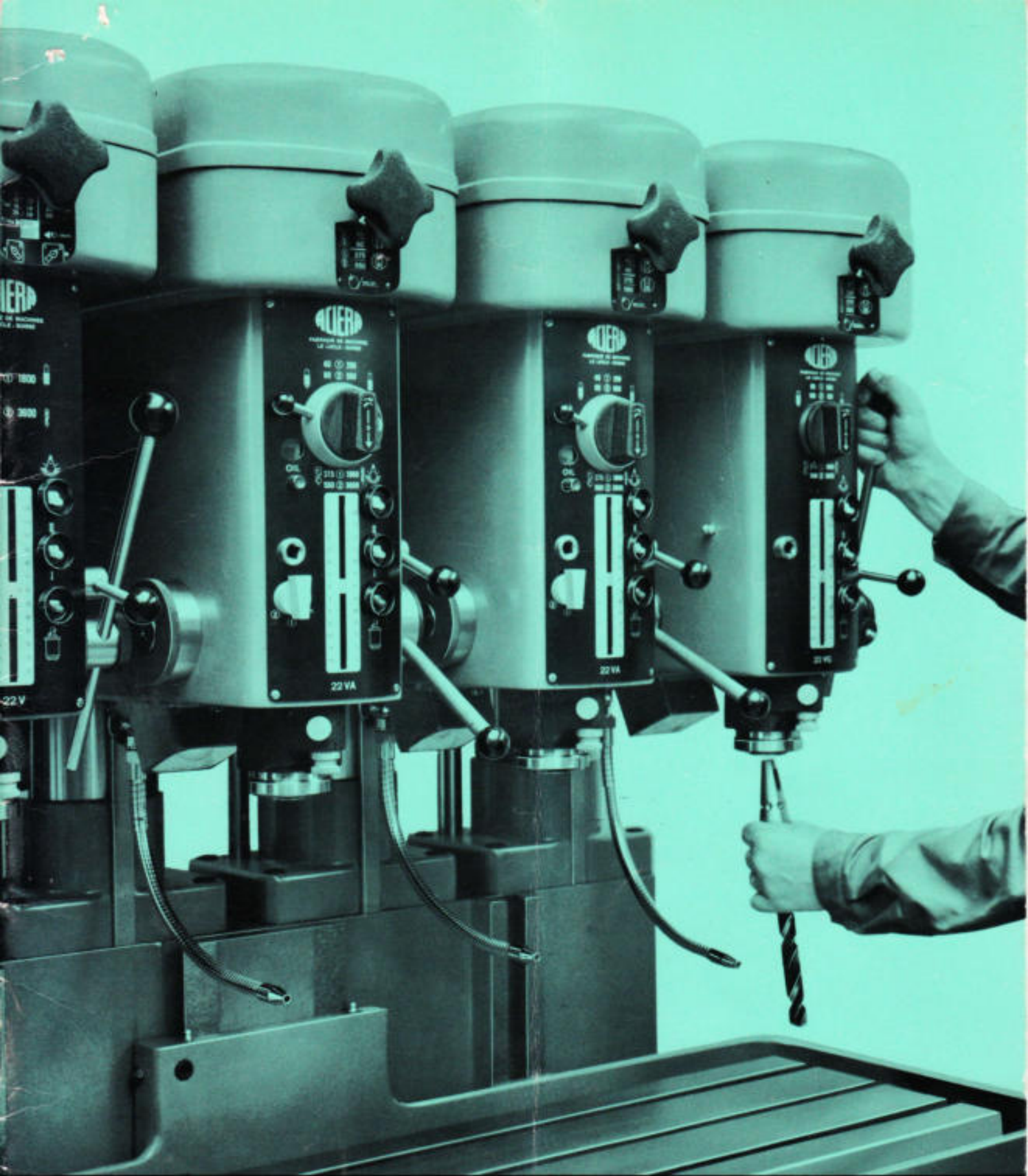




## Precision Drilling and Tapping Machines Type 22

**ALTERA**

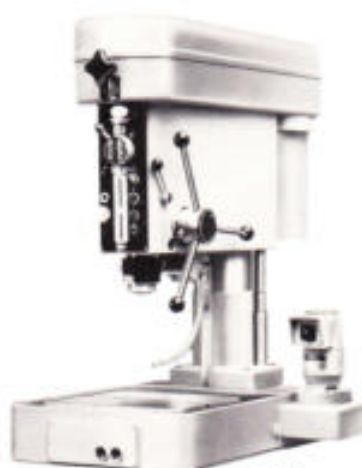


offer a complete range of precision drilling/tapping machines, from single spindle bench models to multi-head production models. There are available more than 100 solutions to your drilling problems.

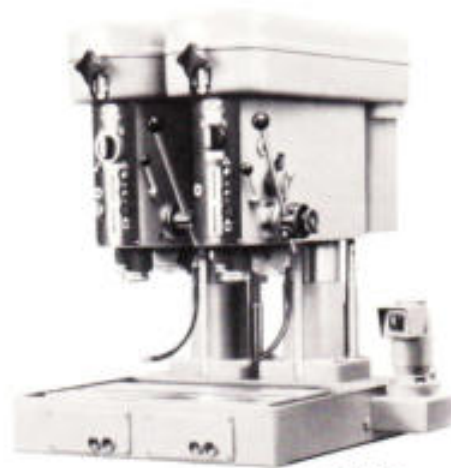
## Bench drilling machine 22 T

Page 5 Drilling heads

- » 9 Column-type bases
- » 10 Tables
- » 11 Sheet-steel bases
- » 13 Cast-iron bases
- » 14 Accessories and tooling



22 T 1



22 T 2



22 C



22 S 1

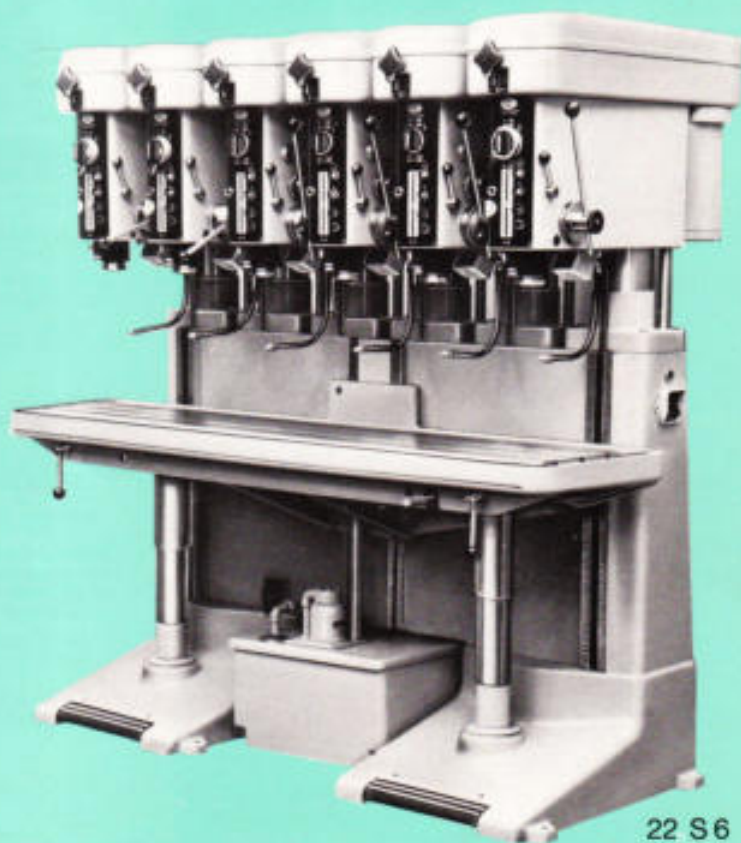
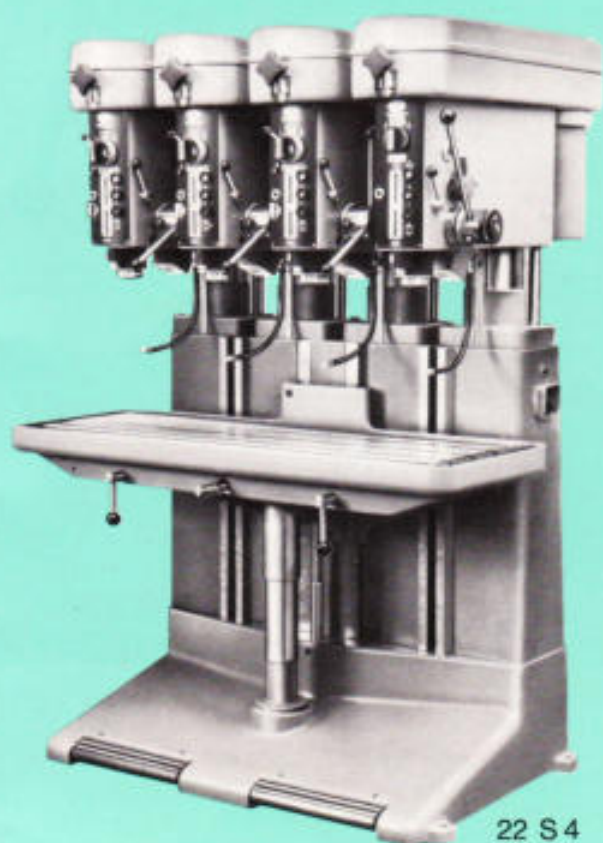
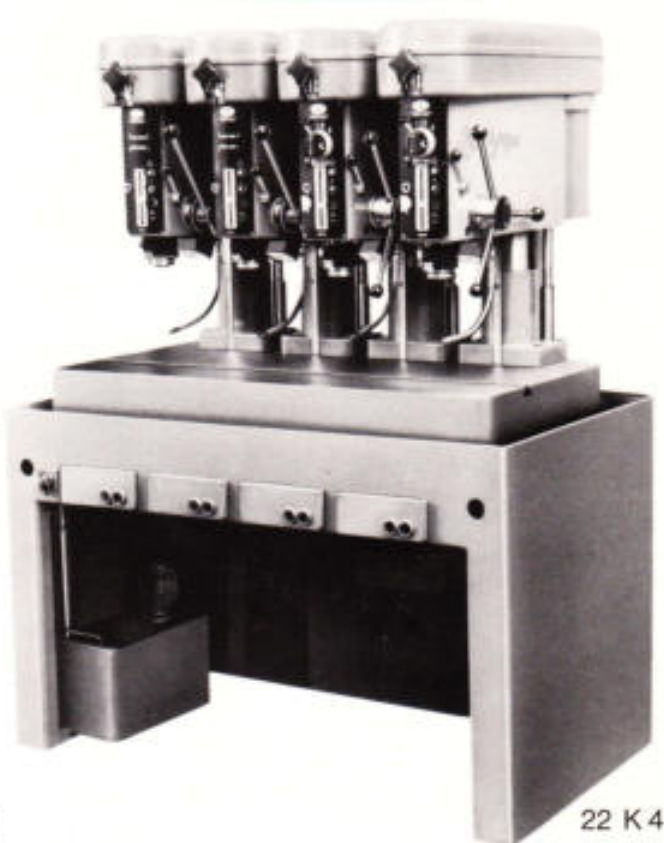


