

NEWALL

DP500 Digital Readout



User Manual

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Specification

Electrical

EU Directive 73/23/EEC (Low Voltage Directive)
BS EN 55022:1998 Class B
BS EN 55024:1998

Input to Power Supply Unit (Supplied)
100-240V (47-63Hz)
External switch-mode - Output voltage 15VDC
Input Voltage to DP500 15-24VDC $\pm 10\%$
Conforms to Low Voltage Directive

Physical

Height	170mm (6.69")	Depth	48mm (1.89")	Mounting Bolt: M10
Width	260mm (10.23")	Weight	1.5kg (3.3lb)	

Environmental

Climatic Range	Storage Temperature	-20°C to 70°C
	Working Temperature	-10°C to 50°C
	Working Humidity	95% R.H. at 31°C
IP-Ingress Protection	IP40 Stand Alone	

Accreditation

CE

Disposal

At the end of its life, you should dispose of the DP500 system in a safe manner applicable to electrical goods

Do not burn

The casework is suitable for recycling. Please consult local regulations on disposal of electrical equipment

Input & Resolutions

Only Spherosyn LT or Microsyn LT encoders can be used with the DP500 DRO

Resolutions

Spherosyn LT or Microsyn LT (10 μ m)

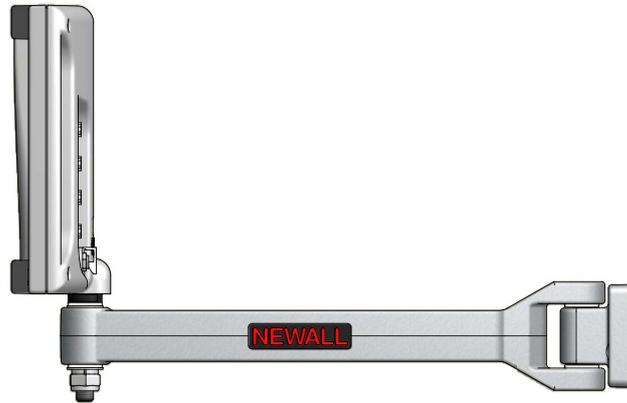
5 μ m (0.0002")
10 μ m (0.0005")
20 μ m (0.001")
50 μ m (0.002")

Newall Measurement Systems Limited reserves the right to make changes to this specification without notice

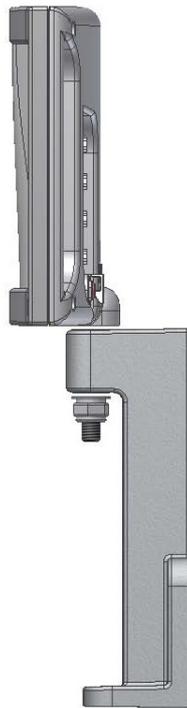
Mounting Options

This chapter details the various mounting options for the DP500, both the standard version and the panel mount version.

Mill Mount (Non Adjustable)



Lathe Mount (Non Adjustable)



Connection Details

This chapter details the cable connections for the DP500.

Important Details

You can only use the DP500 with Newall Spherosyn LT and Microsyn LT analogue encoders.

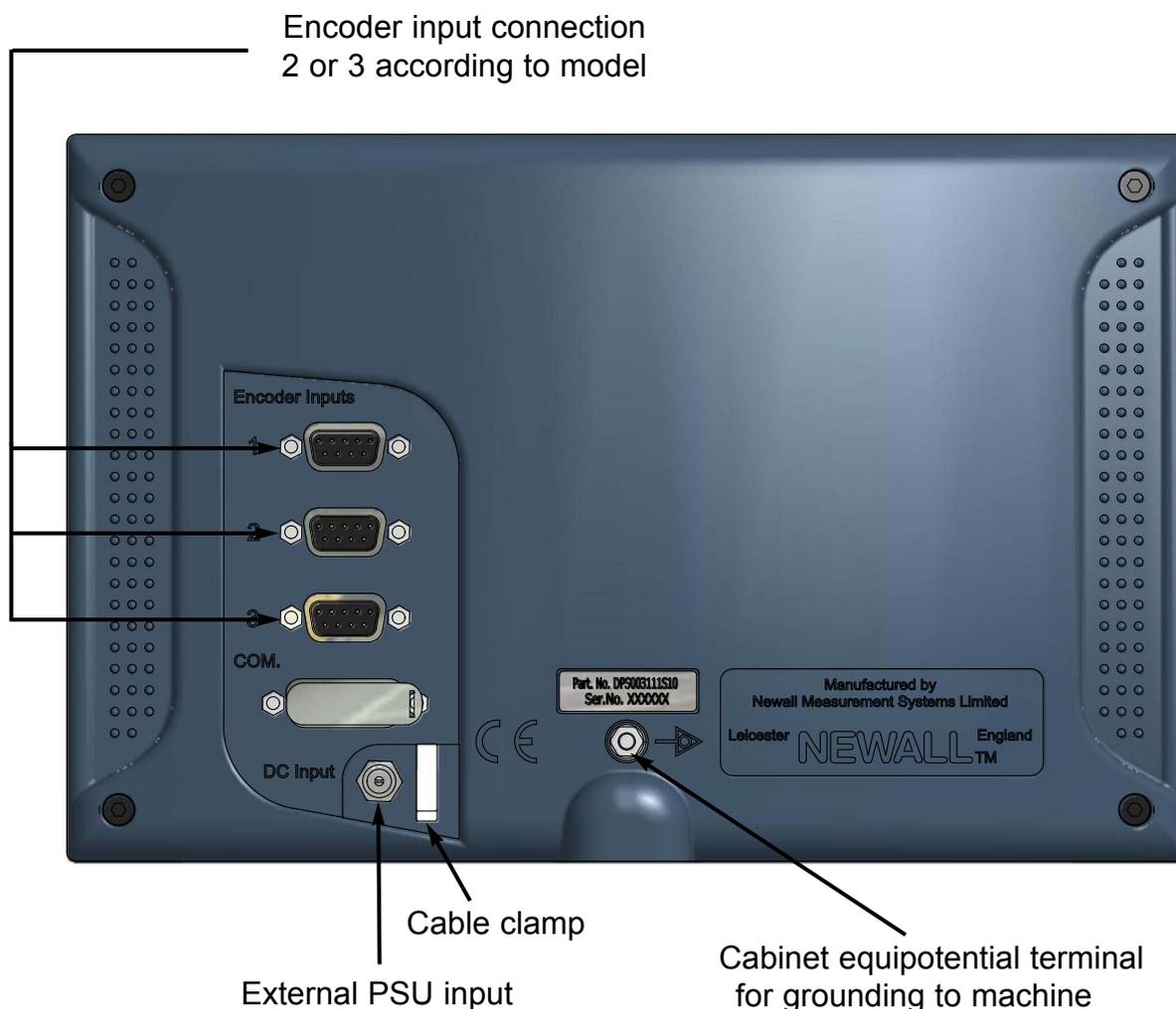
You need to ensure that:

