



BroomWade

**self feed units
for low cost
automation**

*Compare. 661167
695532*

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Self-Feed Units FOR MODERN PRODUCTION

SFU DRILLS

These versatile units combine a COMPACT, POWERFUL and QUIET air motor with a built-in pneumatic feed cylinder. Any number of units can be operated simultaneously with provision for automatic control.

SFU TAPPERS

Similar to the Self-Feed Unit drills, but incorporating an automatically reversing tapping head. On the return stroke the spindle rotates at twice the tapping speed.

TWIN SPINDLE SFU DRILLS AND TAPPERS

These adjustable centre twin spindle units can be used to perform close centre drilling or tapping operations in any position.

The spindles are fully adjustable between $\frac{1}{2}$ in and $2\frac{1}{2}$ in (13 mm and 63,5 mm) centres.

- (a) by rotating the spindles relative to each other.
- (b) by rotating the head itself to any position relative to the tool.

The Motor which is of the rotary vane type is highly efficient and provides ample power for drilling $\frac{3}{8}$ " (8,0 mm) dia. holes in steel.

Gearing Assemblies are readily interchangeable, giving a range of 7 speeds from 600 to 17,000 rev/min.

Feed Cylinder. This is single acting and provides a maximum thrust of 160 lb (72,6 kg) at an air line pressure of 90 lb/in² (6,3 kg/cm²).

Feed Adjustment. The rate of advance is adjustable from 0-8" (0-203 mm) per second by a needle valve.

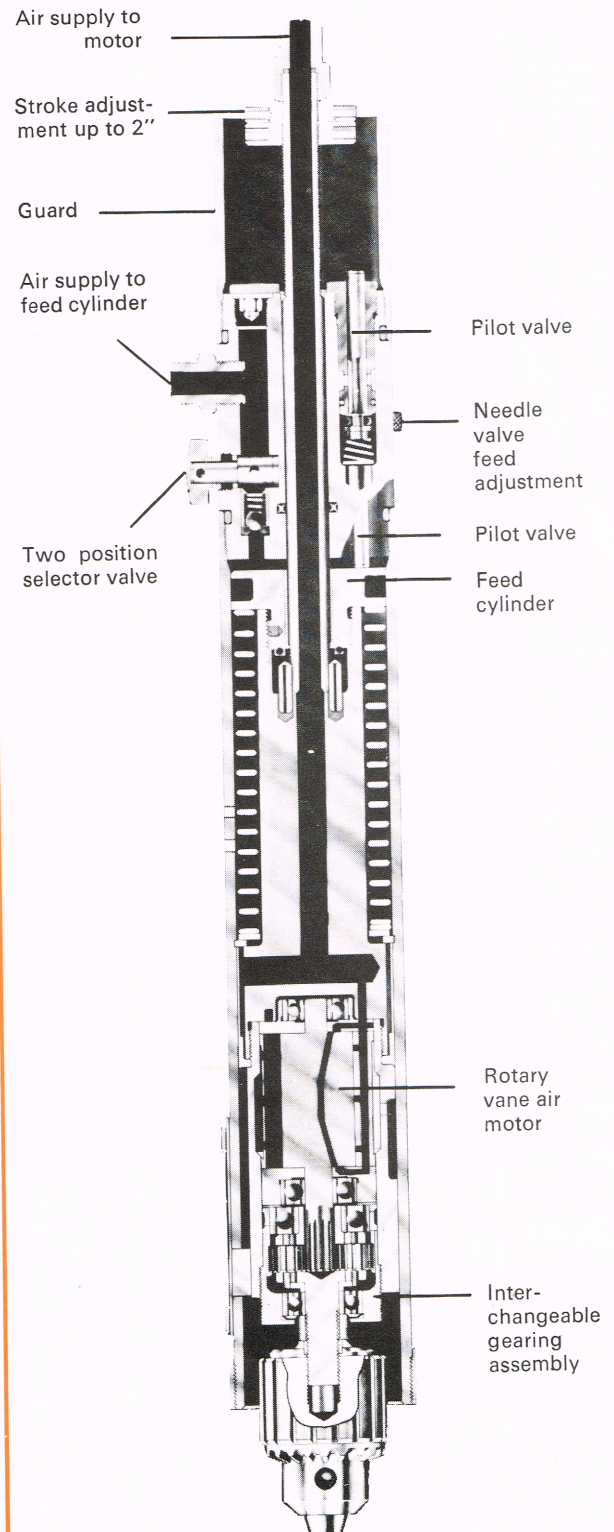
Selector Valve. Position 1 gives controlled forward and return strokes. Position 2 provides for controlled approach and rapid return.

Pilot Valves. The two pilot valves are tripped by the forward and return motions of the unit to indicate completion of the stroke in either direction. These pass air signals which can be used to operate remote control valves initiating retraction of other functions, making it possible to arrange a fully automatic interlocking circuit to suit requirements.

