

# Operating Instructions and Parts Manual 5x6-inch Mitering Variable-Speed Band Saw Model HBS-56MVS



#### JET

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# 1.0 IMPORTANT SAFETY INSTRUCTIONS

Read and understand the entire instruction manual before operating machine.

This band saw 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 band saw, do not use until proper training and knowledge have been obtained.

#### WARNING – To reduce risk of injury:

- a. Wear eye protection.
- b. Do not remove jammed cut off pieces until blade has stopped.
- c. Maintain proper adjustment of blade tension, blade guides, and thrust bearing.
- d. Adjust upper guide to just clear workpiece.
- e. Secure workpiece firmly against table.
- 1. 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.
- 2. Replace the warning labels if they become obscured or removed.
- Do not use this band saw 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.
- Always wear ANSI Z87.1 approved safety glasses or face shield while using this band saw. (Everyday eyeglasses only have impact resistant lenses; they are *not* safety glasses.)
- Before operating this machine, remove tie, rings, watches and other jewelry, and roll sleeves up past the elbows. Do not wear loose clothing. Confine long hair. Non-slip footwear or anti-skid floor strips are recommended. Do not wear gloves.
- 6. Wear hearing protection (plugs or muffs) if noise exceeds safe levels.
- 7. Do not operate this machine while tired or under the influence of drugs, alcohol or any medication.
- 8. Reduce the risk of unintentional starting. Make sure switch is in off position before plugging in.
- 9. Make certain the machine is properly grounded.

- 10. Make all machine adjustments or maintenance with the machine unplugged from the power source.
- 11. 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.
- 12. 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 after completion of maintenance.
- 13. 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.
- 14. Provide for adequate space surrounding work area and non-glare, overhead lighting.
- 15. Keep the floor around the machine clean and free of scrap material, oil and grease.
- 16. Keep visitors a safe distance from the work area. Keep children away.
- 17. Make your workshop child proof with padlocks, master switches or by removing starter keys.
- 18. Give your work undivided attention. Looking around, carrying on a conversation and "horse-play" are careless acts that can result in serious injury.
- Maintain a balanced stance at all times so that you do not fall into the blade or other moving parts. Do not overreach or use excessive force to perform any machine operation.
- 20. 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 more safely.
- 21. Use recommended accessories; improper accessories may be hazardous.
- 22. Maintain tools with care. Keep saw blades sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
- 23. Turn off the machine before cleaning. Use a brush or compressed air to remove chips or debris do not use your hands.
- 24. Do not stand on the machine. Serious injury could occur if the machine tips over, or if the cutting tool is unintentionally contacted.

- 25. Never leave the machine running unattended. Turn the power off and do not leave the machine until it comes to a complete stop.
- 26. Remove loose items and unnecessary work pieces from the area before starting the machine.
- 27. Make sure workpiece is securely clamped in vise. Never use your hand to hold the workpiece.
- 28. Never reach around or over a moving saw blade.
- 29. Feed work into a blade or cutter only against the direction of rotation of the blade or cutter.
- 30. Set blade guides for minimal exposure of blade before operating.
- 31. Don't use in dangerous environment. Don't use power tools in damp or wet location, or expose them to rain. Keep work area well lighted.
- 32. Use proper extension cord. Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Table 2 (sect. 6.2) shows correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

MARNING: This product can expose you to chemicals including lead which is known to the State of California to cause cancer and birth defects or other reproductive harm, and ethylbenzene which is known to the State of California to cause cancer. For more information go to http://www.p65warnings.ca.gov.

A WARNING: Some dust, fumes and gases created by power sanding, sawing, grinding, drilling, welding and other construction activities contain chemicals known to the State of California to cause cancer and 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

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 wellventilated area and work with approved safety equipment, such as dust masks that are specifically designed to filter out microscopic particles. For more information go to http://www.p65warnings.ca.gov/ and http://www. p65warnings.ca.gov/wood.

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

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

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

## SAVE THESE INSTRUCTIONS

#### 1.1 ON/OFF Switch padlock

To avoid accidental starting by young children or others not qualified to use the tool, the use of a padlock (not provided) is recommended.

See Figure 1-1.

To lock out the ON/OFF switch:

- 1. Open padlock, and insert through hole in start button.
- 2. Close the padlock.
- 3. Store the key in a safe place inaccessible to children.

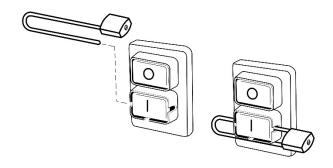


Figure 1-1

# 2.0 About this manual

This manual is provided by JET, covering the safe operation and maintenance procedures for a JET Model HBS-56MVS Band Saw. This manual contains instructions on installation, safety precautions, general operating procedures, maintenance instructions and parts breakdown. Your machine has been designed and constructed to provide consistent, long-term operation if used in accordance with the instructions as set forth in this document.

If there are questions or comments, please contact your local supplier or JET. JET can also be reached at our web site: www.jettools.com.

Retain this manual for future reference. If the machine transfers ownership, the manual should accompany it.



AWARNING Read and understand the entire contents of this manual before attempting assembly or operation! Failure to comply may cause serious injury!

Register your product using the mail-in card provided, or register online: http://www.jettools.com/us/en/service-and-support/warranty/registration/

The specifications in this manual were current at 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.

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# 4.0 Specifications

Model numbe	er		HBS-56MVS	
Stock number			414558	
Motor and Electricals				
Motor type			DC brushed motor	
Horsepower			1/2 HP (0.375 kW)	
Motor phase			single	
Voltage			115 V only	
Cycle			60 Hz	
Listed FLA (fu	ull load amps)		3.8 A	
Motor speed			1200-3600 RPM	
On/off switch	es		Magnetic push-button	
Power transfe	er		Gear box	
Power cable			SJT 3x18AWG, 300V, length 5-1/2 ft. (168 cm)	
Power plug ir	nstalled		5-15P	
Recommende	ed circuit size <sup>1</sup>		15 A	
Sound emiss	ion without load	2	60~65 dB at 1m (40 in.)	
Capacities				
		90 deg.	5 in. (128 mm)	
	Round	45 deg.	3-3/4 in. (95 mm)	
Cutting		60 deg.	1-3/4 in. (44 mm)	
capacities	Destaude	90 deg.	5 x 6 in. (128 x 150 mm); and 2 x 6 in. (51 x 152.4 mm)	
	Rectangle (HxW)	45 deg.	3-3/4 x 2-1/3 in. (95 x 60 mm)	
		60 deg.	1-1/4 x 1-3/4 in. (32 x 44 mm); 5 x 1-3/4 in. (128 x 44 mm)	
Throat depth			5 in. (128 mm)	
Bow and blac	le			
Blade type pr	ovided		14 TPI, Raker type, bi-metal	
Blade size (W	/xTxL)		1/2 x 0.025 x 64-1/2 in. (13 x 0.64 x 1638 mm)	
Blade speeds	3		variable, 80-230 SFPM (25-72 MPM)	
Blade wheel			7-3/8 in. (187 mm)	
Bed and vise				
	eight from floor		28 in. (710 mm)	
	s per vise position	on	back position 0-45 deg.; front position 45-60 deg.	
Main materia	ls			
Bed			cast iron, ground surface	
Bow			cast iron	
Stand			steel	
Side blade guides			ball bearings mounted on eccentric shafts	
Rear blade guides			ball bearings	
Band wheels			flanged cast iron	
Dimensions				
Floor space required			20.47 x 43.3 in. (520 x 1100 mm)	
Overall assembled (LxWxH), lowered position			38.58 x20.47 x 43.3 in. (980 x 520 x 1100 mm)	
Shipping dimensions (LxWxH)			35.43 x 17.8 x 21.65 in. (900 x 452 x 550 mm)	
Weights				
Net weight			136 lbs. (62 kg)	
Shipping weig	gnt		147 lbs. (67.2 kg)	
			Table 1	

<sup>1</sup> subject to local/national electrical codes. <sup>2</sup> The specified values are emission levels and are not necessarily to be seen as safe operating levels. As workplace conditions vary, this information is intended to allow the user to make a better estimation of the hazards and risks involved only.