- ✓ You secure all the cables to prevent the connectors from dropping into hazardous positions (for example the floor or coolant tray) when you unplug them.
- ✓ You route all cables to prevent them from being caught on moving parts.
- ✓ The DP500 is grounded to the machine, using the braided grounding lead provided, before you turn on the machine supply.
- ✓ The power has been disconnected, before you connect the encoder(s).

Do not connect this unit directly to the mains supply.

If an encoder connected to the DP500 travels over 2.2m an error code (2.1) will be displayed in the X axis and the other axes will go blank. See the trouble shooting guide for further details on page 25.

Connections



Display and Keypad

This chapter explains how to interpret the display and use the keypad.

Understanding The Display



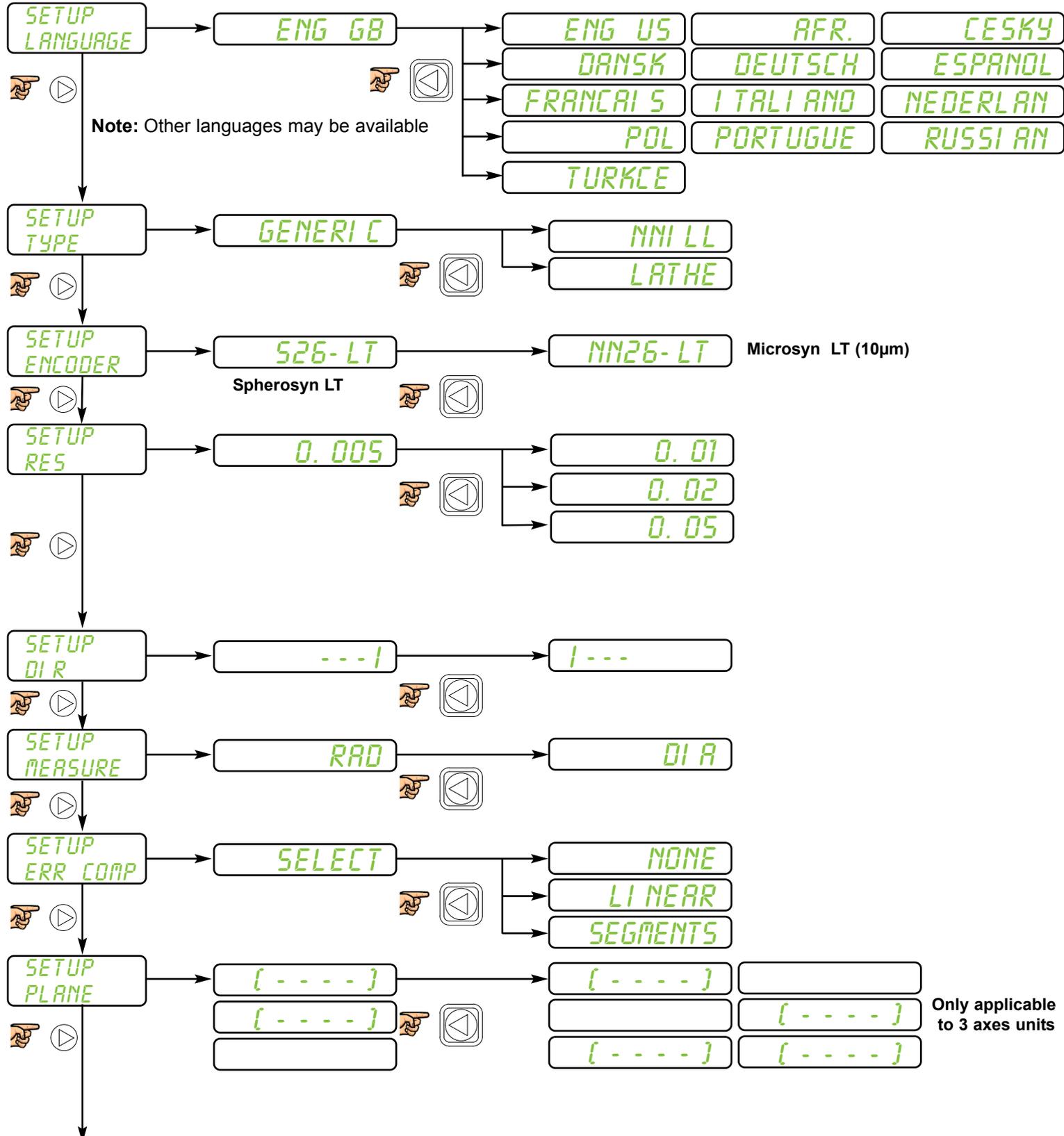
Understanding The Keypad

	Axis Selection Key		Digifind / Reference
	Numeric Keys		Switches between Zero and Axis Preset modes
	Enter Key		Switches between Absolute and Incremental modes
	Clear Numeric Entry		Switches between Inch and mm display
	Centre Find		Information selection (scrolls through options on Message display)
	Undo Key		Function Menu Key
	Sleep Key		Function Navigation Keys