Stroke Adjustment is infinitely adjustable between 0 and 2" (0 and 50,8 mm).

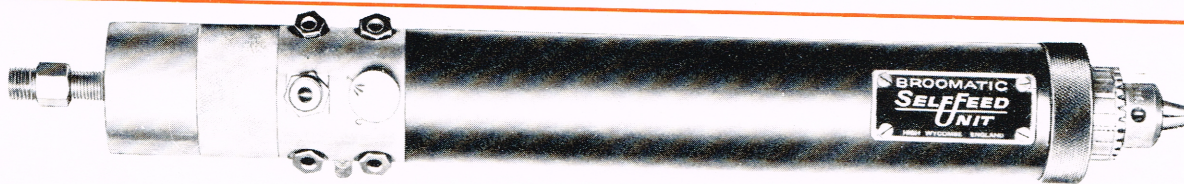
Air supply. Self feed units are designed to operate at 85 lb/in² (6,0 kg/cm²). Separate inlets are provided to the motor and feed cylinder so that thrust pressure can be adjusted without affecting motor speed. When the optional extra Hydraulic Breakthrough Attachment is fitted the minimum thrust pressure is 60 lb/in² (4,5 kg/cm²).

Do not hesitate to call on our technical advisers who can offer guidance based on a very wide experience in the application of Self-Feed Units.



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SFU drills

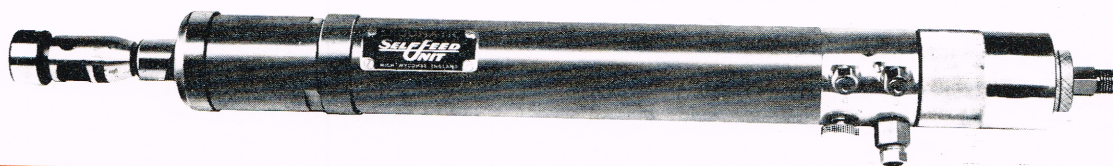


model	speed	length		weight		chuck capacity		drilling capacity*			
	rev/min	in	mm	lb	kg	in	mm	soft to medium aluminium		mild steel	
DD5A-06	600	18 3/32	482	7	3,17	3/8	9,5	3/8	9,5	5/16	8,0
DD5A-09	900	18 3/32	482	7	3,17	3/8	9,5	3/8	9,5	5/16	8,0
DD5A-15	1500	18 3/32	482	7	3,17	3/8	9,5	5/16	8,0	1/4	6,5
DD5A-25	2500	17 3/16	436	6 1/2	2,94	3/8	9,5	5/16	8,0	3/32	5,5
DD5A-33	3300	17 3/16	436	6 1/2	2,94	5/16	8,0	1/4	6,5	3/32	4,0
DD5A-50	5000	17 3/16	436	6 1/2	2,94	5/16	8,0	1/4	6,5	3/32	2,5

3/8" (9,5 mm) chuck optional at extra cost on tools with speeds up to 3300 rev/min.

\$800
com
012M
Drill

SFU tappers



model	speed	length		weight		chuck capacity†		tapping capacity*			
	rev/min	in	mm	lb	kg	in	mm	soft to medium aluminium		mild steel	
TD5A-06	600	22 3/8	568	8	3,62	1/4	6,5	3/8	9,5	5/16	8,0
TD5A-09	900	22 3/8	568	8	3,62	1/4	6,5	5/16	8,0	1/4	6,5

† 1/2" (12,7 mm) chuck optional at extra cost.

twin spindle SFU drills

model	speed	length		weight		maximum collet capacity		drilling capacity*			
	rev/min	in	mm	lb	kg	in	mm	soft to medium aluminium		mild steel	
DT5A-06	600	22 1/8	562	8 3/4	4,97	1/4	6,5	—	—	3/16	4,5
DT5A-09	900	22 1/8	562	8 3/4	4,97	1/4	6,5	—	—	3/16	4,5
DT5A-15	1500	22 1/8	562	8 3/4	4,97	1/4	6,5	1/4	6,5	5/32	4,0
DT5A-25	2500	22 1/8	562	8	3,63	1/4	6,5	1/4	6,5	1/8	3,0
DT5A-33	3300	22 1/8	562	8	3,63	1/4	6,5	3/16	4,5	1/16	1,5
DT5A-50	5000	22 1/8	562	8	3,63	1/4	6,5	3/16	4,5	1/16	1,5

Price

twin spindle SFU tappers

model	speed	length		weight		maximum collet capacity		tapping capacity *			
	rev/min	in	mm	lb	kg	in	mm	soft to medium aluminium		mild steel	
TT5A-06	600	24	609	10 1/4	4,65	1/4	6,5	1/4	6,5	3/16	6,5
TT5A-09	900	24	609	10 1/4	4,65	1/4	6,5	3/16	4,5	1/8	3,0

