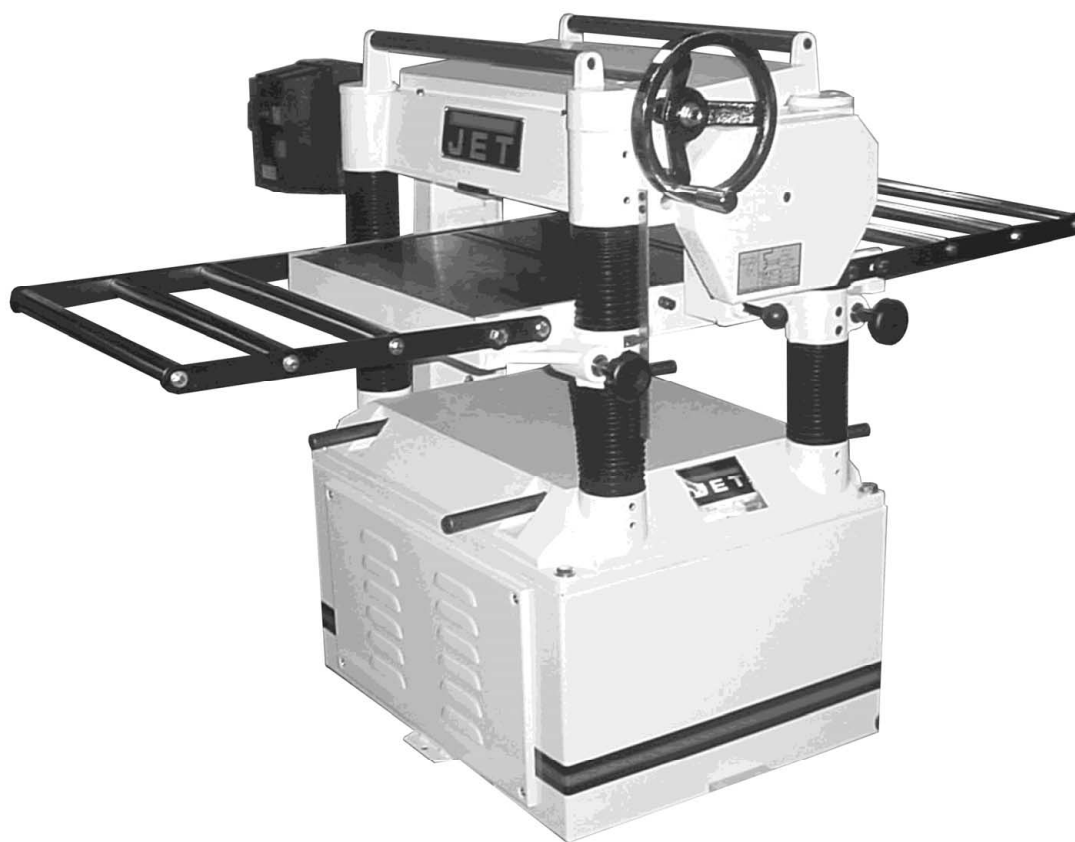




Operating Instructions and Parts Manual

20-inch Planer

Models JWP-208 and JWP-208HH



Model JWP-208 shown

WMH TOOL GROUP, Inc.

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Elgin, Illinois 60124
Ph.: 800-274-6848
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Part No. M-708528

Revision H1 5/07

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Warranty and Service

WMH Tool Group, Inc., warrants every product it sells. If one of our tools needs service or repair, one of our Authorized Service Centers located throughout the United States can give you quick service. In most cases, any of these WMH Tool Group Authorized Service Centers can authorize warranty repair, assist you in obtaining parts, or perform routine maintenance and major repair on your JET® tools. For the name of an Authorized Service Center in your area call 1-800-274-6848.

MORE INFORMATION

WMH Tool Group is consistently adding new products to the line. For complete, up-to-date product information, check with your local WMH Tool Group distributor, or visit jettools.com.

WARRANTY

JET products carry a limited warranty which varies in duration based upon the product. (MW = Metalworking, WW = Woodworking)

90 DAY WARRANTY	1 YEAR WARRANTY	2 YEAR WARRANTY	5 YEAR WARRANTY	Warranty reverts to 1 Year Warranty if woodworking (WW) products listed below are used for commercial, industrial or educational purposes	LIFE LIFETIME WARRANTY
Lathe Accessories Machine Accessories Mobile Bases Safety Equipment Specialty Items Vise Accessories	Air Tools-Contractor Air Tools-Industrial Air Tools-Light Industrial Lubrication	Body Repair Kits Bottle Jacks Cable Pullers Cold Saws Hoists-Air Hoists-Electric Metalforming Mill/Drills Milling Machines	MW Bandsaws MW Drill Presses MW Finishing Equipment MW Lathes MW Precision Vises Pallet Trucks	Rigging Equip. Service Jacks Stackers Surface Grinders Tapping Trolleys-Air Trolleys-Electric Web Slings Winches-Electric	Beam Clamps Chain Hoist-Manual Lever Hoists Pullers-JCH Models Scissor Lift Tables Screw Jacks
				Trolleys-Geared Trolleys-Plain Winches-Manual WW Air Filtration WW Bandsaws WW Buffers WW Drill Presses WW Dust Collectors WW Dust Filters WW Dust Fittings WW Jointers WW Lathes WW Planers WW Sanders WW Shapers WW Tablesaws	Fastening Tools Mechanics Hand Tools Striking Tools Vises (non-precision) Clamps

WHAT IS COVERED?

This warranty covers any defects in workmanship or materials subject to the exceptions stated below. Cutting tools, abrasives and other consumables are excluded from warranty coverage.

WHO IS COVERED?

This warranty covers only the initial purchaser of the product.

WHAT IS THE PERIOD OF COVERAGE?

The general JET warranty lasts for the time period specified in the product literature of each product.

WHAT IS NOT COVERED?

Five Year Warranties do not cover woodworking (WW) products used for commercial, industrial or educational purposes. Woodworking products with Five Year Warranties that are used for commercial, industrial or education purposes revert to a One Year Warranty. This warranty does not cover defects due directly or indirectly to misuse, abuse, negligence or accidents, normal wear-and-tear, improper repair or alterations, or lack of maintenance.

HOW TO GET SERVICE

The product or part must be returned for examination, postage prepaid, to a location designated by us. For the name of the location nearest you, please call 1-800-274-6848.

You must provide proof of initial purchase date and an explanation of the complaint must accompany the merchandise. If our inspection discloses a defect, we will repair or replace the product, or refund the purchase price, at our option.

We will return the repaired product or replacement at our expense unless it is determined by us that there is no defect, or that the defect resulted from causes not within the scope of our warranty in which case we will, at your direction, dispose of or return the product. In the event you choose to have the product returned, you will be responsible for the shipping and handling costs of the return.

HOW STATE LAW APPLIES

This warranty gives you specific legal rights; you may also have other rights which vary from state to state.

LIMITATIONS ON THIS WARRANTY

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

WMH TOOL GROUP 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.

WMH Tool Group sells through distributors only. The specifications in WMH catalogs are given as general information and are not binding. Members of WMH Tool Group reserve 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® branded products are not sold in Canada by WMH Tool Group.

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Warnings

Read the manual. Always read the owner's manual carefully before attempting to use the machine. Know the limitations and hazards associated with the use of this planer.

Installation. If mounting machine to the floor, use high quality anchor bolts through the mounting holes on the base. If using a mobile base, be sure to lock the wheels.

Eye protection. Always wear approved safety goggles, glasses, or a face shield when operating this machine. NOTE: Common eyeglasses are only impact resistant, they are not safety glasses. Also use face or dust mask if the cutting operation is dusty.

Dress code. Do not wear loose clothing, neckties, jewelry, or gloves that can get caught in moving parts. Confine long hair. Keep sleeves above the elbow.

Placement. Place machine so that potential kickback area is not in line with aisles, doorways, wash stations or other work areas. Do not use machine in a damp or wet location, or expose to rain. Keep work area well lighted.

Electrical grounding. Your machine must be electrically grounded. If a cord and plug are used, make certain the grounding lug connects to a suitable ground. Follow the grounding procedure indicated by the National Electrical Code.

Guards. Be sure machine guards are in place and in good working order. Do not operate while gear cover is open. If a guard must be removed for adjustments or maintenance, it should be reinstalled immediately upon completion of the procedure and before operating the machine.

Housekeeping. Before turning on machine, remove all extra equipment such as keys, wrenches, scrap, stock, and cleaning rags from the machine. Keep the area around machine clean and free of scrap material and sawdust to minimize the danger of slipping.

Power off. Make sure the machine is either unplugged or electrically disconnected and locked out when performing maintenance or service work. Also, make sure switch is in OFF position before plugging in power cord. Never leave the machine running unattended. Do not leave machine until it comes to a complete stop.

Cutterhead. Keep knives sharp and free of all rust and pitch. Make sure gib screws are tightened securely.

Work piece. Check material for loose knots, nails and other defects that can damage knives and pose a safety hazard for the operator.

Keep hands away from feed rollers and cutterhead while operating.

Use the 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 undersize cord will cause a drop in line voltage resulting in loss of power and overheating. For runs up to 25 feet, use an 18 AWG or larger gauge cord.

Do not operate this machine while under the influence of drugs, alcohol or any medication.

If you are not thoroughly familiar with the operation of wood planers, obtain advice from your supervisor, instructor or other qualified person.

Health hazards. Some dust created by power sanding, sawing, grinding, drilling and other construction activities contains 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 and cement and other masonry products.
- Arsenic and chromium from chemically-treated lumber.

Your risk from these exposures 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 those dust masks that are specifically designed to filter out microscopic particles.

Safety Decals

Familiarize yourself with the location and content of these decals on your planer.



Figure 1

WARNING

DO NOT attempt to remove this cover while machine is running. Failure to comply may result in personal injury.

Features

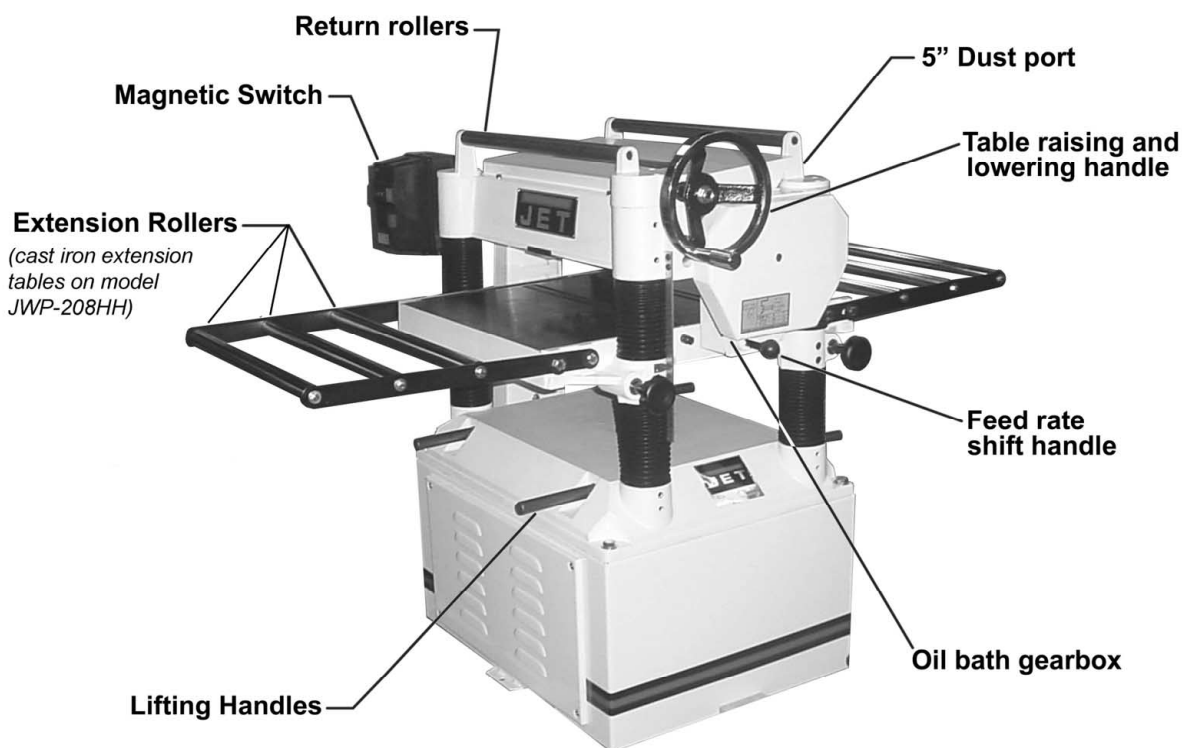


Figure 2

Specifications

Model No.....	JWP-208	JWP-208HH
Stock No (3HP, 1Ph, 230V only).....	708528	--
Stock No (5HP, 1Ph, 230V).....	--	708544
Stock No (5HP, 3Ph, 230/460V*).....	708584	708545
Table Area (D x W/in.).....	25-3/4 x 20	25-3/4 x 20
Maximum Planing (W/in.).....	20	20
Maximum Planing (T/in.).....	6	6
Full Width Cutting Depth (in.).....	3/32	3/32
Minimum Planing Depth (in.).....	6-3/4	6-3/4
Knives.....	(4) 20x1x1/8Thk	(92) four-sided inserts
Cutterhead Speed (RPM).....	5,000	5,000
Cuts per Minute.....	20,000	n.a.
Cutterhead Diameter (dia/in.).....	3-3/16	3-3/16
Feed Rate (FPM).....	24 & 31	24 & 31
Dust Chute Diameter (dia/in.).....	5	5
Overall Dimensions (L x W x H/in.).....	26 x 36-5/8 x 41-3/8	26 x 36-5/8 x 41-3/8
Overall Dimensions (L x W x H/in.).....	26 x 36-5/8 x 41-3/8	26 x 36-5/8 x 41-3/8
Net Weight (approx. lbs.).....	640	640

*pre-wired 230V

The specifications in this manual are given as general information and are not binding. WMH Tool Group reserves the right to effect, at any time and without prior notice, alterations to parts, fittings, and accessory equipment deemed necessary for any reason whatsoever.

