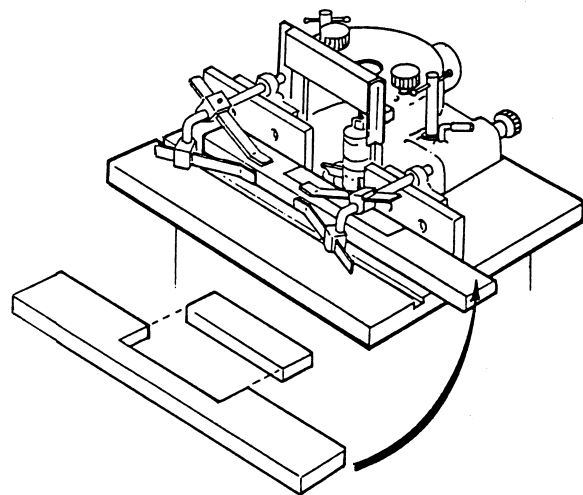


Figure 24

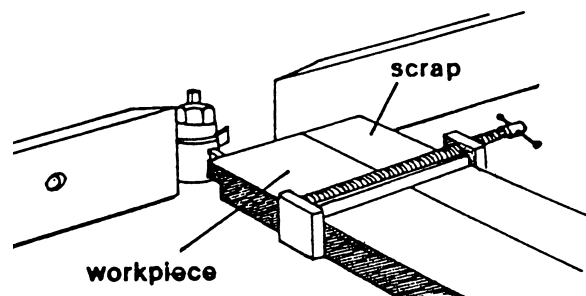


Figure 25

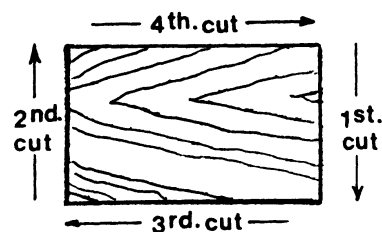


Figure 26

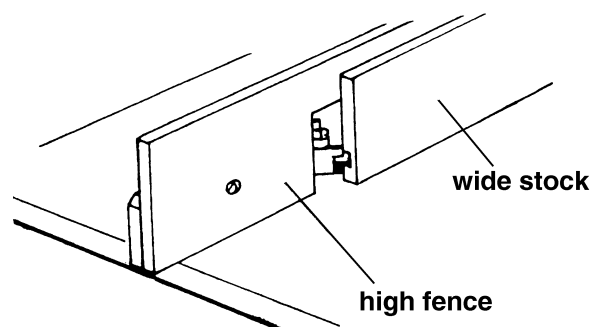


Figure 27

Straight Line Bevel Shaping

To shape a beveled straight edge, use a bevel-edge shaping jig in combination with the regular fence as shown in Figure 28.

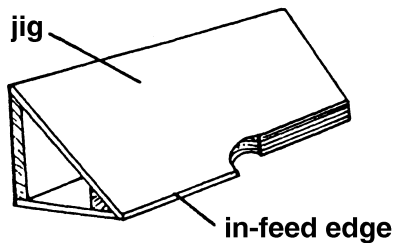


Figure 28

To perform a bevel-edge cut, the in-feed edge of the jig is placed against the infeed fence and clamped to the table as shown in Figure 29. The outfeed fence is moved forward as necessary to compensate for the cut.

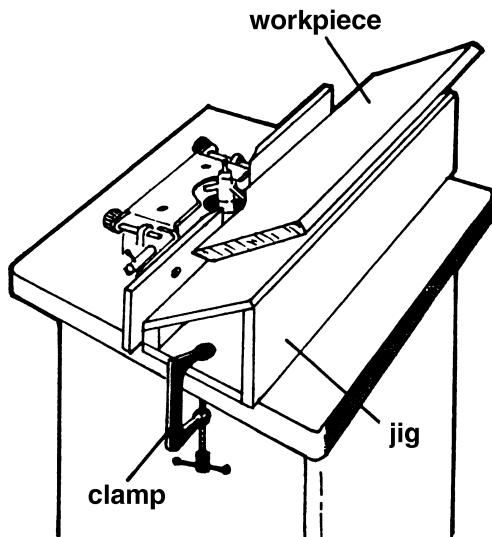


Figure 29

CAUTION Never attempt to bevel cut free hand. Always use a bevel-edge fixture.

Contour Edge Shaping With Collar Bearing

To shape contoured edges, the operator must first remove the fence assembly.

In order to control the workpiece and limit the depth-of-cut, the operator must use an anti-friction collar with the cutter(s) as shown in Figure 30.

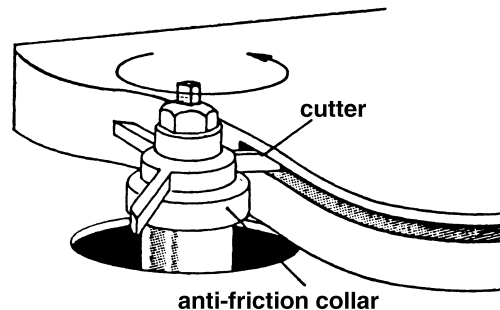


Figure 30

The collar may be positioned above or below the cutter(s), and its function is to ride against the workpiece or template. At the same time, the collar will establish the depth-of-cut as shown in Figure 31. Whenever possible, always use the ring guard or safety collar.

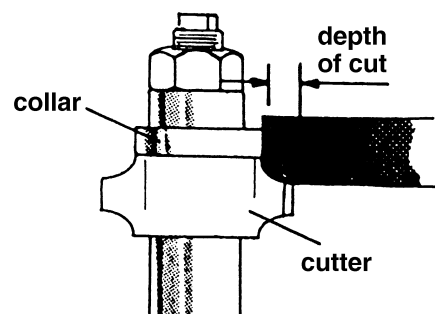


Figure 31

Note: Since the collar requires at least 1/8" of surface edge to ride against, the entire edge cannot be shaped as shown in Figure 32. The added use of a pattern, however, permits the shaping of the entire contour edge.

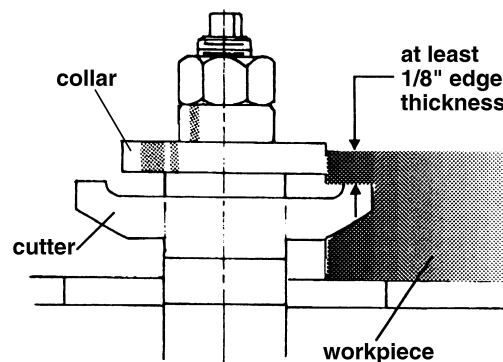


Figure 32

If the workpiece is to be shaped all around the perimeter, hold it firmly and push the work straight into the cutter until the depth of cut is established by the collar as shown in Figure 33. Continue to feed the work so that the point of contact on the edge is always 90 degrees to the collar (or directly in line with the cutter edge) and held firmly against it.

When the workpiece is not contoured all around, start the cut as shown in Figure 39. With this operation, the workpiece is positioned against the starter pin and the end swung into place to start the cut. When the cut has begun and the workpiece firmly against the collar, swing the stock away from the pin and proceed with cut.

⚠ WARNING Freehand shaping is extremely dangerous. The operator must be aware at all times of the proximity of his hands to the cutter. Hands must never come closer than 12 inches to the cutter without the proper guard or similar safety device over the cutterhead.

Shaping With Collars

When shaping with collars and starting pin, always adhere to the following rules for good work and safe operation:

The collar must have sufficient bearing surface, as shown in Figure 34. Also, the stock must be fairly heavy in proportion to the cut being made. Under no circumstances should a short, light workpiece be shaped against the collars, as in Figure 35.

Note: The edge of the work to be shaped must be smooth. Any irregularity on the surface which rides against the collar will be duplicated on the molded surface.

Collars must be smooth and free from pitch and other substances.

Position of Collars

Collars may be used above, below or between cutterheads.

1. When the collar is used below the cutter, as shown in Figure 36, the progress of the cut can be seen throughout the operation. However, any accidental lifting of the work will gouge the wood and ruin the workpiece.
2. When the collar is used above the cutter, as shown in Figure 37, the cut cannot be seen. But this method offers an advantage in that the cut is not affected by slight variations in the thickness of the stock. Also, accidental lifting of the workpiece will not gouge the workpiece; simply repeat the operation to correct the mistake.