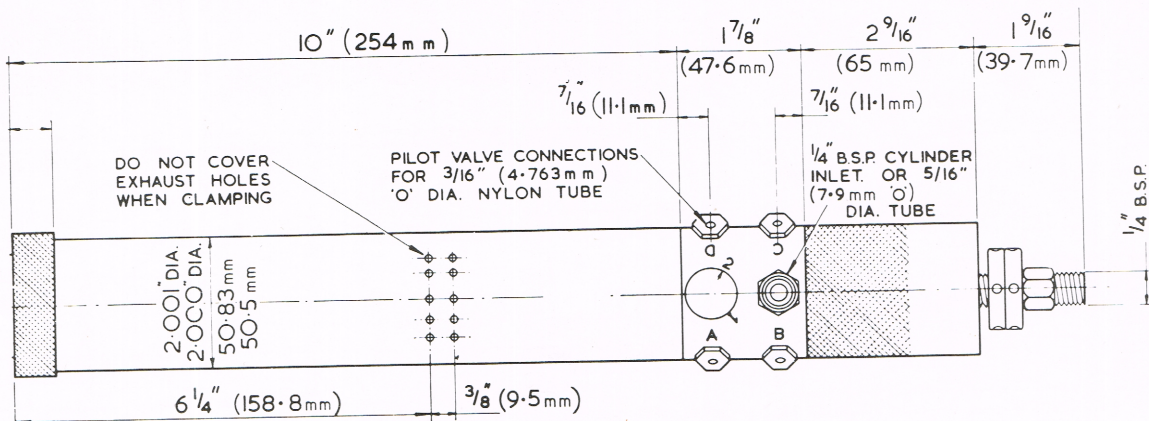
*Note: the capacities shown in the tables on this page are intended as a guide, but are to a certain extent dependent on depth of hole etc.



Twin spindle tapping head on Self-Feed Unit taper set for 2 1/2 in (63,5 mm) centres.

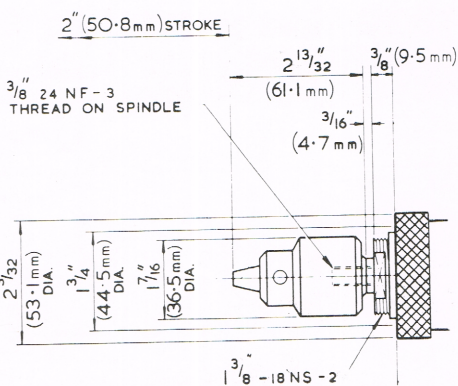
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For dimensions of the various heads which are fixed to the body of the tool see below.



DRILL HEADS

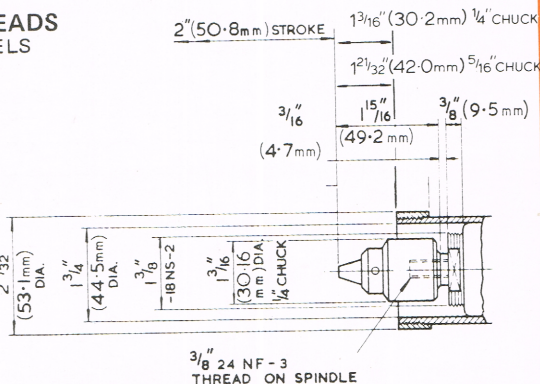
FOR MODELS
DD5A-06
DD5A-09
DD5A-15



Overall length of body and drill head is 18 3/32" (482 mm)

DRILL HEADS

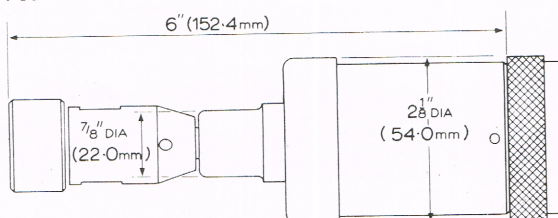
FOR MODELS
DD5A-25
DD5A-33
DD5A-50
DD5A-170



Overall length of body and drill head is 17 3/16" (436.5 mm)

TAPPER HEADS

FOR MODELS
TD5A-06
TD5A-09

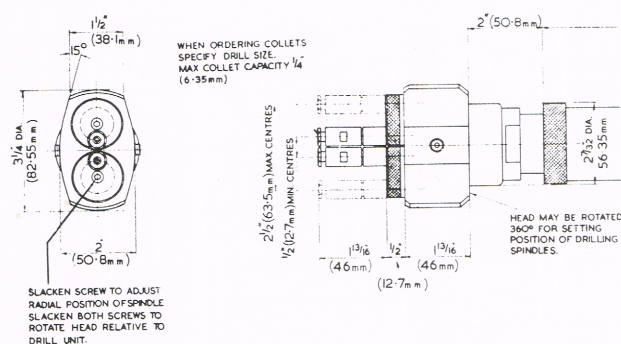


Overall length of body and tapper head is 22" (559 mm)

