



Control block A1

Part number 436313-A1



Original instructions.

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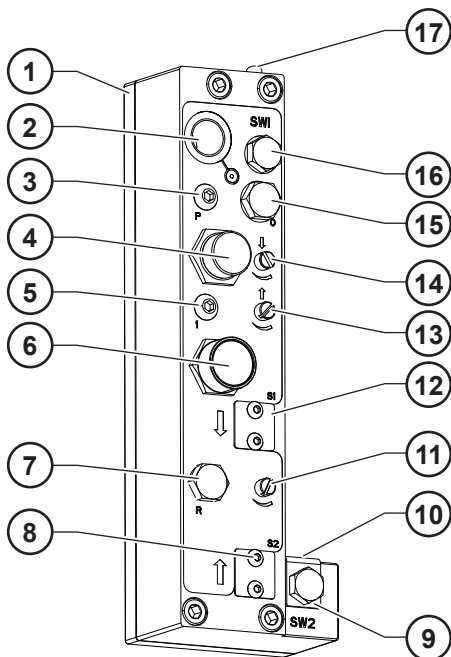
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1. FULL FEATURE CONTROL BLOCK A1

Forward Feed Air Only, Return Feed Air/Spring or Both.

The A1 block enables the user to control the tool by:

- 2 ways to know that the tool is fully back (datum position).
- 3 ways to send the tool forward.
- 2 ways to know that the tool is fully forward (depth position).
- 4 ways to send the tool back.

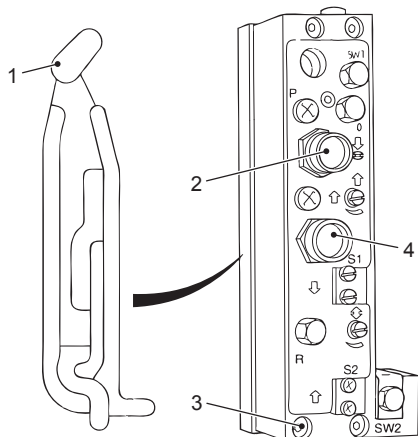


Item	Description
8	S2 Electric Interface Port, for remote retract using a solenoid valve (24VDC/110VAC)
9	SW2 Electric Interface Port, for electric depth signal through a proximity switch (M8)
10	End Stop - to automatically return tool when at depth
11	Main Air Regulating Screw
12	S1 Electric Interface Port, for remote start using a solenoid valve (24VDC/110VAC)
13	Retract Rate Regulating Screw
14	Advance Rate Regulating Screw - functions on Air Return tools Only
15	0 Port tapped 1/8" BSP/M5, remote depth/retract, signal port for Pecking/Dwelling
16	SW1 Electric Interface Port, for electric datum signal through a proximity switch (M8)
17	M Port tapped M5, for air signal in datum position - constant

Item	Description
1	Valve block module complete
2	Mains Air Inlet 1/4" NPT
3	P Port tapped M5, signal port for Pecking/Dwelling
4	Manual Retract Button - Red
5	1 Port tapped M5, for remote start air pulse signal
6	Manual Start Button - Green
7	R Port tapped 1/8" BSP/M5, supply for air return

2. SPARE PARTS

2.1. Main breakdown



Item	Description	Part no.	Qty
1	Seal	370393	1
2	Red valve button assy	203763	1
3	Screw	273653	4
4	Green valve button assy	203773	1

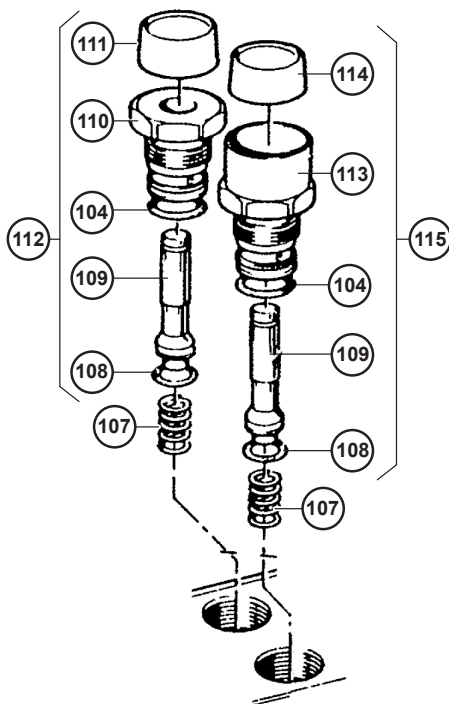
Service kit

-	Seal Kit	370943	1
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Adaptor kit

