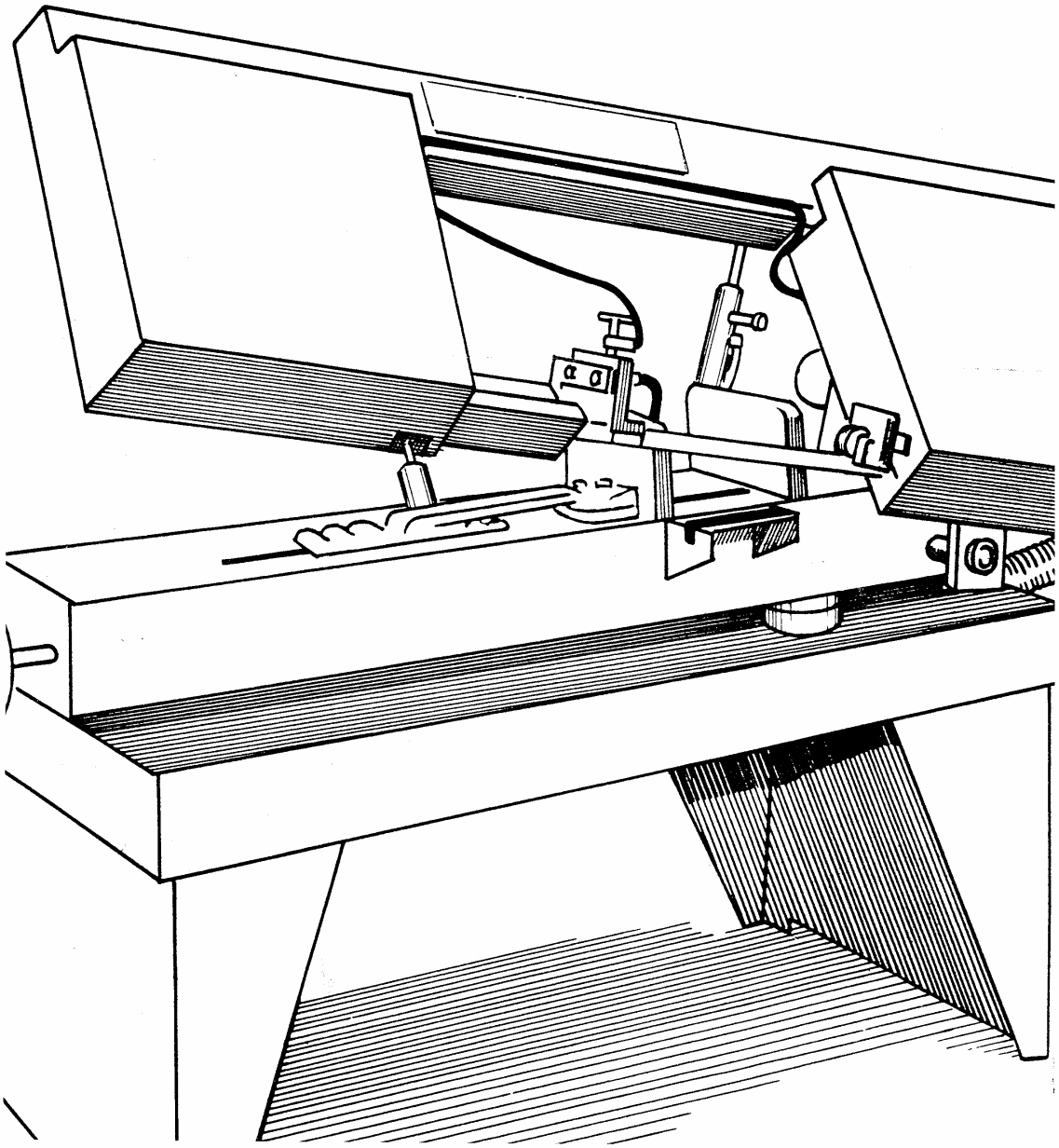
Instruction Manual and Illustrated Parts Breakdown for RAMCO RS90 Series Cutoff Saw



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Section 1: General Information

You have purchased a quality machine tool, and you will want to give it good care.

To derive maximum satisfaction from the use of your bandsaw, become familiar with the contents of this manual.

Section 2: Inspection

When you receive your machine, look it over carefully.

Should any shipping damage be noticed, report it promptly to the shipping carrier or directly to the factory, for fast claim service.