L = length, W = width, H = height, T = thickness

SFPM = surface feet per minute RPM = revolutions per minute TPI = teeth per inch

6

# 5.0 Setup and assembly

### 

**AWARNING** Read and understand all instructions before attempting assembly. Band Saw must be disconnected from power during all assembly procedures. Failure to comply may cause serious injury.

Compare the contents of your container with the following parts list to make sure all parts are intact. Missing parts, if any, should be reported to your distributor. Do not discard any packing materials until saw is assembled and operating satisfactorily. Read this instruction manual thoroughly for assembly, maintenance and safety instructions.

#### 5.1 Carton contents

- 1 Band saw (not shown)
- 1 Side plate left (A)
- 1 Side plate right (B)
- 1 Door (C)
- 1 Wheel base (D)
- 1 Plate bottom (E)
- 2 Feet (F)
- 1 Front door knob (G)
- 2 Wheels (H)
- 1 Handle (J)
- 1 Work stop assembly (K)
- 1 Axle (L)
- 1 Chip pan (M)
- 1 Drip tray (N)
- 1 Open-end wrench 12/14mm (not shown)
- 1 Hex wrenches 3mm,4mm (not shown)
- 1 Owner's manual (not shown)
- 1 Product registration card (not shown)
- 1 Hardware package (p/n HBS56MVS-HP)
  - 4 3/8" x 1-1/4" Hex Cap Screw (HP1)
  - 12 5/16" x 3/4" Hex Cap Screw (HP2)
  - 4 5/16" x 1-1/2" Hex Cap Screw (HP3)
  - 33 5/16" Flat Washers (HP4)
  - 4 10 x 23 x t2 Flat Washer (HP5)
  - 4 5/8" x 30 x t3 Flat Washer (HP6)
  - 2 3x25 Cotter Pin (HP7)
  - 16 5/16" Hex Nut (HP8)
  - 1 5/16" Nylon Nut (HP9), not shown

#### 5.2 Tools required for assembly

Open-end wrench, 12/14mm (provided) (Note: A ratchet wrench with sockets may speed assembly time.) Hex wrenches, 3mm,4mm (provided) Cross point (Phillips) screwdriver

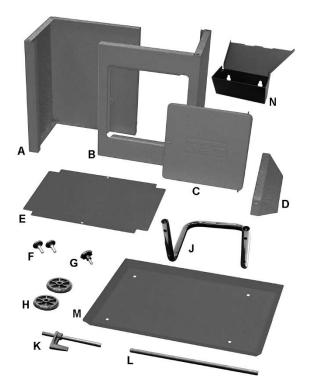


Figure 5-1: carton contents

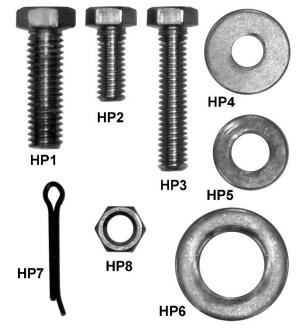


Figure 5-2: hardware package HBS56MVS-HP (Actual Size)

#### 5.3 Assembly of Stand

See Figure 5-3.

- 1. Assemble left (A) and right (B) side plates with six 5/16x3/4 hex cap screws, twelve flat washers, six hex nuts (HP2/4/8). Tighten hex nuts.
- Turn assembly (from Step 1) on its back (door opening upward) and mount bottom plate (E) with two 5/16x3/4 hex cap screws, four flat washers, two hex nuts (HP2/4/8). Tighten hex nuts.
- 3. Install two rubber feet (F) on bottom of left plate (A).
- 4. Turn assembly upside down and install wheel base (D) with four 5/16x3/4 hex cap screws, eight flat washers, four hex nuts (HP2/4/8).

- 5. Insert axle (L) through holes of wheel base (D).
- Install wheel (H) and two 5/8"x30mm flat washers (HP6) on each side of wheel. Insert cotter pins (HP7) through holes on each end of axle and bend the ends of the cotter pins to secure wheel on axle.
- Install handle (J) to left side plate (A) with four 5/16x1-1/2 hex cap screws, four flat washers and four hex nuts (HP3/4/8). Tighten hex nuts.
- 8. Install door (C). The upper hinge pin is spring loaded and must be retracted to mount door to cabinet.
- 9. Install door lock knob (G) with 5/16 flat washer (HP4) and 5/16 nylon nut (HP9).

Installation of chip pan (M) is described in sect. 5.5.

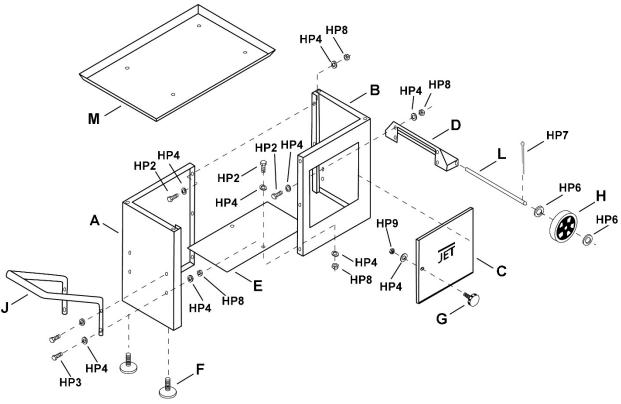


Figure 5-3

#### 5.4 Mounting band saw to stand

Remove any plastic or holding straps from around the band saw. Areas of the machine have been given a protective coating at the factory; this should be removed using a soft cloth moistened with kerosene or a cleaner-degreaser. Do not use gasoline, paint thinner, or lacquer thinner as these will damage painted surfaces. Do not use an abrasive pad.

AWARNING Saw is heavy; two-person lift is recommended.

See Figure 5-4.

1. Place chip pan (M) on stand. The side with the mounting holes farther from the edge (X) must be towards the left.

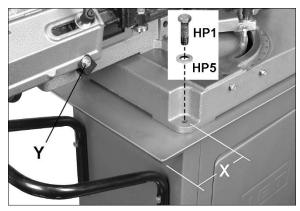


Figure 5-4

- 2. Using an assistant, place band saw atop chip pan (M).
- 3. Align holes at four corners of saw and chip pan with holes in stand. Band saw front faces same direction as JET logo on stand.
- 4. Install 3/8x1-1/4 hex cap screw (HP1) with flat washer (HP5) in each of the four holes. When all four are inserted, tighten screws with 1/2" wrench.
- 5. Remove two screws and shipping bracket (Y, Figure 5-4) which secured the bow during shipment. Retain these items in case they are needed for future transporting of machine.