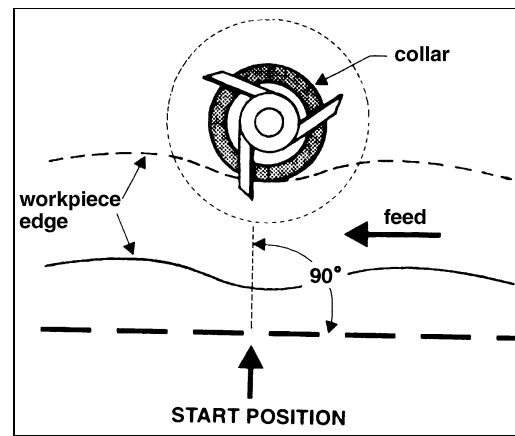
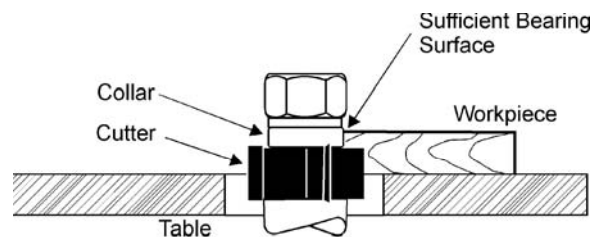
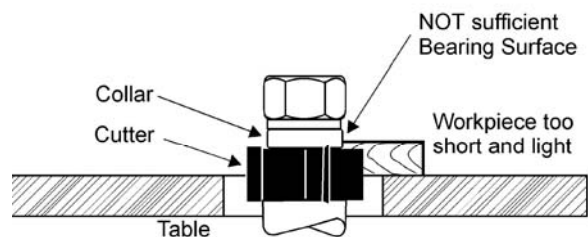


Figure 33



RIGHT

Figure 34



WRONG

Figure 35

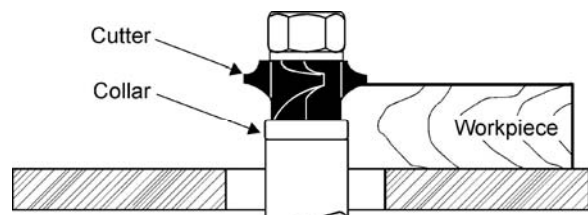


Figure 36

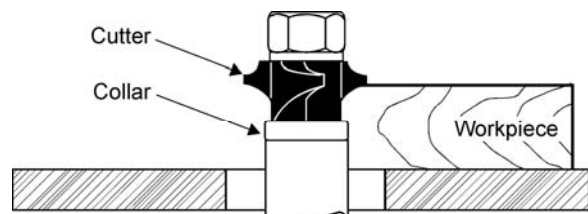


Figure 37

- Using the collar between the two cutters has the advantages and disadvantages of the first two procedures, and is frequently used where both edges of the work are to be molded, Figure 38.

Note: It is advisable to place the cutter as low as possible on the spindle to reduce spindle deflection and ensure the best possible finish. Also make sure that the contacting surfaces of the cutter are smooth, clean and without dents.

Starting Pin

⚠WARNING Use of the starting pin should only be attempted by advanced users. If you have never used this method, it is recommended you get training from a qualified person. Failure to comply may result in serious injury.

The starting pin is used to support the work when starting the cut.

- The work should be placed in the *position 1*, (Figure 39), using the starting pin as a support
- Swing the work into the cutter as shown in the *position 2*. The work is now supported by the starting pin and the collar.
- After the cut has been started, the work is swung free of the starting pin and only rides against the collar (Figure 40). Always feed against the cutterhead rotation.

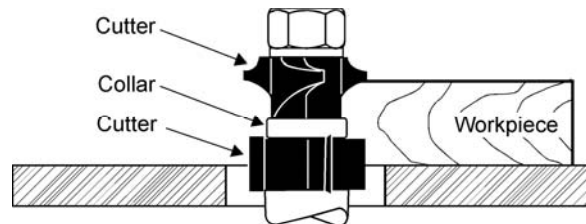


Figure 38

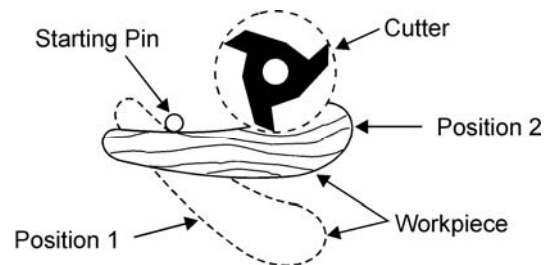


Figure 39

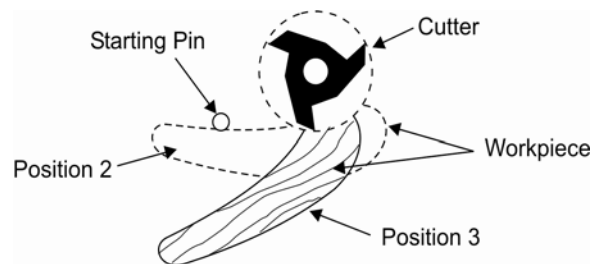


Figure 40

Arcs and Circles

Large circular and arc-shaped stock can be shaped as described in *Contour Edge Shaping* on page 24. However, smaller sized stock requires the use of special shaping jigs similar to those shown in Figure 41.

With the entire fence assembly removed, carefully position the jig for desired depth-of-cut and securely clamp to the table.

It is important with the arc and circle shapes that the workpiece, prior to being shaped, must be roughly cut to the desired size and curve of the finished piece. Make sure that the jig curve matches exactly the workpiece curve. At all times keep the workpiece firmly in contact with the jig while the cutter is cutting the stock.

CAUTION Never perform this type operation without a ring guard, safety collar or similar safety device over the cutterhead.

Enclosed Edge Shaping

An enclosed workpiece edge is shaped in the same manner as an outside contoured edge except that a starting pin is not required as shown in Figure 42.

Note: If the whole edge is to be shaped, the operator must use a pattern.

Position the workpiece on the table before starting the motor. The operator must do the entire shaping cut by pushing (feeding) the workpiece into the cutter(s).

WARNING Enclosed edge shaping is extremely dangerous. The operator must be aware at all times of the direction of feed. Never perform this type operation without a ring guard, safety collar or similar safety device over the cutterhead.

With a firm grip, ease the edge into the cutter(s) until stopped by the collar as shown in Figure 42.

Continue to push straight in while feeding and turning the workpiece at the same time until the cut is finished. Turn off the motor and do not remove workpiece until the cutters have completely stopped.

CAUTION Never perform enclosed edge shaping if there is less than two inches of workpiece material all around the opening. Never perform enclosed edge shaping if the workpiece opening is smaller, in any direction, than twice the diameter of the cutter(s).

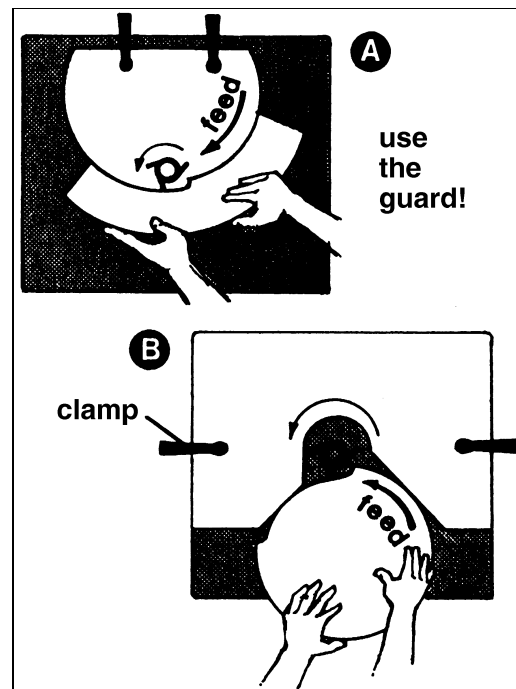


Figure 41

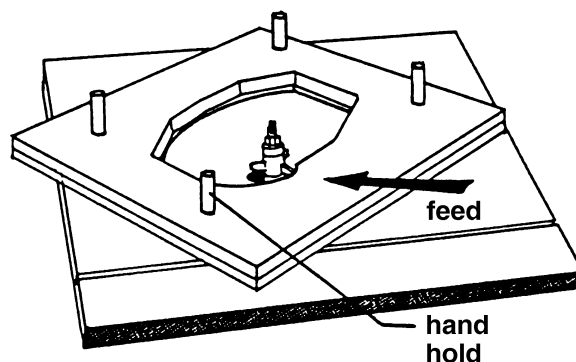


Figure 42

Templates

The template must be thick enough to provide a solid bearing edge against a collar. When constructing a template similar to the one shown in Figure 43, keep in mind that it serves only as a guide for the cutter.

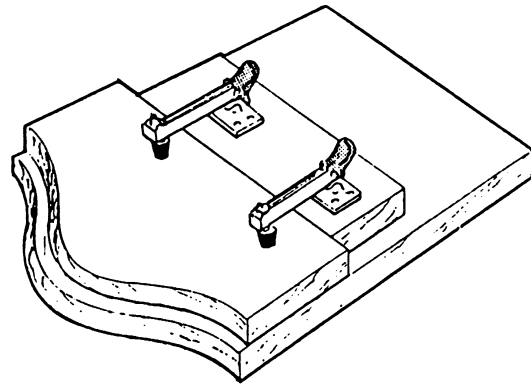


Figure 43

If the workpiece requires all-around shaping, the template can be constructed from several sections pieced together as shown in Figure 44.

