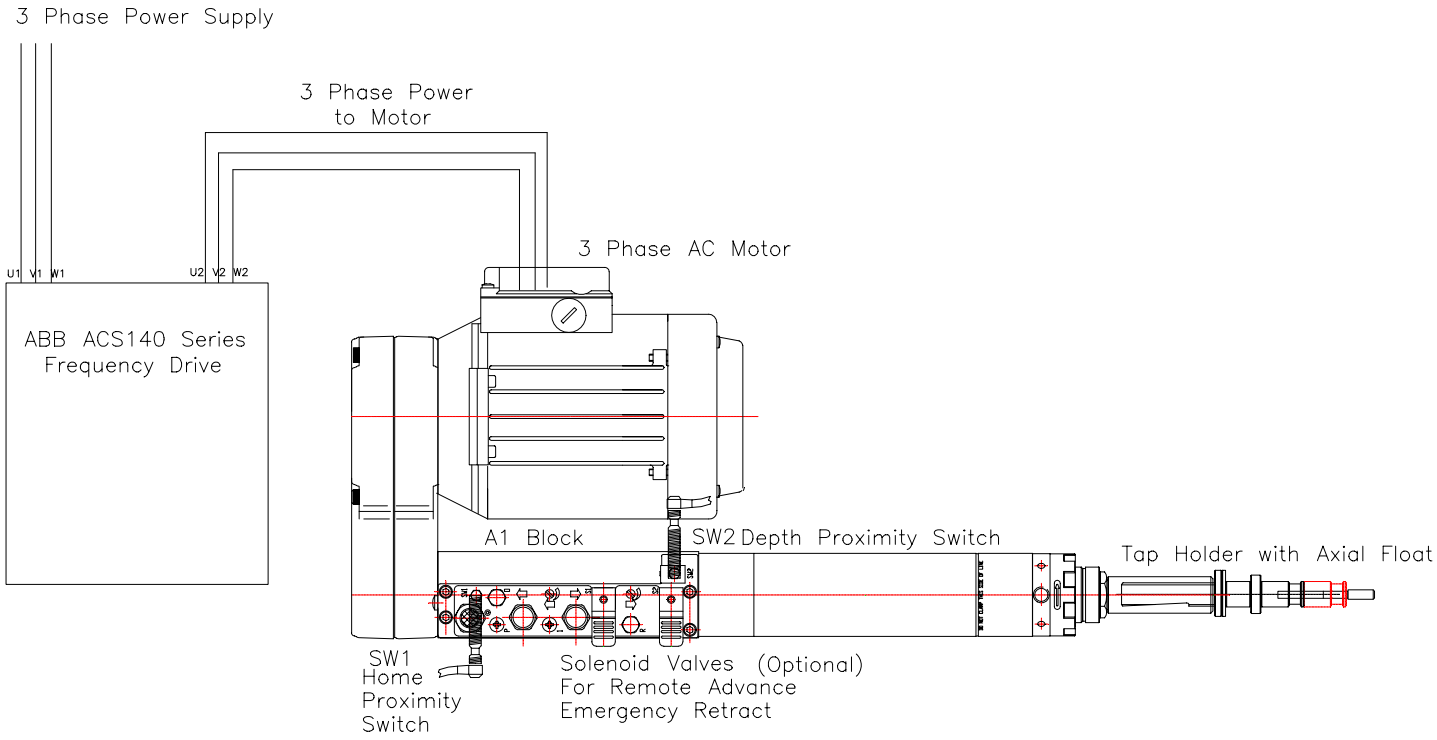
Tension/Compression Tapping by Reversing the Motor on a standard AFDE Unit

This can be carried out using the following – see diagram.



How it works
The tool will be set up with the motor running in the correct forward direction.

The unit can then be advanced through air pulse into 1 port or electrical pulse into S1 Solenoid Valve.

An HCU can be set to give the required rapid advance controlling the feed on the tap just as it enters the pre-drilled hole.

The tap holder with axial float will allow the tap to feed through at the rate required.
Note can be used with multiple spindle heads provided each spindle has axial float.

At end of stroke (adjustable from 0 – 4”) the depth proximity switch will give an output signal to the frequency drive which will reverse the electric motor.