Setting Up The Unit

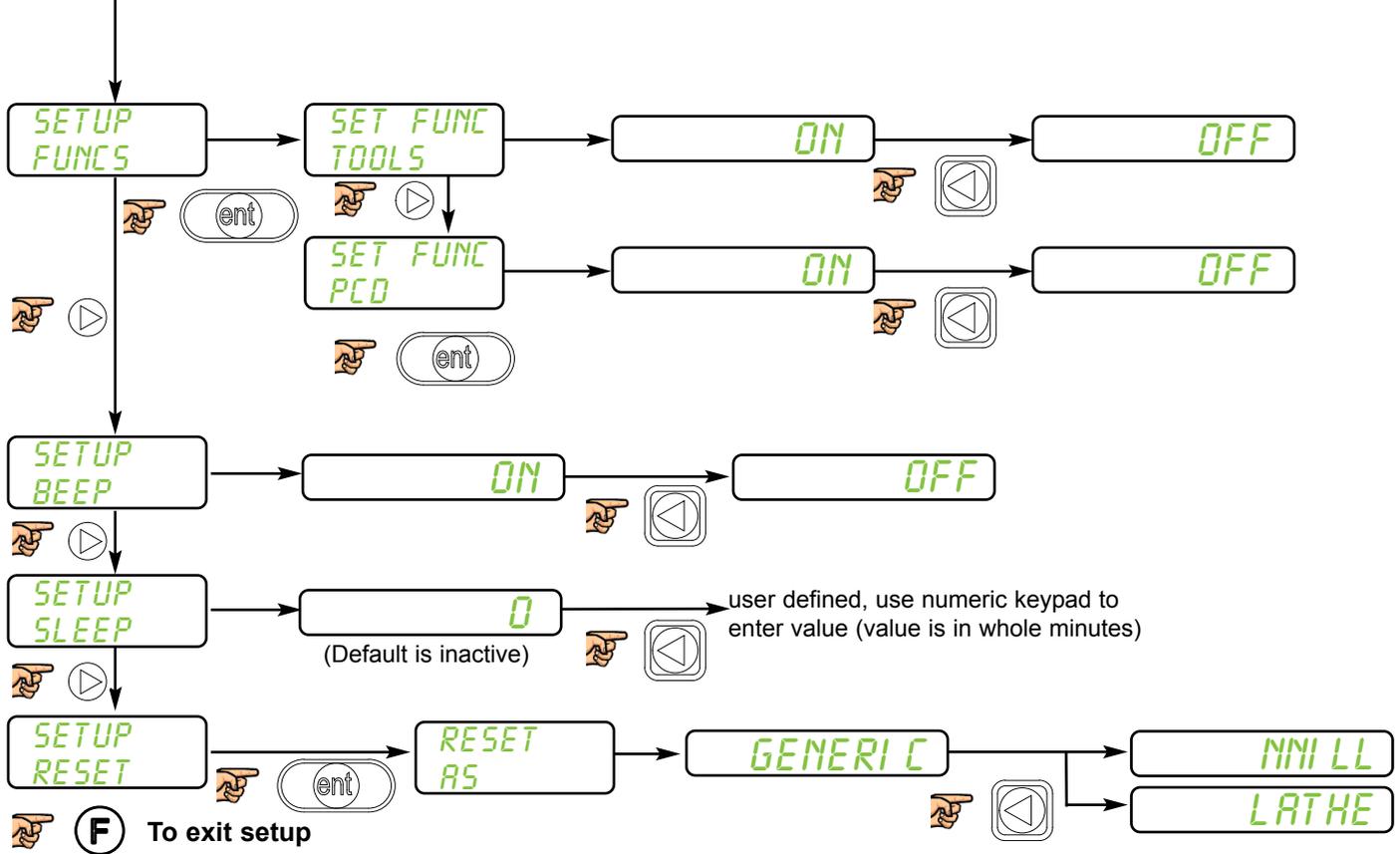
Navigating Complete Setup

How to enter setup



Setting Up The Unit

Navigating Complete Setup (continued)



Setting Up The Unit

Language Setup

This setting enables the user to choose the language that is required to be displayed in the DP500 display. There are 14 language settings: ENG GB English UK **(Default)**

ENG US English US	DANSK Danish	RUSSIAN Russian
FRANCAIS French	PORTUGUE Portuguese	CESKY Czech
DEUTSCH German	ESPANOL Spanish	AFR. Afrikaans
ITALIANO Italian	TURKCE Turkish	NEDERLAN Hollandic
		POL Polish

Press the axis select key  next to the 'X' axis to cycle through options

Note: Other languages may be available

Type Setup

This setting enables the user to choose the machine type that the DP500 operates in.

There are 3 settings:

GENERIC
MILL
LATHE

Press the axis select key  next to the 'X' axis to cycle through options

Note: When set to lathe the x axis changes to diameter measurement

Note: When set to lathe or mill some functions are automatically turned off

Encoder Type Setup

The encoder settings must match the actual encoder in use, or the DP500 will not measure correctly.

Newall encoders that work with DP500:

Spherosyn LT	526-LT
Microsyn LT (10µm)	NNM26-LT

Press the axis select key  next to the 'X', 'Y' or 'Z' axis to cycle through options

Encoder Resolution Setup

The resolution settings available for each axis depend on the inch/mm setting.

µm	Display		Spherosyn™ LT	Microsyn™ LT (10µm)
	mm	in		
5	0.005	0.0002	✓	✓
10	0.01	0.0005	✓	✓
20	0.02	0.001	✓	✓
50	0.05	0.002	✓	✓

Press the axis select key  next to the 'X', 'Y' or 'Z' axis to cycle through options

Setting Up The Unit

Direction of Travel Setup

You use the direction setting to match the DP500 to the actual direction of travel of any axis.

There are two settings for each axis and

Press the axis select key  next to the 'X', 'Y' or 'Z' axis to cycle through options

Example

If the current setting is and the travel is positive from right to left, changing the setting to will reverse the direction to measure positive from left to right.