Receiving

Carefully unpack the planer and any loose items from the wood crate and inspect for damage. Any damage should be reported immediately to your distributor and shipping agent. Before proceeding further, read your manual thoroughly to familiarize yourself with proper assembly, maintenance and safety procedures.

Remove the screws that hold the planer to the shipping skid. Remove the protective coating from the table, bed rolls, feed rolls, cutterhead and loose items packed with the machine, including lifting handles and motor pulley. This coating may be removed with a soft cloth moistened with Kerosene. Do not use acetone, gasoline or lacquer thinner for this purpose. Do not use solvents on plastic parts.

CAUTION Use care when cleaning the cutterhead, the knives are very sharp.

Installation & Assembly

1. There are four lifting handles (Fig. 3) on the machine. Pull the handles out for use, push in when not in use.
2. If a sling or forklift is used to lift the machine, be sure to lift by the handles only. See Fig. 3. Make sure machine is kept in level position while lifting.
3. For best planing performance, locate planer on a solid, level foundation and anchor to the floor with good quality lag screws. Do not tighten screws completely yet.
4. With machine in position, test table surface lengthwise and crosswise with machinist's level. Place metal shims under low corners.
5. Check that all four corners are supported, then tighten lag screws.
6. Re-test level of table surface in both directions and adjust if necessary.

Starter Box

Mount the starter box at the left side of the machine with two socket head cap screws (Fig. 4).

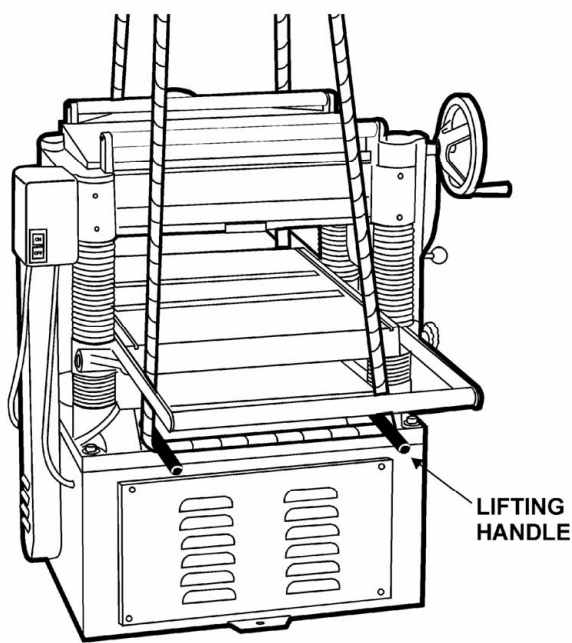


Figure 3

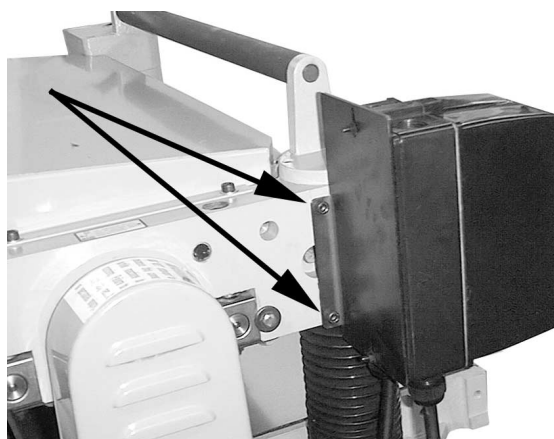


Figure 4

Handwheel

1. Remove the nut and washer from the gearbox shaft, and place the handwheel onto the shaft (Fig. 5), making sure it is oriented so the handwheel slips over the key.
2. Place flat washer and hex nut on shaft and tighten with wrench.
3. Mount the handle in the threaded hole in the handwheel, and tighten with a wrench placed over the flat on the handle.

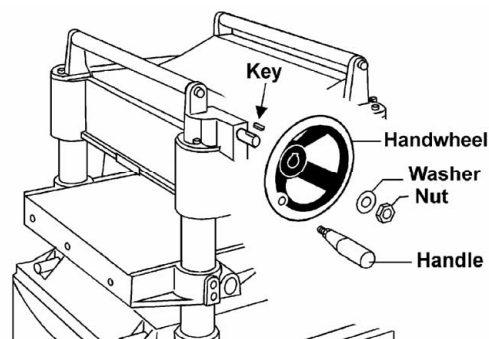


Figure 5

Table Extension Rollers (JWP-208 only)

Mount the table extension rollers to the table using the provided hex cap screws and washers (A, Fig. 6). The rollers should be adjusted before operating the planer; see *Adjusting Table Extension Rollers* on page 11.

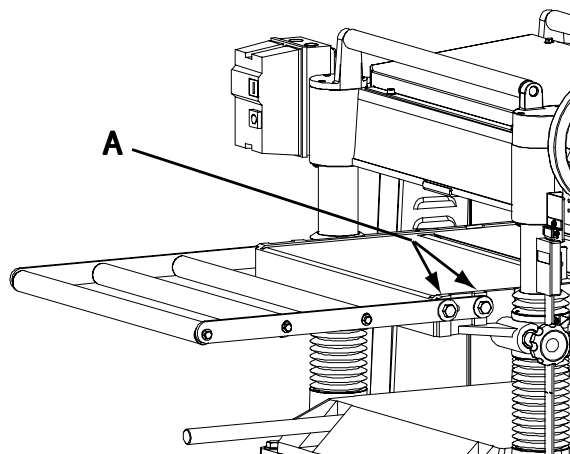


Figure 6 - JWP-208 only

Extension Tables (JWP-208HH only)

1. Mount a cast iron table to the edge of the main table with three M8 x 25 hex cap screws (Figure 6a). Do not fully tighten yet.
2. The extension table must be leveled with the main table. Place a straight edge (such as a jointed board) across both tables.
3. Insert three socket set screws with a hex wrench, and screw them in or out as needed until tables are level.
4. Securely tighten the hex cap screws.
5. Mount the second extension table to the opposite side of the planer table, using the same procedure.

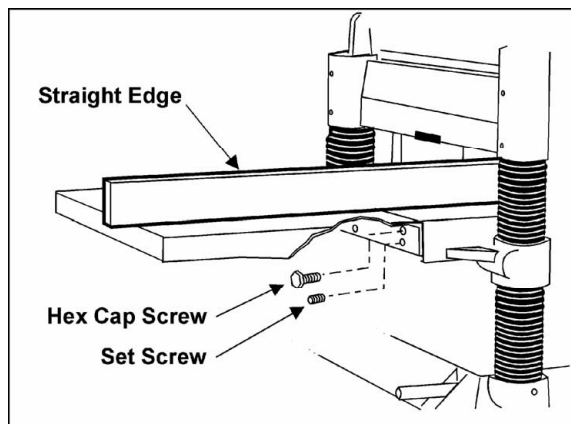


Figure 6a - JWP-208HH only

Dust Collection Hood

The dust collection hood (Fig. 6b) comes standard with the model JWP-208 planer, and helps maintain a clean and safe work area. It is assembled to the planer with the screws and washers as shown.

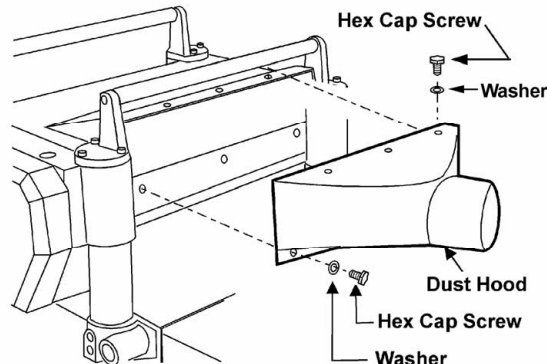


Figure 6b

Electrical Connections

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

A power plug is not provided with the 208 planer. You may either connect one or "hard-wire" the machine directly to your electrical panel provided there is a disconnect near the machine. Consult the wiring diagrams on pages 32-35 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

The use of an extension cord is not recommended for this machine, but if one is necessary make sure the cord rating is suitable for the amperage listed on the machine's motor plate. An undersize cord will cause a drop in line voltage resulting in loss of power and overheating.

The chart in Figure 7 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.

Rated amps	Length of cord		
	25 ft.	50 ft.	100 ft.
0-6	18	16	16
7-10	18	16	14
11-12	16	16	14
13-16	14	12	12
17-20	12	12	10
21-30	10	10	Not recommended

Figure 7

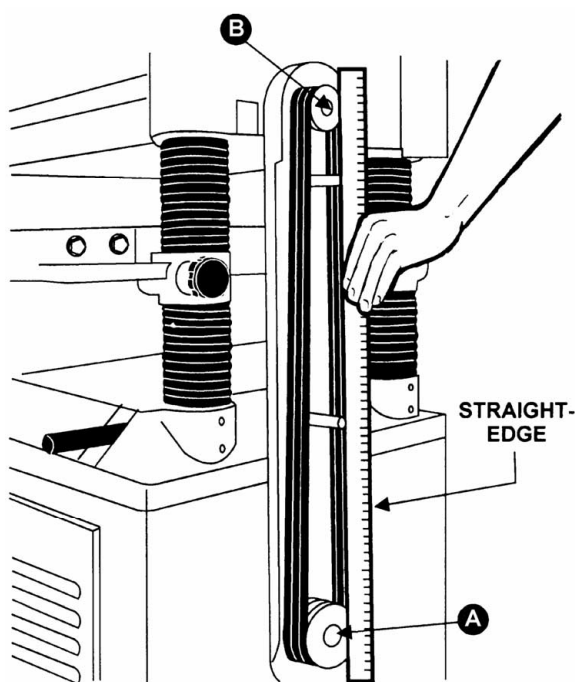


Figure 8

Adjustments

Belt and Pulleys

1. Using a straight edge, align the motor pulley (A, Fig. 8) and cutterhead pulley (B, Fig. 8). The motor plate can be moved for alignment by loosening the set screws (C, Fig. 9) in the motor plate.

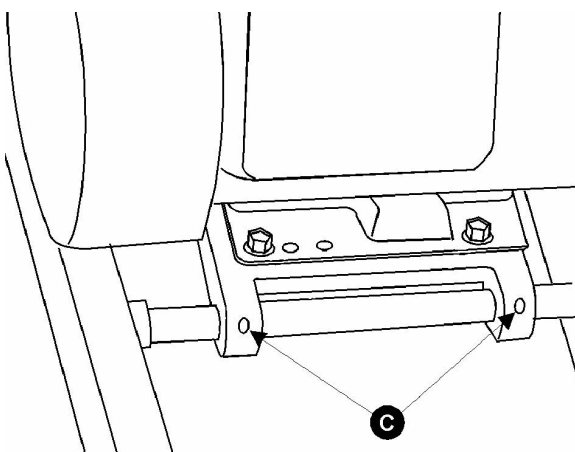


Figure 9

2. Check belt tension. Proper tension is obtained when there is approximately 1/4" deflection of the center span of the pulleys using light finger pressure (Fig. 10).

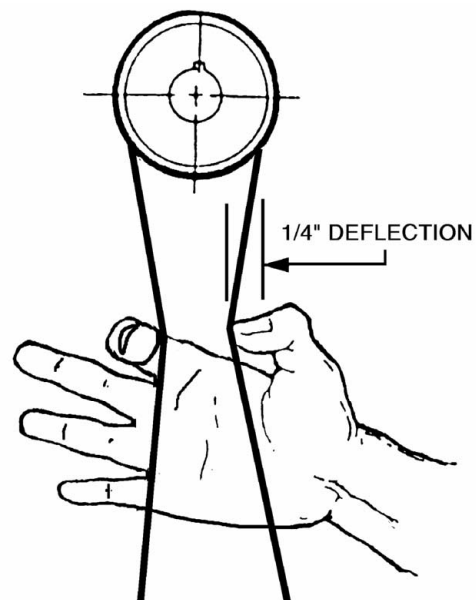


Figure 10

3. If adjustment of belt tension is necessary, loosen one pair of hex nuts (E & F, Fig. 11) and turn the other pair to raise or lower the motor plate. Re-tighten nuts.

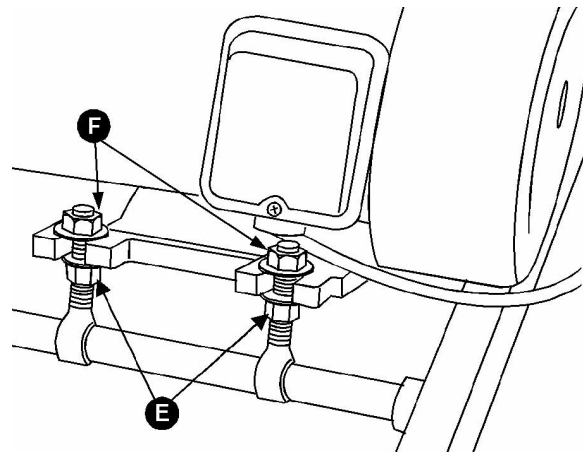


Figure 11

Table Rollers

Overview

Your planer is supplied with two table rollers (A, Fig. 12) which turn as the stock is fed into the planer, thus reducing friction. It is not possible to give exact dimensions on the proper height setting of the table rollers because each type of wood behaves differently.

As a general rule, however, when planing rough stock, the table rollers should be set at high position. When planing smooth stock the rollers should be set at low position.

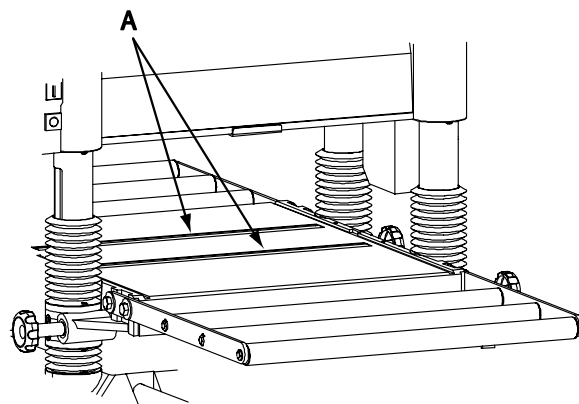


Figure 12

Note: When raising the roller higher above the table, the available range is from .003" to .006"
See Fig. 13.