#### **ACAUTION** When moving the band saw, the bow should be in lowered position.

#### 5.5 Handwheel

Install handwheel onto vise lead screw shaft, aligning the set screw with the flat on the shaft. Tighten set screw.

#### 5.6 Stock stop

The stock stop is used for making multiple cuts of the same length.

- 1. Insert stock stop rod (Figure 5-5) into hole at front or rear of base, as shown.
- Secure rod by tightening socket set screw (K1, 2. Figure 5-5) with 3mm hex wrench.
- The stock stop is moved along the rod by 3. loosening the socket set screw (K<sub>2</sub>, Figure 5-7) with 4mm hex wrench. The stock stop can be reversed on rod to accept slightly longer lengths of workpieces. Tighten socket set screw (K<sub>2s</sub>) before beginning operations.

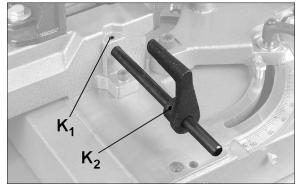


Figure 5-5

### 5.7 Drip tray

Back out two screws on front or back of machine base to mount drip tray, as shown in Figure 5-6.

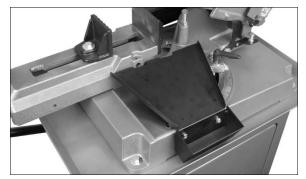


Figure 5-6

# 6.0 Electrical connections

The HBS-56MVS Band Saw is rated for 115-volt power. The band saw comes with a plug designed for use on a circuit with a *grounded outlet* that looks like the one pictured in **A**, Figure 6-1.

Before connecting to power source, be sure switch is in *off* position.

It is recommended that the band saw be connected to a dedicated 15 amp circuit with circuit breaker or fuse. If connected to a circuit protected by fuses, use time delay fuse marked "D". Local codes take precedence over recommendations.

#### 6.1 **GROUNDING INSTRUCTIONS**

This machine must be grounded. In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances.

Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.

### 

**EXAMPLYING** Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded. Failure to comply may cause serious or fatal injury.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.

Repair or replace damaged or worn cord immediately.

This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in **A**, Figure 6-1. An adapter, shown in **B**, may be used to connect this plug to a 2-pole receptacle as shown in **B** if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician. The green-colored rigid ear, lug, and the like, extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.

**Note:** In Canada, the use of a temporary adaptor is not permitted by the Canadian Electrical Code, C22.1.

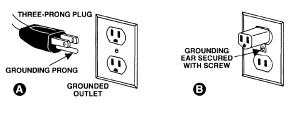


Figure 6-1

#### 6.2 Extension cords

The use of extension cords is discouraged; try to position machines near the power source. If an extension cord is necessary, make sure it is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. Table 2 shows correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gauge. The smaller the gauge number, the heavier the cord.

Ampe Rating		Volts	Total length of cord in feet			
More	Not	120	25	50	100	150
Than	More Than		AWG			
0	6		18	16	16	14
6	10		18	16	14	12
10	12		16	16	14	12
12	16		14	12	Not Recom	mended

Table 2: Extension cord recommendations

# 7.0 Adjustments

#### 7.1 Tools required for adjustments

(Not all may be needed depending on adjustment.) Wrenches 10, 12, 14mm Hex wrench 6mm Square Straight edge Small clamp

#### 7.2 Blade-to-table squareness

The blade must be perpendicular to table to ensure a straight cut. This setting should be verified during initial setup. Special blade setting gauges can be purchased for this type of inspection; however, it can also be done using more common shop items, as follows.

1. "Extend" the surface of blade by clamping a straight, flat object to blade. (Figure 7-1 uses a small, lightweight aluminum ruler.) Use a lightweight clamp.

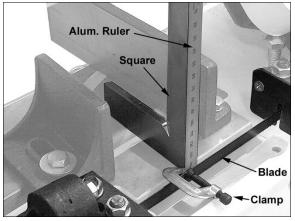


Figure 7-1

- 2. Place a square on table and against ruler. The square should lie flat against ruler without a gap.
- 3. If there is a gap, loosen bolt (A, Figure 7-2) on each blade guide assembly and rotate blade guide assemblies until gap is eliminated between square and ruler.
- 4. Retighten bolts (A).
- 5. After making this adjustment, be sure to recheck other blade adjustments as noted in this manual.

#### 7.3 Squaring vise to blade (90° stop)

For accurate cutting, vise jaws must be square to blade. Inspect as follows:

- 1. Loosen handle (B, Figure 7-2) and make sure bow is swiveled enough that the stop screw (C) is contacting the fixed screw (D).
- 2. Place a machinist's square on the bed against blade and fixed jaw of vise, as shown in Figure

7-2. The square should lie along entire length of jaw and blade without a gap.

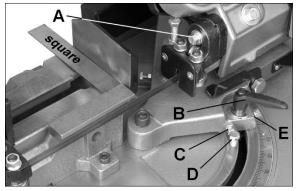


Figure 7-2

- If vise and blade are not square, loosen hex nut on stop screw (C, Figure 7-1) with 10mm wrench and rotate stop screw as needed until vise and blade are square whenever the stop screw is contacting the fixed screw.
- If vise and blade are square but pointer (E, Figure 7-2) is misaligned, loosen screw and adjust pointer until it aligns with zero on scale. Tighten screw.

**Note**: The handle (B, Figure 7-2) is adjustable. Simply lift up on handle and rotate it on the pin. Release handle, making sure it seats itself properly on pin.

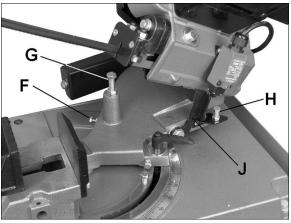


Figure 7-3

### 7.4 45° stop

Swivel bow to 45° angle. Use machinist's protractor or similar 45° device to verify angle of blade to vise.

If adjustment is needed, loosen hex nut on 45° stop (F, Figure 7-3) and rotate screw as needed with 10mm wrench. When satisfied, tighten hex nut.

#### 7.5 Downfeed stop

The weight of the bow guides the blade through the workpiece. The stop screw (G, Figure 7-3) prevents blade from contacting base after the cut. It has been adjusted by the manufacturer. If future adjustment is needed, loosen hex nut and rotate screw then retighten hex nut.

#### 7.6 Limit switch stop

The limit switch stops the blade after cut has been completed and bow has reached down position.

To adjust, loosen hex nut and turn screw (H, Figure 7-3). A distinct "click" will be heard when limit switch engages. Tighten hex nut against plate to secure screw setting.

#### 7.7 Bow prop

Use prop (J, Figure 7-3) to keep bow in raised position.

#### 7.8 Vise adjustment

# **AWARNING** Keep hands away from blade while moving or adjusting vise.

#### 7.8.1 Miter cutting

The base has two sets of holes for mounting vise assembly. For miter cuts from 0° to 45°, mount vise assembly to rear set of holes. For miter cuts over 45° up to 60°, mount vise to front set of holes. See Figure 7-4.