22 S 2

**Column drilling machine 22C**

**Drilling machines on**

## Drilling machines on sheet-steel bases 22 K



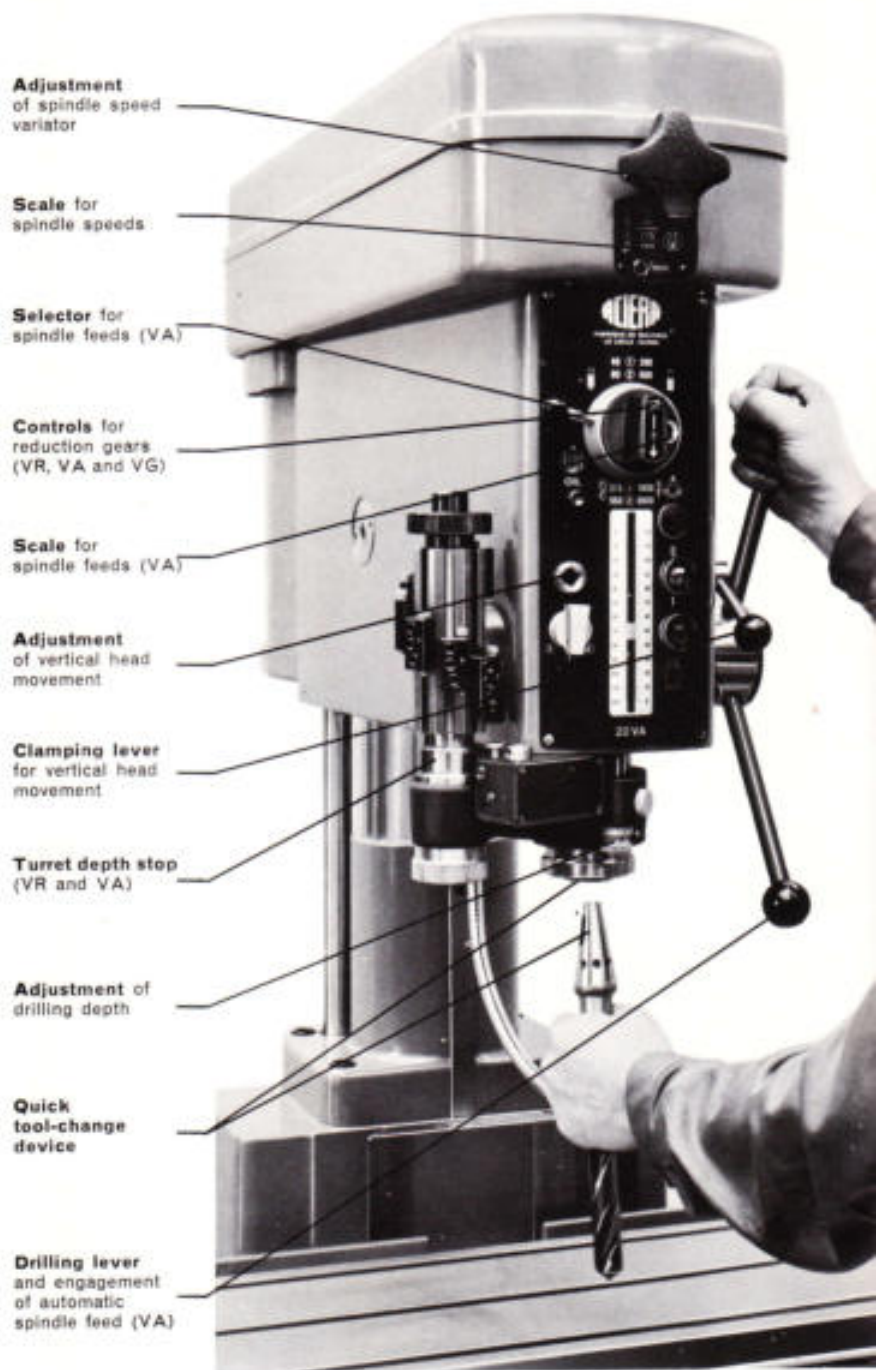
cast-iron bases 22 S with elevating tables

## Shared characteristics

- 2-Speed Motor 700/1400 RPM – 0.75/1.1 kW – 1/1.5 HP
- Quick tool-change device incorporated in the spindle  
Max. capacity No. 3 M.T.
- Variable speed drive by cone pulleys and vee-belt
- Hardened and ground gears
- 65 mm dia. hardened and ground quill with long guide sleeve
- Hardened and ground spindle running in 3 self-aligning bearings. On the Type VA, high-precision pre-loaded bearings.
- **Drilling** (60 kg/mm<sup>2</sup> – 45 ton/sq. in. steel)  
Capacity: 2 to 22 mm (.080" to 0.87") dia.  
Depth: 120 mm (4.7")
- **Tapping** (60 kg/mm<sup>2</sup> – 45 ton/sq. in. steel)  
Capacity: 3 to 18 mm (.12" to 0.71") dia.  
Depth: 110 mm (4.3")  
(Max. capacity for Type V: 14 mm (0.55"))
- \* Electric tapping for Types V-VR-VA  
(Equipment on request p. 14)
- Integral low-voltage safety lighting
- Cooling by electric pump  
(Equipment on request p. 14)

## Operating and setting controls

... grouped on the frontal plate



## 4 Drilling/Tapping Machines

### Type V Drilling-tapping machine \* with variable speed drive

Spindle speeds: motor 50 c/s: 275 – 3600 RPM  
motor 60 c/s: 345 – 3600 RPM  
Weight: 210 kg (462 lbs)



### Type VR Drilling-tapping machine \* with variable speed drive and reduction gears

Spindle speeds:  
with reduction gears: motor 50 c/s: 40 – 560 RPM  
motor 60 c/s: 50 – 560 RPM  
with direct drive: motor 50 c/s: 275 – 3600 RPM  
motor 60 c/s: 345 – 3600 RPM  
Weight: 220 kg (484 lbs)

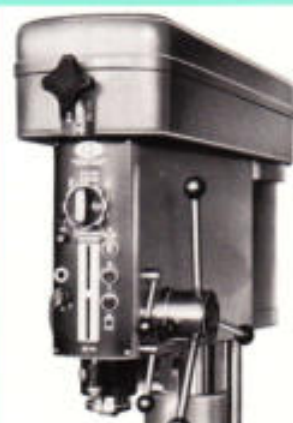


### Type VA Drilling-reaming-tapping machine \* with variable speed drive, reduction gears and 6 powered down-feeds

Spindle speeds: with reduction gears: motor 50 c/s: 40 – 560 RPM  
motor 60 c/s: 50 – 560 RPM  
with direct drive: motor 50 c/s: 275 – 3600 RPM  
motor 60 c/s: 345 – 3600 RPM

|                         |                            |                     |                   |
|-------------------------|----------------------------|---------------------|-------------------|
| 6 powered<br>down-feeds | Machine for metric reading | Standard mm/rev.    | Special mm/rev.   |
|                         | range 40- 560 RPM          | 0.12-0.25-0.6       | 0.25-0.50-1.2     |
|                         | 275-3600 RPM               | 0.02-0.04-0.1       | 0.04-0.08-0.2     |
|                         | Machine for inch reading   | Standard inch/rev.  | Special inch/rev. |
|                         | range 40- 560 RPM          | .005"-.01"-.023"    | .008"-.017"-.050" |
|                         | 275-3600 RPM               | .0008"-.0016"-.004" | .001"-.003"-.008" |

Weight: 230 kg (506 lbs)



### Type VG Tapping-drilling machine with variable speed drive, reduction gears and friction tapping device

Spindle speeds: with reduction gears: motor 50 c/s: 55 – 720 RPM  
motor 60 c/s: 70 – 720 RPM  
with direct drive: motor 50 c/s: 275 – 3600 RPM  
motor 60 c/s: 345 – 3600 RPM  
Tapping speeds: motor 50 c/s: 55 – 720 RPM  
motor 60 c/s: 70 – 720 RPM

Return of tap: doubled speed  
Description and operation page 6  
Weight: 230 kg (506 lbs)



## Principles of construction: Robust and well-tried components Long life materials

- **Tapping / Drilling machine,** type VG with built-in tapping device. Sensitive operation by friction cones, permitting reversal during tapping. Tapping depth adjustable with automatic reversal at the end of travel. Tapping rate unlimited.

Device for locking friction cones when drilling.