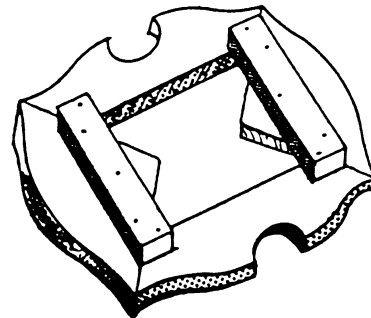


Figure 44

Securing the Template

There are various methods used to secure the template to the workpiece. The experienced operator will choose the most appropriate according to the shape, size, and type construction of the template. For example, if the workpiece is large enough to extend beyond the front of the table and still leave room for the desired cut, it can be securely held to the template with "C" clamps as shown in Figure 45.

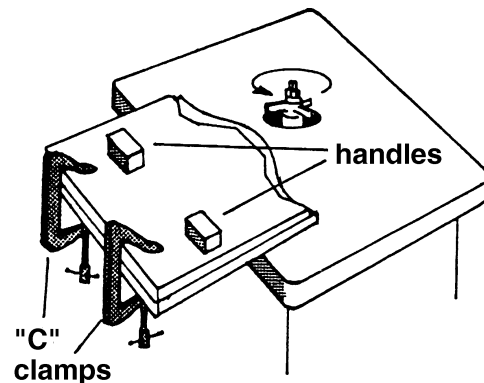


Figure 45

In many situations the workpiece is positioned against the template using dowels as anchor points and handles (wood blocks) to assist the operator in guiding the work-piece through the cut as shown in Figure 46.

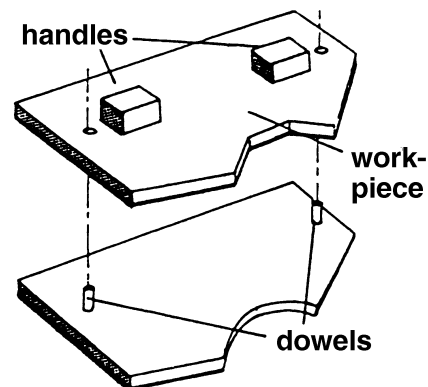


Figure 46

Special Cuts

The illustrations in this section show the profile, or section, views made by the cutter(s). The most efficient cutters are carbide tipped to ensure clean and long-term cutting. Small cutters may be solid carbide, and some use inserts. Since there are such a wide variety of choices, the operator is limited only by his experience and imagination.

Stacked Cutters

A variety of interesting and timesaving cuts can be made in a single setup by stacking the cutters. When the operator stacks the cutters, extra care should be taken to see that all parts are clean, free of nicks and flaws, and perfectly balanced in the stacked position.

Sash and Door Shaping

Shaping a door requires two operations.

Figure 47 shows the sash cut for the first operation.

Figure 48 shows the stock flipped over and the sash cutter used with a 1/4 inch groove cutter to complete the cut.

Figure 49 shows the first shaping cut with the sash cutter for the matching door stile sash.

Figure 50 shows the same cut with the stock flipped over.

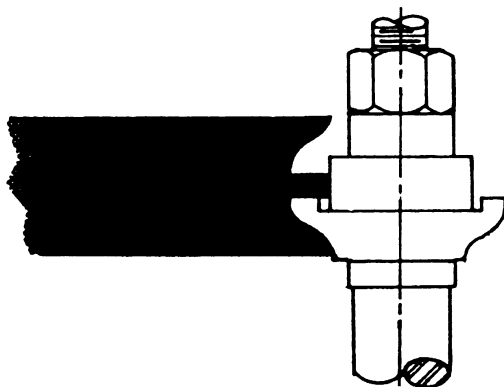


Figure 50

Figure 51 shows the first shaping cut for a window sash stile utilizing a sash cutter, collar, and a 1/2 inch groove cutter.

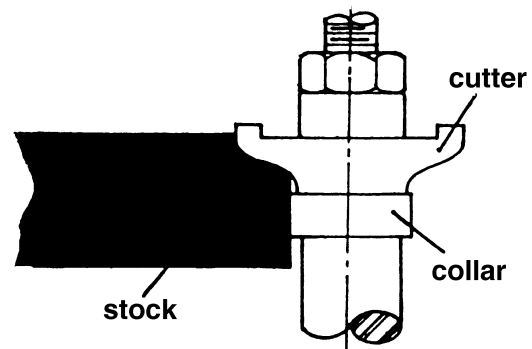


Figure 47

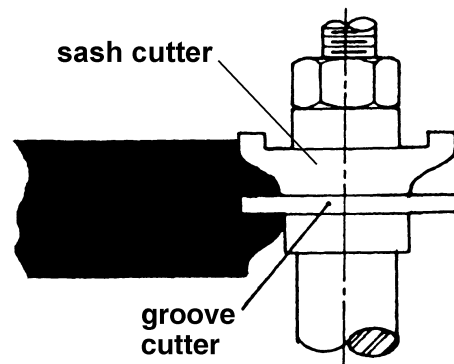


Figure 48

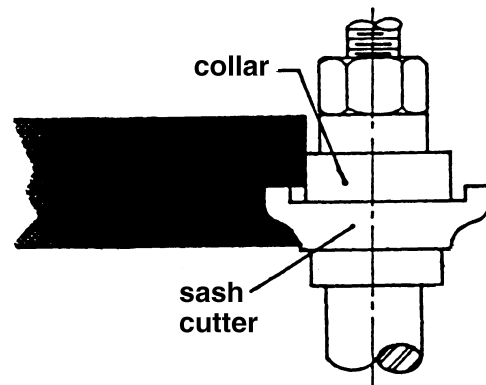


Figure 49

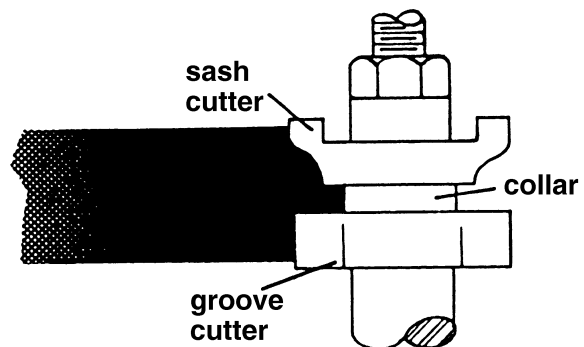


Figure 51

Figure 52 shows BOTH cuts required for a window sash rail end. The first operation at top is a rabbet cut made with a groove cutter. The second operation is performed with a stub spindle and buttonhead screw.

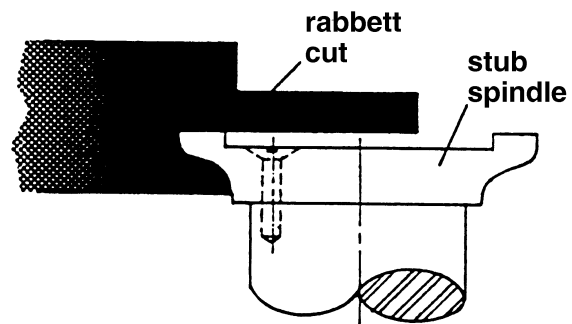


Figure 52

Butt Joints

All butt-type joints require both work-pieces to be perfectly square and straight-edged.

Glue Butt Joint

To perform a glue butt joint, both fences are kept inline and adjusted for a depth of cut (Figure 53).

The cuts on both work-pieces are part-edge cuts which do not reduce the stock width during the cutting procedure. When shaping the two workpieces, one is fed top-side up; the other is fed bottom-side up.

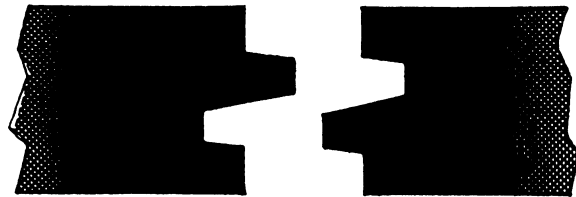


Figure 53

Tongued Joint

Similar to the glue joint, both fences are kept in-line for the tongued joint and adjusted for a 1/4 inch depth of-cut with no reduction in stock width. With this joint, however, both work-pieces are fed with the same side up as shown in Figure 54.

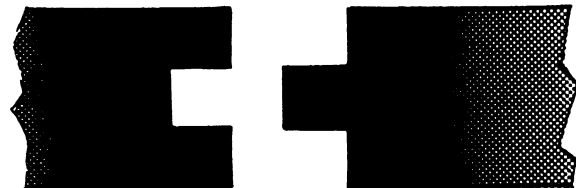


Figure 54

Drop Leaf Joint

When shaping a drop-leaf joint as shown in Figure 55, the leaf workpiece is shaped with a Drop-Leaf Bead cutter; the table workpiece is shaped with a Drop-Leaf Cove cutter.