Section 3: Location of Installation

Select a convenient well lighted work area having sufficient room to allow long stock to be easily positioned in the saw.

Place the saw on a firm level surface. Be sure that there is sufficient clearance for raising the saw head to its vertical position.

Section 4: Cleanliness

As with all machinery, cleanliness is of utmost importance.

This machine and the general work area should be kept clean at all times.

Section 5: Installation

5.1 Remove the slipping bolts from the saw and saw legs.

5.2 Slide the saw out of the shipping crate and place it on some type of temporary support.

5.3 Bolt the saw legs to the saw using the bolts provided for this purpose located in the bolt kit at tached to the saw blade.

5.4 Remove the shipping bolt that locks the saw head to the base of the saw.

Section 6: Safety Precautions

6.1 Before cleaning this machine, or before doing any machine maintenance, disconnect the power supply.

6.2 Never use an air hose for cleaning purposes,

—instead, use a hand brush.

6.3 Never place your hands in the direct line of the saw blade, — use a “stock pusher to push against the stock.

6.4 Do not force the material into the saw blade.

6.5 Do not twist the material in the saw blade, — make curved cuts graduallywithout binding the blade.

6.6 Do not use a saw blade that has teeth missing from it.

6.7. Never operate this saw without the blade guides in place.

6.8 This tool should be grounded while in use to protect the operator from electric shock. Replace or repair damaged or worn cord immediately.

6.9 Wear proper apparel.

6.10 Use safety glasses.

Section 7: Lubrication

Lubricate the following parts using SAE-30 weight MOTOR oil.

7.1 THRUST BEARINGS (ltems29)from 6-8 drops each week.

7.2 BLADE-GUIDE BEARINGS (Items 20) none required.

7.3 VISE ADJUSTING-ROD as needed.

7.4 All other pivot points, shafts and bearing areas,

6-8 drops each week.

The heavy duty GEAR REDUCER requires a medium weight GEAR oil (Item 63) available from the factory.

Section 8: Blade Selection

Your bandsaw comes to you fully equipped with a good general purpose saw blade of moderate coarseness (Item 33.3).

The type of material that you wish to cut will determine the tye of saw blade to be used.

Solid material requires a COARSE blade (fewer number of teeth per inch) and lighter guage material requires a FINE blade (greater number of teeth per inch.)

The blade size required for this bandsaw is 3/4” wide x 115-1/2” long. This length is equal to 9-7- 1/2’.

The saw blade grips on this bandsaw can accom modate various blade thicknesses.

Section 9: Cutting Speed Selection

This bandsaw is provided with a step pulley drive arrangement that provides the ability to select any one of three cutting speeds.

9.1 FAST, — 153 Feet Per Minute

9.2 MEDIUM, — 108 Feet Per Minute.

9.3 SLOW, — 55 Feet Per Minute.

For SOFTER materials, use a FASTER cutting speed, — for HARDER materials, us a SLOWER cutting speed.

Section 10: Cutting Speed Adjustment

10.1 FOR FAST CUTTING SPEED, — set the V BELT (Item 6) in the LARGEST pulley groove of the MOTOR PULLEY (Item 7) and in the SMALLEST pulley groove of the REDUCER PULLEY (Item 5).

10.2 FOR MEDIUM CUTTING SPEED,— set the V-BELT in the MIDDLE pulley groove of BOTH pulleys.

10.3 FOR SLOW CUTTING SPEED, — set the

V-BELT in the SMALLEST pulley groove of the MOTOR PULLEY (Item 7) and in the LARGEST pulley groove of the REDUCER PULLEY (Item 5).

10.4 The V-BELT is easily positioned by swing ing the spring loaded DRIVE MOTOR (Item 1) downward while moving the V-Belt to the desired position in the step pulleys, and then releasing the spring loaded DRIVE MOTOR to re-tighten the V Belt.

Section 11: Cutting Speed Chart

The following Chart gives suggested settings for several materials. For detailed cutting data, check any good machinist handbook and use the closest speed available.