DRILL HEADS

FOR TWIN SPINDLE
MODELS

DT5A-06 DT5A-33
DT5A-09 DT5A-50
DT5A-15 DT5A-170
DT5A-25

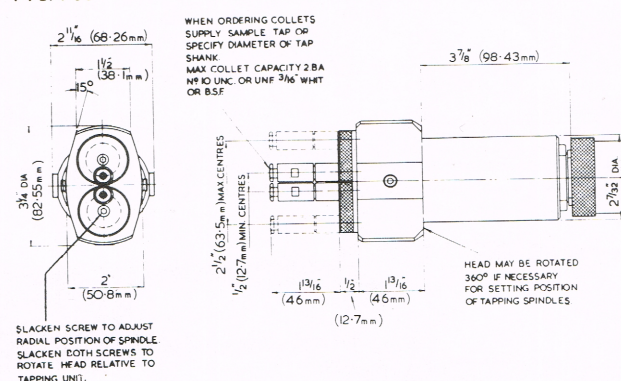


Overall length of body and drill head is 22 1/8" (562 mm)

TAPPER HEADS

FOR TWIN SPINDLE
MODELS

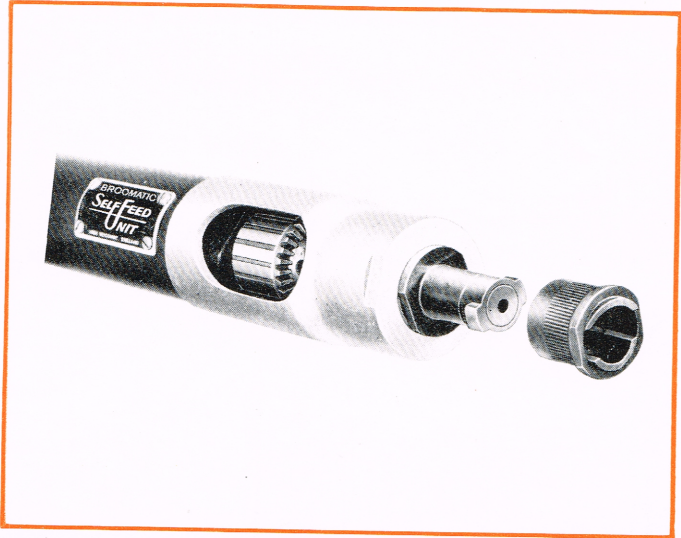
TT5A-06
TT5A-09



Overall length of body and tapper head is 24" (610 mm)

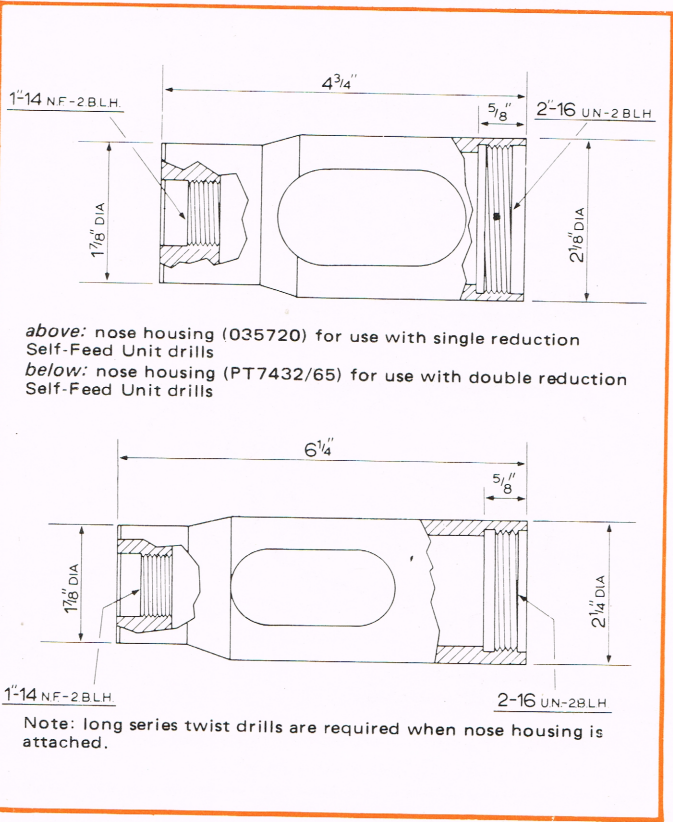
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Accessories



Bayonet Mountings

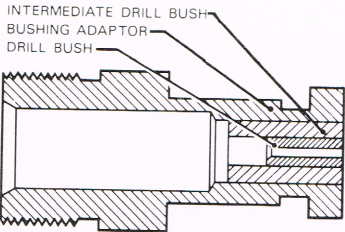
As an alternative to the standard mounting clamp arrangement, a series of bayonet mounting adaptors is available. These bayonet adaptors each carrying a drill guide bush, locate rapidly into lock bushings press fitted into the fixture at points where holes are to be drilled. By this means the tools can be quickly repositioned to cover a series of hole patterns. Details of bayonet mountings and lock bushings are given opposite. A nose housing carrying the bayonet mounting is screwed to the drill in place of the thread guard. Dimensions of nose housings are given below.