-	BSP/NPT	444513	1
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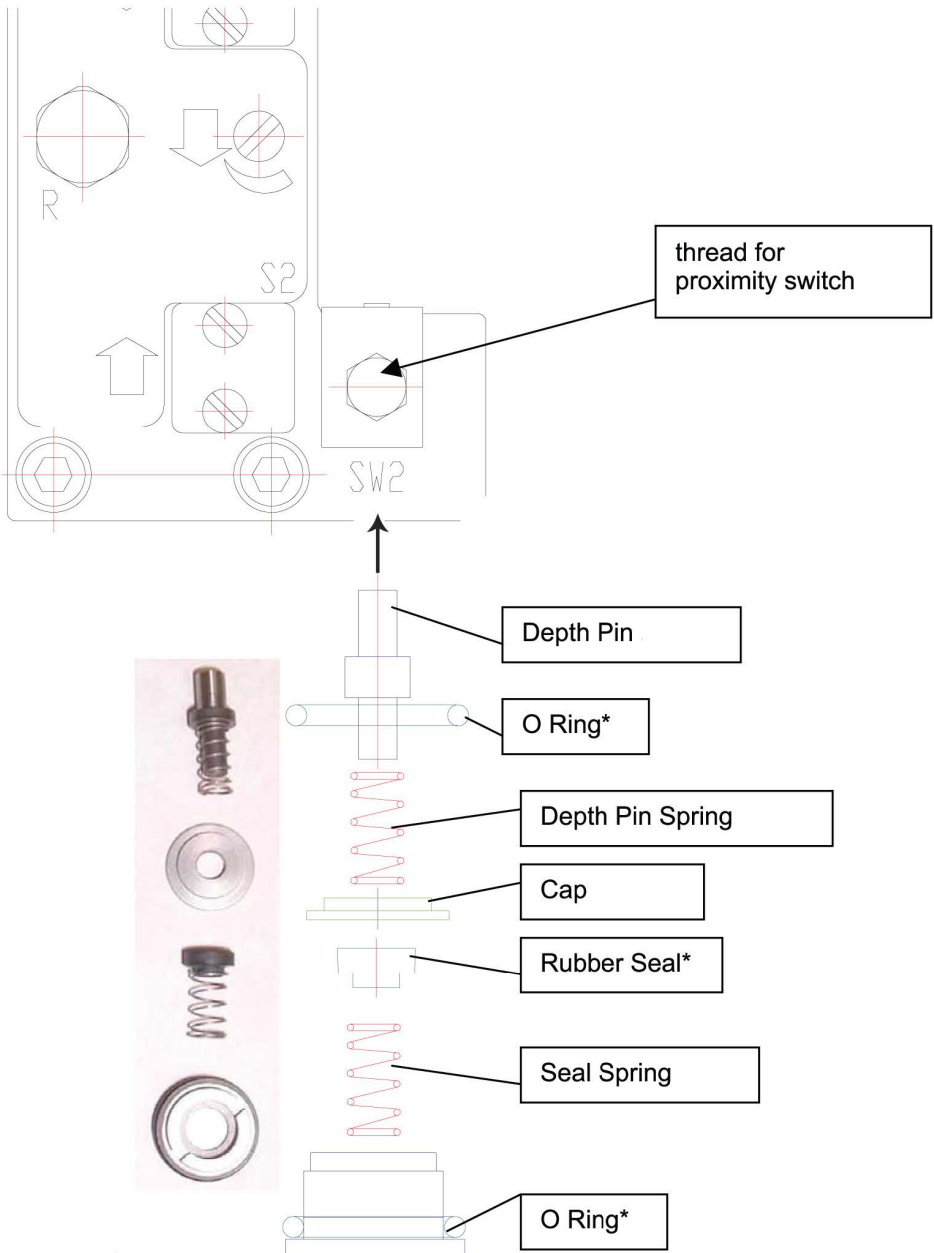
2.2. Control block spares