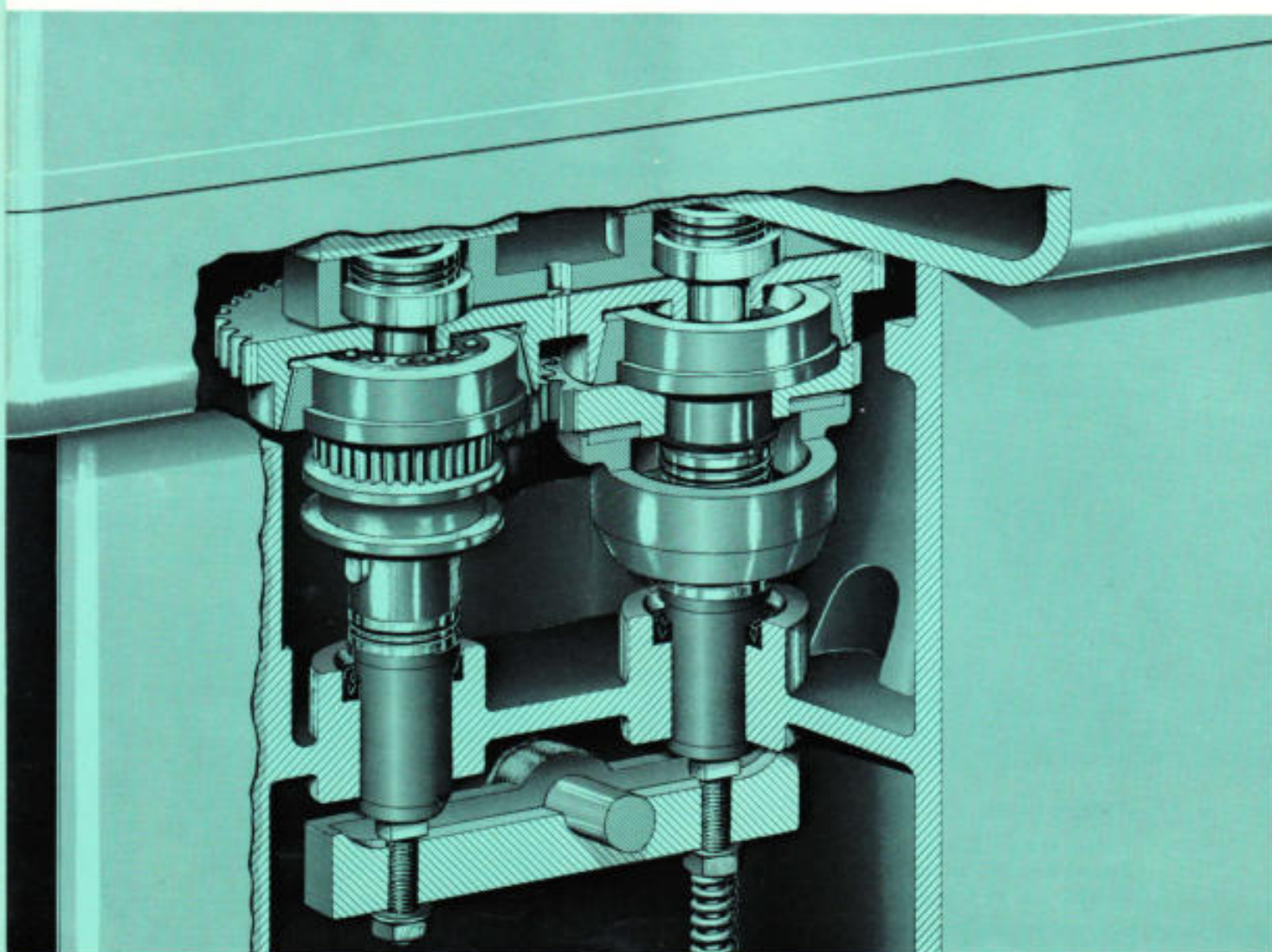
- **Electric tapping «E».** Accessory No. 2230 - For drilling heads V/VR/VA.

Tapping device, employing the motor reversal principle. Reversal actuated by two micro-

switches at the beginning and end of quill stroke:

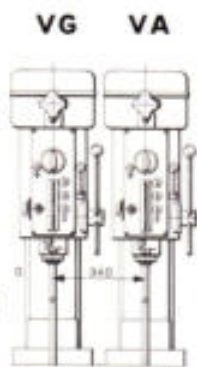
Adjustable depth stop. Can also be used with drilling machine equipped with turret-type depth stop.

Limited tapping rate - max. 8 per minute.

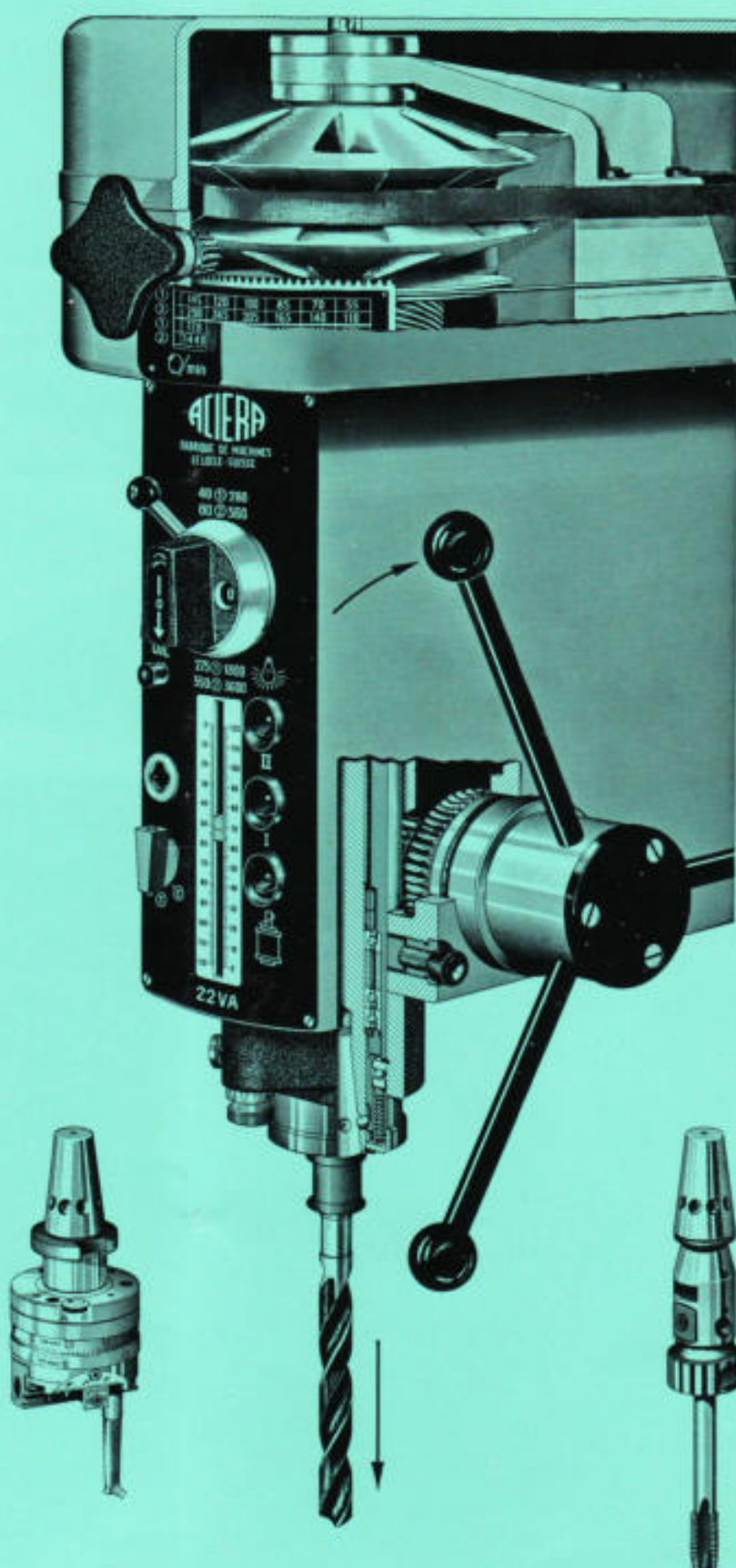


If a **VG** head is on the left of a **VA** head: minimum spacing between spindles = 340 mm (13.4")

For 2 or several following **VG** heads the same minimum spacing is recommended



- V-Belt variable speed drive driven by 2-speed motor.
- Spindle Speed Adjustment whilst running.
- Selection of the best adapted drilling speed: for each tool.
- Quietness in operation.
- High-precision Quill.
- Quick Tool-change Device incorporated in the spindle nose.
- Stiff Spindle due to the total absence of overhang.
- **Standard tooling:** Morse tapers 1-2-3.
- Possible Rate of Tool Change on the drilling heads: approx. 20 changes/minute.



## Motor brake:

For drilling heads V/VR/VA/VG.  
Accessory No. 2233.

- Reduction of time lost for tool changing.
- Mounted on the end of the motor shaft.
- Braking at zero voltage.
- **Safety** for the operator.

## Turret-type depth stop:

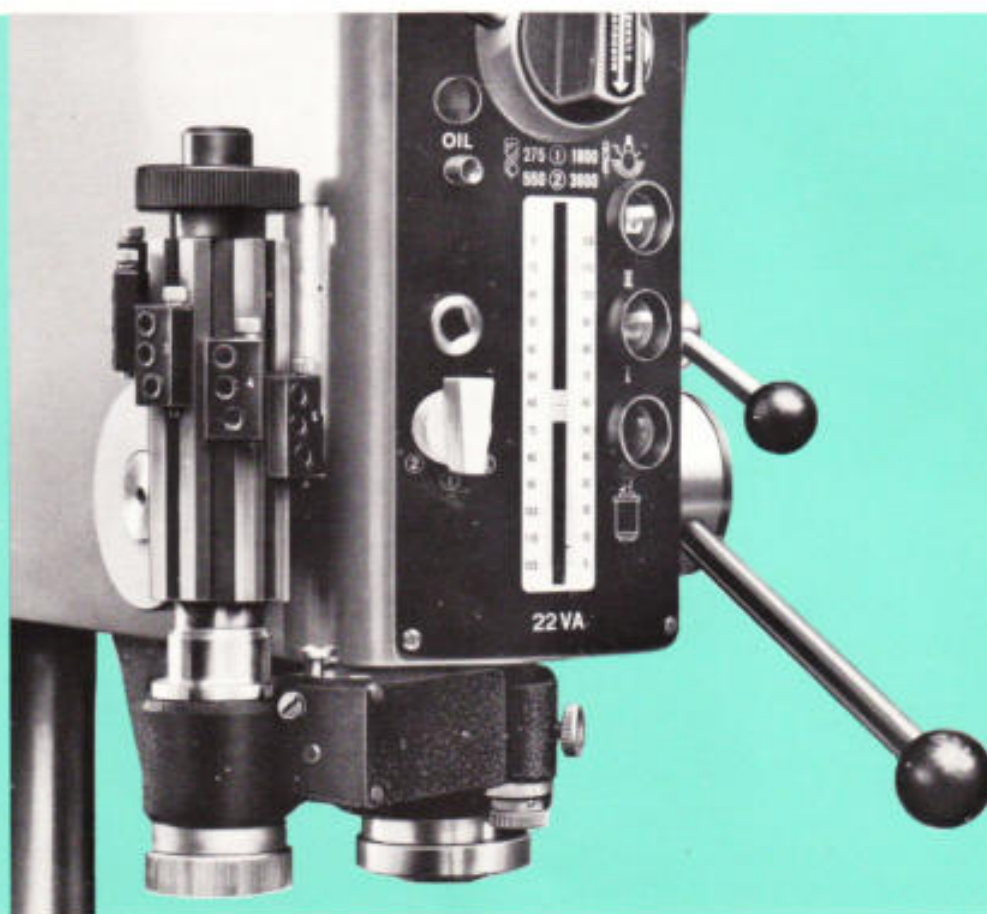
For drilling heads VR/VA.  
Accessory No. 2234.