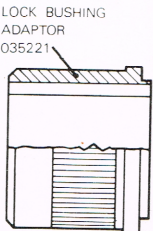
Function

The self feed unit can be rapidly positioned to drill accurately a number of holes without the necessity of holding the drill in a stand or clamp.

A lock bushing is pressed into position in the drill fixture at each location. A bayonet fitting adaptor attached to the end of the self feed drill locks into the lock bushing, holds the unit, and correctly positions and guides the drill during the drilling operation.



Male thread size of all bushing adaptors 1"-14UNF.2A L.H.



Recommended diameter of hole in mild steel fixture plate 1.000/1.001" to give press fit with lock bushing. For other fixture plate materials, hole diameter will vary.

TABLE OF DRILL SIZES AND ASSOCIATED ADAPTORS

One lock bushing, Part Number 035221, is required for each location in the drilling fixture.

Drill Diameter			Drill and Liner Bushing Assembly	Bushing Adaptor	Drill Bush	Intermediate Drill Bush
Dec.	Frac.	Metric equiv. mm				
.0591	—	1,5	PT7432/69A	PT7432/66C	PT7401/2	PT401/66
.0625	1/16	—	"/69C	"	"/4	"
.0781	5/64	—	"/69J	"	"/10	"
.0787	—	2	"/69L	"	"/12	"
.0938	3/32	—	"/69T	"	"/18	"
.0984	—	2,5	"/70B	"	"/21	PT7401/81
.1094	1/64	—	"/70G	"	"/26	"
.1181	—	3	"/70M	"	"/31	"
.1250	1/8	—	"/70P	"	"/33	"
.1378	—	3,5	"/70T	"	"/36	"
.1406	9/64	—	"/70V	"	"/38	"
.1563	5/32	—	"/71E	PT7432/66D	"/44	PT7401/97
.1575	—	4	"/71G	"	"/46	"
.1719	11/64	—	"/71M	"	"/51	"
.1772	—	4,5	"/71R	"	"/54	"
.1875	3/16	—	"/71V	"	"/58	"
.1969	—	5	"/72D	PT7432/66C	"/63	—
.2031	13/64	—	"/72G	"	"/66	—
.2165	—	5,5	"/72M	"	"/71	—
.2188	7/32	—	"/72N	"	"/72	—
.2344	15/64	—	"/72T	"	"/76	—
.2362	—	6	"/72U	"	"/77	—
.2500	1/4	—	"/72Y	"	"/81	—
.2559	—	6,5	"/73	PT7432/66D	"/82	—
.2656	1/64	—	"/73C	"	"/85	—
.2756	—	7	"/73F	"	"/88	—
.2813	9/32	—	"/73J	"	"/91	—
.2953	—	7,5	"/73M	"	"/94	—
.2969	19/64	—	"/73N	"	"/95	—
.3125	5/16	—	"/73R	"	"/97	—

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Rapid Assembly Fixture Construction Components

Self-feed tools can be rapidly fixed in any position, singly or in multiples using BroomWade clamps and support bar. There are only 3 clamps (figs 1-3)—a female/female clamp, a female/male clamp (T-clamp) and a base mounting bracket which can be bolted to a jig or fixture. Clamping is done with $\frac{1}{4}$ in. (6.35 mm) bolts throughout and all clamp orifices are 2 inch (50.8 mm) in diameter into which the support bar or self feed tool fits. The same clamps and bar can also be used for the Broomatic twin-spindle tools.

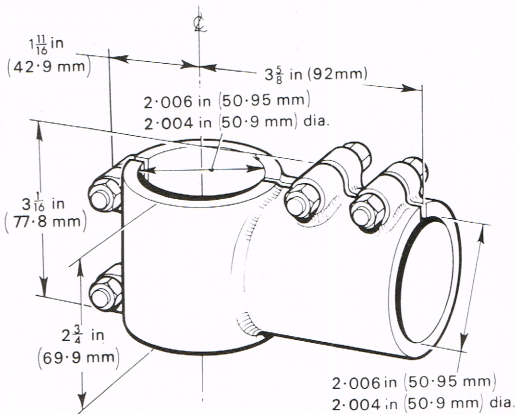
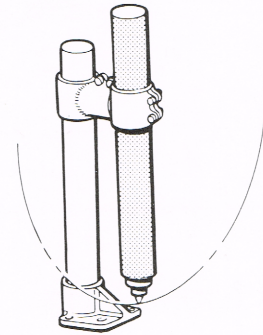
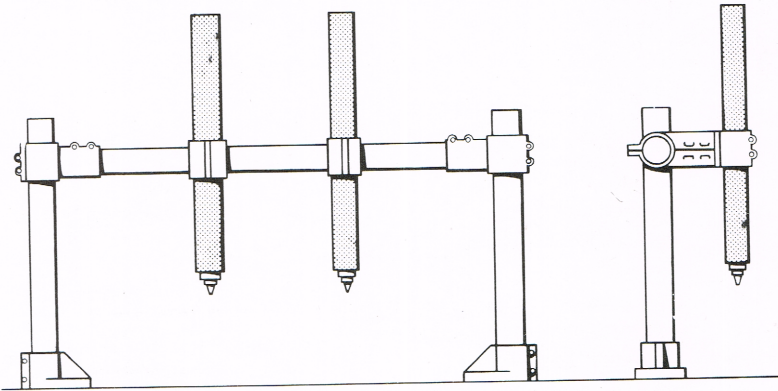
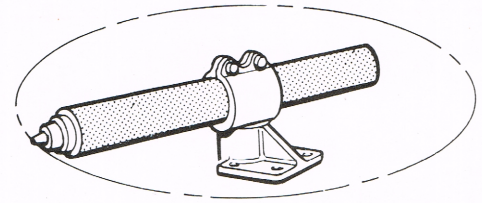