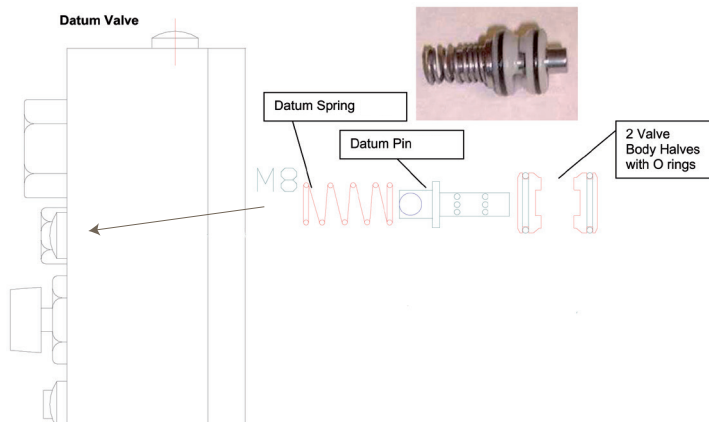
Item	Description	Part no.	Qty
104	O'ring	40503	6
107	Spring	39783	3
108	O'ring	43583	2
109	Valve spindle	-	2
110	Valve body	-	1
111	Button - red	202833	1
112	Stop valve complete	203763	1
113	Valve body shrouded	-	1
114	Button - green	202843	1
115	Start valve complete	256913	1

3. ASSEMBLY DETAILS

3.1. Depth valve



3.2. Datum valve



4. INPUT AND OUTPUT SIGNALS

Input Signal	Output Signal	Manual	Remote Air	Remote Electrical	Automatic
-	Datum	-	M Port (17) Constant air signal	SW1 (16) Constant signal through M5/8 proximity switch	-
Forward	-	ST Green button (6)	1 Port (5) Give pulse air signal	S1 (12) Through solenoid valve - Pulse signal	-
-	Depth	-	O Port (15) P Port (3) Constant at depth	SW2 (9) Constant Signal Through M5/8 Proximity Switch	-
Retract	-	SP Red button (4)	O Port (15) P Port (3) Give pulse air signal	S2 (8) Through solenoid valve - Pulse signal	End stop (10)

i Remote Electrical Signals Require an Interface Kit of Two Proximity Switches NPN or PNP and Two Solenoid Valves - depending on the control requirements.

4.1. Manual Control (ST, SP)

Start	Press green button (ST) and release. The tool will cycle automatically.
Stop	Press red button (SP) and release. The unit will retract and for AFD models the motor stop upon reaching datum.

4.2. Remote Air Control (1, 0, P,M,R)

Start	Pulse of air (1 second maximum) into port 1. The tool will cycle automatically.
Stop	Pulse of air (1 second maximum) into port O or port P. The unit will retract and for AFD models the motor stop upon reaching datum.
Datum	When the tool is at the datum position a valve is actuated providing a positive constant pneumatic air signal from the M port on the top of the block.
Depth	Should a pneumatic signal be required upon reaching depth the O port can be used in conjunction with adaptor (2S7023), O-Ring (250913) and lock nut (257033) sealing the connection between the O and P ports. A signal can then be fed back into the P port to return the tool to datum.

The R port can be used to increase the speed of the return stroke or assist the return when fitting heavy multiple spindle heads for the AFDE400/410/600/610/620.

A kit is available (Part no..10S362) to connect the R port to the nose port 1/8"BSP on the tool which passes air to the front of the piston on the retract stroke.

4.3. Remote Electrical Control (S1, S2, SW1, SW2)

Start	Depending on the type of valve fitted (N.O. or N.C.) the solenoid is powered on or off (1 second maximum) to allow an air signal to pass through the block via mounting position S1. The tool will cycle automatically.
Stop	Depending on the type of valve fitted (N.O. or N.C.) the solenoid is powered on or off (1 second maximum) to allow an air signal to pass through the block via mounting position S2. The unit will retract and for AFD models the motor stop upon reaching datum.
Depth	SW1 is used to sense that the tool is at the datum position. The threads are M8 x 1.0 (were M5 x 0.5).