Material	Speed	FPM
Tool Steel Stainless Steel Alloy Steels Bearing Bronze	Slow	55 FPM
Medium to High Carbon Steels Hard Brass or Bronze	Medium	108 FPM
Low to Medium Carbon Steels	Medium To Fast	108 FPM To 153 FPM
Soft Brass Aluminum Plastics	Fast	153 FPM

Section 12: Saw Blade Removal

12.1 Turn the BLADETENSION ADJUSTER (Item

13) counterclockwise allowing the WHEEL AXLE ASSEMBLY (Items 12 & 27) to move inward along the GUIDE BLOCKS (Item 28) thereby loosening the saw blade, — permitting it to be removed from the BLADE WHEELS (Items 30.1 & 30.2)

Section 13: Saw Blade Installation

13.1 Place the appropriate blade onto the BLADE WHEELS (Items 30.1 & 30.2) and in between the GUIDE BEARINGS (Items 20) being sure that the smooth back edge of the blade is close to the blade bacKup flange on both blade wheels.

Be sure that the blade teeth are pointed in the right direction, — toward the motor end of the saw.

13.2 Re-tighten the BLADE TENSION ADJUSTER (Item 13) which pushes the wheel axle assembly back out along the GUIDE BLOCKS (Items 28) thereby tightening the saw blade just enough to track align itself.

13.3 Check to be sure that the blade is properly installed and freely fitting in the BLADE GUIDES.

13.4 Inch the saw to make a complete revolution of the saw blade, to check for proper tracking.

13.5 Apply the correct tension to the saw blade,

— that tension which will allow the blade to be deflected 1/8” sideways from its true position.

13.6 Run the saw again to check for proper blade tracking.

For more extensive tracking adjustment, see Section 11.

Section 14: Saw Blade Tracking Adjustment

Correct saw blade tracking has been factory adjusted. However, should you find it necessary to re-adjust the tracking of the saw blade, proceed as follows.

14.1 Slightly loosen the bolts that fasten the WHEEL AXLE (Item 12) to the ADJUSTMENT BRACKET (Item 27).

14.2 Change the tilt of the WHEEL AXLE just a small amount by turning the two adjustment bolts in” or “out” as the case may require, — to track the smooth edge of the saw blade approximately 1/16” away from the blade backup flange on each BLADE

WHEEL.

Also, the tilt angle of the drive shaft of the GEAR REDUCER (Item 4) can be adjusted in like manner,

— but this adjustment should be made only if the blade will not otherwise track by the above adjust ments.

Section 15: Saw Blade Grip Adjustment

The BEARING GUIDE assemblies (Items 18) can be adjusted to accommodate different blade widths. This is accomplished as follows:

15.1 Loosen the blade guide HEX NUTS (Items

15).

15.2 Turn the ECCENTRIC BOLTS (Items 21) until the BLADE GUIDE BEARINGS (Items 20) lightly grip the saw blade.

15.3 Re-tighten the blade guide HEX NUT while holding the ECCENTRIC BOLT in its position.

When properly adjusted, the BLADE GUIDE BEARING should be just barely turriable by hand.

Section 16: Saw Blade Pitch Adjustment

16.1 Loosen the bolts that attach the BLADE GUIDES (Items 18) to the right hand and the left hand BLADE GUIDE CARRIAGE (Items 16 & 22).

16.2 Rotate the BLADE GUIDES clockwise or counterclockwise to set the correct pitch of the blade.

If the blade is cutting “in” at the bottom of the stock

material, adjust the blade pitch outward.

If the blade is cutting “out” at the bottom of the stock material, adjust the blade pitch inward.

16.3 Re-tighten the blade guide mounting bolts. If all adjustments are correct, the blades should lightly touch all BLADE GUIDE BEARINGS (Items 20).

16.4 Check settings by making sample cuts in scrap stock before doing production work.

Section 17: Adjusting the Clamp Vise

17.1 FOR ALL CUTS, — set the STATIONARY VISE JAW tern 50) as close as possible to the right hand BLADE UIDE ASSEMBLY (Item 18).

17.2 FOR SQUARE CUTS, — set the face of the STATIONARY VISE JAW so that it is “square” with the saw blade, — to ensure accurate “square” cuts horizontally across the stock material.

17.3 FOR ANGLED CUTS, —set the face of the STATIONARY VISE JAW at the desired cut-angle with reference to the saw blade.

17.4 FOR PARALLEL STOCK, set the angle of the MOVEABLE VISE JAW (Item 49) parallel to the STATIONARY VISE JAW.

17.5 FOR NONPARALLEL STOCK, — set the MOVEABLE VISE JAW parallel to the stock mate rial, after it has been set in place on the sawbed.

