

Instruction for Fitting Ah-ha system to Posidata Cabinet

We recommend that you read these instructions right through a couple of times before you start any physical work. You may not understand them until you are carry out the work but we are sure it will help you when you do start.

If you find anything in the documents difficult to follow please let us know as we continually revise them based on customer feed back to try to make them as unambiguous as possible.

The control is connected to the machine via several cables. There is one for each motor and usually 2 for the auxiliary functions. The 2 cables for auxiliary functions should be marked A1 and A2. The pins and sockets in the cable are identified by letters so when we refer to A1 W we mean the wire connected through pin/socket W in the A1 cable. As the actual sockets on the control are not easy to get at it is usually much better to identify terminals connected to the socket using a meter.

If you have a machine with programmed functions such as spindle on/off, coolant on/off, tool changer, spindle speed etc. that still function it is a very good idea to operate all these individually if possible before disconnecting the old control. Identifying the relays and contactors operated along with the associated terminal numbers and making a careful note of what does what. Most important is to check how the coolant is switched. Check if the wire on A1 W is switched to ground to operate the coolant. If so the easiest thing to do is fit a slave relay operated by our output (which all switch + 24 volts with the exception of the built on M03/M04 circuit which just closes relay contacts and gives you the option of fitting a + 24 V common or a 24V return common).

Before removing or disconnecting existing wiring switch off the Machine and Isolate from the mains!

Please note these instructions are for guidance only and have been produced with the help of a number of Posidata engineers who have fitted Ah-ha to Posidata controlled machines. One thing that is clear is there a number of versions of interface cabinet fitted to the side of the Posidata controlled machines and also that many of them have been modified over the years. The most important point is that the standard existing E stop makes a connection using a N/O (normally open) contact. THIS IS DANGEROUS and not allowed on machines built today. Make sure you fit a normally closed contacts as per these instructions. If you have any difficulties in getting your machine running give us a call. We can always get your machine running, hopefully without an engineers visit and any great expense.

Open the doors on the Posidata control and locate a card labelled FRF. You should find a 26 way ribbon cable plugged into the card. This is the key to running the Posidata drives from Ah-ha software.

Mount the EMT IF card in the cabinet at a location where the ribbon cable previously located can reach and be plugged into the matching socket in the EMT IF board and where 1 of the 37 way cables can reach to a wall of the cabinet at a point where the second cable can reach the PC.

If you are fitting an EMT 16OP IF card to control a tool changer and spindle speed it is a good idea to mount this at the same time again where one of the 25 way cables can reach the cabinet wall close to the 37 way cable.

Locate the A1 socket on the Posidata cabinet. When we indicate a connection has to be made to the socket you may find some of the wires are brought out to a terminal block which may be a much better place to make the connection. Remove the existing wire in each case, carefully labelling it and also isolating the end for safety. Most of the wires can eventually be removed completely along with all the logic racks but it is better to play safe as some cabinets have been extensively modified in the field so it is safer to finally remove all the surplus wires and parts once the machine is up and running.

A1 Pin S is 24V DC and a connection should be made to our IF terminal T3-1 (The EMT IF terminals are numbered from the bottom in 4 blocks. T3 means the 3rd block up and the 1 means the lowest terminal on that block. It is clearly marked +24VDC. If it is not you have identified the WRONG terminal DO NOT CONNECT and check again until you fully understand our terminology).

A1 Pin R & U are the 24V returns, make connections to EMT terminal T1-1.

Connect 24V DC to EMT Terminal T1-6.

Connect A1 Pin Z to EMT Terminal T1-5

These provides the machine with 24 Volt switched via the new E stop circuit.

Spindle connections

Connect between a convenient 24V Return and EMT Terminal T1-4

Connect A1 Pin M to EMT Terminal T1-3

Connect A1 Pin T to EMT Terminal T1-2

These are fitted so when Ah-ha switches M03 and M04 the connection from the machine interface is taken to ground (24 Volt Return) which is the way the Posidata operated.

Limit Switch connections

Connect A1 Pin B to EMT Terminal T2-6

Connect A1 Pin C to EMT Terminal T2-5

Connect A1 Pin D to EMT Terminal T2-2

Connect A1 Pin E to EMT Terminal T2-1

Connect A1 Pin H to EMT Terminal T2-7

Connect A1 Pin J to EMT Terminal T2-3

Connect A1 Pin X to EMT Terminal T2-4

Connect A1 Pin Y to EMT Terminal T2-8

If you do not have 4 Axes only connect those terminals that are appropriate

If you are not using any guards with interlock switches this is a good time to link out the built in guard circuit by fitting a link between EMT terminal T1-11 and any convenient 24V.

