

MACHINE SHOP

REFERENCES: BOOKLETS (SEPARATE)

1. The Hisey-Wolf Machine Co, Hisey type 5 USN double Wheel Floor Grinder.
2. The R K Leblond Machine Tool Co- Running A Regal.
3. Manning, Maxwell and Moore Inc. Drill Press, Instruction Booklet.

The machine Shop is located in the after Engine Room, Port Side. Refer to the general section in which is given a layout of the after Engine Room showing the machine shop.

Located in the Machine Shop is the following equipment.

MACHINE	MAKE	TYPE
1. Lathe	LeBlond	Medium
2. Drill Press	Royersford	Upright, Back Gear
3. Grinder, Wet and Dry	Hisey Wolf	2 Wheel
4. Work benches & Vises	Federal	Medium Duty

A GEARED HEAD ENGINE LATHE

Much can be said and discussed about the Leblond Lathe but since the aforementioned reference is more complete and compact than this section it is suggested that the reader refer to the reference. In this reference is discussed the following:

1. How to set up the Lathe (a complete description of each part from one end to the other)
2. Accessories Required for Lathe Work.
3. Lathe Tools.
4. Regal Equipment and attachments.
5. Methods of Holding Work in the Lathe.
6. How to Grind Lathe Tools.
7. Testing Lathe Centers.
8. Operations (facing to length)
9. Drilling, Boring and Reaming.
10. Instructions Concerning other types of work.

B DRILL PRESS

The following is a description of the equipment furnished:

- 1 - Royersford 21" back geared upright drilling machine, arranged for motor drive through gears, direct connected, provided with wheel and lever feed, self-feed a-tomatic stop, adjustable table, ball bearing spindle. Other bearings bronze bushed.
- 1 - Motor - Westinghouse, Frame 224, type SK, 1 $\frac{1}{2}$ H.P. 6.2 Amperes, 1800 RPM, 230 Volts, D.C. Marine Type, Ball Bearing, Drip-proof, Stabilized shunt wound, Self-Ventilated Marine Type, Class "A" Insulation, Grease Lubricated.
- 1 - Set - Spare Brushes.
- 1 - Controller - WESTINGHOUSE #8585 with drip-proof control cabinet, waterproof pushbutton station HD-WP- overload protection and low voltage.

MECHANICAL SPARES:

- 1 Ea. Morse taper Sockets -
1-4, 2-4, 3-4
- 1 - #14 Drill Chuck with #4 M.T. Arbor.

DRILL PRESS (CONT.)

MECHANICAL SPARES (CONT.)

Drill floor plan.....Drawing A C 500 *

Motor.....Drawing 2-C-4468*

Controller Wiring Diagram.....2-C-6711*

* (These can be found in the reference)

INSTRUCTIONS FOR OPERATING ROYERSFORD 21" DRILL.

Keep Bearings Properly Lubricated

Do not Remove Guards

Stop machine To Change "elt Speed

Run "achine at Proper Speeds

Secure "ork Firmly Before Drilling

Keep Cutting Tools Well Sharpened

Use Back Gears for Large Drills

Stop Machine to Engage Back Gears

THE IMPROVED 21-INCH MOTOR DRIVEN BACK GEARED UPRIGHT POWER DRILL

This is a most thoroughly modern and up-to-date power Drill, combining all the good features that a machine of its kind ought to have; in every respect equal and in many respects superior to any drill of its size previously placed on the market. It combines simplicity and speed in operation with strength and rigidity and drills with perfect accuracy from the smallest hole up to $1\frac{1}{2}$ -inch. The gears are machine cut. The bearings are all large and powerful. The change from a plain drill to a back-gear'd drill is done in an instant by simply sliding the gears. Ball Bearing thrust on top and bottom of the spindle.

The drill is made with square base; has eight speeds with three distinct and complete feeds — power feed, hand screw feed and lever feed. It is supplied with all the graduated and automatic features of higher-priced drills. The spindle is counter-balanced by a weight in the hollow column; has automatic stop attachment with quick return to the lever giving rapid movement to the spindle. Has quick action screw for raisin' and lowering the table.