- **Preselection** of drilling and tapping depths.
- Mounted at the front of the drilling head, jointly with the tool spindle.
- Eight stops with micrometer screw.
- Quick clamping interchangeable drums.
- Manual indexing.

## Electric equipment:

For drilling heads V/VR/VA/VG.  
In accordance with **Swiss** and **International Standards**

- Entry cut-out Control by thermal contactors.
- Transformer for 48V control circuit and 24V lighting circuit.
- **The choice of two working rates:**
  - I **Alternating operation** of the spindle with the motor stopping when the quill reaches its upper position (work requiring frequent tool-changes).
  - II **Continuous operation** without the spindle stopping in the upper position. (Work without tool-changes).

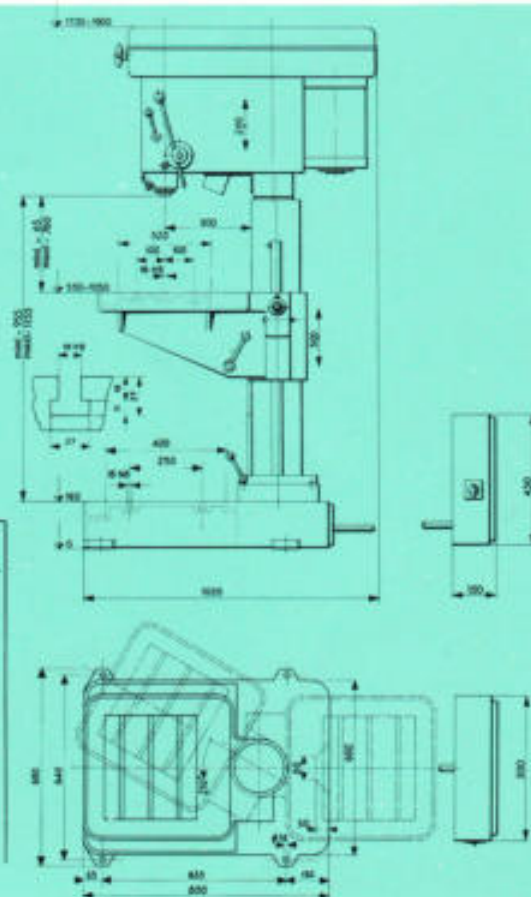


## Drilling machine on column-type base

# 22 C



22 C

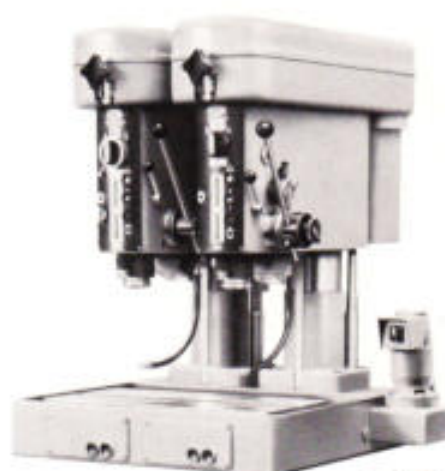


|                            |                    |                  |                                    |
|----------------------------|--------------------|------------------|------------------------------------|
| Number of Spindles         |                    |                  | 1                                  |
| TYPE                       |                    |                  | 22 C                               |
| Size of Elevating Table    | USEFUL             | mm (inches)      | 320 x 360 (12.9" x 14.2")          |
|                            | TOTAL              | mm (inches)      | 520 x 500 (20.5" x 19.7")          |
| Size of Fixed Table        | USEFUL             | mm (inches)      | 420 x 450 (16.5" x 17.7")          |
|                            | TOTAL              | mm (inches)      | 520 x 600 (20.5" x 23.6")          |
| Weight (base only)         |                    | approx. kg (lbs) | 360 (794)                          |
| Packing (complete machine) | Continental        | approx. kg (lbs) | 110 (242)                          |
| Coolant (on request)       | Seaworthy          | approx. kg (lbs) | 180 (396)                          |
| Electrical equipment       | reservoir on panel |                  | in the base<br>in separate cabinet |

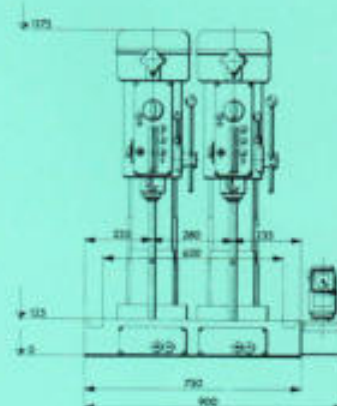
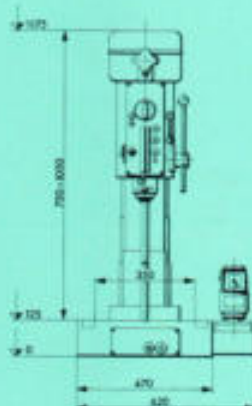
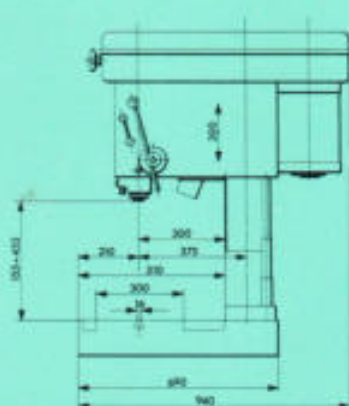
# 22 T Bench drilling machines



22 T 1



22 T 2



| Number of Spindles   |                      |             | 1                         | 2                         |
|----------------------|----------------------|-------------|---------------------------|---------------------------|
| <b>TYPES</b>         |                      |             | <b>22 T 1</b>             | <b>22 T 2</b>             |
| Table Size           | USEFUL               | mm (inches) | 300 × 350 (11.8" × 13.8") | 300 × 630 (11.8" × 24.8") |
|                      | TOTAL                | mm (inches) | 510 × 470 (20" × 18.5")   | 510 × 750 (20" × 29.5")   |
| Weight (table only)  | approx.              | kg (lbs)    | 75 (165)                  | 115 (253)                 |
| Packing              | Continental          | approx.     | 70 (154)                  | 100 (220)                 |
|                      | Seaworthy            | approx.     | 95 (209)                  | 140 (308)                 |
| Coolant (on request) | reservoir            |             | in the table              | in the table              |
| Electrical equipment | separate compartment |             | in the table              | in the table              |



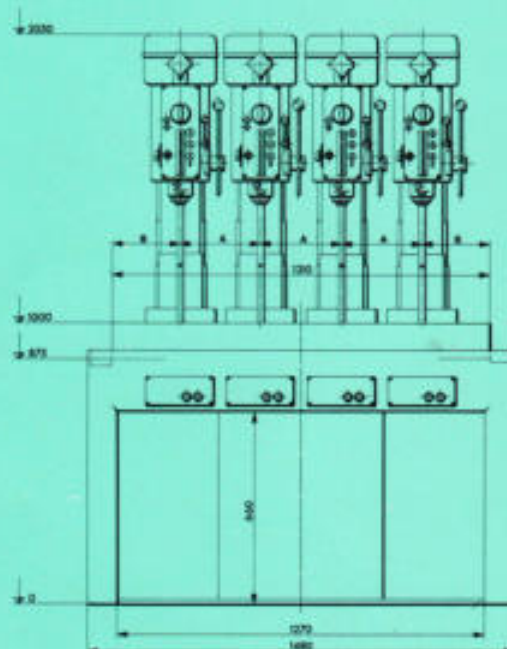
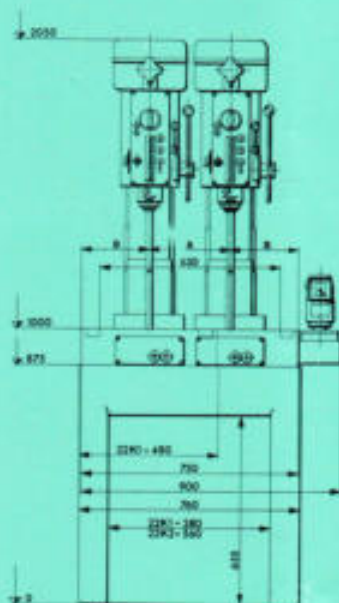
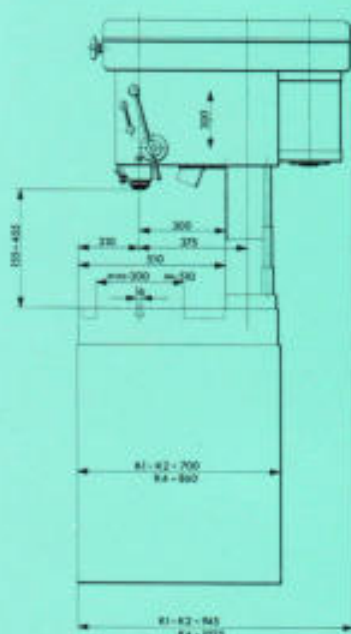
22 K 1