Turn your attention to the head of the machine and remove the panel to gain access to the limit switches.

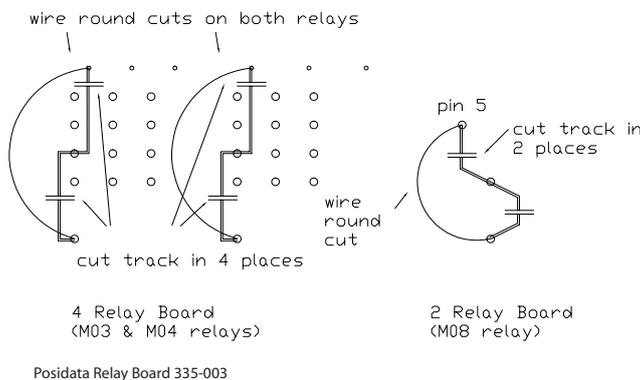
We need the 2 switches mounted on the right.

We suggest you run a new cable to the head from the machine interface box with at least 12 signal wires. Wire the Z limit switches normally closed as per the drawing. Taking Z + as an example first remove the existing wire from the common and trace it back to a suitable connection point where it can be disconnected safely. Connect 1 of the new wires to the limit switch common and then connect the other end in the machine cabinet to any +24 volt terminal. Pin S (24V) at the machine end of the A1 cable is possible but it is much easier if you can find the terminal connection. Connect another wire to the normally closed connection on the Z + limit this time taking the other end to A1 pin J or the terminal connected to pin J.

Repeat For the Z - switch but using the pins or terminals as the drawing. (The common can be just connected to the common of the Z + limit switch)

Now deal with the X and Y limit switches. You need 2 switches per axis instead of the single originally fitted. We normally fit 2 new switches but we know that some customers have managed to fit an additional switch next to the original. Wire the switches as per the drawing via the A1 cable. The pins to use are shown in the A1 cable listing.

The existing machine mounted M function relays are latched. This is a good time to modify the board so that they release when the Ah-ha releases the relays so the spindle etc. do actually stop! Locate the 2 relay printed circuit boards in the cabinet. 1 board has 4 relays and the other 2 relays. Release the boards so you can get at the back and cut the tracks as per the drawing and add link wires as shown.



You need a button to switch on the new interface card. If possible add a N/O (normally open) contact to the existing cabinet On push button. Connect a wire from the 24V to the new contact. Connect the other side of the contact to the EMT terminal T1-10 (RESET).

You need to wire the E stops. Again if possible add contact (This time a N/C contact) to the E stop on the Posidata cabinet and the E stop on the machine. You need to connect these new contacts in a chain. Wire one side of the Posidata E stop N/C (normally closed) contact to 24V. Wire the other side to control A1 pin P. Wire EMT terminal T1-12 to control A1 Pin Q. On the machine using one of the new wires run up to the head connect one side of the Machine E stop N/C (normally closed) contact to machine end A1 pin P and the other side to machine end A1 pin Q.

A N/O push button needs to be fitted to act as the spindle enable button and we normally fit a small button in the box on the head of the machine just above the existing switches. Connect this new switch as per the

circuit diagram supplied using the 2 more of the new wires previously run to the head, one side connected to machine end A1 pin G and the other side connected to 24V possibly at A1 pin S (24V). At the control end wire A1 pin G to EMT terminal T1-9 (enable). Note the purpose of the enable button is to prevent the spindle running just from the PC control. Whenever the control issues a spindle command the programme operation is suspended until the enable button is pressed which also starts the spindle. To be used the Block allow parameter must be mapped to 202. If you use a N/O (normally Open) switch the polarity must be set in parameters to LOW=TRUE.

If you are going to use the remote cycle start and feed hold 2 more push buttons need to be fitted at a convenient position on the machine and wired back to the EMT board using A1 pin L and AUXIN3 for feed hold and A1 pin K with AUXIN 4 for cycle start. These must be mapped in the parameters to 203 and 204 respectively. If you use a N/O (normally Open) switch the polarity must be set in parameters to LOW=TRUE and for a N/C (normally closed) switch HIGH=TRUE. We strongly recommend N/O (normally Open) switches for Enable and Cycle Start and N/C (normally closed) switch for Feed Hold.

