Sensitive or Power Feed
Step Pulley or Variable Speed Drive
Pedestal and Bench Types 1 to 6 Spindles
Floor Models
1" Capacity

Bulletin No. 4229-B
Available Models

Buffalo No. 20 Drilling Machines are available in Production Bench or Pedestal types—1 to 6 spindles, Standard Bench type with tilting table, or Floor type.

All machines are furnished with 5-step pulley drive and sensitive hand feed as standard equipment. Power feed, variable speed drive or head-raising device may be furnished as original equipment at nominal extra charge or may be added to machines at a later date.

Table-raising device and production oil trough table are available as extras on Standard Bench and Floor models only.
No. 20 Bench Drill
with Oil Trough Table and Head-Raising Device.

No. 20 Bench Drill
with Standard Table and Head-Raising Device.

No. 20 Floor Drill
with Oil Trough Table, Foot Feed, Table-Raising Screw and Head-Raising Device.

No. 20 Floor Drill
with Power Feed, Variable Speed Drive and Standard Table.
TABLES AND BASES. Extra heavy proportions with large working surfaces. Standard type table and base have thru-slots for T-bolts; Production type have T-slots.

5 "START-STOP" PUSh BUTTON SWITCH is mounted in cavity in front of machine. Standard machine includes a single phase push button switch mounted in front of frame.

Any of the following controls can be furnished at a nominal extra charge:

SINGLE PHASE (Specify Operating Voltage)
Manual Starting Switch with overload protection consists of a "Start-Stop" toggle type switch mounted in front of the head in place of the push button switch. Order as, Extra for Switch with Overload Protection.
Magnetic Starter with separate push button switch mounted in front of drill head, provides overload and low voltage protection. Order as, Extra for Single Phase Magnetic Starter.

THREE PHASE (Specify Operating Voltage)
Push Button "Start-Stop" Switch mounted in front of drill head and separate overload device mounted on motor bracket. Order as, Extra for 3-Phase Switch and Overload Device.
It is not recommended to operate a 3-phase motor without overload protection, however if overload protection is not required, order as, Extra for 3-Phase Push Button Switch without Overload.
Magnetic Starter with Separate Push Button Station mounted in front of drill head, provides overload and low voltage protection. Order as, Extra for 3-Phase Magnetic Starter.
Magnetic Starter same as above except having a 115 volt Pilot Circuit Transformer. Order as, Extra for 3-Phase Magnetic Starter with Transformer.

6 LOCKING DEVICE, to clamp frame on column, is split bushing type; more positive than clamping the frame casting on the column . . . also prevents possibility of scoring the column.

7 COMPLETE BELT GUARD, furnished as standard equipment, is hinged at the back for greater accessibility in changing belts.

8 FIVE-STEP PULLEYS are geometrically progressed so that the belt may be changed from one step to another without adjusting motor bracket.

9 SPINDLE RETURN SPRING* can be adjusted by hand, without use of tools, to regulate the return of the spindle and to compensate for the weight of various chucks or drills. It also provides an "anti-flyback" feature and prevents risk of injury to the operator when the spring is being adjusted.

*Located on opposite end of feed pinion (Not shown).

10 DEPTH STOP BAR is equipped with a readily adjustable collar for either sensitive or power feed.

11 BALL BEARINGS are all of the permanent seal, pre-lubricated type reducing lubrication problems to a minimum.

12 FULL 6" OF SPINDLE TRAVEL is provided for either sensitive feed or power feed.

Note: All accessories or modifications as listed on Pages 6 & 7, may be added to a machine at any time. Columns are furnished with rack teeth for head-raising device.
Optional Equipment

All accessories or modifications illustrated on this and the following page may be added to a machine at any time. Columns are furnished with rack teeth for head-raising device.

Reverse Control for Tapping

Motor reverse tapping is available on all No. 20 drill models. It is not recommended for taps under 1/4" and will tap up to 3/8" national fine thread in cast iron, or 1/2" coarse thread in mild steel. Standard 2 or 3 phase motors are satisfactory for occasional tapping in maintenance shops or tool rooms for the general machine shop. For production tapping it is recommended that a high torque, high slip reversing motor be used. Motor reverse tapping is not available for D.C. or Single Phase. For continuous operation, motor reverse tapping is suitable for 10 reversals per minute maximum.

Foot Feed

Operated by a gear meshing the feed pinion, foot feed has 2" stroke. The lever connecting the gear is ratchet mounted, permitting disengagement of entire assembly by turning one knurled nut. Treadle return is a torsion spring. This design assures maximum return pressure at end of stroke; does not have overtravel common to the use of counter weights.

