

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

DRILLING MACHINE, UPRIGHT, FLOOR MOUNTED, 2 INCH DRILLING CAPACITY
IN CAST IRON, 1 SPINDLE, NO. 4 MORSE TAPER SOCKET, 7 1/2 INCH SPINDLE
TRAVEL, 11 INCHES FROM COLUMN TO CENTER OF SPINDLE, 8 SPEEDS 65
TO 1350, 3 HORSEPOWER, 220-VOLTS, 60-CYCLE, 3-PHASE
(BUFFALO FORGE COMPANY MODEL 22 RC) (3413-517-1061)

HEADQUARTERS, DEPARTMENT OF THE ARMY
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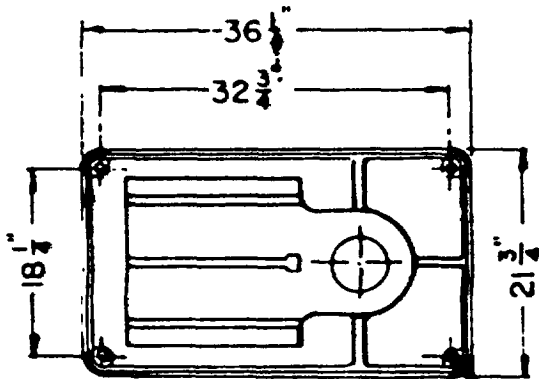
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SPECIFICATIONS AND CAPACITIES

