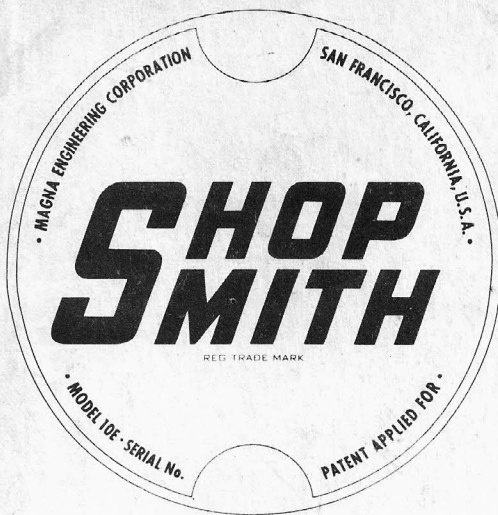




SHOPSMITH is a great, new, multi-purpose power tool. It was developed by a practical industrial engineer. Its production was designed by experienced technicians. It was tested and proved by leading laboratories. SHOPSMITH is one of the most significant contributions to the field of woodworking since the application of power to wood cutting tools.

Your SHOPSMITH will give you a lifetime of service and pleasure -- if you will give it proper care and protection. The manufacturers of SHOPSMITH are preparing an Owner's Guide and Instruction Book, complete in detail, which will help to increase your enjoyment of this versatile new tool. In the meantime, the attached pages contain instructions and illustrations of how to set up your SHOPSMITH, and how to use it for all your principal jobs.

Please mail the enclosed addressed post card (which also establishes your warranty record) and you will receive in the near future, without cost, your copy of SHOPSMITH Owner's Guide and Instruction Book.

MAGNA ENGINEERING CORPORATION

465 CALIFORNIA STREET .
SAN FRANCISCO 4, CALIFORNIA

FIG. I - THE COMPLETE SHOPSMITH

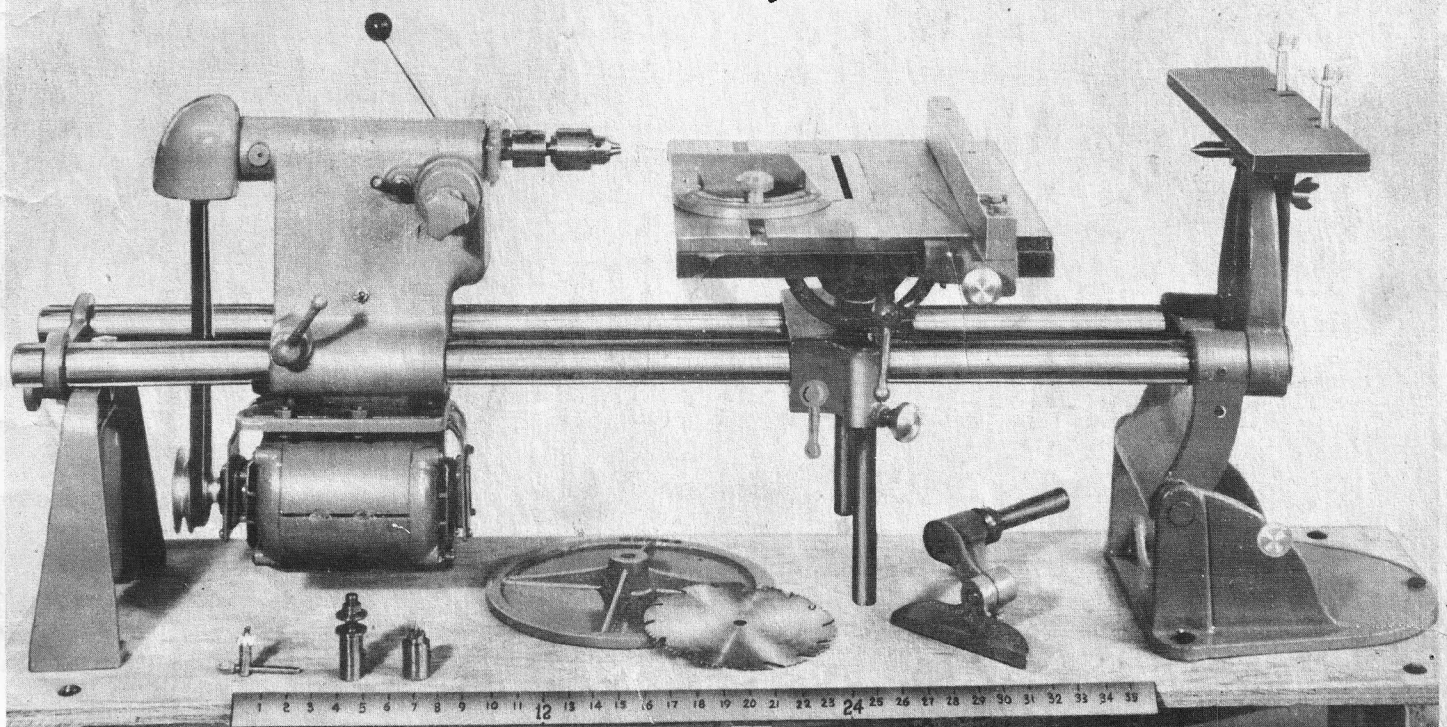


TABLE OF CONTENTS

<u>INTRODUCTION</u>	<u>Page</u> <u>Cover</u>
<u>INSTALLATION</u>	
Packing List	1
Setting Up SHOPSMITH	1
Connecting Switch	2
Mounting Motor	2
Adjusting Pulleys and Belts	3
Storage of Accessories	4
 <u>OPERATION</u>	
SHOPSMITH Basic Parts	4
Headstock	4
Carriage	5
Table	6
Tailstock and Table Extension	6
Frame Assembly	7
Spindle Speeds	7
SHOPSMITH As A:	
Lathe	8
Circular Saw	9
Disc Sander	11
Horizontal Drill Press	12
Vertical Drill Press	12
Other Uses	13
 <u>SAFETY PRECAUTIONS</u>	14
 <u>MAINTENANCE</u>	
Lubrication	15
Replacement Parts	15

TABLE OF ILLUSTRATIONS

- Fig. 1 - The Complete SHOPSMITH
 2 - Set-Up
 3 - Headstock Assembly
 4 - Carriage and Table
 5 - Tailstock and Table Extension
 6 - As a Lathe (Spindle Turning)
 7 - As a Lathe (Face Plate Turning)
 8 - As Circular Saw (Tilt Position)
 9 - As Circular Saw (With Table Extension)
 10 - As Disc Sander
 11 - As Horizontal Drill Press
 12 - As Vertical Drill Press
 Plan View - Main Assembly and Headstock
 Plan View - Table Assembly
 Part List

SHOPS M I T H

Multi-purpose Woodworking Power Tool

INSTALLATION

Packing List

The crate in which your SHOPS M I T H is received contains the following items:

- (a) Basic SHOPS M I T H, complete with Headstock, Carriage, Table Assembly, and Frame Assembly.
- (b) Corrugated box containing one each -- Tailstock, Head Rest, Table Extension, Rip Fence, Miter Gauge, Saw Guard, Pulley Guard, Motor Pulley, Headstock Pulley, Lathe Tool Rest, Sanding Disc, Circular Saw Blade, Saw Adapter, Jacobs Chuck, Chuck Adapter, Lathe Spur Center, Lathe 60° Center, and Toggle Switch.
- (c) Blueprint of suggested bench.