Table-Raising Screw

Full ball bearing actuated by machine-cut steel screw and gears. Raising crank is pivoted on its shaft. Handle can be turned toward inside for protection. When raising screw is not furnished, table fork is provided with a safety collar (see illustration) which prevents table from dropping.
Vari-Speed Drive

Offers an exceptionally wide range of spindle speeds with no slippage of belt or loss of power. Speeds are changed by turning the handle located on the right side of the drill head. The spindle pulley is actuated by a worm and worm wheel arrangement that also provides a positive locking action to prevent "drifting" of speeds. Pulley is supported top and bottom with permanently sealed, pre-lubricated ball bearings to assure rigidity and smooth action. Speeds are changed while drill is running. A direct reading speed-plate and indicator provides operator with true speeds at all times. Also note power feed take-off shaft with timing belt drive.

Power Feed

Driven from the power feed take-off shaft and incorporating two variable speed pulleys, the "Buffalo" power feed provides the operator with infinite rates of feed from .002 to .012 or .001 to .006 as optional. Feed rate is adjusted by a convenient handle combined with easy-to-read indicator. Feeds are changed with motor running. The heavy-duty clutch has hardened engaging teeth to transmit power to the feed pinion. Feed engagement lever (located on front of unit) is knocked out by adjustable depth bar collar automatically stopping feed at the predetermined depth.

Head-Raising Device

Actuated thru a worm and worm wheel arrangement with ball bearings to give ease of operation and absorb the load of the head. All columns are furnished with rack teeth to accommodate the raising device. The entire drive is enclosed in a heavy walled cast iron housing. When raising device is not used, head is provided with a safety collar which prevents head from dropping.
Special Designs to Solve Production Drilling Problems

Hollow Spindle for High Speed Drilling of Very Hard Materials

This special concept in drilling combines a coolant system with a heavy-duty, hollow spindle in a high speed drill for use with special drilling bits.

This combination enables you to drill materials formerly considered "impossible" on a production basis. Regular jobs are finished faster and better. The exceptional quality of the holes drilled eliminates reaming operations in many cases.

The coolant pump forces coolant through the spindle to accomplish the dual job of cooling the bit and flushing away minute chips. For very hard metals and alloys, cold point drills are generally used while glass and ceramics are handled with ease by diamond impregnated core bits.

One Switch—Three Heads—Nine Holes

The machine pictured and described on this page is typical of special equipment that is "engineered" at Buffalo Forge Company.

The machine utilizes three standard No. 20 drill heads mounted on 2" thick surface plate and supported by four 4" diameter columns. It is so arranged that by actuating one foot switch all three heads advance and drill a total of nine holes to a predetermined depth and then retract to the start position. A toggle switch on each air feed unit permits cutting out one or more heads when not required. The machine is also equipped with emergency stop button that retracts all air feeds and stops all motors.

Upper head is mounted on a dovetail slide (rack and pinion operated) to give a total of 6¼" lateral movement. Side and lower head are rigidly mounted in a fixed position.
Specifications and Capacities

**Standard Bench Type**

Capacity in cast iron or mild steel
1"

Spindle Feed Travel (Sensitive or Power Feed)
6"

Drills to Center of Circle
20"

Spindle Sleeve Diameter
2 3/4"

Spindle Nose Diameter
1 3/4"

Spindle Diameter
2 1/8"

Column Diameter
3.906"

Spindle Nose, Morse Taper
No. 3

No. 2 Morse Taper Spindle Optional. No. 3 Jacobs Taper Optional (Chuck Extra)

**Standard Floor Type**

Power Feed—rate of feed per revolution of spindle—infinitely variable from .002 to .012".

Optional from .001 to .006.

†For applications requiring slower speeds than normally furnished, we offer a 4 to 1 slow speed attachment. Price and data on application.