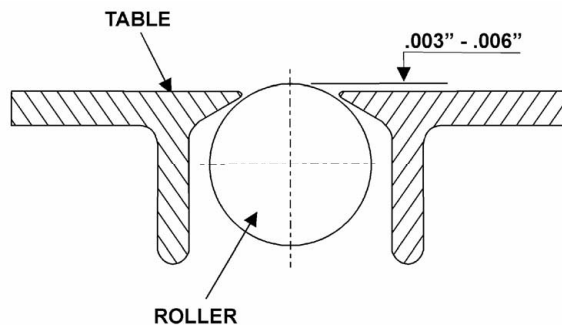


Figure 13

The table rollers are factory set for average planing and are parallel to the table surface. If you desire to adjust the table rollers higher or lower, proceed as follows:

1. Disconnect machine from power source.
2. Lay a straight edge (B, Fig. 14) across both rollers.
3. On one side of the table, loosen the screws (C, Fig. 14) with a hex wrench, and turn the eccentric shafts (D, Fig. 14) to raise or lower the rollers.
4. When the proper height is achieved, tighten screws (C, Fig. 14).
5. Adjust the rollers from the opposite side of the table in the same manner.

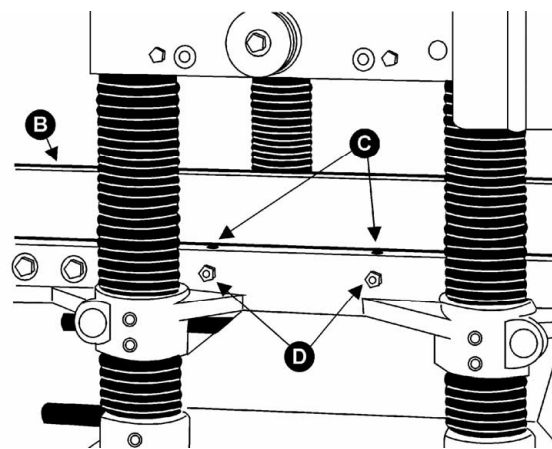


Figure 14

Important: Be sure that the height of front and rear rollers are the same. The table rollers must always be set parallel to the table.

Adjusting Table Extension Rollers

1. Place a straight edge over the extension roller and the table, as shown in Fig. 15, to make sure the extension roller and table are at the same height. If necessary, adjust the table extension rollers as follows:
2. Loosen the screws and washers (A, Fig. 15) to move the extension roller to the proper position, then retighten the screws.
3. Adjust both front and rear extension rollers in the same manner.

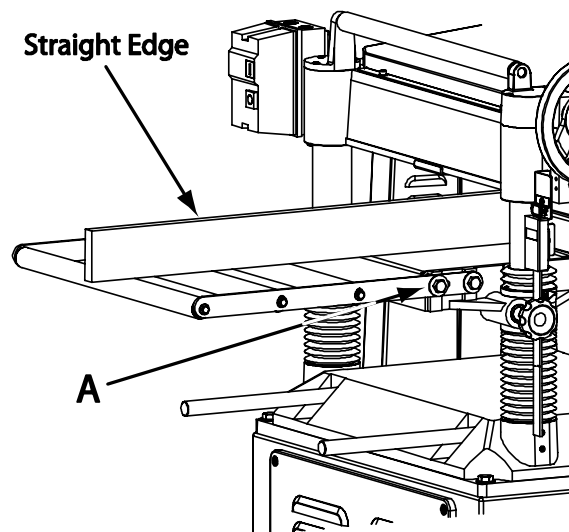


Figure 15

Adjusting Depth of Cut

The cutting depth scale (A, Fig. 16) is a combination inch/metric scale with a cutting range from 0 to 8" (204mm). The distance of upward or downward movement is controlled by the handwheel (B, Fig. 16). One revolution of the handwheel is .059" (1.5mm). Before moving the table up or down, loosen the lock nuts (C, Fig. 16). After obtaining the proper table position, tighten the lock nuts (C, Fig. 16).

⚠WARNING Always tighten the lock nuts before operating the planer.

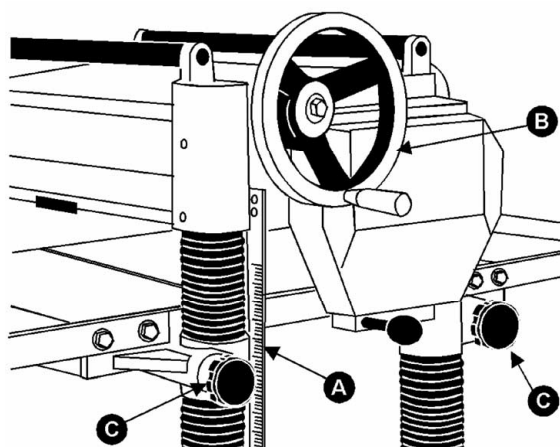


Figure 16

Cutterhead Adjustment

Overview

Although your planer was carefully adjusted at the factory, it should be checked before being put into operation. Any inaccuracies due to rough handling in transit can easily be corrected by following these directions.

To check the adjustments you will need a straight edge, feeler gauge, and a home made gauge block made of hardwood. This gauge block can be made by following the dimensions shown in Figure 17.

Knife Adjustment (Model JWP-208 only)

When checking or adjusting the cutterhead knives, proceed as follows:

1. Disconnect machine from power source.
2. Remove the six screws (A, Fig. 18) and remove upper cover (B, Fig. 18).
3. To check and adjust knives, use the provided knife gauge (Fig. 19 & 20) and check all four knives. Knives should just contact the bottom of the center protrusion (D, Fig. 19) of the knife gauge.
4. If an adjustment to one or more of the knives is necessary, slightly loosen the knife gib (E, Fig. 19) by turning the six locking screws (F, Fig. 19) into the gib. Turn the screws just enough to relieve stress in the cutterhead without disturbing the setting of the knives. Do this for all four knives at the same time.
5. With the gauge in place over a knife (G, Fig. 19) continue to loosen the locking screws (F, Fig. 19) until the springs (H, Fig. 19) begin raising the knife. When knife comes into contact with the center protrusion (D, Fig. 19) of the gauge, snug up the gib by lightly backing out the six locking screws (F, Fig. 19) against the slot.

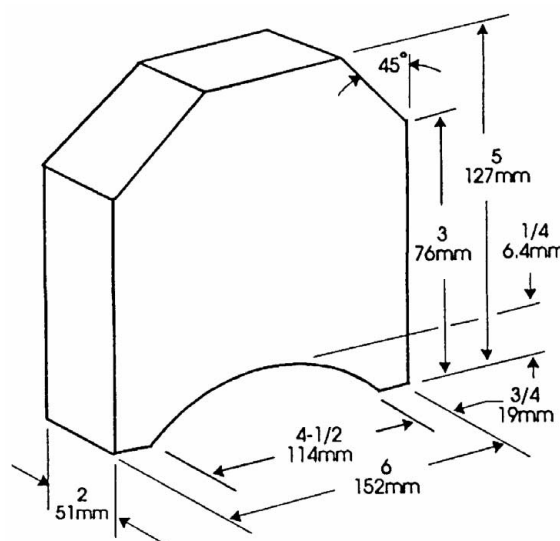


Figure 17

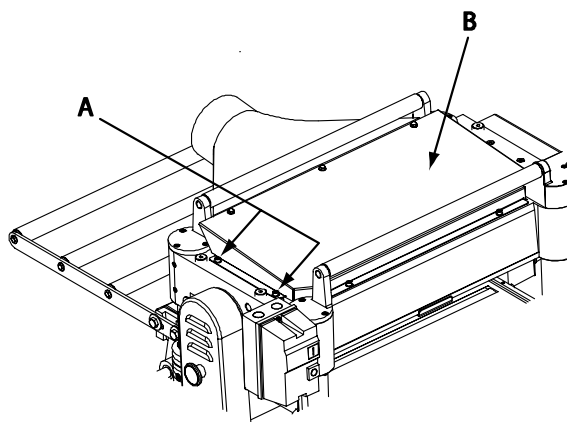


Figure 18

NOTE: At this time, only tighten the knife in the slot just enough to hold knife in position.

6. If additional knives must be reset, repeat step 5.
7. After all four knives are set with screws just snug, back out and tighten the six locking screws (F, Fig. 19 & 20), against the slot starting with the end screws first, then the center screws, until the knife is securely held in the cutterhead. Tighten remaining three knives in the same manner.

Important: Double check all screws for tightness.

Replacing & Resetting Knives (Model JWP-208 only)

If the knives are removed for sharpening, care must be exercise in replacing and resetting them. Proceed as follows:

1. Disconnect machine from power source.
2. Remove six screws and upper cover (see Fig. 18).
3. To remove knife, loosen the gib (E, Fig. 19) by turning the six locking screws (F, Fig. 19) into the gib. Remove gib (E, Fig. 19), knife (G, Fig. 16) and springs (H, Fig. 19). NOTE: The inner two springs may pop out when the knife and gib are removed.
4. Remove the remaining three knives in the same manner.
5. Thoroughly clean the knife slots, gibs, springs and locking screws. Check the locking screws; if the threads appear worn or stripped or if the heads are becoming rounded, replace them.
6. Inspect the cutting edge of the knives for nicks or wire edge. Hone the knives slightly using a stone, or if the knives are to be sharpened, maintain a cutting angle of 35 degrees.
7. Insert springs, knives and gib into slot of cutterhead. Back out locking screws just enough to hold the knife in the cutterhead.
8. Place knife gauge (C, Fig. 19) over knife.
9. While holding down on the knife gauge, loosen all six locking screws (F) by turning them into the gib (E) until cutting edge of knife comes into contact with the protrusion (D) of the gauge. Snug up the gib by slightly backing out the six locking screws against the slot.

Note: At this time, only tighten the knife into the slot just enough to hold the knife in position.

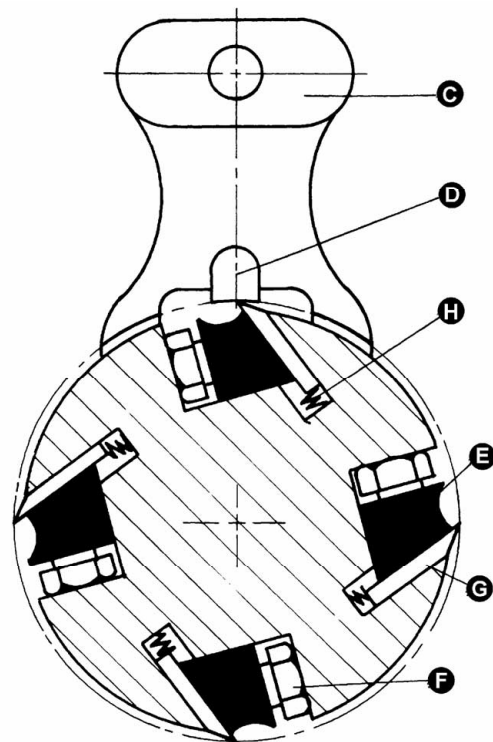


Figure 19 – JWP-208 only

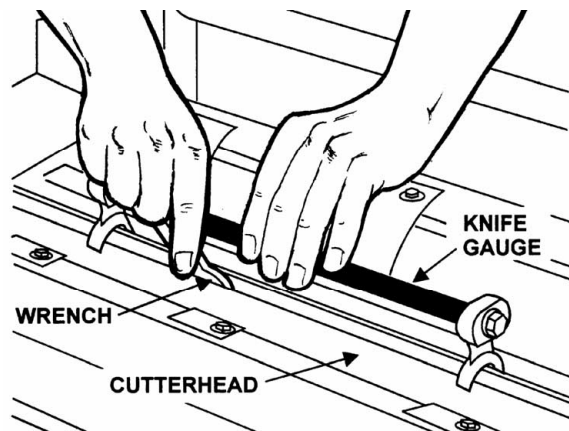


Figure 20 – JWP-208 only

10. Replace and reset the other three knives in the same manner.
11. After all four knives are set with the screws just snug, back out and tighten the six screws (F) against the slot starting with the end screws first and then the center screws until the knife is securely held in the cutterhead. Tighten the remaining three knives in the same manner.

⚠WARNING After replacing and checking knives, **CHECK AGAIN** carefully. Make certain the direction of knives is correct and all twenty-four locking screws are tightened securely.

Replacing or Rotating Knife Inserts (Model JWP-208HH only)

The knife inserts on the model JWP-208HH are four-sided. When dull, simply remove each insert, rotate it 90° for a fresh edge, and re-install it.

Use the provided star point screwdriver to remove the knife insert screw. See Figure 20a. It is advisable to rotate all inserts at the same time to maintain consistent cutting. However, if one or more knife inserts develops a nick, rotate only those inserts that are affected.

Each knife insert has an etched reference mark so you can keep track of the rotations.

IMPORTANT: When removing or rotating inserts, clean saw dust from the screw, the insert, and the cutterhead platform. Dust accumulation between these elements can prevent the insert from seating properly, and may affect the quality of the cut.

Before installing each screw, lightly coat the screw threads with machine oil and wipe off any excess.

Securely tighten each screw which holds the knife inserts before operating the planer!

⚠WARNING Make sure all knife insert screws are tightened securely. Loose inserts can be propelled at high speed from a rotating cutterhead, causing injury.