Unpack carefully and check to be certain you have removed all the pieces. Do not release any levers or force any parts until you have read the following instructions for setting up the SHOPS M I T H.

Before the SHOPS M I T H is crated for shipment at the factory, certain parts are given a coating compound which is moisture and rust-resisting. This should be removed by a thorough cleaning with a rag and kerosene. After wiping dry, cover all unpainted surfaces with a light coat of good machine oil to prevent rusting. These surfaces, particularly the tubular ways, should be kept lightly covered with oil at all times, and the SHOPS M I T H should be protected with a canvas or similar cover when not in use. This protection is especially recommended when the tool is installed in basement shops.

Setting Up SHOPS M I T H

SHOPS M I T H does not require a large working area or special conditions. It will be of greater convenience and utility, however, if it can be placed in a well-lighted, dry location. The more open space around the SHOPS M I T H, the larger the pieces of work which can be accommodated.

It is not necessary to bolt the SHOPS M I T H bench to the floor; on the contrary, it will be helpful, occasionally, if it can be moved to handle large, awkward pieces of work. As with any precision instrument, it is desirable, however, to have the SHOPS M I T H mounted on a substantial work bench on a level floor. Included in the packing crate is a blueprint of an inexpensive but sturdy bench, which can be quickly constructed from standard materials.

FIG. 2 - SET-UP

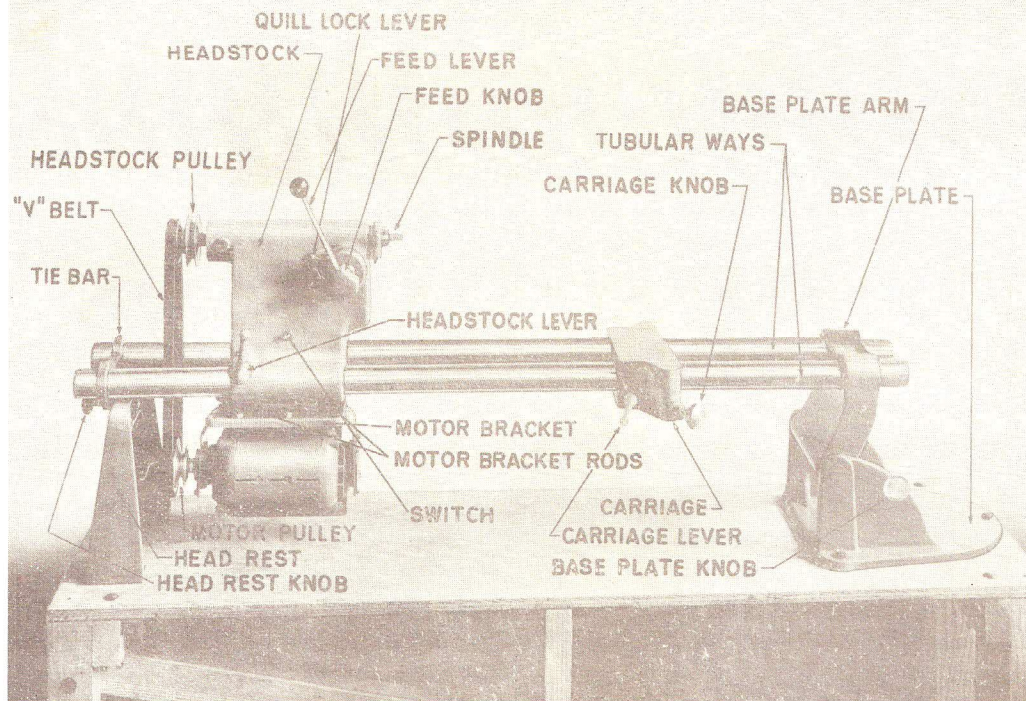


FIG. 3 - HEADSTOCK ASSEMBLY

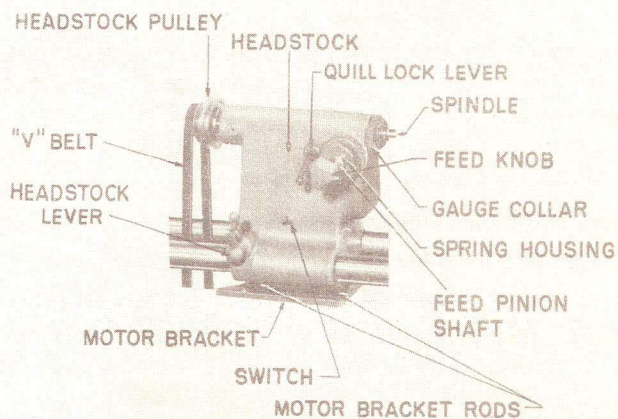
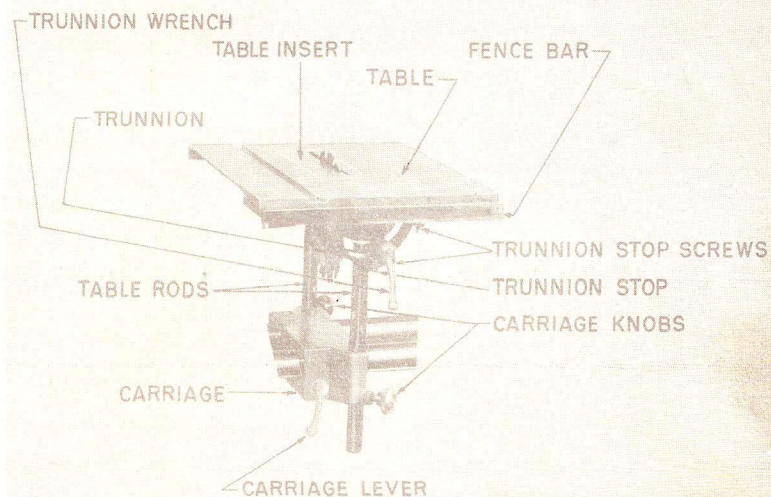


FIG. 4 - CARRIAGE AND TABLE



The SHOPSMITH bench should be 20" high, but can be adjusted to suit individual requirements. The bench top should be strongly constructed and suitably reinforced. If plywood is used for the top, support it from beneath with 2 x 4's or 1 x 6's.

In the packing crate SHOPSMITH is secured in a vertical position. After removing the corrugated pasteboard box, which is tied to the tubular ways, loosen the two "carriage" knobs (Fig. 2) and carefully pull the table out from the carriage until it is completely detached. Holding the ways with the left hand, loosen the base knob (Fig. 2) and with both hands holding the ways, lower slowly.

SHOPSMITH base-plate and head support should be securely attached to the bench with machine bolts or three-inch lag screws. It is very important that the base-plate be firmly secured, for in the vertical position it supports a substantial weight. To locate the headrest on the bench, tighten the headrest to the tie bar and register the bench holes.

