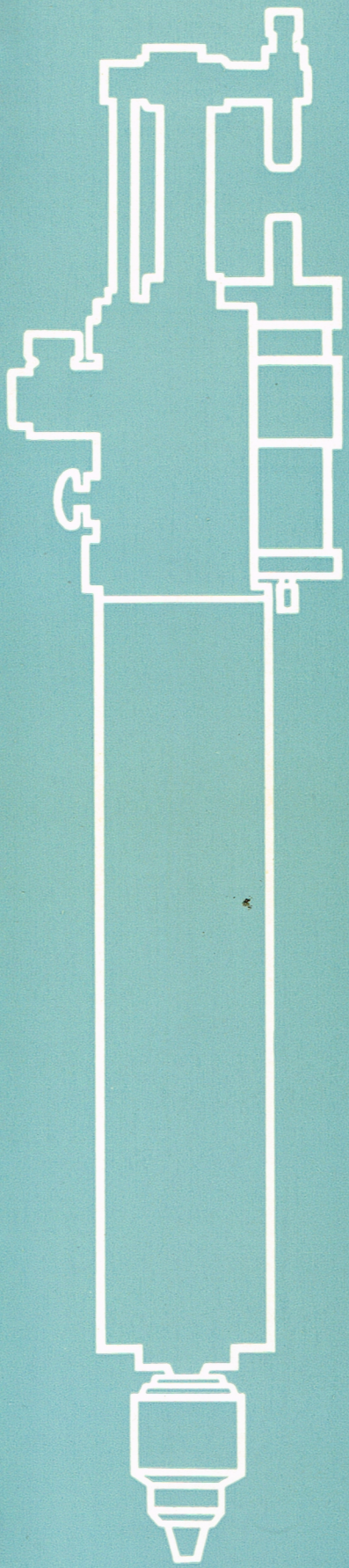
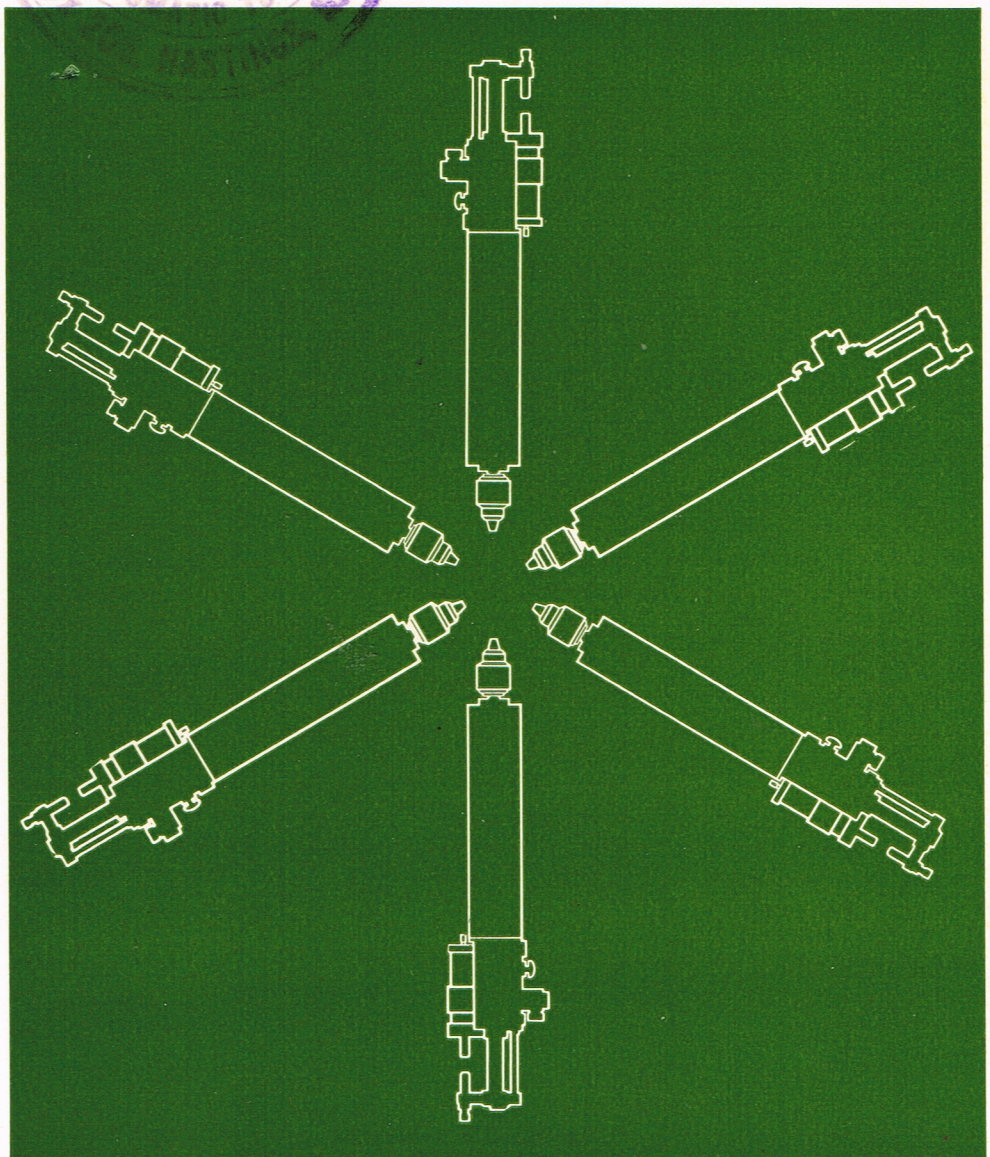


Desoutter

Auto Feed Drills and Tappers



Desoutter

AFD

The System for Multi-Drilling

COMPLETELY AUTOMATIC CYCLE

All controls contained inside the head.
Adjustable air feed; accurate control of depth.
Emergency retraction button.

CHOICE OF TWO MOTORS

Governed motor for economy.
Ungoverned high output motor for heavy duty work.

DETACHABLE HYDRAULIC CONTROL UNIT

Built-in oil reservoir with visible oil level indicator.
Hydraulic feed rate adjustment.

WIDE SPEED RANGE

Eighteen different speeds from 23,000 – 450 r.p.m.

COMPLETE MOUNTING SYSTEM

Interchangeable tubes, clamps and brackets for fixing singly or in groups at any desired angle.

WIDE RANGE OF MODELS

Eighteen drills, five tappers.

HYDRAULIC OIL

A specially prepared oil is available from Desoutter for use in the Hydraulic Control Unit. A filling gun has also been designed to facilitate service.
Details will be supplied on request.

All the motors and gearboxes are the same length. The new tangential blade layout results in less wear, and gives several times normal running life, chucks are taper mounted, for accuracy, on chuck spindles provided with double row ball races. Erickson type chucks are recommended for precise drilling on the 20,000 rpm models but they can, of course, be fitted to any model.

For a single tool, the control head needs only one air connection; it also contains all its own valves, giving the tool a completely automatic cycle. Once started the tool will advance to a predetermined depth, retract to its original position and switch itself off ready for the next cycle. The emergency button can be used at any point in the forward stroke to return the tool immediately to its starting position.

The Auto Feed Drill can be used as a single unit or in a multiple setup of any number of tools. Provision is made in the control head for air signals to start and stop the action and also an air signal is developed at the end of the cycle which can be used, with suitable circuits, to initiate other drills, indexing or clamping, etc.

The design of the control head is such that even in a multiple drilling arrangement where a number of tools are connected together to one starting valve, each tool can still be tried independently of the others by pressing its own starting button. A small signal of air is all that is needed to operate a shuttle valve in each tool head, thus opening the main air supply to each motor; this means that a number of tools can be started simultaneously by one valve of small capacity, as the supply of air to the motors does not pass through it. There is an air feed control – with a very fine adjustment – which enables the tool to be used for drilling and tapping very small diameters; $\frac{3}{64}$ in (1 mm) diameter holes and 6BA (3,0 mm) threads.

At the top of the head there are two depth stops, one for the stroke of the drill unit (maximum 3 in – 75 mm), and the other for the amount of controlled stroke required from the hydraulic check unit (maximum $1\frac{1}{2}$ in – 38 mm).

The hydraulic unit is needed at such times as when breaking through, or when drilling through a cross hole. It is quickly detachable by means of two screws, and it has its own fine feed adjustment on the outside. There is a built-in oil reservoir containing excess oil, and a visible oil level indicator on the end of the hydraulic unit which indicates the oil level in the reservoir.

A complete system of tubes, clamps and different mounting brackets is available so that a number of tools can be mounted together at any desired angle; the tubes are the same diameter as the outer case of the tool, and are available in standard lengths of 12 in, 18 in, 24 in and 30 in (305 mm, 457 mm, 610 mm and 760 mm).

There are twenty three different models available, eighteen drills and five tappers. In addition, each of the drills can be fitted with a jig drill nose with bayonet fitting for portable jig-drilling applications.

Desoutter

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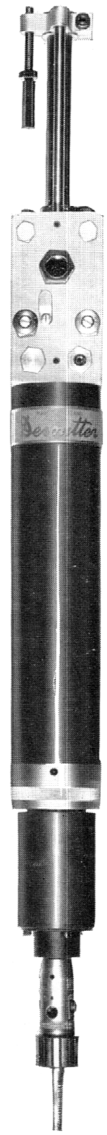
DRILL



TAPPER

TYPE	MODEL	SPEED	CHUCK CAPACITY		WEIGHT	
		rpm	in	mm	lb	kg
DRILLS	AFDL-4600	4 600	$\frac{3}{8}$	10	$20\frac{1}{4}$	8,1
	AFDL-3200	3 200	$\frac{3}{8}$	10	$20\frac{1}{4}$	8,1
	AFDL-2300	2 300	$\frac{3}{8}$	10	$20\frac{1}{4}$	8,1
	AFDL-1700	1 700	$\frac{3}{8}$	10	$20\frac{1}{4}$	8,1
	AFDL-1000	1 000	$\frac{1}{2}$	13	$20\frac{1}{4}$	8,1
	AFDL-700	700	$\frac{1}{2}$	13	$20\frac{1}{4}$	8,1
	AFDL-550	550	$\frac{1}{2}$	13	$20\frac{1}{4}$	8,1
TAPPERS	AFDL-T-700	700	$\frac{3}{8}$	10	$26\frac{1}{4}$	11,9
	AFDL-T-550	550	$\frac{3}{8}$	10	$26\frac{1}{4}$	11,9

Main Air Inlet $\frac{3}{8}$ in BSP, $\frac{3}{8}$ in NPT

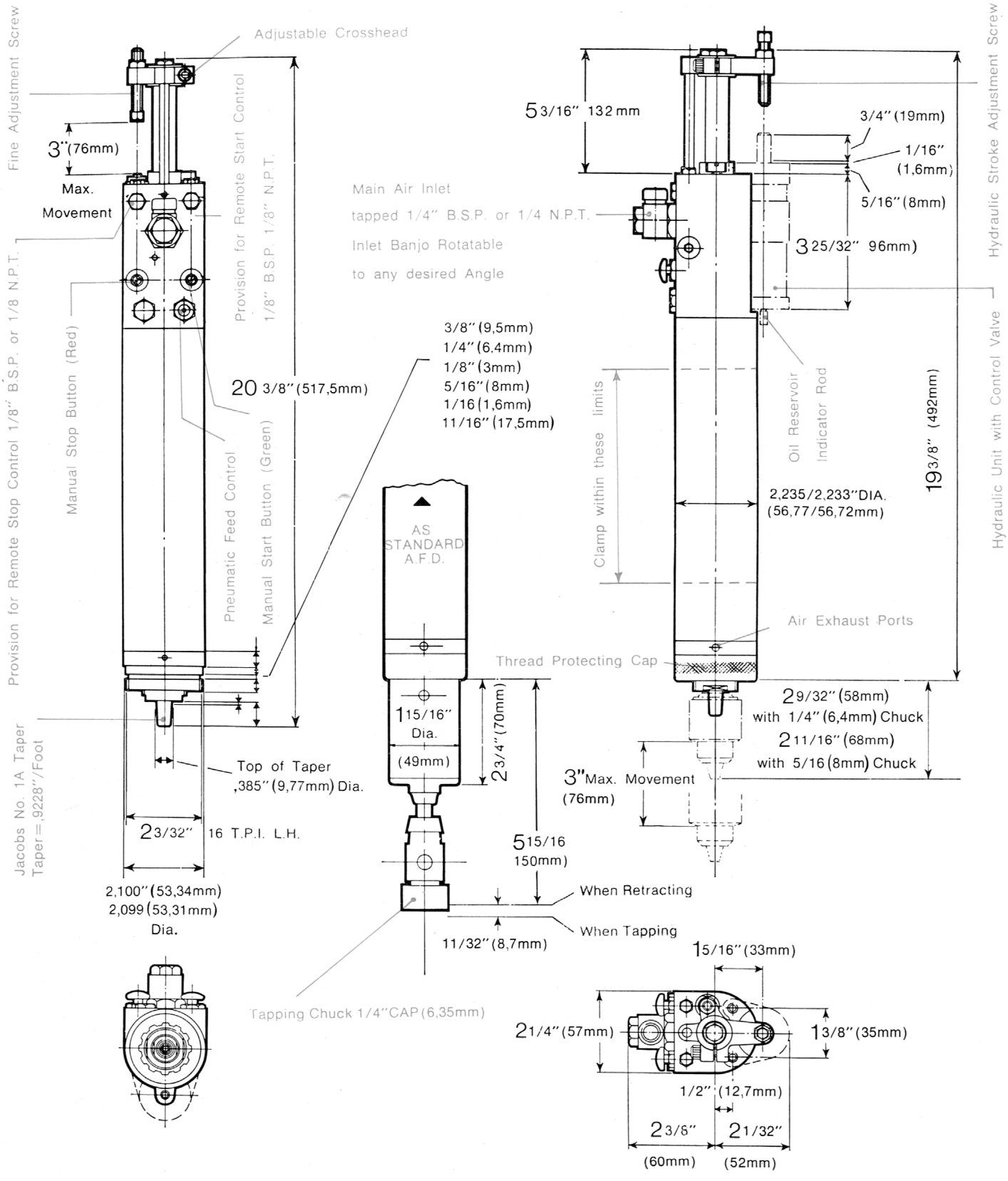
A new range of larger sized A.F.D., type 'L', are now available and full details will be supplied on request.

TYPE	MODEL	SPEED	CHUCK CAPACITY		WEIGHT	
		rpm	in	mm	lb	kg
DRILLS	AFD-20000	20 000	$\frac{1}{4}$	6	$9\frac{1}{2}$	4,3
	AFD-9000	9 000	$\frac{1}{4}$	6	$9\frac{1}{2}$	4,3
	AFD-5000	5 000	$\frac{1}{4}$	6	$9\frac{1}{2}$	4,3
	AFD-3500	3 500	$\frac{1}{4}$	6	$9\frac{1}{2}$	4,3
	AFD-2750	2 750	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
	AFD-1550	1 550	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
	AFD-1200	1 200	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
	AFD-730	730	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
	AFD-450	450	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
TAPPERS	AFD-T-730	730	$\frac{1}{4}$	6	$10\frac{1}{4}$	4,6
	AFD-T-450	450	$\frac{5}{16}$	8	$10\frac{1}{4}$	4,6

MODEL	SPEED	CHUCK CAPACITY		WEIGHT	
	rpm	in	mm	lb	kg
AFDK-23000	23 000	$\frac{1}{4}$	6	$9\frac{1}{2}$	4,3
AFDK-10000	10 000	$\frac{1}{4}$	6	$9\frac{1}{2}$	4,3
AFDK-5400	5 400	$\frac{1}{4}$	6	$9\frac{1}{2}$	4,3
AFDK-3800	3 800	$\frac{1}{4}$	6	$9\frac{1}{2}$	4,3
AFDK-3000	3 000	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
AFDK-1700	1 700	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
AFDK-1150	1 150	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
AFDK-800	800	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
AFDK-500	500	$\frac{5}{16}$	8	$9\frac{1}{2}$	4,3
AFDK-T-1150	1150	$\frac{1}{4}$	6	$10\frac{1}{4}$	4,6
AFDK-T-800	800	$\frac{1}{4}$	6	$10\frac{1}{4}$	4,6
AFDK-T-500	500	$\frac{5}{16}$	8	$10\frac{1}{4}$	4,6

Main Air Inlet $\frac{1}{4}$ in BSP or $\frac{1}{4}$ in NPT.