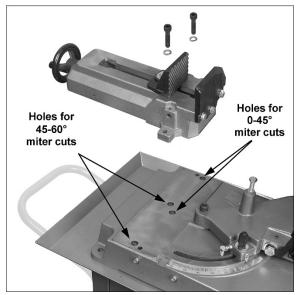


Figure 7-4

To adjust vise to 60° position:

- 1. Disconnect band saw from power source.
- 2. Raise bow and secure with prop.
- 3. Remove two screws and washers on vise assembly with 6mm hex wrench, and move

assembly to other set of holes. Tighten screws securely.

4. Remove stop screw (D, Figure 7-2) and swivel bow until pointer lines up with 60° on scale. Tighten handle (B, Figure 7-2).

**Note**: If handle becomes too constrained to be easily tightened while at 60° position, lift up on handle and use hex wrench to tighten the pin, then fully tighten using the handle itself. See Figure 7-5.

The cutting operation will now take place on opposite side of vise. Install chip tray and/or work stop to opposite side of vise.

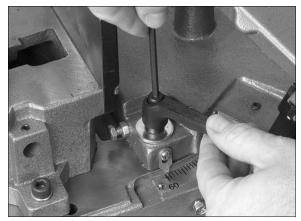


Figure 7-5

#### 7.8.2 Workpiece clamping

Place workpiece against fixed jaw which has already been squared (see sect. 7.2). Rotate handwheel clockwise to clamp floating jaw against workpiece, counterclockwise to release.

For irregular-shaped workpieces, loosen screw on floating jaw, bring jaw into contact with workpiece to conform to shape, then tighten screw.

#### 7.9 Blade tension

- 1. Disconnect band saw from power source.
- Remove back blade cover by removing knob and two screws. Inspect position of blade on wheel. If blade is not adjacent to wheel flange, first adjust blade tracking according to sect. 7.10, then proceed to step 3.
- 3. Turn blade tension knob (K, Figure 7-6) clockwise to tighten blade. Pluck the blade with your finger; a tensioned blade will emit a "twang" sound.

For precise measurement, use a blade tension gauge (not provided). Hard-back blades are generally tensioned at about 25,000 PSI (1757 kg/cm<sup>2</sup>); bi-metal blades at about 35,000 PSI (2460 kg/cm<sup>2</sup>).

4. Perform cutting operations with the saw, and make further tension adjustments as deemed necessary. As experience with the saw is

gained, the operator should develop a better "feel" for how tight to set a particular blade. Tick marks can be made on the tension knob for quickly resetting tension when re-installing a blade.

#### 7.10 Blade tracking

#### 

Blade tracking adjustment requires running saw with back cover open. Use caution when making this adjustment. Failure to comply may cause serious injury.

Blade tracking has been set by the manufacturer and should not require adjustment. When the blade is replaced, tracking may be required for the new blade.

- 1. Confirm that blade tension is set properly. To adjust, see *sect.* 7.9.
- 2. Raise bow and prop in position. Remove back blade cover.

**ACAUTION** While performing the following steps, keep blade from rubbing excessively on wheel flange. Excessive rubbing will damage wheel and/or blade.

- Run saw at low speed and observe blade. Blade should run next to but not tightly against wheel flange.
- 4. Loosen bolts (L, Figure 7-6) with 12mm wrench.
- 5. Turn set screw (N, Figure 7-6) with 4mm hex wrench, while observing blade tracking on wheel. Turn set screw clockwise to track closer to wheel flange, counterclockwise to track away from wheel flange.

**NOTE:** This adjustment is sensitive; start with 1/4 turns on the set screw and allow blade to respond to changes.

- 6. Once tracking is set, tighten bolts (L).
- 7. Make any final adjustments to blade tension (sect. 7.9).

#### 7.11 Blade guide adjustments

#### 7.11.1 Guide assemblies

The left blade guide assembly should be moved as close to workpiece as possible without interfering with cutting operation. This allows minimal blade exposure. To adjust, loosen handle (A, Figure 18) and slide assembly into position. Tighten handle (A) after adjustment.

The right blade guide assembly has been properly positioned to clear the cutting area. If future adjustment is needed, loosen bolt (B, Figure 18).

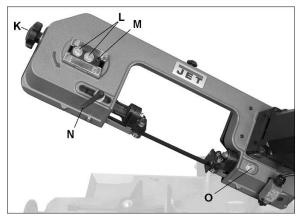


Figure 7-6

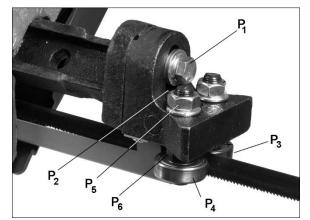


Figure 7-7

#### 7.11.2 Blade guide bearings

The blade guide bearings come pre-adjusted from the manufacturer, but should be inspected frequently and adjustments made as needed, especially after changing blades.

The blade should have already been tensioned and tracked properly before adjusting the blade guides.

- 1. Disconnect band saw from power source.
- Loosen bolt (P<sub>1</sub>, Figure 7-7) and adjust assembly so that rear bearing (P<sub>2</sub>) is slightly set back from back edge of blade. Also, inside bearing (P<sub>3</sub>) should very lightly contact blade. Tighten bolt (P<sub>1</sub>).
- Inside bearing (P<sub>3</sub>) is fixed. Outside bearing (P<sub>4</sub>) rotates on an eccentric shaft. Loosen top nut (P<sub>5</sub>) and rotate bottom nut (P<sub>6</sub>) to adjust eccentric bearing to very slight distance away from blade.
- 4. Hold bottom nut ( $P_6$ ) to prevent it turning further, and tighten top nut ( $P_5$ ).
- 5. Repeat above steps for opposite blade guide assembly.

#### 7.12 Blade replacement

AWARNING Use caution and proceed slowly when working with or around a band saw blade. Use work gloves when handling it.

- 1 Disconnect band saw from power source.
- Remove back blade cover, and red blade 2. guards.

AWARNING It is essential these red quards be installed after new blade has been fitted. Failure to comply may cause serious injury.

- 3. Release tension on blade using handle (K. Figure 7-6).
- 4. Remove old blade. Place new blade between blade guide assemblies and around each wheel. Make sure blade teeth are pointing in proper direction (see Figure 7-8).

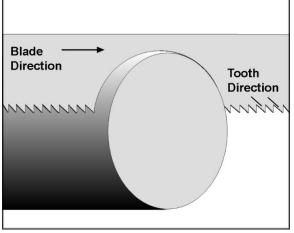


Figure 7-8

- 5. If teeth do not orient properly regardless of how blade is positioned, turn blade inside-out. Tension blade enough to hold in place.
- 6. An arrow on the bow indicates blade direction.
- 7. Tension blade fully (see sect. 7.9).
- 8. Place 2 to 3 drops of lightweight oil on blade.
- 9. Connect machine to power source.
- 10. Operate saw and make sure blade is tracking properly (sect. 7.10.)
- 11. Follow blade break-in procedures, sect. 8.2.

