

Fitting Ahha to a machine with Panasonic drives

Switch off the Machine and Isolate from the mains!

Please note these instructions are for guidance. If you have any doubt on any particular point please check with us. 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. If you find any part of this documentation unclear or spot any errors PLEASE let us know. We constantly revise and add to our documentation in order to make fitting ahha control as straight forward as possible.

First check the items you need.

We supply the following:-

- 1 Ahha IF card that fits in the PC as per the Ahha instruction manual.
- 1 EMT IF Card that fits in or near the machine electrics.
- 1 EMT Panasonic interface card.
- 2 Cables that connect the Ahha card to the EMT card. We supply 2 so that they can be joined through a slot cut in the cabinet wall saving having to make 37 connections!

You will need the following:-

A push button with normally open contacts that switches on the EMT IF card. We recommend adding normally open contacts to the existing machine ON button if there is one.

A normally closed Emergency stop button or additional normally closed contacts on any existing Emergency stops.

A normally open push button to act as the spindle enable.

A contactor with sufficient poles to switch on the Panasonic drives if there is not one on the machine.

Fuses and holders or circuit breakers to fit in the mains feeding the Panasonic drives.

24 volt DC power supply if there is not one already on the machine.

If you are fitting to a lathe and require threading you will need a 5 volt power supply for the spindle encoder if there is not one already on the machine.

You may need the following:-

A normally open push button to act as remote start if required.

A normally closed push button to act as remote feed hold if required.

Normally closed axis limit switches if they are not already fitted.

Normally closed limit switches to act as shut down switches as described below.

MOST IMPORTANT

All servo machines should have shut down switches or dead stops fitted on all axes at extreme travel. These should be fitted outside the limit switches that are connected into the EMT IF card sufficiently far away

so that they are not operated if the axis hits a limit at rapid speed. If the machine is being retrofitted it is highly likely that suitable switches exist. We suggest that you wire the shut down switches in series and link directly into the E stop chain that is connected into the EMT IF card Estop terminal. That way you cannot switch on our circuits if you are on a shut down switch. Normally this should never happen and if it did you would have to wind the axis off the switch by hand. Alternatively you can fit a shut down override button but this must only be operated once you have removed whatever caused the axis to hit the shut down in the first place. Failure to do this could result in MAJOR damage. We also take the relay or contactor chain that switches on the Panasonic drives through the Estop1 and Estop2 terminals on the EMT F0598 IF card. These are voltage free contacts that close when the reset input is operated. The E stop Latch link JR3 must be removed from the main EMT IF board so that the Ready contacts on the F0634 Panasonic interface cards also operate the E stop circuit in the event of a servo error. These must be wired in series to the E stop latch1 and E stop latch 2 terminals.

Suggested Procedure

Switch off the machine and Isolate from the mains!

Fit the axis limit switches and shut down switches if not already fitted.

Mount the EMT F0598 IF card in the cabinet at a location where 1 of the cables can reach to a wall of the cabinet at a point where the second cable can reach the PC. Mount the EMT Panasonic F0634 interface card as close as possible to the EMT F0598 IF card. If using the ribbon cable this must be above the F0598 IF card so the cable can plug into both cards .

Locate the existing 24V DC power supply or mount a new one.

A 24V DC 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).

A 24V return should be made to EMT terminal T1-1.

Fit the Normally Closed contacts to the emergency stop switch(es) and take a 24V connection in series through the shut down switches to EMT terminal T1-12 as shown on the drawing. 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 24V.

Fit the new ON push button or one of the new normally open contact to the existing ON push button and make a connection from 24V to one side of the contact . Connect the other side of the contact to the EMT terminal T1-10 (RESET).

Locate the machine limit switches and check they are normally closed. Wire the 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 a new wire to the common and connect the other end in the machine cabinet to +24V DC. Connect the other side of the switch to EMT terminal T2-3 on milling machines and T1-1 on lathes.

Repeat For the Z - switch but using the 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 in the same way.