Connecting Switch

S Included in the packing box is a toggle switch designed to accommodate a
W 1/2 H.P. Motor on alternating current. (If you plan to use a motor of
I greater horse power, you should secure an adequate switch.) Connect the
T two wires of your lead-in line to the two poles at one end of the switch.
C Attach to the other end, the two wires of the line to the motor. Both
H wires should be threaded through one of the back slots of the motor bracket.

Mounting Motor

M SHOPSMITH is designed to be driven by a 1750 R.P.M. 1/2 H.P. motor. For
best results, use a capacitor, repulsion-induction or three-phase type
O of motor. Though some operations may be performed satisfactorily with
the SHOPSMITH when driven by a smaller motor, full utilization of this
T versatile tool can be obtained by having adequate power. The principal
disadvantage of using a motor larger than 1/2 H.P. is its weight, which
O becomes a factor when raising SHOPSMITH to the vertical position.
Although there is adequate clearance in the SHOPSMITH horizontal position
R for standard motors, this point should be considered in selecting a motor.
Should there be any projection on motor housing which prevents clearance,
turn the motor 90° in its mount.

R Either before or after mounting motor to motor bracket, check it for
O proper rotation. Motor should run clockwise when viewed from the motor
T pulley end.

A Rotation can be corrected by moving brush holders on induction-repulsion
T motors to one side or the other of witness mark or brush holder mounting.
I Capacitor type motors are given reverse rotation by removing cover from
O terminal box and reversing fieldwinding wires on binding posts. For three-
N phase motors, any two leads can be reversed to change direction of rotation.
If there is any doubt, consult wiring diagram of connections supplied with
motor or information given on name plate.

M SHOPSMTIH is shipped with the motor bracket mounted beneath the headstock,
 O which should be removed by loosening the Allen screws with the wrench
 T provided. Attach motor to the universal motor mount, using four 3/8" x
 1" machine bolts and washers. The pulley shaft of the motor should be
 on the "V" end of the motor bracket. Do not tighten bolts until motor
 has been finally positioned.

O After SHOPSMTIH has been mounted on the bench, and the motor has been
 attached to the motor bracket, the latter may be positioned beneath the
 headstock. First, move the SHOPSMTIH carriage to the extreme right side
 R and secure by tightening the carriage lever (Fig. 2). Then move the
 headstock to the extreme right until it touches the carriage, and secure
 it by tightening the headstock lever. Next, raise the tubular ways until
 M they are vertical, and secure by turning the base knob (Fig. 2).

O Insert the motor bracket rods into the holes in the underside of the head-
 stock and secure temporarily by tightening one Allen screw. After remov-
 U ing one ring nut from the switch, reach into the headstock and insert the
 switch shank through the hole immediately beneath the name plate. Secure
 N by applying the ring nut from the front. CAUTION: Turn the switch so
 that the motor is off when the toggle arm is pointed toward the tubular
 T ways. This will prevent the motor being started by bumping the switch.

After the switch is attached, release the Allen screw, push the rods fully
 in, and tighten the Allen screws on both ends of the headstock, securing
 the rods.

P Adjusting Pulleys and Belts

U The pulley with the largest bore should be attached to the headstock shaft,
 L small pulley away from headstock. Be careful that the pulley set-screw
 fits into countersunk hole in the shaft. This may be accomplished by re-
 L moving the set-screw and sighting through the hole. Attach motor pulley
 to motor shaft, large pulley away from motor. Lower SHOPSMTIH to the
 E horizontal position, being certain that the motor bracket Allen screws
 are tightened. Align motor pulley with headstock pulley by moving motor
 until the two are in line. Tighten bolts holding motor to bracket,
 Y but do not apply belt to pulley until motor wires have been connected to
 current source and the motor tested for correct rotation as described.
 S With rotation of motor correct, apply V-belt.

"V" Length of V-belt required depends upon the motor used, due to varying
 distance of shaft to motor bracket. For most installations a belt with
 B inside circumference of 37 inches, outside 39 inches, will be satisfactory.
 E Thickness of the belt is important, and it is recommended that the follow-
 L ing series of various manufacturers be used: Browing FHP 137, Gates 2390,
 T Dayton 1MO39, Gilmer 3390, Goodrich 1390, Goodyear FA 39, Manhattan 1370
 (codes given are for the belt with 37 inch inside circumference).

T Belt tension should be carefully adjusted. It can be increased or de-
 E creased by lowering or raising the motor bracket. Belt should be suf-
 N ficiently tight that it will not rub the ways at any pulley speed. Since
 S there is always some slack in the belt retreating from the motor pulley,
 I it may have a tendency to rub the ways. This may be compensated for by
 O loosening the motor bracket bolts, pulling the motor slightly towards the
 N front side, and retightening.

Belt should be tight enough to prevent rubbing the ways. Excessive belt tension not only shortens the life of the belt but places unnecessary strain on bearings and power is lost through excessive friction. Be careful not to get the belt too tight as excessive pressure can distort the bearings. CAUTION: If spindle bearings ever heat up, check belt tension immediately.

Storage of Accessories

SHOPSMITH will perform most efficiently if you make provision at once to properly store the parts which make it so versatile. Remember -- each is a precision piece, and careless handling or storage can destroy its accuracy. In addition to the usual precautions against corrosion, you will find it helpful and convenient to provide hooks, shelves, or cabinets to store the several parts. The closer they can be stored to the basic unit, the greater the convenience to the operator.

O P E R A T I O N

Shopsmith Basic Parts

To understand and appreciate what SHOPSMITH can do, it is necessary to know the principal parts and their functions. The brief descriptions and illustrations which follow should be carefully observed.

Headstock

SHOPSMITH headstock (Fig. 3) is made of high-grade cast iron, precision machined, and factory tested. It is the key operating unit of the SHOPSMITH, and contains the headstock spindle shaft and bearings, quill, pinion shaft and gear, pulley shaft and bearings. These parts are assembled at the factory, and since the bearings are life-long, grease-sealed, it should not be necessary ever to disassemble the headstock. If, however, adjustment or replacement is required, the component parts can be disassembled as follows: To remove pulley bearing assembly, release the Allen screw and pull out total assembly; to remove the quill assembly, take nut off the depth stop rod and wind out with feed lever; to remove pinion shaft and gear, take off feed knob, collar and spring, and pull out.

CAUTION: Ball bearings are injured or ruined by improper handling. When seating or unseating a bearing, pressure should be applied to the outer race only; when pressed onto or off a shaft, on the inner race only. Keep bearings free of dirt and grit and do not tap them into place with a hammer except in extreme cases.

The headstock spindle must always revolve freely and without vibration. It is housed in ball bearings at either end of the quill, which is a movable steel sleeve. When the feed lever is turned, a simple rack-and-pinion gearing moves the quill, and the spindle it supports, in a plane parallel to the tubular ways.

When pressure on the feed lever is released, a coil spring returns the quill and spindle to their normal, retracted position. This spring is enclosed in a metal case on the side of the headstock. Tension of the spring is set at the factory. If, however, a different spring tension is desired, it can be accomplished in either of two ways:

- (1) Remove nut from depth stop rod, turn feed lever until quill rack is disengaged from pinion gear. Keep turning feed lever until desired tension is obtained, then re-engage rack and allow to return to retracted position.
- (2) Release the Allen screw in the collar outside the spring housing. Gripping the housing tightly, slowly pull it away from the headstock until the spring case clears the boss on the head. To increase tension, turn the case counter-clockwise. To decrease tension, turn the case clockwise. Other possible interference with proper spindle return may be investigated by slacking off all tension of the spring and working the feed lever. It should, of course, move freely in this position.