The standard AFD is fitted with a governed motor to give improved economy. The AFDK range with its ungoverned motor is intended for use where higher power output is consistently required.


Fine Adjustment Screw
Adjustable Crosshead
3" (76mm)
Max.
Movement
Provision for Remote Start Control
1/8" B.S.P. 1/8" N.P.T.
Main Air Inlet
tapped 1/4" B.S.P. or 1/4 N.P.T.
Inlet Banjo Rotatable
to any desired Angle
5 3/16" 132 mm
3/4" (19mm)
1/16"
(1,6mm)
5/16" (8mm)
3 25/32" 96mm)
Hydraulic Stroke Adjustment Screw
Provision for Remote Stop Control 1/8" B.S.P. or 1/8 N.P.T.
Manual Stop Button (Red)
20 3/8" (517,5mm)
Pneumatic Feed Control
Manual Start Button (Green)
3/8" (9,5mm)
1/4" (6,4mm)
1/8" (3mm)
5/16" (8mm)
1/16 (1,6mm)
11/16" (17,5mm)
Clamp within these limits
Oil Reservoir
Indicator Rod
19 3/8" (492mm)
Hydraulic Unit with Control Valve
2,235/2,233"DIA.
(56,77/56,72mm)
AS
STANDARD
A.F.D.
Air Exhaust Ports
Thread Protecting Cap
1 15/16"
Dia.
(49mm)
2 3/4" (70mm)
2 9/32" (58mm)
with 1/4" (6,4mm) Chuck
2 11/16" (68mm)
with 5/16 (8mm) Chuck
3" Max. Movement
(76mm)
Jacobs No. 1A Taper
Taper = ,9228"/Foot
Top of Taper
,385" (9,77mm) Dia.
2 3/32" 16 T.P.I. L.H.
5 15/16
150mm)
When Retracting
When Tapping
11/32" (8,7mm)
2,100" (53,34mm)
2,099 (53,31mm)
Dia.
Tapping Chuck 1/4"CAP (6,35mm)
1 5/16" (33mm)
2 1/4" (57mm)
1 3/8" (35mm)
1/2" (12,7mm)
2 3/8"
(60mm)
2 1/32"
(52mm)

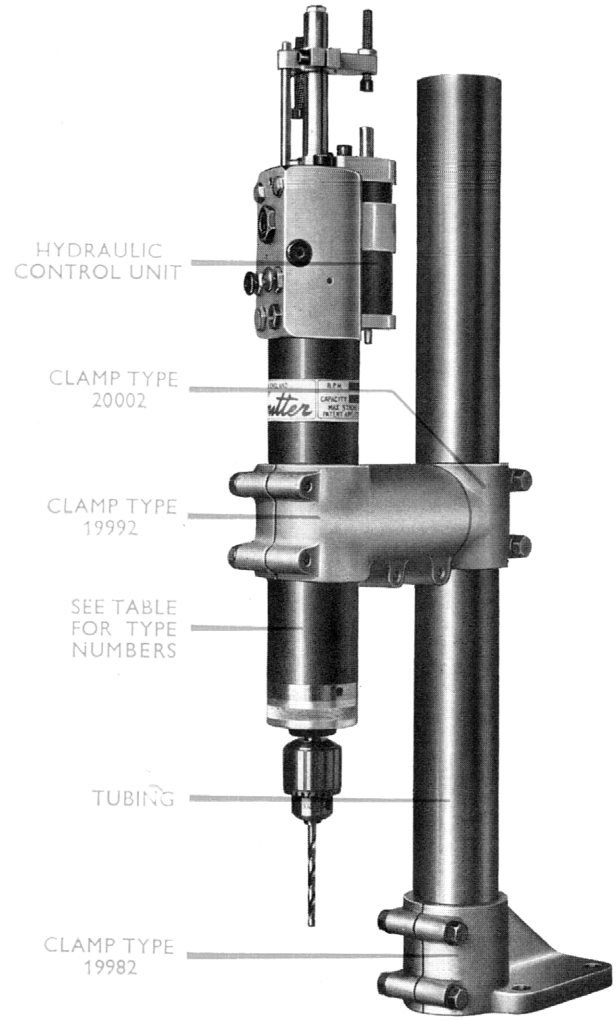
CLAMPS

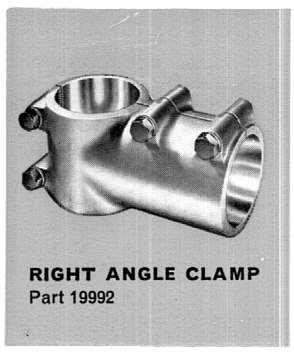
By means of the 6 clamps shown and standard tubing the Auto Feed Drill can be mounted in any position to provide a complete system for drilling and tapping.

TUBING

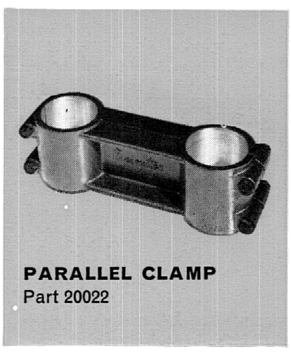
This tubing is of the same diameter as the outer case of the tool and is available in standard lengths as follows:

9 in (228 mm)	Part 9452
12 in (305 mm)	,, 9462
18 in (457 mm)	,, 9472
24 in (610 mm)	,, 9482
30 in (760 mm)	,, 9492

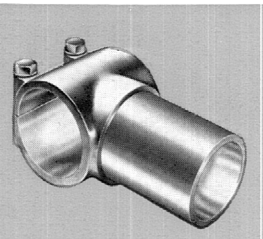




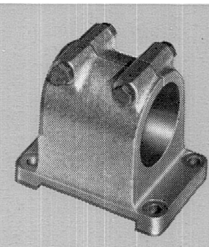
RIGHT ANGLE CLAMP
Part 19992



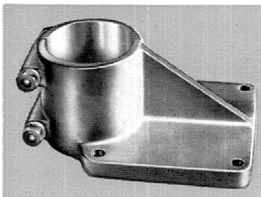
PARALLEL CLAMP
Part 20022



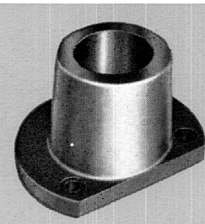
SWIVEL CLAMP
Part 20002



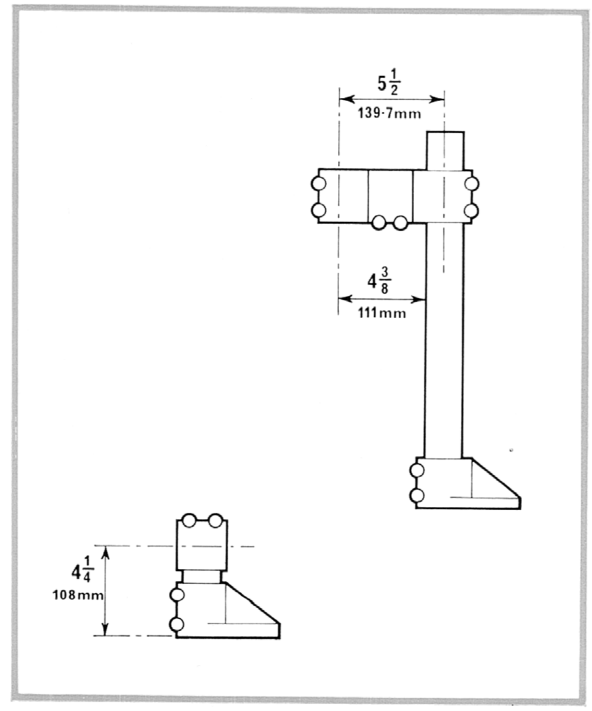
HEAVY DUTY BAR CLAMP
Part 20032

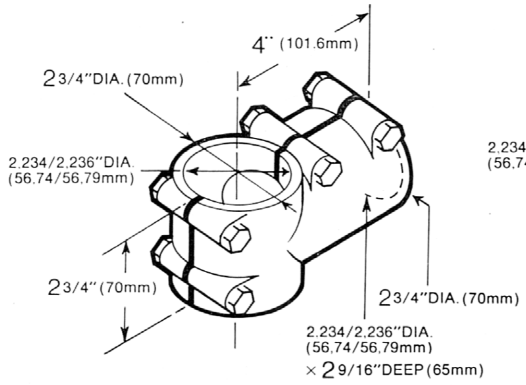


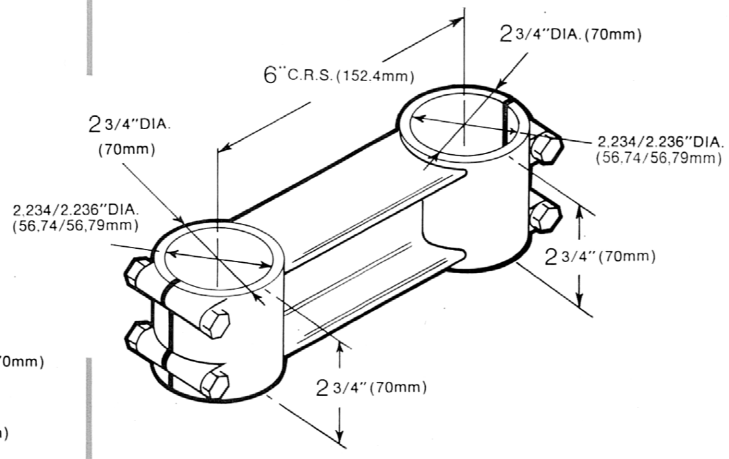
BASE CLAMP
Part 19982

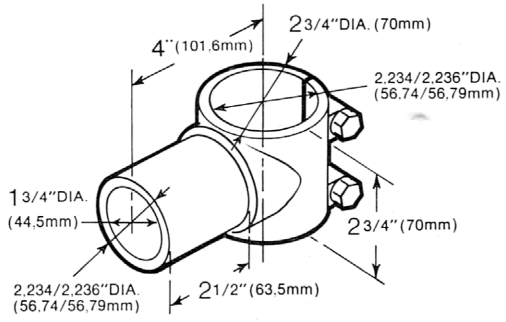


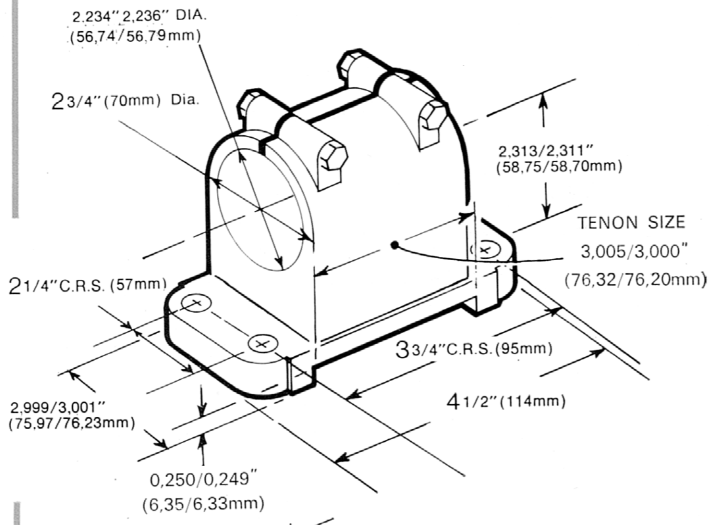
HEAVY DUTY PILLAR SUPPORT
Part 20042

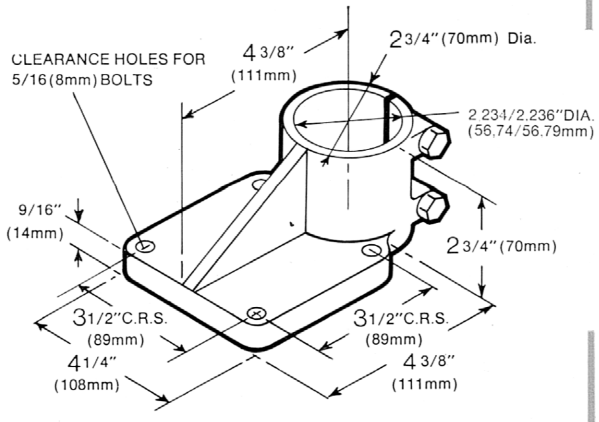


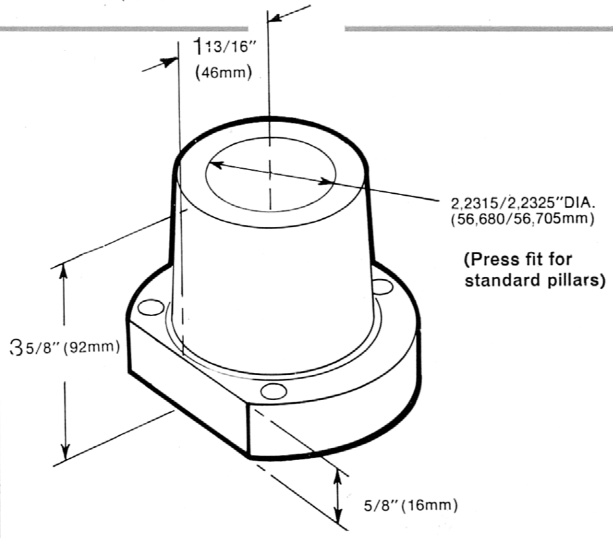

4" (101.6mm)
2 3/4"DIA. (70mm)
2.234/2.236"DIA.
(56.74/56.79mm)
2 3/4" (70mm)
2 3/4"DIA. (70mm)
2.234/2.236"DIA.
(56,74/56,79mm)
× 2 9/16"DEEP (65mm)


2 3/4"DIA. (70mm)
6" C.R.S. (152.4mm)
2 3/4"DIA.
(70mm)
2.234/2.236"DIA.
(56.74/56.79mm)
2.234/2.236"DIA.
(56,74/56,79mm)
2 3/4" (70mm)
2 3/4" (70mm)

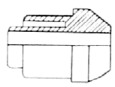
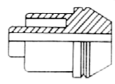

4" (101.6mm)
2 3/4"DIA. (70mm)
2.234/2.236"DIA.
(56.74/56.79mm)
1 3/4"DIA.
(44,5mm)
2 3/4" (70mm)
2.234/2.236"DIA.
(56,74/56,79mm)
2 1/2" (63.5mm)


2.234",2.236" DIA.
(56,74/56,79mm)
2 3/4" (70mm) Dia.
2,313/2,311"
(58,75/58,70mm)
TENON SIZE
3,005/3,000"
(76,32/76,20mm)
2 1/4"C.R.S. (57mm)
3 3/4"C.R.S. (95mm)
4 1/2" (114mm)
2,999/3,001"
(75,97/76,23mm)
0,250/0,249"
(6,35/6,33mm)


CLEARANCE HOLES FOR
5/16 (8mm) BOLTS
4 3/8"
(111mm)
2 3/4" (70mm) Dia.
2.234/2.236"DIA.
(56,74/56.79mm)
9/16"
(14mm)
2 3/4" (70mm)
3 1/2"C.R.S.
(89mm)
3 1/2"C.R.S.
(89mm)
4 1/4"
(108mm)
4 3/8"
(111mm)


1 13/16"
(46mm)
2.2315/2.2325"DIA.
(56,680/56,705mm)
(Press fit for
standard pillars)
3 5/8" (92mm)
5/8" (16mm)

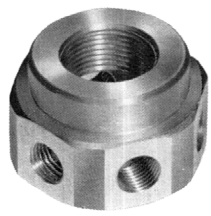
'NITEX' CONNECTORS

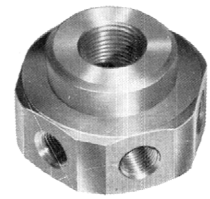
	O.D. of Tube	I.D. of Tube	Part
	$\frac{3}{8}$ in (9,5mm)	,295 in	54753
	$\frac{3}{16}$ in (4,8mm) $\frac{1}{4}$ in (6,4mm)	,110 in ,150 in	69473 54803

O.D. of Tube		X	O.D. of Tube	'X' U.N.F. Thread	Part
O.D. of Tube		X	$\frac{3}{16}$ in (4,8mm)	$\frac{3}{8}$ in × 24 TPI	69483
			$\frac{1}{4}$ in (6,4mm)	$\frac{7}{16}$ in × 20TPI	54793
			$\frac{3}{8}$ in (9,5mm)	$\frac{9}{16}$ in × 18TPI	54743

DISTRIBUTOR BLOCKS

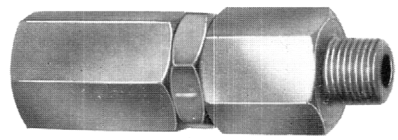
The distributor block enables 6 feeds to be arranged to groups of tools. Available for $\frac{1}{8}$ in (for signal and control, part No. 54873) and $\frac{1}{4}$ in (for main motor feeds, part No. 54493) B.S.P. fittings.