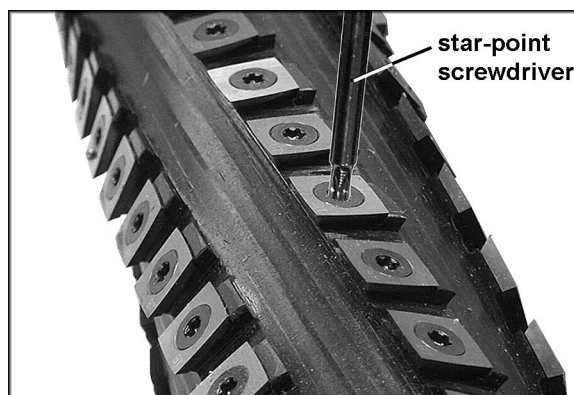


Figure 20a – JWP-208HH only

Checking Work Table Parallel to Cutterhead

The work table is set parallel to the cutterhead at the factory and no further adjustment should be necessary. If your machine is planing a taper, first check to see if the knives are set properly in the cutterhead. Then check to see if the work table is set parallel to the cutterhead. Proceed as follows:

1. Disconnect machine from power source.
2. Place the gauge block (Figure 21) on the work table directly under the edge of a knife or knife insert as shown. Make slight contact with the knife edge by gently raising the table.
3. Move the gauge block to the opposite end of the work table. The distance from the work table to the edge of the knife should be the same on both ends of the knife.

Adjusting Work Table Parallel to Cutterhead

If the work table is not parallel to the cutterhead, perform the adjustment procedure as follows:

1. Disconnect the machine from power source.
2. Tilt planer on its side to expose underside of base, as shown in Fig. 22.
3. Remove bolt (A, Fig. 22) and loosen bolt (B, Fig. 22) which will allow you to move the idler sprocket assembly (C, Fig. 22) far enough to release tension on the chain.
4. Remove chain from the particular sprocket on corner of base that must be adjusted.

Turn the sprocket by hand to bring that corner into adjustment with the other three corners. NOTE: Turning sprocket clockwise will increase the distance between the working table and headcasting; counter-clockwise will decrease the distance. This adjustment is very sensitive and it should not be necessary to turn the sprocket more than one or two teeth.

5. When adjustments are correct, replace chain around corner sprocket, slide sprocket (C, Fig. 22) back to re-tension chain, tighten bolt (B, Fig. 22) and replace and tighten bolt (A, Fig. 22).

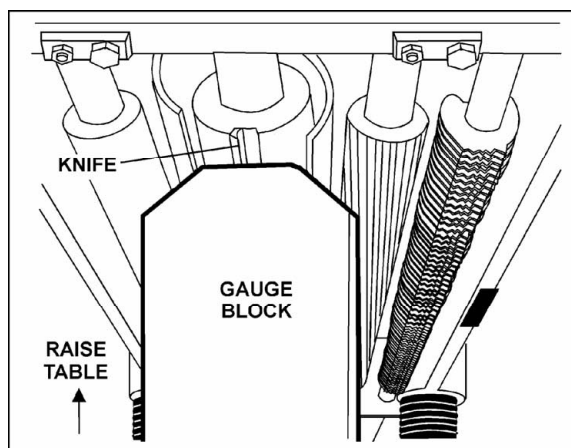


Figure 21

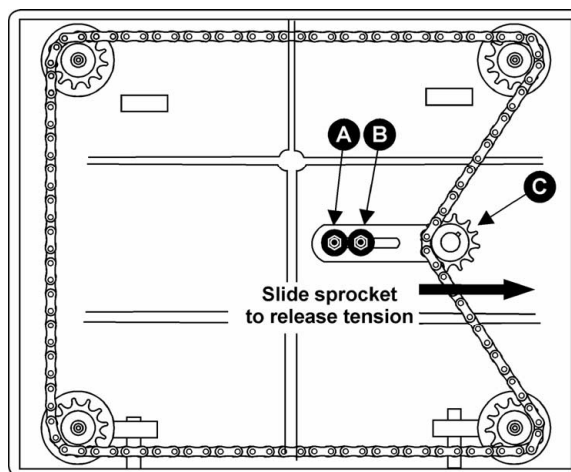


Figure 22

Know the Transmitting Rollers of Your Planer

- A – Anti-Kickback Fingers
- B – Infeed Roller
- C – Chipbreaker
- D – Cutterhead
- D – Pressure Bar
- E – Outfeed Roller

The infeed roller (B, Fig. 23) and outfeed roller (F, Fig. 23) are those parts of your planer that feed the stock while it is being planed. The infeed and outfeed rollers are under spring tension and this tension must be sufficient to feed the stock uniformly through the planer without slipping but should not be so tight that it causes damage to the board. The tension should be equal at both ends of each roller.

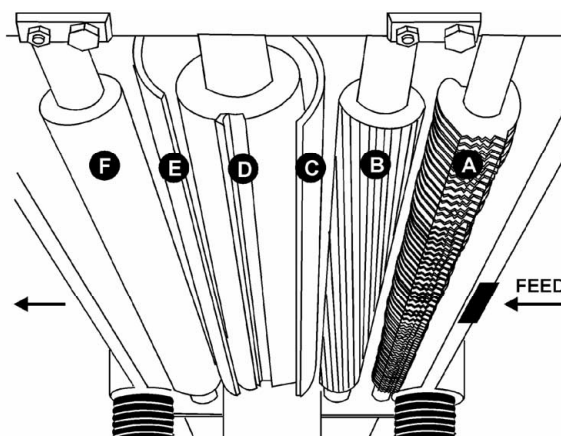


Figure 23

Anti-Kickback Fingers

The anti-kickback fingers (A, Fig 23) help prevent kickback of stock. They operate by gravity and it is necessary to inspect them occasionally to make sure they are free of gum and pitch, so that they move independently and operate correctly.

Adjusting Infeed & Outfeed Roller Spring Tension

To adjust the spring tension of the infeed and outfeed rollers, turn screws (G & H, Fig. 24) with a hex wrench. Turn screws on opposite end of infeed/outfeed rollers in the same manner.

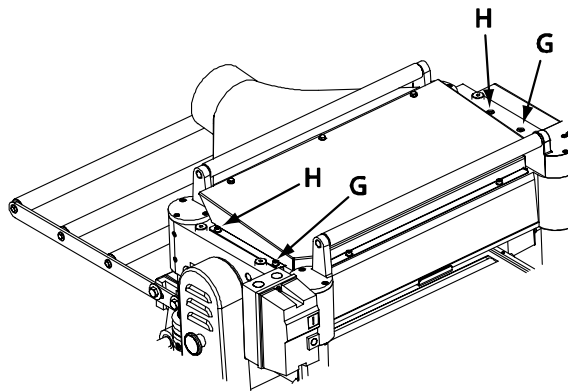


Figure 24

CUTTING - ROLLER ASSEMBLY (SIDE VIEW)

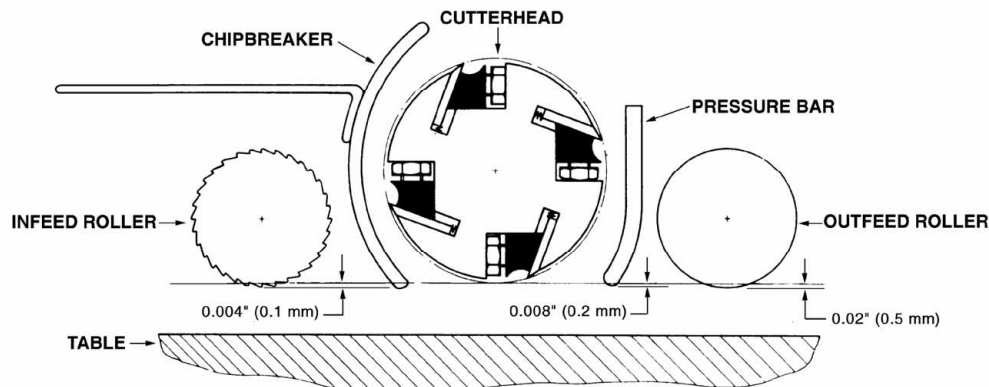


Figure 25

Height of Infeed Roller, Chipbreaker, Pressure Bar & Outfeed Roller

The infeed roller, chipbreaker, pressure bar and outfeed roller are adjusted at the factory. The infeed roller and the chipbreaker should be set at 0.004" (0.1mm) below the cutting circle; and the outfeed roller should be set at 0.02" (0.5mm) below the cutting circle. See Fig. 25.

If an adjustment to the infeed roller, chipbreaker, pressure bar or outfeed roller is necessary, use the following steps as an example of procedure.

To check and adjust the outfeed roller below the cutting circle, proceed as follows:

1. Disconnect machine from power source.
2. Make sure the knives are adjusted properly as previously explained under "Checking & Adjusting of Knives."
3. Place the gauge block (J, Fig. 26) on the table directly underneath the cutterhead (D,

Fig. 26). Using a 0.02" (0.5mm) feeler gauge (K, Fig. 26) placed on top of the gauge block, raise the working table until the knife just touches the feeler gauge when the knife is at its lowest point. Do not move the working table any further until the outfeed roller is adjusted.

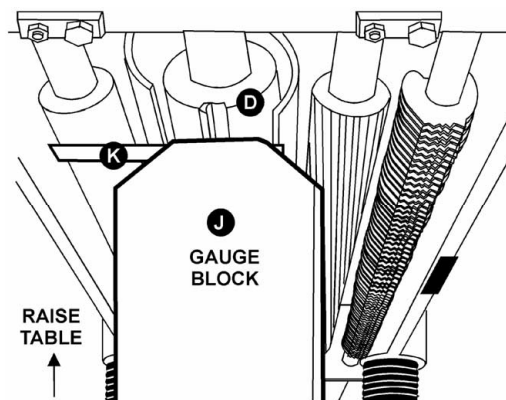


Figure 26

4. Move the gauge block (J, Fig. 27) under one end of the outfeed roller (F, Fig. 27). The bottom of the outfeed roller should just touch the top of the gauge block. If an adjustment to the outfeed roller is necessary, loosen the lock nut (L, Fig. 27) and turn screw (M, Fig. 27) until the outfeed roller just touches the gauge block. Then tighten lock nut (L, Fig. 27).
5. Check and adjust opposite end of the outfeed roller in the same manner.

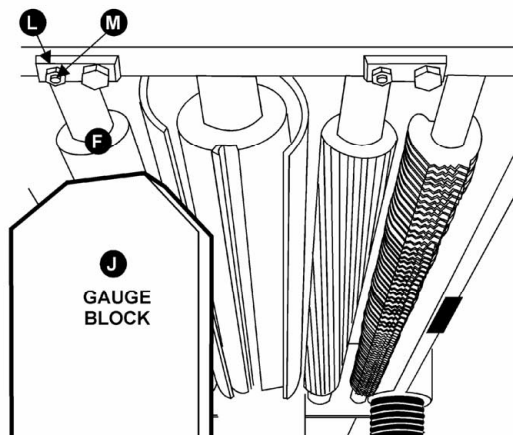


Figure 27

Feed Speed Control

Your machine is equipped with a spiral, serrated infeed roller and a solid outfeed roller. When the feed rollers are engaged, they turn to feed the stock. The feed rollers slow automatically when the machine is under heavy load for best planing in all conditions. The feed rollers are driven by chains (A, Fig. 28) and sprockets (B, Fig. 28) which take power directly from the cutterhead through the oil bath gear box (C, Fig. 28).

The gear box has two feed speeds. These are set by pulling out or pushing in the shift lever (D, Fig. 28) while the machine is running. The feed speed range is shown in Fig. 29.

Changing Accessories for Lowest Feed Speed

The lowest feed speed for your planer (16.2 fpm & 20.7 fpm) can be obtained by replacing the lower (gear shaft) sprocket and the chain. See Fig. 29. To change the sprocket and the chain on your machine, proceed as follows:

1. Disconnect machine from power source.
2. Remove the three hex cap screws and washers (E, Fig. 28).
3. Remove the three sprockets (B, Fig. 28) from the infeed roller, outfeed roller and the gear shaft at the same time.

4. When the sprockets (B, Fig. 28) are removed, replace the lower sprocket which will be assembled on the gear shaft.
5. Assemble the three sprockets and chains to the shafts, and tighten the hex cap screws (E, Fig. 28).

Return Rollers

The two return rollers on the top of the machine serve as a convenient rest for stock. They save time and motion for the operator as the stock is returned to the infeed side.

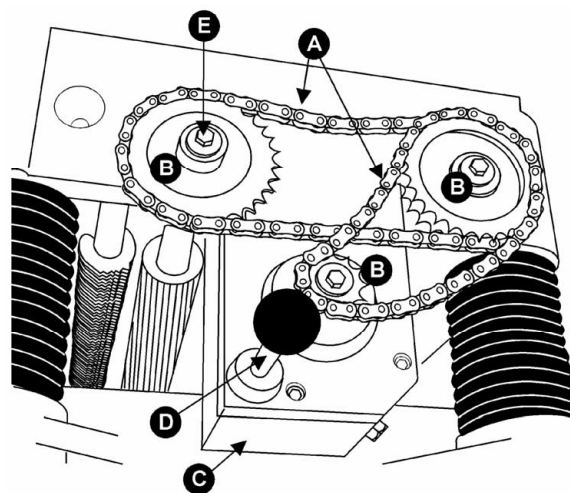


Figure 28

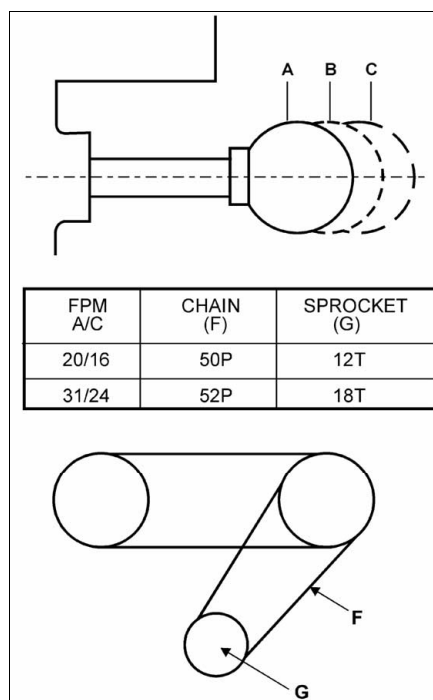


Figure 29

Maintenance

Periodic or regular inspections are required to ensure that the machine is in proper adjustment, that all screws are tight, that belts are in good condition, that dust has not accumulated in the electrical enclosures, and that there are no worn or loose electrical connections.