Radius / Diameter (measure Setup)

The radius/diameter function allows the operator to display actual (radius) or twice-actual (diameter) measurements for each axis.

This function is generally used in turning applications, such as the cross travel on a lathe where you want to display the diameter reading rather than the radius.

There are two settings for each axis:

Radius

Diameter

Press the axis select key  next to the 'X', 'Y' or 'Z' axis to cycle through options

Setting Up The Unit

Error Compensation

Your digital readout (DRO) system helps you to improve productivity. It decreases the number of scrapped parts, as you no longer have to be concerned about making mistakes related to counting the revolutions on the dials. Your DRO system also helps to eliminate some errors related to ballscrew backlash.

Your DRO system will operate to its published accuracy, provided all components are in working order and properly installed. Field calibration is not necessary.

Accuracy problems with machined parts may be caused by machine error, DRO system error, or a combination of both. The first step in determining the source of error is to check the DRO system. You do this by comparing the movement of the Newall reader head to the position reading shown on the display. You need a high accuracy standard, such as a laser interferometer. You can use a dial indicator to check short distances, but a laser provides the best results. If you have to use a dial indicator, be sure it is the highest available accuracy.

To check the accuracy of the DRO system:

1. Place the target of the laser or the needle of the dial indicator directly on the Newall reader head. It is absolutely critical that you take the readings directly from the Newall reader head. If you have to use a dial indicator, be sure that the needle of the indicator is perpendicular to the reader head and not angled. If you take readings anywhere else on the machine, machine errors may distort the results.
2. When the reader head moves, the movement registers on the laser / indicator and DRO display.
3. Set the laser / dial indicator and DRO position displays to 0.
4. Make a series of movements and compare the position readings between the laser / dial indicator and the DRO display. If the readings match within the accuracy specified, then you know that the DRO system is operating properly. If this is the case, you can proceed to the next step: evaluating the machine errors. If the readings do not match, you must repair the DRO system before proceeding with error compensation.

To evaluate machine errors:

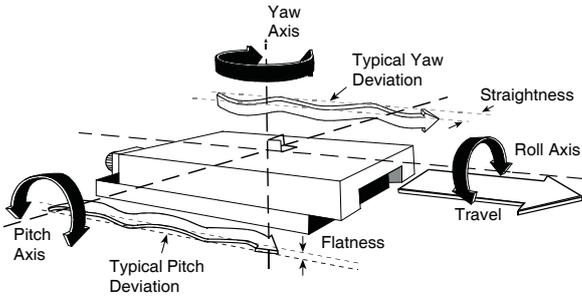
1. Put the laser target / dial indicator on the part of the machine where the machining is done.
2. Make a series of movements and compare the position readings between the laser / dial indicator and the DRO display. The difference between the laser / dial indicator reading and the reading on the DRO display is your machine error.
3. Plot the machine error along the entire axis of travel to determine the nature of the error. If it is a linear error, you can use linear error compensation. If the error is not linear, you should use segmented error compensation.

Setting Up The Unit

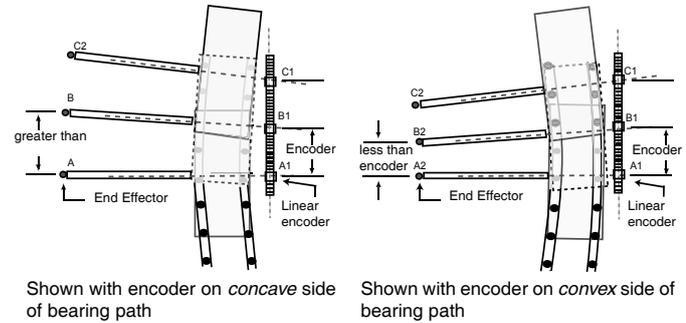
Types of Machine Error

There are many types of machine error, including pitch, roll, yaw, flatness, straightness, and Abbé error. The diagrams below demonstrate these errors.

Way errors

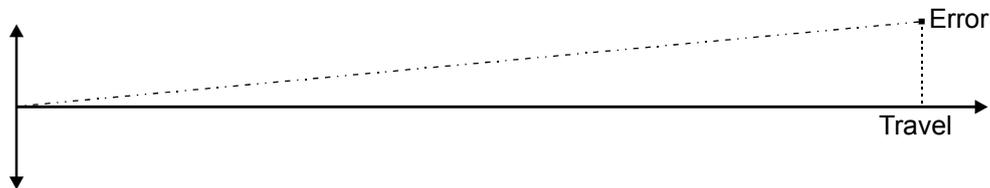


Abbé error

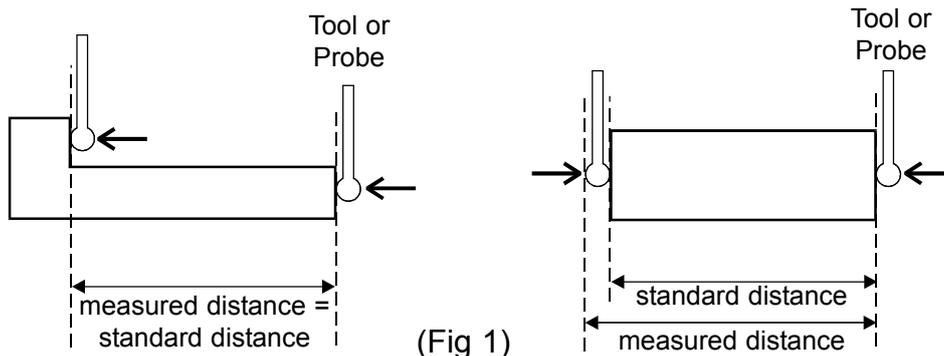


Linear Error Compensation

In this mode, you can apply a single constant correction factor for each axis to all displayed measurements. You calculate the correction factor, and specify it in parts per million (ppm). In this mode a single constant correction factor for each axis is applied to all displayed measurements.



As you follow the procedure you must ensure that you either use a stepped standard, and approach each edge from the same direction; or if you must approach each edge from opposite directions, then subtract the width of the tool or measuring probe from the value displayed on the DP500.