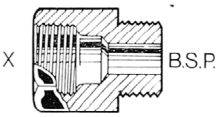
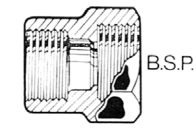
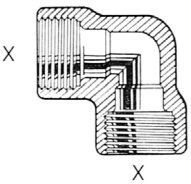
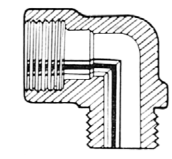
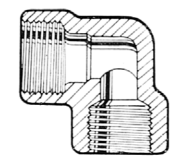
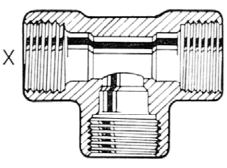
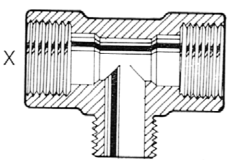
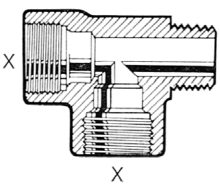
NON RETURN VALVE

When several A.F.D.'s are connected together in a circuit for multiple operation it is recommended that this small valve (Part 76393) be connected to the Remote Start and Retract air inlet ports.



NYLON HOSE

O.D.	I.D.	Part
$\frac{3}{16}$ in	0,110 in	69513
$\frac{1}{4}$ in	0,150 in	54763
$\frac{3}{8}$ in	0,295 in	54723

	'X' Tube	BSP Thread	Part
X  B.S.P.	$\frac{3}{16}$ in (4,8mm) $\frac{1}{4}$ in (6,4mm) $\frac{1}{4}$ in (6,4mm) $\frac{3}{8}$ in (9,5mm)	$\frac{1}{8}$ in $\frac{1}{8}$ in $\frac{1}{4}$ in $\frac{1}{4}$ in	69493 54773 54983 54733
X  B.S.P.	$\frac{3}{8}$ in (9,5mm)	$\frac{1}{4}$ in	68233
X  X	$\frac{1}{4}$ in (6,4mm) $\frac{3}{8}$ in (9,5mm)		64823 64833
X  B.S.P.	$\frac{3}{16}$ in (4,8mm) $\frac{1}{4}$ in (6,4mm) $\frac{1}{4}$ in (6,4mm) $\frac{3}{8}$ in (9,5mm)	$\frac{1}{8}$ in $\frac{1}{8}$ in $\frac{1}{4}$ in $\frac{1}{4}$ in	69503 54783 54993 59543
X  B.S.P.	$\frac{1}{4}$ in (6,4mm)	$\frac{1}{8}$ in	65143
X  X X	$\frac{1}{4}$ in (6,4mm) $\frac{3}{8}$ in (9,5mm)		64853 64863
X  X B.S.P.	$\frac{1}{4}$ in (6,4mm) $\frac{3}{8}$ in (9,5mm)	$\frac{1}{8}$ in $\frac{1}{4}$ in	64873 64883
X  B.S.P. X	$\frac{1}{4}$ in (6,4mm) $\frac{3}{8}$ in (9,5mm)	$\frac{1}{8}$ in $\frac{1}{4}$ in	64893 64903

When drilling a blind hole the A.F.D. will function automatically and give satisfactory results, but it is advisable to fit a check unit when it is necessary to break through the material or into another hole and so restrict the acceleration of the feed that would otherwise occur. In this case feed is adjusted to prevent the acceleration just mentioned so that the initial feed taken on by the air is carried through at the same rate when the drill breaks through the component.

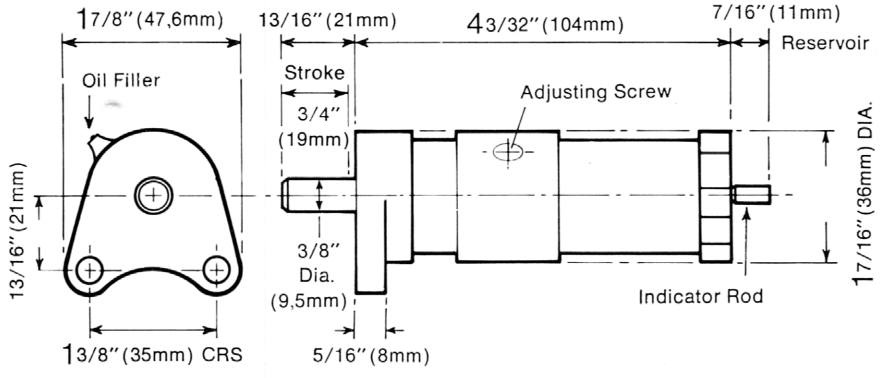
When using very small drills, however, say $\frac{5}{32}$ in or below, it is found that the overall feed rate to approach the component as adjusted on the air control, is rather slow, and therefore it is normal practice to accelerate rapidly until in contact with the plunger of the hydraulic check unit and complete the actual drilling of the material by adjusting the feed on the hydraulic control.

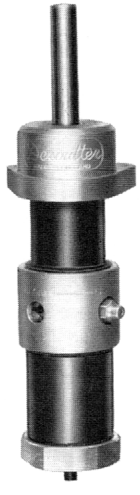
The feed rate adjustment for the hydraulic check unit is exactly the same as the feed control on the A.F.D. is, that clockwise to reduce the feed and anti-clockwise to increase the feed. There are 2 models of H.C.U. $\frac{3}{4}$ in (19 mm) and $1\frac{1}{2}$ in (38 mm) strokes.

The former is used when control is required for only a short stroke, as when breaking through. The longer stroke model would be used, for example, when control is required over a long period or when drilling both sides of a tube.

Part 91623

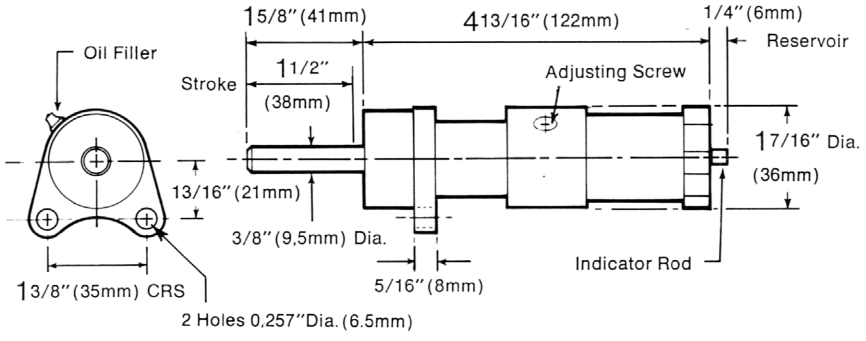
H.C.U. $\frac{3}{4}$ in STROKE





Part 157763

H.C.U. $1\frac{1}{2}$ in STROKE



This twin head drilling attachment enables the A.F.D. to drill two holes simultaneously on centres which are infinitely variable between $\frac{3}{4}$ in and $3\frac{1}{4}$ in (19 mm to 82 mm). The attachment is simply and speedily attached to the A.F.D. and will provide many extra applications, particularly for close centre drilling.

Guide pillars are incorporated into the design and, therefore, no additional means of clamping the A.F.D. are required other than the normal ancillary clamps provided for the system.

The twist drills are fitted by means of collets which are available in a range of sizes, as shown in the table below.

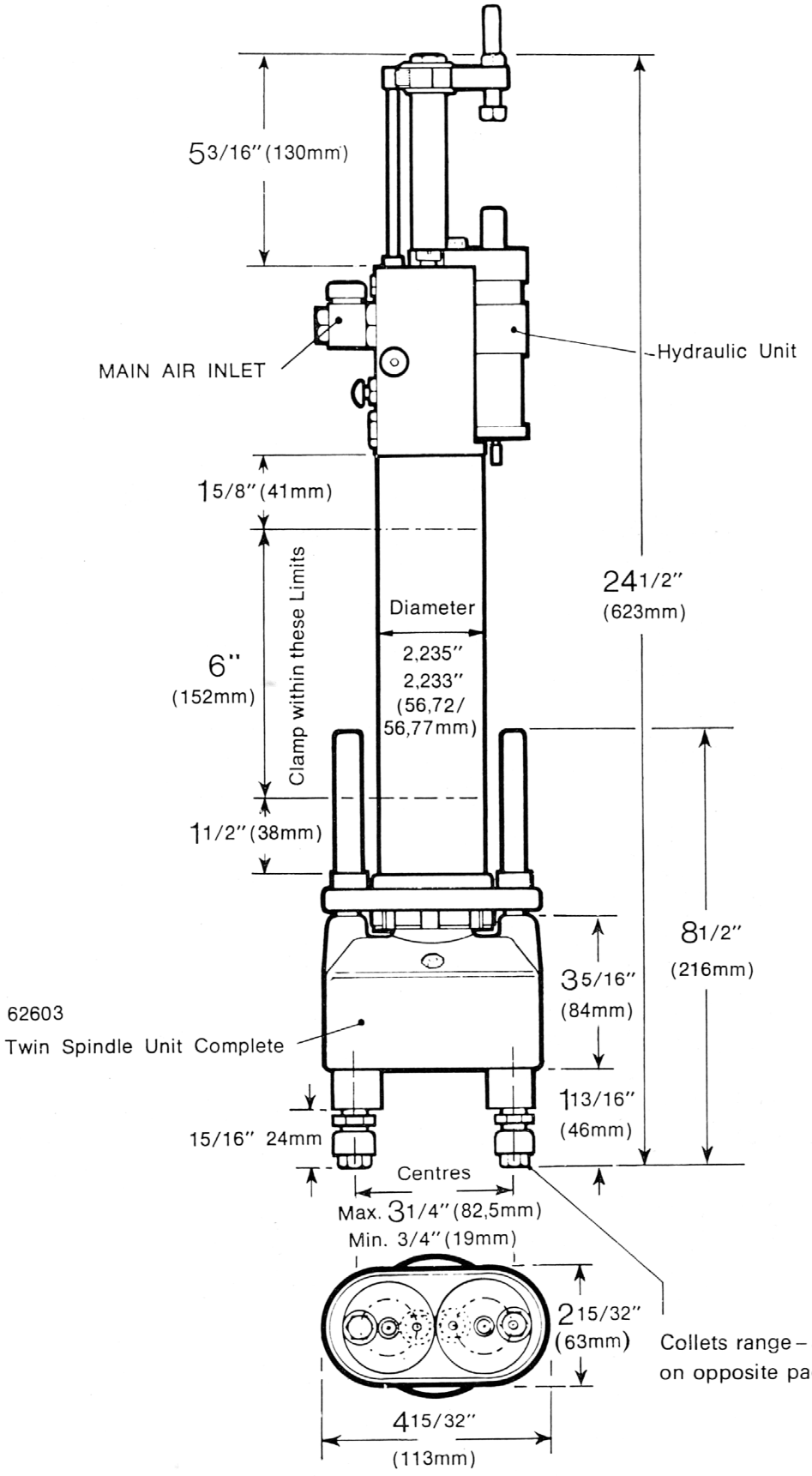
The drilling stroke of the existing A.F.D. is unaffected by the addition of the attachment and remains at 3 in.

It is not recommended that this unit is fitted to 20 000 rpm models.

For drilling in adjustable centres from $\frac{1}{2}$ in to $\frac{3}{4}$ in (12–19 mm) special lightweight heads are available on request. Special heads with fixed centres are also available for twin or more spindles.

Size	*Part*
$\frac{1}{32}$ in	3772
$\frac{3}{64}$ in	3782
$\frac{1}{16}$ in	3792
$\frac{5}{64}$ in	3802
$\frac{3}{32}$ in	3812
$\frac{7}{64}$ in	3822
$\frac{1}{8}$ in	3832
$\frac{9}{64}$ in	3842
$\frac{5}{32}$ in	3852
$\frac{11}{64}$ in	3862
$\frac{3}{16}$ in	3872
$\frac{13}{64}$ in	3882
$\frac{7}{32}$ in	3892
$\frac{15}{64}$ in	3902
$\frac{1}{4}$ in	3912
0,8 mm	3922
0,9 mm	3932
1,0 mm	3942
1,1 mm	3952
1,2 mm	3962
1,3 mm	3972
1,4 mm	3982
1,5 mm	3992
1,6 mm	4002
1,7 mm	4012
1,8 mm	4022
1,9 mm	4032
2,0 mm	4042
2,1 mm	4052
2,2 mm	4062
2,3 mm	4072
2,4 mm	4082
2,5 mm	4092

Size	*Part*
2,6 mm	4102
2,7 mm	4112
2,8 mm	4122
2,9 mm	4132
3,0 mm	4142
3,1 mm	4152
3,2 mm	4162
3,3 mm	4172
3,4 mm	4182
3,5 mm	4192
3,6 mm	4202
3,7 mm	4212
3,8 mm	4222
3,9 mm	4232
4,0 mm	4242
4,1 mm	4252
4,2 mm	4262
4,3 mm	4272
4,4 mm	4282
4,5 mm	4292
4,6 mm	4302
4,7 mm	4312
4,8 mm	4322
4,9 mm	4332
5,0 mm	4342
5,1 mm	4352
5,2 mm	4362
5,3 mm	4372
5,4 mm	4382
5,5 mm	4392
5,6 mm	4402
5,7 mm	4412
5,8 mm	4422
5,9 mm	4432
6,0 mm	4442


5 3/16" (130mm)
MAIN AIR INLET
Hydraulic Unit
1 5/8" (41mm)
24 1/2"
(623mm)
Diameter
2,235"
2,233"
(56,72/
56,77mm)
6"
(152mm)
Clamp within these Limits
1 1/2" (38mm)
8 1/2"
(216mm)
3 5/16"
(84mm)
62603
Twin Spindle Unit Complete
1 13/16"
(46mm)
15/16" 24mm
Centres
Max. 3 1/4" (82,5mm)
Min. 3/4" (19mm)
2 15/32"
(63mm)
Collets range – as shown in table
on opposite page.
4 15/32"
(113mm)

BENCH UNIT

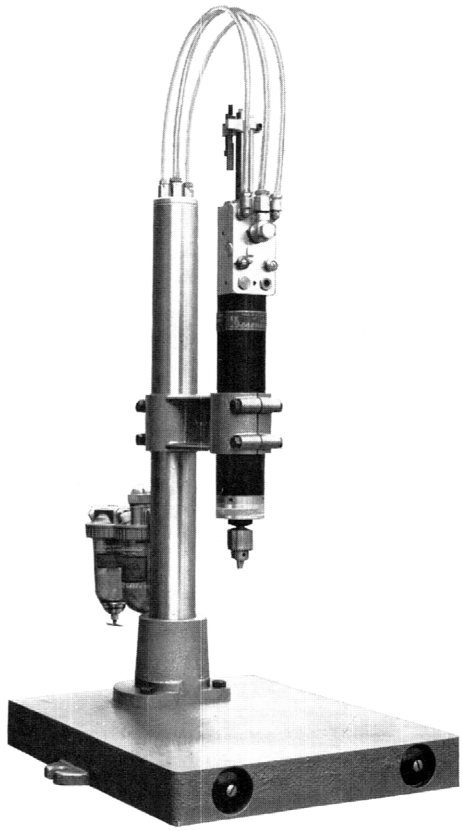
The bench unit consists of a large robust base plate on which provision is made for rigidly mounting a vertical column which will carry any of the nine standard drill models, with or without twin head attachments, or either of the two tapping models.