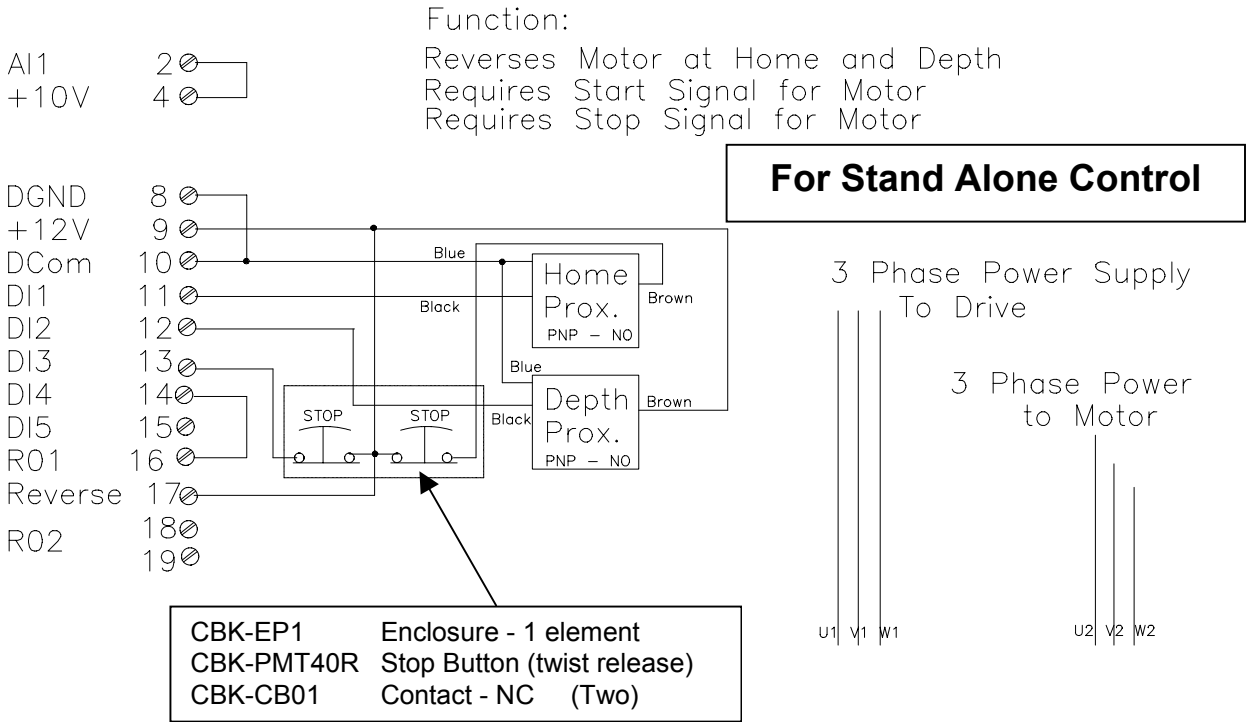
At the same time the unit will retract. The reverse RPM of the motor can be set higher than the forward RPM thereby allowing faster retract also using the tap holder with axial float to aid this.

When unit returns to home position the home proximity switch will give a signal and motor direction will be reversed leaving it running in the forward direction ready for the next tapping cycle.

