



OPERATING MANUAL
for
Hoffmann Dovetail Routing Machine
Model PP2

Hoffmann Machine Company, Inc.

1386 Drexel Road Valdese, NC 28690 USA

Phone: (828) 430 - 4510 Fax: (828) 430 - 4620

e-mail: info@Hoffmann-USA.com

www.Hoffmann-USA.com

Toll-free Technical Support: (866) 248 - 0100

1. Safety and Warning Labels

A number of important warning labels have been attached to this Dovetail Routing Machine for your information and protection.

For your own safety, please take a moment to locate and read all warning labels before operating this machine.

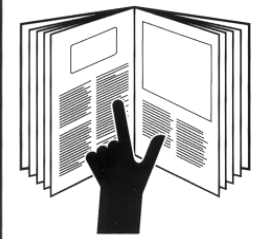
If a label has been removed, defaced or is illegible, please contact Hoffmann Machine Company, Inc. to request a free replacement.

NEVER REMOVE ANY SAFETY OR WARNING LABEL!

SAFETY INSTRUCTIONS

1. Only a trained person is to be permitted to operate this equipment. Training should include instruction in operation under normal conditions and emergency situations.
2. Where safety is dependent upon stopping devices or starting devices or both, they are to be kept free of obstructions that could endanger personnel.
3. The areas around loading and unloading points are to be kept clear of obstructions that could endanger personnel.
4. Personnel working on or near this equipment shall be instructed as to the location and operation of pertinent stopping devices.
5. This equipment is to be used only for the purpose for which it is constructed. See operator's manual for the proper use of this equipment.
6. Under no circumstances are the safety characteristics of this equipment to be altered.
7. Routine inspections and corrective/preventative maintenance measures are to be conducted to ensure that all guards and safety features are retained and function properly.
8. All personnel are to be alerted to the potential hazards indicated by the safety labels on this equipment.
9. As a general rule this equipment is not to be cleaned while in operation. Where proper cleaning requires the equipment to be in motion and a hazard exists, personnel should be made aware of the associated hazard.

©1998 Hazard Communication Systems, Inc. 800-748-0241 Reorder No. 7000-025VPZ



! WARNING

Failure to read and understand operator's manual and all safety signs could result in serious injury.

Manual must remain with machine.

©2000 HCS, Inc. 800-748-0241 Reorder No. 6001-MSWHPK



! WARNING

Dust hazard.

Wear appropriate dust mask in this area.

©1998 HCS, Inc. 800-748-0241 Reorder No. 6115-U7WHPK



! WARNING

Flying objects and loud noise hazards.

Wear approved ear and eye protection.

©1998 HCS, Inc. 800-748-0241 Reorder No. 3019-U8WHPK



! WARNING

Rotating cutter hazard.

Keep hands clear.

Disconnect power before servicing.

©2000 HCS, Inc. 800-748-0241 Reorder No. 1030-JCWHPK



2. Safety Rules

Read and understand these safety rules before operating this machine!

1. Always disconnect the machine from the electrical power supply and from compressed air supply before attempting any adjustment, repair or maintenance procedure (change of router bit, depth-of-cut adjustment, removal of wood dust, etc.).
2. Do not allow power cord or air hose to lay on the floor, in the way of passing personnel or the machine operator. They will cause a trip hazard.
3. Always wear eye and ear protection as well as a respirator suitable for wood dust.
4. Remove or confine loose hair, clothing and jewelry to avoid entanglement.
5. Avoid a dangerous environment. Do not expose electrical equipment to rain. Do not use in presence of flammable liquids or gases.
6. Keep the area around the machine clean and free from scrap, sawdust, wood chips, oil and grease to avoid the danger of slipping.
7. Always use a suitable dust collection system. Duct must be properly connected to the dust extraction port at the back of the machine.
8. Use only sharp and flawless original Hoffmann router bits.
9. Check the machine upon receipt as well as before every use for improper functioning and worn or damaged parts. Make sure the appropriate router bit is securely installed.
10. Broken or defective parts must not be used until replaced or repaired by a qualified technician.
11. When interrupting work or upon leaving the area, machine must be switched off.
12. Only trained and qualified personnel must be allowed to use machine.
13. Only original Hoffmann replacement parts must be used to rebuild machine.



3. Operator Training

The Hoffmann Dovetail Routing Machine model PP-2 is to be operated, maintained and repaired only by properly trained and qualified personnel. It is imperative that the operator has carefully read and understood these operating instructions, and that he or she is aware of all potential risks resulting from operating this machine.

If the operator does not possess sufficient English language skills to completely understand all sections of this manual, especially the sections on Warning Labels and Safety Rules, it is the responsibility of the purchaser to retain a qualified translator to translate this entire manual.

All applicable safety procedures and rules, including but not limited to all OSHA Rules and Regulations, are to be adhered to.

Any unauthorized modification or alteration to this machine by the operator or owner, including the use of router bits other than Original Hoffmann Dovetail Router Bits, will immediately void the machine warranty. The manufacturer cannot be held liable if the machine is used for any operations other than outlined in this manual or if the machine is modified or altered.

Please refer to the complete Hoffmann Machine Company, Inc. warranty in the back of this operating manual.

4. General Machine Description

The Hoffmann Dovetail Routing Machine model PP-2 is designed solely to process material for the Hoffmann Dovetail Joining System.

This machine is to be used only to process material for Hoffmann Dovetail Keys, size W-1, W-2, W-3 and W-4.

USE OF THIS MACHINE FOR ANY OTHER OPERATION IS DANGEROUS AND WILL VOID THE WARRANTY.

The manufacturer cannot be held liable if the machine is used for any operations other than outlined in this manual.

The Hoffmann Dovetail Routing Machine model PP-2 is designed to rout dovetail shaped keyways in hard and softwoods as well as wood related sheet goods, such as particleboard, MDF, plywood, MDO, etc.

The material is placed on the machine table, the proper location is established with either a steel fence plate for miter joints, or with square stops for butt joints.

Depressing the foot pedal activates the hold-down clamps and secures the workpiece. With the workpiece clamped securely, the router motors are turned on and raised up automatically and the spinning router bits move up into the material. A height adjustment rod is used to set the routing height. When the pre-set height is reached, a pneumatic valve is triggered and the motors return to their resting position and are shut off. A pneumatic valve is triggered when the motors have reached their home position, this valve releases the material clamps and the workpieces are removed from the machine table by the operator.

WARNING:

The machine is equipped with an automatic ON/OFF feature, depressing the foot pedal starts the router motors immediately and releasing the pedal returns the motors to their home position.



5. Potential Risks and Dangers

Even when the machine is used as designed, and when the aforementioned safety rules are adhered to, the potential risk of injury must always be considered.

It is especially important to be aware of the following:

- ❑ The risk of pinching between stationary and moveable parts of the machine.
- ❑ The risk of pinching on the clamping devices of the machine.
- ❑ The risk of injury from sharp edges when handling, adjusting or changing the tooling.
- ❑ The risk of injury due to the inhalation of wood dust when operating the machine.
- ❑ The potential risk of injury on the electrical parts of the machine.
- ❑ The potential risk of injury on the pneumatic elements of the machine.

6. Toolkit

The machine is shipped with a Hoffmann toolkit, consisting of:

- Hex key 2.5mm
- Hex key 3.0mm
- Hex key 4.0mm
- Hex key 5.0mm
- Hex key 6.0mm
- Wrench 14mm
- Wrench 17mm
- Wrench 18mm
- Wrench 22mm
- One Safety Equipment Starter Kit (safety glasses, ear plugs, dust mask)

This starter kit is included as a courtesy to allow the machinery owner to start using this machine upon receipt. It is the machine owner's responsibility to supply additional safety equipment as needed, and the machine operator's responsibility to use all safety equipment as instructed.

7. Technical Data

Electrical Supply	120 Volt, 60 Hz, 17 Amps. - single phase
Router motors	two Hoffmann brand motors, 1,000 Watt each
Rotation	CCW (counter clockwise)
Revolutions per minute	33,000 rpm (idle)
Collet size	¼" = 6.35mm (8mm collet required for W-4 router bits)
Compressed air supply	90 psi = 6.0 bar
Dust collection:	One 4" diameter duct, approx. 500 cfm required
Max. routing height	4"
Max. material thickness:	5 ¾"
Operating noise	75.3 dB (A)
Weight:	348 lbs.
Dovetail Key sizes	W-1, W-2, W-3, W-4



8. Machine Installation

8.1 Unpacking – Inspection

Upon receipt, check the machine and shipping container for any damage. Report any transportation damage to the delivering carrier and indicate it on the bill of lading. Request an immediate inspection for assessment of damage. Claim should then be entered with the carrier. The carrier is solely responsible for any loss or damage during transit.