The end result of this wiring should give you circuits that operate as per the F0626A01 drawing but using the auxiliary cables to connect between the machine and control. The auxiliary cables are not shown on the drawing as a number of users have decided the original cables are in poor condition and just run new wiring.

Fit the card supplied with the software into the PC as the Ah-ha instructions and connect the PC board and the machine interface using the 2 cables supplied joining the cables at the slot already cut in the cabinet. Check that the machine is connected correctly to the 3 phase mains and most important that the earth connection is properly made and of an adequate size. At this stage it should be safe to switch on the Posidata but take care in case any mistakes have been made in the new wiring. If all is well you can now press the On button which will switch on both the Posidata electrics and the new interface card. You should now see red LED's on indicating RLE1 is on and all the green LED's for limits that have been connected are on. If this is not the case switch off and carefully go through all the connections you have made looking for any errors.

Loading the software

From DOS (Never Windows)

Insert Floppy Disc in Drive A and log onto A by typing in A: and pressing the enter key.

Type GO and press Enter

When the self-extracting process is complete you can run the software.

Reboot the computer and you will get an option screen enabling you to run Artisan version 4.0, the previous version of artisan or DOS. The option to run the earlier version of Artisan is only applicable if you have the old version and have upgraded.

If we have supplied a PCK file on disk do the following:-

After Running Ah-ha software and for the first time go into setup (ALT S and then into the CNC timing menu and make a note of the Linear master timer rate and circular timer rate. These are generated to match the speed of your computer.

Insert the disk with the PCK file and log onto A by typing in A: and pressing the enter key.

Type GO and press Enter. This will copy the PCK file

Run the software again by typing CNC40 followed by the enter key and then change the timer rates to the value previously noted (If necessary).

Make sure you have the input and output polarities set correctly for any custom switches and you have fitted.

If the machine has programmable spindle speeds you will probably need to create an MCDMAP.AGC programme in the CNC40 directory. If we have provide an example this can be installed by typing A: enter and GO enter in the same way as the PCK file was installed. Please note that if you edit the MCDMAP.AGC programme from within the CNC software you must exit to DOS and restart the CNC software as otherwise your changes are not recognised. This is because if an MCDMAP programme is present in the CNC40 directory it is loaded into memory when the software is started.

Most Important

When you have the Computer set up copy all the PCK files to 2 floppy disks and LOCK one of them away with the original software disks for safety.

To do this log onto C if necessary by typing in C: and press "Enter". Type CD \CNC40 and press "Enter".

Insert the floppy disk. Log onto A by typing in A: and press "Enter".

Type Copy C:*.PCK and press "Enter".

Log back onto C by typing in C: and press "Enter".

We also include a tiny programme to do this. Insert a floppy disk and type PCK2A and press "Enter".