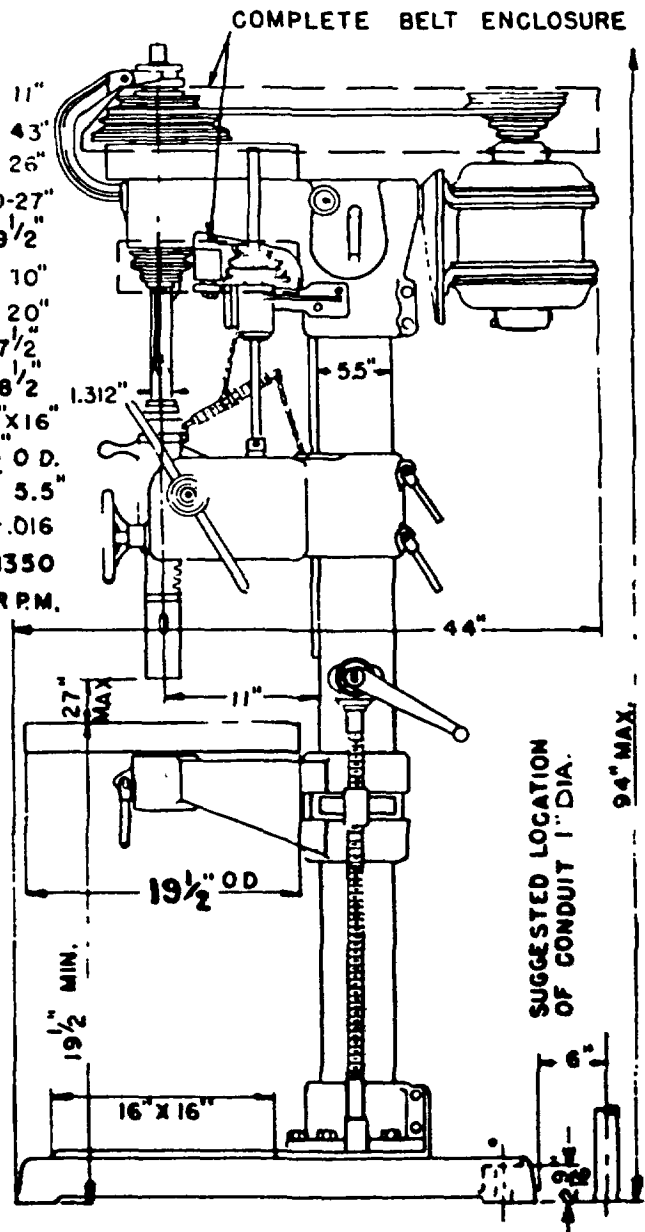
BUFFALO NO. 22 DRILL

WITH 4 STEP FEED

CAPACITY-CENTER SPINDLE TO COLUMN 11"
 MAXIMUM DISTANCE, SPINDLE NOSE TO BASE 43"
 MINIMUM DISTANCE, SPINDLE NOSE TO BASE 26"
 MAXIMUM DISTANCE, SPINDLE NOSE TO TABLE 0-27"
 MINIMUM DISTANCE, TABLE TO FLOOR 19 1/2"
 RANGE ADJUSTMENT OF SLIDING HEAD 10"
 RANGE ADJUSTMENT OF TABLE 20"
 TRAVEL OF SPINDLE WITH DEPTH STOP.... 7 1/2"
 TRAVEL OF SPINDLE WITHOUT DEPTH STOP.. 8 1/2"
 WORKING SURFACE OF BASE 16"x16"
 WORKING SURFACE OF TABLE .. 19 1/2" O.D.
 COLUMN DIAMETER-(STEEL)..... 5.5"
 FEEDS - PER REV. .004-.008-.012-.016
 SPEEDS 65-96-150-230-400-575-900-1350
 MOTOR 3 H.P., 1200 R.P.M.
 SPINDLE-LEAST DIAMETER .. 1.312"
 SPINDLE-NOSE 2.50"
 SPINDLE-SLEEVE 2.50"
 SPINDLE-NOSE BORED FOR MORSE TAPER NO.4
 HEIGHT SPINDLE IN RAISED POSITION. 94"
 FLOOR SPACE INCLUDING OVERHANGS 23"x44"
 WEIGHT-LBS. 1300



FOUNDATION PLAN



OVERALL DIMENSIONS

4- 9/16" DIA. HOLES

ID-3677-2

2. Installation

The weight of the No. 22 Drill and dimensions of its base are such that a floor load of approximately 275 pounds is created. While this load is well within the prescribed limits of safety codes, it is well to consider that the load cannot be considered wholly as a dead load because of vibration. If the machine is set on a ground floor, the customary concrete foundation should be used. Dimensions of such a foundation are totally dependent on the nature of soil and climatic conditions. In general, a foundation whose upper dimension measures six to eight inches larger, on all sides, than the base is sufficient. It may have vertical sides but tapered sides are preferable, so that they act as an anchor. Generally speaking, the depth of foundation for this machine should be in the neighborhood of 2 feet and should be steel reinforced. The foundation bolts may be set securely when the concrete is poured.

Installations on concrete or composition floors should place machinery either directly over, or, as near to as possible, a steel supporting member so that the vibration will be minimized and stress imposed, will be direct. Lag screws and shields are sufficient to hold the machine securely.

Installation on wooden floors should, in general, follow the procedure outlined above as regards placing the machine. When not practical to do so, auxiliary members should be added to the floor structure so that the weight will be distributed over a larger number of floor beams.

The base has four 9/16-inch diameter holes for receiving 1/2-inch foundation bolts or lag screws.

When installing the machine, care should be taken that sufficient clearance is left all around for maintenance and repair. The machine should be set level and the foundation shimmed if necessary to assure equal pressure being applied to all 4 bolts.

After the machine is installed certain precaution should be taken to insure proper operation. The machine has been coated with a rust preventative which must be carefully and completely removed. Special care should be taken to clean the spindle splines thoroughly, and the Morse taper socket of the spindle nose. Have the electrical connections checked by a competent electrician. Make certain that all grease is removed from pulleys and belts, and that the drive belt is not too tight.

3. Starting and Stopping

A momentary contact push button station, which closes the magnetic control circuit, is mounted on the left hand side. Do not commence work until motor has come up to full speed.

The machine is stopped by pressing the STOP button on the push button station. Except in emergencies, the machine should not be stopped with the tool still in the work. A safety disconnect switch is provided for disconnecting machine from source of power supply.

4. Twist Drill Failures and Their Causes

a. *Drill Breakage.*

Caused by -Lack of lip clearance
Speed too slow
Dull drill
Back lash in work or machine
Flutes clogged (usually found in brass and wood)

b. *Broken Tang.*

Caused by -Imperfect fit of taper shank.
May be caused by nicks, dirt, burrs, or worn-out socket.

c. *Chipping of lip or Cutting Edge.*

Caused by- Too much pressure
Too much lip clearance

d. *Oversize Hole.*

Caused by- Unequal angle of point
Unequal length of cutting edge
Loose spindle

e. *Rough Hole.*

Caused by -Dull drill
Improper grind on drill
Wrong or lack of lubricant
Too much pressure

5. Operation Under Abnormal Conditions

If the machine is operated under extremely dusty conditions, it should be run at lowest possible speed. This will prevent, to some extent, rapid abrasive wear on exposed parts. At frequent intervals it may be necessary to clean exposed parts thoroughly.