22 K 2

# 22 K

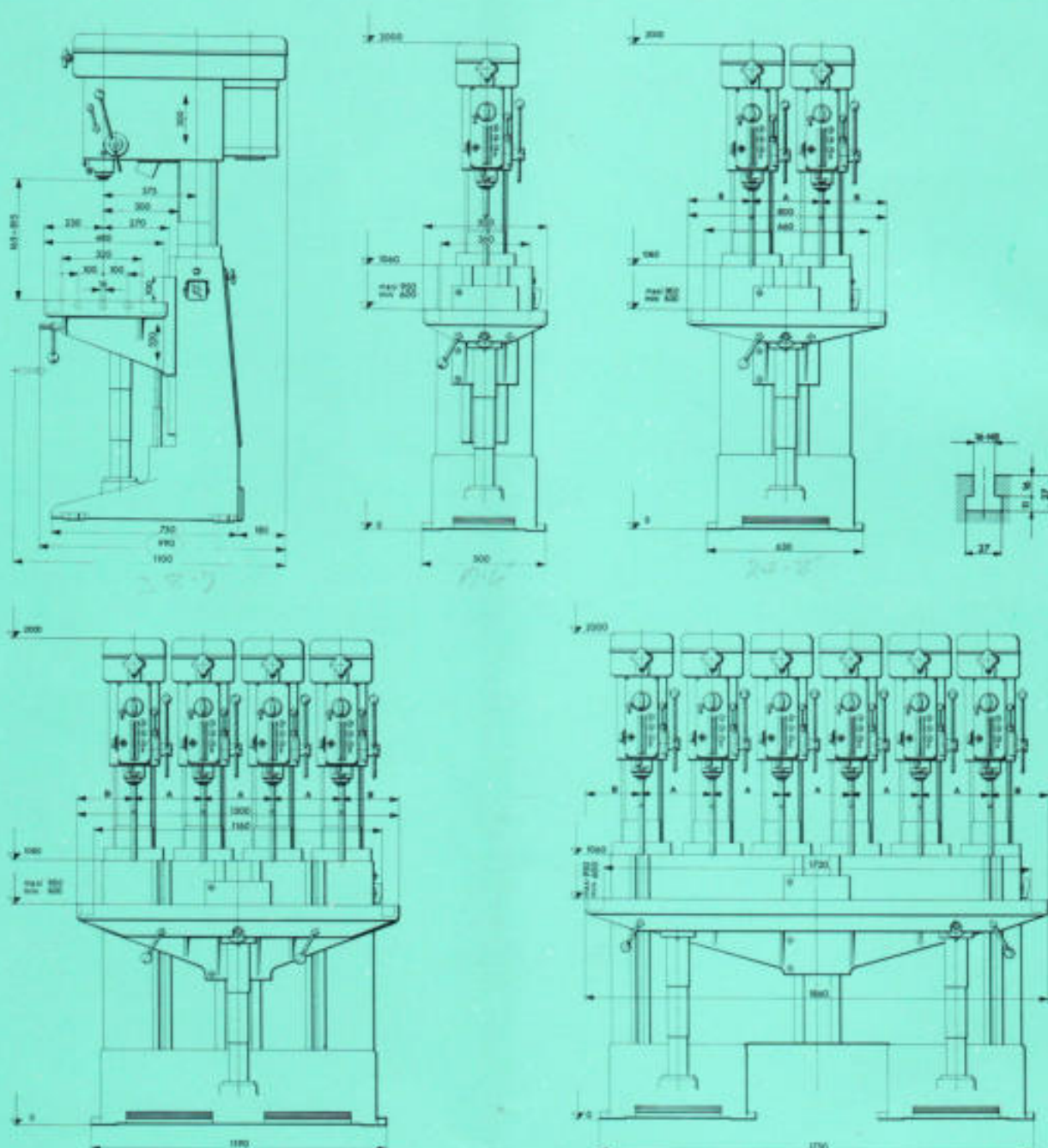
## Drilling machines on sheet metal base



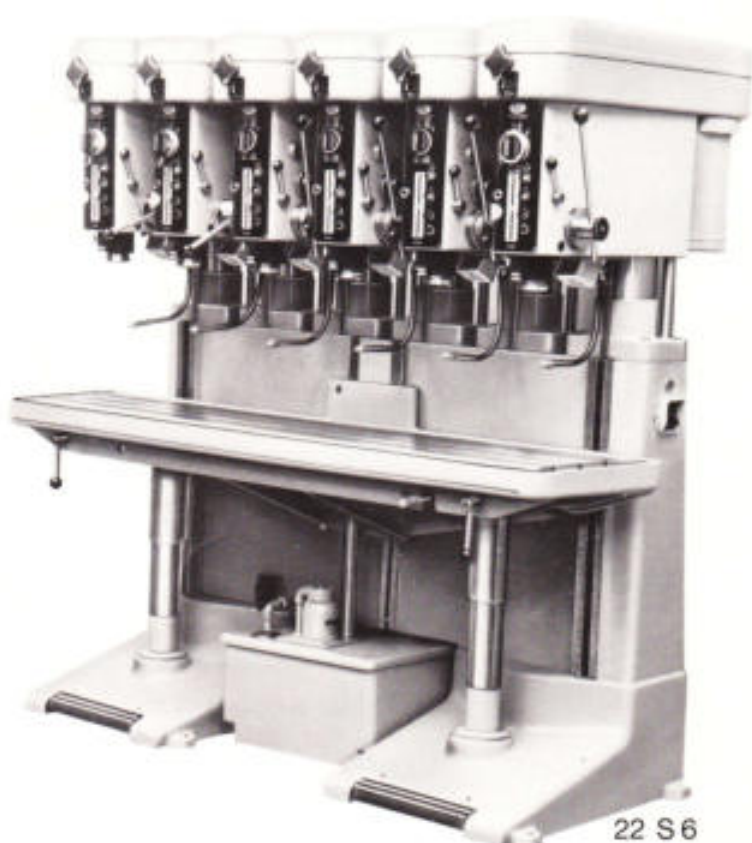
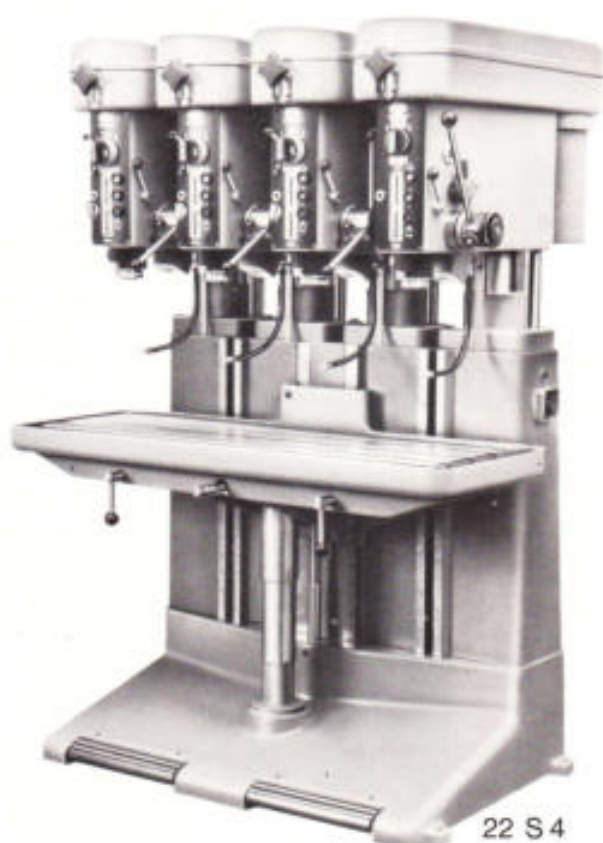
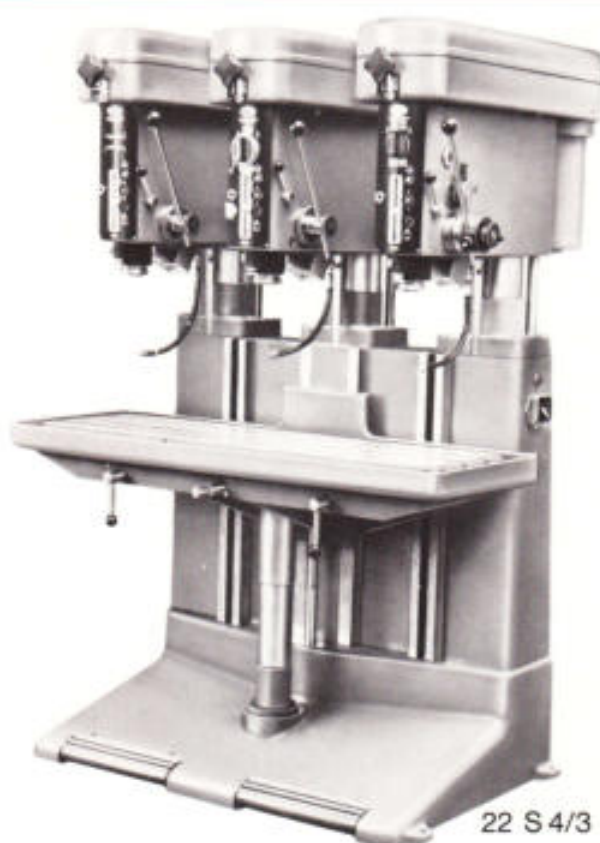
| Number of Spindles        |                              | 1                         | 2                         | 3                                 | 4                        |
|---------------------------|------------------------------|---------------------------|---------------------------|-----------------------------------|--------------------------|
| <b>TYPES</b>              |                              | <b>22 K 1</b>             | <b>22 K 2</b>             | <b>22 K 4/3</b>                   | <b>22 K 4</b>            |
| Distance between spindles | A mm (inches)                | —                         | 280 (11")                 | 420 (16.5")                       | 280 (11")                |
|                           | B mm (inches)                | —                         | 235 (9.3")                | 235 (9.3")                        | 235 (9.3")               |
| Table Size                | USEFUL mm (inches)           | 300 × 350 (11.8" × 13.8") | 300 × 630 (11.8" × 24.8") | 510 × 1310 (20" × 51.6")          | 510 × 1310 (20" × 51.6") |
|                           | TOTAL mm (inches)            | 510 × 470 (20" × 18.5")   | 510 × 750 (20" × 29.5")   | 510 × 1310 (20" × 51.6")          | 510 × 1310 (20" × 51.6") |
| Weight (table + base)     | approx. kg (lbs)             | 135 (297)                 | 195 (429)                 | 390 (858)                         | 390 (858)                |
| Packing                   | Continental approx. kg (lbs) | 110 (242)                 | 160 (352)                 | 190 (418)                         | 190 (418)                |
|                           | Seaworthy approx. kg (lbs)   | 180 (396)                 | 220 (484)                 | 260 (752)                         | 260 (752)                |
| Coolant (on request)      | reservoir                    | in the table              | in the table              | indep. tank in bottom of the base |                          |
| Electrical equipment      | separate compartment         | in the table              | in the table              | in the base                       |                          |