The spindle can be locked in any extended position by turning the quill lock lever, which draws two cylindrical wedges against the quill. If the quill has been removed from the headstock, it is advisable to remove the wedges before reinserting the quill. This is done by unscrewing the quill lock lever and pushing out the wedges. When they are replaced, be careful that the wedge side of the cylinder fits against the quill. Position of the lever when in the tightened position can be adjusted by turning the cylinder so that the opposite wedge flat is against the quill.

To re-set the depth to which the spindle can travel, turn the nuts on the depth stop rod to the desired location. Do not set the depth stop for a depth of stroke greater than $4\frac{1}{2}$ inches, or the quill rack may become disengaged from the pinion gear.

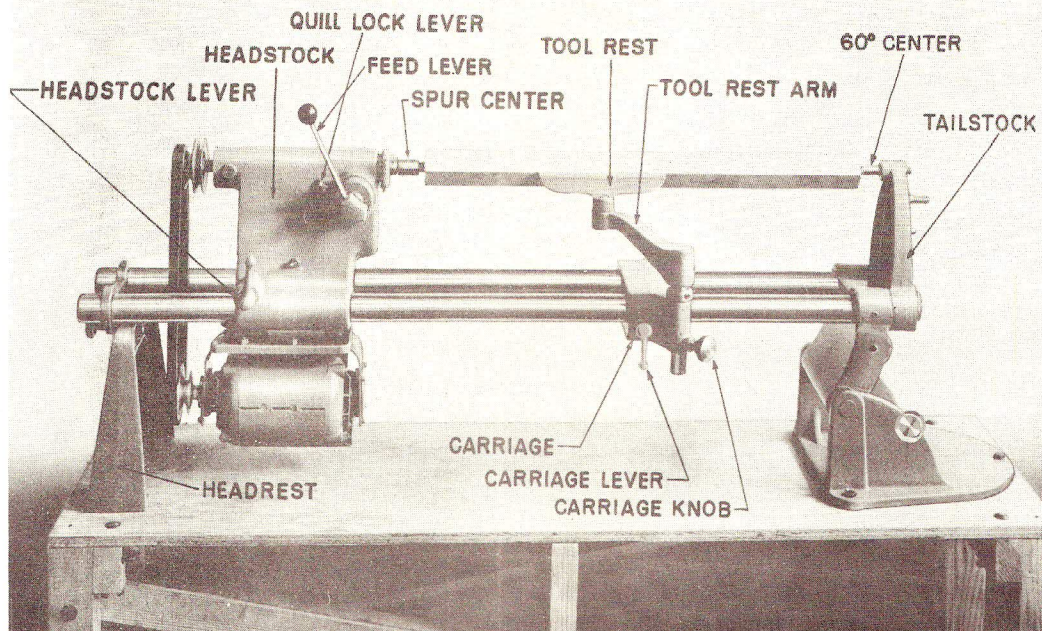
Also on the headstock is the switch, previously described, and the headstock lever, consisting of two cylindrical wedges and lever similar to the quill lock lever assembly, which locks the headstock in any desired position on the tubular ways. If they are removed, be certain the wedge side of the cylinder fits against the tubular way when they are reinserted.

Carriage

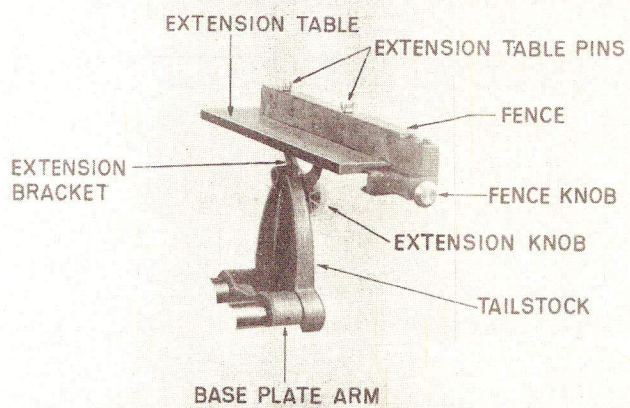
The cast iron carriage (Fig. 4) is vitally important to the precision accuracy of the versatile SHOPS MITH. Precision bored and gauged, it provides the constant relationship of cutting tool to work support which assures accuracy in every operation.

The carriage slides smoothly along the ways, and is locked in any desired position by the carriage lever, which applies wedges against the ways. Carriage knobs on either side secure the table or lathe tool rest at the desired height. CAUTION: Be certain that both the carriage lever and knobs are tightened before starting any operation.

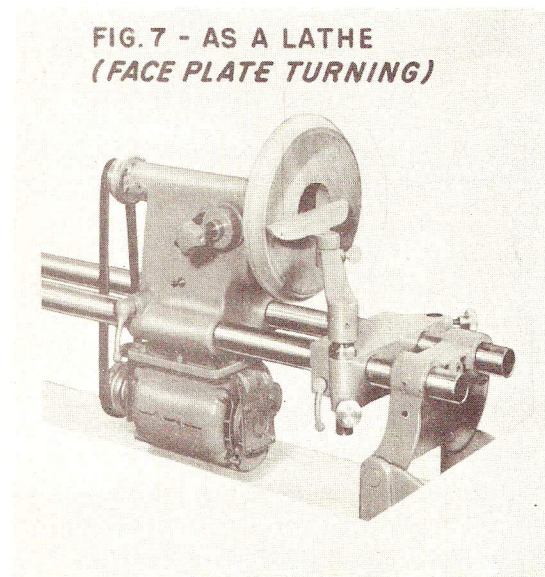
FIG. 6 - AS A LATHE (SPINDLE TURNING)



**FIG. 5 - TAIL STOCK AND
TABLE EXTENSION**



**FIG. 7 - AS A LATHE
(FACE PLATE TURNING)**



The machine bolt attached to the headstock side of the carriage is for pre-setting the carriage position when using the circular saw.

Table

SHOPSMITH'S heavily ribbed, precision-ground aluminum table (Fig. 4) is supported by two steel rods which fit into the carriage. A unique, patented device permits the table to tilt from 45° in one direction to 90° in the opposite direction.

The table has an insert which can be removed to accommodate other cutting heads. The insert can be leveled by removing the two slotted head screws and adjusting the Allen screws beneath. Two slots on the surface accommodate the miter gauge on either side of the blade, while the steel fence bar in front assures a smoothly sliding fence.

The SHOPSMITH saw guard and splitter combines clear view of the work with utmost safety. It can be adjusted to accommodate any angle to which the table is tilted by releasing the screw on the back of the table.
CAUTION: Use the saw guard and splitter for all sawing operations. You will do better work -- more safely!

Beneath the table is a trunnion and wrench which permits the table to be tilted and locked at any desired angle. Automatic stops are provided for the 45° and 90° positions. The stop is engaged by twisting the brass flange into position, and then tightening with the trunnion wrench.