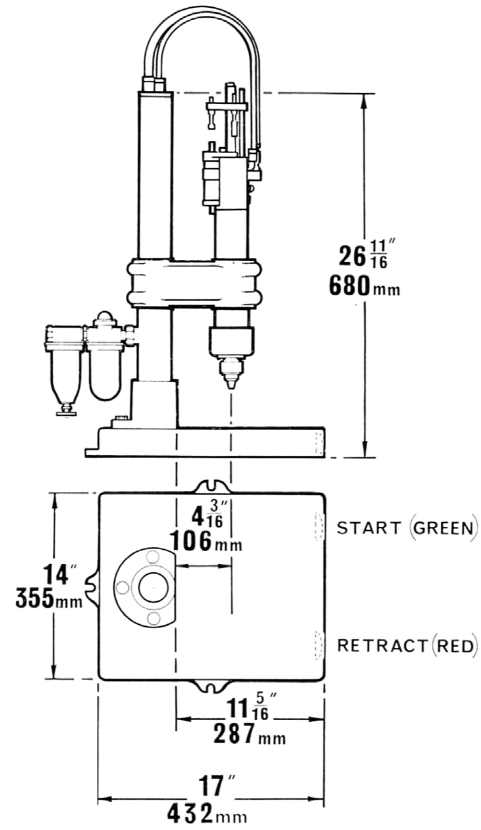
Incorporated in the unit are matching Air Line Lubricators and Air Line Filters. Control of the Drill or Tapper is from 'Push Button' valves conveniently placed in the front edge of the base casting. All that is needed for installation is a connection to a supply of compressed air at about 80 psi with a minimum bore of $\frac{3}{8}$ in.

By means of this unit users may utilise existing drill jigs and fixtures to obtain precision drilling where controlled feed rates are desirable to produce accurate holes free from heavy 'breakthrough' burrs and all the faults arising from the use of unskilled labour.

Due to the completely automatic cycle of the Auto Feed Drill it is quite practicable for one operator to control two or more of such units to achieve a high volume of production with no idle time.

Twenty three different models are available, for drills and tappers.

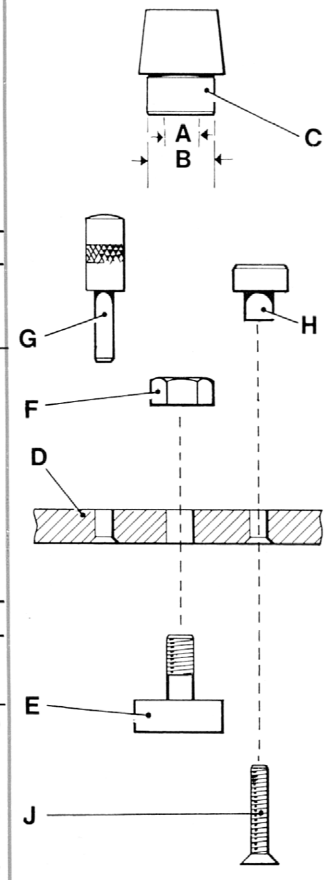


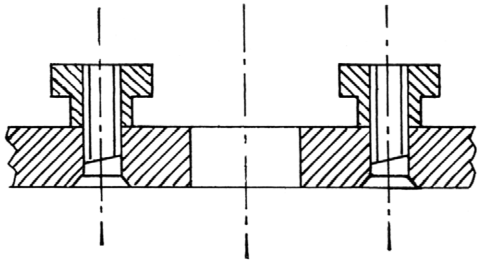


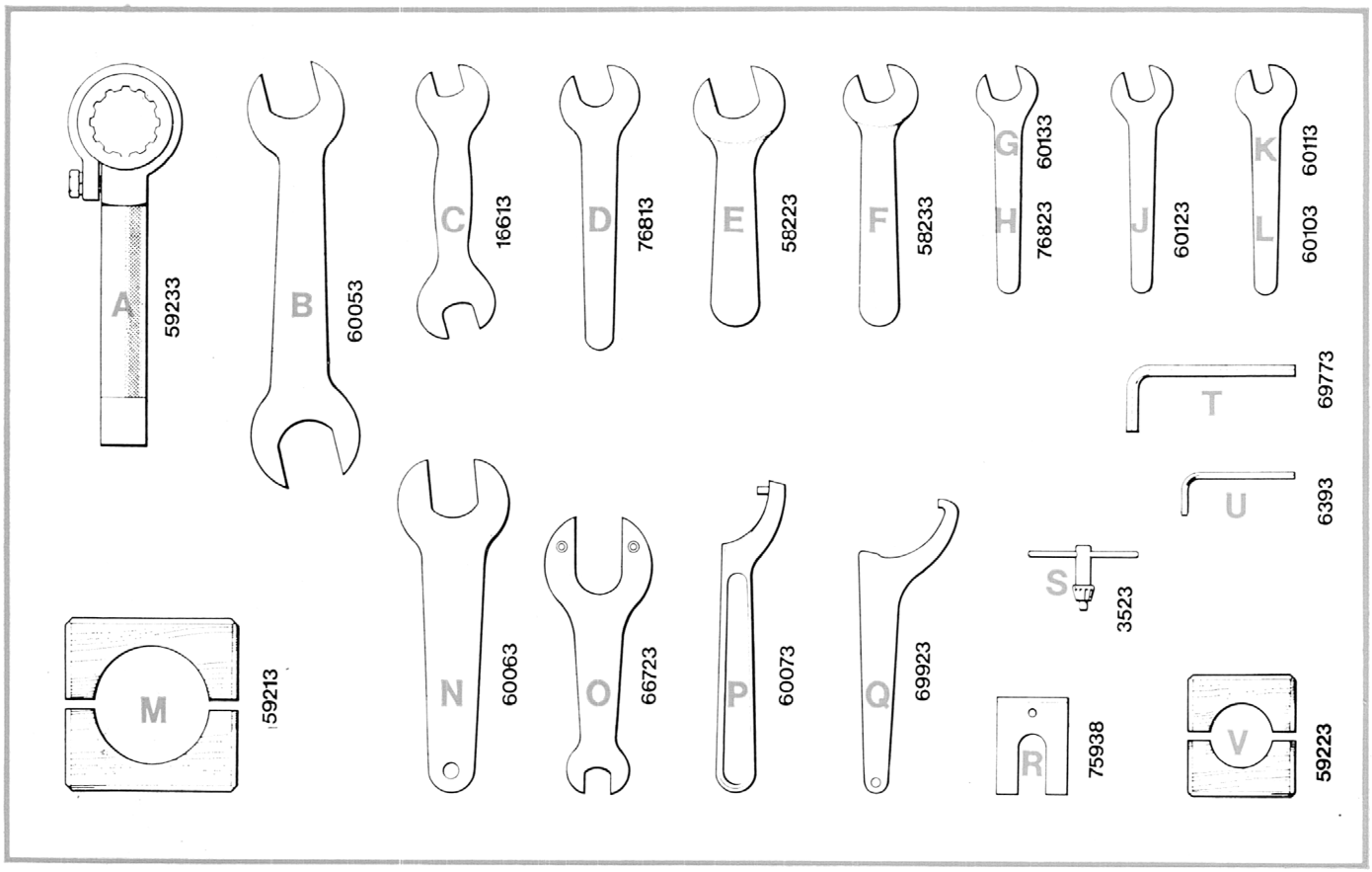
A DIA in	A DIA mm	B DIA in	B DIA mm	Part	
11/64	4,4	3/8	9,5	16972	
3/16	4,8	3/8	9,5	16982	
13/64	5,1	7/16	11,1	16992	C
7/32	5,5	7/16	11,1	17002	
15/64	5,9	7/16	11,1	17022	
1/4	6,4	7/16	11,1	17032	
17/64	6,7	1/2	12,7	17042	
9/32	7,1	1/2	12,7	17052	
19/64	7,5	1/2	12,7	17062	
5/16	7,9	1/2	12,7	17072	
21/64	8,3	1/2	12,7	17082	

A DIA mm	B DIA mm	Part	
3,0	10,0	17232	
3,5	10,0	17242	
4,0	10,0	17252	C
4,5	10,0	17262	
5,0	10,0	17272	
5,5	10,0	17282	
6,0	10,0	17292	
6,5	12,0	17302	
7,0	12,0	17322	
7,5	12,0	17332	
8,0	12,0	17342	

DESCRIPTION	SIZE in	SIZE mm	Part	
Jig Plate	1¾ crs	44,4 crs	17472	D
Interchangeable Buttons	3/8	9,5	17482	
Ditto		10,0	17492	
Ditto	7/16	11,1	17502	E
Ditto		12,0	17522	
Ditto	1/2	12,7	17532	
¼ in BSF Hex Nut			17602	F
Locating Pin			17622	G
Locating Stud			17632	H
2 BA C/Sunk Screw			17642	J







	DESCRIPTION	PART
A	A.F.D., Gearcase Spanner	59233
B	A.F.D., Front Bearing Housing Spanner. $1\frac{1}{8}$ in A/F (28,6 mm)	60053
	A.F.D., Air Inlet Cap Spanner 1,20 in A/F (30,5 mm)	60053
G	A.F.D., Control Top Spanner ,600 in A/F (15,2 mm)	60133
J	A.F.D., Control Top Spanner $\frac{9}{16}$ in A/F (14,3 mm)	60123
K	A.F.D., Control Top Spanner $\frac{1}{2}$ in A/F (12,7 mm)	60113
L	A.F.D., Control Top Spanner $\frac{7}{16}$ in A/F (11,1 mm)	60103
M	A.F.D., Outer Case Wood Blocks (Pair)	59213
N	A.F.D., Bearing Clamp Nut Spanner 1,01 in A/F 25,7 mm)	60063
P	A.F.D., Bearing Sleeve 'C' Spanner	60073
R	A.F.D., Chuck Removing Wedges (Pair)	75938

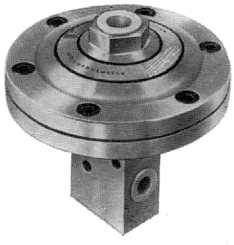
	DESCRIPTION	PART
S	A.F.D., Chuck Key No. 1 Jacob	3523
	No. 7 Jacob	1833
	No. 30 Jacob	1653
T	A.F.D., Crosshead Clamp Screw Hexagon Key $\frac{1}{4}$ in A/F (6,4 mm)	69773
V	A.F.D., Motor Case Wood Blocks (Pair)	59223
E	A.F. Tapper, Chuck Sleeve Spanner	58223
F	A.F. Tapper, Chuck Body Spanner	58233
U	A.F. Tapper, Chuck Hexagon Key $\frac{1}{8}$ in A/F (3,2 mm)	6393
D	Bristol Erickson Collet Holder, Nut Spanner $\frac{3}{4}$ in A/F (19,0 mm)	76813
H	Bristol Erickson Collet Holder, Spanner $\frac{5}{8}$ in A/F (15,9 mm)	76823
C	T.H.A., Collet Nut Spanner $\frac{19}{32}$ in A/F (15,1 mm)	16613
O	T.H.A., Drive Spindle Housing and Collet Spindle Spanner	66723
Q	T.H.A., 'C' Spanner	69928

Type VP 13B/24
miniature pilot valve 3 way
ball operated

Type VP 13B/23
miniature pilot valve
palm operated

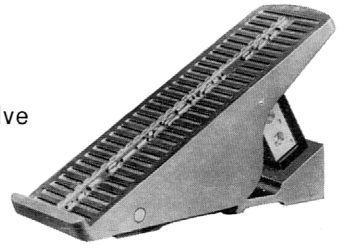
Type VP 13B/19
miniature pilot valve
air operated

Type VP 13B/RT
miniature pilot valve
roller operated



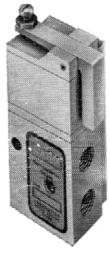
Type VP 13B/25
miniature pilot valve
diaphragm operated

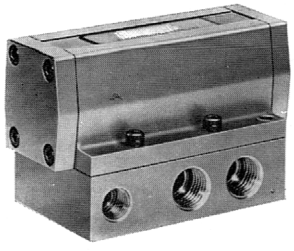
Type VP 13B/6
miniature pilot valve
foot operated



Type VP 13B/3
miniature pilot valve
switch operated

Type VP 13B/26
micro pilot valve
lever operated

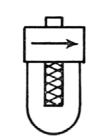
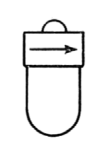
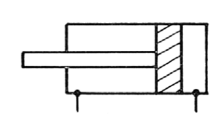
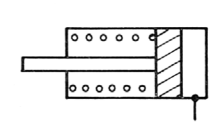
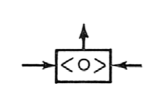
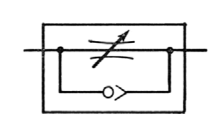


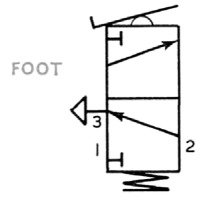
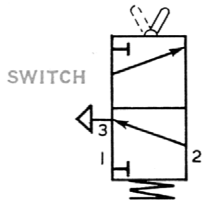
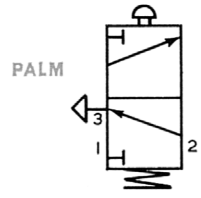
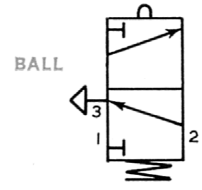
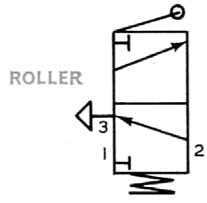
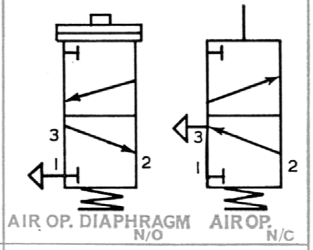
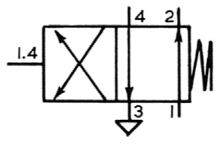
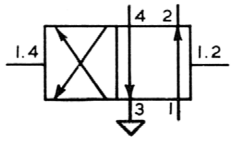


Type VL 25
heavy duty linear slide
valve
air or solenoid operated

The valves shown above are typical of those used in A.F.D. control circuits. Technical literature is available to designers on request.