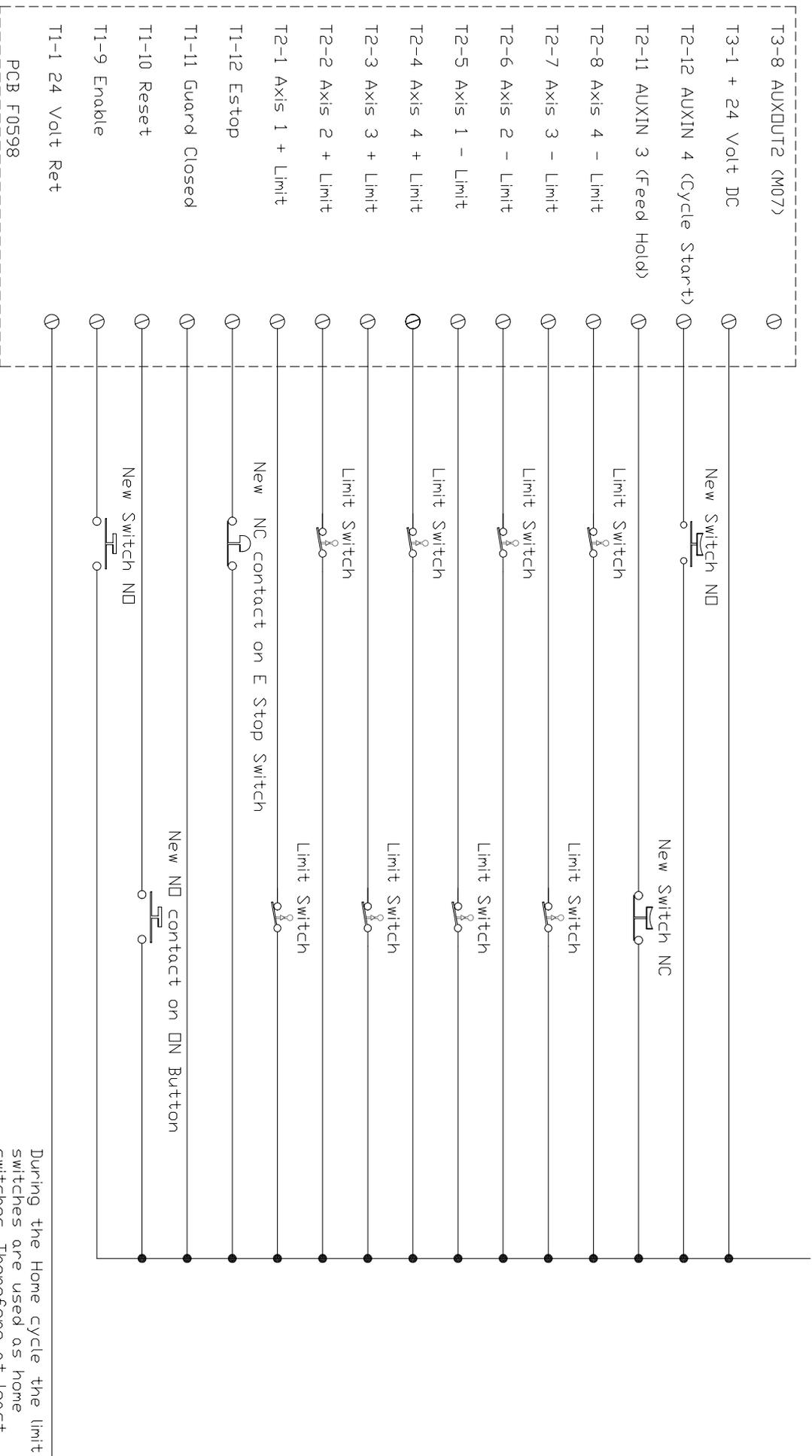
For you convenience we also include a tiny programme to copy all user programmes to a floppy. Insert a floppy disk and type AGC2A and press "Enter".

If you have any difficulties we can be contacted by telephone 01297-446000, fax 01297-446001 or email sales@eagland.co.uk

Posidata A1 cable pin designations

| Old Posidata Function | New Ahha Function | PIN | Terminal |
|----------------------------|----------------------------|-----|--------------------|
| AI FUNCTION | AI FUNCTION | | |
| AUX INTLK (ALL STOP) INPUT | AUX INTLK (ALL STOP) INPUT | A | |
| REMOTE JOG B | Y LIMIT (NC) Minus | B | T2-6 |
| REMOTE JOG - | X LIMIT (NC) Minus | C | T2-5 |
| Y LIMIT (NO) | Y LIMIT (NC) Plus | D | T2-2 |
| X LIMIT (NO) | X LIMIT (NC) Plus | E | T2-1 |
| LO LUBE | Lo Lube | F | |
| LAMP RETURN | Remote Spindle Enable | G | |
| REMOTE STOP | Z LIMIT (NC) Minus | H | T2-7 |
| REMOTE START | Z LIMIT (NC) Plus | J | T2-3 |
| SPIN OFF (M05) | Remote Start | K | T2-12 |
| L | Remote Stop | L | T2-11 |
| SPIN REV (M04) | SPIN REV (M04) | M | T1-3 |
| 1st RTC (M91/M92) N | | N | |
| QUILL CLAMP | I/F Card E Stop Chain | P | Auxiliary Terminal |
| Z LIMIT (NO) | I/F Card E Stop Chain | Q | Auxiliary Terminal |
| 24V RET | 24V RET | R | T1-1 |
| +24V EXT | +24V EXT | S | T3-1 |
| SPIN FWD (M03) | SPIN FWD (M03) | T | T1-2 |
| LOGIC GND | 24V RET | U | T1-1 |
| COOLANT ON MIST (M07) | | V | |
| COOLANT ON FLD (M08) | COOLANT ON FLOOD (M08) | W | |
| COOLANT OFF(M09) | W LIMIT (NC) Plus | X | |
| W LIMIT (NO) | W LIMIT (NC) Minus | Y | |
| +26V VIA A/S CP (OUTPUT) | +26V VIA A/S CP (OUTPUT) | Z | T1-5 |

NB Input Output relative to control



During the Home cycle the limit switches are used as home switches. Therefore at least one per axis must be fitted. Which switch is used depends on home direction set in the software