The arched bracket beneath the table which holds the table to the supporting rods is rugged cast iron, precision machined. With proper care, the SHOPSMITH table will always provide an accurate work support.

Tailstock and Table Extension

For lathe operations SHOPSMITH departs from conventional assembly by using a fixed tailstock and movable headstock. The former (Fig. 5) is heavily constructed of cast iron and precision-fitted to be tubular ways, assuring perfect alignment of the dead center with the headstock spindle. Top of the tailstock is machined to a No. 2 Morse taper, and holds the center rigidly.

On the back of the tailstock is a square stud and a screw shank with threaded knob. These hold the table extension (Fig. 5) vertical and lock it in place. The table extension consists of a slotted bracket which attaches to the tailstock, a steel bar which attaches to the bracket, and a heavy plywood table which fits above the bar. In addition, there are two studs threaded on both ends which attach to the table extension and hold the fence to the plywood. The end of the stud which has the greatest number of threads should be inserted into the table, and the opposite end through the fence.

Frame Assembly

Basic structure of the SHOPSMITH, the frame assembly (Fig. 2) consists of two centerless ground steel tubes, base plate, base plate arm, tie bar, and head rest. All of these parts, except the tubes, are high quality cast iron, and each is bored in fixtures which assure permanent alignment.

F To remove the headstock or carriage from the ways, release the Allen screw
R in each side of the tie bar and slip off the latter.

A The headstock and carriage can then be removed from the end. The tubular
M ways can then be checked for vertical alignment. To do this, raise the ways
E to the vertical position. If, by using a carpenter's square or other aid, the ways are not vertical, release the Allen screws in the base plate arm and slide one of the tubes up or down until it is vertical. Lock in place with the Allen screw; then let the other arm slide down to the boss and lock it in place.

CAUTION: Maintain the tubular ways with care. Prevent tools and heavy work pieces from falling on or striking against the ways. Wipe abrasive dust or metal chips from them before sliding the carriage or headstock. Always keep a film of light machine oil on them to prevent corrosion.

Spindle Speeds

P SHOPSMITH is equipped with a three-step cone pulley on the headstock, and
I a mating pulley for the motor. They will provide the three basic speeds
N required for nearly all operations. If an intermediate speed is desired, the motor can be moved on the motor bracket to align the pulleys for other ratios. For this condition, it will be necessary also to adjust the distance between pulley centers if the same belt is to be used.

D Standard speeds with the SHOPSMITH three-step pulley are:

L 1-- 875 R.P.M. 2-- 1750 R.P.M. 3-- 3500 R.P.M.

E There is relatively wide latitude in the speeds used for various operations
S performed with the SHOPSMITH. The following tables are suggested as base
P speeds the individual operator may use in establishing his requirements.
E It is best to use the lower speed on any questionable job until it is
D determined that the work can stand an increase.

S Pulley positions refer to classification above:

WOODTURNING

<u>Dia. of Work</u>	<u>Roughing Cut</u>	<u>General Cutting</u>	<u>Finishing</u>
UNDER 2 IN.	2	2	3
2 to 4 IN.	1	2	3
4 to 6 IN.	1	2	2
6 to 8 IN.	1	1	2
8 to 10 IN.	1	1	1
OVER 10 IN.	1	1	1

CIRCULAR SAWPulley Position

8 IN. COMBINATION BLADE

3

SANDING and GRINDING

12 INCH DISC SANDER

2

3 INCH DRUM

2

4 INCH GRINDING WHEEL

3

6 INCH GRINDING WHEEL

3

BUFFING AND POLISHING (CLOTH WHEEL)

3

SCRATCH BRUSHING (ROUGH FINISH)

1

SCRATCH BRUSHING (SMOOTH FINISH)

3

DRILL PRESSWOOD BORING (BITS TO $\frac{1}{2}$ IN.)

3

WOOD BORING (BITS TO 1 IN.)

2

WOOD BORING (BITS OVER 1 IN.)

1

MORTISING (HARDWOOD)

2

MORTISING (SOFTWOOD)

3

ROUTING

3

SHAPING

3

AS A LATHESpindle Turning (Fig. 6):S
P
I
N
D
L
E

After the ends of the work piece have been squared, locate the center accurately on each end. If hardwood, drill a small hole in the center of each end, and saw diagonally across the end which will be fixed to the spur center. With the spur (or drive) center removed from the SHOPSMITH, seat it on end of spindle by striking with a mallet.

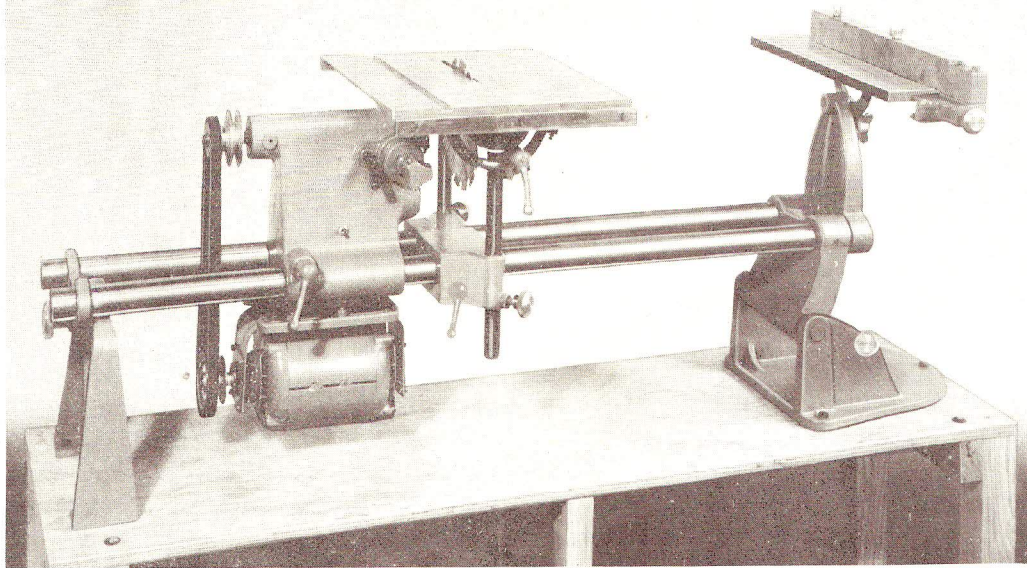
T
U
R
N
I
N
G

Secure the spur center to the lathe spindle by tightening the set screw. Be sure the tailstock knob is tight and the 60° center firmly seated. Position and lock the headstock on the ways so the distance between centers is approximately 1/4 inch greater than the length of work to be turned. Position the work between centers and advance the quill feed lever so that centers are firmly engaged, then slack off slightly and tighten the quill lock lever. The tailstock center should be oiled, either before or after mounting the work.

T
O
O
L
R
E
S
T

The tool rest is seated in the carriage hole nearest the operator. The rest should be adjusted so that it is 1/8 inch above the center and approximately 1/8 inch away from the work. Always turn by hand before starting the motor to be certain of clearance. The tool rest should never be lower than indicated, and may be set higher to suit the work. If experience indicates a higher setting, the collar on the tool rest rod can be set to automatically assume this position.