A N/O push button needs to be fitted to act as the spindle enable button and we normally fit a small button somewhere on the existing machine panel. Connect this new switch as per the circuit diagram supplied using 2 more new wires . 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 two more push buttons need to be fitted at a convenient position and wired back to the EMT board using AUXIN 3 for feed hold and 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

Fit the card supplied with the software into the PC as the Ahha instructions and connect the PC board and the machine interface using the 2 cables supplied joining the cables at a 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 machine 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 machine 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.

Next connect up the Panasonic drives. The short cable from the drive plugs straight into the socket on the EMT F0634 IF PCB. Make sure you fit jumpers on the Estop and FH pins below any axis connector that are NOT used. Connect the 26 way ribbon cable between the F0634 and the F0598 IF PCB's. If the 26 way connection on the F0598 board is already in use for other drives wire the step and direction signals from the EMT IF card to the Panasonic IF card as shown on the drawing.

Wire 24VDC and 24V RET to the F0634 interface cards as per drawing. Connect the Estop Latch 1 connection and Latch 2 connections as per the drawing. Remove the JR3 jumper from the F0598 board . Wire the extra link needed between the test points on the F0598 board if you are NOT using the ribbon cable connection. This is necessary to avoid noise as the Drive is using the same power supply as the IF card. Optionally wire the Feedhold 1 and Feedhold 2 connections into your feed hold circuit if required. If you are using the ribbon cable you must fit the full step jumper JR1 on the EMT F0598 IF board.

Change Panasonic parameters

On the original Panasonic drives Change:-

P01 to 2 Selection of initial display. 2 sets it to torque display

P02 to 0 Selection off control mode. 0 sets drive to position control mode

P29 to 2 Pulse input mode 2 if using ribbon cable, 2 sets to phase mode (Note you must fit Full Step

Jumper to IF board in this mode

P29 to 3 3 sets to pulse row and sign if using step and direction connections

P26 to 2500 Denominator of pulse frequency division, 2500 multiplies Steps from control by 4 and gives you an effective 2500 steps per motor revolution

P20 Position loop gain. Sets gain as per Panasonic documentation to suit your machine

On the new A series drive we don't know the parameter numbers. However you should be able to locate the appropriate number to match the above set up. As soon as we have the numbers we will update this document.

Don't forget to Write parameters to Eeprom as per Panasonic instructions otherwise the parameter changes will be lost at power down

Note when using any servo drives it is better to start the software before switching on the drives with the on button and better to switch off the drives with the Estop button before exiting the software. This avoids any axis jumping slightly as the command circuits switch on and off.

If the machine is a lathe or a mill with programmable spindle speeds refer to the additional 16 OP IF card documentation.

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".