With this type joint, the whole edge of both workpieces is shaped, same-side up, and allowance made for a 1/16 inch reduction in width. Adjust the in-feed fence to reduce the workpiece width by 1/16 inch, and adjust the out-feed fence to compensate for stock removed.



Figure 55

Taper Cuts

Taper cuts can be made by offsetting the fences for the amount of taper desired, or with a layout line on the stock which can be paralleled to the infeed fence as shown in Figure 56.

Start the cut by holding the stock against the infeed fence and swinging it into contact with the outfeed fence just past the cutterhead. As the cut is started, transfer pressure to hold the workpiece against the outfeed fence, and continue feeding the workpiece through. After the first cut, the fences will have to be readjusted in order for the second cut (parallel cut) and the final depth-of-cut to remain true with the taper.

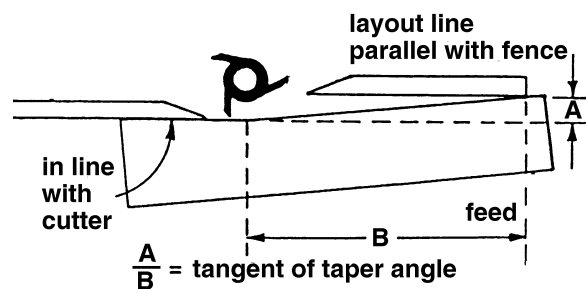


Figure 56

CAUTION Do not use the standard fence for short work (12 inches or less in length on the side to be cut). Instead, use a miter gauge or special fixture to avoid losing control of the workpiece.

Tenoning

The tenoning fixture illustrated in Figure 57 shows a miter gauge equipped with a hold-down for shaping the ends of narrow work-pieces.

The miter gauge can also be adapted to cut square and centered tenons at the ends of legs for tables, chairs, etc. Secure the leg to jig and position for cut as shown in Figure 58.

Make all first cuts with the same jig setting and spindle height. When the first series of cuts have been made, reposition leg on the jig for each succeeding cut.

Note: If the leg is tapered, use a wedge to place the side facing the cutter into a 90 degree vertical position as shown in Figure 59.

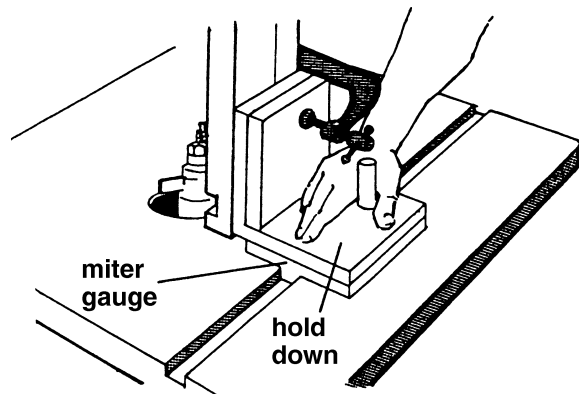


Figure 57

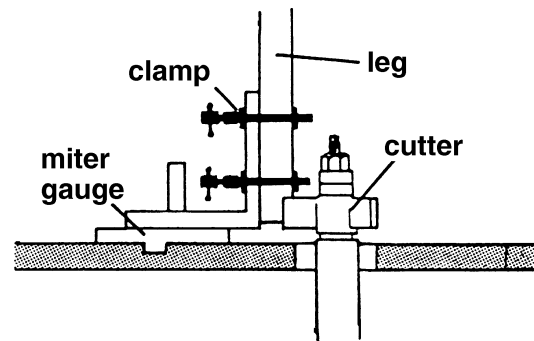


Figure 58

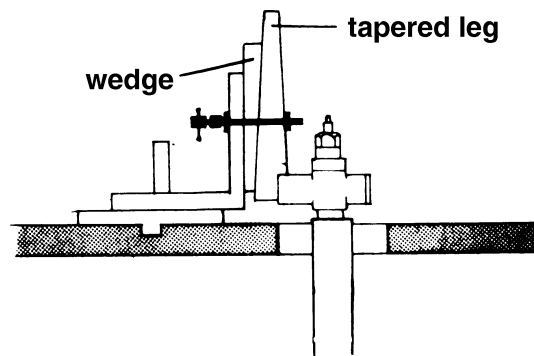


Figure 59

Troubleshooting

Trouble	Possible Cause	Remedy
Shaper will not start.	<ol style="list-style-type: none"> 1. Cord unplugged from the power source. 2. Fuse blown or circuited breaker tripped. 3. Cord damaged. 4. Reversing switch is in the Off position. 5. Overload tripped. 	<ol style="list-style-type: none"> 1. Plug in power cord. 2. Replace fuse or reset circuit breaker. 3. Replace cord. 4. Turn switch to forward or reverse. 5. Reset overload by depressing red stop button.
Overload kicks out frequently.	<ol style="list-style-type: none"> 1. Extension cord or wiring inadequate size. 2. Feeding stock too fast. 3. Cutter needs cleaning or replacing. See also <i>Unsatisfactory Cuts</i> below. 	<ol style="list-style-type: none"> 1. Replace cord or wiring with proper gauge wire. 2. Reduce feed stock rate. 3. Clean or replace cutter.
Cuts are unsatisfactory.	<ol style="list-style-type: none"> 1. Dull cutter. 2. Cutterhead rotating in wrong direction. 3. Feeding work in wrong direction. 4. Gum or pitch on cutter. 5. Gum or pitch on table causing erratic feed. 	<ol style="list-style-type: none"> 1. Replace cutter. 2. Check for proper rotation at startup. 3. Feed work <i>against</i> the cutter rotation. 4. Remove cutter and clean with solvent. 5. Clean table with solvent.
Cutter does not come up to full speed.	<ol style="list-style-type: none"> 1. Shop wire gauge is too small. 2. Extension cord or wiring inadequate size. 3. Power source is not adequate. 4. Motor not wired for correct voltage. 5. Spindle is locked with madrel lever. 	<ol style="list-style-type: none"> 1. Replace wiring with proper gauge wire. 2. Replace with adequate size cord. 3. Contact your electric utility. 4. Refer to motor name place and wiring diagram for correct wiring. 5. Unlock spindle – see label next to lever on base.
Machine vibrates.	<ol style="list-style-type: none"> 1. Stand on uneven surface. 2. Cutterhead damaged. 3. Defective V-belt. 4. V-belt incorrectly tensioned. 5. Bent pulley. 6. Motor mounted improperly. 	<ol style="list-style-type: none"> 1. Stand must rest solidly on level surface. Fasten to floor if necessary. 2. Replace cutterhead. 3. Replace V-belt. 4. Apply proper tension. 5. Replace pulley. 6. Motor must be properly mounted with snug nuts and bolts.

Trouble	Possible Cause	Remedy
Edge splits off on cross grain cut.	1. Characteristic of this type of cut.	1. Make cross grain cuts first, then finish cut with the grain. Use scrap block to support end of cut.
Raised areas on shaped edge.	1. Variation of pressure holding work against cutter.	1. Hold work firmly against table and fence. Use hold-downs and push sticks.
Work pulled from hand.	1. Feeding in wrong direction.	1. Always feed work against the rotation of the cutterhead.
Depth of cut not uniform.	1. Fence misalignment. 2. Side pressure not uniform.	1. Align outfeed fence. 2. Use hold-downs; keep constant pressure against fence and use push sticks.
Work burns.	1. Cutting too deep on one pass. 2. Forcing work.	1. On hardwoods take light cuts; attain full depth with several passes. 2. Feed work slowly and steadily.
Cut height not uniform.	1. Variation in pressure holding work to table.	1. Keep pressure uniform throughout pass. Use hold-downs. Make pass slowly and steadily. Keep work under cutter whenever possible.
Cuts not smooth.	1. Wrong R.P.M. 2. Feed too fast. 3. Working against the grain. 4. Cutting too deep on one pass.	1. Use faster speed. 2. Slow feed speed. 3. Work with the grain whenever possible. 4. Take several passes on very deep cuts.
Spindle does not raise freely.	1. Shaper dust and dirt in raising mechanism.	1. Brush or blow out loose dust and dirt.