FIG. 9 - AS CIRCULAR SAW (WITH TABLE EXTENSION)



**FIG. 8 - AS A CIRCULAR SAW
(IN TILT POSITION)**

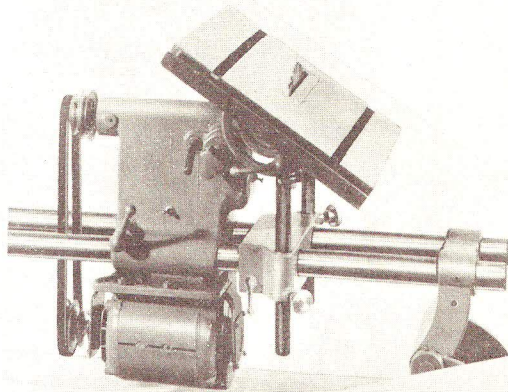
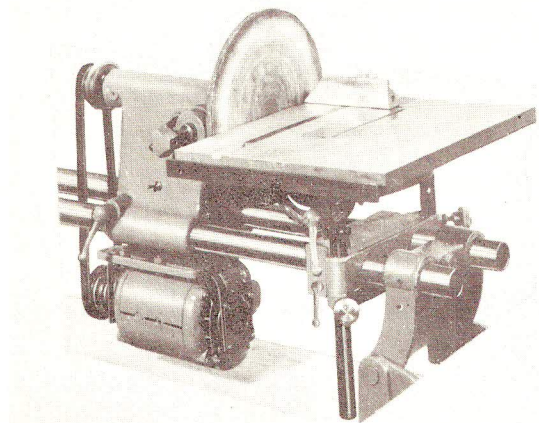


FIG. 10 - AS DISC SANDER



SHOPSMITH tool rest has a substantial advantage over conventional lathes in that it always moves parallel to work, and locks in position with a lever rather than a wrench. This does not require extra length tool rests for long work, and makes it possible to smooth cuts by holding the cutting tool against the work piece and sliding the tool rest along the ways.

Faceplate Turning: If the work to be turned cannot be seated between lathe centers, it is generally mounted on a face plate or chuck. SHOPSMITH has greater swing than conventional lathes, and therefore accommodates larger work pieces for faceplate turning (Fig. 7). Any face plate with 5/8 inch center hole will fit the SHOPSMITH.

The tool rest is quickly positioned in front of the faceplate and work. The operator can face the work directly by moving the carriage and headstock to the extreme right position (having first removed the tailstock).

AS A CIRCULAR SAW

SHOPSMITH is designed for an eight inch saw (Fig. 8). Smaller blades can be used, but larger diameter blades cannot be accommodated by the table. To attach the saw blade, push the adapter as far as possible onto the spindle and tighten the set screw on the spindle tapered-flat. Place one of the threaded washers on the adapter shank with the wrench flat toward the headstock. Place the blade on the adapter so the teeth will cut as they advance toward the operator. Apply the second threaded washer and tighten securely with two wrenches. The saw blade should be approximately one inch from the threaded end of the adapter.

Place the saw table rods into the carriage holes and lower as far as necessary to secure with the carriage knobs. Position the headstock on the ways at the desired location and lock with the headstock lever. Slide the carriage along the ways until the saw blade is directly beneath the slot in the table insert. When this location has been established, adjust the machine bolt attached to front of carriage so that it just touches the headstock. Thereafter, or until the blade is changed on the saw adapter, this bolt will serve as an automatic stop for correctly positioning the table in the saw position and makes it possible to slide the headstock and carriage together along the ways.

The table can best be lowered to the desired depth of cut by grasping the table rod nearest operator in the left hand, releasing the carriage knob on the opposite side, and then on the front side. By relaxing grip, the table will lower slowly into position, where it can be locked by right carriage knob. To raise table, release the far carriage knob; then while holding the top of the table up with the left hand, release the near carriage knob, hold the far side of the table with the right hand, and lift vertically. It is important in both lowering and raising to lift equally from both sides so that the rods are aligned correctly with the holes in the carriage, and not "cocked." Always tighten both carriage knobs and the carriage lever before starting the motor.

T The table can be tilted by raising it above the saw blade, locking the near
I carriage knob, and releasing nut with the trunnion wrench. To use the
L automatic trunnion stops, pull the brass flange forward when tilting. Note
T when the table is tilted, either the carriage must be moved slightly to the
I left, or the quill advanced and locked, due to the difference in tilt of the
N table and line of the insert slot.
G

F Machined on both sides, the fence can be used on either side of saw blade.
E When placing the fence bar for the first time, be certain the knob is
N screwed out far enough that it does not strike end of bar. Secure by
C tightening fence knob.
E

M SHOPSMITH miter gauge will pivot 60° in either direction, and the table is
I slotted to accommodate it on either side of the blade. After adjusting the
T alignment with saw blade, change the miter gauge indicator to provide the
E correct reading. CAUTION: Use the miter gauge on the right side of blade
R whenever table is tilted.
G

A
U
G
E

T An exclusive feature with SHOPSMITH is the table extension which gives this
A 8 inch saw the largest effective table radius of any similar size bench
B saw. This saw, as described is attached to the lathe tailstock by the
L single knob. Height of the extension can be adjusted either by sighting
E along the pre-set main table, or by sliding the carriage and headstock
E together to the tailstock and adjusting the extension to the table height.
X

T For cross-cutting with miter gauge, use table extension as a work rest.
E If desired, use the fence as a guide for work larger than can be accommodated
N with the fence on the main table, such as ripping a panel, insert two
S stud screws in holes of the table extension, secure from below with wing
I nuts. Place fence on these studs, and secure from above with wing nuts.
O NOTE: Table extension (and tailstock) fits on either end of the tubular ways.
N When on left (or motor) side, the largest effective table area is obtained.

Adjustments:

A All parts of SHOPSMITH can be adjusted to accommodate special jobs, and
D to assure utmost accuracy by the individual operator. After the saw blade
J has been secured on the spindle for the first time, or thereafter as con-
U sidered necessary, the operator should check the following:

S Miter gauge slots on table top should run parallel to saw blade. Check
T by holding a piece of wood, or other guide, against the miter gauge with the
M end against saw blade. Mark the tooth and turn it to the opposite side.
E If the distance is different at the front and back, the table top should
N be "revolved". To do this release the four bolts under table which hold
S it to the trunnion and table bearing. There is sufficient allowance in
these holes to permit any adjustment the table might require. After

alignment has been corrected, tighten the bolts.

A The fence should be parallel to the saw blade. Check as described. If adjustment is necessary, release the two bolts at end of fence, correct alignment, and tighten.

D The miter gauge can be checked by using a square. After determining the correct 90° position, adjust the indicator.

U The automatic tilt stops on the trunnion can be set as follows:

S First, square the table to saw blade. (If the ways are level, a spirit level can be used to check the table.) By extending the brass tilt stop, the headless screw can be set against the stop and the locknut tightened at the 90° position. The same should be done at the 45° position, checking with a triangle. The third stop is for the vertical drill press position and should be checked with a square. Adjust the indicator arm.