# Drilling machines on cast-iron base with elevating tables

# 22 S



| Number of Spindles        |                  | 1                | 2             | 3               | 4             | 4                                      | 5                                      | 6                                      |
|---------------------------|------------------|------------------|---------------|-----------------|---------------|----------------------------------------|----------------------------------------|----------------------------------------|
| <b>TYPES</b>              |                  | <b>22 S 1</b>    | <b>22 S 2</b> | <b>22 S 4/3</b> | <b>22 S 4</b> | <b>22 S 6/4</b>                        | <b>22 S 6/5</b>                        | <b>22 S 6</b>                          |
| Distance between spindles | A                | mm               | 280           | 420             | 280           | 405                                    | 340                                    | 280                                    |
|                           | inches           | —                | 11"           | 16.5"           | 11"           | 15.9"                                  | 13.4"                                  | 11"                                    |
|                           | B                | mm               | 250           | 260             | 230           | 322                                    | 250                                    | 230                                    |
| Table Size                | USEFUL           | mm               | 320 × 360     | 320 × 660       | 320 × 1160    | 320 × 1160                             | 320 × 1720                             | 320 × 1720                             |
|                           | inches           | 12.6" × 14.2"    | 12.6" × 26"   | 12.6" × 45.7"   | 12.6" × 45.7" | 12.6" × 45.7"                          | 12.6" × 67.7"                          | 12.6" × 67.7"                          |
|                           | TOTAL            | mm               | 480 × 500     | 480 × 800       | 480 × 1300    | 480 × 1300                             | 480 × 1860                             | 480 × 1860                             |
|                           | inches           | 18.9" × 19.7"    | 18.9" × 31.5" | 18.9" × 51.2"   | 18.9" × 51.2" | 18.9" × 51.2"                          | 18.9" × 73.2"                          | 18.9" × 73.2"                          |
| Weight (base only)        | approx. kg (lbs) | 320 (704)        | 420 (924)     | 625 (1375)      | 625 (1375)    | 870 (1914)                             | 870 (1914)                             | 870 (1914)                             |
| Coolant (on request)      | reservoir        | in the base      | in the base   | in the base     | in the base   | independent tank in bottom of the base | independent tank in bottom of the base | independent tank in bottom of the base |
| Packing                   | Continental      | approx. kg (lbs) | 110 (242)     | 160 (352)       | 190 (418)     | 290 (638)                              | 290 (638)                              | 290 (638)                              |
|                           | Seaworthy        | approx. kg (lbs) | 180 (396)     | 220 (484)       | 260 (572)     | 380 (836)                              | 380 (836)                              | 380 (836)                              |
| Electrical equipment      | on panel         | in the base      | in the base   | in the base     | in the base   | in the base                            | in the base                            | in the base                            |



## Accessories

|               |                                         |                              |
|---------------|-----------------------------------------|------------------------------|
| <b>2230</b>   | <b>ELECTRIC TAPPING "E"</b>             | (Special Motor) (see page 6) |
| (recommended) | for types V-VR-VA                       |                              |
|               | Max. Capacity                           | M 18 (0.71")                 |
|               | Max. Rate                               | 8 Threads/min                |
|               | (M 14 (0.55") for Type V Drilling Head) |                              |

|             |                                 |
|-------------|---------------------------------|
| <b>2231</b> | <b>COOLANT SYSTEM</b>           |
|             | Electric-pump, piping and taps. |

|             |                        |                              |
|-------------|------------------------|------------------------------|
| <b>2233</b> | <b>MOTOR BRAKE</b>     | (Special motor) (see page 8) |
|             | Electromagnetic system |                              |
|             | Weight                 | 7.7 kg (16.9 lbs)            |

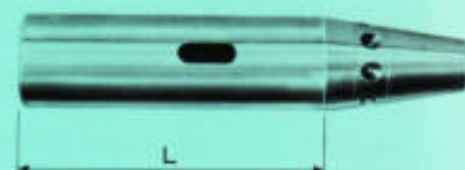
|             |                                                      |                                         |
|-------------|------------------------------------------------------|-----------------------------------------|
| <b>2234</b> | <b>TURRET-TYPE DEPTH STOP</b>                        | (For drilling heads VR/VA) (see page 8) |
|             | - Quick-change drums                                 |                                         |
|             | - 8 Adjustable stops with micrometer screw           |                                         |
|             | - Manual indexing                                    |                                         |
|             | - Drilling and tapping depth                         | 110 mm (4.3")                           |
|             | - Min. distance between 2 drilling head spindle axes | 370 mm (14.6")                          |

|               |                                                              |
|---------------|--------------------------------------------------------------|
| <b>2234-1</b> | <b>INTERCHANGEABLE DRUM</b>                                  |
|               | Supplementary, with 8 adjustable stops with micrometer screw |
| Weight        | 1.6 kg (3.5 lbs)                                             |

|               |                             |                |                |                |
|---------------|-----------------------------|----------------|----------------|----------------|
| <b>2216</b>   | <b>REDUCTION SLEEVE</b>     | <b>MT 1</b>    | <b>MT 2</b>    | <b>MT 3</b>    |
| (recommended) | Length L mm . . . . .       | 26 (1.0")      | 33 (1.3")      | 62.5 (2.4")    |
|               | Weight approx. kg . . . . . | 0.3 (11.0 ozs) | 0.25 (9.0 ozs) | 0.3 (11.0 ozs) |
|               | Order No. . . . .           | 2216-1         | 2216-2         | 2216-3         |

|             |                                |                |               |               |
|-------------|--------------------------------|----------------|---------------|---------------|
| <b>2217</b> | <b>REDUCTION SLEEVE - LONG</b> | <b>MT 1</b>    | <b>MT 2</b>   | <b>MT 3</b>   |
|             | Length L mm . . . . .          | 100 (3.9")     | 100 (3.9")    | 98 (3.8")     |
|             | Weight approx. kg. . . . .     | 0.8 (1.8 lbs.) | 0.7 (1.5 lbs) | 0.5 (1.1 lbs) |
|             | Order No. . . . .              | 2217-1         | 2217-2        | 2217-3        |

|             |                                                                                      |                |                |                |
|-------------|--------------------------------------------------------------------------------------|----------------|----------------|----------------|
| <b>2218</b> | <b>REDUCTION SLEEVE without ejection slot, but with clamping screw, for cutters.</b> | <b>MT 1</b>    | <b>MT 2</b>    | <b>MT 3</b>    |
|             | Length L mm . . . . .                                                                | 26 (1.0")      | 33 (1.3")      | 62.5 (2.4")    |
|             | Weight approx. kg . . . . .                                                          | 0.3 (11.0 ozs) | 0.25 (9.0 ozs) | 0.3 (11.0 ozs) |
|             | Order No. . . . .                                                                    | 2218-1         | 2218-2         | 2218-3         |



## Accessories

### 2219 SPINDLE INSERT for chucks with DIN 238 Taper

|                             |              |              |               |              |
|-----------------------------|--------------|--------------|---------------|--------------|
| Taper Size . . . . .        | B 10         | B 12         | B 16          | B 18         |
| Weight approx. kg . . . . . | 0.25 (9 ozs) | 0.25 (9 ozs) | 0.27 (10 ozs) | 0.3 (11 ozs) |
| Order No. . . . .           | 2219-10      | 2219-12      | 2219-16       | 2219-18      |

### SPINDLE INSERT for chucks with JACOBS JT Taper

|                             |              |              |              |
|-----------------------------|--------------|--------------|--------------|
| Taper Size . . . . .        | 1 JT         | 2 JT         | 3 JT         |
| Weight approx. kg . . . . . | 0.25 (9 ozs) | 0.25 (9 ozs) | 0.3 (11 ozs) |
| Order No. . . . .           | 2219-1       | 2219-2       | 2219-3       |



### 2208 SELF-TIGHTENING CHUCK, hardened and ground. (Including spindle insert No. 2219)

#### STANDARD

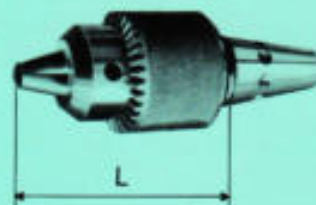
|                             |                |                |               |
|-----------------------------|----------------|----------------|---------------|
| Capacity mm . . . . .       | 0-6.5 (0-1/4") | 0-10 (0-3/8")  | 0-13 (0-1/2") |
| Length L mm . . . . .       | 70 (2.7")      | 90 (3.5")      | 105 (4.1")    |
| Weight approx. kg . . . . . | 0.54 (1.2 lbs) | 0.86 (1.9 lbs) | 1.2 (2.6 lbs) |
| Order No. . . . .           | 2208-6         | 2208-10        | 2208-13       |



### 2209 KEY-TIGHTENED CHUCK (Including spindle insert No. 2219)

#### STANDARD

|                             |                      |                     |                     |
|-----------------------------|----------------------|---------------------|---------------------|
| Capacity mm. . . . .        | 0.3-6.4 (.012"-1/4") | 0.5-10 (.020"-3/8") | 0.5-13 (.020"-1/2") |
| Length L mm. . . . .        | 55 (2.2")            | 75 (2.95")          | 90 (3.5")           |
| Weight approx. kg . . . . . | 0.41 (14 ozs)        | 0.78 (1.7 lbs)      | 1.12 (2.4 lbs)      |
| Order No. . . . .           | 2209-6               | 2209-10             | 2209-13             |



### 2227 JACOBS RUBBER-FLEX TAP-HOLDER (Including spindle insert No. 2219)

with hardened and ground jaws in synthetic rubber sleeve.