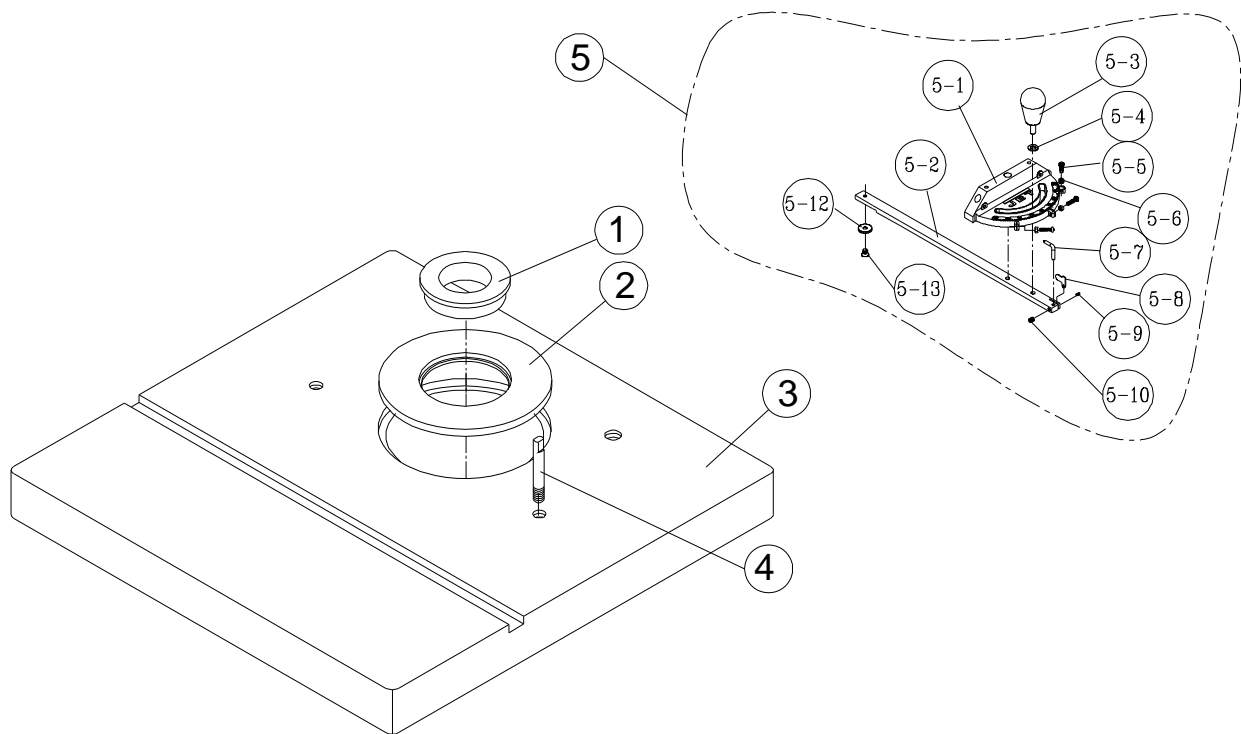
Parts

Ordering Replacement Parts

To order parts or reach our service department, call 1-800-274-6848 Monday through Friday (see our website for business hours, www.jettools.com). Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately.

Table – Parts and Assembly

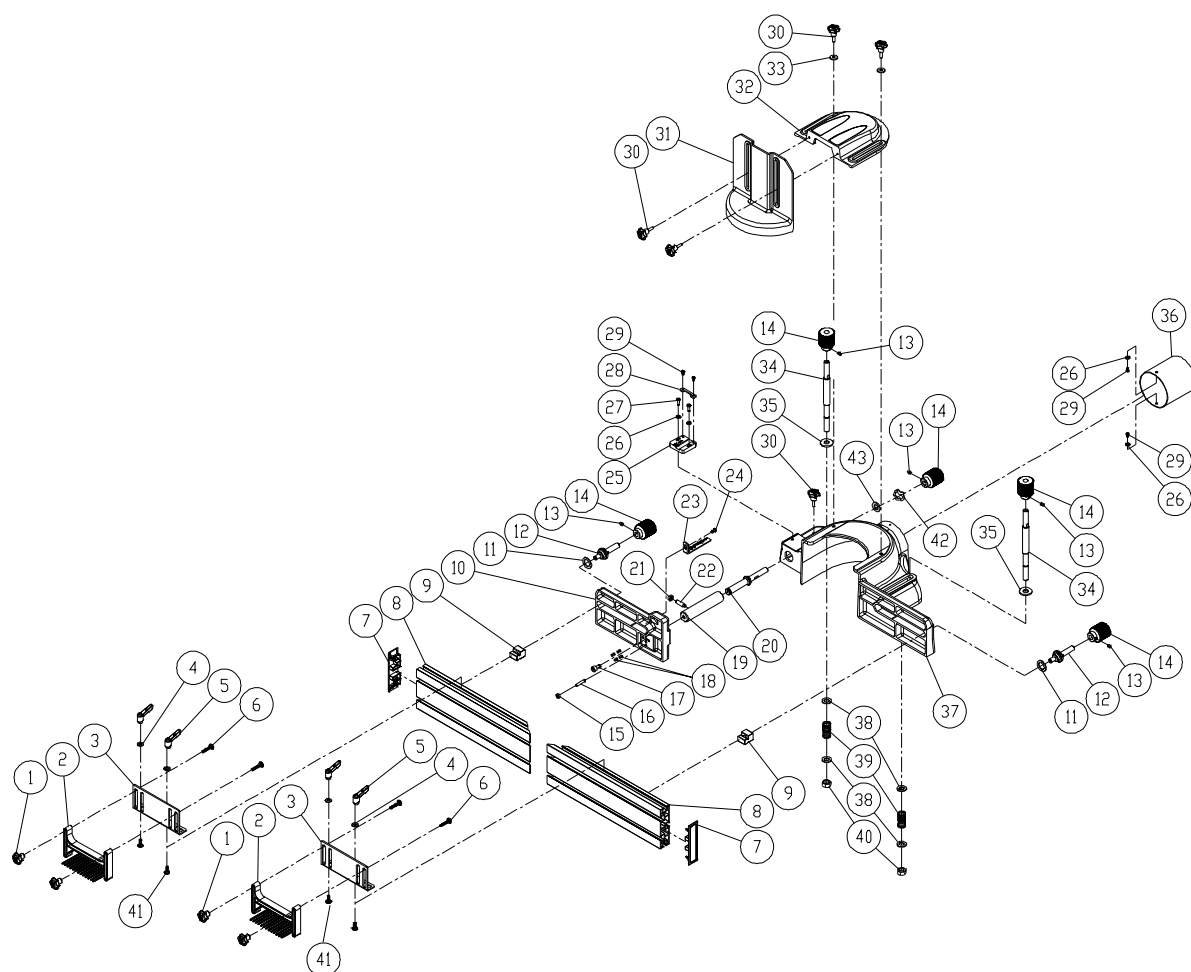
Index No.	Part No.	Description	Size	Qty
1.....	JWS25X-101.....	Insert Ring (Small).....		1
2.....	JWS25X-102.....	Insert Ring (Large).....		1
3.....	JWS25X-103.....	Table.....		1
4.....	JWS25X-104.....	Starting Pin.....		1
5.....	JWS25X-105.....	Miter Gauge Assembly		1
5-1.....	JWS25X-105-1.....	Miter Gauge Body.....		1
5-2.....	JWS25X-105-2.....	Miter Bar		1
5-3.....	JWS25X-105-3.....	Handle.....		1
5-4.....	TS-1550061.....	Flat Washer.....	M8.....	1
5-5.....	TS-1533062.....	Pan Head Machine Screw	M5x20	3
5-6.....	TS-1540031.....	Hex Nut.....	M5.....	3
5-7.....	JWS25X-105-7.....	Pointer.....		1
5-8.....	JWS25X-105-8.....	Stop Plate.....		1
5-9.....	JWS25X-105-9.....	Roll Pin.....		1
5-10.....	TS-0267021.....	Socket Set Screw	1/4"-20x1/4"	1
5-12.....	JWS25X-105-12.....	Special Washer		1
5-13.....	TS-081F021.....	Flat Head Machine Screw.....	1/4"-20x3/8"	1
.....	JWS25X-TUP	"Touch Up" Paint, Small Can (not shown)		1