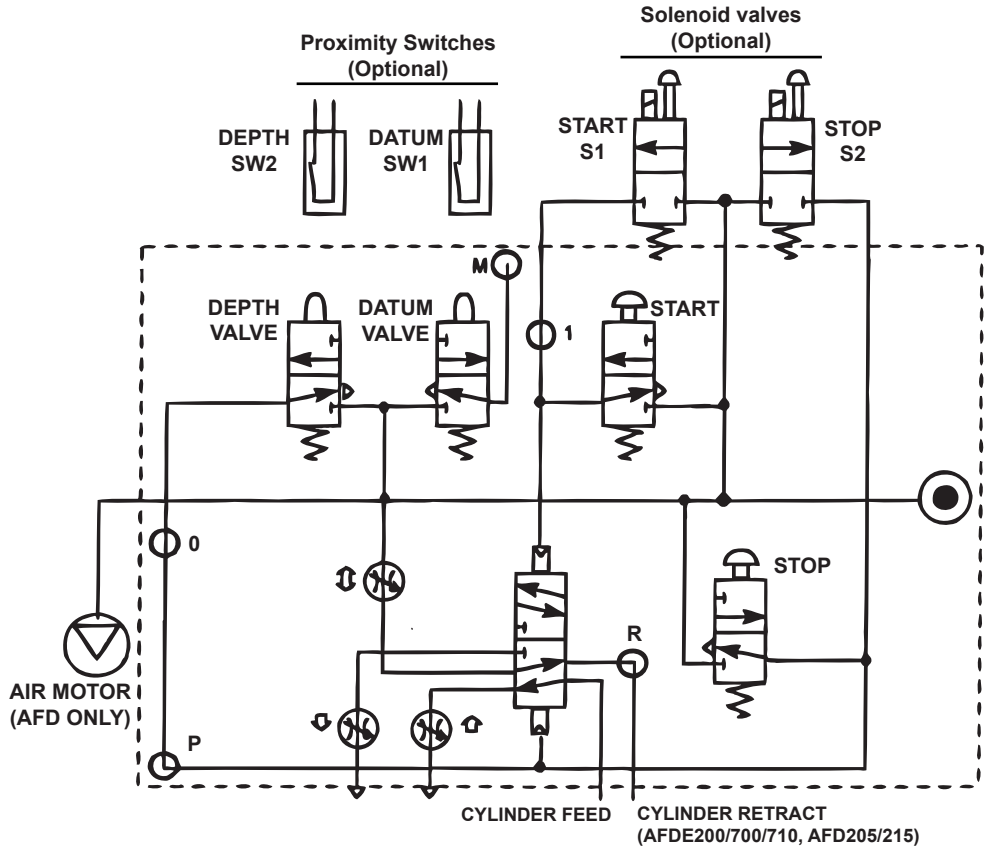
Depth	SW2 is used to sense that the tool is at the depth position. The threads are M8 x 1.0 . (were M5 x 0.5).
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The main air inlet (1/4" BSP or NPT) must be connected to an air supply for both the AFD and AFDE tools as the air supply to the tool and block is provided through this port.

4.4. A1 Circuit Diagram

The circuit diagram below shows the workings of the control block circuit.

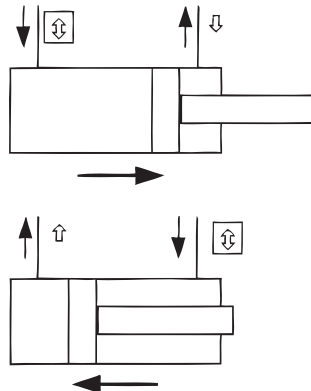


4.5. Feed Control- Flow Regulators

There are 3 adjustable flow regulators on the control block to control the feed and retract of the tool.

↑ Retract control	Controls the exhaust air when the tool retracts.
↓ Feed control	Controls the air exhaust air when the tool feeds forward.
↕ Feed control	Controls the input air onto the back of the piston when the tool feeds forward.

- AFDE200 and AFD205/215:



- AFD415, AFDE400/410 and AFDE600/610/620:

Flow Regulator Settings are covered in the AFD applications section.