#### STANDARD

|                                   |                       |                       |
|-----------------------------------|-----------------------|-----------------------|
| Cylindrical capacity mm. . . . .  | 4.5-9.7 (0.18"-0.38") | 2.8-5.7 (0.11"-0.22") |
| Capacity for taps approx. . . . . | M6 - M12              | M3 - M6               |
| Length L mm . . . . .             | 80 (3.15")            | 50 (1.97")            |
| Weight approx. kg . . . . .       | 0.92 (2 lbs)          | 0.41 (14 ozs)         |
| Order No. . . . .                 | 2227-12               | 2227-6                |



### 2228 SUPPLEMENTARY COLLET, for STANDARD tap-holder No. 2227-12

|                                   |                   |                     |
|-----------------------------------|-------------------|---------------------|
| Cylindrical capacity mm. . . . .  | 7-12.5 (0.28"-1") | 2.8-7 (0.11"-0.28") |
| Capacity for taps approx. . . . . | M10 - M16         | M3 - M8             |
| Weight approx. kg . . . . .       | 0.025 (1 ozs)     | 0.025 (1 ozs)       |
| Order No. . . . .                 | 2228-16           | 2228-6              |





## Accessories

|               |                                         |                              |
|---------------|-----------------------------------------|------------------------------|
| <b>2230</b>   | <b>ELECTRIC TAPPING "E"</b>             | (Special Motor) (see page 6) |
| (recommended) | for types V-VR-VA                       |                              |
|               | Max. Capacity                           | M 18 (0.71")                 |
|               | Max. Rate                               | 8 Threads/min                |
|               | (M 14 (0.55") for Type V Drilling Head) |                              |

|             |                                 |
|-------------|---------------------------------|
| <b>2231</b> | <b>COOLANT SYSTEM</b>           |
|             | Electric-pump, piping and taps. |

|             |                        |                              |
|-------------|------------------------|------------------------------|
| <b>2233</b> | <b>MOTOR BRAKE</b>     | (Special motor) (see page 8) |
|             | Electromagnetic system |                              |
|             | Weight                 | 7.7 kg (16.9 lbs)            |

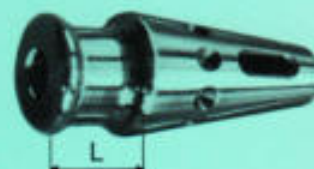


|             |                                                      |                                         |
|-------------|------------------------------------------------------|-----------------------------------------|
| <b>2234</b> | <b>TURRET-TYPE DEPTH STOP</b>                        | (For drilling heads VR/VA) (see page 8) |
|             | - Quick-change drums                                 |                                         |
|             | - 8 Adjustable stops with micrometer screw           |                                         |
|             | - Manual indexing                                    |                                         |
|             | - Drilling and tapping depth                         | 110 mm (4.3")                           |
|             | - Min. distance between 2 drilling head spindle axes | 370 mm (14.6")                          |

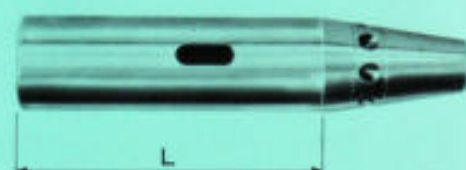
|               |                                                              |
|---------------|--------------------------------------------------------------|
| <b>2234-1</b> | <b>INTERCHANGEABLE DRUM</b>                                  |
|               | Supplementary, with 8 adjustable stops with micrometer screw |
| Weight        | 1.6 kg (3.5 lbs)                                             |



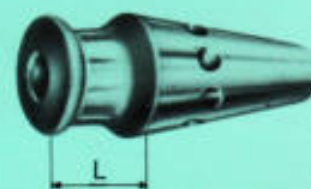
|               |                             |                |                |                |
|---------------|-----------------------------|----------------|----------------|----------------|
| <b>2216</b>   | <b>REDUCTION SLEEVE</b>     | <b>MT 1</b>    | <b>MT 2</b>    | <b>MT 3</b>    |
| (recommended) | Length L mm . . . . .       | 26 (1.0")      | 33 (1.3")      | 62.5 (2.4")    |
|               | Weight approx. kg . . . . . | 0.3 (11.0 ozs) | 0.25 (9.0 ozs) | 0.3 (11.0 ozs) |
|               | Order No. . . . .           | 2216-1         | 2216-2         | 2216-3         |



|             |                                |                |               |               |
|-------------|--------------------------------|----------------|---------------|---------------|
| <b>2217</b> | <b>REDUCTION SLEEVE - LONG</b> | <b>MT 1</b>    | <b>MT 2</b>   | <b>MT 3</b>   |
|             | Length L mm . . . . .          | 100 (3.9")     | 100 (3.9")    | 98 (3.8")     |
|             | Weight approx. kg. . . . .     | 0.8 (1.8 lbs.) | 0.7 (1.5 lbs) | 0.5 (1.1 lbs) |
|             | Order No. . . . .              | 2217-1         | 2217-2        | 2217-3        |



|             |                                                                                      |                |                |                |
|-------------|--------------------------------------------------------------------------------------|----------------|----------------|----------------|
| <b>2218</b> | <b>REDUCTION SLEEVE without ejection slot, but with clamping screw, for cutters.</b> | <b>MT 1</b>    | <b>MT 2</b>    | <b>MT 3</b>    |
|             | Length L mm . . . . .                                                                | 26 (1.0")      | 33 (1.3")      | 62.5 (2.4")    |
|             | Weight approx. kg . . . . .                                                          | 0.3 (11.0 ozs) | 0.25 (9.0 ozs) | 0.3 (11.0 ozs) |
|             | Order No. . . . .                                                                    | 2218-1         | 2218-2         | 2218-3         |



## Accessories

### 2219 SPINDLE INSERT for chucks with DIN 238 Taper

|                         |              |              |               |              |
|-------------------------|--------------|--------------|---------------|--------------|
| Taper Size . . . . .    | B 10         | B 12         | B 16          | B 18         |
| Weight approx. kg . . . | 0.25 (9 ozs) | 0.25 (9 ozs) | 0.27 (10 ozs) | 0.3 (11 ozs) |
| Order No. . . . .       | 2219-10      | 2219-12      | 2219-16       | 2219-18      |

### SPINDLE INSERT for chucks with JACOBS JT Taper

|                         |              |              |              |
|-------------------------|--------------|--------------|--------------|
| Taper Size . . . . .    | 1 JT         | 2 JT         | 3 JT         |
| Weight approx. kg . . . | 0.25 (9 ozs) | 0.25 (9 ozs) | 0.3 (11 ozs) |
| Order No. . . . .       | 2219-1       | 2219-2       | 2219-3       |



### 2208 SELF-TIGHTENING CHUCK, hardened and ground. (recommended) (Including spindle insert No. 2219)

#### STANDARD

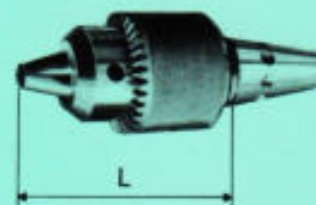
|                         |                |                |               |
|-------------------------|----------------|----------------|---------------|
| Capacity mm . . . . .   | 0-6.5 (0-1/4") | 0-10 (0-3/8")  | 0-13 (0-1/2") |
| Length L mm . . . . .   | 70 (2.7")      | 90 (3.5")      | 105 (4.1")    |
| Weight approx. kg . . . | 0.54 (1.2 lbs) | 0.86 (1.9 lbs) | 1.2 (2.6 lbs) |
| Order No. . . . .       | 2208-6         | 2208-10        | 2208-13       |



### 2209 KEY-TIGHTENED CHUCK (Including spindle insert No. 2219)

#### STANDARD

|                                       |                     |                     |
|---------------------------------------|---------------------|---------------------|
| Capacity mm. 0.3-6.4 (.012"-1/4")     | 0.5-10 (.020"-3/8") | 0.5-13 (.020"-1/2") |
| Length L mm. 55 (2.2")                | 75 (2.95")          | 90 (3.5")           |
| Weight approx. kg . . . 0.41 (14 ozs) | 0.78 (1.7 lbs)      | 1.12 (2.4 lbs)      |
| Order No. . . . . 2209-6              | 2209-10             | 2209-13             |



### 2227 JACOBS RUBBER-FLEX TAP-HOLDER (recommended) (Including spindle insert No. 2219)

with hardened and ground jaws in synthetic rubber sleeve.

#### STANDARD

|                                                |                       |
|------------------------------------------------|-----------------------|
| Cylindrical capacity mm. 4.5-9.7 (0.18"-0.38") | 2.8-5.7 (0.11"-0.22") |
| Capacity for taps approx. M6 - M12             | M3 - M6               |
| Length L mm. . . . . 80 (3.15")                | 50 (1.97")            |
| Weight approx. kg . . . 0.92 (2 lbs)           | 0.41 (14 ozs)         |
| Order No. . . . . 2227-12                      | 2227-6                |



### 2228 SUPPLEMENTARY COLLET, for STANDARD tap-holder No. 2227-12

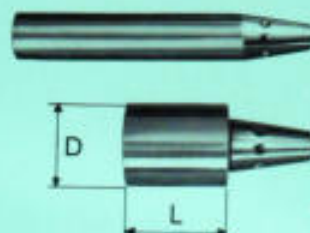
|                                            |                     |
|--------------------------------------------|---------------------|
| Cylindrical capacity mm. 7-12.5 (0.28"-1") | 2.8-7 (0.11"-0.28") |
| Capacity for taps approx. M10 - M16        | M3 - M8             |
| Weight approx. kg . . . 0.025 (1 ozs)      | 0.025 (1 ozs)       |
| Order No. . . . . 2228-16                  | 2228-6              |



## Accessories

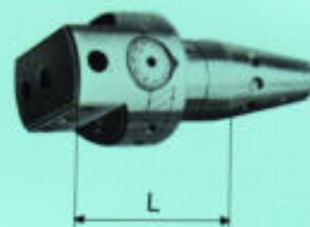
### UNFINISHED TOOL-HOLDER

|                | Diameter D    | Length L      | Net. weight      |
|----------------|---------------|---------------|------------------|
| <b>2243-32</b> | 32 mm (1.25") | 150 mm (5.9") | 1.1 kg (2.4 lbs) |
| <b>2243-50</b> | 50 mm (1.97") | 60 mm (2.36") | 1.1 kg (2.4 lbs) |



### **2201 BORING HEAD** (Only of interest for Type 22 VA) Supplied in wooden box with 3 boring tools and Allen keys

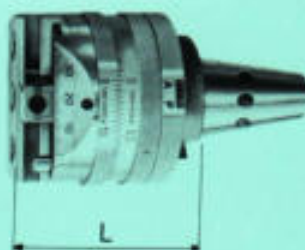
|                                                             |                            |
|-------------------------------------------------------------|----------------------------|
| Boring capacity - approx. . . . .                           | 5" - 110 mm (0.2-4.3")     |
| Boring tool diameter . . . . .                              | 8 mm (0.32")               |
| Radial travel of tool slide, graduated to 0.01 mm . . . . . | 22 mm (0.87")              |
| Diameter of head x length L . . . . .                       | 50 x 75 mm (1.97" x 2.95") |
| Weight with box . . . . .                                   | 1.65 kg (3.6 lbs)          |