Fence – Parts List

Index No.	Part No.	Description	Size	Qty
1.....	JWS35X-201.....	Knob		4
2.....	PM2700-237	Feather Board		2
3.....	PM2700-234	Bracket.....		2
4.....	TS-1550061	Flat Washer.....	M8.....	4
5.....	PM2700-232	Lock Handle		4
6.....	PM2700-235	Carriage Bolt	M5x30	4
7.....	PM2700-231	End Cap		2
8.....	JWS25X-208.....	Fence.....		2
9.....	JWS35X-209.....	Slide.....		2
10.....	JWS35X-210.....	Left Fence Plate		1
11.....	JWS35X-211.....	Plastic Flat Washer.....		2
12.....	JWS35X-212.....	Leader Screw		2
13.....	TS-1523021	Socket Set Screw	M6x8.....	5
14.....	JWS35X-214.....	Knob		5
15.....	TS-1540041	Hex Nut.....	M6	1
16.....	JWS35X-216.....	Socket Set Screw	M6x30	1
17.....	TS-1504031	Socket Head Cap Screw.....	M8x16	1
18.....	TS-1523041	Socket Set Screw	M6x12	4
19.....	JWS35X-219.....	Shaft		1
20.....	JWS35X-220.....	Adjustment Leader		1
21.....	TS-1540061	Hex Nut.....	M8.....	1
22.....	JWS35X-222.....	Socket Set Screw	M8x30	1
23.....	JWS35X-223.....	Scale.....		1
24.....	TS-1533032	Pan Head Machine Screw	M5x10	1
25.....	JWS35X-225.....	Bracket.....		1
26.....	TS-1550031	Flat Washer.....	M5.....	4
27.....	TS-1533052	Pan Head Machine Screw	M5x16	2
28.....	JWS35X-228.....	Fixing Plate		1
29.....	TS-2284082	Pan Head Machine Screw	M4x8	4
30.....	JWS35X-230.....	Knob		5
31.....	PM2700-203	Cutter Guard		1
32.....	JWS35X-232.....	Safety Guard Holder.....		1
33.....	TS-1550041	Flat Washer.....	M6.....	2
34.....	JWS35X-234.....	Shaft		2
35.....	TS-155009	Flat Washer.....	M14.....	2
36.....	JWS35X-236.....	Dust Chute		1
37.....	JWS35X-237.....	Fence Body		1
38.....	PM2700-205	Flat Washer.....	M13.....	4
39.....	JWS35X-239.....	Spring.....		2
40.....	JWS35X-240.....	Lock Nut.....	1/2"-12.....	2
41.....	PM2700-236	Carriage Bolt	M5x16	4
42.....	JWS35X-242.....	Wave Washer.....		1
43.....	JWS35X-243.....	Flat Washer.....		1
.....	JWS25X-FA.....	Fence – Complete Assembly (Index #1 - #43).....		1

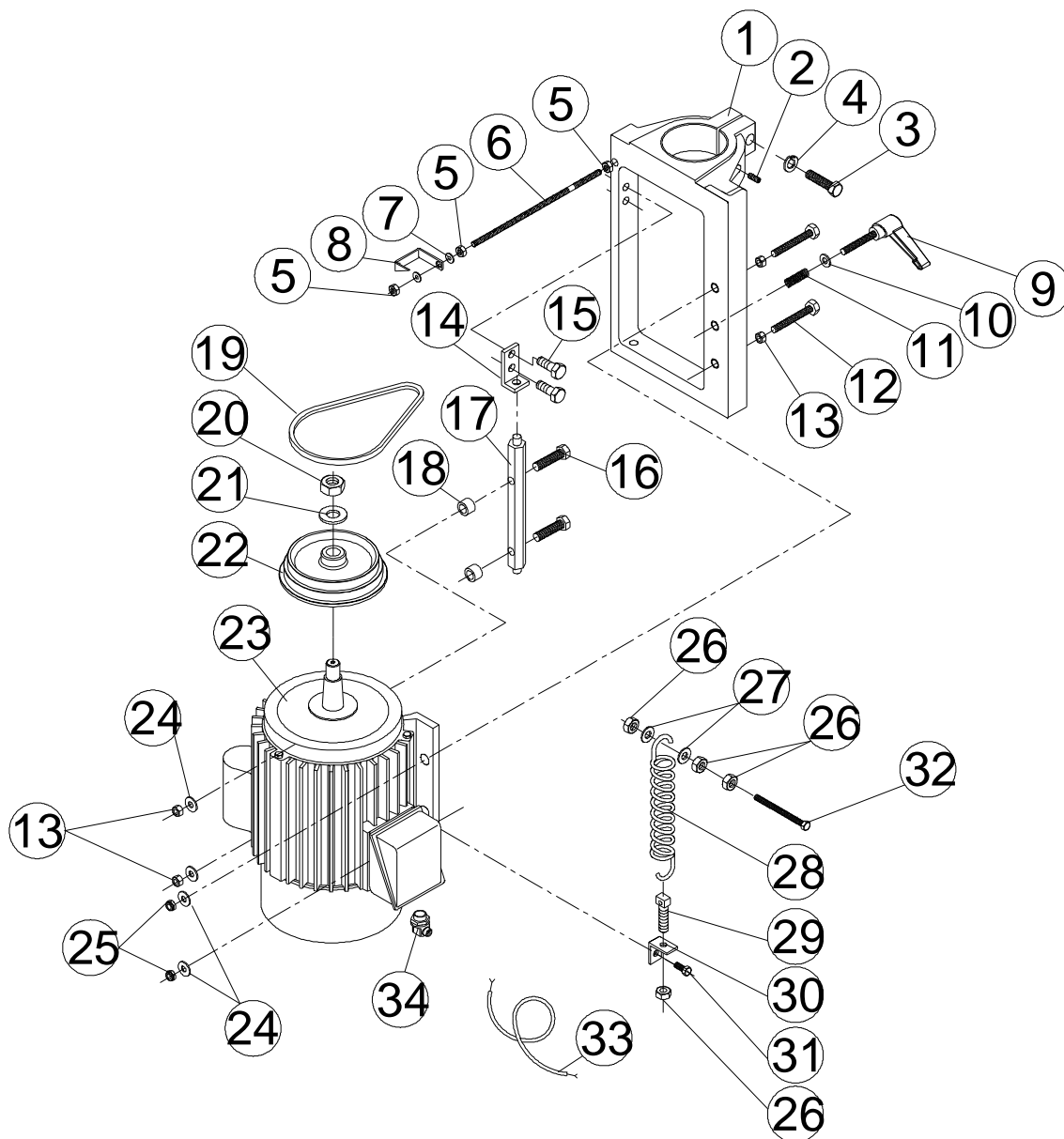
Fence – Assembly Drawing



Frame and Motor – Parts List

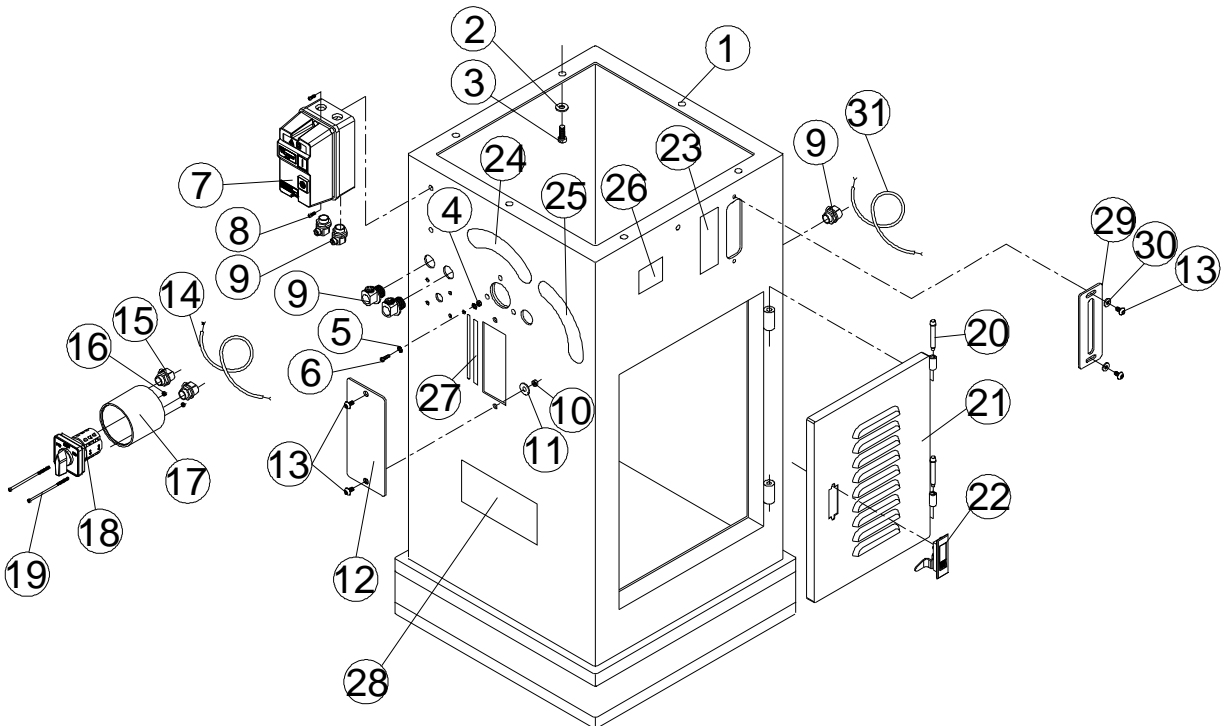
Index No.	Part No.	Description	Size	Qty
1	JWS25X-301	Motor Bracket		1
2	TS-0270051	Socket Set Screw	5/16"-18x1/2"	1
3	JWS25X-303	Hex Cap Screw	1/2"-12x2"	1
4	TS-0720111	Lock Washer	1/2"	1
5	TS-0561011	Hex Nut	1/4"-20	3
6	JWS25X-306	Pointer Leader		1
7	TS-0680021	Flat Washer	1/4"	2
8	JWS25X-308	Pointer		1
9	JWS25X-309	Lock Handle		1
10	TS-0680041	Flat Washer	3/8"	1
11	JWS25X-311	Spring		1
12	TS-0060131	Hex Cap Screw	3/8"-16x3"	2
13	TS-0561031	Hex Nut	3/8"-16	4
14	JWS25X-314	Bracket		1
15	TS-0060031	Hex Cap Screw	3/8"-16x3/4"	2
16	TS-0060091	Hex Cap Screw	3/8"-16x2"	2
17	JWS25X-317	Truss Rod		1
18	JWS25X-318	Bushing		2
19	VB-M25	V-Belt	M25	1
20	TS-0561072	Hex Nut	5/8"-18UNF	1
21	TS-0680081	Flat Washer	5/8"	1
22	JWS25X-322	Motor Pulley		1
23	JWS25X-323	Motor	3HP, 1Ph, 230V	1
	JWS25X-323MF	Motor Fan (not shown)		1
	JWS25X-323MFC	Motor Fan Cover (not shown)		1
	JWS25X-323SC	Starting Capacitor (not shown)	300µF, 125V	1
	JWS25X-323RC	Running Capacitor (not shown)	30µF, 350V	1
24	TS-0680042	Flat Washer	3/8"	4
25	TS-0640091	Nylon Insert Lock Nut	3/8"-16	2
26	TS-0561021	Hex Nut	5/16"-18	4
27	TS-0680031	Flat Washer	5/16"	2
28	JWS25X-328	Spring		1
29	JWS25X-329	Special Screw	5/16"-18x1-1/2"	1
30	JWS25X-330	Bracket		1
31	TS-0051011	Hex Cap Screw	5/16"-18x1/2"	1
32	TS-0051131	Hex Cap Screw	5/16"-18x3"	1
33	JWS25X-333	Motor Cable	14AWGx4Cx120cm	1
34	JWS25X-334	Strain Relief		1