Section 18: Work Setup

18.1 Raise the saw head to its highest position.

18.2 Open the vise to accept the piece to be cut,

— by raising the CLAMP BAR (Item 47) on the MOVEABLE VISE JAW (Item 49). Then slide it away from the STATIONARY VISE JAW (Item 50).

18.3 Place the workpiece on the saw bed (Item

54). Long bar stock should be supported by a tripod type stand at the same height as the saw bed.

18.4 Clamp the workpiece in the vise, by again raising the CLAMP BAR and sliding it toward the workpiece until contact is made.

18.5 Drop the CLAMP BAR into a convenient slot in the clamp rack (Item 46).

18.6 Tighten the vise by rotating the HANDWHEEL (Item 62) clockwise until the workpiece is securely clamped in the vise.

Section 19: Positioning the Left Hand Blade Guide Assembly

Always position the left hand BLADE GUIDE assembly (Item 18) as close to the MOVEABLE VISE (Item 49) as possible, as follows.

19.1 Loosen the BLADE GUIDE LOCK (Item 25) and slide the left hand BLADE GUIDE CARRIAGE (Item 22) to the recommended position.

19.2 Re-tighten the BLADE GUIDE LOCK before cutting.

Section 20: Horizontal Operation

20.1 Raise the saw head so that the saw blade clears the stock material.

20.2 Position the stock material in the vise and close the vise jaw tight enough to hold the workpiece.

DO NOT REST THE BLADE ON THE WORKPIECEl

20.3 Re-check the position of the workpiece in the vise jaws.

20.4 When the position of the workpiece is cor rect, tighten the vise firmly by hand, by turning the HANDWHEEL (Item 62)1

20.5 Position the left hand BLADE GUIDE

CARRIAGE and lock it in position by tightening the

BLADE GUIDE LOCK until it is moderately tight. DO

NOT OVERTIGHTEN!

20.6 Raise the saw head away from the work- piece as high as possible.

20.7 Switch the saw “ON”.

20.8 Lower the sawhead by slowly turning the control knob on the hydraulic DESCENT CYLINDER (Item 42) counterclockwise until the saw head begins to descend allowing the saw blade to GENTLY enter the material to be cut.

Lightly support the saw head by hand until a good introductory cut is established.

After the blade has safely entered the material, it is no longer necessary to support the frame by hand, since the natural feed of the saw will complete the cut and the saw will switch “OFF” automatically.

20.9 Repeat the foregoing opertions for each subsequent cut.

20.10 When through cutting remove the work- piece from the vise and raise the saw head to its raised position.

It is best not to leave the saw head in the horizontal position, since in this position the COUTERBAL ANCE SPRING (Item 56) is under tension.

20.11 Clean saw and tidy up work area. See Sections 4 & 6.

Section 21: Re-adjusting the Counterbalance Spring

The COUNTERBALANCE SPRING (Item 56) assists the hydraulic DESCENT CYLINDER in controlling the speed of the saw head descent.

21 .1 To provide more counterbalance and a gentler rate of cutting as well as longer blade life and smoother cuts, — TIGHTEN the COUNTERBALANCE SPRING.

21.2 To provide less counterbalance and more vigorous rate of cutting, — LOOSEN the COUNTER BALANCE SPRING.

Section 22: Raising the Saw Head to

Section 22: Raising the Saw Head to Vertical Position

22.1 Loosen the LOCKING BOLT (ITEM 35).

22.2 EXTEND THE VERTICAL SUPPORT LEG (Item 36) about 6".

22.3 Re-lock the locking bolt.

22.4 Lift the saw head so that it is perpendicular to the saw bed. (Item 54).

22.5 With the saw head held upright, readust the position of the VERTICAL SUPPORT LEG to touch the floor.

22.6 Re-lock the LOCKING BOLT.

22.7 Place the VERTICAL TABLE (Item 9) in place with about 1 ' clearance between it and the lower BEARING GUIDE assembly. (Item 18).

Section 23: Vertical Operation

Although this machine will be used primarily as a cutoff saw, — Notching, Slitting, and Contour Work will be done at times with the saw head in the vertical position.

A VERTICAL TABLE (Item 9) is included with this bandsaw, for this purpose.

For vertical operation, be sure that a fine-tooth saw blade is installed in the saw, since in vertical operation the material to be cut will most likely be of a light gauge.