Setting Up The Unit

Linear Error Compensation Setup

This setting allows you to setup compensation factors for linear errors. There are two methods of entering compensation values **Teach mode** and **Program mode**.

Teach Mode

Teach mode is an easier way of calculating linear errors by using the DP500 to automatically calculate the error, by comparing the actual measurement and the physical movement.

The procedure to do this is shown below.

Error comp select screen is displayed

Press the axis select key  next to the 'X', 'Y' or 'Z' axis which requires linear compensation

Press the   key to Navigate to **Linear**. Press 

Press the   key to Navigate to **Teach**. Press 

Display Shows  Move tool / probe to start position (see fig 1) Press 

Display Shows  Move tool / probe to end position (see fig 1) Press 

Display Shows  Enter the actual measurement using numerical keypad Press 

Display Shows  Press  to accept, or  to decline

If accepted, goes back to error comp select screen

Program Mode

First you must determine the correction factor required. To do this you use the following equation. (In the following example the standard distance is 500.000mm and the measured distance is 500.200mm). Values can be entered in Inches or millimetres.

$$\begin{aligned}\text{Correction factor} &= \text{error} / \text{actual} \times 1,000,000 \\ \text{Correction factor} &= (500 - 500.200) / 500.000 \times 1,000,000 \\ \text{Correction factor} &= -400\end{aligned}$$

Error comp select screen is displayed

Press the axis select key  next to the 'X', 'Y' or 'Z' axis which requires linear compensation

Press the   key to Navigate to **Linear**. Press 

Press the   key to Navigate to **Program**. Press 

Display Shows 

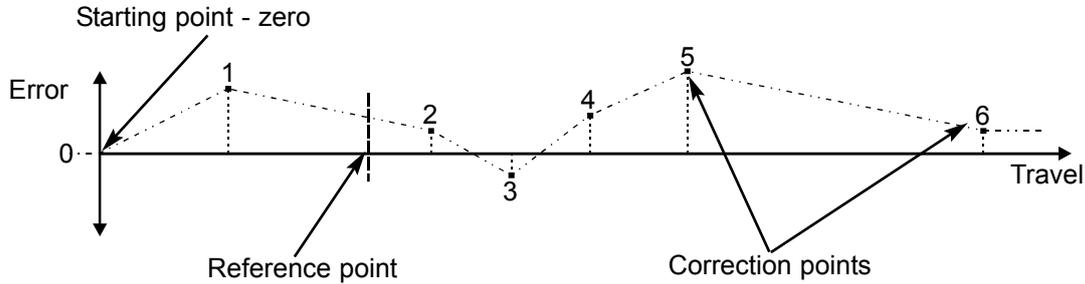
Enter -400 from the example above using the numeric keypad Press 

Goes back to error comp select screen

Setting Up The Unit

Segmented Error Compensation

The scale travel is broken down into as many as 200 user-defined segments, each with their own correction factor, measured against a laser interferometer. The following parameters need to be identified:



Each Correction Point is measured with respect to the Starting Point - zero - which should be set at the negative end of travel, the DRO must be counting positive when moving away from the starting point. The Reference Point can be set anywhere along the scale, and does not need to coincide with either the absolute datum or any of the correction points. However, it may be convenient to make the absolute datum and the reference point the same.

Always approach the Starting Point, Correction Points and Reference Point from the same direction. If you do not, then the size of the tool or probe will render the measurement inaccurate. Digifind should not be used if segmented compensation is active, datums set in normal DRO mode will not affect segmented error compensation.

Segmented Error Compensation Setup

Procedure for setting segmented error compensation

Error comp select screen is displayed



Press the axis select key next to the 'X', 'Y' or 'Z' axis which requires segmented compensation

Press the key to Navigate to **segments**. Press

Press the key to Navigate to **Teach** or **Program** Press

Teach Mode: Enter new segments

Program Mode: Edit previously entered segments

Teach Mode

Display Shows



Move machine to reference point Press

Display Shows



Move to zero Press

Display Shows



Move to first position Press

Display Shows



Enter the actual movement* using numerical keypad Press

Display Shows



The difference between the DRO and laser will be displayed Press to accept, or to decline

Display Shows



Press to move to next point, or to finish

Goes back to error comp select screen

* Actual movement = total accumulated movement of all segments completed, as shown on laser interferometer

Setting Up The Unit

Program Mode

Display Shows



AX* EDIT
SEG 001

The existing compensation value(s) for each segment are displayed in each axis. The displayed value is the difference between the laser interferometer and the DRO registered movement over the segment length.

To Edit:

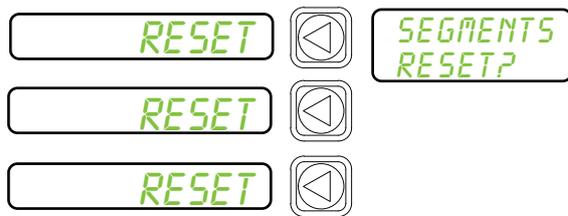
Press  Enter number using numerical keypad, press  to accept

To navigate to other segments use  , or enter segment number and then press 

Press  to finish

Using Segmented Error Compensation

Note. When using Segmented error, each time you turn on the DP500 you need to move to the machine reference point. The DP500 will prompt you for this on power up, see below.



RESET  SEGMENTS
RESET  RESET?
RESET 

Note. Reset will only appear on an axis if segmented error has been implemented

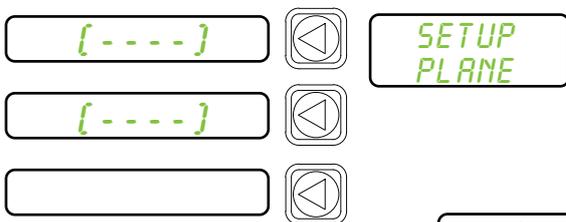
Move each axis to the **reference point** and then press  next to the axis in question

Once all axes have been reset to reference the DP500 will go into normal operating mode

Plane Setup

This setting enables the user to choose the plane in which certain functions will operate. The plane consists of two axes that require to be set for certain functions to operate correctly.