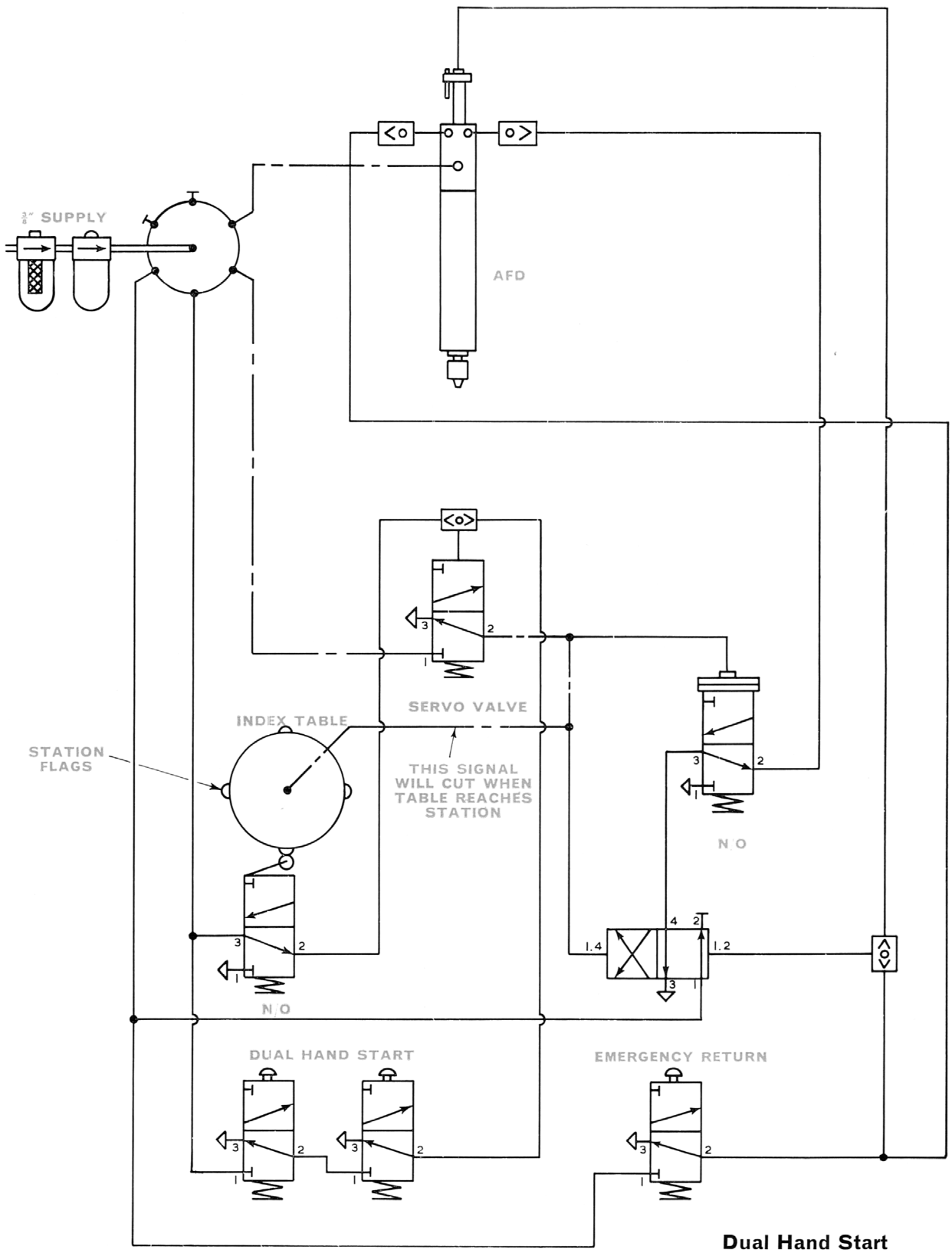
BASED ON 'CETOP' FUNCTIONAL SYMBOLS

DESCRIPTION	DEFINITION	SYMBOL
Flow Lines	Supply to installation	
	Main Line for A.F.D. circuitry $\frac{3}{8}$ in o/dia (min) nylon tube	
	Pilot Control Line	
Triangle	Direction of exhaust flow to atmosphere	
Arrow	Path and direction of flow through Valves	
Sloping Arrow	Variable Control	
Filter	For filtration of air at entry to the installation	
Lubricator	For lubrication of apparatus, small quantities of oil are added to the air which is flowing through lubricator	
Double Acting Cylinder	Forward and return stroke by pressure	
Single Acting Cylinder	Forward stroke by pressure Return stroke by spring	
Check Valve (Non-return Valve)	Allows free flow in one direction only	
Shuttle Valve	The inlet under pressure is automatically connected to the common outlet, and the other inlet is closed	
Variable Flow Control Valve with One Way Restrictor (Flow Regulator)	Valve which allows free flow in one direction and variable restricted flow in the other direction	

DESCRIPTION	DEFINITION	SYMBOL
Directional Control Valve	Manually operated against Return Spring. 3 way. May be piped for N/O or N/C operation.	
Directional Control Valve	Manually operated against Return Spring. 3 way. May be piped for N/O or N/C operation.	
Directional Control Valve	Manually operated against Return Spring. 3 way. May be piped for N/O or N/C operation.	
Directional Control Valve	Mechanically operated against Return Spring. 3 way. May be piped for N/O or N/C operation.	
Directional Control Valve	Mechanically operated against Return Spring. 3 way. May be piped for N/O or N/C operation.	
Directional Control Valve	Pressure operation against Return Spring. 3 way. May be piped for N/O or N/C operation	
Directional Control Valve	Pressure operation against Return Spring. 4 way. Single air — self reversing	
Directional Control Valve	Pressure control from both ends. 4 way. 2 positions positive (Double air operation)	

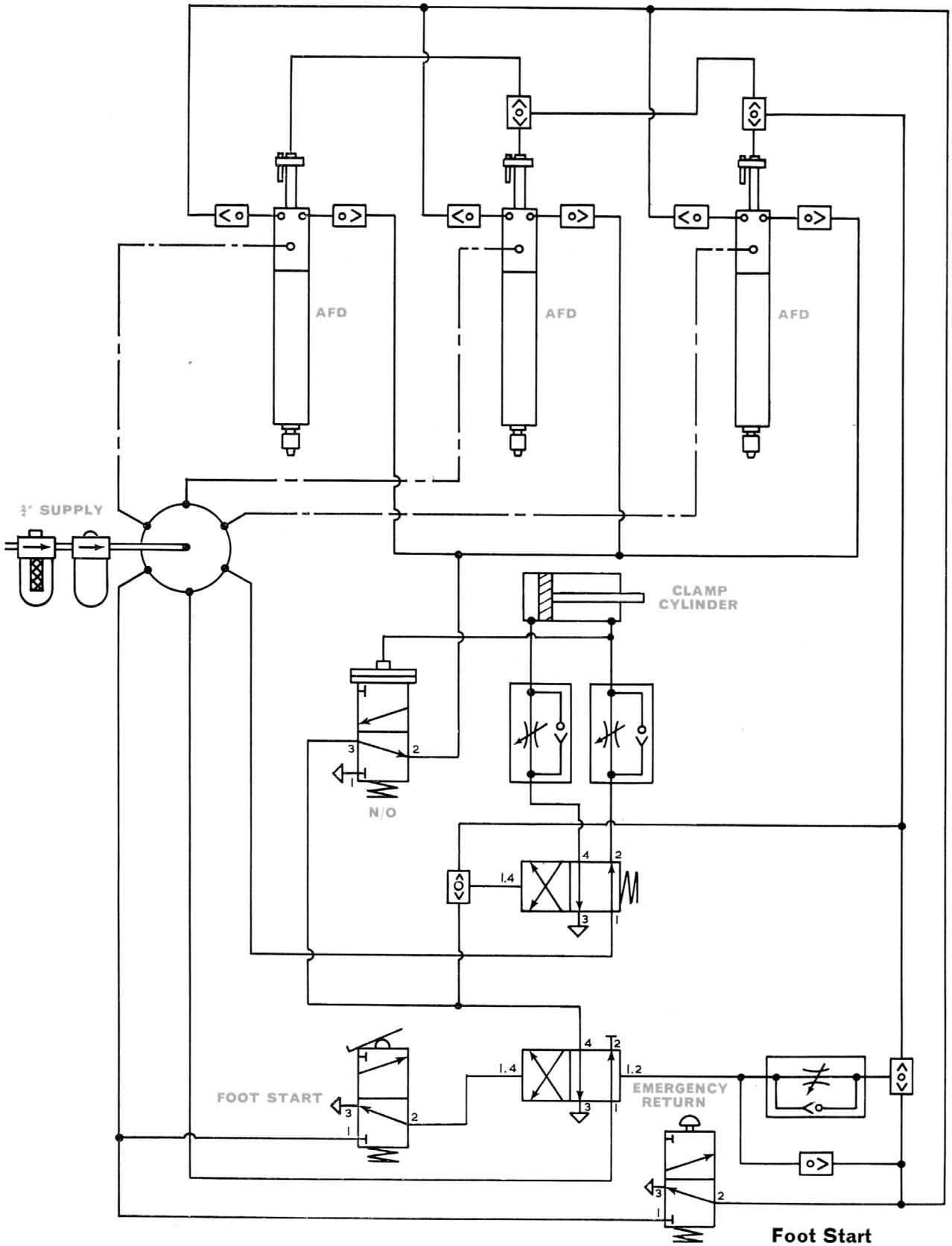
NOTE: Pilot Signals are marked 1.2 and 1.4. This indicates direction of flow through the valve, i.e. 1.2 = Supply in at port 1, and out at port 2.