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<thead>
<tr>
<th>Dimensions in Inches</th>
<th>Bench</th>
<th>Floor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working Surface of Base</td>
<td>12 x 13&quot;</td>
<td>12 x 13&quot;</td>
</tr>
<tr>
<td>Working Surface of Std. Table</td>
<td>14 x 14&quot;</td>
<td>14 x 14&quot;</td>
</tr>
<tr>
<td>Working Surface of Oil Trough Table</td>
<td>16 x 16&quot;</td>
<td>16 x 16&quot;</td>
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<tr>
<td>Max. Distance, Spindle Nose to Table</td>
<td>14&quot;</td>
<td>14&quot;</td>
</tr>
<tr>
<td>Min. Distance, Spindle Nose to Table</td>
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<td>0&quot;</td>
</tr>
<tr>
<td>Max. Distance, Spindle Nose to Base</td>
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<td>32&quot;</td>
</tr>
<tr>
<td>Net Wgt., Lbs.</td>
<td>500</td>
<td>525</td>
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† SPINDLE SPEEDS

5-step Pulley Drive
- with 1725 motor...360—630—1090—1850—3040
- with 1140 motor...240—415—720—1220—2000
- with 1450 motor (50 cycle) ...300—530
- 915—1530—2500

¾ H.P. motors recommended for the above
with 3450—1 1/2 H.P. motor
- 720—1260
- 2200—3700—6100

† SPINDLE SPEEDS

Vari-Speed Drive
- with 1725 motor (1 H.P.) from 700 to 4370
- with 1140 motor (¾ H.P.) from 465 to 2850
- with 1450 (50 cycle) motor (1 H.P.) from 590 to 3650

10 BUFFALO FORGE COMPANY / BUFFALO 5, NEW YORK
Dimensions and Weights

**Pedestal Type**

<table>
<thead>
<tr>
<th>No. of Spindles</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Net. Wgt. Lbs.</th>
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<td>22&quot;</td>
<td>26&quot;</td>
<td>—</td>
<td>21½&quot;</td>
<td>750</td>
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<tr>
<td>2</td>
<td>46&quot;</td>
<td>50&quot;</td>
<td>20&quot;</td>
<td>31½&quot;</td>
<td>960</td>
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<td>58&quot;</td>
<td>62&quot;</td>
<td>19&quot;</td>
<td>49½&quot;</td>
<td>1350</td>
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<tr>
<td>4</td>
<td>77&quot;</td>
<td>81&quot;</td>
<td>19&quot;</td>
<td>68½&quot;</td>
<td>1960</td>
</tr>
<tr>
<td>6</td>
<td>115&quot;</td>
<td>119&quot;</td>
<td>19½&quot;</td>
<td>107¼&quot;</td>
<td>3000</td>
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**Bench Production Type**

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<th>No. of Spindles</th>
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<th>B</th>
<th>C</th>
<th>D</th>
<th>Net. Wgt. Lbs.</th>
</tr>
</thead>
<tbody>
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<td>18&quot;</td>
<td>22&quot;</td>
<td>—</td>
<td>16&quot;</td>
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<tr>
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<td>1960</td>
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<tr>
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<td>78&quot;</td>
<td>20&quot;</td>
<td>2520</td>
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<td>94&quot;</td>
<td>98&quot;</td>
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Other Popular "BUFFALO" Drilling Machines

No. 15—A versatile tool. Standard Heavy-Duty models available in Bench, Floor and Multiple Bench Types; Production models in Bench and Pedestal types, 1 to 8 spindles. Ask for Bulletin 4024.

No. 16—Built in three sizes: 8", 12" and 15" overhang. Sensitive Type or Power Feed. The 12" and 15" are available in Bench or Pedestal models; the 8" in Bench, Pedestal or Round Column Floor Type. Ask for Bulletin 2730.

No. 18—Offers a series of nineteen models in customized designs to meet the needs of your specific applications. Both Bench and Floor types are available. Single and Multi-Spindle arrangements. Ask for Bulletin 3179.

No. 22—Sensitive or Power Feed models. Handles as fast and smoothly as a regular sensitive drill on light work. Round column type shown. Also in Pedestal and Multi-Spindle models. Ask for Bulletin 2989.

No. 1A RPMster—An infinitely variable production drilling machine—1" capacity—12" overhang—1½" HP rating—100 to 3000 RPM. Available in round column or 1-6 spindle pedestal type, sensitive or power feed. Ask for Bulletin 3967.

No. 3B RPMster—The ultimate in a production drill. Round column or 1-6 spindle pedestal type available. 2½" capacity with 7½ HP, infinitely variable 30 to 2000 RPM. Back gears and power feed are standard. Hollow spindles available. For complete details and other accessory features, see Bulletin 3257.

BUFFALO FORGE COMPANY
MACHINE TOOL DIVISION / BUFFALO, N. Y. 14205
CANADIAN BLOWER & FORGE CO., LTD., KITCHENER, ONTARIO

We reserve the right to change the design and construction of any machine of our manufacture without incurring any obligation to purchasers or users of Buffalo equipment.