Buildup of sawdust and other debris can cause your machine to plane inaccurately. Periodic cleaning is not only recommended but mandatory for accurate planing.

Close-fitting parts, such as the cutterhead slot and gibs, should be cleaned with a cloth or brush and non-flammable solvent, and freed from clinging foreign matter.

Remove resin and other accumulations from feed rollers and table with a soft rag and non-flammable solvent.

Periodically check all the chains for proper tension and adjust accordingly if required.

Tip: If a foreign object nicks the knives, instead of throwing them away or trying to grind out the deep nick, simply stagger the knives in the head, moving one knife no more than 1/4" to the right and another knife no more than 1/4" to the left. The nick should no longer be noticeable.

The table should be kept clean and free of rust. Some users prefer a paste wax coating. Another option is talcum powder applied with a blackboard eraser rubbed in vigorously once a week; this will fill casting pores and form a moisture barrier. This method provides a table top that is slick and allows rust rings to be easily wiped from the surface. Important also is the fact that talcum powder will not stain wood or mar finishes as wax pickup does.

Lubrication

The bearings on the cutterhead are factory lubricated and sealed for life – no lubrication required.

The lubricant in the gearbox must be replaced every 2,500 hours. Multi-purpose gearbox lubricant will be suitable.

To replace the gearbox lubricant:

Remove the drain plug (A, Fig. 30), and filler cap (B, Fig. 30). Drain dirty oil thoroughly.

Tighten the drain plug (A, Fig. 30).

Fill with clean lubricant through hole (B, Fig. 30).

Tighten filler cap (B, Fig. 30).

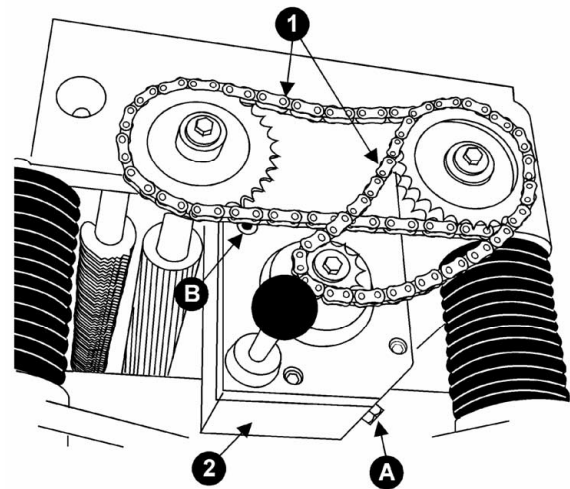


Figure 30

[The item numbers on this chart are referenced with the accompanying illustrations.]

No.	Position	Interval	Suitable Types of Lubricant	Fig. No.
1	Drive Chain	Frequently	Grease	30
2	Gear Box	When operated more than 2,500 hours	70 to 90 weight gear oil	30
3	Return Rollers	Frequently	SAE-30	32
4	Worm Gear	Frequently	Grease	33
5	Lead Screw	Frequently	Grease	33
6	Column	Frequently	Clean and SAE-30	33
7	Table Chain	Frequently	Grease	34
8	Feed Rollers	Frequently	SAE-30	35

Figure. 31

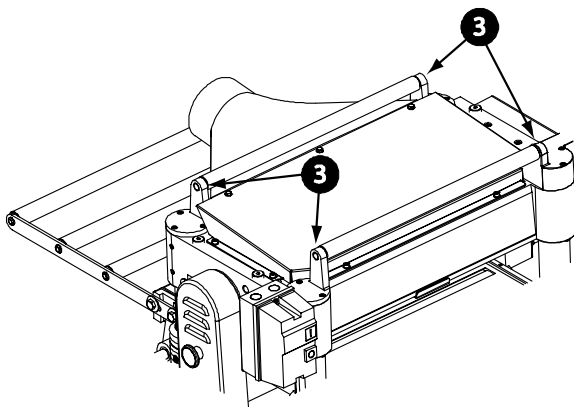


Figure 32

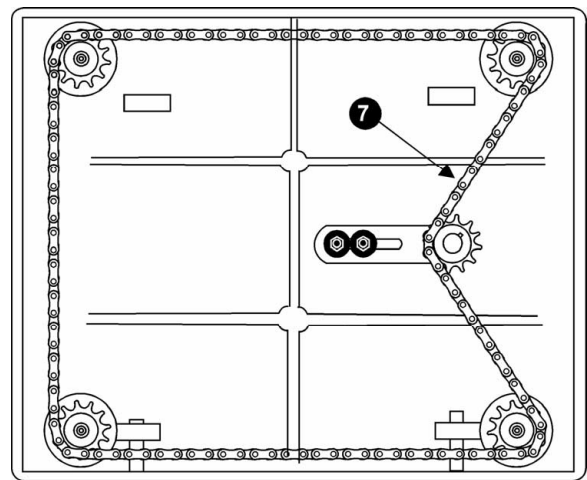


Figure 34

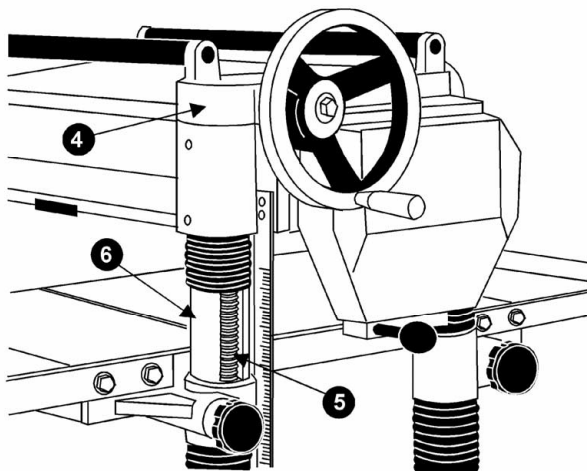


Figure 33

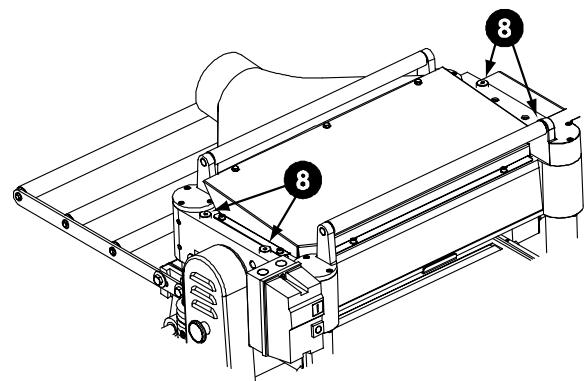


Figure 35

Troubleshooting

Operating Problems

Problem	Possible Cause	Solution
Snipe. (Snipe can not be eliminated, but can be minimized so as to become negligible.)	Table rollers not set properly. Inadequate support of long boards. Uneven feed roller pressure front to back. Dull Knives Lumber not butter properly.	Adjust rollers to proper height. Support long boards with extension rollers. Adjust feed roller tension. Sharpen knives. Butt end to end each piece of stock as they pass through.
Fuzzy Grain	Planing wood with a high moisture content. Dull knives.	Remove high moisture content from wood by drying. Sharpen or replace.
Torn Grain	Too heavy a cut. Knives cutting against grain. Dull knives.	Adjust proper depth of cut. Cut along the grain. Sharpen knives.
Rough/Raised Grain	Dull knives. Too heavy a cut. Moisture content too high.	Sharpen knives. Adjust proper depth. Remove high moisture content from wood by drying.
Rounded, glossy surface	Dull knives. Feed speed too slow. Cutting depth too shallow.	Sharpen or replace knives. Increase speed. Increase depth.
Poor feeding of lumber	Inadequate feed roller pressure. Planer bed rough or dry. Transmission v-belt slipping. Surface of feed rollers too smooth.	Adjust feed roller tension. If proper tension cannot be achieved, replace feed rollers. Clean pitch and residue, and wax planer table. Tighten transmission v-belt. Lightly roughen the feed roller surface with sandpaper.

Mechanical and Electrical Problems

Problem	Possible Cause	Solution
Uneven depth of cut side to side.	Knife projection. Cutterhead not level with bed.	Adjust knife projection. Level bed.
Board thickness does not match depth of cut scale.	Depth of cut scale incorrect.	Adjust depth of cut scale.

Problem	Possible Cause	Solution
Chain jumping.	Inadequate tension. Sprockets misaligned. Sprockets worn.	Adjust chain tension. Align sprockets. Replace sprockets.
Machine will not start/restart or repeatedly trips circuit breaker or blows fuses.	No incoming power. Overload automatic reset has not reset. Planer frequently trips. Building circuit breaker trips of fuse blows. Loose electrical connections. Motor starter failure. Motor starter failure. Motor failure.	Verify unit is connected to power. When planer overloads on the circuit breaker built into the motor starter, it takes time for the machine to cool down before restart. Allow unit to adequately cool before attempting restart. If problem persists, check amp setting on the motor starter inside the electrical box. One cause of overloading trips which are not electrical in nature is too heavy a cut. If too deep a cut is not the problem, then check the amp setting on the overload relays. Match the full load amps on the motor as noted on the motor plate. If amp setting is correct then there is probably a loose electrical lead. Check amp setting on motor starter. Verify that planer is on a circuit of correct size. If circuit size is correct, there is probably a loose electrical lead. Check amp setting on motor starter. Go through all the electrical connections on the planer including motor connections, verifying the tightness of each. Look for any signs of electrical arcing which is a sure indicator of loose connections or circuit overload. Examine motor starter for burned or failed components. If damage is found, replace motor starter. If motor starter looks okay but is still suspect, you have two options: have a qualified electrician test the motor starter for function, or purchase a new starter and establish if that was the problem on changeout. If you have access to a voltmeter, you can separate a starter failure from a motor failure by first, verifying incoming voltage at 220 +/- 20 and second, checking the voltage between starter and motor at 220 +/- 20. If incoming voltage is incorrect, you have a power supply problem. If voltage between starter and motor is correct, you have a motor problem. If electrical motor is suspect, you have two options: Have a qualified electrician test the motor for function or remove the motor and take it to a qualified electric motor repair shop and have it tested.

Problem	Possible Cause	Solution
	Miswiring of the unit.	Double check to confirm all electrical connections are correct and tight. Refer to wiring diagrams on pages 32-35 to make any needed corrections.
	On/off switch failure.	If the on/off switch is suspect you have two options: Have a qualified electrician test the switch for function, or purchase a new on/off switch and establish if that was the problem on changeout.

Optional Accessories

Stock No Description

708119 Mobile Base
708520 Digital Read-out Retrofit Kit
708583 Low Speed Gear Kit
708808 Knives, Single Sided (set of 4) – *model JWP-208 only*
1791212 Knife Inserts (set of 10) – *model JWP-208HH only*

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.wmhtoolgroup.com). Having the Model Number and Serial Number of your machine available when you call will allow us to serve you quickly and accurately.

Parts

Head Assembly – Parts List

Index	Part No.	Description	Size	Qty
1.....	JWP208-001.....	Head Casting.....		1
2.....	TS-1525021.....	Set Screw.....	M10 x 12.....	8
3.....	JWP208-003.....	Cutterhead*.....		1
4.....	6292620.....	Spring*.....		8
5.....	708808.....	Knife*.....		4
6.....	JWP208-006.....	Knife Gib*.....		4
7.....	6292623.....	Hex Cap Bolt*.....	M8 x 10.....	24
8.....	JWP208-008.....	Knife Gauge Bar.....		1
9.....	JWP208-009.....	Knife Gauge.....		2
10.....	JWP208-010.....	Washer.....	3/8.....	2
11.....	JWP208-011.....	Nut.....	M10.....	2
12.....	BB-6206ZZ.....	Ball Bearing.....	6206ZZ.....	1
13.....	JWP208-013.....	Key.....	8 x 8 x 36.....	1
14.....	6292630.....	Pulley.....		1
15.....	6292631.....	Washer.....		2
16.....	TS-1523071.....	Set Screw.....	M6 x 25.....	2
17.....	JWP208-017.....	Motor Pulley.....		1
18.....	JWP208-018.....	Infeed Roller.....		1
19.....	JWP208-019.....	Bushing.....		4
20.....	JWP208-020.....	Spring.....		4
21.....	JWP208-021.....	Screw.....	M22 x 20.....	4
22.....	JWP208-022.....	Plate.....		4
23.....	TS-1490031.....	Hex Cap Screw.....	M8 x 20.....	8
24.....	JWP208-024A.....	Jack Screw*.....		8

* Index # 3, 4, 5, 6, 7 and 24 are used only on the straight cutterhead, model JWP-208