There are three possible settings:



[- - - -]  SETUP
[- - - -]  PLANE
[- - - -] 

Press 

To scroll through options



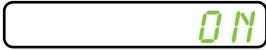
[- - - -]	[- - - -]	
[- - - -]		[- - - -]
	[- - - -]	[- - - -]

Note: Only applicable to a 3 axes unit

Setting Up The Unit

Functions Setup

This setting enables the user to choose the functions that are required to be used with the DP500. Functions that are switched off will not show in the function menu or message display.

Function On 

Function Off 

Press the axis select key  next to the 'X' axis to cycle through options

Press the   key to Navigate through functions

the list of functions can be found below



Tool Offsets



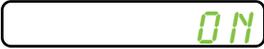
Pitch Circle Diameter / Bolt Hole Circle

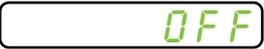
press  to exit

Beep Setup

This setting enables the user to have the option of an audible tone on pressing any of the keys on the DP500.

There are two settings:

Key Beep on 

Key Beep off 

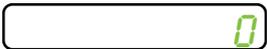
Press the axis select key  next to the 'X' axis to cycle through options

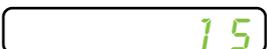
Sleep Setup

This setting enables the user to define an automatic sleep mode after a period of time. The user either leaves the default setting at 0 which deactivates the sleep mode, or inputs a value (in whole minutes) for when the sleep mode is initiated after no operation of the DP500.

To exit sleep mode, simply move an axis or press any key.

There are two settings:

Sleep Mode deactivated  (Default)

Sleep Mode Active 

Enter the required value via the numeric keypad, Press  to accept the value.

Note: The number in the display is the value in whole minutes before the DP500 will enter sleep mode.

The  key can be used to manually enter/exit sleep

Setting Up The Unit

Reset Setup

This setting enables the user to reset the DP500 unit back to factory defaults.

There are three factory default settings:

Default as Lathe / Mill 

Default as Mill 

Default as Lathe 

Press the axis select key  next to the 'X' axis to cycle through options

Press  to accept the option.

Press the axis select key  next to the 'X' axis to cycle between yes and no.

Press  to accept.

Please note: When the DP500 is defaulted as a lathe the X axis default setting is DIA and therefore the X axis will measure double.

OEM Defaults: The DP500 may have OEM default settings specific to a machine. In this case the DP500 will only display one reset option. This reset will default all parameters to match the machine it has been provided with.

Standard Functions

This chapter details the standard functions of the DP500.

Absolute / Incremental

Press  to toggle between absolute and incremental mode

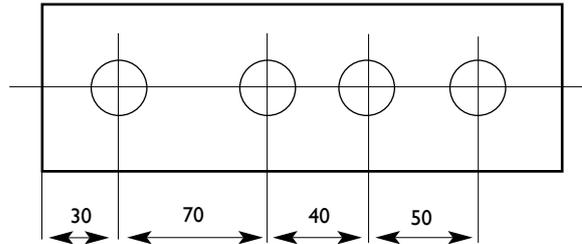
The DP500 has a dedicated key to switch the positional displays between absolute (abs) and incremental (inc) measurements. The current display mode is indicated by a red LED either above or below the key as shown right.

 Absolute (abs) mode has been selected

 Incremental (inc) mode has been selected

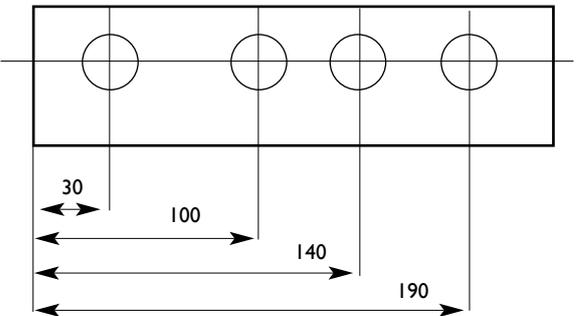
Using Incremental Mode

In Incremental mode the DRO displays the position relative to the last position. This is also known as point-to-point use. In this mode you can set the value for each axis, or zero it to create an Incremental datum. This does not effect the machine's Absolute datum that you configure in Absolute mode.



Using Absolute Mode

In Absolute mode the DRO displays the positions of all the axes with respect to a fixed datum. The datum is set by entering an axis position when in Absolute mode.



Example of Absolute and Incremental use

Set absolute zero at lower left corner of the part



Move to first position in ABS (Hole A)



Move to second position in ABS (Hole B)



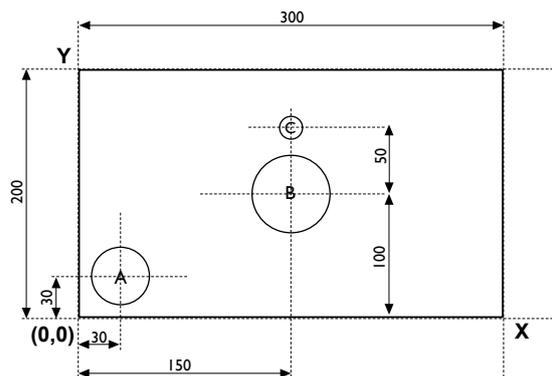
Switch to incremental mode and zero the display



Make an incremental move to Hole C



Switch to absolute mode



Inch and mm

Press  to toggle between Inch and mm mode

The DP500 has a dedicated key to switch the positional displays between imperial (inch) and metric (mm) measurements. The current display mode is indicated by a red LED either above or below the key as shown right.

 Imperial (Inch) mode has been selected

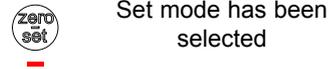
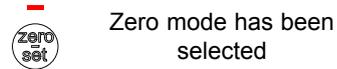
 Metric (mm) mode has been selected

Standard Functions

Zero and Preset an axis

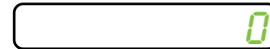
Press  to toggle between 'set' and 'zero' mode

The DP500 has a dedicated key to switch the operation of the axis selection key between zero mode and set mode. The currently selected mode is indicated by an LED either above or below the key as shown right.