8.2 Placement

After unpacking, select a suitable location with enough room around the machine for safe and unobstructed workflow, cleaning and maintenance.

The floor should be sound and reasonably level. When properly installed, the machine should not rock or wobble.

8.3 Cleaning

Clean the machine and remove the applied rust preventive coating with a cotton rag and thin oil (WD-40 or similar). Be careful when using liquids containing silicones – the finishing process of your material could later be impaired.

Never use thinner or solvents to clean machine, damage could result.

8.4 Electric Connection

Only a licensed electrician shall connect the electrical supply line to the machine. The electrical connection to 120 volts, single phase power must be made in accordance with all applicable codes and laws. If a disconnect switch is required, one must be installed by the owner. If a plug-receptacle connection is allowed, the power cord must be routed out of the path of normal operator movement and should be protected from damage.

8.5 Compressed Air

Route a compressed airline to the machine. Caution: If a rubber hose is used make sure that it does not lay on the floor in the path of normal operator movement. It is recommended that the compressed airline drop from overhead. The airline connection should be made with a quick disconnect fitting to allow for positive lock-out from the air source when performing adjustments, cleaning, maintenance or repair work. The connection is made to the incoming side of the air filter, regulator and lubricator assembly, which is mounted on the outside of the machine base.

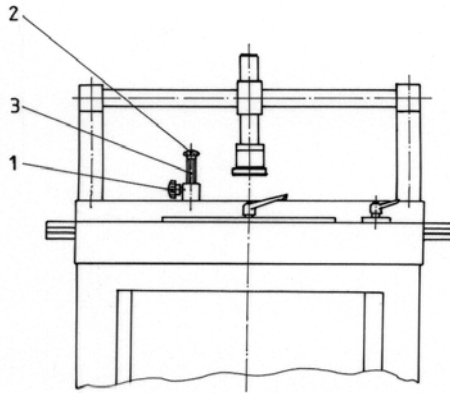
CAUTION: WHEN AIR PRESSURE IS INTRODUCED TO THE MACHINE, THE HOLD DOWN CLAMP AND THE MOTOR CARRIAGE WILL IMMEDIATELY MOVE TO THEIR HOME POSITIONS. THEREFORE, USE EXTREME CAUTION AND STAND CLEAR OF THE MACHINE WHENEVER COMPRESSED AIR IS INITIALLY CONNECTED.

9. Machine Operation

9.1 Standard 45-degree miters with one key per joint

The machine is equipped with a routing height adjustment rod (2). The scale (3) on the vertical bar indicates the height the router bit will travel into the material. To adjust the height, simply loosen the locking lever (1) and move the bar to the desired height.

Always use the longest key possible to achieve a tight joint on the face side of the workpiece.



(PU2 model shown - routing height adjustment is identical for PU2 and PP2 machines.)

With the routing height and the keyway position set, place the material on the table and lower the pneumatic hold-down clamps to within 1/8" above the workpiece. Secure the setting by tightening the orange handles.

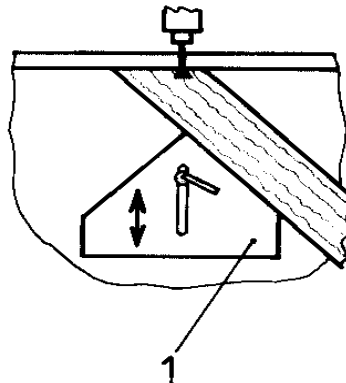
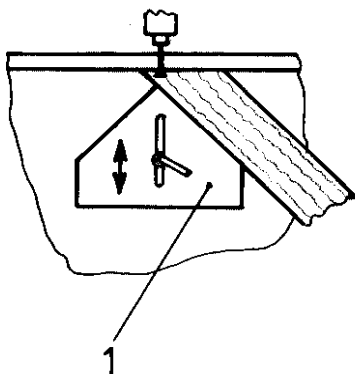
Start the routing operation by depressing the pneumatic foot pedal. Do not release the switch until the routing sequence is completed and the routers have returned to their home position. Once the clamps have released the workpieces, they can be removed from the table.

Before routing the material make sure the orange handles securing the hold-down clamps and the steel fence plate are properly tightened, and do not change the settings until both parts are routed.

9.2 Standard 45-degree miters with multiple keys per joint

Adjust the machine and process the material for one dovetail key as described above.

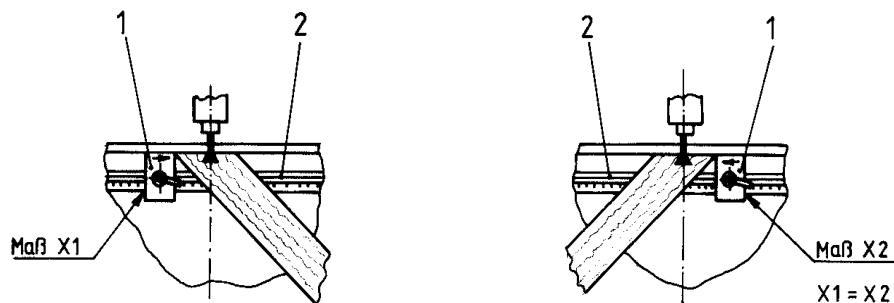
After all material has been machined for the first key location, re-set the steel fence plate (1) on the machine table (and re-set the routing height if necessary) and proceed as before.



9.3 Miter joints with angles other than 45 degrees

Replace the standard 45-degree steel fence plate (shipped with machine) with either a fixed fence plate for hexagon or octagon frames, or the adjustable Hoffmann Synchro fence and proceed as outlined in section 9.2.

The square stop (1) can also be used to machine miter joints with any given angle.



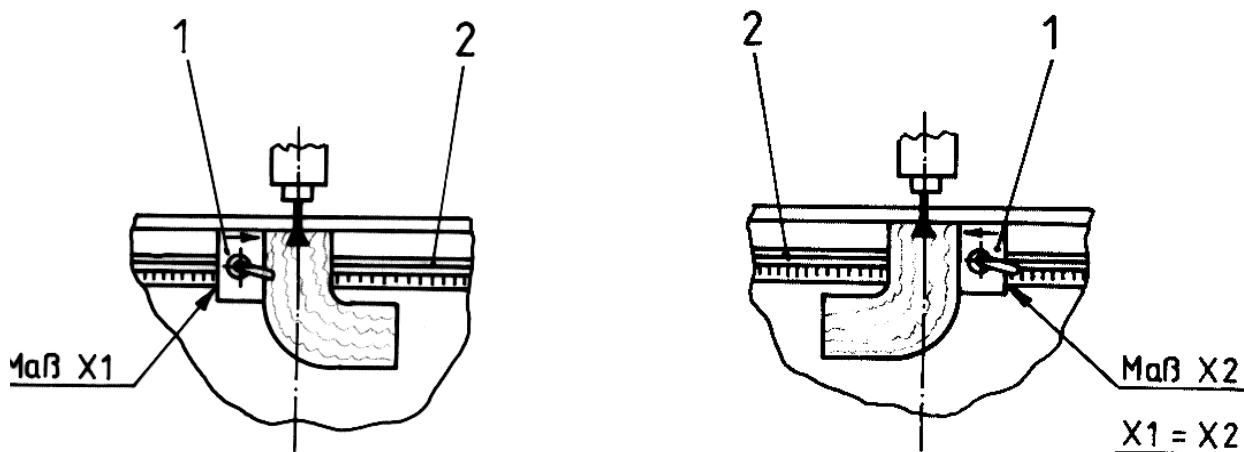
The square stop (1) is set to the desired position and locked in place. All material is machined on its right end miters with this setting.

The square stop is then moved to the other side of the table, and the same position is set with the aid of the tape scale (2).

With both settings being equal, a perfectly aligned corner is achieved.

9.4 Butt-joints with square cut ends (e.g. face-frame construction, round parts)

Remove the steel fence plate from the machine table and use the supplied square aluminum stop (1) instead. Recessed in the machine table is a tape scale (2), with is used to adjust these stops.

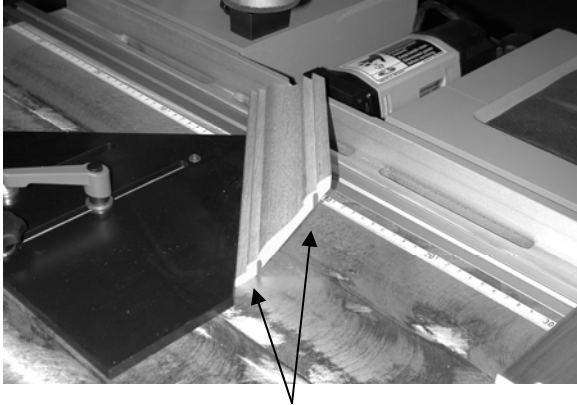


9.5 Compound Miter Joints

Moulding joined with a compound miter is machined almost like a standard, flat moulding. To achieve a tight and correctly aligned joint, the mitered face must be placed tight against the machine back fence and the moulding edge must rest against the black steel fence plate.