#### 7.13 Feed pressure adjustment

The spring (Figure 7-9) moderates downfeed pressure of bow. Turn screw with 12mm wrench, clockwise to decrease pressure, counterclockwise to increase pressure.



Figure 7-9

#### 7.14 Test cut to verify adjustment

Test cuts can be used to determine whether or not the blade is accurately adjusted. Use 2-inch round bar stock to perform these test cuts, as follows:

- With bar stock securely clamped in vise, make a cut through the bar stock. (See Figure 7-10.)
- Mark the top of bar stock. 2.
- 3. Move the bar stock about 1/4-inch past the blade so that you can begin a second cut.
- Rotate the bar stock 180 degrees so the mark 4. you made is now at bottom of cut.
- 5. Make a cut through the bar stock.
- Use a micrometer to measure the thickness 6. variation of the disk you have cut from the bar stock. Measure at top and bottom of disk.

The saw blade can be considered correctly adjusted when the variation measure is no more than 0.012 inch across the face of the disk.

If you do not have a piece of 2-inch bar stock available for a test cut, use a larger diameter test piece rather than a smaller one. [Note: Do not exceed material capacity of the machine - refer to specifications.] The maximum thickness variation on any test piece should be no more than 0.003 inch, per side, per inch of stock diameter.

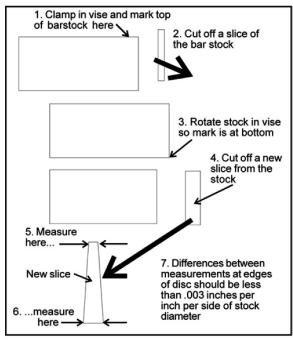


Figure 7-10

# 8.0 **Operation**

The HBS-56MVS is equipped with a motor driver containing a voltage feedback device to provide consistent torque during operation.

The saw is also provided with an overload protection device to prevent overheating of the motor. If saw shuts off because of overload, allow to cool a few minutes, then restart.

#### 8.1 Blade selection

The saw is provided with a blade that is adequate for a variety of cut-off jobs on a variety of common materials.

See Table 3 for recommended speeds for various materials. These selections, while appropriate for many shop cutting needs, do not encompass the wide variety of blades of special configuration (tooth pitch and set) and special alloys for cutting unusual or exotic materials.

Material	Speed (SFPM)*
Hardened Ferrous	80-130
Ferrous	130-180
Non-ferrous, Plastic, Wood	180-230

\*SFPM = surface feet per minute

Table 3: Speed recommendations

A coarse blade could be used for a solid steel bar but a finer tooth blade would be used on a thin-wall tube. In general, the blade choice is determined by the thickness of the material; the thinner the material, the finer the tooth pitch.

# General rule for band saw blade speed: The harder the material being cut, the slower the blade speed.

A minimum of three teeth should be on the work piece at all times for proper cutting. The blade and workpiece can be damaged if the teeth are so far apart that they straddle the workpiece.

For very high production on cutting of special materials, or to work hard-to-cut materials such as stainless steel, tool steel, or titanium, ask your industrial distributor for more specific blade recommendations. Also, the supplier who provides the workpiece material should be prepared to provide specific instructions regarding the best blade (and coolant or cutting fluid, if needed) for the material and shape supplied.

Use of a cutting oil is recommended when cutting at higher blade speeds.

#### 8.2 Blade break-in

New blades are very sharp and therefore have a tooth geometry which is easily damaged if a careful break-in procedure is not followed. Consult the blade manufacturer's literature for break-in of specific blades on specific materials. However, the following procedure will be adequate for break-in of JET-supplied blades on lower alloy ferrous materials.

- 1. Clamp a round section workpiece in the vise. The workpiece should be 2 inches or larger in diameter.
- 2. Set the saw on low speed. Start the cut with a very light feed rate.
- When the saw has completed 1/3 of the cut, increase feed rate slightly and allow saw to complete the cut.
- 4. Keep the same hydraulic cylinder setting and begin a second cut on the same or similar workpiece.
- 5. When blade has completed about 1/3 of cut, increase feed rate. Watch chip formation until cutting is at its most efficient rate and allow saw to complete the cut (see *sect. 8.4, Evaluating cutting efficiency*).
- 6. The blade is now ready for regular service.

#### 8.3 General operating procedure

1. Raise bow and secure in position using prop.

**ACAUTION** Always secure bow in raised position with prop before loading material. Never start a cut with blade contacting workpiece.

2. Position workpiece in vise and tighten vise. Workpiece should be fitted directly between jaws without adding other objects. When workpiece is profiled section, flat piece or special shape, refer to examples in Figure 8-1 for proper clamping positions. The top row shows acceptable clamping positions, the bottom row shows *unacceptable* positions.

If the thickness of profile section is very thin, a piece which duplicates the profile should be fitted inside the workpiece itself, to prevent workpiece being crushed between the jaws.

AWARNING Do not load/unload material from vise while machine is running. Never hold workpiece by hand when cutting; workpiece must be firmly secured in vise. Do not reach into cutting area during cutting operations.

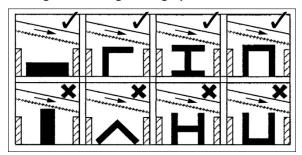


Figure 8-1: clamping positions

- 3. Adjust blade guides to minimize exposed blade area.
- 4. Release prop and turn on saw. Lower bow until blade contacts material. Release bow to allow cutting to proceed. Weight of bow in conjunction with spring tension will force blade through material until cut is finished.
- 5. Limit switch must turn off saw at completion of cut. Adjust if needed.

### 8.4 Evaluating cutting efficiency

Is the blade cutting efficiently? The best way to determine this is to observe the chips formed by the cutting. The ideal chip is thin, curled, silvery, and warm to the touch. This indicates blade is operating at efficient speed and downfeed rate.

If chip formation is powdery, then feed pressure is much too light, or blade is dull.

If chips are curled, but are heavy, or colored golden brown to blue, then excess heat is being produced. Feed pressure is too great or blade speed is too high.

# 9.0 User-maintenance

AWARNING Before doing maintenance on the machine, disconnect it from the electrical supply by pulling out the plug or switching off the main switch. Failure to comply may cause serious injury.

#### 9.1 General maintenance

Wipe down saw with a soft rag after each use, and clear metal particles with a small paint brush or parts cleaning brush. Do not use compressed air, as it may force chips into guide bearings and other critical areas of saw.

Periodically apply a light coat of oil, such as SAE30, on exposed metal surfaces to inhibit rust.

Make frequent inspections of motor fan, and blow out (with low pressure air hose) or vacuum any accumulation of foreign material to maintain normal motor ventilation.

Keep blade guides clean and free of metal particles.

Check guide bearings frequently to make sure that they are properly adjusted and turning freely.

Inspect power cord; if worn, cut or damaged in any way, have it replaced immediately.

#### 9.2 **Commutator brush inspection**

To maintain motor efficiency, inspect the two carbon brushes every two months, or more frequently if saw is heavily used. Stalling or loss of power may be a symptom of worn carbon brushes. If one brush is worn out, replace both at the same time.

# 

Continued use of a damaged or worn brush may result in damage to motor armature.