5. INTERFACE KITS

The interface kits are used to control the AFD range using electrical signals to provide start and retract signals and feedback for depth and datum. Generally for use with PLC (Programmable Logic Controllers) the kits contain solenoid valves and proximity switches of differing types depending on the method of control and on which control block they are being used with.

All solenoid valves and proximity switches are of the plug in type.

Supply voltages are 10-30V DC for the proximity switches and commonly 24V DC for the solenoid valve.

The proximity switches are supplied in both PNP (most common - sourcing) and NPN (sinking) and are normally open (NO).

The solenoid valves have either DIN type connections on the plug or a length of cable molded into the plug and can be normally open (NO) or normally closed (NC - most common).



Note 110VAC option available on solenoid valve only.

5.1. Fitting an Interface Kit to an A1 Control Block

- Remove the blanking plates at positions S1 and S2.
- Fit the 2 solenoid valves ensuring the gasket is fitted correctly between the valve and the control block.
- To fit the proximity switches remove the blanking plugs at positions SW1 and SW2.



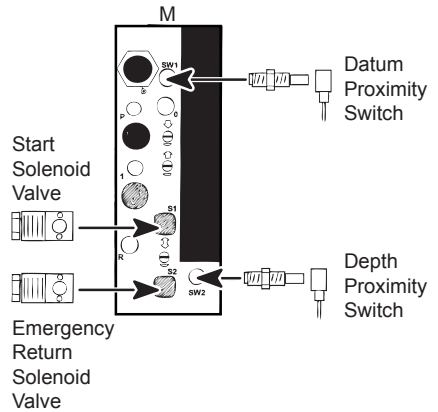
There is a constant air supply from the SW1 port.

The proximity switch must seal against this air pressure.

There is an air supply from the SW2 port at depth only and again the proximity switch must seal against this air pressure.

- With the tool at the datum position fit a proximity switch in SW1 by gently rotating clockwise until a some resistance is felt.
- Rotate the switch approximately one turn anti-clockwise and make sure the switch is sensing.
- Similarly with the depth stop depressed insert the other switch in SW2 and follow the same procedure.

- Make sure the switch is sensing.



5.2. Operation of Interface Kits

Input Signals	
Start	<p>For interface kits C10 and C12:</p> <ul style="list-style-type: none"> • To start the cycle energize the solenoid at position S1 for approximately 0.5 seconds. • The tool will cycle automatically. <p>For kits C11:</p> <ul style="list-style-type: none"> • The Normally Open solenoid valve is fitted to S2 and so to start cycle energize both solenoids. (Note with electric power off and air on air will exhaust around red stop button). • NOTE: External solenoid valve can also be used to give pulse start signal to 1 port.
Emergency Return	<p>For interface kits C10 and C12:</p> <ul style="list-style-type: none"> • To stop the cycle and return to datum energize the solenoid at position S2. For approximately 0.5 seconds. • The tool will return to datum. <p>For kits C11:</p> <ul style="list-style-type: none"> • The Normally Open solenoid valve fitted to S2 is de-energized to stop the cycle. • This also acts as a fail safe should the electrical power fail. • NOTE: External solenoid valve can also be used to give pulse start signal to P or O port.

Output Signals	
Depth	<ul style="list-style-type: none"> The proximity switch at SW2 will provide a signal upon reaching depth.
Datum	<ul style="list-style-type: none"> The proximity switch at SW1 will provide a signal when the tool is at datum.

5.3. Kit Types for A 1 blocks

Code	Part no..	Control Block	Solenoid Valves	Proximity switches
C03	104002	A1 M8	-	2 x M8 PNP + Cables
C05	104842	A1 M8	-	2 x M8 NPN + Cables
C10	438223	A1 M8	2 x NC	2 x M8 PNP + Cables
C11	438233	A1 M8	1 x NO, 1 x NC	2 x M8 PNP + Cables
C12	438243	A1 M8	2 x NC	2 x M8 NPN + Cables

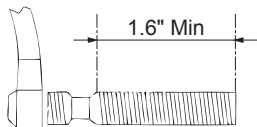
5.4. Individual Proximity Switch Part Numbers & Specifications

Proximity Switch Type	Part no..	Operating Voltage	Voltage Drop	Rated Operating Current	Operating Temperature
M8 PNP NO*	381223	10-30V	≤2.5V	250mA	-25 to 70 °C
PNP Cable	381233	-	-	-	-
M8 NPN NO	396183	10-30V	≤2.5V	250mA	-25 to 70 °C
NPN Cable	397043	-	-	-	-

(* Used on previous range of tools.