The machine is adjusted for both keyway locations and the routing heights are set for each head. For a production environment, it is advisable to build a fixture to support the moulding in the correct position.

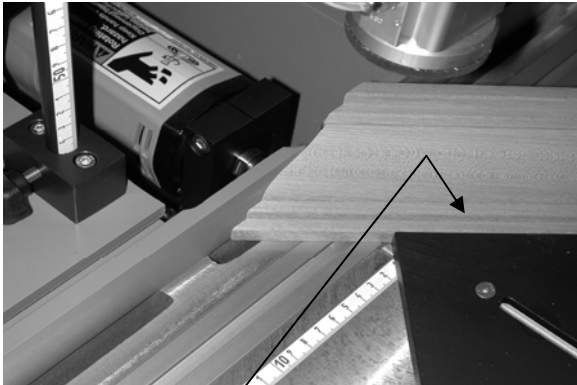
(Pictures depict PU-2 single-head machine, same set-up is used for PP2 models)



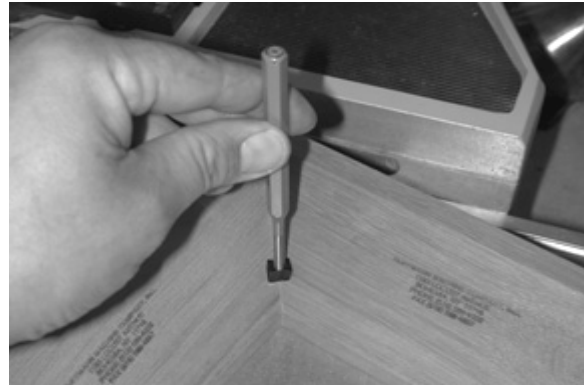
dovetail keyway locations



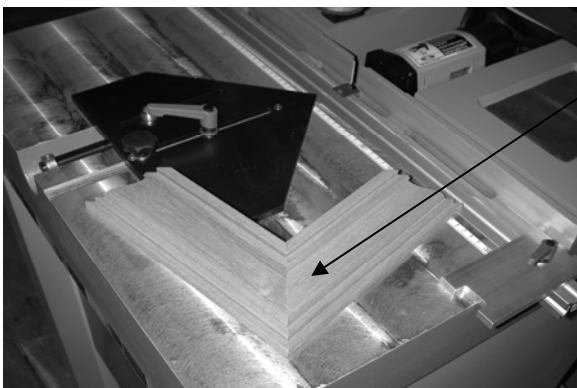
place miter face tight against back fence



moulding edge rests against fence plate



Keys are inserted with a round steel punch

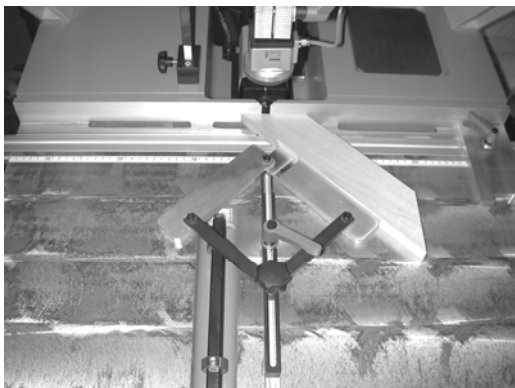


The completed joint with no visible fastener.

Note: Depending on moulding width, use two or more Keys for tight joints.
Use of good quality glue is important.
For best results, use a shop-made jig to hold moulding steady while routing (jig can be mounted to recessed aluminum fence rail).

Place first Key close to inside corner and second Key close to outside corner - choose thick moulding sections and use longest Key possible.

10. Accessories for PU2 and PP2 production models



Synchro fence, adjustable from 18-64°
order number: W 3105000

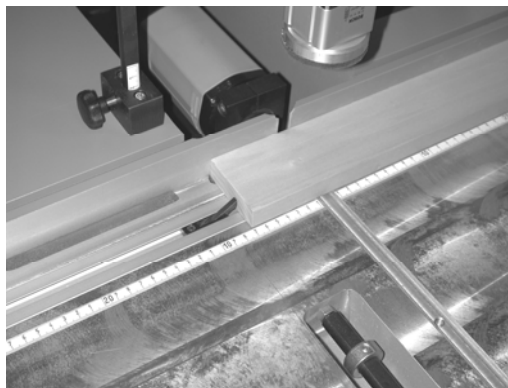
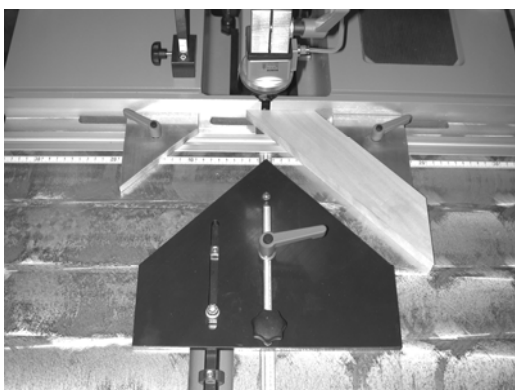
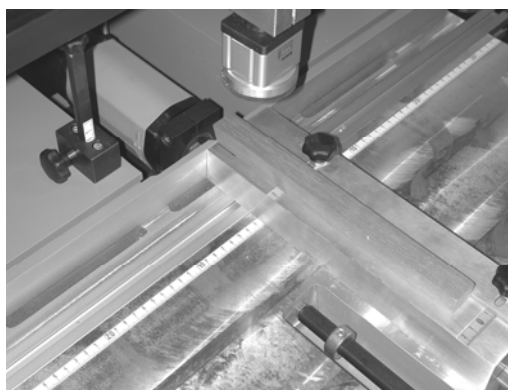


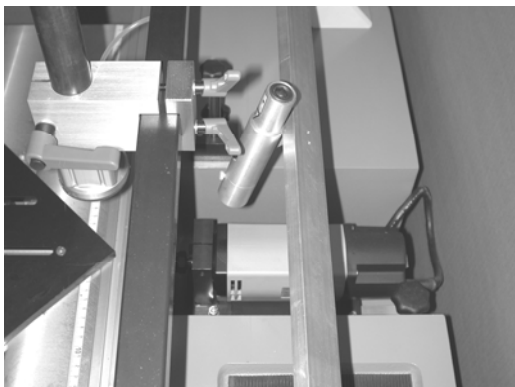
Table flip-stop with spring loaded tab
order number: W 3900002



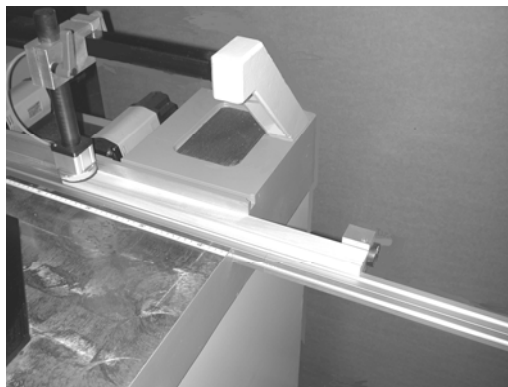
Inside corner fences for 45° miters
order number: W 3208000



Mullion jig for coped mullion joints
order number: W 3108000



Laser guide for working to pencil lines
order number: W 3900006



Fence extension rail with flip-stop
order number: W 3900001 / W 3900003



11. Change of router bit

ALWAYS DISCONNECT THE ELECTRICAL POWER SUPPLY AND COMPRESSED AIR LINE BEFORE ATTEMPTING ANY SERVICE, MAINTENANCE OR REPAIR WORK!

Follow proper "Lock-Out / Tag-Out" procedures as specified by the Occupational Safety and Health Administration "OSHA".