E After the main table has been squared, the table extension can be adjusted so that the fence attached to it will be parallel to the blade. Tighten fence on extension table. Measure in two places distance between fence and one slot on main table. If not parallel, release screws which attach extension bracket to bar beneath wooden table. There is sufficient play in these holes to make any required adjustment.

S All adjustments should be re-checked by cutting a piece of wood and checking the result with a square, protractor, or other instruments. Finally, the table insert can be leveled with the set screws beneath it.

AS A DISC SANDER

D The SHOPSMITH sanding disc (Fig. 10) is a strong, carefully machined aluminum casting which has been statically and dynamically balanced. If properly treated, and the abrasive disc carefully applied, it will always provide accurate use.

C The disc fits directly on the spindle tip, and is secured with an Allen screw. Be certain that it is tightly applied, and avoid running at excessive speed.

S The table position is similar to that described under the saw above. Table height should be approximately $1\frac{1}{2}$ inches below centerline of disc, and the edge of table should be between $1/8$ " and $1/4$ " from disc.

N Angular sanding of work pieces of small dimensions can be accomplished by setting the miter gauge to the desired position. For larger work pieces, the table can be tilted. For compound angles, both the table and the miter gauge should be adjusted.

R New abrasive discs can be applied by stripping off the old disc, holding a tube of standard adhesive against the metal disc while turning, and then applying the new abrasive sheet. Be careful to spread adhesive evenly, and to center abrasive disc accurately.

Headstock and carriage should be moved to the extreme right to allow the operator to face the disc while working.

FIG. 11 - AS HORIZONTAL DRILL PRESS

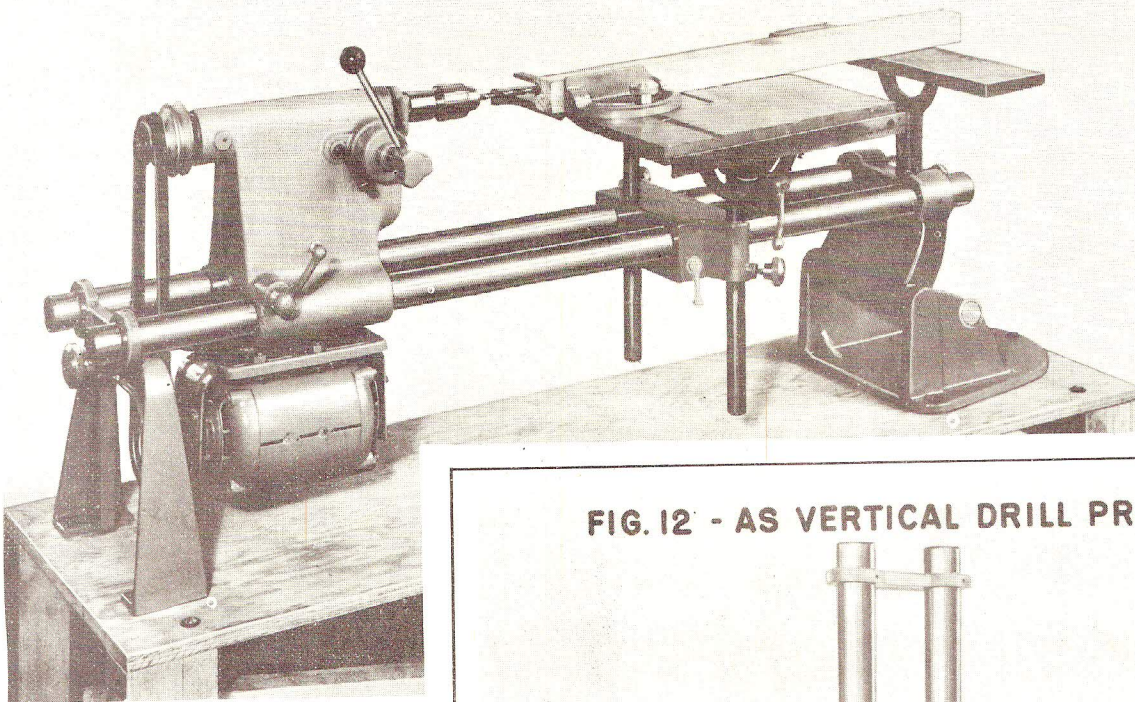
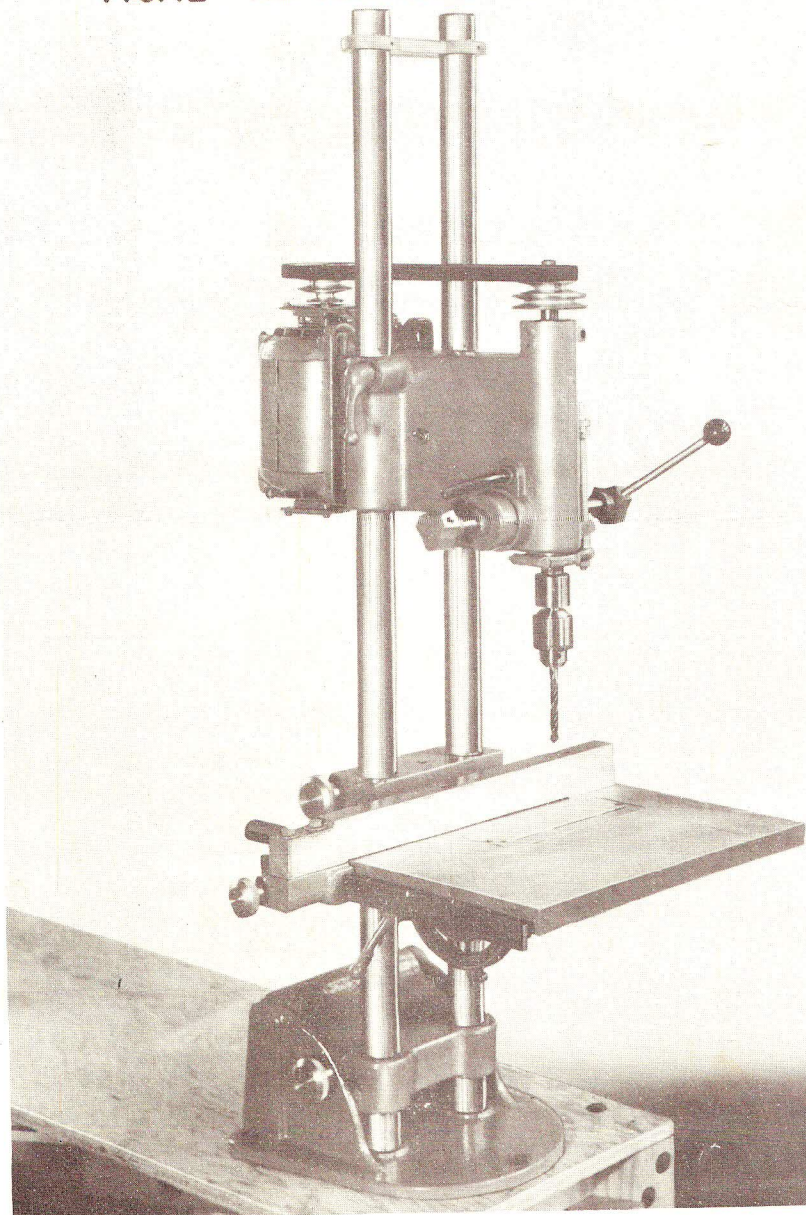


FIG. 12 - AS VERTICAL DRILL PRESS



AS A HORIZONTAL DRILL PRESS

SHOPSMTIH makes a horizontal drill press available for the first time in the light machinery field (Fig. 11). In addition to handling work too large for a floor model drill press, SHOPSMTIH as a horizontal press will do many jobs with greater precision and ease than a vertical installation.