SPECIFICATIONS

Height of Drill.....	76 Inches
Distance between table and spindle....	29 Inches
Distance between spindle and base.....	45 Inches
Distance from column to center spindle	$10\frac{1}{2}$ Inches
Diameter of column.....	$5\frac{7}{16}$ Inches.
Traverse of table on column.....	$21\frac{1}{2}$ Inches
Diameter of table.....	18 Inches
Diameter of spindle.....	$1\frac{1}{4}$ Inches
Traverse of spindle.....	9 Inches
Hole in spindle bored to fit Morse taper No. 3 or No. 4.	
Size of cone pulleys (4step).....	$4, 5\frac{3}{4}, 7\frac{1}{2}, 9$ x 2 Inches face
Size of Motor Pinion.....	$2\frac{1}{2}$ P.D. 15 teeth.
Size of driven gear.....	14 P.D. 84 teeth
Floor space required.....	23x62.
Horse power required.....	1 Speed of motor.....1750 RPM
Weight - Net	1050
Crated weight.....	1200

Also, included in the reference is a complete discription of the WESTINGHOUSE TYPE MOTOR and control used with the Drill Press.

150W TYPE 5 U S N DOUBLE WHEEL FLOOR GRINDER.

Grinder is of the double wheel combined wet and dry type mounted on a column. The motor is attached as part of the machine direct to the spindle. Right wheel is arranged for wet grinding and left wheel for dry grinding. Wet grinding side has a splash bowl and 2 $\frac{1}{2}$ gallon ~~max~~ capacity water tank with settling chamber, pump and adjustable nozzle and valve.

A surface grinding attachment is furnished for use on left side of machine increasing the utility.

INSTALLATION

Connect machine to a circuit of the same electrical current as stamped on the name-plate. (10% variance in voltage allowable).

It is important that the proper size wire be used for connections from main switch box to the control switch of machine. The size depends upon the distance between the two points.

OPERATION

After proper electrical connections have been made, fill the reservoir with clean fresh water; not more than two and one-half gallons.

The water flow is controlled by the valve above the nozzle. The nozzle is adjustable in and out and up and down by loosening the cap screws in the clamp fittings attached to the guard. Water is circulated by a belt driven pump. This belt is adjusted by loosening two cap screws holding pump bracket, adjusting same and tightening screws. Pump gland is packed with graphite composition molded packing, automatically adjusted by coil spring.

To use surface plate, detach left wheel guard and grinding wheel. To attach surface grinding attachment, replace the grinding wheel and clamp surface table to hub of left end bell. Surface table can be raised or lowered by means of adjusting screw and lock nuts.

SAFETY PRECAUTIONS

The motor is protected by Automatic starter with the correct overload and under voltage protection. Continued throwing out of the starter indicates overloading or line trouble. Investigate and correct condition.

Controller and fuses are mounted inside column and can be reached by opening column door.

To ground machine attach ground wire to motor frame and connect to suitable connection.

CARE AND MAINTENANCE

Proper care should be exercised to see that the ball bearings are properly greased from time to time, using a good grade lubricant. Bearing chambers should be cleaned and flushed thru the drain and plug once a year. Pump bearings should be greased by using a good grade of mineral grease or non-medicated vaseline to the pump bearing grease cups. Water tank should be cleaned of sediment at regular intervals by removing pipe plugs at the bottom of tank and flushing out water bowl and settling chambers. All grease cups should be carefully cleaned before filling so as to insure no dirt or grit entering into the bearing chambers. Use grease N.B. SPEC. 14L3B.

Included in the reference are the following:

1. Plan of Machine
2. Motor Section and Parts list.
3. Motor Control Outline
4. Wiring Diagram
5. Spare Parts List.

D. WORKING BENCHES AND VISES

These are of the general type and it is suggested that a visit be made to the shops for any particulars concerning them.