The output is short circuit protected (pulsed).

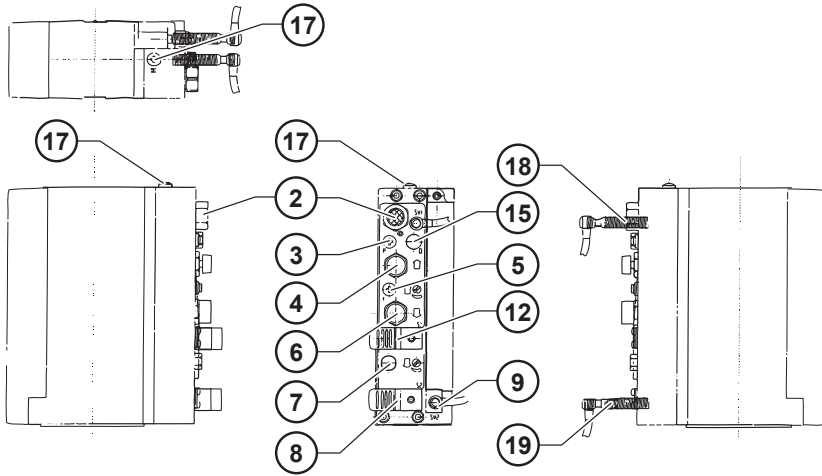
After elimination of the short circuit the switch is ready again for operating.



5.5. Solenoid Valve Part Numbers & Specifications

Solenoid Valve Type	Part no..	Rated Voltage	Rated Power
NO	396263	24V	2W
NC	326753	24V	1W

6. DESCRIPTION



- 2 Main air inlet (1/4" BSP)
- 3 P (M5)
- 4 Manual retract
- 5 1 (M5)
- 6 Manual advance
- 7 R (1/8" BSP)
- 8 S2 - Retract solenoid (Optional)
- 9 Automatic retract signal
- 12 S1 - Advance solenoid (Optional)
- 15 O (1/8" BSP)
- 17 M (M5)
- 18 SW1 - Home proximity (Optional)
- 19 SW2 - Depth proximity (Optional)

6.1. Supplied accessories

Qty	Description
1	1/4" BSP to NPT adaptor for Main air inlet
2	1/8" BSP to NPT adaptors

6.2. Optional accessories

Electrical Interface Kits:

	Description
C10 (438223)	2 M8 PNP (NO) Proximity Switches with 3m plug in cables (for Home/ Depth signals) 2 DIN Connector Solenoid Valves (NC) for advance/ retract signals.
C11 (438233)	2 M8 PNP (NO) Proximity Switches with 3m plug in cables (for Home/ Depth signals) 2 DIN Connector Solenoid Valves (1 NC and 1 NO) for advance/retract signals.

Description

C12 (438243)	2 M8 NPN (NO) Proximity Switches with 3m plug in cables (for Home/ Depth signals) 2 DIN Connector Solenoid Valves (NC) for advance/ retract signals.
C03 (104002)	2 M8 PNP (NO) Proximity Switches with 3m plug in cables (for Home/ Depth signals).
C05 (104842)	2 M8 NPN (NO) Proximity Switches with 3m plug in cables (for Home/ Depth signals)
O Port Blanking Kit	Comprising O-Ring 250913, Adaptor 257023, Lock Nut 257033 - Interrupts Automatic Retract - Used for PLC dwell and peck.

6.3. Main use of ports

	Description
Main Air Inlet	Supply for air feed and air motor on AFD versions.
M (M5)	Constant air signal in HOME position for cycle complete.
1 (M5)	For remote air signal start - PULSE only.
P (M5) Or O (1/8" BSP)	For remote emergency retract signal- PULSE only.
R (1/8" BSP)	Use on AFDE400/41 0/600/610/620 AFD625 to supply port at the nose of the tool for air assisted retract.

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