Head Assembly – Parts List

Index	Part No.	Description	Size	Qty
25	TS-1540041	Hex Nut	M6	8
26	JWP208-026A	Key	5 x 5 x 24	2
27	6292643	Sprocket		1
28	TS-1550041	Washer	M6	2
29	JWP208-029A	Hex Washer Head Screw	M6 x 16	5
30	JWP208-030	Outfeed Roller		1
31	6292647	Sprocket		1
32	JWP208-032	Locking Bolt		1
33	JWP208-033	Retaining Ring		1
34	JWP208-034	Chip Breaker		1
35	TS-1540081	Nut	M12	2
36	JWP208-036	Plate Springs		3
37	JWP208-037	Washer	1/4	12
38	JWP208-038A	Hex Washer Head Screw	M6 x 12	14
39	JWP208-039	Shaft		1
40	JWP208-040	Bracket		2
41	JWP208-041	Pressure Plate		1
42	TS-2361081	Lock Washer	M8	2
43	JWP208-043	Shaft		1
44	TS-1523051	Set Screw	M6 x 16	9
45	TS-1523061	Set Screw	M6 x 20	2
46	JWP208-046	Plate Spring		3
47	JWP208-047	Chip Deflector Plate		1
48	6292664	Anti-Kickback Finger		87
49	6292665	Collar		88
50	JWP208-050	Shaft		1
51	JWP208-051	Retaining Ring		2
52	6292668	Cut Limit Plate		1
53	JWP208-053A	Flat Head Machine Screw	M5 x 8	2
54	JWP208-054	Upper Cover		1
55	JWP208-055	Gasket		1
56	JWP208-056	Collector Tube		1
57	JWP208-057	Roller Stand		3
58	JWP208-058	Roller		3
59	TS-1503041	Socket Head Cap Screw	M6 x 16	9
60	JWP208-060	Worm Gear Box		1
61	TS-1503111	Socket Head Cap Screw	M6 x 50	3
62	JWP208-062	Worm		1
63	BB-6201Z	Ball Bearing		1
64	JWP208-064	Retaining Ring	6201Z	1
65	JWP208-065	Key	4 x 4 x 10	1
66	JWP208-066	Hand Wheel		1
67	JWP208-067	Washer	1/2	1
68	6292684	Handle		1
69	JWP208-069	Scale		1
70	JWP208-070	Machine Screw	M5 x 10	2
71	JWP208-071	Pointer		1
72	6292814	Special Washer	M6	3
73	JWP208-073	Cover		1
74	JWP208-074	Spring Pin	6 x 20	1
75	JWP208-075	Safety Plate		1
76	JWP208-076	Machine Screw	M6 x 8	4
77	JWP208-077	Safety Latch		1
78	TS-1504081	Socket Head Cap Screw	M8 x 40	1
79	JWP208-079	Pulley Guard		1

Head Assembly – Parts List

Index	Part No.	Description	Size	Qty
80	6292696	Bolt		2
81	TS-0680041	Washer	5/16	2
82	TS-0561021	Nut	5/16-18	2
83	VB-M60	V-Belt		3
84	JWP208-084	Pulley Cover		1
85	6292710	Knob	5/16	2
86	JWP208-086A	Switch Mounting Plate		1
87	JWP208-087D	Switch (3HP, 1Ph)		1
	JWP208HH-087	Switch (5HP, 1Ph)		1
	JWP208-087E	Switch (5HP, 3Ph)		1
88	TS-1540031	Nut	M5	2
89	TS-1482021	Hex Cap Screw	M6 x 12	10
91	JWP208-091	Chain		1
92	JWP208-092	Relief Bushing		2
	JWP208HH-092	Relief Bushing (for 5HP, 1PH, 230V only)		2
93	JWP208-093	Power Cord		1
	JWP208HH-093	Power Cord (for 5HP, 1PH, 230V only)		1
94	JWP208-094	Tooth Washer		4
95	TS-1503021	Socket Head Cap Screw	M6 x 10	12
96	TS-1524011	Set Screw	M8 x 8	1
98	JWP208-098	Collar		1
99	6292714	Shaft		1
100	PA-C59	Idler Pulley		1
101	PA-C58	Bracket		1
	JWP208-106	Chain Tensioning Assy		1
102	PA-C59	Shaft		1
103	PA-C60	Hanger		1
104	PA-C61	Spring		1
105	PA-C62	Collar		1
106	TS-1534042	Pan Head Screw	M6X12	1
107	TS-1503021	Socket Head Cap Screw	M6x10	2
108	JWP208-108	Hex Head Screw	M8x18	4
	MS-SA20-24V	Magnetic Contactor for 3HP Motor (not shown)		1
	MS-SA20-24VA	Magnetic Contactor for 5HP, 3PH Motor (not shown)		1
	MS-208HH-24V	Magnetic Contactor for 5HP, 1PH Motor (not shown)		1
	JWP208-087DTR	Thermal Relay for 3HP Motor (not shown)		1
	JWP208-087ETR	Thermal Relay for 5HP, 3PH Motor (not shown)		1
	JWP208HH-108TR	Thermal Relay for 5HP, 1PH Motor (not shown)		1
	PG-M02	JET Plaque		1
	6012192	Warning Label (not shown)		1
	6292819	Lubrication Label (not shown)		1
	6292820	Guard Label (not shown)		1
	1791224	Helical Cutterhead Assembly (index #109 thru #111)**		1
109	JWP208HH-109	Helical Cutterhead**		1
110	1791212	Knife Insert (sold in set of 10)**		92 total
111	JWP208HH-111	Knife Insert Screw**	#10-32 x 1/2"	92
112	JJ6HH-113	Star Point Screwdriver (not shown)**		2

** Index # 109 thru 112 are used only on the helical cutterhead, model JWP-208HH

Head Assembly – Exploded View

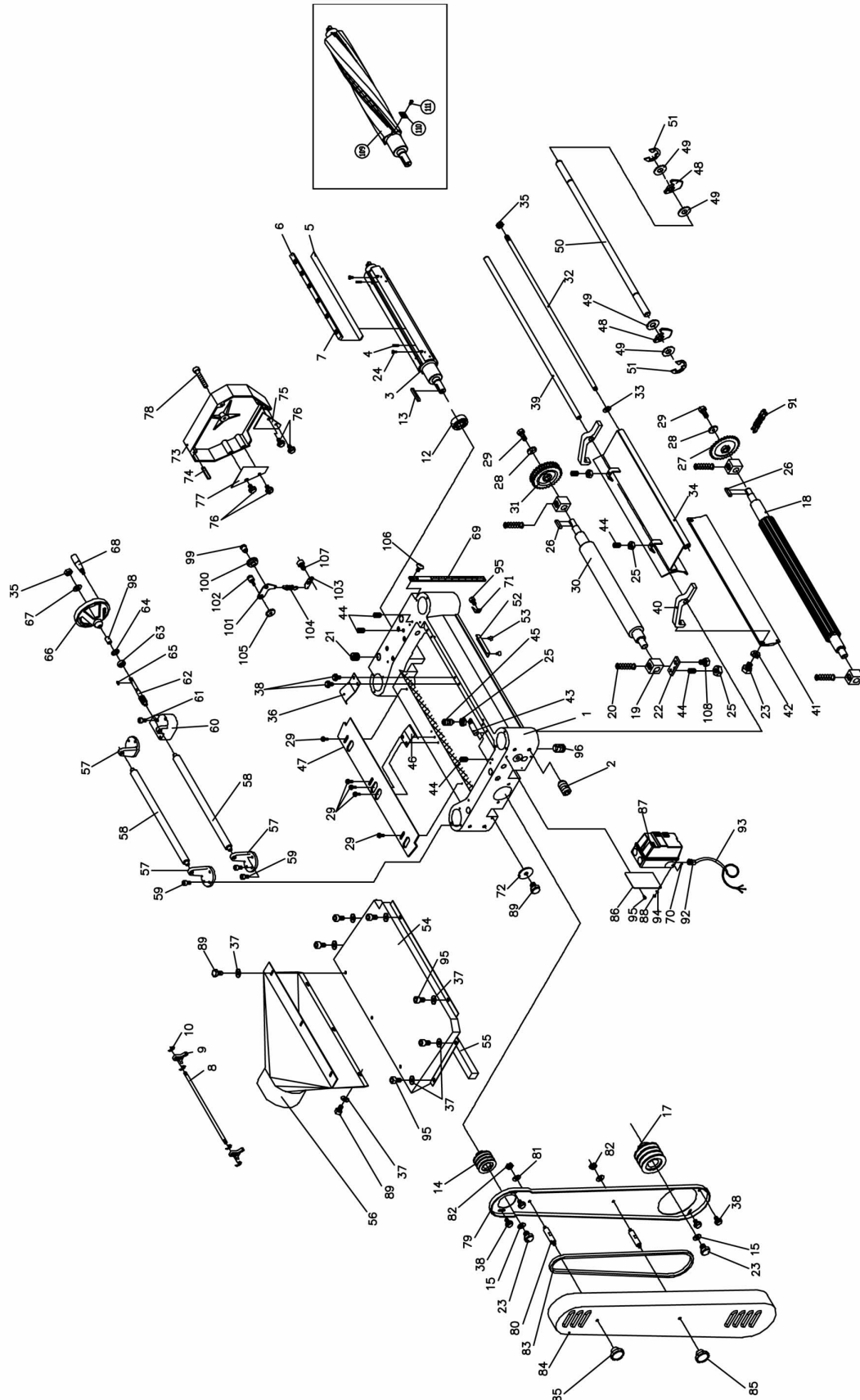
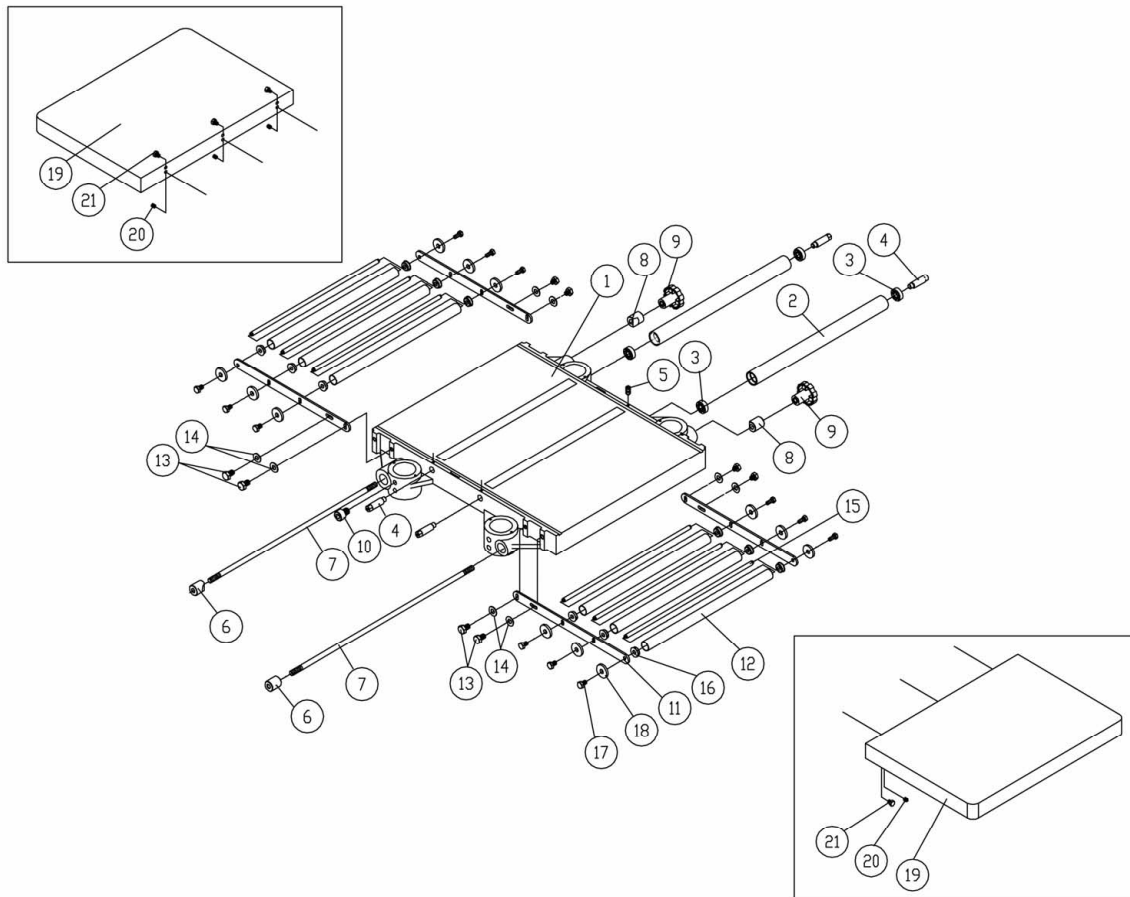


Table and Roller – Parts and Assembly

Index	Part No.	Description	Size	Qty
1.....	JWP208-201	Middle Table.....		1
2.....	6292722	Roller		2
3.....	BB-6201ZZ	Ball Bearing.....	6201ZZ.....	4
4.....	6292724	Eccentric Shaft		1
5.....	TS-1523041	Set Screw.....	M6x12	4
6.....	6292725	Lock Bar		2
7.....	6292726	Lock Bolt		2
8.....	6292727	Lock Bushing (no thread).....		2
9.....	6292728	Knob		2
10.....	TS-1504041	Socket Head Cap Screw.....	M8x20	8
11.....	6292730	Roller Frame*		4
12.....	6292731	Roller*		6
13.....	TS-1491031	Hex Cap Screw*	M10x25	8
14.....	TS-0680041	Washer*	3/8"	8
15.....	6292808	Shaft*		6
16.....	6292809	Bushing*		12
17.....	TS-1482021	Hex Head Screw*	M6x12	12
18.....	TS-1550041	Flat Washer*	M6	12
19.....	JWP208HH-219	Extension Table**		2
20.....	TS-1524051	Socket Set Screw**	M8x20	6
21.....	TS-1490041	Hex Cap Screw**	M8x25	6