1. Verify that electrical power and compressed air supply has been disconnected.
2. Loosen the lock-nut and raise the motor carriage manually by turning the threaded stem on the back of the motor carriage. Raise the carriage until the router bit is approx. 1/4" above the machine table.
3. Remove the old chip breakers from the table recess and discard.
4. Loosen the hex head screw in the black motor bracket and carefully slide the motor out.
5. Use the included metric wrenches (18mm & 22mm) to open the 1/4" or 8mm collet and remove the old router bit.
6. Install new bit and tighten collet securely.
Distance between tip of router bit and top of collet should be:
For W-1 router bit: 15.5 mm = 0.610"
For W-2 router bit: 17.0 mm = 0.669"
For W-3 router bit: 19.0 mm = 0.749"
7. Slide the motor back into the bracket and use the square stop to set the proper distance. The stop has three steps in one side (W1, W2, W3) and one large step machined in the opposite for W4 router bits.
Slide the square stop out of the fence rail and remove the locking lever, washer and square nut. Place the stop upside down on the table to use.
Use the smallest step for W-1, the middle step for W-2 and the deepest step for W-3.
8. Lower the carriage to its home position.
9. Make a test cut and verify proper settings by inserting a Hoffmann key.
10. Raise the carriage again until the bit is approx. 2" above the table, then install a new chip breaker insert. Place a piece of scrap wood over the insert and slowly lower the running router bit down through the wood. The scrap wood eliminates tearout on the surface of the chip breaker.
Hold the scrap wood securely in place and be aware of the turning bit at all times. Lower the router carriage by turning the threaded stem slowly. When the motor has shut off, secure the threaded stem with the locknut.

Machined steps for W1-W2-W3 bits

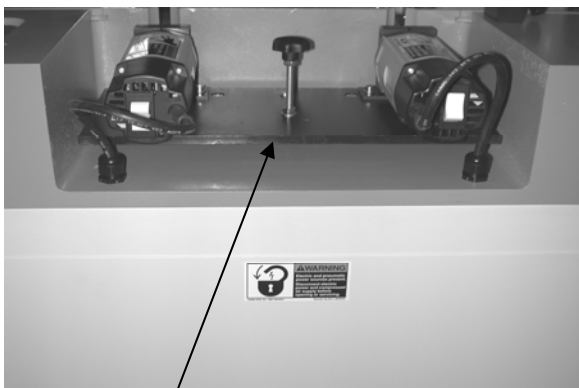


Machined step for W4 bit

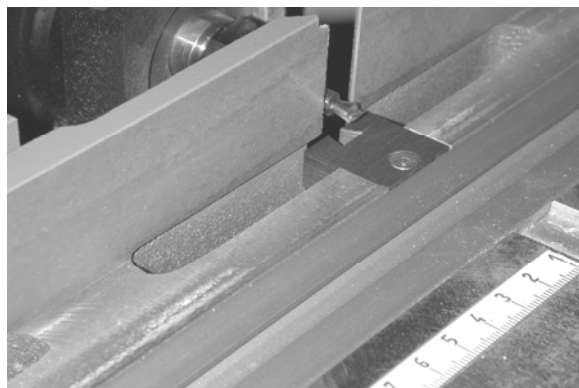
Square or "butt-joint" stop

11.1 Change of router bit on PP2 production models

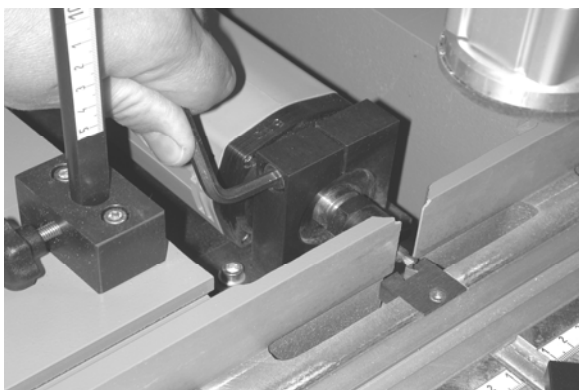
ALWAYS DISCONNECT THE ELECTRICAL POWER SUPPLY AND COMPRESSED AIR LINE BEFORE ATTEMPTING ANY SERVICE, MAINTENANCE OR REPAIR WORK!



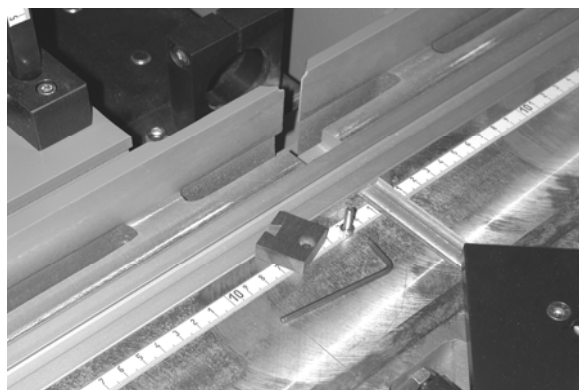
Lift motor carriage with threaded stem



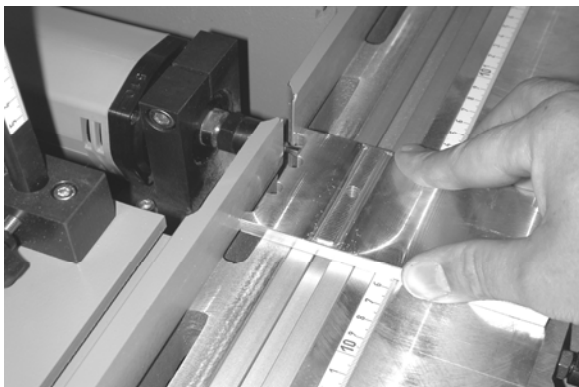
Router bit raised approx. 1/4" above table



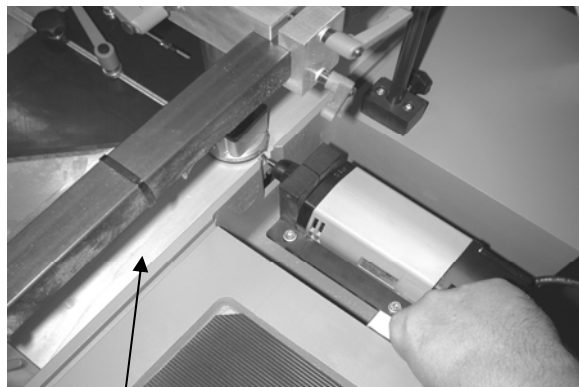
Loosen screw in motor bracket to remove motor



For best results, discard old chip breaker



Use square stop to adjust new router bit projection



Scrap wood placed on machine table for initial cut through new chip breaker
Lower the router bit SLOWLY with threaded stem!

11.2 Fine Adjustment

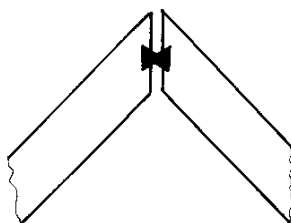
The operator can adjust the tightness of an assembled joint as well as the clamping force exerted by the key.

ALWAYS DISCONNECT THE ELECTRICAL POWER AND COMPRESSED AIR SUPPLY BEFORE ATTEMPTING ANY SERVICE, MAINTENANCE OR REPAIR WORK!

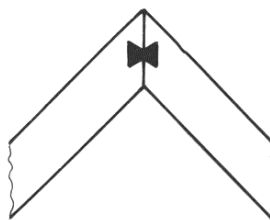
Follow proper "Lock-Out / Tag-Out" procedures as specified by the Occupational Safety and Health Administration "OSHA".

11. Verify that electrical power and compressed air supply have been disconnected.
12. Raise the motor carriage as described before.
13. Remove the chip breaker.
14. Open the collet with two open-end wrenches.
15. Carefully move the router bit further toward the operator to increase the routing depth, or move the router bit away from the operator to decrease the routing depth.
Only a small movement (0.1 – 0.5mm = 0.004 – 0.020") is necessary to make a noticeable difference.
16. Tighten the bit in the collet and lower the carriage.
17. Re-connect the electrical power and compressed air supply and make a test cut.
18. When the new setting is to your satisfaction, re-install the chip breakers and follow the procedures on the previous page for the initial cut through the chip breaker.

To re-set the machine to the factory setting, use the included aluminum set-up jig.

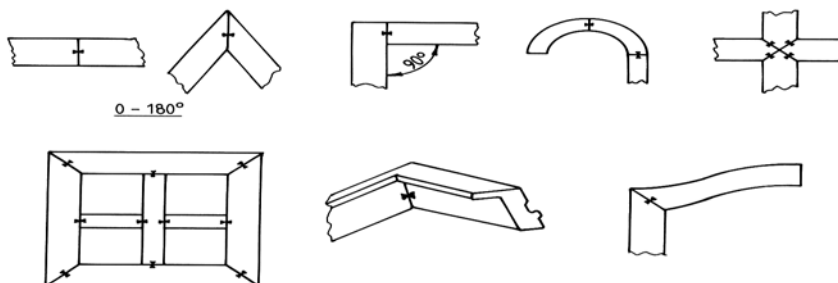


Wrong Setting



Correct Setting

12. Applications for the Hoffmann Dovetail Joining System

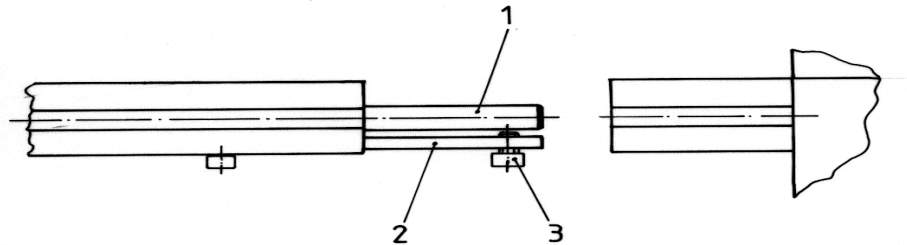




13. Installation of fence extensions

If accessory fence extensions have been ordered with the machine please follow these assembly instructions:

1. Push the left and right hand side fence with the steel connector plate (2) and bolt (1) into the machine fence profile.
2. Tighten the screw (3) on the connector plate.
3. Attach the self-adhesive tape scale to the fence extension.
Proper line-up with the table scale is important!