Fig. 1 Clamp PT7432/143

\$32

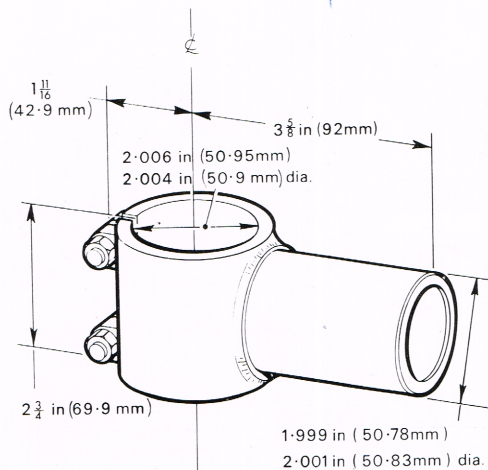


Fig. 2 Clamp PT7432/142

\$32

5 stock

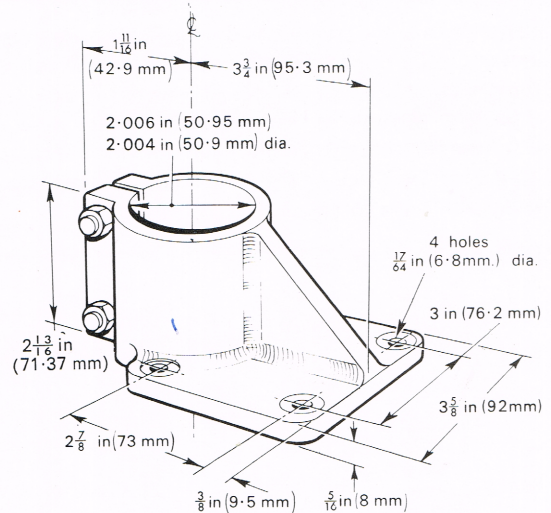


Fig. 3 Base clamp
PT7432/141

\$32

5 stock

Standard lengths 18, 24, 30 and 36 in.
(457, 610, 762 and 915 mm)

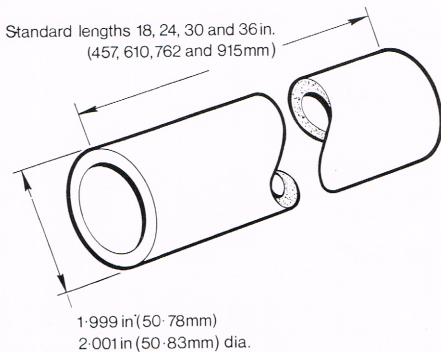


Fig. 4 Mounting column/support bar
PT7432/40 length to order

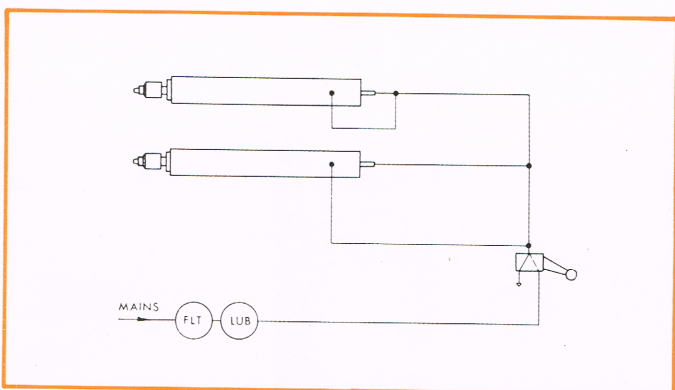
1.999 in (50.78 mm)
2.001 in (50.83 mm) dia.