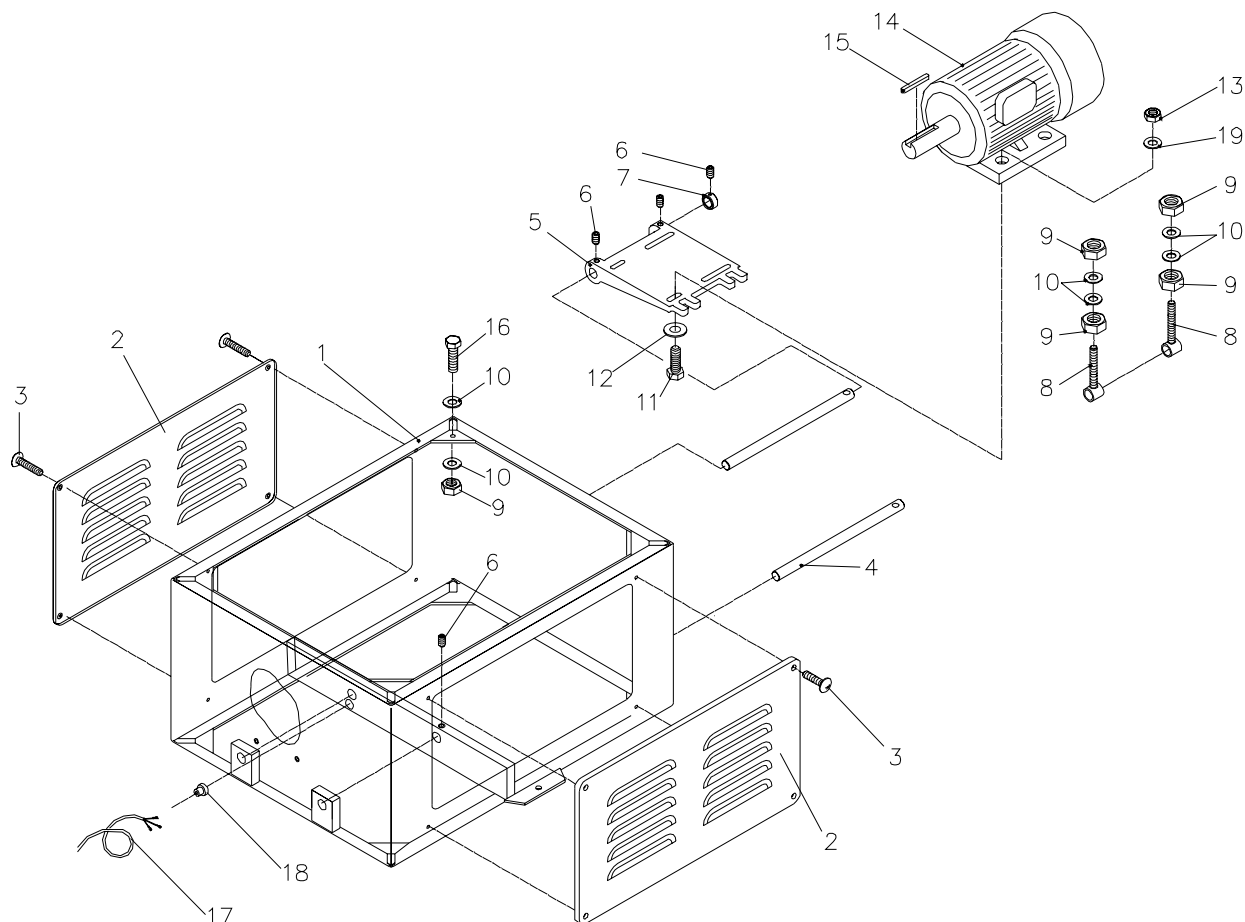
* Index #11 thru 18 are used only on the model JWP-208.

** Index #19, 20 and 21 are used only on the model JWP-208HH.



Stand and Motor – Parts and Assembly

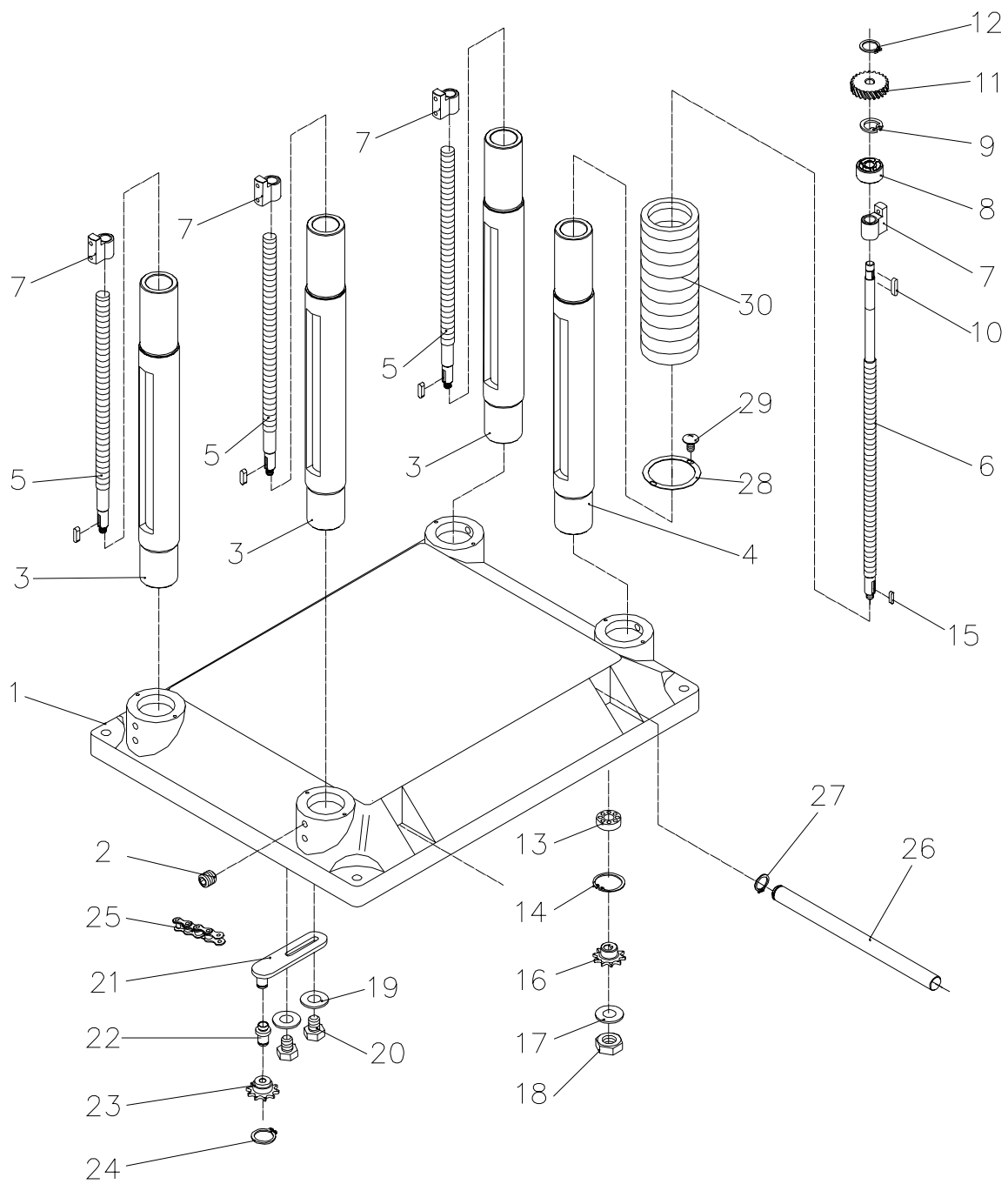
Index	Part No.	Description	Size	Qty
1.....	JWP208-401	Stand		1
2.....	JWP208-402	Cover		2
3.....	TS-2286201	Flat Head Machine Screw	M6 x 20	8
4.....	6292796	Bar		2
5.....	JWP208-405	Motor Mount		1
6.....	TS-1524011	Set Screw	M8 x 8	4
7.....	JWP208-407	Collar		1
8.....	JWP208-408	Adjust Bolt		2
9.....	TS-1540081	Nut	M12	8
10.....	TS-0680061	Washer	1/2	4
11.....	TS-1490041	Hex Cap Screw	M8 x 35	4
12.....	TS-0680031	Washer	5/16	4
13.....	TS-1540061	Nut	M8	4
14.....	JWP208-414	Motor (3HP, 1Ph, 230V)		1
.....	209-5023	Motor (5HP, 1Ph, 230V)		1
.....	JWP208-414A	Motor (5HP, 3Ph, 230/460V)		1
15.....	JWP208-415	Key		1
16.....	TS-1492051	Hex Cap Screw	M12 x 50	4
17.....	JWP208-417	Power Cord		1
.....	JWP208HH-417	Power Cord (for 5HP, 1PH, 230V only)		1
18.....	JWP208-418	Strain Relief		1
.....	JWP208HH-418	Strain Relief (for 5HP, 1PH, 230V only)		1
19.....	TS-0680031	Washer	5/16	4



Base and Column – Parts List

Index	Part No.	Description	Size	Qty
1	JWP208-301	Base		1
2	TS-1525021	Set Screw	M10 x 12	8
3	JWP208-303	Column		3
4	JWP208-304	Column		1
5	JWP208-305	Lead Screw		3
6	JWP208-306	Lead Screw		1
7	JWP208-307	Nut		4
8	JWP208-308	Bushing		1
9	JWP208-309	Retaining Ring		1
10	JWP208-310	Key	4 x 4 x 10	1
11	JWP208-311	Gear	24T	1
12	JWP208-312	Retaining Ring		1
13	BB-6202ZZ	Ball Bearing	6202ZZ	4
14	JWP208-314	Retaining Ring		4
15	JWP208-315	Key	5 x 5 x 16	4
16	JWP208-316	Sprocket	10T	4
17	JWP208-317	Washer	3/8	4
18	JWP208-318	Nut	M10	4
19	JWP208-319	Washer		2
20	TS-1490041	Hex Cap Screw	M8 x 25	2
21	6292749	Idler Bracket		1
22	JWP208-322	Shaft		1
23	6292751	Sprocket	10T	1
24	JWP208-324	Retaining Ring	STW-15	1
25	JWP208-325	Chain		1
26	JWP208-326	Carry Handle		4
27	JWP208-327	Retaining Ring	ETW-19	4
28	JWP208-328	Pipe Band		16
29	TS-1533032	Pan Head Screw	M5 x 10	32
30	JWP208-330	Expansion Band		8