C Provided with SHOPSMTIH is a Jacobs key chuck with threaded 1/2" hole, and
H adapter which fits tightly against the shoulder of the chuck. Place the
U adapter on spindle and tighten Allen screw, then screw on the chuck. Place
the bit or other cutting tool in the jaws of the chuck and complete tightening by using the chuck key provided.

C The table is positioned as described elsewhere in these pages. Both the
K fence and the miter gauge can be used as guides or stops. For example, to drill a series of holes in one inch side of 1 x 12 (a difficult work piece to support on a vertical drill press) adjust the table to the correct height and distance from the bit, then use the fence as a stop for the 1 x 12. For drilling ends of long work pieces, the miter gauge is an excellent guide; it can be secured by clamping the miter gauge bar to table. Ribbing under table permits clamping in any location.

When used in the horizontal position, the feed lever should be installed on the pinion shaft nearest the operator. From this position the quill may be fed without reaching over the headstock.

AS A VERTICAL DRILL PRESS

V Changing SHOPSMTIH from any horizontal operating unit to a vertical drill
E press (Fig. 12) is a quick and simple procedure. First, tighten the table
R in its highest position, release the trunnion nut, flip back the brass stop,
T and swing the table down until it is perpendicular to the ways. Release
I the carriage knobs and let the table lower slowly until it rests on the
C carriage. Move the carriage to a point approximately 12 inches from the
A base plate arm and securely tighten the carriage lever (experience will
L indicate which is the best table position for operator's height). Move the
head along the ways until the chuck is approximately 3 inches from the
table, and lock the headstock lever tightly.

D Check to see that the baseplate knob is fully retracted, then release the
R headstock knob. Hold the ways near the headrest end securely in both hands
I and swing the entire unit up to the vertical position. Tighten the base-
L plate knob, and SHOPSMTIH is ready to operate as a vertical drill press.
(You may adjust the height of both the table and headstock to your own
working requirements. The instructions given are intended for the first
trial.)

P Left-handed as well as right-handed operators can now use a drill press
R with equal dexterity, for the SHOPSMTIH spindle can be fed from either side.
E Insert the feed lever on the side which is most convenient and natural to
S work.

S Two nuts on the depth stop rod on the right side of the headstock can be
set to control length of spindle stroke. The quill lock lever on the left
side will hold the spindle at any extended position. The fence is a very
useful guide for making a series of parallel holes, or as part of a jig.
The table will tilt to any desired angle. It is advisable to place a piece
of plywood or other wood upon the table when drilling through any work piece.

For Other Uses

SHOPSMITH'S versatility in both vertical and horizontal positions makes it particularly adaptable to other operations:

Grinding: By placing an abrasive wheel on an adapter (the saw blade adapter is satisfactory for this purpose also), and using the lathe tool rest as a work holder, SHOPSMITH is an excellent grinder.

CAUTION: Always wear protective glasses while grinding, and carefully remove abrasive grit from ways before sliding the headstock or carriage. Place a piece of cardboard or plywood over the ways for protection.

O Buffing: Place buffing pads on an adapter and operate at high speed. If
T jeweler's rouge or other abrasive is used, carefully clean off residue from ways before sliding headstock or carriage.

H Scratch brushing: Wire brushes on an adapter can provide either a rough
E textured finish, or a smooth satin finish, depending upon type of brush used and speed operated.

R Drum sander: In either horizontal or vertical position, SHOPSMITH is an
U excellent drum sander. Gauged surface sanding can be accomplished in a horizontal position by placing the table beneath the sander and running the work piece between. CAUTION: Hold the work securely and feed from rear.

S Router: SHIPSMITH'S large work table makes an excellent base for routing.
E Fence and miter gauge can both be used for guides - the fence can be pushed across the table, advancing the work to the router bit for cross
S routing.

Shaper: SHOPSMITH can be used in any of three positions for shaping -- horizontal, normal vertical, or inverted. To obtain the latter position, remove the tie bar, headstock and carriage, and replace in inverted position. An auxiliary wood table and circular guide should be used for shaping operations.

Flexible shaft: In the horizontal position SHOPSMITH is a particularly convenient drive for a flexible shaft. Lowering the table at the opposite end to its lowest position provides an excellent base to clamp work pieces for grinding, routing, buffing, etc.

SAFETY PRECAUTIONS

1. Never make any adjustments while the SHOPSMITH is running.
2. Do not leave the saw blade on the spindle when SHOPSMITH is not in use.
3. When using the circular saw, always use "push sticks" to feed the work piece close to the blade. A group of push sticks of different widths should be kept on hand.
4. Always use the saw guard. It will slide smoothly over the work, and will protect the operator.
5. Keep the belt guard on. This is critically important in the vertical drill press position.
6. In the sanding disc position, always tilt the table away from the disc-- never "V" it with the disc.
7. When drilling metal, always support the work piece in a table vice or clamp; do not attempt to hold with hands.
8. Do not wear loose clothing -- ties, loose sleeves, etc -- when working with the SHOPSMITH.
9. Re-check that the carriage lever and carriage knobs are tight before turning on the saw.
10. Re-check that the headstock lever and carriage lever are tight before raising to the vertical drill press position.

MAINTENANCE

Lubrication:

SHOPSMITH has been designed to avoid extensive maintenance and eliminate trouble spots. All four of the headstock ball bearings are life-long grease sealed, and require no further attention. Oil should be applied principally as a rust preventative and only as directed.

Periodically cover the exposed steel parts with a film of light machine oil. Most important are the tubular steel ways, table rods, quill, spindle spline and hardened tip, fence bar, miter gauge bar, pinion shaft and gear, and exposed steel studs. If any of the wedges have a tendency to stick, remove them, clean out the hole, and cover the wedges with oil. The chuck, adapters, centers and other steel items should be protected with a light oil cover.

Avoid excess oiling -- it only causes dust and chips to accumulate. Keep the SHOPSMITH clean and protected and it will be trouble-free.

REPLACEMENT PARTS

A complete price list will be included in the Owner's Guide and Instruction Book. Until you receive your copy, prices of individual parts will be provided on request.

Should you need any repair parts for your SHOPSMITH, you must provide the following information with your order:

Complete name and number of part as listed in the parts list.

Complete name and model number of your SHOPSMITH as shown on plate attached.

Complete serial number as stamped on SHOPSMITH name plate.

SHOPSMITH will ship parts direct from the factory, freight charges collect. If there is no agent at your freight or express station who will collect transportation charges, enclose enough extra in your remittance to cover transportation cost. Any excess over actual charges will be refunded.

Note: The manufacturer reserves the right at any time to increase any price, if costs make an increase expedient. Prices are subject to an additional charge to cover any applicable sales tax, use tax, occupation tax or other tax affecting purchase or sale of merchandise.