23.1 Raise the saw head to its vertical position, (Section 21)

23.2 Install the VERTICAL TABLE.

23.3 Set the top BLADE GUIDE (Item 18) to a height above the VERTICAL TABLE equal to 1/8" more than the thickness of the stock material.

23.4 Proceed with cutting.

The same speed principles apply to vertical cutting as apply in the case of horizontal cutting.

Feeding the material to be cut into the saw blade is obviously a hand operation in vertical cutting, so

EXERCISE CAUTION AT ALL TIMES.

With practice, you will readily beome aware of the amount of pressure that will be needed to achieve the best cutting efficiency, (See Section 6).

Section 24: Switch Actuator Adjustment

Adjust the SWITCH ACTUATOR (Item 44) up or down so that the ON-OFF SWITCH (Item 45) is turned "OFF" when the saw has cut through the workpiece.

Section 25: Programming

To avoid costly, time consuming changeovers and re-adjustments, it is wise to plan in advance the cuts to be made, and do them all in the same set up.

Section 26: Important Notes

The BLADE GUIDE BEARING adjustments outlined in Sections 12 and 13 are the most impor tant adjustments on your saw. It is impossible to get satisfactory work from your saw if the BLADE GUIDES are not properly adjusted.

The BLADE GUIDES are adjusted and power tested with several test cuts before leaving the factory to ensure proper setting and the need for readjusting should rarely occur when the saw is properly used.

However, if the BLADE GUIDES do get out of adjustment, it is extremely important to re-adjust them at once.

If improper adjustment is allowed, the blades will not cut straight, and if the situation is not corrected, it will cause serious blade damage.

Because BLADE GUIDE adjustment is a critical factor in the performance of your saw, it is always best to try a new blade to see of this will first correct poor cutting before proceeding with any readjust ing.

If a blade becomes dull on one side sooner than on the other, forexample, itwill begin cutting crooked.

A simple blade change will correct this problem whereas the more difficult BLADE GUIDE adjust ment will not.

If a new blade does not correct the problem, check the BLADE GUIDES for proper spacing.

For most efficient operation and maximum accu racy in cutting, the BLADE GUIDE BEARINGS should just touch the blade so that they will still turn freely.

Care should be taken to ensure that the welded blade area is no thicker than the parent metal.

A minimum of three (3) teeth should be on the workpiece at all times, for proper cutting, — if the teeth of the blade are so far apart that they straddle the workpiece, severe damage to the workpiece and to the blade can result.

CARE MUST BE EXERCISED TO KEEP THE

BLADE FROM RUBBING EXCESSIVELY ON THE

SHOULDER OF THE BLADE WHEELS AS THIS

WILL DAMAGE THE PULLEYS AND/OR BLADE.

Section 27: Trouble Shooting		
Problem	Probable Cause	Solution
Excessive Blade Breakage	Material loose in vise. Wrong speed or feed. Teeth too coarse for stock. Wrong blade tension. Blade in contact with stock before saw is started. Blade rubs on wheel flange. Misaligned blade guides. Blade too thick for wheel diameter. Cracking at blade weld.	Clamp work securely. Check machininst handbook for correct speed and feed. Check machinist handbook for recommended blade type. Adjust so that blade does not slip on blade wheels. Place blade in contact with stock after saw is started. Adjust wheel alignment. Adjust. Use thinner blade. Anneal blade longer.
Premature Blade Dulling	Teeth too coarse. Too much speed. Inadequate feed pressure. Hard spots in/on stock. Work hardening of stock. Blade installed backwards. Insufficient blade tension.	Use finer tooth blade. Try next slower speed. Adjust saw head descent. Reduce speed, increase feed pressure. Increase feed pressure. Remove blade, twist inside-out, and re-install. Increase to proper level.
Crooked Cuts	Work not square. Feed pressure too great. Blade guide bearings out of adjustment. Inadequate blade tension. Blade guides too far apart. Dull blade. Incorrect speed. Blade guide assembly loose. Blade guide bearing assembly loose. Blade tracking too far away from wheel flanges. Guide bearing worn.	Adjust vise square with blade. Clamp work tightly. Reduce. Adjust. Increase blade tension a little at a time. Move guides as close to work as possible. Replace blade. Check manual for correct speed. Tighten. Tighten. Retrack blade per instructions. Replace.
Rough Cuts	Too much speed or feed Blade too coarse	Reduce Replace with finer blade.
Twisting Blade	Cut is binding blade. Too much blade tension.	Decrease feed pressure. Decrease blade tension.
Unusual Wear on Side/Back	Blade guides worn. Blade guide bearings not adjusted. Loose Blade bearing bracket.	Replace. Adjust per instructions. Tighten.