Control can be stand alone through the frequency drive or through a PLC

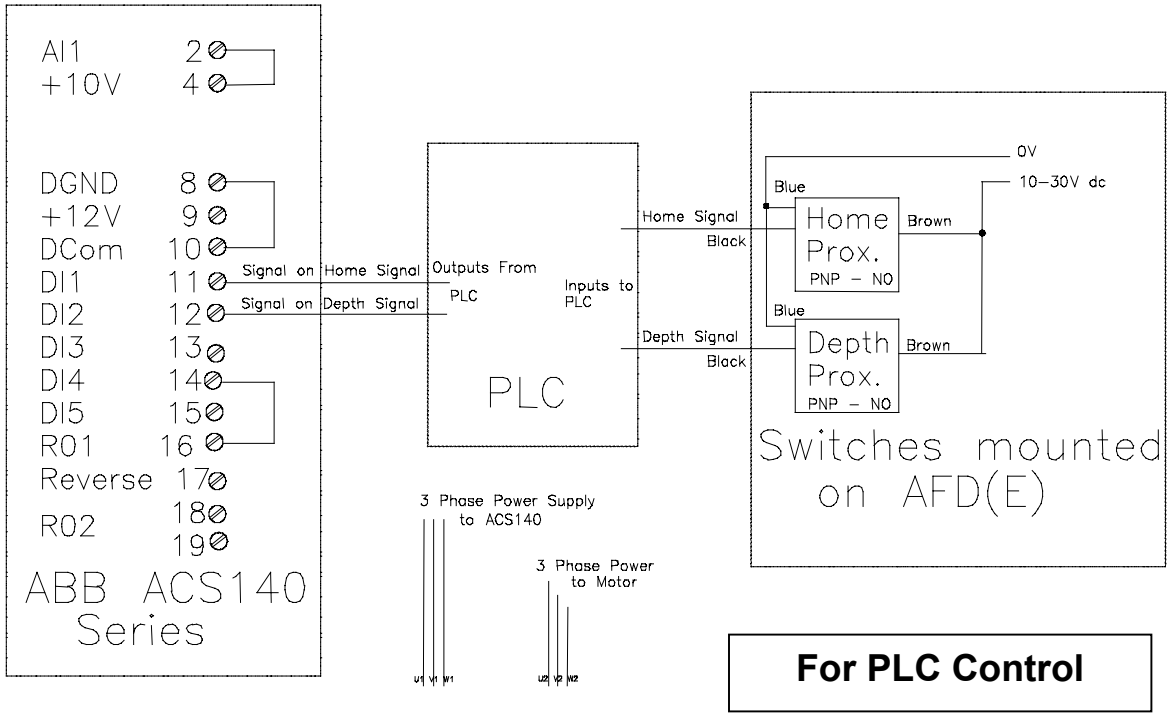
Control Diagrams

The diagrams below show the connections for the ACS140 Frequency drive.
Certain parameters within the drive also need to be set, this should only be done by or with the data from Desoutter



For Stand Alone Control

NOTE: Drive MUST be properly grounded according to the Users Guide



For PLC Control

NOTE: Drive MUST be properly grounded according to the Users Guide

ABB ACS 140 Variable Frequency Drives for use with Desoutter Auto Feed Drills and Tappers

Possible uses include:

1. Speed Change either automatically through a proximity switch or manually through the key pad.
   Can be used when changing hole size/material or “drapping”.
2. Electric motor reversal for tension tapping.
3. Rapid advance and motor reversal when lead screw tapping.

Basic Feature Summary:

Easy Integration

Flexible application macros.
On board power supply 12vdc, max 100mA for powering proximity switches.
Five programmable digital inputs for logic functions.
Two programmable analog inputs.
Simple keypad entry for parameter setting.

Detachable Control Panel

Parameters can be easily copied from drive to drive.
Tamper proof setting

Multiple mounting possibilities – NOTE Must be mounted in an enclosure

Wall mount
Built in DIN rail mount
Flange mount where the heat sink can be placed outside of a cabinet.

CE Marked, UL and CUL Approved

DC Braking Optional Accessory

Standard Ratings (ambient temperature 40 °C) and Frame Sizes

	Rated Motor Power (HP)	Rated Output Current 3 phase (A)			Rated Input Current 3 phase (A)	Frame Size/ Weight (lbs)
		Output Current I_2	Maximum Current Imax	Frequency Drive		
200-240V	0.75	3	4.5	ACS 143-1K1-1	4.2	B/2.4
3 phase	1.5	5.9	8.9	ACS 143-2K1-1	7.2	C/4.4
50/60 Hz	3	9	13.5	ACS 143-4K1-1	12	D/5.5
380-480V	1	2	3	ACS 143-1K6-3	2.7	B/2.4
3 phase	1.5	2.8	4.2	ACS 143-2K1-3	4	B/2.4
50/60Hz	2	3.6	5.4	ACS143-2K7-3	5.1	C/4.4
	3	4.9	7.4	ACS 143-4K1-3	6.4	D/5.5

Parameter Listing

For details on how to program refer to the ACS140 Programming Guide.

ACS 140 Complete Parameter List

Only the basic parameters (shaded in grey) are initially visible.
The menu function -LG- can be used to make the full parameter set visible.