### **479 a "PICCOLO" BORING AND FACING HEAD** (Only of interest for Type 22 VA)

Special  
Prospectus  
on  
request

|                                       |                            |
|---------------------------------------|----------------------------|
| Boring capacity - approx. . . . .     | 2 - 180 mm (.079" - 7.0")  |
| Radial travel of tool slide . . . . . | 30 mm (1.18")              |
| Facing feed, automatic . . . . .      | 0.05 mm (.002")/rev.       |
| Quick withdrawal, automatic . . . . . | 2.5 mm (.098")/rev.        |
| Diameter of head x length L . . . . . | 65 x 60 mm (2.56" x 2.36") |
| Weight with box . . . . .             | 3.0 kg (6.6 lbs)           |



### **2210 COLLET-HOLDER** For ES 32 double-taper collets

|                                       |                            |
|---------------------------------------|----------------------------|
| Diameter of head x length L . . . . . | 50 x 45 mm (1.97" x 1.77") |
| Weight with key . . . . .             | 0.9 kg (2 lbs)             |



### **2211 DOUBLE-TAPER COLLET TYPE ES 32**

|                                                               |                             |
|---------------------------------------------------------------|-----------------------------|
| Bore dia. 2.5 and 3 mm, compressible through 0.5 mm           |                             |
| Bore dia. 4 to 20 mm in 1 mm steps, compressible through 1 mm |                             |
| Weight . . . . .                                              | 0.09 - 0.16 kg (3 to 5 ozs) |



### **2236 CLAMPING PIECE - CLOSED**

|                        |                 |
|------------------------|-----------------|
| Total length . . . . . | 100 mm (3.9")   |
| Thickness . . . . .    | 19 mm (0.75")   |
| Weight . . . . .       | 0.4 kg (0.9 lb) |



## Accessories

### 2237 CLAMPING PIECE – OPEN hardened and ground.

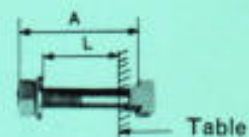
|                        |                  |
|------------------------|------------------|
| Total length . . . . . | 160 mm (6.3")    |
| Thickness . . . . .    | 25 mm (0.98")    |
| Weight . . . . .       | 0.85 kg (1.9 lb) |



### 2238 CLAMPING BOLT 16 mm diameter.

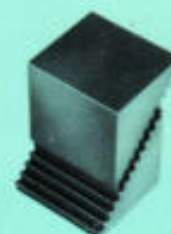
|        |           |            |            |
|--------|-----------|------------|------------|
| A      | 80 (3.2") | 125 (4.9") | 200 (7.9") |
| L MIN. | 20 (0.8") | 55 (2.2")  | 120 (4.7") |
| L MAX. | 50 (1.9") | 95 (3.7")  | 170 (6.7") |

Weight approx. 0.2 to 0.45 kg (0.44 to 1 lb)



### 2239 ADJUSTABLE PACKING BLOCK hardened and ground. Height adjustable in steps of 1.4 mm (0.06")

| Size  | Min. Height<br>mm | Max. Height<br>mm | Width<br>mm | Weight<br>kg    |
|-------|-------------------|-------------------|-------------|-----------------|
| No. 2 | 25 (0.98")        | 33 (1.30")        | 38 (1.5")   | 0.15 ( 5.5 ozs) |
| No. 3 | 40 (1.58")        | 55 (2.17")        | 38 (1.5")   | 0.45 (16.5 ozs) |
| No. 4 | 63 (2.48")        | 90 (3.54")        | 38 (1.5")   | 1 ( 2.2 lbs)    |



### 2246 INDEXING FIXTURE, with 2 fixing screws

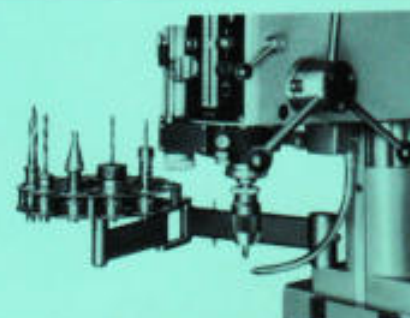
|                                                   |                    |
|---------------------------------------------------|--------------------|
| Chuck diameter . . . . .                          | 115 mm (4.5")      |
| Total height in vertical position . . . . .       | 135 mm (5.3")      |
| In horizontal position:                           |                    |
| Distance between fixture axis and table . . . . . | 85 mm (3.3")       |
| Direct divisions . . . . .                        | 2, 3, 4, 6, 8, 12. |
| Graduation of flange . . . . .                    | 360°               |
| Weight . . . . .                                  | 12.6 kg (27.7 lbs) |



### 2255 ROTARY TOOL SUPPORT

For 20 tools held by one fixing screw on the drilling head column. Tool-holder sleeves in plastic.

|                                                               |               |
|---------------------------------------------------------------|---------------|
| Diameter of toolholder plate . . . . .                        | 300 mm (12")  |
| Max. extension of swivelling arm to centre of plate . . . . . | 610 mm (24")  |
| Weight . . . . .                                              | 6 kg (13 lbs) |



For your orders:

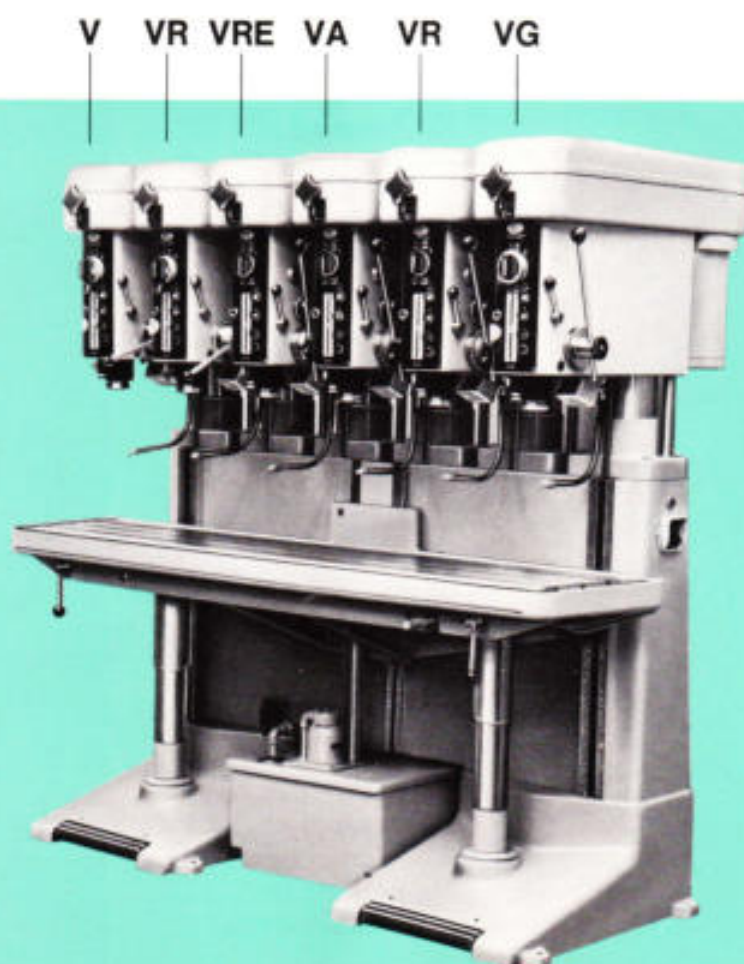
**EXAMPLE:**

**Designation of a 6 spindle drilling machine**

| Type | Stand | Number of heads | Type and arrangement of heads |
|------|-------|-----------------|-------------------------------|
| 22   | S     | 6               | V·VR·VRE·VA·VR·VG             |

electric tapping ↗

↖ mechanical tapping



## General manufacturing programme

### Universal Milling Machines

|          |                                 |                   |
|----------|---------------------------------|-------------------|
| Type F 1 | Table 220 × 100 mm ( 8½" × 4")  | 0.25 kW (0.33 HP) |
| Type F 3 | Table 600 × 205 mm (23½" × 8")  | 1.1 kW (1.5 HP)   |
| Type F 4 | Table 800 × 250 mm (31½" × 10") | 2.3 kW (3.0 HP)   |
| Type F 5 | Table 800 × 300 mm (31½" × 12") | 2.9 kW (4.0 HP)   |

### Hydraulic Copy-Milling Machine

|           |                                  |                 |
|-----------|----------------------------------|-----------------|
| Type R 20 | Copying Area 300×175 mm (12"×7") | 1.2 kW (1.6 HP) |
|-----------|----------------------------------|-----------------|

### Drilling/Tapping Machines

|           |                                        |                |
|-----------|----------------------------------------|----------------|
| Type E 3  | Drilling machine Capacity 4 mm (5/32") |                |
| Type ET 3 | Tapping machine Capacity M 3,5 (1/8")  |                |
| Type 6    | Capacity 6 mm (1/4") M 5 (7/32")       | 1 – 6 spindles |
| Type 10   | Capacity 10 mm (3/8") M 8 (5/16")      | 1 – 6 spindles |
| Type 22   | Capacity 22 mm (7/8") M 18 (11/16")    | 1 – 6 spindles |

### Semi Jig-Borer

|             |                                     |                                    |
|-------------|-------------------------------------|------------------------------------|
| Type 22 STA | Capacity 22 mm (7/8") M 18 (11/16") | Table 700 × 370 mm<br>(28" × 14½") |
|-------------|-------------------------------------|------------------------------------|

### Production Drilling Machine with Repetitive Positioning Co-ordinate Table (System Bregnard)

|             |                                     |                                   |
|-------------|-------------------------------------|-----------------------------------|
| Type 22 TRA | Capacity 22 mm (7/8") M 18 (11/16") | Table 564 × 390 mm<br>(22" × 15") |
|             | Positioning Area                    | 278 × 190 mm<br>(11" × 7½")       |

**United Kingdom Agents**



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equipment  
limited**

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