Section 27: Trouble Shooting

Problem	Probable Cause	Solution
Teeth	Blade too coarse for stock.	Use finer tooth blade.
Ripping	Heavy feed; slow feed.	Decrease feed pressure and/or increase feed.
From	Vibrating work piece.	Clamp work securely.
Blade	Blade gullets loading.	Use coarser blade or brush, to remove chips.
Motor	Blade tension too high.	Reduce blade tension.
Running	V-BELT tension too high.	Reduce tension.
Hot	Blade too coarse for stock.	Use finer blade.
	Blade too fine for stock.	Use coarser blade.
	Idler BLADE WHEEL need lubrication.	Oil THRUST BEARINGS (Item 29)

Section 28: Parts List

Item	Part Number	Description
1.	P-7501	Drive Motor
2.	B-2146	Motor Mount
3.	P-i 701	Compression Spring
4.	P-i 501	Gear Reducer
5.	P-0601	Reducer Pulley
6.	P-0501	V-Belt
7.	P-0602	Motor Pulley
8.	0-2148	Belt Guard
9.	B-21i4	Vertical Table
10.	P-i 001	Pivot Shaft
11.	B-2158	Support Leg
12.	0-2179	Wheel Axle
13.	B-2180	Blade Tension Adjuster
14.	A-2i81	Bearing Bolt
15.	P-0130-05	Hex Nut, 516-18 thread
16.	A-2174	Blade Guide Carriage, R.H.
17.	B-2118	Angled Leg
18.	B-2121	Blade Guide
19.	P-Oi13-07	Flat Washer, for 5/16 bolt
20.	P-1305	Blade Guide Bearing
21.	A-2182	Eccentric Bolt
22.	A-2175	Blade Guide Carriage, L.H.
23.	B-2110	Blade Guard
24.	B-2i55	Guide Block
25.	B-2i83	Blade Guide Lock
26.	0-2161	Cover, L.H.
27.	C-2i06	Adjustment Bracket
28.	B-2i85	Guide Block
29.	P-i 306	Thrust Bearing
30.1	0-2186-01	Blade Wheel, L.H.
30.2	C-2i86-02	Blade Wheel, R.H.
30.3	A-2192	Keystock
31.	P-1211	Setscrew Collar
32.	P-0008-09	Hex Jamnut, 7/8’-14 thread

Section 28: Parts List

Item	Part Number	Descripton
33.2.	P-2102	Saw Blade, 8 T.P.I.
33.3	P-2103	Saw Blade, 10 T.P.I.
33.4	P-2104	Saw Blade, 14 T.P.I.
33.5	P-2105	Saw Blade, 18 T.P.I.
34.	D-2163	Back Panel
35.	P-0102-29	Hex Head Cap Screw, 3/8-16 thread x 3/4 long
36.	B-2187	Vertical Support Leg
37.	C-2162	Cover, R.H.
38.	P-0141-01	Clevis Pin
39.	P-0142-01	Cotter Pin
40.	P-5301	Clevis Block
41.	P-0102-39	Stud Bolt
42.	P-5101	Descent Cylinder
43.	P-0901	Automatic Stop Support
44.	A-2189	Switch Actuator
45.	P-8101	On-Off Switch
46.	B-2152	Clamp Rack
47.	B-2153	Clamp Bar
48.	B-2154	Clamp Clevis
49.	C-2190	Moveable Vise Jaw
50.	C-2191	Stationary Vise Jaw
51.	A-2122	Vise Adjustment Nut
52.	A-2123	Vise Slide Plate
53.	A-2124	Vise Lock Plate
54.	C-21 43	Saw Bed
55.	C-2141	Base Pan
56.	P-1702	Counterbalance Spring
57.	P-0510-01	Spring Adjuster Eyebolt
58.	P-0136-02	Wingnut, 3/8”-16 thread
59.	0-2142	Pan Support Leg
60.	B-2184	Vise Adjusting Rod
61.	P-0140-70	Rollpin, 3/16 diameter x 1” long
62.	B-2150	Handwheel