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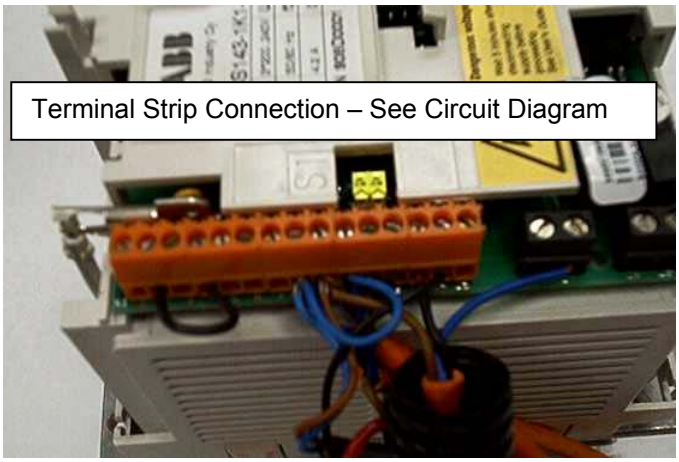
S = Parameters can be modified only when the drive is stopped.
M = Default value depends on the selected macro.

Code	Name	Range	Resolution	Default	User	S	M
Group 99	**START UP DATA**						
9902	APPLIC MACRO	0-7	1	0 (Factory)	1	X	
9905	MOTOR NOM VOLT	200-480V	-	*	From Motor Plate	X	X
9906	MOTOR NOM CURR	0.5*IN - 1.5IN	IN		From Motor Plate	X	
9907	MOTOR NOM FREQ	0 - 250 Hz	1 Hz	*	From Motor Plate	X	X
9908	MOTOR NOM SPEED	0 - 3600 rpm	1 rpm	*	From Motor Plate	X	X
Group 10	**Command Inputs**						
1001	EXT1 COMMANDS	0-10	1		5	X	X
1002	EXT2 COMMANDS	0-10	1		5	X	X
1003	DIRECTION	0-8	1		3	X	X
Group 11	**Reference Select**						
1101	KEYPAD REF SEL	1-2	1		1		X
1102	EXT1/EXT2 SEL	1-8	1		4	X	X
1103	EXT REF1 SELECT	0-8	1		1	X	X
1104	EXT REF1 MIN	0-250 Hz	1 Hz	0 Hz	0		
1105	EXT REF1 MAX (Forward Speed)	0-250 Hz	1 Hz		A		X
1106	EXT REF2 SELECT	0-8	1		1	X	X
1107	EXT REF2 MIN	0-100%	1%	0%	0		
1108	EXT REF2 MAX (Reverse Speed)	0-500%	1%	100%	A		
Group 12	**Constant Speeds**						
1201	CONST SPEED SEL	0-10	1		0	X	X
Group 14	**Relay Outputs**						
1401	Relay Output 1	0-11	1	3 (Fault)	6		
1402	Relay Output 2	0-11	1	2 (Run)	3		
Group 16	**System Controls**						
1601	RUN ENABLE	0-6	1		0	X	X
1602	PARAMETER LOCK	0-2	1	1 (open)	1		
1604	FAULT RESET SEL	0-7	1	6 (start/stop)	0	X	
Group 20	**LIMITS**						
2003	MAX CURRENT	0.5In-1.5In	0.1 A	1.5 In	From Motor Plate		
2005	OVERVOLT CTRL	0-1	1	1 (Enable)	1		
2006	UNDERVOLT CTRL	0-2	1	1 (Enable Time)	1		
2007	MINIMUM FREQ	0-250 Hz	1Hz	0 Hz	0		
2008	MAXIMUM FREQ (Reverse Speed)	0-250 Hz	1 Hz		A		X
Group 21	**START/STOP**						
2101	START FUNCTION	1-4	1	1 (Ramp)	1		
2102	STOP FUNCTION	1-2	1	1 (COAST)	1		
2103	TORQ BOOST CURR	0.5 In - 2.0 In	0.1 A	1.2 In	From Motor Plate		
2104	STOP DC INJ TIME	0-250s	0.1 s	0 s	0		
2105	PREMAGN SEL	0-6	1		0	X	X
2106	PREMAGN MAX TIME	0.0-25.0s	0.15 s	2.05 s	2		
Group 22	**ACCEL/DECEL**						
2201	ACC/DEC 1/2 SEL	0-5	1		0	X	X
2202	ACCELER TIME 1	0.1-1800 s	0.1;1 s	5 s	A		
2203	DECELER TIME 1	0.1-1800 s	0.1;1 s	5 s	A		
2206	RAMP SHAPE	0-3	1	0 (LINEAR)	0		
Group 25	**CRITICAL FREQ**						
2501	CRIT FREQ SEL	0-1	1	0 (OFF)	0		
Group 26	**MOTOR CONTROL**						
2603	IR COMPENSATION	0-30V	1	10V	10V	X	
2604	IR COP RANGE	0-250 Hz	1 Hz	50 Hz	60Hz	X	
2605	CARRIER FREQ. 1=LO NOISE	0-1	1	0(standard)	0	X	
2606	V/f RATIO	1-2	1	1(linear)	1	X	
Group 30	**FAULT FUNCTIONS**						
3010	STALL CURRENT	0.5*In-1.5*In	0.1 A	1.2*In	From Motor Plate		