TYPICAL CIRCUITRY



1 AFD coupled for use with Index Table

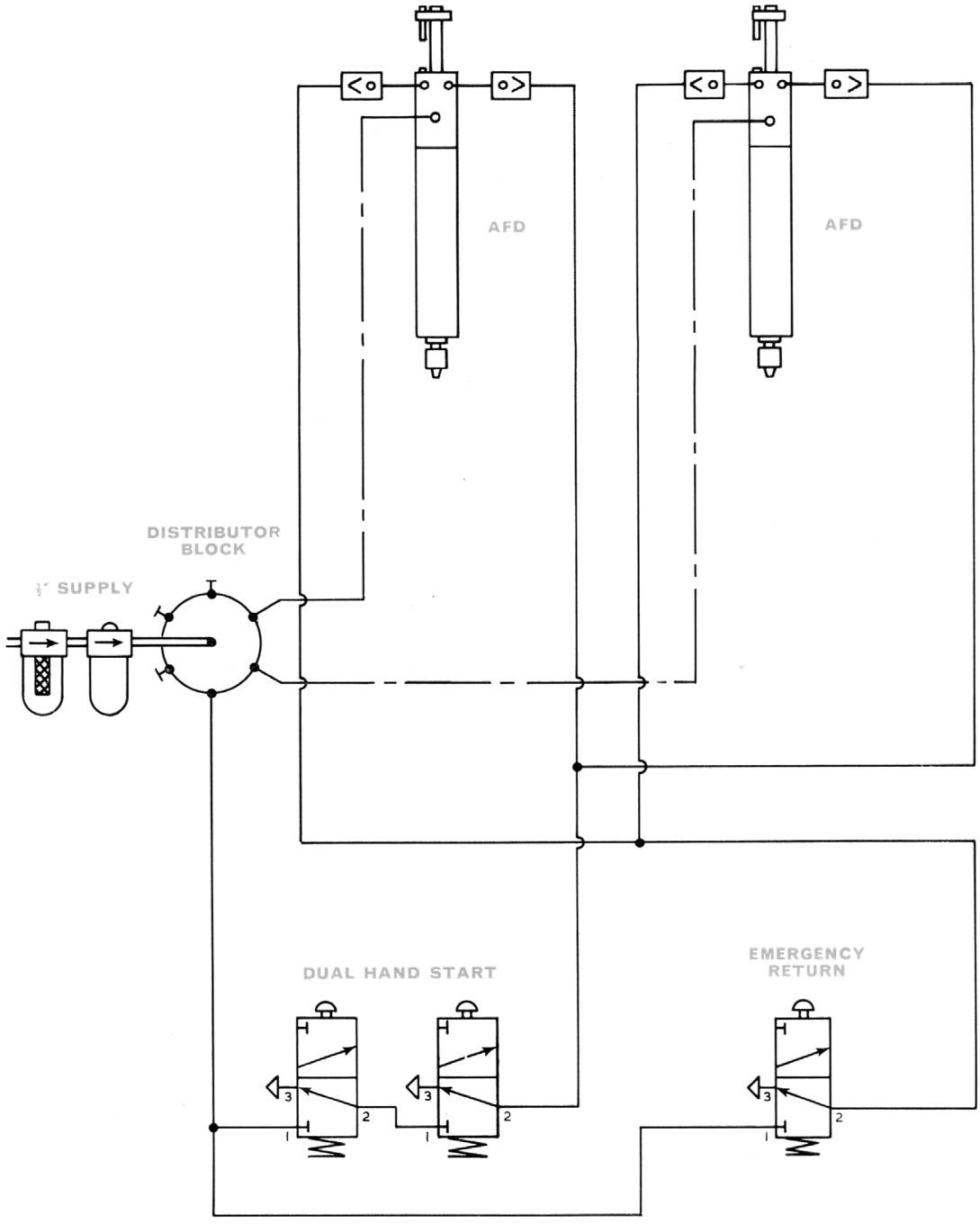
Dual Hand Start
Table Index
AFD Cycle



3 AFDs coupled for use with Clamp Cylinder

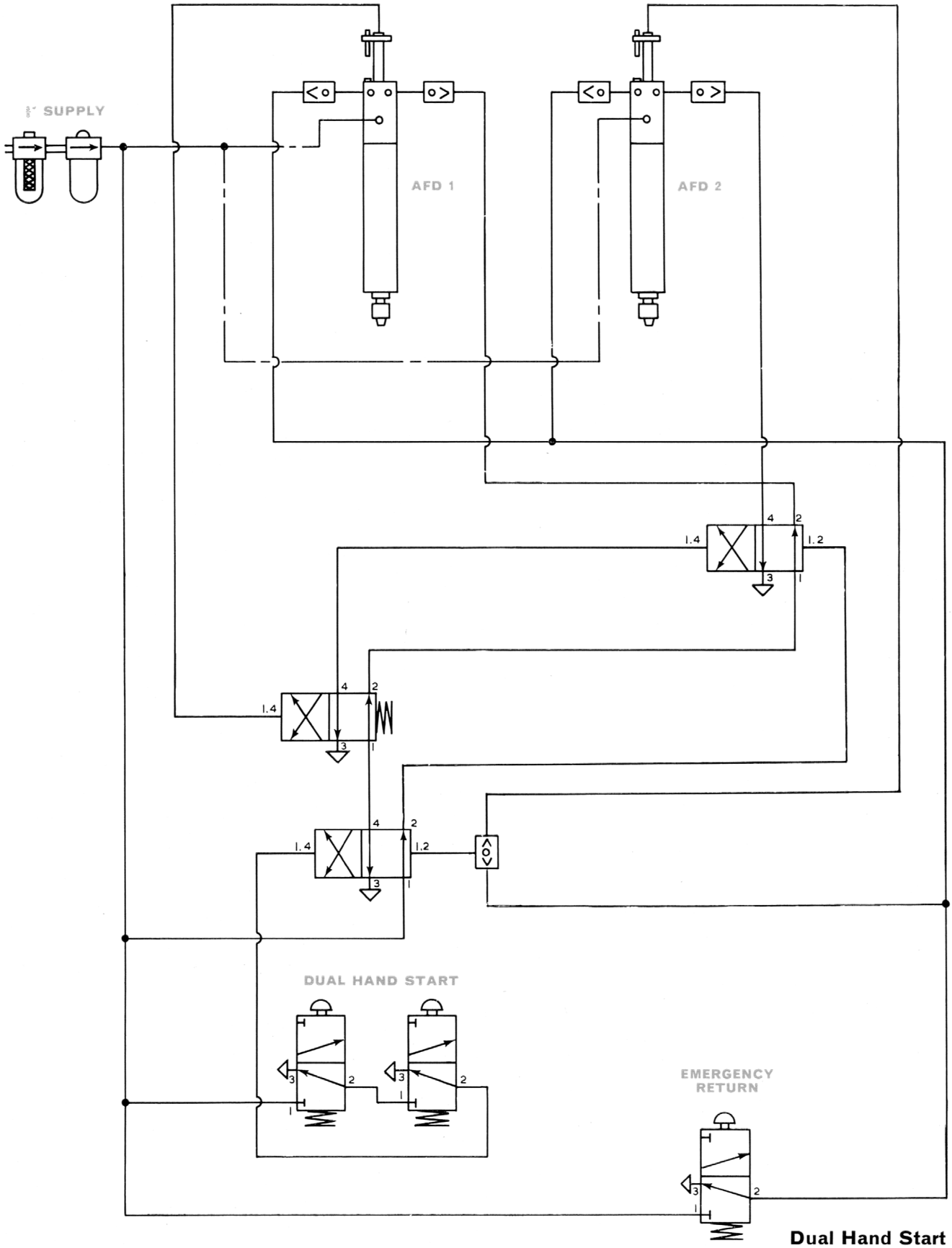
Foot Start
Clamp on
3 AFDs Cycle
Clamp off

TYPICAL CIRCUITRY



2 AFDs coupled for simultaneous operation

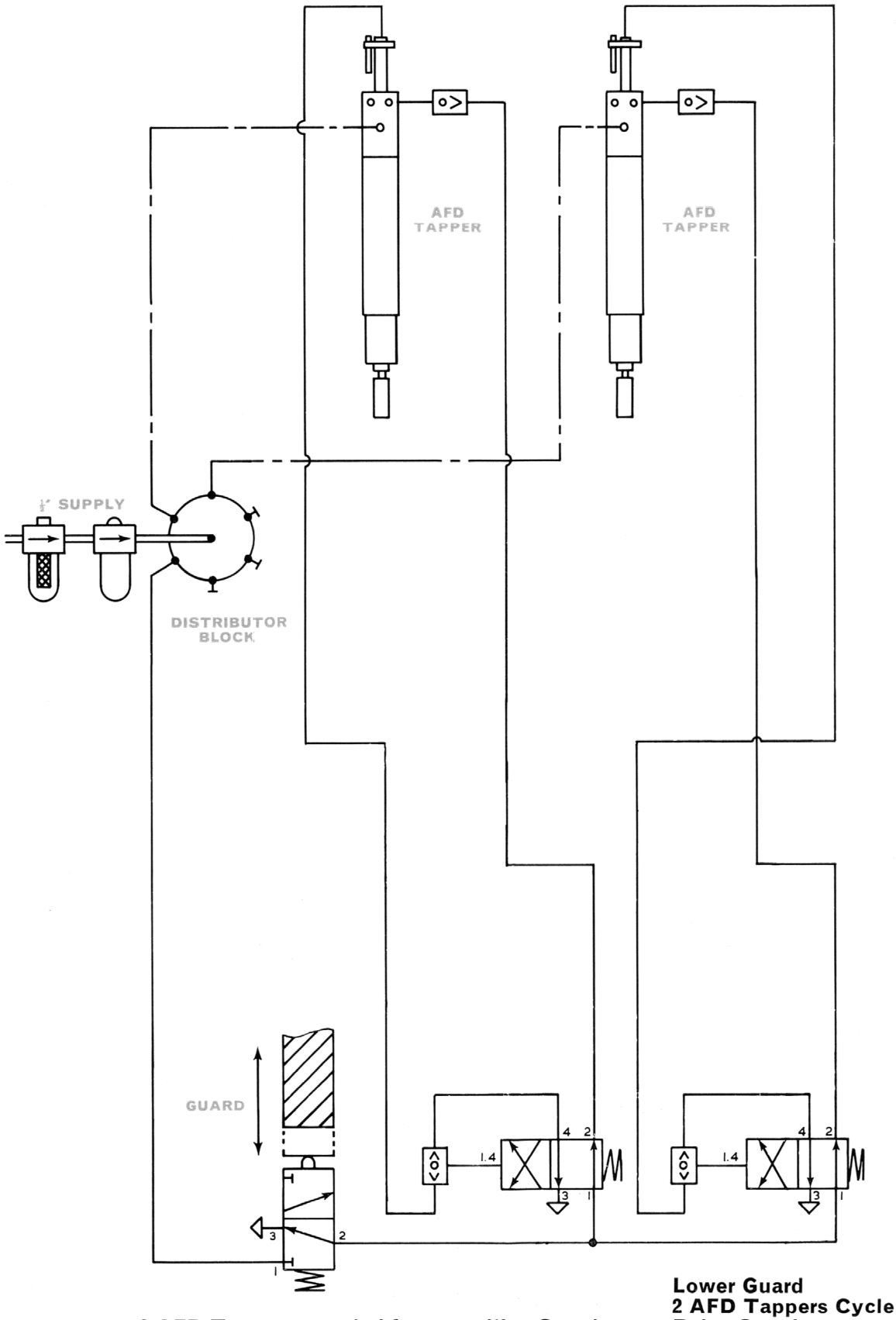
Dual Hand Start
2 AFDs Cycle



2 AFDs coupled in sequence

Dual Hand Start
AFD 1 Cycle
AFD 2 Cycle

TYPICAL CIRCUITRY



2 AFD Tappers coupled for use with a Guard

Lower Guard
2 AFD Tappers Cycle
Raise Guard

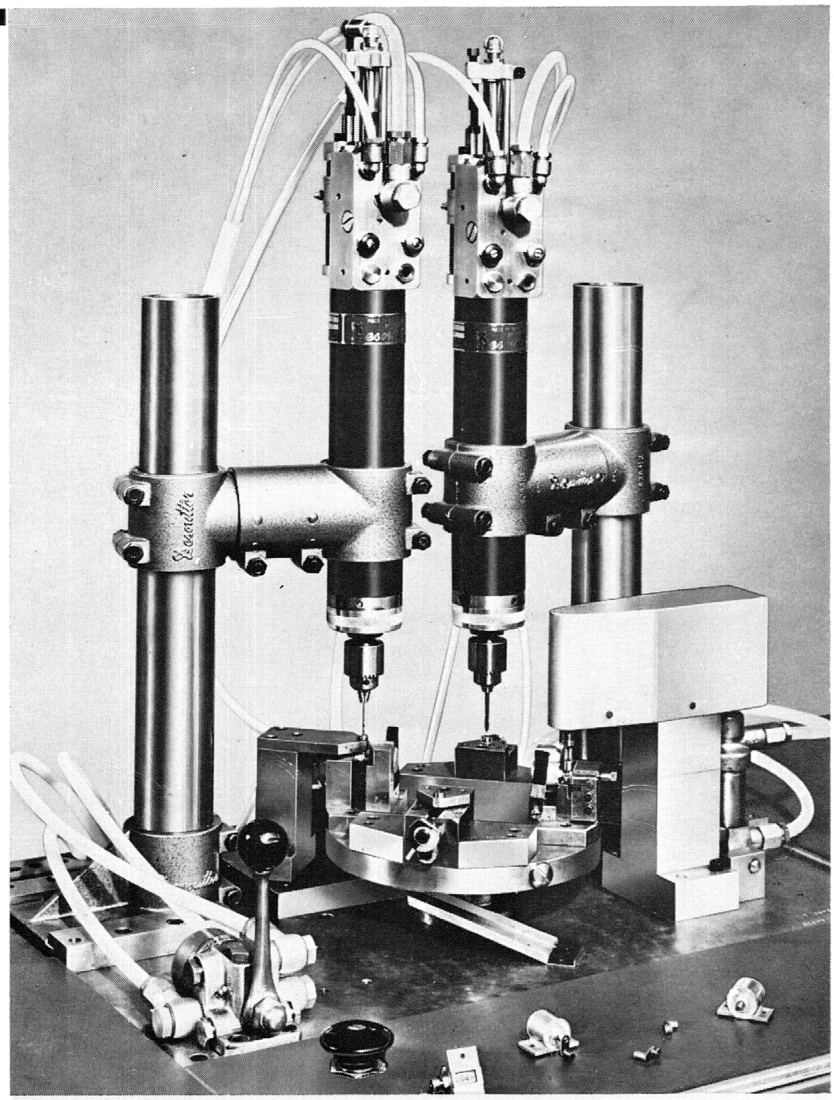
TYPICAL APPLICATIONS

. . . the most economical method of multi-drilling available. By using these tools with standard clamps and fittings . . . all can be reclaimed at the end of a run for further use . . .

The following pages give information on typical applications of Desoutter Auto Feed Drills and their ancillary components and show the great use which has been made of them throughout the world. We would appreciate further photographs and details from any of our users.

Desoutter

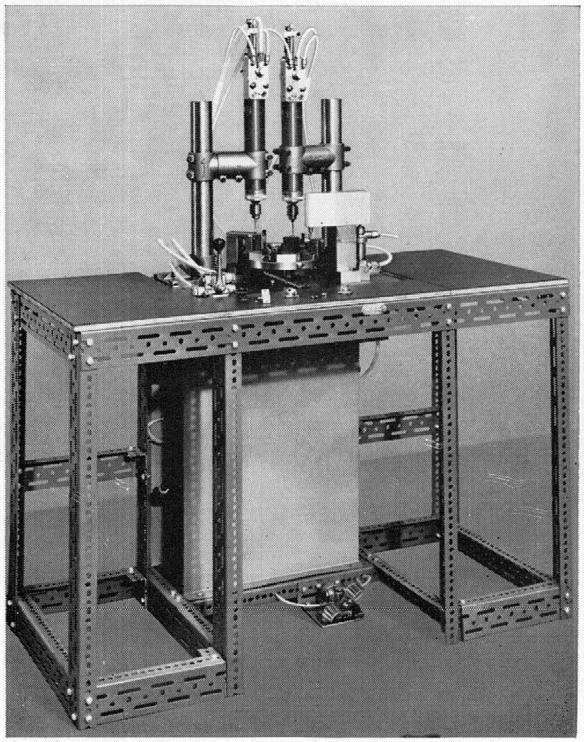
Drilling two holes and inserting pin into spindle.
1 mm (0.04 in) using type AFD/5,000
$\frac{1}{8}$ in (3.175 mm) using type AFD/2,750
140% increase in productivity.



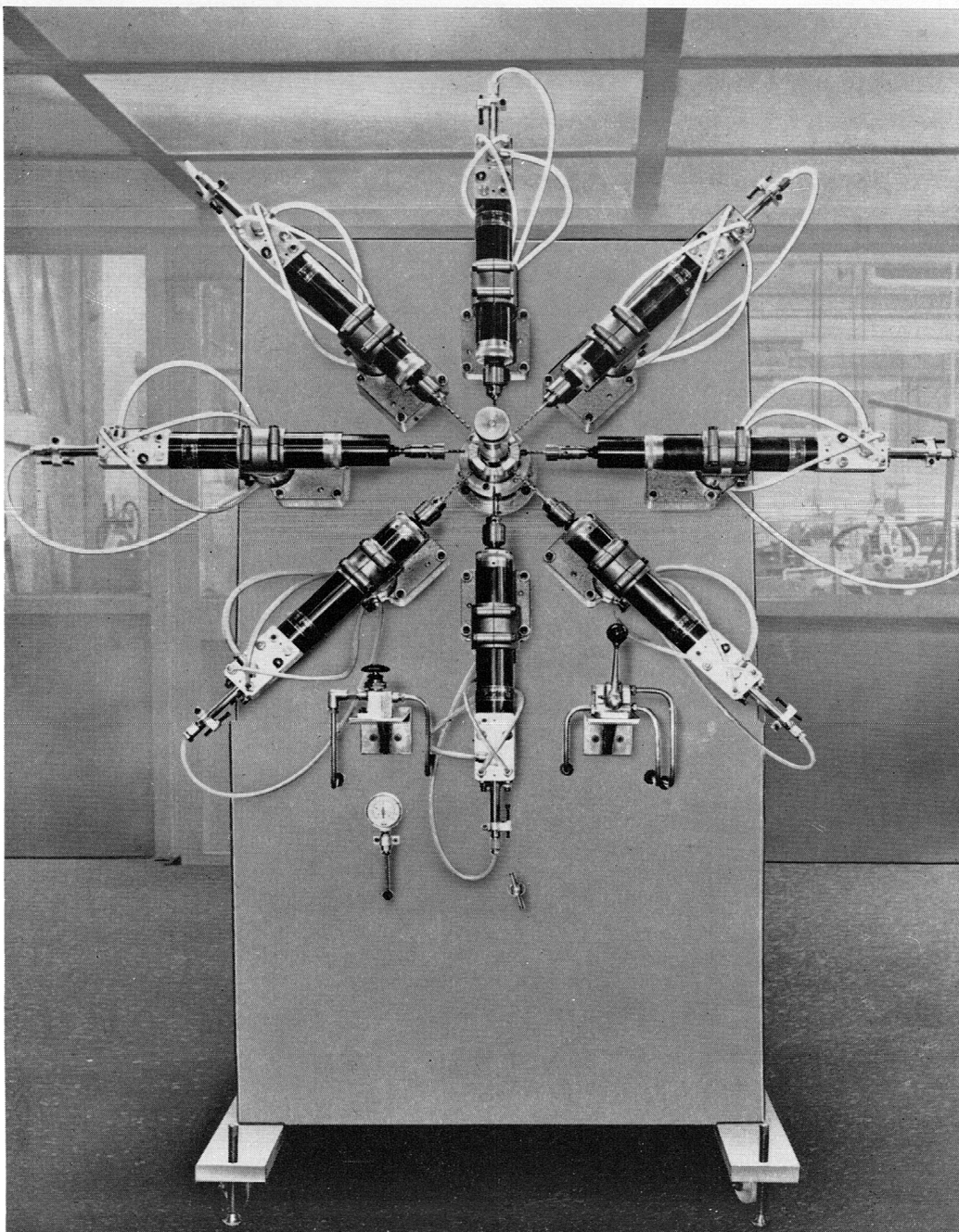
The economics of batch production requires a considerable amount of original thinking with flexibility in possible uses of standard tooling and facilities for easy re-arrangement of machine elements. An interesting example of such requirements and an ingenious method of meeting them is in operation at the Enfield, Middlesex, works of English Numbering Machines, Ltd., who devised the layout.