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Information for use when laying out Self-Feed Unit circuits

As a general guide each Self Feed Unit when working at maximum horsepower has an average air consumption of 19ft³/min. (0,54m³/min.) of free air at a working pressure of 80/85lb/in² (5,6/6,0 Kg/cm²). Valving and pipework should be sized in accordance with this requirement. To assist in maintaining these conditions the following points are offered for guidance:

1. Minimum valve sizes should be as follows:
 1 Self-feed unit use 1/4" BSP valve.
 2-3 Self-feed units use 1/2" BSP valve.
 4-6 Self-feed units use 3/4" BSP valve.
 7-10 Self-feed units use 1" BSP valve.
 11-12 Self-feed units use 2 x 3/4" valves.
2. Pipe from the air supply line to the valve should be one size larger than the valve size.
3. It is essential that a vitalizer (filter and lubricator) is inserted in the supply line to the valve with ports equal to the size of the pipe.
4. When using pipe as a manifold use a size larger than the valve port size.
5. Use pipe from the valve to the manifold equal in size to the valve port size.
6. Hose or tubing from the manifold to the tool should have a minimum bore of 5/16".

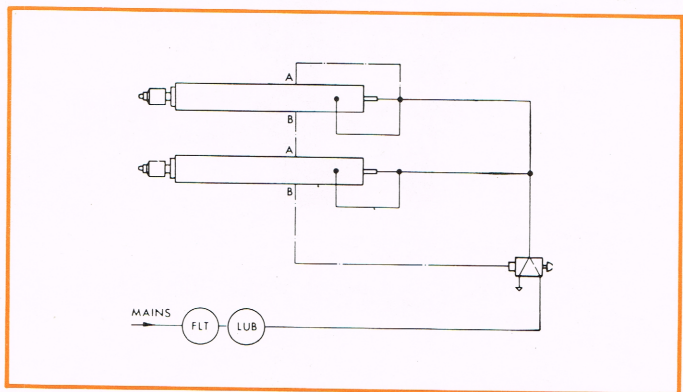
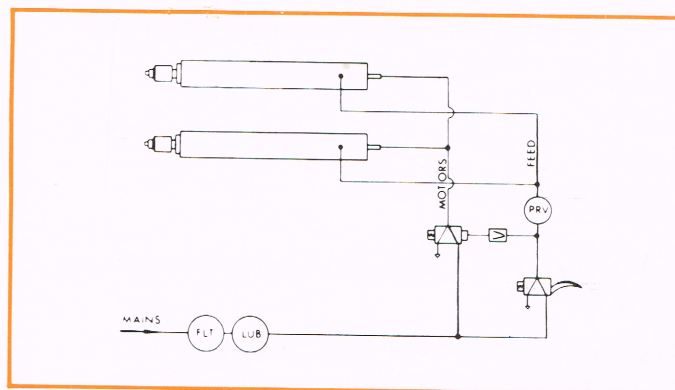


Simple manual control

For simple operations the tools can be advanced and retracted manually by a three-way hand lever or foot valve. This provides for drill rotation on the forward stroke but not on the return. Air supply to feed cylinder can be tapped off adjacent to the tool as shown in upper diagram to reduce hose lengths, or at the valve as shown in the lower diagram if more convenient.

Manual control with variable thrust pressure and rotation during return stroke

The tools are advanced and retracted by manual operation of the three-way hand or foot valve. Separate air lines are provided to the motors and feed cylinders enabling the thrust pressure to be controlled by a pressure regulating valve when using small diameter drills and/or drilling plastics or similar brittle materials. The inclusion of an air-operated spring return three-way valve and associated restrictor enables the motors to be kept revolving during retraction.



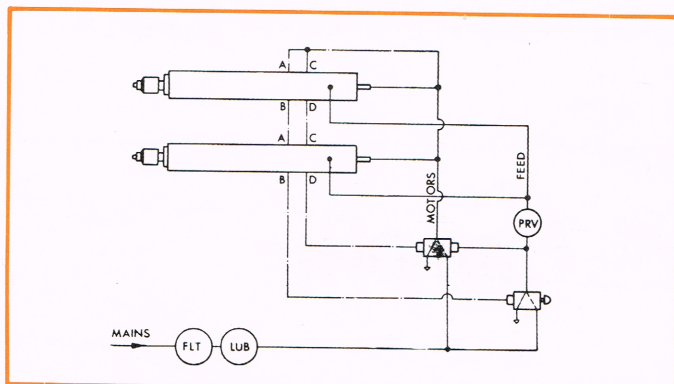
Automatic control with variable thrust pressure and rotation during return stroke

Separate airlines are used for the motors and the feed cylinders so that the thrust pressure can be regulated by the pressure reducing valve. Motors rotate during retraction until an internal valve is tripped. The signal from this cuts off the air supply. This arrangement is recommended for self-feed tappers.

The positions of the pilot valve connections A, B, C, D, as shown above are diagrammatic and are not intended to relate to their actual positions.

Simple automatic control

Momentary depression of the three-way push button valve (air return) will advance the units. Retraction occurs when the internal pilot valves, connected in series, are tripped at the set stroke of the units. This passes a signal which reverses the push button valve and exhausts air from the system so that the tool retracts without rotation. If precise depth control is required, a delay must be introduced into the signal from the pilot valves so that the units dwell at the bottom of their stroke.