14. Maintenance

ALWAYS DISCONNECT THE ELECTRICAL POWER AND COMPRESSED AIR SUPPLY BEFORE ATTEMPTING ANY SERVICE, MAINTENANCE OR REPAIR WORK!

Follow proper "Lock-Out / Tag-Out" procedures as specified by the Occupational Safety and Health Administration "OSHA".

- All moving parts should be cleaned weekly and lubricated as necessary.
- The cooling vents in the motor housing must be kept free from dust and debris.
- Promptly replace damaged or worn router bits. Use only Original Hoffmann Dovetail Router Bits for best performance.
- All fasteners, nuts and bolts should be checked periodically and re-tightened as necessary.
- Periodically check the machine for damage or unusual wear. Never operate the machine if damaged.
- Do not modify the machine. Any modification will void the warranty and may cause a hazardous condition.
- Remove condensation from the air filter assembly by opening drain on bottom of plastic reservoir, as needed.
- Re-fill oil reservoir with good quality air tool oil, as needed.
Set-screw should be adjusted to dispense one drop of oil approx. every 30-40 machining cycles.



15. Parts List

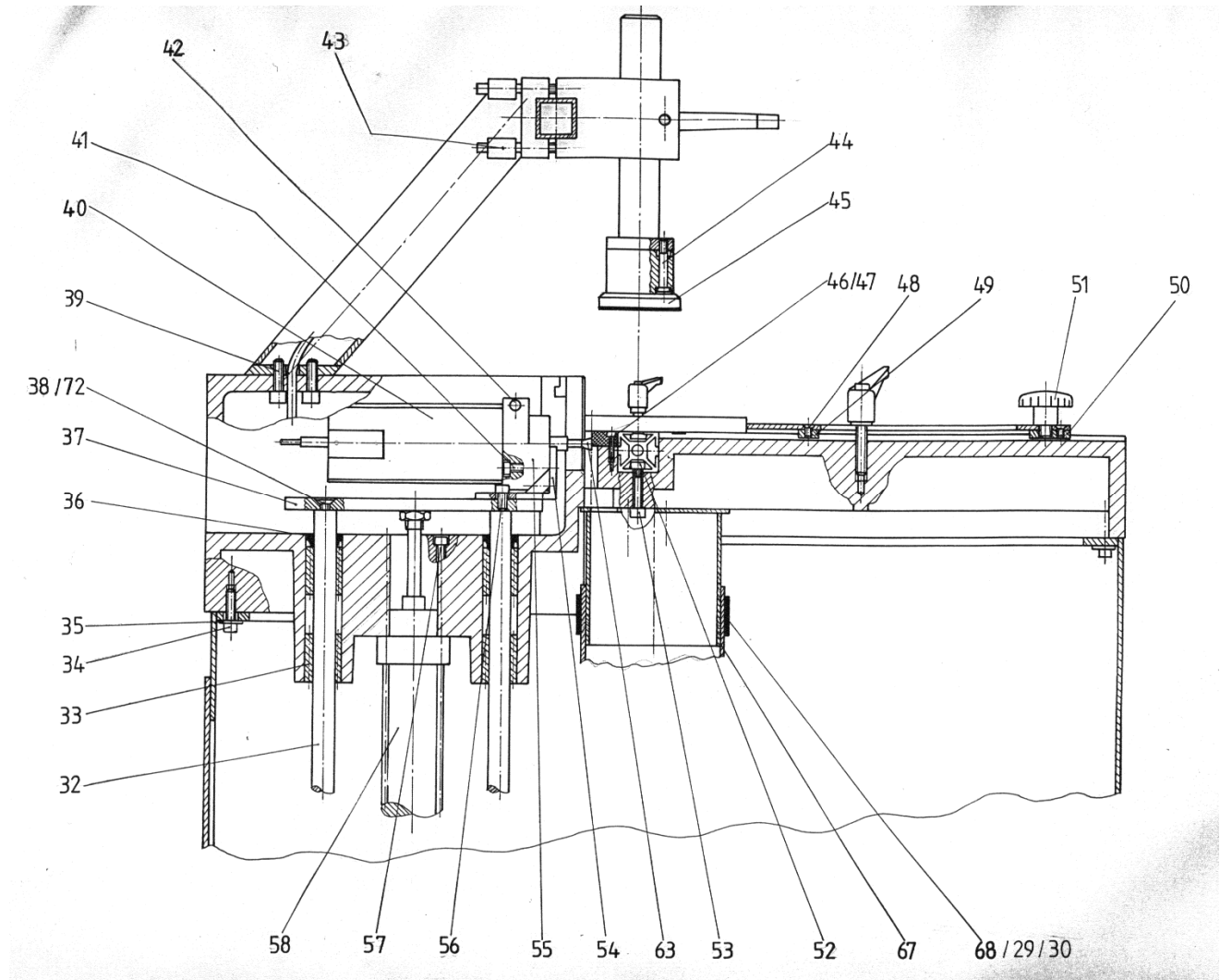
1. Cast aluminum table base
2. Steel cabinet
3. 45 degree fence plate
4. Bolt
5. Washer
6. Square nut
7. Stop-ring
8. Bolt
9. Fence rail
10. Grommet
11. Screw
12. Aluminum disc
13. Guide block
14. Screw
15. Knob
16. Height adjustment rod
17. Self adhesive scale
18. Knob
19. Aluminum bracket, left side
20. Aluminum bracket, right side
21. Screw
22. Square steel tube
23. Foam pad
24. Screw
25. Stem for hold-down cylinder
26. Locking lever
27. Mounting plate
28. Short-stroke cylinder
29. Screw
30. Dust collection fitting
31. Mounting bracket for hold-down stem
32. Guide rod
33. Linear bearing
34. Screw
35. Washer
36. Bearing seal
37. Motor carriage base plate
38. Screw
39. Screw
40. Router motor
41. Screw