The job is that of drilling two holes and inserting a pin into a lever which is fitted on the actuating shaft of a numbering counter. The special machine was designed from the outset to undertake several different jobs throughout its life. The particular advantage in using the Desoutter equipment is the ease with which relatively simple units can be produced and the fact that almost all of the items can be adapted for further use at the end of the total run.

In this instance the number of operations was cut from 10 to 2 and the hydraulic check feed on the 1 mm drill has reduced breakage considerably.

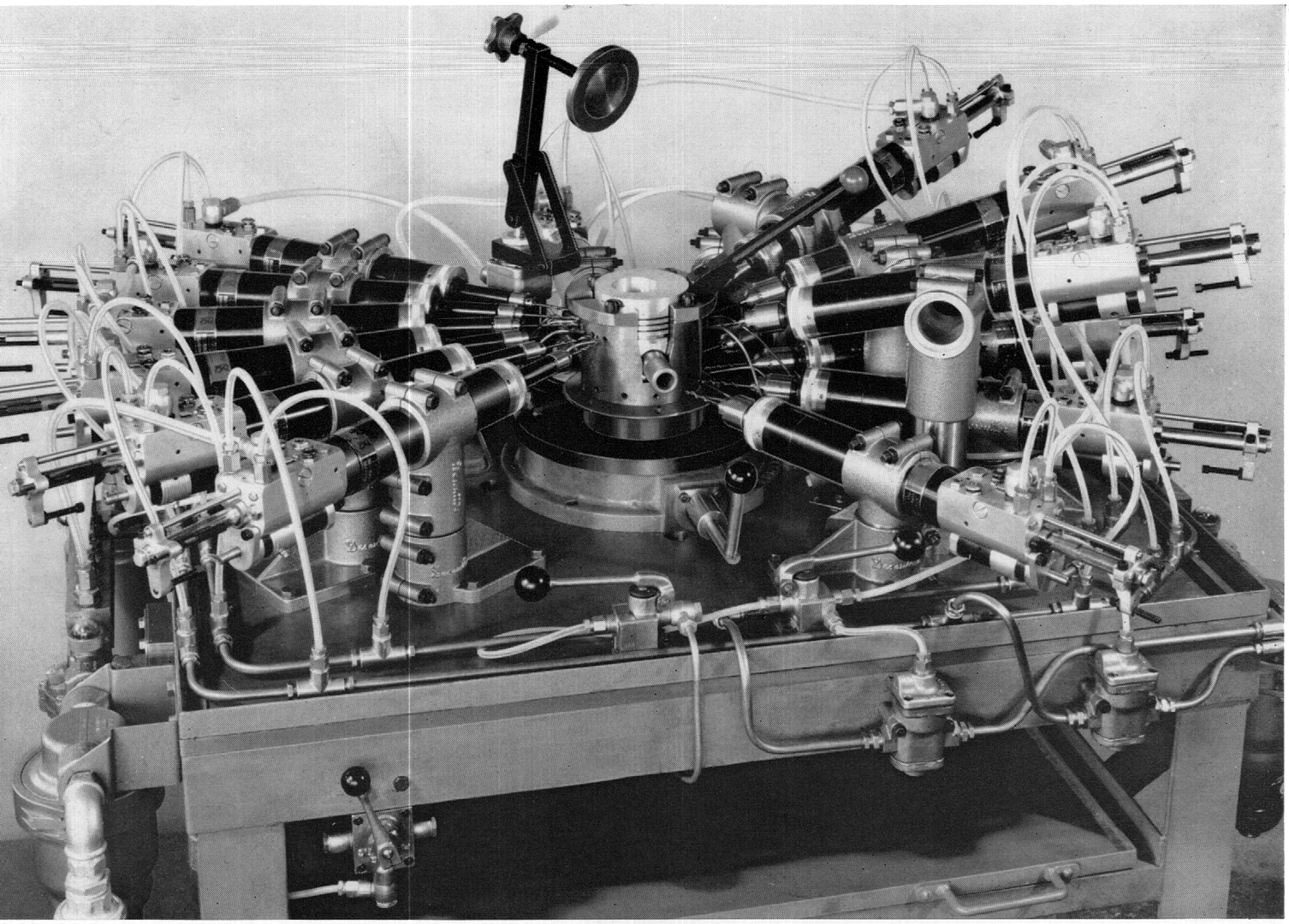


An 8 spindle A.F.D. drilling and tapping machine, the operations are as follows:—
4 A.F.D. drills 2,750 r.p.m., drill 4 holes using a combination drill having 13/64″ and .159″ dias. The turret is indexed 45° and 2 tappers 450 r.p.m. produce a No. 10 × 32 TPI UNF thread. At the same time 2 drills produce 5/32″ and .103″ dias. using a combination drill.
The turret is indexed 90° and 2 more holes are tapped as before. The actual cycle time of the operation is 27 seconds from start to finish of the cutting time, the total floor to floor time which includes loading and unloading and inspection is 53 seconds. The material is EN.100.



6 AFD 2,750
2 AFD/T 450
350% increase in productivity.

MOTOR IBERICA (FORD SPAIN)



This machine made for the Ford company in Spain is for drilling 30 oil holes, in the ring grooves of an Aluminium Piston.

Due to the close centres of the holes, only 15 can be drilled in one operation. The Piston is then manually indexed 180°, and the remaining 15 holes are drilled, using the same A.F.D.'s. The total drilling time is only 20 seconds.

All the A.F.D.'s are 3,500 r.p.m. fitted with hydraulic check units. The size of drilling varies from $\frac{1}{8}''$ to $\frac{5}{32}''$ dia., by a maximum of $\frac{1}{2}''$ deep.

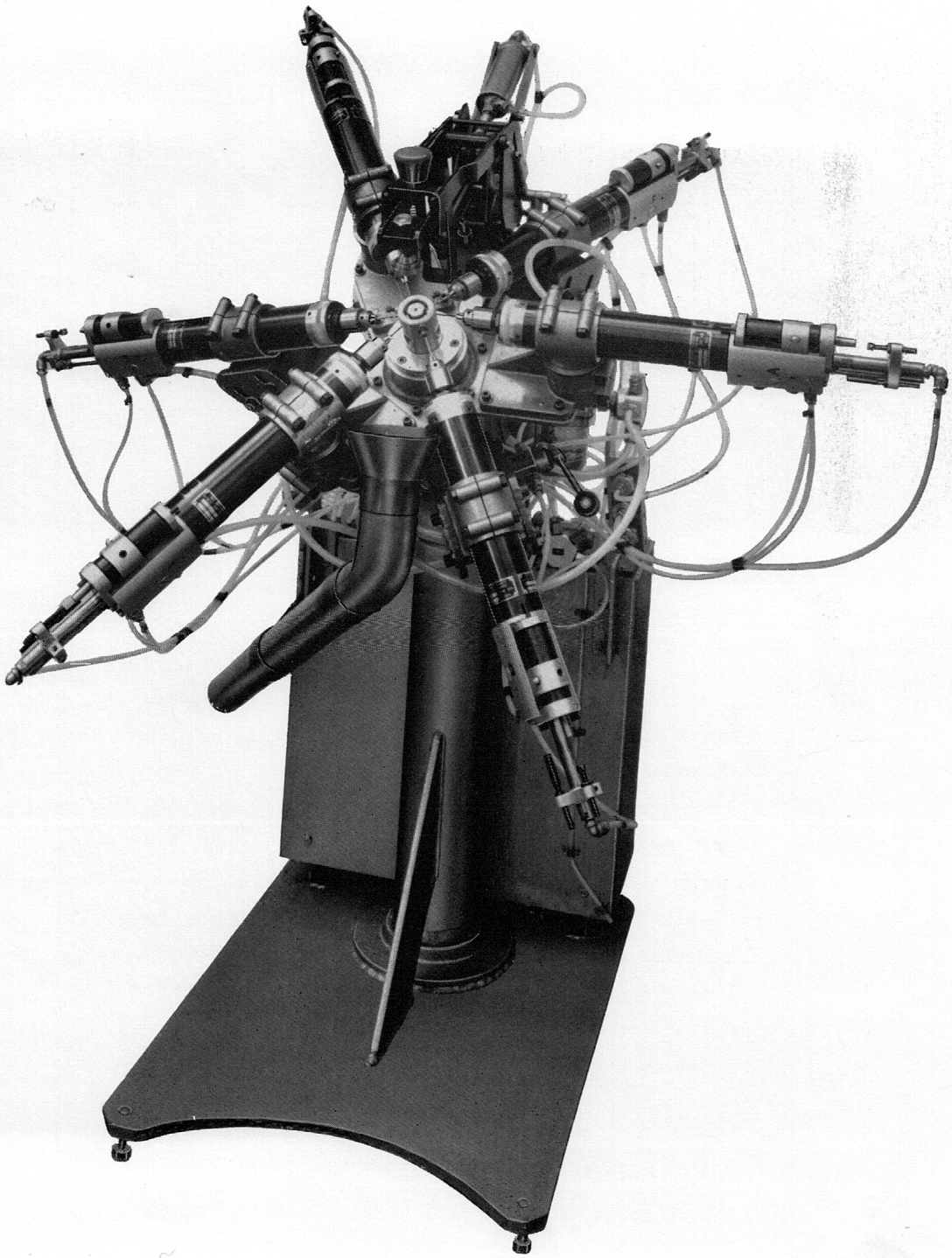
The jig clamp is operated by a double acting cylinder.

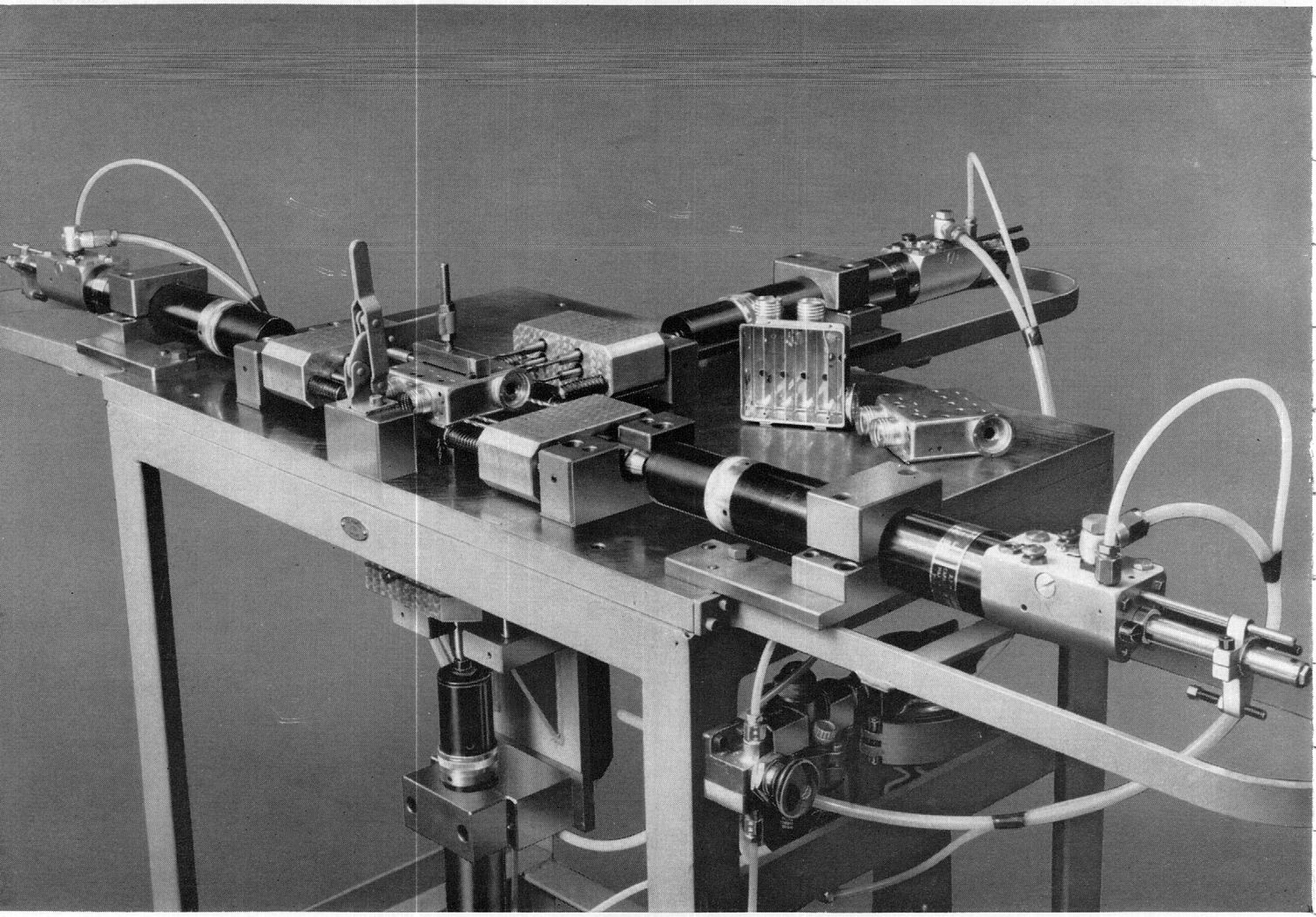
Cutting oil is used, being supplied to the drills by the Norgren "Mistcool" system. Desoutter-Lang Valves and Desoutter standard mounting clamps are used through-out.

The excellent model of a special purpose A.F.D. unit was designed and manufactured by Hertford Precision Engineers of Hoddeston, Hertfordshire. It is used in the machining of electrical connectors initially formed by the cold extrusion process.

Six A.F.D.'s are used each of type AFD/5,000. 3 are drilling holes spaced around the body of the component in the first part of the cycle. This is followed by the remaining 3 drills, each inclined at an angle of 30°, operating in sequence. Each is equipped with a ball nosed drill which is used to countersink on the *inside* of the cylindrical body of the component as a prelude to being rivetted. The countersinking has to be carried out to a finely controlled depth, by means of the hydraulic control units.

When the component is inserted in the jig the clamp is pressed down by hand, this operates a pneumatic holding down clamp and initiates the drilling action.