Using Set Mode

With set mode selected, this enables the select axis keys to prompt a numeric entry into the desired axis. Once the correct value has been selected, it can be set into the axis by pressing the enter key. This can be seen in the example on the right.



Input the required numeric value



Zeroing an Axis in Set Mode

With set mode selected, it is possible to zero the axis conveniently by double pressing the relevant select axis key. This can make use of the DP500 zeroing and set modes much quicker and easier. This is shown in the example on the right.

Using Zero Mode

With zero mode selected, this enables the select axis keys to zero each axis independently. This can be seen in the example on the right.



Undo Function

The DP500 stores the last 10 positions/numeric inputs, which can be accessed using the undo  feature

Example 1 - non movement

Display shows  input a value 

You have inputted an incorrect figure and want to get back to the dimension shown before

Press  Display now shows 

Example 2 - movement

input a value  move to that point, display now shows 

input a value  move to that point, display now shows 

Press  once, display now shows  this is the position of your second point

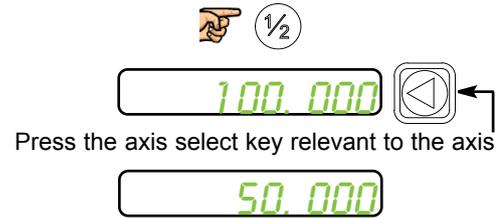
Press  again, display now shows  this is the position of your starting point

Standard Functions

Half Function / Centre Find

Press $\frac{1}{2}$ to initiate the half function.

The DP500 has a dedicated key to half the value in any axis. This is done by initiating the half mode and selecting the required axis. This can be seen in the example on the right.



Digifind / Reference Function

The DP500 comes equipped with Digifind, a feature unique to Newall digital readout products. Digifind eliminates the risk of losing your position and datum Set-Up. With Digifind, precise Set-Up of a workpiece is carried out only one time.

When the DP500 is powered on, it displays the position at power off, compensated for any movement of a Spherosyn LT transducer up to 0.2500" (6mm) and a Microsyn LT encoder up to 0.1000" (2.5mm) in either direction since the unit was last used. If the machine has moved beyond 0.2500" (6mm) - Spherosyn LT [0.1000" (2.5mm) - Microsyn LT], Digifind allows a quick means to find the datum if lost.

A mark must be made on both a stationary part and moving part of the machine. The marks must be aligned and will serve as the machine "home" position.

The mark must be indelible, and it must allow the operator to move the machine to within a 0.2500" (6 mm) - Spherosyn LT [0.1000" (2.5mm) - Microsyn LT] band around the mark at any time. Alternatively, you can use a convenient reference point on the workpiece

Setting the reference



Message display shows



The reference point is now set

Finding the reference

If datum is lost at anytime it is possible to "Find" the datum again. Position the machine to within the 6mm (0.2500") band for Spherosyn LT and 2.5mm (0.1000") band for Microsyn LT. "Find" the reference.



Message display shows



The position to the absolute zero for that axis is now displayed

Finding zero

As a fail safe, Digifind can 'find' the last datum or absolute zero set.

Position the machine to within the 6mm (0.2500") band for Spherosyn LT and 2.5mm (0.1000") band for Microsyn LT. "Find" the reference.



Message display shows



The original datum is reset

Note: Display must be in ABS mode for digifind actions

Mill Functions

This chapter details the Mill functions of the DP500. The mill functions use the plane setting from setup.

PCD / Bolt Hole Circle

The DP500 calculates positions for a series of equally spaced holes around the circumference of a circle. The message display prompts the user for various parameters it needs to do the calculations.

Once the DP500 completes the calculations, the axis displays show the distance to each hole. The operator works to Zero for each hole location. See example below.

How to navigate to PCD function.



Example

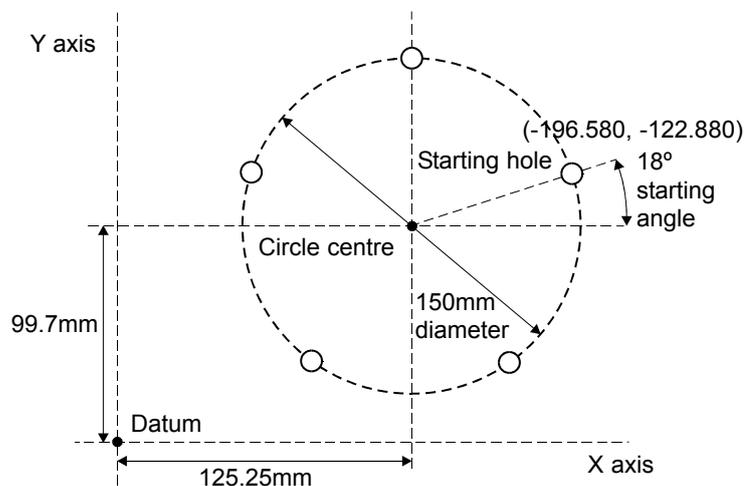
Message display shows

PCD CENTRE	Enter centre co-ordinates (See using set mode P19)	<input type="text" value="125.250"/>	<input type="text" value="99.700"/>	<input type="button" value="ent"/>
PCD DIAMETER	Enter the diameter value (See using set mode P19)	<input type="text" value="150.000"/>	<input type="button" value="ent"/>	<input type="button" value="ent"/>
PCD HOLES	Enter the number of holes (See using set mode P19)	<input type="text" value="5"/>	<input type="button" value="ent"/>	<input type="button" value="ent"/>
PCD ANGLE	Enter the start angle value (See using set mode P19)	<input type="text" value="18"/>	<input type="button" value="ent"/>	<input type="button" value="ent"/>

Note: The PCD will be calculated from the 3 o'clock position, anti-clockwise. Enter the angle as a negative value if it is given as clockwise from 3 o'clock.

Note: At this point you can use the keys to navigate back and forth through the above menus.