- 1. Unplug saw from power source.
- 2. Remove four button head screws, and remove motor sleeve.
- 3. Unscrew and remove cap with flat blade screwdriver. See Figure 9-1.
- 4. Gently pry up an edge of the brass clip, until the spring causes it to disengage from hole. (Notice orientation of brush as you remove it; it should be inserted in the same manner; curvature of brush will match curvature of motor.)
- Pull out brush and inspect. Brush should be 5. replaced if any of the following are discovered:
  - Brush has worn to about 1/2-inch long.
  - Signs of crumbling, burning, breaking. •
  - End of brush is rough or pitted.
  - Abnormal coloration of spring
  - Broken lead in spring
  - Collapsed spring

- 6. Install new brush (or reinstall current brush) and gently press it all the way into hole until brass clip is secured.
- 7. Install cap.
- 8. Repeat for other brush.
- 9. Reinstall motor sleeve and screws.

NOTE: It is recommended that saw be run without load for several minutes to seat new brushes.



Figure 9-1

#### 9.3 Lubrication

Ball bearings on blade guide assemblies and blade wheels are permanently lubricated and sealed, and require no further lubrication.

Periodically lubricate the vise leadscrew as needed with #2 tube grease.

#### 9.4 Additional servicing

Any additional servicing on the band saw should be performed by an authorized service representative.

# 10.0 Troubleshooting HBS-56MVS Band Saw

# 10.1 **Operational problems**

Symptom	Possible Cause	Correction	
Cuts not square.	Blade not square to vise/material.	Adjust vise square to blade.	
	Blade surface not perpendicular to table.	Adjust blade guides until perpendicular.	
	Workpiece shifting in vise.	Properly secure workpiece.	
	Low blade tension.	Increase tension.	
	Blade guides out of adjustment.	Adjust blade guides. Bring guides as close as possible to workpiece.	
Premature dulling of	Improper blade break-in.	Follow proper break-in procedure.	
blade teeth.	Excessive blade speed – blade teeth overheating.	Decrease speed.	
	Insufficient downfeed pressure.	Increase downfeed pressure (adjust spring tension).	
	Insufficient blade tension.	Increase blade tension.	
	Improper tooth pitch for material.	Use proper blade.	
	Hard spots on, or work hardening of, material	Reduce blade speed and increase downfeed rate.	
Rough cut.	Improper blade break-in.	Follow proper break-in procedure.	
	Improper speed or feed pressure.	Adjust as needed.	
	Dull or damaged teeth.	Replace blade.	
	Poor weld on blade.	Replace or re-weld blade.	
Frequent blade	Workpiece shifting in vise.	Properly secure workpiece.	
breakage.	Improper blade selection; too few teeth per inch or blade too thick.	Use blade with appropriate thickness and tooth pitch for material.	
	Incorrect blade speed or downfeed rate.	Use proper speed and feed rates.	
	Improper blade tension.	Tighten blade to prevent slippage on wheels.	
	Blade overstressed, pushing against wheel flange.	Adjust blade tracking.	
	Poor blade construction; cracks at weld.	Use properly welded blades.	
	Blade contacting workpiece before saw is started.	Blade must be clear of workpiece when turning on saw.	
	Guide bearing misalignment.	Adjust blade guides according to instructions.	
Blade refuses to track properly on wheels.	Improper blade tension.	Tighten blade to prevent slippage on wheels.	
	Guide bearing misalignment.	Adjust blade guides according to instructions.	
	Blade catching in workpiece.	Use good quality blade of appropriate style and tooth pitch for workpiece. Use cutting fluid when needed.	
	Improper blade wheel alignment.	Inspect and adjust wheel alignment. Contact JET technical service if needed.	
	Wheel bearings/bushings worn.	Inspect and replace if needed.	

#### 10.2 Mechanical and electrical problems

Symptom	Possible Cause	Correction *
Motor will not start.	Low voltage.	Check power line for proper voltage.
	Open circuit in motor or loose connection.	Inspect all lead connections on motor for loose or open connections.
	Overload condition.	Allow machine to cool down, then re-start.
Motor will not start, or motor stalls, resulting	Too many tools running on one circuit.	Reduce number of tools connected to circuit.
in blown fuse or tripped breaker.	Motor brushes worn.	Inspect and replace brushes if needed.
Dieakei.	Short circuit in line cord or plug.	Inspect cord or plug for damaged insulation and shorted wires.
	Short circuit in motor or loose connections.	Inspect all connections on motor for loose or shorted terminals or worn insulation.
	Incorrect fuses or circuit breakers in power line.	Install correct fuses or circuit breakers.
Motor overheats.	Motor overloaded.	Reduce load on motor: Increase speed or decrease feed pressure. Make sure blade is appropriate for material.
	Air circulation through motor is restricted.	Clean motor fan with vacuum to restore normal air circulation.
	Gear misalignment.	Take unit to authorized JET service center.
	Gear case bearings are worn.	Take unit to authorized JET service center for bearing replacement.
Machine slows when operating.	Excessive feed pressure.	Adjust spring tension to reduce feed pressure, or increase speed.
	Motor brushes worn.	Inspect and replace brushes if needed.

Table 4

\* **WARNING:** Some corrections may require a qualified electrician.

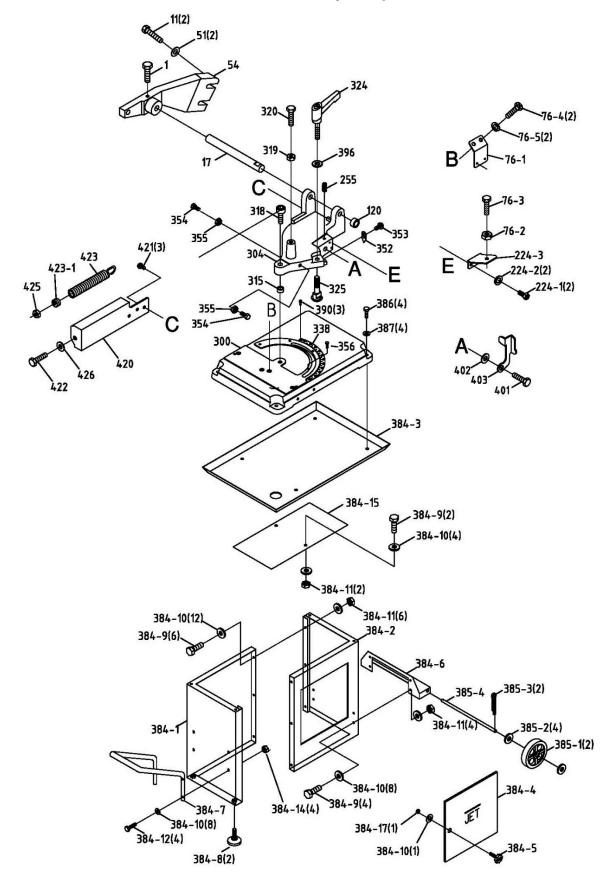
# 11.0 Replacement Parts

Replacement parts are listed on the following pages. To order parts or reach our service department, call 1-800-274-6848 Monday through Friday, 8:00 a.m. to 5:00 p.m. CST. Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately.

Some parts are shown for reference only, and may not be available individually.