Frame and Motor – Assembly Drawing



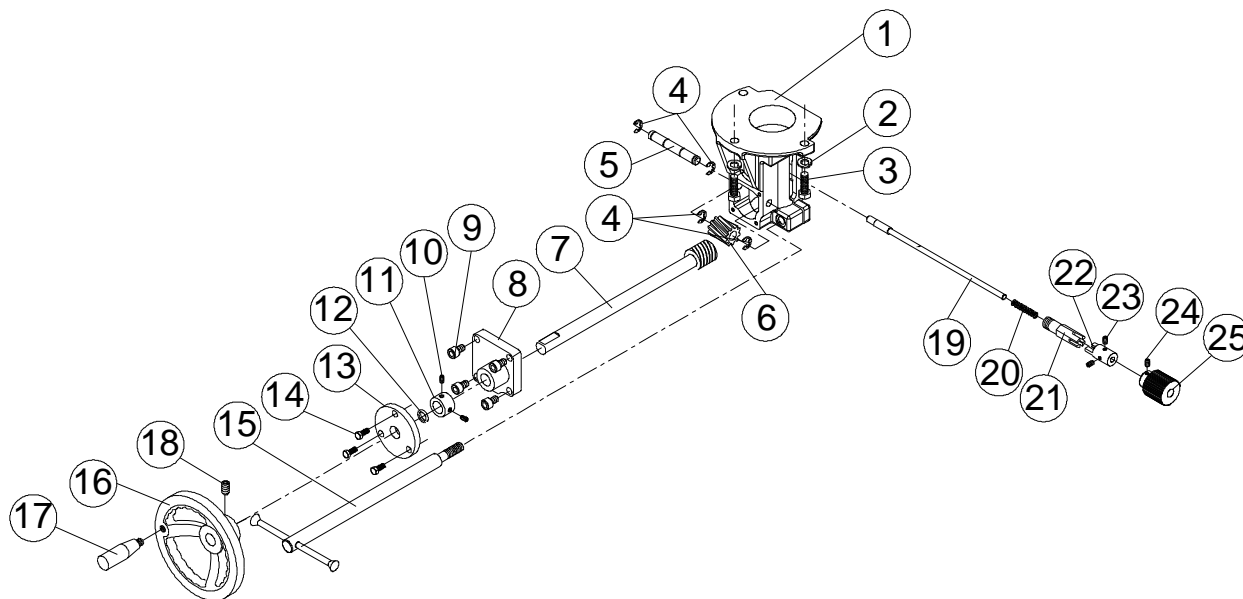
Cabinet and Base – Parts and Assembly

Index No.	Part No.	Description	Size	Qty
1	JWS25X-401	Cabinet		1
2	TS-0680041	Flat Washer	3/8"	6
3	TS-0060051	Hex Cap Screw	3/8"-16x1"	6
4	TS-0560071	Hex Nut	#10-24	1
5	JWS25X-405	Star Washer	M5	2
6	TS-0810012	Round Head Machine Screw	#10-24x1/4"	1
7	JWS25X-407	Magnetic Switch	3HP, 230V	1
8	TS-1532042	Pan Head Machine Screw	M4x12	2
9	JWS25X-409	Strain Relief		5
10	TS-0561011	Hex Nut	1/4"-20	2
11	TS-0680021	Flat Washer	1/4"	2
12	JWS25X-412	Window		1
13	TS-0254031	Button Head Socket Screw	1/4"-20x5/8"	4
14	JWS25X-414	Switch Cable	14AWGx4Cx75cm	1
15	JWS25X-415	Strain Relief		2
16	TS-1540021	Hex Nut	M4	2
17	JWS25X-417	Switch Cover		1
18	JWS25X-418	Forward/Reverse Switch		1
19	JWS25X-419	Screw	M4x100	2
20	JWS25X-420	Door Hinge Pin		2
21	JWS25X-421	Door		1
22	JWS25X-422	Door Latch		1
23	JWS25X-423	Warning Label - Spindle Lock/Release		1
24	JWS25X-424	Label - Spindle Height		1
25	JWS25X-425	Label - Spindle Height Lock		1
26	JWS25X-426	ID Label		1
27	JWS25X-427	Scale Label		1
28	JWS25X-428	JET Logo		1
29	JWS25X-429	Plate		1
30	TS-0680021	Flat Washer	1/4"	2
31	JWS25X-431	Power Cable	14AWGx3Cx240cm	1



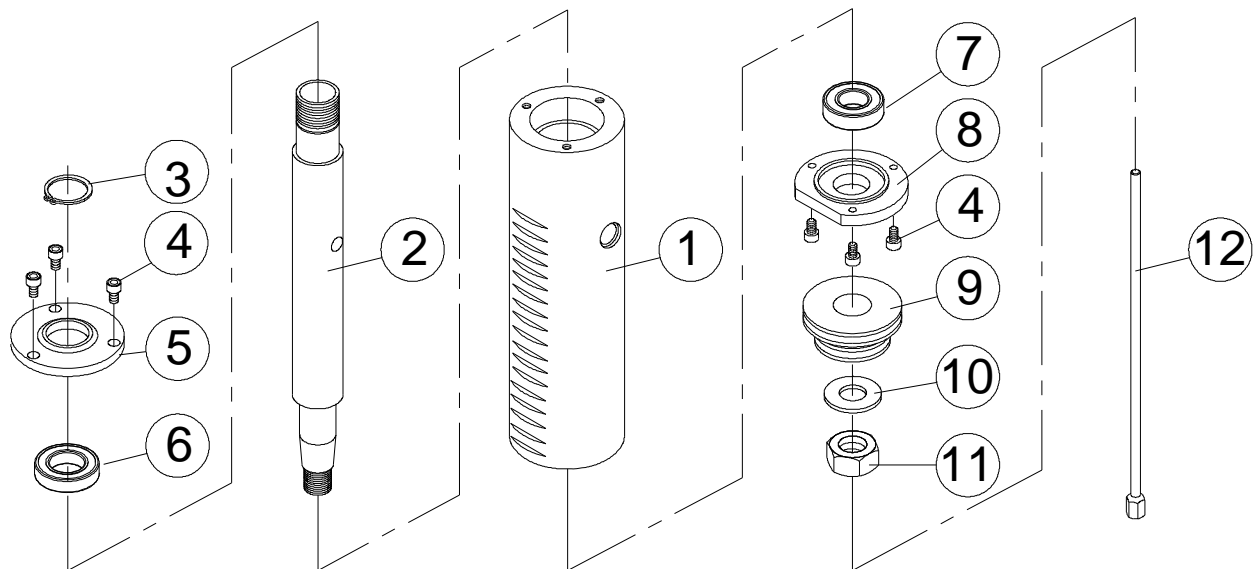
Elevator – Parts and Assembly

Index No.	Part No.	Description	Size	Qty
1	JWS25X-501	Housing		1
2	TS-0720111	Lock Washer	1/2"	3
3	JWS25X-503	Hex Cap Screw	1/2"-12x1-1/2"	3
4	JWS25X-504	E-Clip	ETW-10	4
5	JWS25X-505	Shaft		1
6	JWS25X-506	Worm Gear		1
7	JWS25X-507	Worm Shaft		1
8	JWS25X-508	Shaft Bracket		1
9	TS-0207041	Socket Head Cap Screw	1/4"-20x3/4"	4
10	TS-0267021	Socket Set Screw	1/4"-20x1/4"	2
11	JWS25X-511	Bushing		1
12	JWS25X-512	O-Ring	P18	1
13	JWS25X-513	Cover		1
14	TS-0081031	Hex Cap Screw	5/16"-18x3/4"	3
15	JWS25X-515	Clamping Handle		1
16	JWS25X-516	Hand Wheel		1
17	JWS25X-517	Handle		1
18	TS-0270051	Socket Set Screw	5/16"-18x1/2"	1
19	JWS25X-519	Lock Rod		1
20	JWS25X-520	Spring		1
21	JWS25X-521	Connector		1
22	JWS25X-522	Lock Mandrel		1
23	TS-1522021	Socket Set Screw	M5x8	2
24	TS-1523021	Socket Set Screw	M6x8	1
25	JWS25X-525	Knob		1