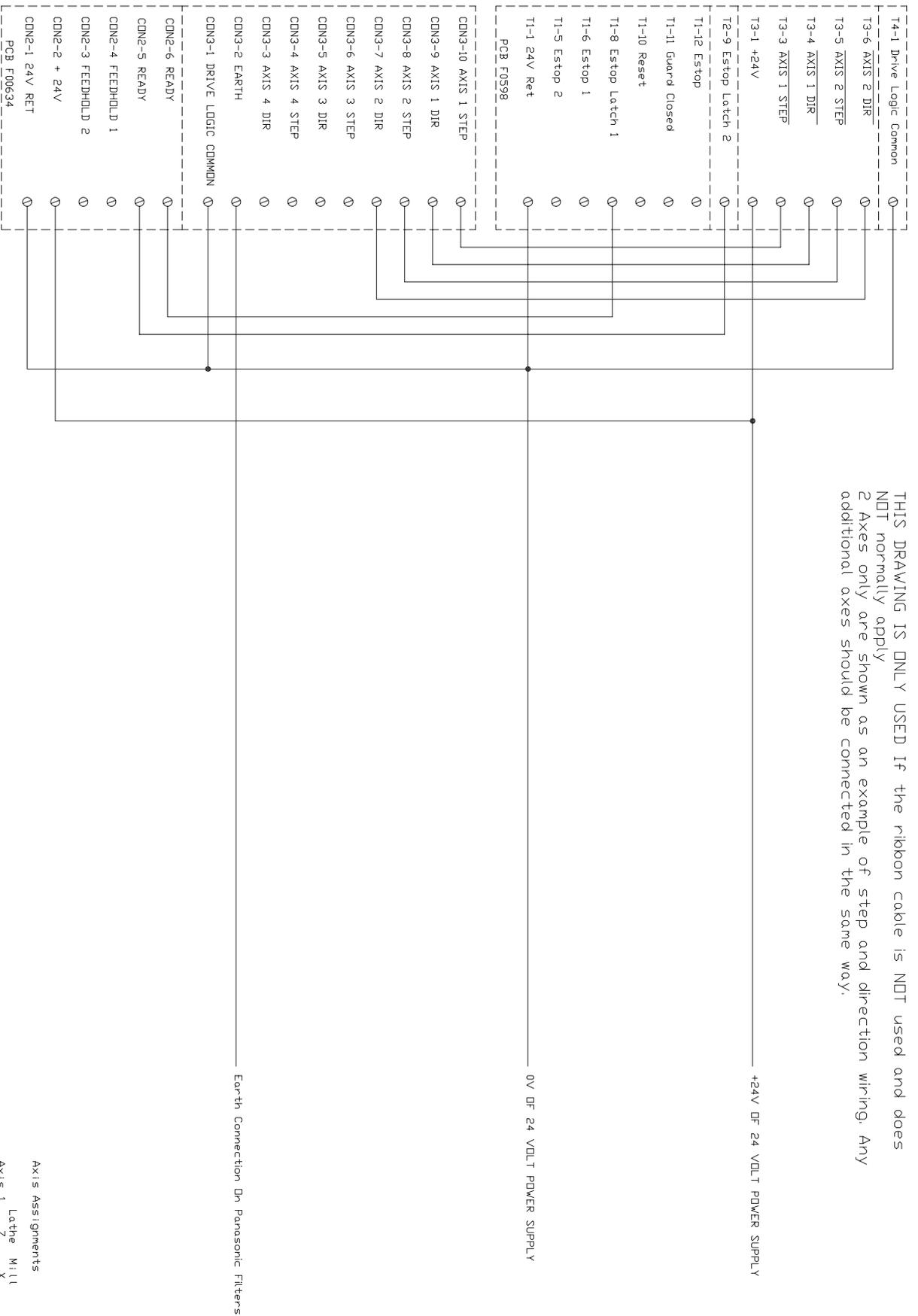
Log back onto C by typing in C: and press "Enter".

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".