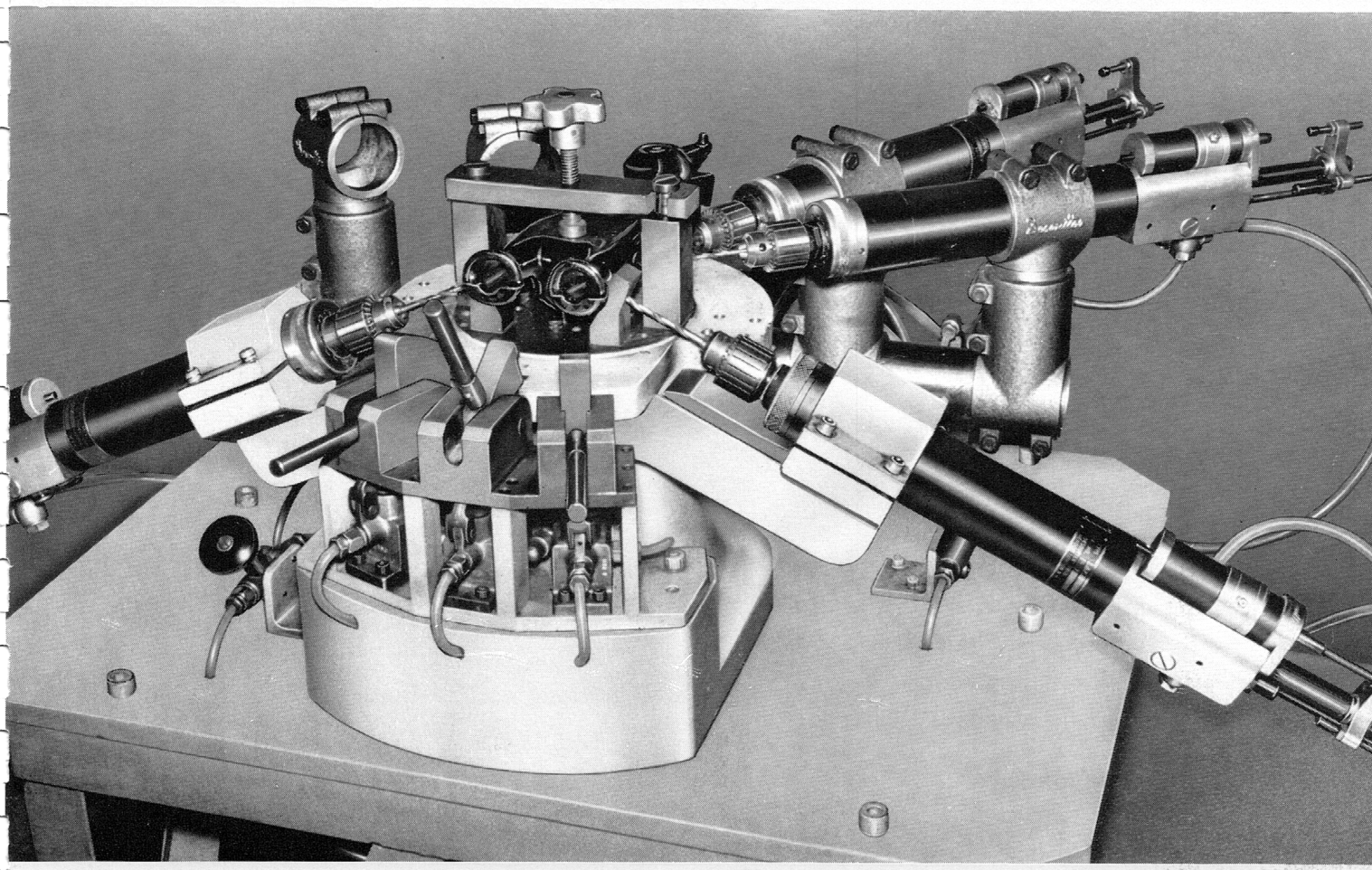


A most interesting application made by C. B. Powell Limited, Hove, for the Plessey Company Limited of Havant.

The operation is to tap 15 various sized holes in a tinned mild steel variable capacitor box. This is done by 4 AFD/T450 in a time of 5 seconds.

Of the units on top of the bench one is tapping 3 4BA, another 4 4BA and the third is tapping $\frac{1}{4}''$ and 3 4BA. The AFD under the table is tapping 4 6BA blind holes.

This machine clearly demonstrates the reserve of power which the new motor gives to the A.F.D.



This unit made by Stoves Ltd., Liverpool, is a 2 station indexing fixture for drilling and counterboring right and left hand gas burner castings. A quick adaptation of the machine converts it from right to left hand components by moving the 2 A.F.D.'s at the rear into the swivel clamps seen on the left.

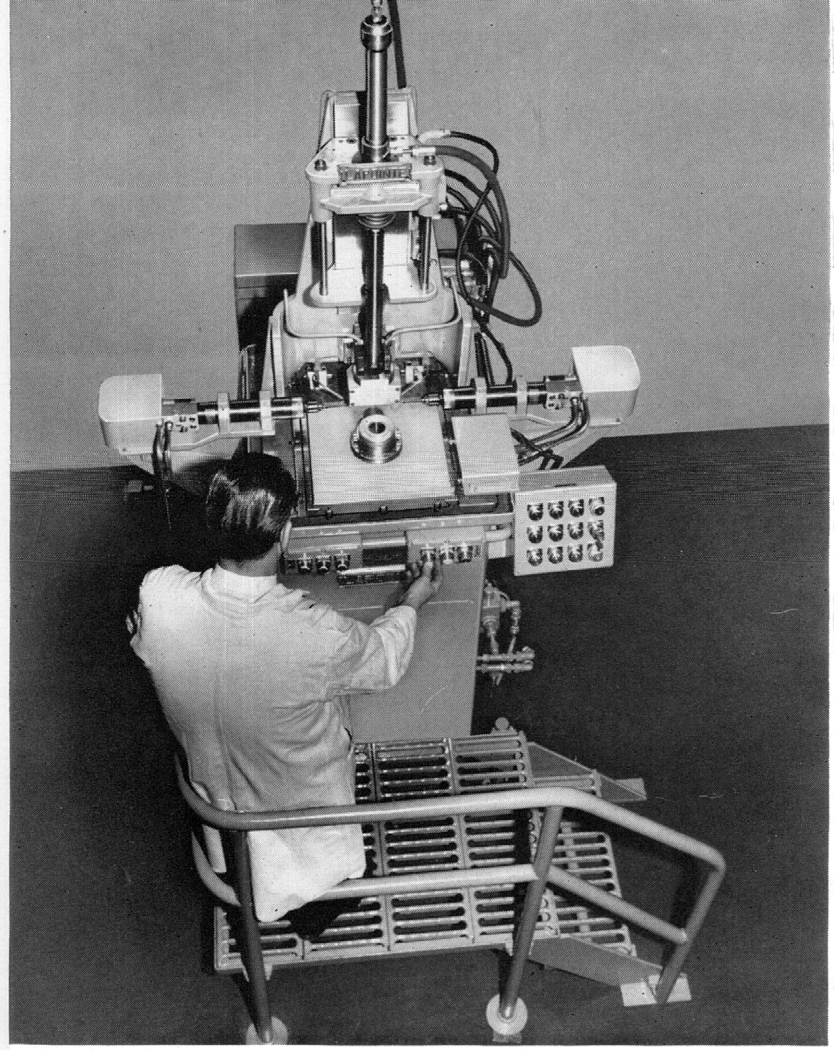
A second machine, somewhat similar in appearance, has been constructed for further drilling, tapping and counterboring operation on the casting. It can also be converted in this simple manner for left hand components.

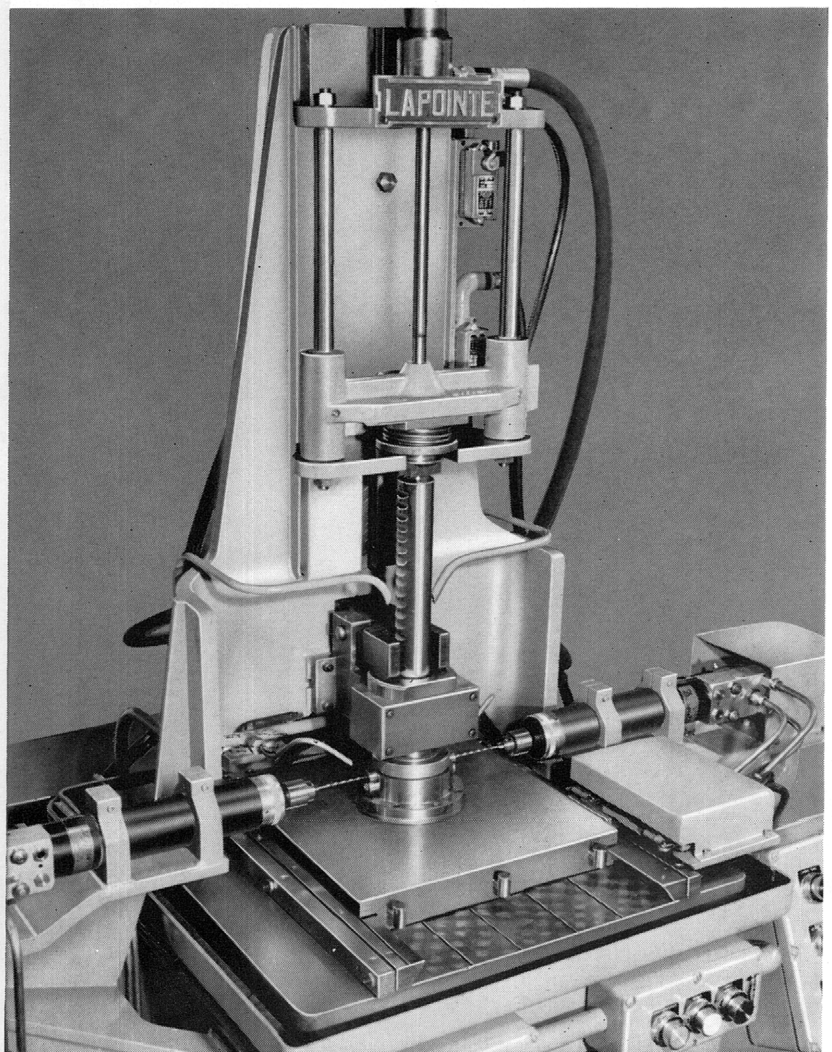
PEUGEOT

This machine was built by the Lapointe Machine Tool Company Limited for the French company of Peugeot for drilling the 3 mm oil fling holes and broaching the oil grooves in a case hardened mild steel gear for a car gear box.

After the component has been manually loaded the operator presses two start buttons and the workpiece is automatically clamped. The drills advance, complete their stroke and retract and then the broach descends to cut two longitudinal V grooves, which also removes the inner burrs around the holes.

A cycle time is quoted of 30 sec.





Desoutter

DESOUTTER BROTHERS LIMITED
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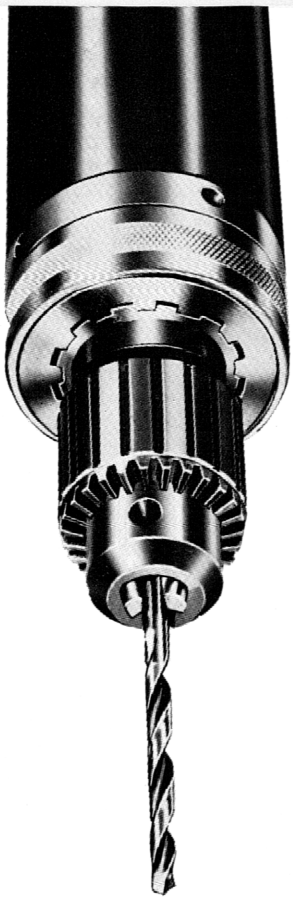
AUTO FEED DRILLS

OPERATING INSTRUCTIONS

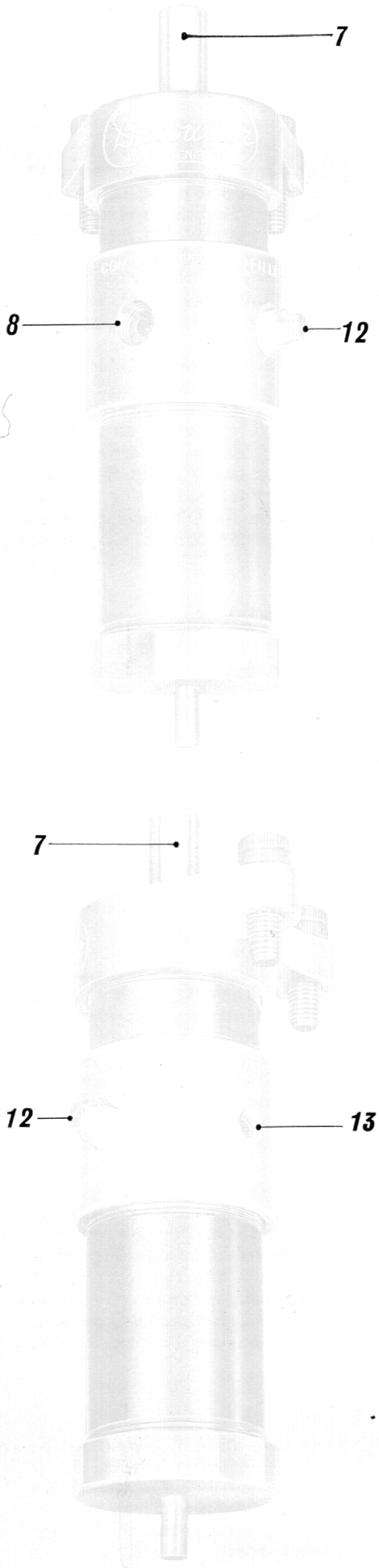


GENERAL

To obtain the speeds and performances of the Auto Feed Drill as listed in the catalogue it must be connected to an air supply of 80 p.s.i. and hose should be $\frac{3}{8}$" dia. bore capable of maintaining this pressure when delivering air at 17 c.f.m. The air should be clean and dry and an air lubricator must be fitted, as ample lubrication is vital to the maximum performance. Read carefully the instructions enclosed with the Norgren oiler to ensure that it is set correctly to pass the necessary amounts of both air and oil, remembering that only 5% of the oil that is seen to flow through the bowl will go to the tool. Also, as when received the tool may have been in store for some time, it should be tested before being set up in a rig.

Insert a few drops of Duckhams P.T. Oil into the air inlet, connect up to the air supply and depress the green button. If the tool does not start, it is most likely that the Feed Control Screw (3) has been left in the fully closed position—open it by using the $\frac{3}{32}$ Hexagon Key.

There are nine different gear units available making it possible to choose the correct speed for the particular work to be performed. For wood or soft metals the drilling capacity of the tool may be larger than the capacity of the chuck as given in the catalogue and larger chucks up to $\frac{1}{2}$" capacity are available to suit these conditions. By mounting the drill with the specially designed clamps and tubing, almost any desired working position can be obtained.



feed is adjusted to prevent the acceleration just mentioned so that the initial feed taken on by the air is carried through at the same rate when the drill breaks through the component.

When using very small drills, however, say $\frac{5}{32}$ or below, it is found that the overall feed rate to approach the component as adjusted on the air control, is rather slow and therefore it is normal practice to accelerate rapidly until in contact with the plunger (7) of the hydraulic check unit and complete the actual drilling of the material by adjusting the feed on the hydraulic control.

The feed rate adjustment (8) for the hydraulic check unit is exactly the same as the feed control on the A.F.D. that is, clockwise to reduce the feed and anti-clockwise to increase the feed.

HYDRAULIC CHECK UNIT SERVICING

It is essential to remove the check unit from the A.F.D. in order to service it and full instructions are as follows.

Remove the Bleed Screw (13) and have needle valve fully open.—Apply an oil Gun fitted with Shell Tellus, Oil No. 27 to the oil filler (12) and pump gently until the oil which flows from bleed screw hole is free from air bubbles,—then insert and tighten bleed screw. Further pumping will gradually feed out the Piston Shank followed by the Indicator Rod, as the oil flows, first into the pressure cylinder (Short Tube) and then into the reservoir cylinder (Long Tube)—Continue filling until the groove in the Indicator Rod is approximately $\frac{1}{4}''$ (6 mm) outside the End Cap.

Hold unit Piston Shank downwards,—press on shank and perform several full strokes.—This operation removes any air from the pressure cylinder into the reservoir cylinder, from whence it may be bled away as follows:— Turn the unit correct way up, but at an angle of about 30° to the vertical with the Bleed Screw uppermost. Undo this screw, about one turn, and bleed until no bubbles are present in the escaping oil, or until the groove is level with the End Cap.—Tighten Screw.

If bleeding has to be continued until the groove in the Indicator Rod has sunk below the face of the End Cap,—apply the oil gun again until it is just visible.—This is the correct full position and gives $\frac{3}{4}''$ (19 mm) controlled stroke. Any air left in the unit will be indicated by a sponginess at the beginning of the stroke and must be removed by repeating the procedure for bleeding.

During use, oil will gradually leak away and the unit should be topped up by applying the oil gun, at regular intervals.

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