Note: The numbers appear as negative values because the operator works to zero.



Navigate through the sequence of holes by using keys, or enter hole number then press

The maximum number of holes is 999

Lathe Functions

This chapter details the Lathe functions of the DP500.

Tool Offsets

The Tool Offset function allows the operator to enter and store offsets for a range of tools. This enables the operator to change tools without resetting absolute zero or datum. Using tool offsets ensures that diameter and length measurements will remain consistent after tool changes. This speeds up tool changes and increases productivity as it eliminates the need for the operator to stop and manually measure the diameter.

The number of Tool Offsets available is 50. This large number allows tools to be grouped where more than one set is used. For convenience, it is highly recommended that tools are physically marked with their corresponding tool number.

There are two ways to set tool offsets, teach mode and program mode.

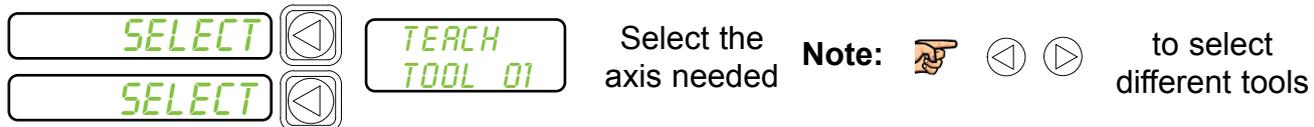
How to navigate to the tool offset function.



Teach Mode



Display will now show



Display will show



Take a skim cut if X axis is selected, or take a face cut if Z axis is selected Hand icon (ent)

Display will show



Measure the part with an accurate gauge and enter this value using the numeric keypad.

Repeat the above process for all the tools required.

Hand icon (F) to exit tool set mode

Lathe Functions

Program Mode

Display will show



Display will now show



Take a skim cut if X axis is selected, or take a face cut if Z axis is selected

Note: Tool must not be moved off the part after taking the cut.

User needs to enter the difference between measured diameter and readout value

Repeat the above process for all the tools required.

to exit tool set mode

Using Tool Offsets

Until message display shows

The message window displays which tool is in use



To scroll through different tools, or enter tool number on numerical keypad at any time.

Lathe Functions

Multiple Tool Datums

The Multiple Tool Datum function offers several advantages when compared to the standard Tool Offset function.

- **Multiple Datums** - Each tool has its own independent datum (tool datum)
- **Quick Tool Edits** - Changes can be made on the fly, with live position display

Application

Several tools are required for work on a particular piece. For example there might be a roughing tool, a finishing tool, a thread cutting tool, ID boring tool, etc. A separate datum can be set for each tool. Changing one tool does not affect the other tools.

Using Multiple Tool Datums

  Until message display shows 

  Until set mode is selected 

   to change tools. Current tool # is displayed in the message window

Setting Tool Datum

  of axis required  will be displayed

   to select  Enter desired numerical position value  

Repeat as necessary for other tools

Trouble Shooting Guide

Symptom	Solution
The display is blank	<ul style="list-style-type: none"> • The DP500 maybe in sleep mode. press any key to exit sleep mode • Check that the power supply is correctly connected to a working mains outlet • Check that the power supply cables are not damaged • Check that the power supply voltage is 15 - 24Vdc $\pm 10\%$ • Check the power supply indicator is illuminated on the front of the DP500.
The display works, but resets from time to time without any keys being pressed.	<p>Either the supply voltage is too low, or the power supply or mains supply has an intermittent fault.</p> <ul style="list-style-type: none"> • Check that the power supply voltage is 15 - 24Vdc $\pm 10\%$. • Check that all the connections are secure.
The display works, but gives erratic readings, the last digit jitters or the measurements jump to new figures unexpectedly.	<p>There may be a poor earth (ground) connection. Both the DP500, and the machine on which it is installed, must have proper earth (ground) connections.</p> <p>There may be a problem with the encoder.</p>
The unit does not respond to any key presses.	Disconnect the DP500 from its power supply, wait 15 seconds and then reconnect.
'NO Sig' / 'SIG FAIL' or '1.x' appears in the display.	<p>This indicates that the unit is not receiving a proper signal from the encoder.</p> <ul style="list-style-type: none"> • Check that the encoder connections are secure. • Check that there is no damage to the connectors or to the encoder. • Switch the DP500 off and back on again. • Swap the encoder to another axis to confirm whether the encoder or the DP500 is at fault.
Readings are incorrect.	<ul style="list-style-type: none"> • Check the Encoder Type to ensure it is correct. • Check the Radius / Diameter setting. The Diameter setting causes the axis to read double. • Check the Error Compensation factors. • If using the Segmented Error Compensation, verify the datum position. • Swap the encoder to another axis to confirm whether the encoder or the DP500 is at fault. • Check that there is no damage to the encoder or its cable. • Check that the encoder is fixed firmly and aligned correctly, as described in the Spherosyn / Microsyn Installation manual. • Check that there is no binding on the scale. With the scale brackets slightly loosened, you should be able to slide the scale back and forth with minimal resistance. • If you have a Spherosyn LT scale, check that the scale is not bent, by removing it and rolling it on a flat surface.
2.1 appears in the display.	<p>This indicates that the encoder has travelled further than the maximum allowed travel</p> <ul style="list-style-type: none"> • This type of error can only be cleared by cycling the power to the DP500. • The sleep button to reset the DP500 will not clear this type of error.

If the solutions suggested above do not solve your problem, contact Newall for further instruction.

To swap encoders to trace a fault:

1. Check that the two axes are set to the correct encoder types.
2. Disconnect the DP500 power supply.
3. Disconnect the encoder from the malfunctioning axis and move to a working axis.
4. Reconnect the DP500 power supply and turn on.

If the fault stays with the same encoder, then the encoder is at fault. If the fault does not follow with the encoder the DP500 is at fault.

Providing you have not moved the machine more than 6.3mm (0.25") for a Spherosyn LT Encoder or 2.5mm (0.1") for a Microsyn LT Encoder, switching the power off and back on again does not lose the datum position.

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