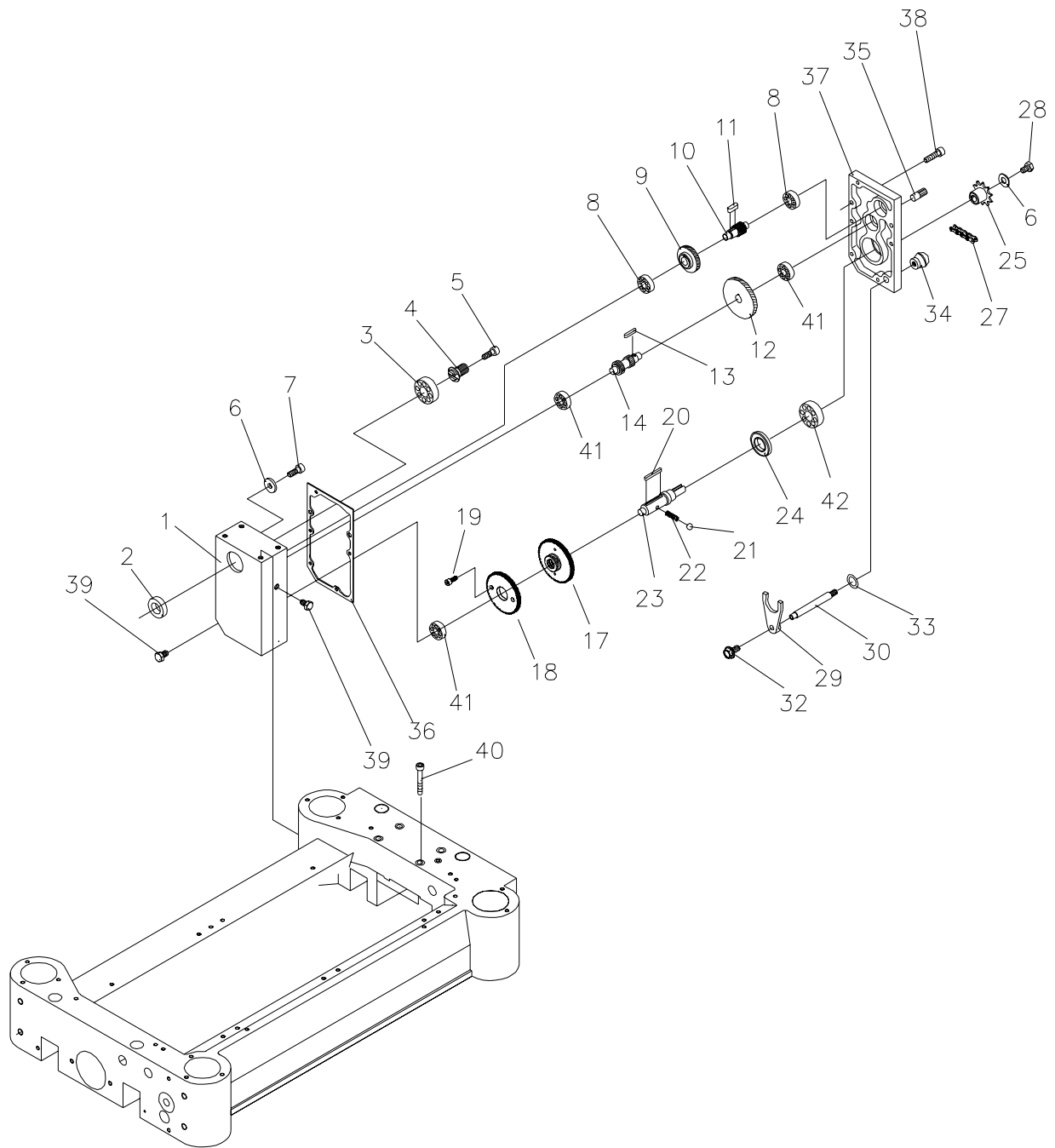
Base and Column – Assembly



Gearbox – Parts List

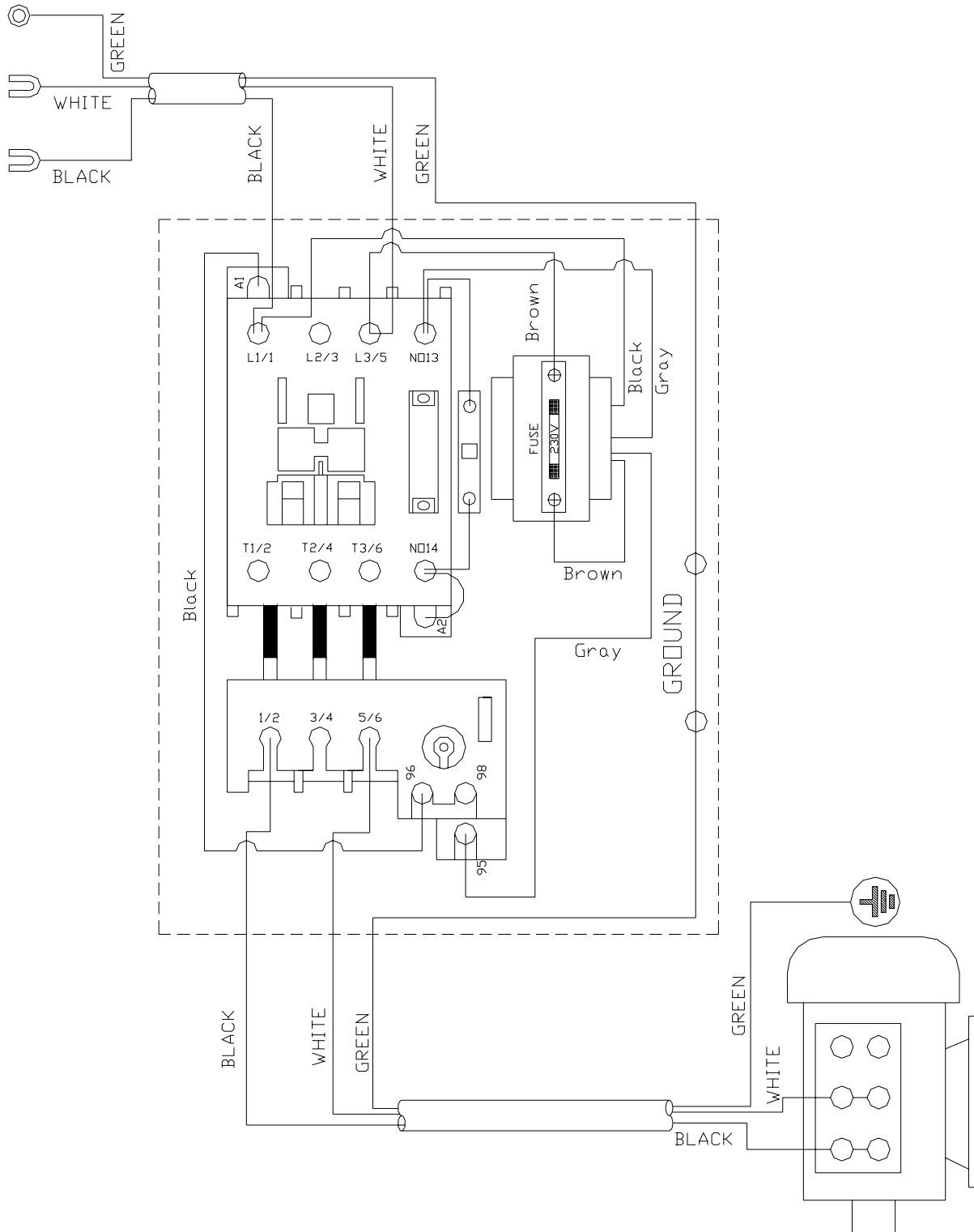
Index	Part No.	Description	Size	Qty
1	JWP208-501	Gear Box		1
2	OS-28408	Oil Seal		1
3	BB-6204ZZ	Ball Bearing	6204ZZ	1
4	6292762	Gear	16T	1
5	TS-1503061	Socket Head Cap Screw	M6 x 25	1
6	TS-1550041	Washer	M6	2
7	TS-1503041	Socket Head Cap Screw	M6 x 16	1
8	BB-6201	Ball Bearing	6201	2
9	6292766	Gear	47T	1
10	6292767	Shaft	18T	1
11	JWP208-511	Key	5 x 5 x 12	1
12	6292769	Gear	71T	1
13	JWP208-513	Key	5 x 5 x 10	1
14	JWP15H-314	Shaft	18T/22T	1
17	JWP208-517	Gear	96T	1
18	JWP208-518	Gear	92T	1
19	TS-1503021	Socket Head Cap Screw	M6 x 10	3
20	JWP208-520	Key	6 x 6 x 40	1
21	JWP208-521	Ball		1
22	6292776	Spring		1
23	6292777	Shaft		1
24	OS-25476	Oil Seal		1
25	6292791	Sprocket	18T	1
	6292779	Sprocket	12T	1
27	6292792	Chain	06BX52 (for 6292791)	1
	6292780	Chain	06BX50 (for 6292779)	1
28	TS-1482031	Hex Cap Screw	M6 x 16	1
29	6292781	Clutch		1
30	6292782	Handle		1
32	JWP208-038A	Hex Washer Head Screw	M6 x 12	1
33	JWP208-533	Oil Ring		1
34	6292784	Knob		1
35	6292785	Pin		2
36	6292786	Packing		1
37	JWP208-537	Cover		1
38	TS-1503061	Socket Head Cap Screw	M6 x 25	5
39	JWP208-539	Oil Plug		1
40	TS-1504101	Socket Head Cap Screw	M8 x 50	4
41	BB-6201Z	Ball Bearing	6201Z	1
42	BB-6204Z	Ball Bearing	6204Z	1
	JWP208-GB	Gear Box Complete (not shown)		1
	JWP208-551	Open End Wrench (not shown)		1
	JWP208-552	Hex Wrench Set (not shown)		1

Gearbox – Assembly



Wiring Diagrams

230V 3HP Single Phase

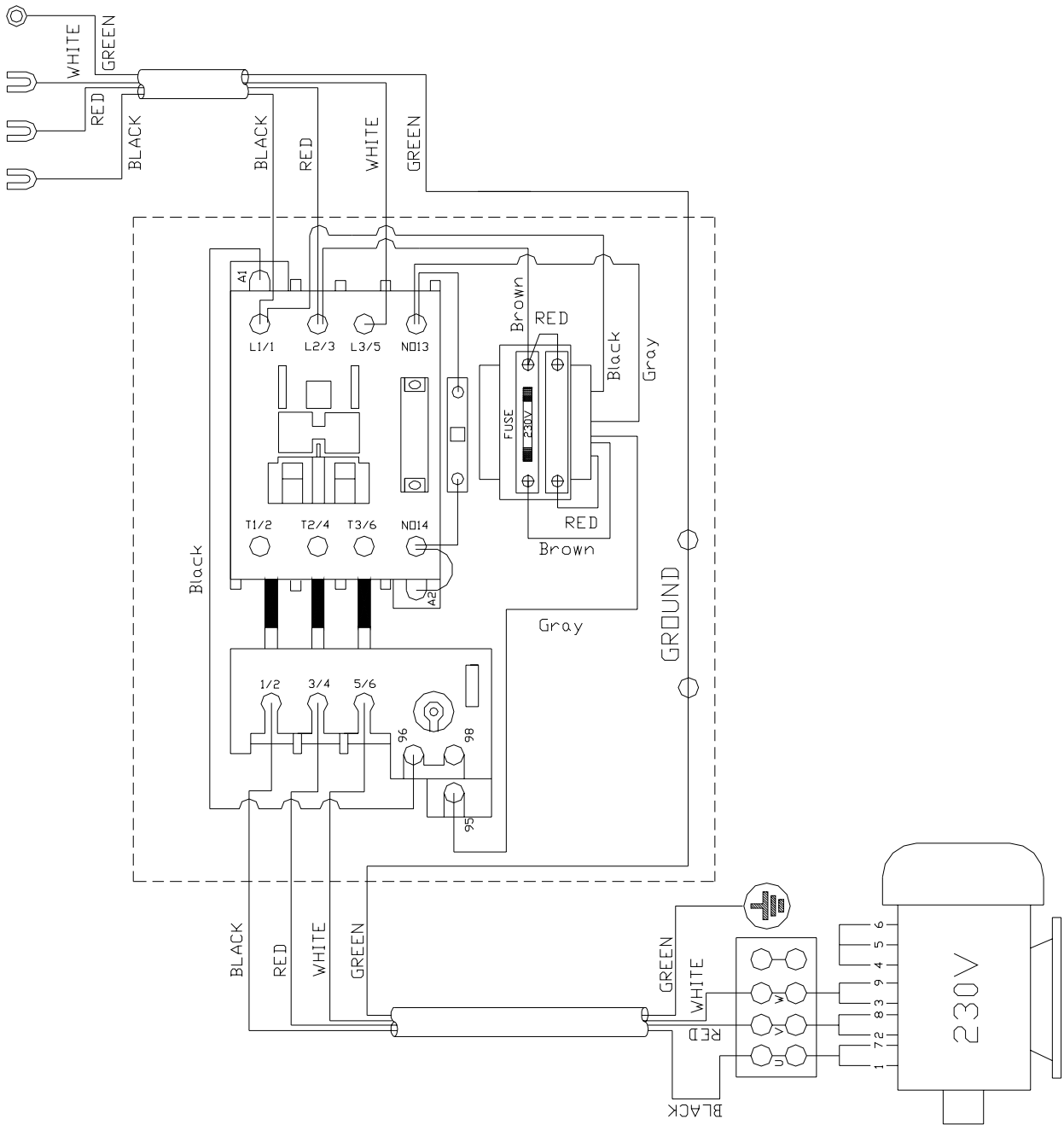


5HP 230V 60HZ 1PH

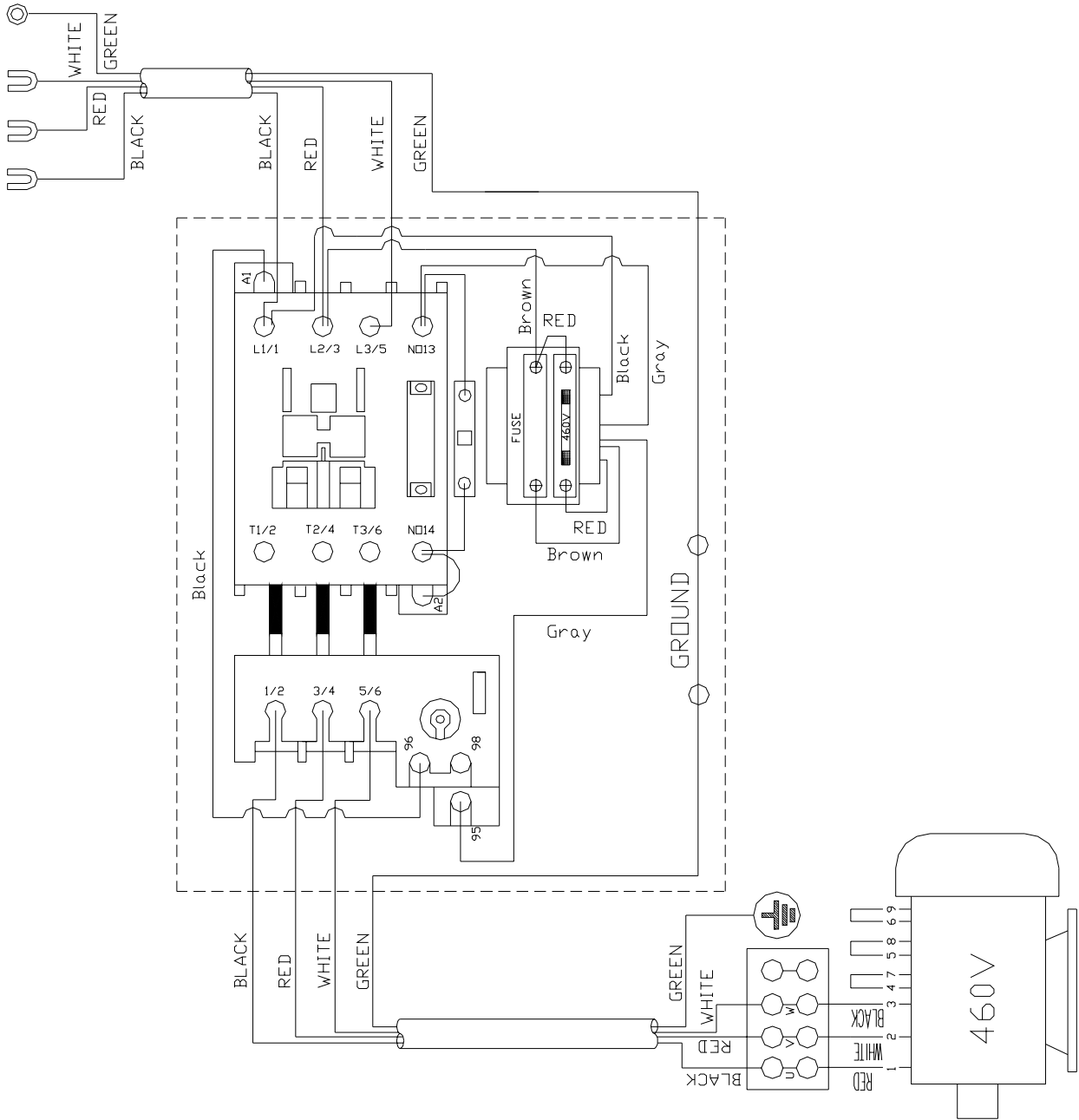
The diagram illustrates the wiring for a 240V electric heater. It features a 20A circuit breaker and a 20A fuse. The wiring is as follows:

- 240V Power Source:** Three phase wires (Black, White, Green) and a Ground wire are connected to the heater's internal components.
- 20A Circuit Breaker:** The Black, White, and Green wires are connected to the terminals labeled L1/1, L2/3, and L3/5 respectively. The Ground wire is connected to the terminal labeled ND13.
- 20A Fuse:** The Brown wire is connected to the terminal labeled T1/2. The Gray wire is connected to the terminal labeled T2/4. The Brown wire is also connected to the terminal labeled T3/6. The Gray wire is connected to the terminal labeled ND14.
- Heater Element:** The heater element is connected to the Ground wire. The terminal labeled 96 is connected to the Ground wire. The terminal labeled 98 is connected to the Ground wire.

230V 5HP Three Phase



460V 5HP Three Phase





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