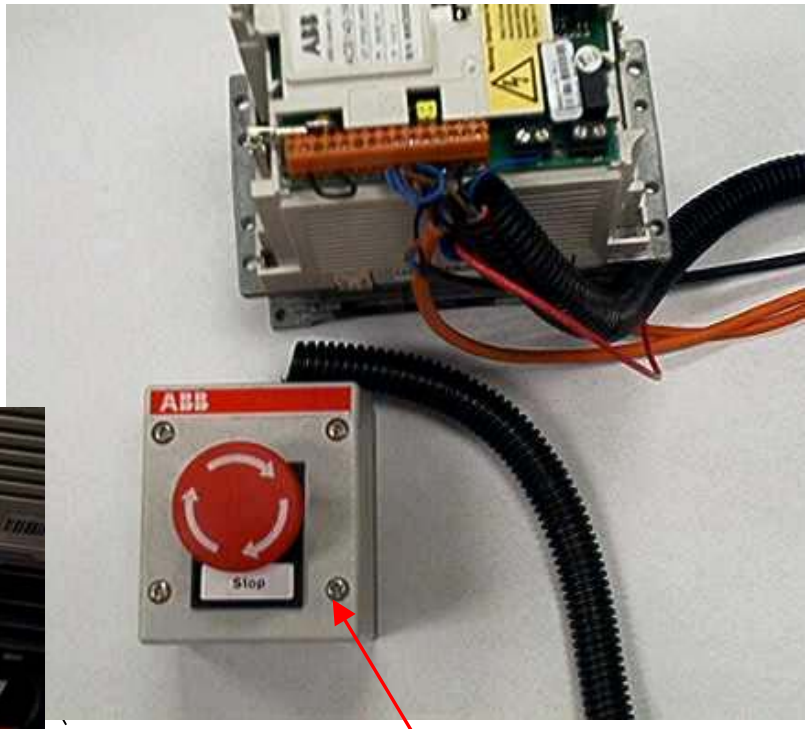
Basic parameters. From the Application

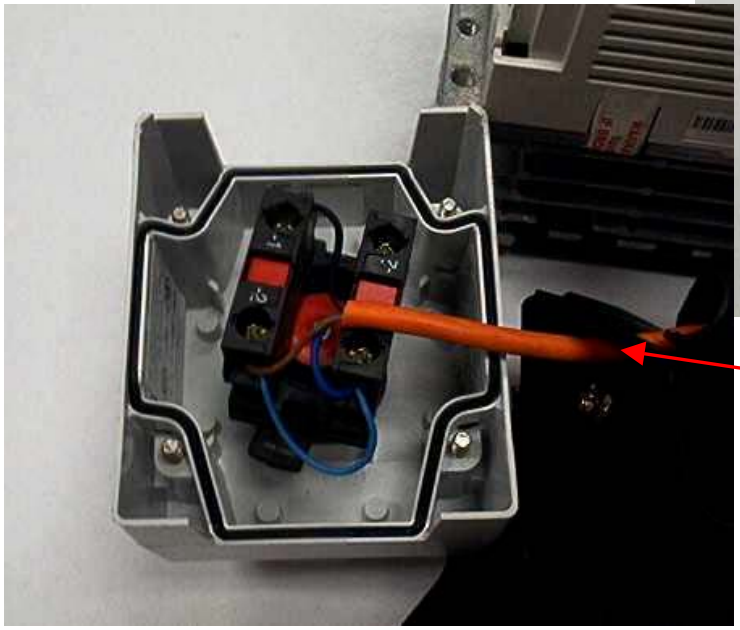
Stand Alone Control – Connections (Refer to Circuit Diagram Above)



Terminal Strip Connection – See Circuit Diagram

Basic Connections – Refer to Circuit Diagram Above
Connect proximity switches and motor start/stop switch





CBK-EP1	Enclosure - 1 element
CBK-PMT40R	Stop Button (twist release)
CBK-CB01	Contact - NC (Two)