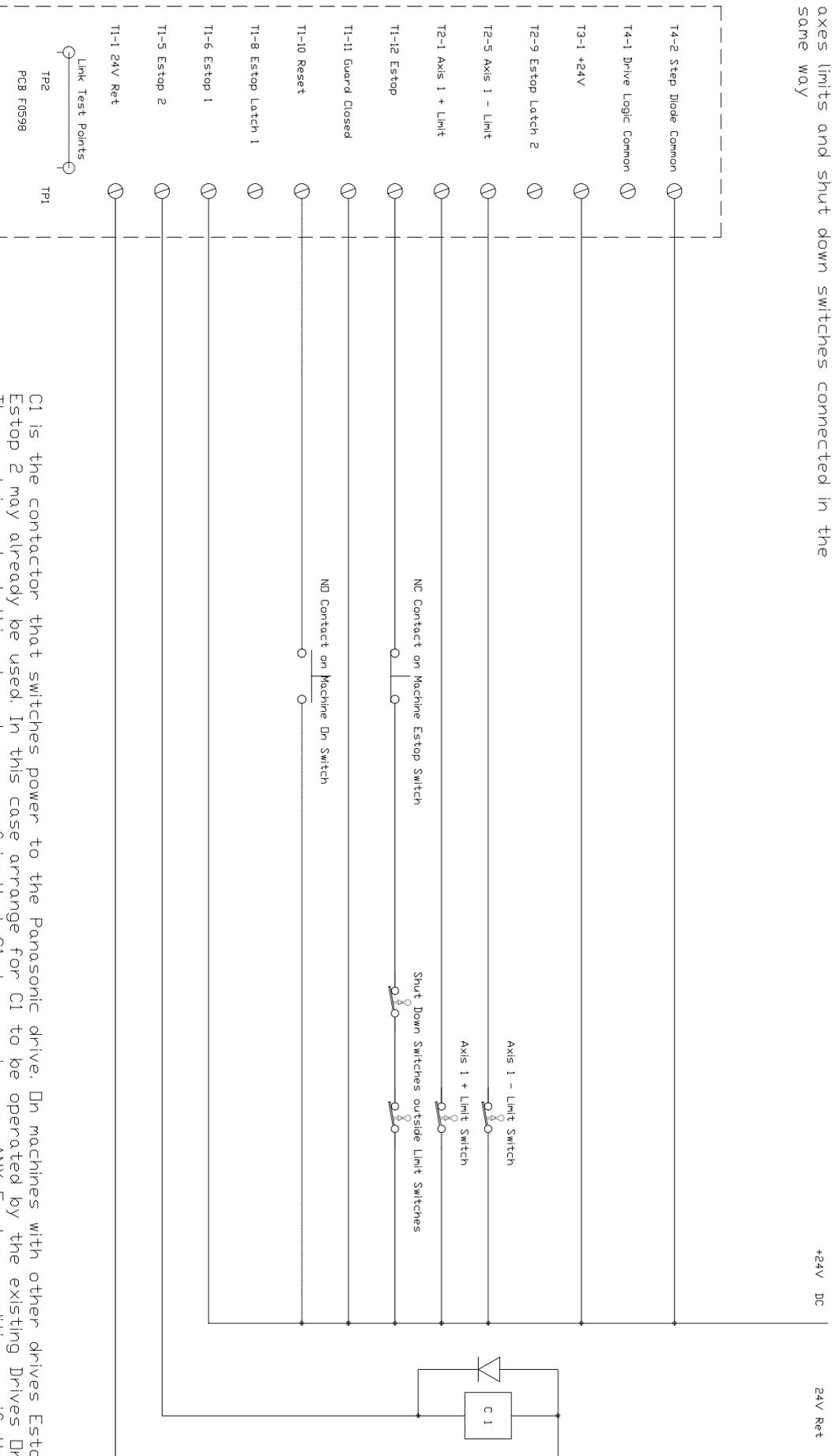
If you have any difficulties we can be contacted by telephone 01297-446000 or email sales@eagland.co.uk

THIS DRAWING IS ONLY USED IF THE RIBBON CABLE IS NOT USED AND DOES NOT NORMALLY APPLY. 2 AXES ONLY ARE SHOWN AS AN EXAMPLE OF STEP AND DIRECTION WIRING. ANY ADDITIONAL AXES SHOULD BE CONNECTED IN THE SAME WAY.



Axis Assignments
 Axis 1 Lathe Mill
 Axis 2 X X
 Axis 3 Z Z
 Axis 4 A/W

Axis 1 (X on mills Z on lathes) only shown, additional axes limits and shut down switches connected in the same way



The test point link has found to be necessary when using step and direction command. It should not be used if using the ribbon cable which provides pulse train commands

C1 is the contactor that switches power to the Panasonic drive. Dn machines with other drives Estop 1 and Estop 2 may already be used. In this case arrange for C1 to be operated by the existing Drives Dn circuit. The most important thing to make sure of is that C1 de-energises on ANY E stop condition or if the Axis shut down switches are operated. Consult EMT if you need further information

Normally all 0 volts connections must be connected to a central ground (earth) point that must be connected to supply earth with substantial cable

You may need to alter the earth connections and the link between the F0598 PCB test points on your own machine. test the axis for lost steps. If the axis is losing position there is almost certainly interference. Contact EMT for advice as how best to solve this problem