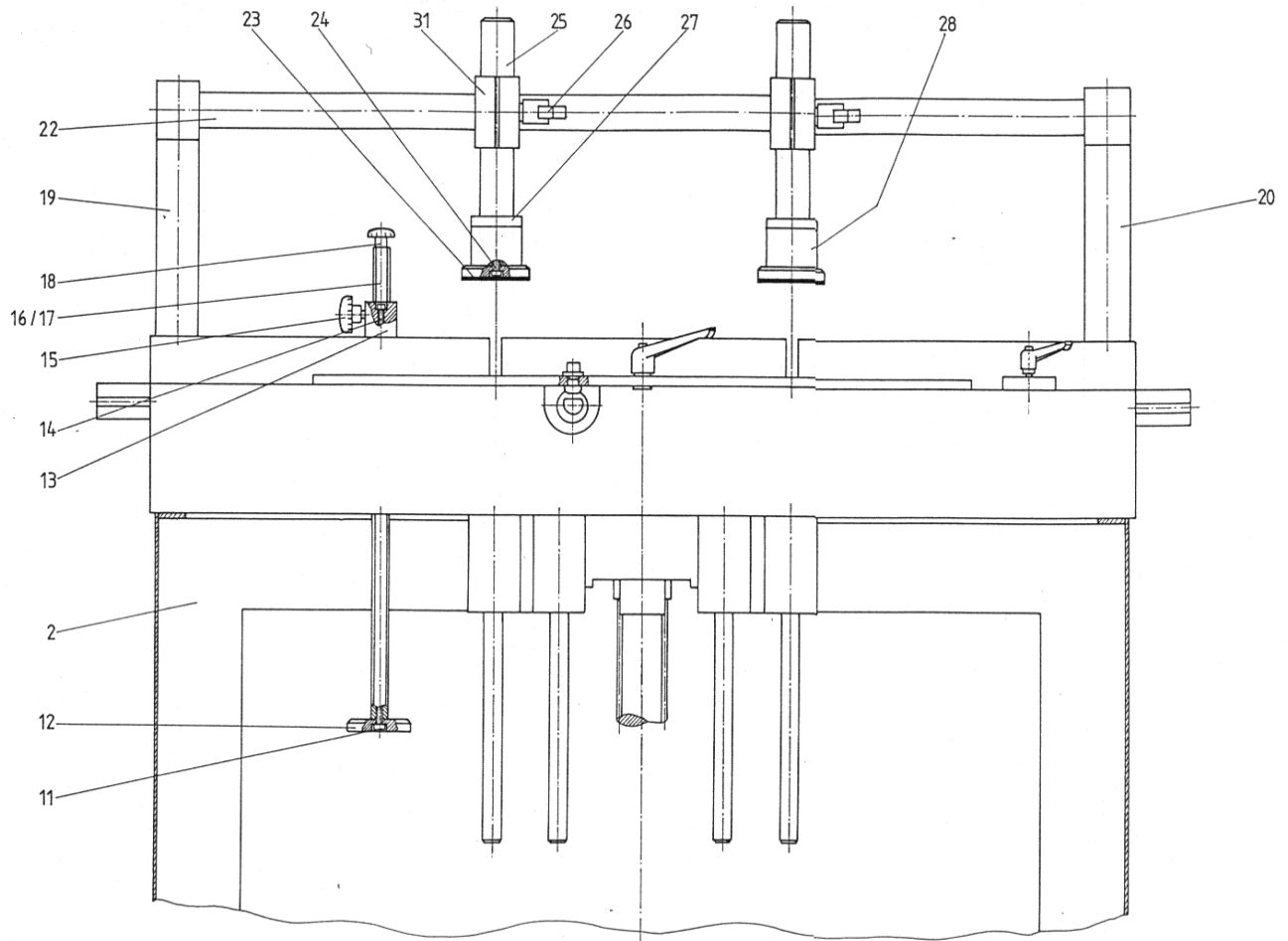
- 42. Screw
- 43. Locking lever
- 44. Screw
- 45. Hold-down plate
- 46. Chip breaker
- 47. Screw
- 48. Screw
- 49. Guide block, front
- 50. Guide block, rear
- 51. Knob
- 52. Square nut
- 53. Screw
- 54. Mounting angle bracket
- 55. Motor collet
- 56. Screw
- 57. Screw
- 58. Pneumatic cylinder (main cylinder)
- 59. Locking lever
- 60. Tape scale
- 61. Square stop
- 62. Locking lever
- 63. Router bit
- 64. Adjustable foot
- 65. Nut
- 66. Foot pedal
- 67. Dust collection hose
- 68. Hose clamp
- 69. N/A
- 70. Washer
- 71. Emergency-Stop Switch
- 72. Screw
- 73. Air regulator-filter-lubricator unit
- 74. Screw
- 75. Washer
- 87. Limit Switch
- 95. Grommet
- 96. Mounting bracket
- 101. Pneumatic limit switch

Please see page 1 of this manual for location and type of Warning and Safety Labels on this machine!