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Peck feed element



This simple peck feed element has been developed to provide variable stroke control which enables BroomWade Self-Feed units to be easily adapted for deep hole drilling. Customers existing installations can be quickly and easily modified to accept the adaption. The use of a simple variable timer and its associated fluidic controls provides BroomWade Self-Feed units with the following positive advantages:

- Overcomes problem of swarf removal normally associated with deep hole drilling.
- Improved drill life results from better utilisation of coolant application.
- Full motor power and optimum drill cutting speeds maintained during complete drilling cycle.
- Less drill breakage reduces costs of deep hole drilling.
- Ideally suited to small diameter drilling applications ($\frac{1}{10}$ " dia.)
- Reduced maintenance costs. Complete system pneumatically controlled.

Automatic control with **VARIABLE THRUST, PRESSURE AND ROTATION DURING RETURN STROKE WITH PECK FEED FACILITY**

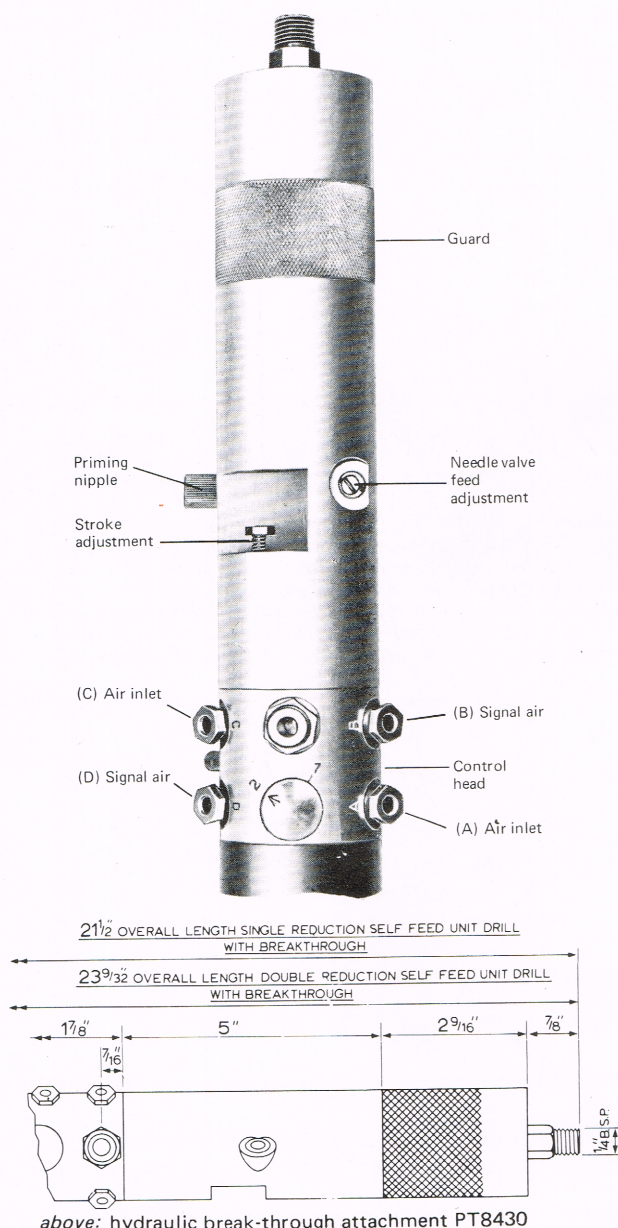
Separate airlines are used for the motors and the feed cylinders so that the thrust pressure can be regulated by the pressure reducing valve. A pecking action takes place during the forward stroke of the machine.

The number of pecks can be varied to suit specific applications by adjusting each cutting cycle through the medium of a built in variable timer and its associated fluidic controls.

When full depth of hole is completed the tool retracts, tripping an internal valve which cuts off the motor supply valve. During the complete cycle of drilling and pecking the motor rotates on both forward and return strokes.

Hydraulic break-through attachment

This provides for controlled thrust during break-through to avoid possible damage to the component or drill point, and to eliminate burrs. The length of hydraulically controlled stroke is infinitely variable from $0 - \frac{1}{2}$ " ($0 - 12,7$ mm) enabling the attachment to be used as a hydraulic feed control when drilling plastics or similar materials, up to a maximum of $\frac{1}{2}$ " ($12,7$ mm) stroke. The extent of hydraulic resistance is variable by means of a needle valve. Feed rate is also adjustable. If ordered with a Self-Feed Unit, the attachment will be fitted. When ordered separately it can be easily assembled to the unit by removing the control head and guard, substituting the piston rod extension supplied, and re-assembling the control head with the hydraulic break-through attached. The guard is then fitted to the rear of the attachment.



above: hydraulic break-through attachment PT8430



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Prices on application

*We reserve the right
to alter prices, details
and specifications
without notice*