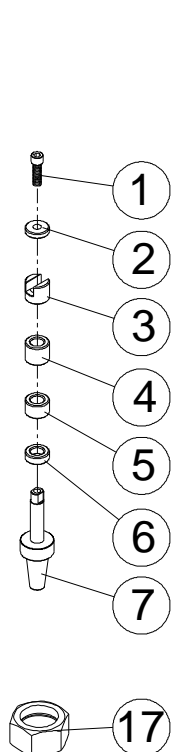
Quill – Parts and Assembly

Index No.	Part No.	Description	Size	Qty
1.....	JWS25X-601.....	Quill.....		1
2.....	JWS25X-602.....	Spindle Holder.....		1
3.....	JWS25X-603.....	Retaining Ring.....	STW-30.....	1
4.....	TS-0207031.....	Socket Head Cap Screw.....	1/4"-20x5/8.....	6
5.....	JWS25X-605.....	Shaft Top Bearing Cover.....		1
6.....	BB-6006VV.....	Ball Bearing.....	6006-2NK.....	1
7.....	BB-6005VV.....	Ball Bearing.....	6005-2NK.....	1
8.....	JWS25X-608.....	Shaft Lower Bearing Cover.....		1
9.....	JWS25X-609.....	Spindle Pulley.....		1
10.....	JWS25X-610.....	Flat Washer.....		1
11.....	TS-0561082.....	Hex Nut.....	3/4"-16UNF.....	1
.....	JWS25X-QA.....	Quill Assembly (Index #1 - #11).....		1
12.....	JWS25X-612.....	Draw Bar.....		1

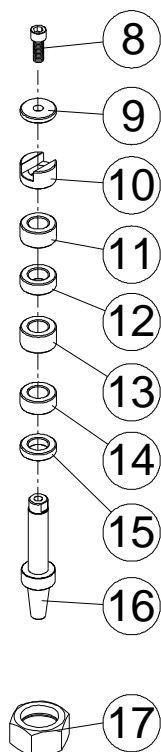


Spindle Assembly – Parts and Assembly

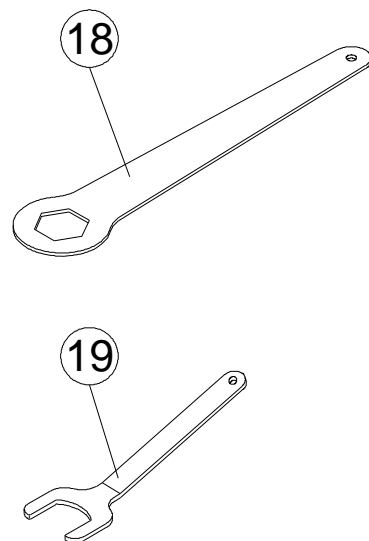
Index No.	Part No.	Description	Size	Qty
1.....	TS-0208061.....	Socket Head Cap Screw.....	5/16"-18x1".....	1
2.....	JWS25X-702.....	Special Washer.....		1
3.....	JWS25X-703.....	Keyed Collar.....		1
4.....	JWS25X-704.....	Collar.....	I.D. 1/2"x20mmT.....	1
5.....	JWS25X-705.....	Collar.....	I.D. 1/2"x15mmT.....	1
6.....	JWS25X-706.....	Collar.....	I.D. 1/2"x8.5mmT.....	1
7.....	JWS25X-707.....	Spindle.....	1/2".....	1
	708388.....	Spindle Assembly (#1 thru #7, #17).....	1/2".....	1
8.....	TS-0209051.....	Socket Head Cap Screw.....	3/8"-16x1".....	1
9.....	JWS25X-709.....	Special Washer.....		1
10.....	JWS25X-710.....	Keyed Collar.....		1
11.....	JWS25X-711.....	Collar.....	I.D. 3/4"x18mmT.....	1
12.....	JWS25X-712.....	Collar.....	I.D. 3/4"x12.8mmT.....	1
13.....	JWS25X-713.....	Collar.....	I.D. 3/4"x20mmT.....	1
14.....	JWS25X-714.....	Collar.....	I.D. 3/4"x15mmT.....	1
15.....	JWS25X-715.....	Collar.....	I.D. 3/4"x8.5mmT.....	1
16.....	JWS25X-716.....	Spindle.....	3/4".....	1
	708387.....	Spindle Assembly (#8 thru #16, #17).....	3/4".....	1
17.....	JWS25X-717.....	Spindle Nut.....		1
18.....	JWS25X-718.....	Wrench.....		1
19.....	JWS25X-719.....	Wrench.....		1



1/2" Spindle

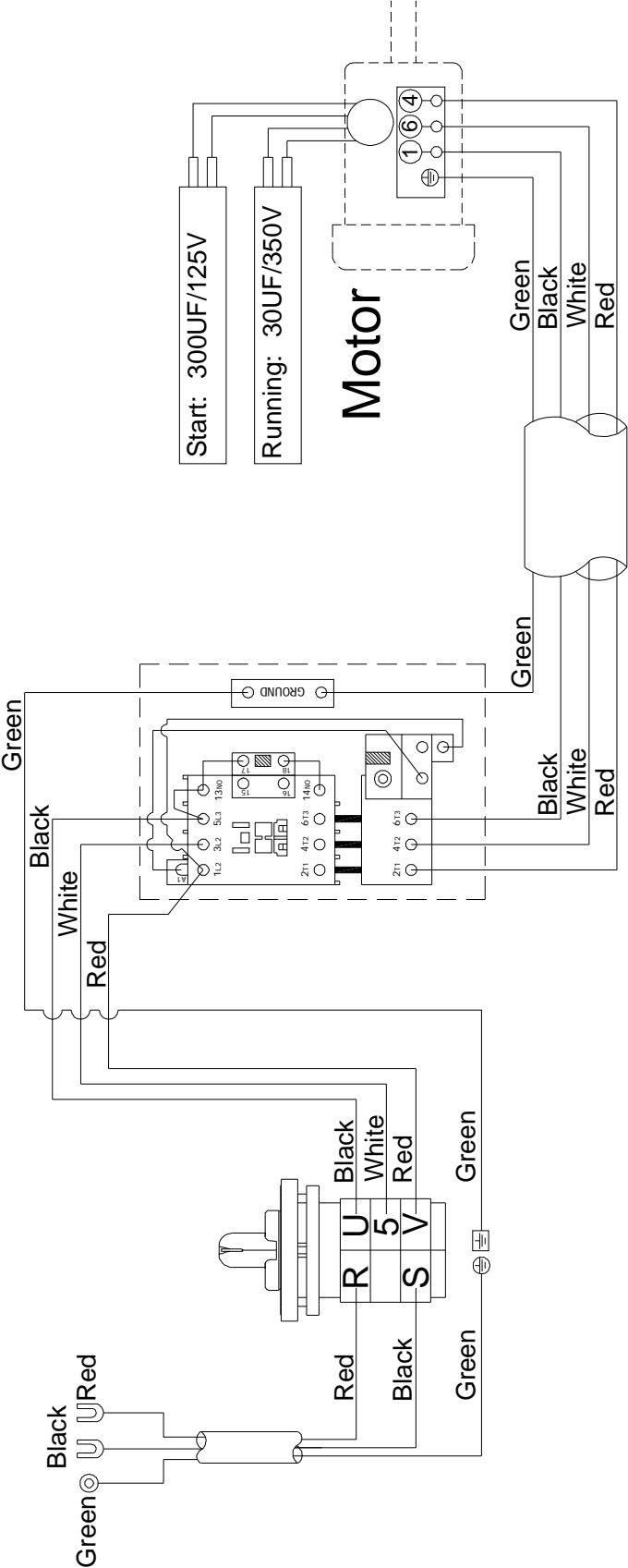


3/4" Spindle



Wiring Diagram

3HP/230V





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