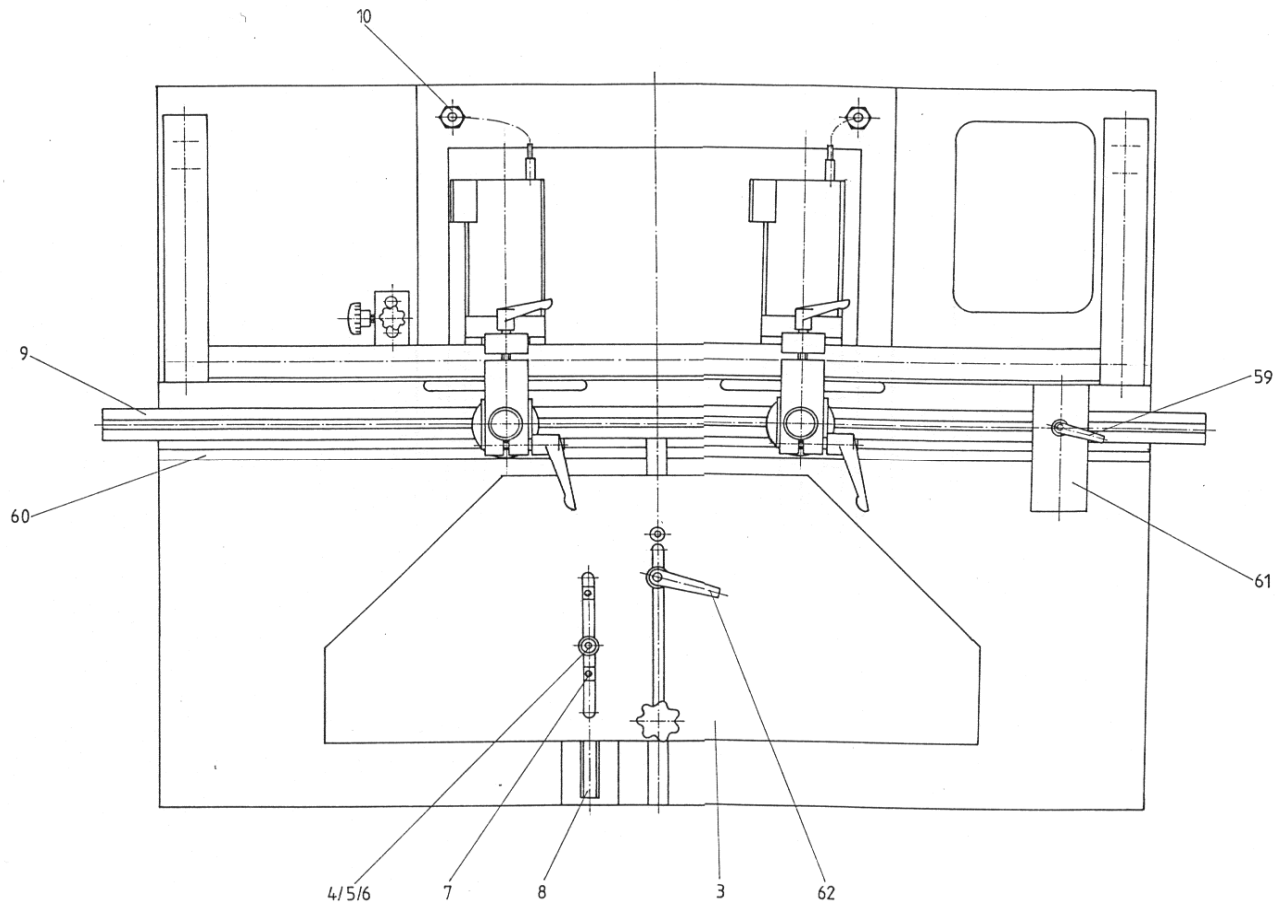
16.1 PP2 side view



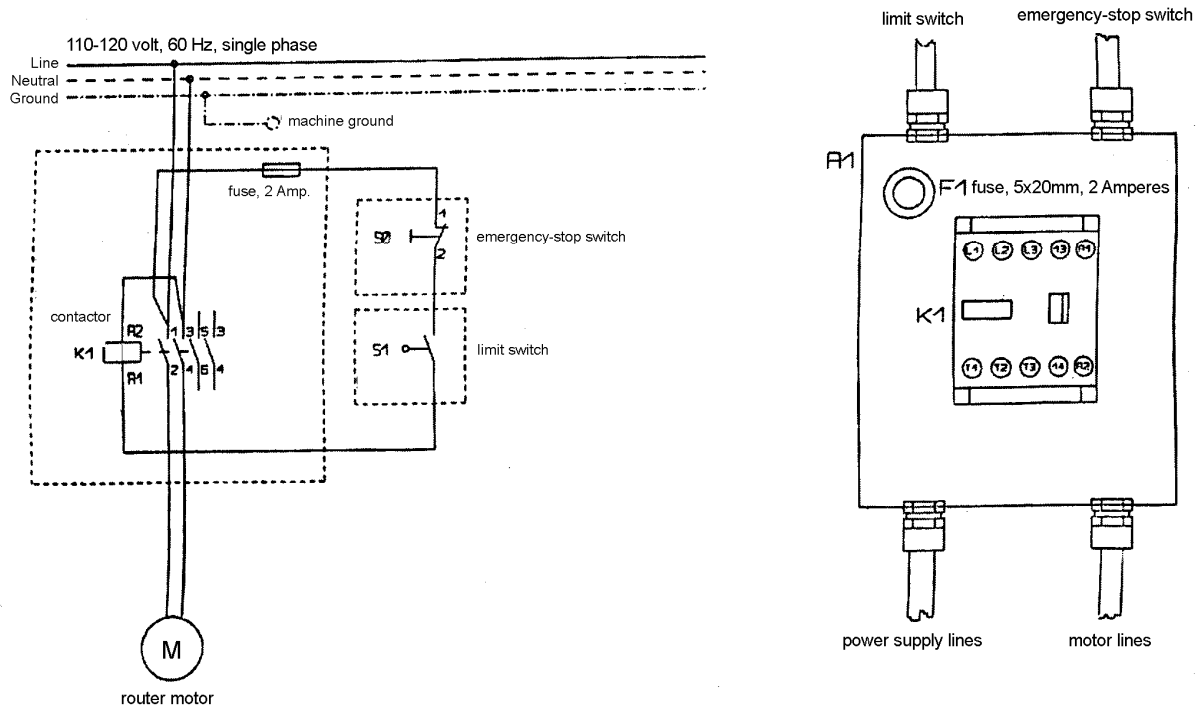
16.2 PP2 front view



16.3 PP2 top view

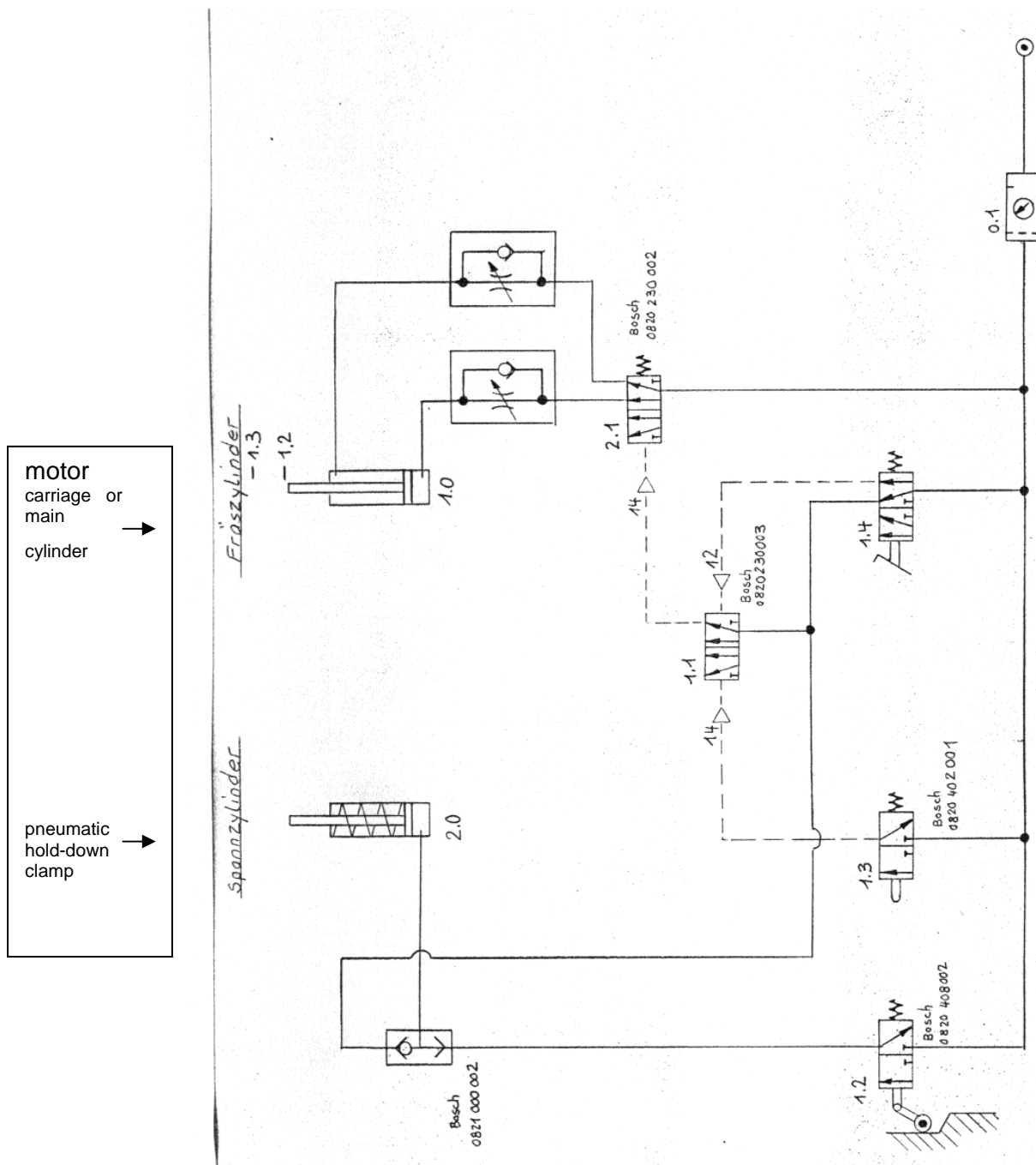


17. Electrical Schematic



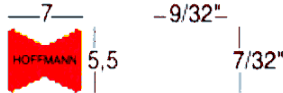
This schematic depicts the typical wiring diagram for a PU2 single-head routing machine. On PP2 double-head models, the second motor is wired into the same contactor.

18. Pneumatic Schematic



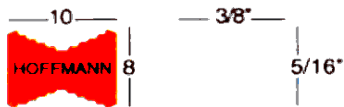
19. Hoffmann Dovetail Keys, standard brown plastic, without flange

W-1



Part number	length in inches	length in mm
W 9100600	W1 – 1/4"	6.0mm
W 9101000	W1 – 3/8"	10.0mm
W 9101400	W1 – 9/16"	14.0mm
W 9101800	W1 – 3/4"	18.0mm
W 9102200	W1 – 7/8"	22.0mm
W 9103000	W1 – 1 1/4"	30.0mm
W 9104000	W1 – 1 9/16"	40.0mm
W 9105000	W1 – 2"	50.0mm
W 9106000	W1 – 2 3/8"	60.0mm

W-2



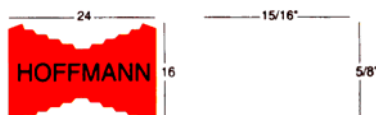
W 9200600	W2 – 1/4"	6.0mm
W 9200900	W2 – 3/8"	9.5mm
W 9201200	W2 – 1/2"	12.0mm
W 9201400	W2 – 9/16"	14.0mm
W 9201500	W2 – 5/8"	15.8mm
W 9201800	W2 – 3/4"	18.0mm
W 9202200	W2 – 7/8"	22.0mm
W 9202000	W2 – 13/16"	20.6mm
W 9202200	W2 – 7/8"	22.0mm
W 9202500	W2 – 1"	25.4mm
W 9203200	W2 – 1 1/4"	31.7mm
W 9203800	W2 – 1 1/2"	38.1mm
W 9204600	W2 – 1 13/16"	46.0mm
W 9206000	W2 – 2 3/8"	60.0mm

W-3



W 9301200	W3 – 1/2"	12.7mm
W 9391500	W3 – 5/8"	15.8mm
W 9301900	W3 – 3/4"	19.0mm
W 9302500	W3 – 1"	25.4mm
W 9303100	W3 – 1 1/4"	31.7mm
W 9303800	W3 – 1 1/2"	38.1mm
W 9304600	W3 – 1 13/16"	46.0mm
W 9305200	W3 – 2"	52.0mm
W 9306000	W3 – 2 2/8"	60.0mm
W 9308000	W3 – 3 1/8"	80.0mm
W 9301000	W3 – 4"	100mm

W-4



W 9404000	W4 – 1 9/16"	40mm
W 9406000	W4 – 2 3/8"	60mm
W 9408000	W4 – 3 1/8"	80mm
W 9401000	W4 – 4"	100mm



20. Hoffmann Machine Company, Inc. Warranty

Hoffmann Machine Company, Inc. (hereinafter called "seller") guarantees all machines and parts of its own manufacture against defects in material and workmanship for a period of twelve (12) months from the date of shipment, under normal use and service by buyer (one eight hour production period per day). No other warranties are to be implied with respect thereto. The liability of seller under its warranty is limited to adjustment, in accordance with the warranty adjustment terms set forth below, for products which are found to be defective by seller in the form in which they were originally shipped. In no event will seller be liable for collateral, consequential or other damages of any kind or nature.

SELLER MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

It is buyer's sole responsibility to test, approve and authorize the use of the Hoffmann Dovetail Joining System and the Hoffmann Dovetail Keys or "Schwalbe" for any and all applications.