Non-proprietary parts, such as fasteners, can usually be found at local hardware stores or may be ordered from JET.

#### 11.1.1 HBS-56MVS Base and Stand Assembly – Exploded View

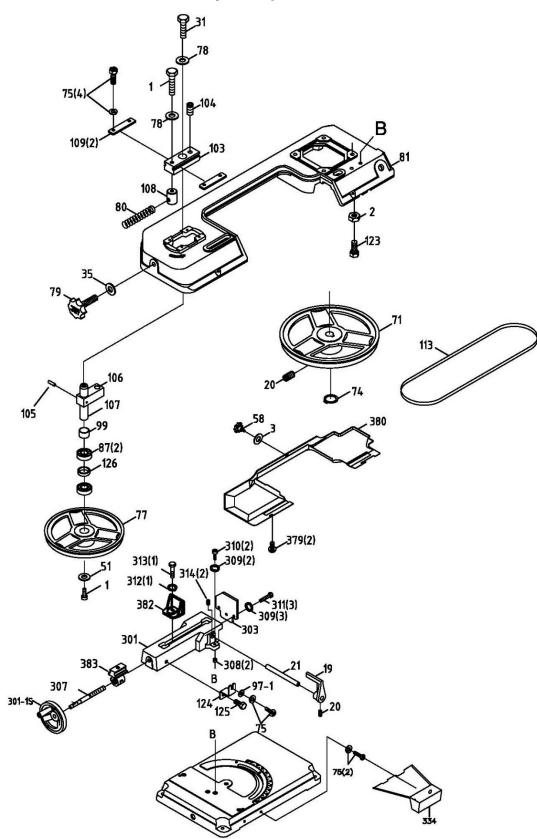


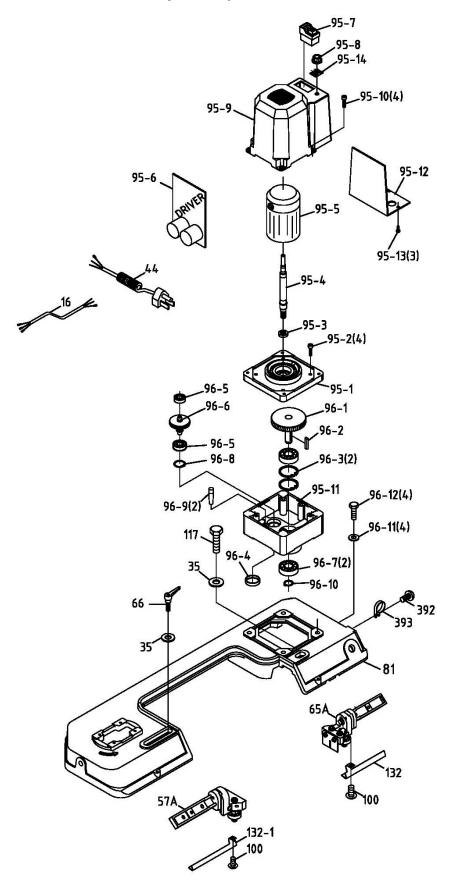
# 11.1.2 HBS-56MVS Base and Stand Assembly – Parts List

Index No	Part No	Description	Size	Qty
1	TS-0081031	. Hex Cap Screw	5/16"-18x3/4"	1
		. Hex Cap Screw		
17	HVBS462-017	. Pivoting Rod		1
		. Flat Washer		
		. Pivot Bracket		
76-1	HBS56MVS-076-1	. Switch Cut Off Base		1
		. Hex Nut		
		. Hex Cap Screw		
		. Hex Cap Screw		
		. Lock Washer		
		. Bushing		
		. Phillips Pan Hd Machine Screw		
		. Lock Washer		
224-3	HBS56MVS-224-3	. Stop Bolt Holder	4/41.00.5/4.01	1
		. Socket Set Screw		
		. Stand Top		
		. Swivel Base (Upper)		
		Positioning Ring.		
		. Socket Hd Cap Screw Hex Nut		
		. Hex Nut		
		. Hex Cap Screw		
		. Carriage Screw		
		. Angle Scale . Pointer		
		. Cross Round Head Screw		
		. Hex Cap Screw		
		. Hex Cap Sciew		
		. Hex Cap Screw		
		. Side Plate (Left)		
		. Side Plate (Right)		
		. Chip Pan		
		. Front Door		
		. Knob		
		. Wheel Base		
		. Hand Rod		
		. Rubber Head Screw		
		. Hex Cap Screw		
384-10	TS-0680031	. Flat Washer	5/16"x23xt2mm	25
384-11	TS-0561021	. Hex Nut	5/16"-18	12
384-12	TS-0051071	. Hex Cap Screw	5/16"-18x1-1/2"	4
		. Hex Nut		
		. Plate		
384-17	TS-0640081	. Hex Nylon Lock Nut	5/16"-18	1
		. Wheel Complete Assembly (includes #385-1 thru :		
		. Wheel		
		. Flat Washer		
		. Cotter Pin		
		. Wheel Rod		
		. Hex Cap Screw		
		. Flat Washer		
		. Rivet		
		. Flat Washer		
		. Hex Cap Screw		
		. Flat Washer		
		. Stopper		
420	HBS56MVS-420	. Spring Bracket		1
		. Socket Head Button Screw		
		. Hex Cap Screw		
423		. Tension Spring		1

Index No Part No	Description	Size	Qty
423AHBS56MVS-423A	. Tension Spring Assembly (#423, 423-1)		1
423-1 HBS56MVS-423-1	. Brace		1
425 TS-1540061	Hex Nut	M8	1
426TS-1550061	Flat Washer	M8	1

# 11.2.1 HBS-56MVS Bow Assembly I – Exploded View



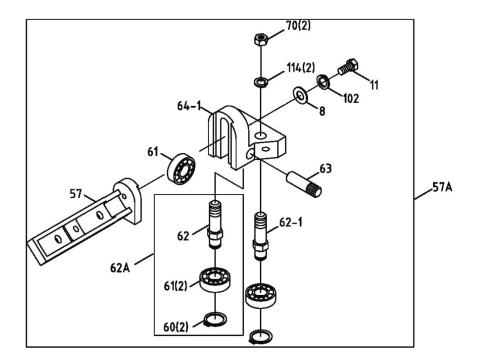


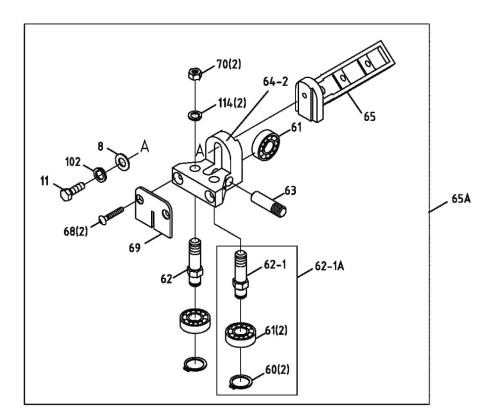
# 11.2.3 HBS-56MVS Bow Assembly – Parts List