Warranty Adjustment Terms

1. Adjustments will be limited to claims which are presented promptly after the product is found to be defective, and within the aforesaid warranty period.
2. All products claimed to be defective will be subject to inspection and test by seller. Normally, seller will request return of products for inspection and test, however, seller reserves the right to make inspection and test on buyer's premises. Returns are to be made only as and if authorized by seller.
3. Buyer will pay all packaging, inspection, labor and transportation costs involved. Credit for the transportation costs only will be issued by seller provided adjustment subsequently is allowed.
4. No adjustments will be allowed for products which have been subjected to abuse, improper installation or application, alteration, accident or negligence in use, storage, transportation or handling; nor for products on which original identification markings have been removed, defaced or altered.
5. Final determination as to whether any adjustment is allowable, and as to the extent thereof, rests with the seller. Full adjustment, if allowed, normally will be made by replacement in kind on an exchange basis. Pro rata adjustment, if allowed, normally will be made by issuance of credit. In all cases, however, the seller reserves the right to make adjustments by repair, replacement or credit.
6. Replacement for products found subject to adjustment, whether new or repaired, will be shipped F.O.B. City of destination with transportation charges prepaid by seller.

Installation

Buyer shall install machinery purchased from seller at buyer's cost and expense, unless otherwise expressly stipulated in writing. At the request of buyer, seller will recommend competent engineers to supervise the installation, and to instruct buyer in the proper operation of the machinery and equipment. During such period of supervision and instruction, such personnel shall be deemed to be employees of the buyer who shall pay the wages, remuneration, board and traveling expenses of such personnel and shall not make seller liable, directly or indirectly, in any manner whatsoever, for any damages resulting from any act of commission or omission or any misfeasance or malfeasance, on the part of said personnel.



21. Terms and Conditions of Sale

1. Application and Scope:

The terms and conditions contained herein apply to proposals made, and to purchase orders received, by HOFFMANN MACHINE COMPANY, INC. (hereinafter called "Seller"), and sets forth the entire agreement between the parties hereto, and supersedes all communication, representations or agreements, whether oral or written, between the parties hereto with respect to the subject matter herein, and no agreement or understanding varying or extending the terms or conditions hereof will be binding unless expressly agreed to in writing by Seller. No conditions stated by Buyer in its purchase order or orders shall be binding upon Seller if in conflict with, inconsistent with, or in addition to, the terms and conditions contained herein, unless expressly accepted in writing by Seller. Seller's failure to object to any provision contained in any communication or purchase order from Buyer shall not be deemed a waiver of the terms and conditions herein. All orders or contracts are subject to approval and acceptance by Seller at its main office in North Carolina. These Terms and Conditions are within the sole discretion of Seller and are subject to change with or without prior notice.

2. Quotations and F.O.B. Point:

Prices are quoted and all sales are made F.O.B. Sellers facility and, unless otherwise indicated in the proposal, prices quoted are effective for a maximum thirty (30) days after the date of any proposal.

3. Terms of Payment:

All invoices are due and payable as set forth on the front of the invoice. Each delivery shall be considered a separate and independent transaction and payment thereof shall be made on terms set forth on invoice covering same. If delivery is delayed by Buyer, payment shall become due when Seller is prepared to make delivery. If, in the sole judgment of the Seller, the financial condition of Buyer at any time does not justify continuation of manufacture or of delivery as originally specified, Seller may vary terms of payment by requiring full or partial payment in advance, or otherwise, or may ship to Buyer's order against sight draft with bill of lading attached.

4. Taxes:

Unless the quotation expressly provides otherwise, the amount of any present or future Federal, State or local sales, excise or other tax applicable to the products purchased hereunder, or to the manufacture or sale thereof (including, without limitation, state or local privilege or excise taxes based on gross revenue), and any taxes or amounts in lieu thereof paid or payable by Seller in respect of the foregoing (excluding, however, taxes based on net income), shall be added to the purchase prices and shall be paid by Buyer. In lieu thereof, Buyer may provide Seller with an appropriate tax exemption certificate acceptable to the taxing authorities.

5. Warranty:

The products covered herein are warranted, for a period of twelve (12) months from date of shipment, against defects in material and workmanship under normal use and service by Buyer. The liability of Seller under its warranty is limited to adjustment, in accordance with the Warranty Adjustment Terms set forth below, for products which are found to be defective by Seller in the form in which they were originally shipped. In no event will Seller be liable for collateral, consequential or other damages of any kind.

SELLER MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.



21. Terms and Conditions of Sale (continued)

6. Warranty Adjustment Terms:

- (a) Adjustments will be limited to claims which are presented promptly after the product is found to be defective, and within the aforesaid warranty period.
- (b) All products claimed to be defective will be subject to inspection and test by Seller. Normally, Seller will request return of products for inspection and test, however, Seller reserves the right to make inspection and test on Buyer's premises. Returns are to be made only as and if authorized in writing by Seller.
- (c) Buyer will pay all packaging, inspection, labor and transportation costs involved. Credit for the transportation costs only will be issued by Seller provided adjustment subsequently is allowed.
- (d) No adjustments will be allowed for products which have been subjected to abuse, improper installation or application, alteration, accident or negligence in use, storage, transportation or handling; nor for products on which original identification markings have been removed, defaced or altered.
- (e) Final determination as to whether any adjustment is allowable, and as to the extent thereof, rests with Seller. Full adjustment, if allowed, normally will be made by replacement in kind on an exchange basis. Pro rate adjustment, if allowed, normally will be made by the issuance of credit. In all cases, however, Seller reserves the right to make adjustment by repair, replacement or credit.
- (f) Replacement for products found subject to adjustment, whether new or repaired, will be shipped F.O.B. city of destination with transportation charges prepaid by Seller.

7. Installation:

Buyer shall install machinery purchased from Seller at Buyer's cost and expense, unless otherwise expressly stipulated in writing.

8. Packaging and Shipment:

All products shipped hereunder will be packaged in accordance with standard commercial practice for domestic shipment. Seller's liability as to delivery ceases upon making delivery of products purchased hereunder to carrier at Seller's facility, in good condition, the carrier acting as Buyer's agent. All claims for damages must be filed with the carrier or Buyer's insurer as appropriate. Seller will select the method of shipment unless Buyer does so in writing at least ten (10) days in advance of the scheduled delivery date. Equipment held for Buyer because of Buyer's delay in acceptance, shall be at Buyer's risk and expense. Seller does not assume liability for shipping in the least expensive manner.

9. Deliveries:

It is the desire of Seller to meet requested delivery schedules, however, Seller shall not incur any liability, consequential, collateral or otherwise, due to any delay or failure to deliver for any reason, other than arbitrary refusal by Seller to perform. Any delivery indication furnished by Seller only represents the best estimate of the time required to make shipment.

10. Assignment:

Buyer shall not assign this purchase order or any interest herein or any rights thereunder, without the prior written consent of Seller.

11. Termination:

Seller may terminate the purchase order or any part thereof herein referred to or any other purchase order or orders then outstanding by written, telegraphic or electronic mail notice to Buyer if Buyer becomes insolvent or is subject to proceedings under any law relating to bankruptcy, insolvency or relief of debtors. Upon such termination Seller shall be entitled to receive reimbursement for reasonable termination charges.



21. Terms and Conditions of Sale (continued)

12. Cancellations or Returns:

Buyer shall not cancel any order nor return any equipment without first obtaining the written consent of Seller. In any event, in case of refusal or inability of Buyer to accept a delivery, the Buyer shall nevertheless be liable for freight, express, storage, handling, restocking and any other expense resulting. In no event are orders for machines or parts built to customers' specification subject to cancellation and Buyer shall be liable for work done and materials used.

13. Specifications:

(a) Phone order specifications are filled at Buyer's risk unless confirmed in writing prior to commencement of manufacture.

(b) If equipment is found not to meet original specifications, Seller shall have a reasonable time to make adjustments.

14. Law Governing:

Buyer's purchase order shall be governed by and construed according to the laws of the State of North Carolina. The courts of the State of North Carolina shall have jurisdiction over any controversy that may arise out of the dealings between Buyer and Seller.

15. Force Majeure:

Seller shall not be liable under this agreement by reason of its delay in the performance of or failure to perform any of its obligations hereunder if such delay or failure is caused by acts of God or the public enemy, riots, incendiaries, interference by civil or military authority, compliance with government laws, rules and regulations or any fault beyond its control.

16. Acceptance:

Payment for or a deposit made for the products shall constitute a contract embodying all of terms and conditions stated herein.

17. Ownership:

All products remain the sole property of the Seller until all charges, including all transportation, crating and installation costs, are paid in full.

18. Severability:

The provisions of these Terms and Conditions are intended to be severable. If, for any reason, any of the above provisions should be found unenforceable or invalid in whole or in part, in any jurisdiction, such provision be ineffective only to the extent the determination of invalidity or unenforceability in that jurisdiction. Any such determination shall not affect the enforceability or validity of the remaining provisions.