Index No	Part No	Description	Size	Qty
		. Hex Cap Bolt		
		. Hex Nut		
		. Flat Washer		
		. Electric Cord		
		. Stock Stop		
		. Socket Set Screw		
21	HVBS462-021	. Stock Stop Rod		1
31	TS-0051051	. Hex Cap Screw	5/16"-18x1"	1
		. Flat Washer		
		. Electric Cable		
51	TS-0680031	. Flat Washer	5/16"	1
57A	HVBS56M-057A	. Adjustable Bracket Assembly LH		1
58	HVBS462-058	. Knob	1/4"	1
65A	HVBS56M-065A	. Adjustable Bracket Assembly RH		1
66	HVBS56M-066	Lock Knob		1
71	HVBS462-071	. Blade Wheel – Drive		1
74	HVBS56M-060	. C-Retainer Ring	S15	1
75	HVBS462-075	. Hex Cap Bolt with Lock Washer	1/4"-20x1/2"	7
77	HVBS462-077	. Blade Wheel – Idler		1
78	TS-0680031	. Flat Washer	5/16"	2
79	HVBS462-079	. Blade Tension Knob	3/8"	1
		. Spring		
		. Saw Bow Casting		
		. Ball Bearing		
95-1	HVBS56MVS-095-1	. Gear Box Cover DC		
95-2	TS-1503051	. Hex Socket Head Cap Screw	M6-1.0x20L	4
		. Oil Seal		
		. Motor Shaft		
		. Motor		
		. Motor Assembly (#95-1, 95-3, 95-4, 95-5)		
		. Motor Carbon Brush		
		. Driver		
		Magnetic Switch		
		. Variable Resistor		
		. Motor Sleeve		
		. Hex Socket Hd Cap Screw		
		. Gear Box		
		Electricals Plate		
		Cross Round Head Screw		
		. VR Speed Label		
		Drive Gear		
		. Flat Key, Double Rd Hd		
		. C-Retainer Ring		
		. Cap		
		. Ball Bearing		
96-6	HR\$56M\/\$-096-6	. Gear 326009-1+326009-2		<u>2</u> 1
		Ball Bearing		
		. C-Retainer Ring		
		. Pivot Pin		
		. C-Retainer Ring		
		. Lock Washer		
		. Hex Cap Screw		
		. Washer		
		. Spacer		
ອອ 100	E000100	. Spacer . Phillips Pan Hd Machine Screw	 #Q_ົ?ົ∿∿?/0"	ا۱ م
103	TS 0270074	Blade Tension Sliding Plate	5/16" 10,0/11 "	ا۱ ا
		Socket Set Screw		
100	UVDS402-105	Spring Pin		۲۱ ۸
		Sliding Plate Draw Block (includes #107)		
107		. Blade Wheel Shaft (RE:HVBS462-106)		1

Index No Part No	Description	Size	Qty
108 HVBS462-108	Shaft Block		1
	Blade Tension Sliding Guide		
	Blade1/2		
	Hex Cap Screw		
123TS-0050031	Hex Cap Screw	1/4"-20x3/4"	1
	Shipping Bracket		
125TS-0051031	Hex Cap Screw	5/16"-18x3/4"	1
126HVBS462-126	Bushing		1
132HVBS462-132	Blade Guard-Right		1
	Blade Guard-Left		
	Work Table		
	Handwheel Assembly		
	Wall Plate		
	Acme Screw		
308 HBS56S-308	Bushing		2
	Flat Washer		
	Hex Socket Hd Cap Screw		
	Hex Cap Screw		
	Flat Washer		
313TS-0208061	Hex Socket Hd Cap Screw	5/16"x1-1/4"	1
	Socket Set Screw		
334 HBS56S-389	Drip Tray		1
	Cross Round Head Screw		
	Back Blade Cover		
	Movable Vise Plate		
383 HBS56S-383	Bracket		1
	Phillips Pan Hd Machine Screw		
	Cable Clamp		
	Speed Chart, HBS-56MVS (not shown)		
	ID Label, HBS-56MVS (not shown)		
	Warning Label (not shown)		
	JET Logo (not shown)		
JJ6CS-OEW2	Open End Wrench (not shown)	12/14 mm	1

11.3.1 HBS-56MVS Blade Guide Assembly – Exploded View

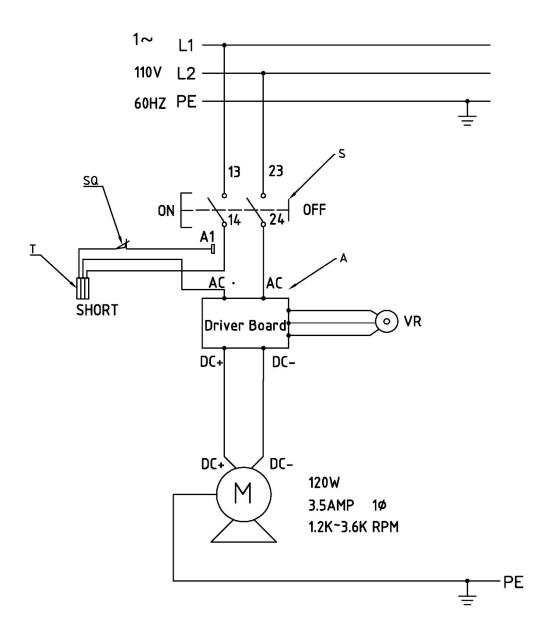




# 11.3.2 HBS-56MVS Blade Guide Assembly – Parts List

Index No Part No	Description	Size	Qty
8TS-0680031	Flat Washer	5/16"	2
11TS-0051051	Hex Cap Screw	5/16"-18x1"	2
	Adjustable Bracket LH		
	Adjustable Bracket Assembly LH		
60 HVBS462-060	C-Retainer Ring		
61BB-6000ZZ	Ball Bearing	6000ZZ	6
62HVBS462-062	Guide Pivot		2
62-1 HVBS462-062-1	Centrifugal Guide Pivot		2
62-1AHVBS462-062-1A	Eccentric Shaft Assembly (Includes #60,61,62-1)		
62AHVBS462-062A	Center Shaft Assembly (Includes #60-62)		
63 HVBS462-063			2
64-1 HVBS462-064-1			
64-2 HVBS462-064-2			
65 HVBS56M-065			
65AHVBS56M-065A	Adjustable Bracket Assembly RH		1
68TS-0813021	Flat Head Machine Screw	1/4"-20x3/8"	2
	Deflector Plate		
	Hex Nut		
102TS-0720081	Lock Washer	5/16"	2
114TS-0680041	Flat Washer	3/8"	4

# 12.0 Electrical Connections – HBS-56MVS Band Saw



# 13.0 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. JET woodworking machinery is designed to be used with Wood. Use of these machines in the processing of metal, plastics, or other materials outside recommended guidelines may void the warranty. The exceptions are acrylics and other natural items that are made specifically for wood turning.

#### **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.

JET sells through distributors only. The specifications listed in JET printed materials and on official JET website are given as general information and are not binding. JET reserves the right to effect at any time, without prior notice, those alterations to parts, fittings, and accessory equipment which they may deem necessary for any reason whatsoever. JET<sup>®</sup> branded products are not sold in Canada by JPW Industries, Inc.

#### Product Listing with Warranty Period

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	90 Days – Parts; Consumable items
	1 Year – Motors; Machine Accessories
	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; Air 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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