SPECTRA PRECISION®

FOCUS™ CU

Spectra Precision®
FOCUS® CU

Part 3

User Guide Software

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Registration

To receive information regarding updates and new products, please contact your local dealer or visit the Spectra Precision website at www.spectraprecision.com/register.

Upon registration you may select the newsletter, upgrade or new product information you desire.

Notices

Australia and New Zealand

This product conforms with the regulatory requirements of the Australian Communications Authority (ACA) EMC framework, thus satisfying the requirements for C-Tick Marking and sale within Australia and New Zealand.

N 1023

Canada

This Class B digital apparatus complies with Canadian ICES-003

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Europe

This product has been tested and found to comply with the requirements for a Class B device pursuant to European Council Directive 89/336/EEC on EMC, thereby satisfying the requirements for CE Marking and sale within the European Economic Area (EEA). These requirements are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential or commercial environment.

The compliance to the applicable requirements is detailed in the official Declaration of Conformity document, which is filed at Spectra Precision.

For product recycling instructions and more information, please go to www.spectraprecision.com/ev.shtml.

Recycling in Europe: To recycle Spectra Precision WEEE (Waste Electrical and Electronic Equipment, products that run on electrical power.), Call +31 497 53 24 30, and ask for the "WEEE Associate".
Or, mail a request for recycling instructions to:
Spectra Precision Europe BV
c/o Menlo Worldwide Logistics
Meerheide 45
5521 DZ Eersel, NL

USA

Class B Statement – Notice to Users. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

THIS DEVICE COMPLIES WITH PART 15
OF THE FCC RULES

OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION

Taiwan

Battery Recycling Requirements

The product contains a removable Lithium-ion battery. Taiwanese regulations require that waste batteries are recycled.

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Welcome to Spectra Precision FOCUS CU

This manual will describe the different softwares that can be installed in Spectra Precision® FOCUS® CU.

Since FOCUS CU have flexible design it is possible to upgrade software, memory units and other accessories. The various softwares makes it possible to customize your system to your own way of working.

About this manual

The contents of this manual are as follows:

Part 3

Includes available softwares and contains step by step instructions on how to use each software.

- B -

CHAPTER

1

P60 Athletics

In General 1-2
How to use 1-3

In General

Program 60, Athletics, is a program designed for athletics competitions. It can be used for measuring distances in various events such as javelin, discus and hammer. Before you start the program you must enter the following label texts using program 41, Enter Labels:

Label	Text	Description
90	ROUND	enter the current round, e.g. javelin1
91	NO	the number of the entrant
92	LENGTH	the measured distance of the throw, only in meters
93	OFFSET	radial offset for current event, only in meters

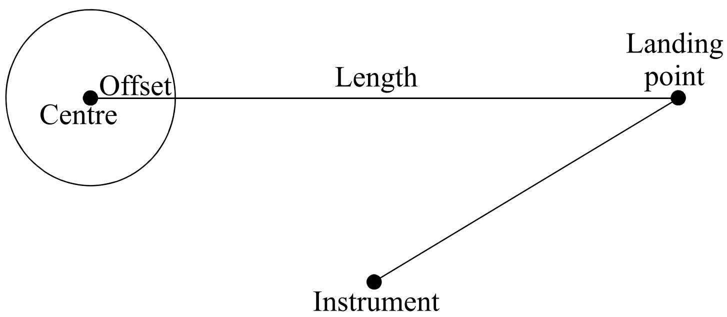

Figure 1.1 Distance definitions

How to use

Locate the instrument on a suitable point and start program 60. Enter in which Jobfile and in which unit you wish to save the measured data.

PRG **6** **0** **ENT**

Aim towards the centre, see fig. on the previous page, and press A/M to measure the point.

```
STD  P60    10:16
HA:
VA:
```

A/M

Press REG to register the measurement.

```
STD  P60    10:16
HA:
VA:
SD:
```

REG

Enter the radial offset and press ENT.

```
STD  P60    10:16

Offset=
```

ENT

Javelin=8.00 m

Hammer=1.068 m

Discus=1.25 m

Enter the round of the event and press ENT, e.g. Hammer round 2 can be expressed as Hammer2.

```
STD  P60    10:16

Round=
```

ENT

Enter the number of the entrant and press ENT.

```
STD  P60    10:16

Entrant
No=
```

ENT

Measuring mode

You are now in theodolite mode and can start measuring by pressing the A/M key.

```
STD  P60    10:16

HA:
VA:
```

A/M

Press REG to register the measurement.

```
STD  P60    10:16
HA:
VA:
SD:
```

REG

The program has now calculated the length. Round off the length to a lower cm, e.g. 95.158=95.15. Press YES or ENT to store the result or NO to continue without storing.

```
STD  P60    10:16
No=
Length=
Store?
```

YES

Do you wish to continue with a new measurement, press ENT. Otherwise press PRG and 0 to exit the program.

```
STD  P60    10:16

Round=
```

PRG **0**

CHAPTER

2

P61 COGO

In General 2-2

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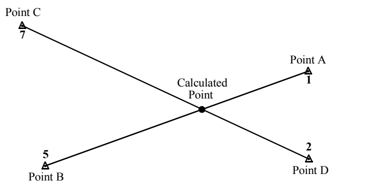
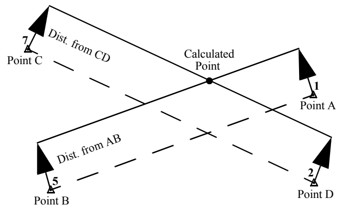
In General

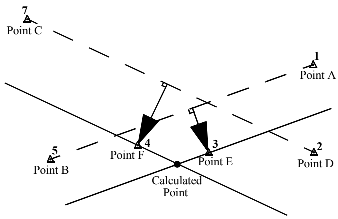
Program 61, COGO, is calculation program for solving coordinate calculations in field or in the office. It is divided into three main sections, Line intersections, Curve intersections and Miscellaneous. These sections then include a number of subsections depending on the current condition and the type of base information you have. The program also includes a general Configuration part which configures the program behaviour. **Please go through this part before you start**. When you have calculated a point you can also set it out without leaving the program. To help you understand the different calculation programs, we have chosen to illustrate these by the following figures:



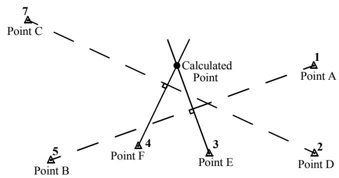
1.1 Intersection between lines



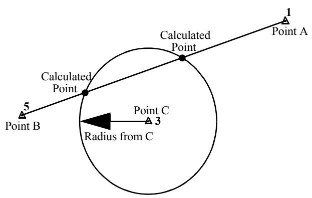
1.2 Offset intersection



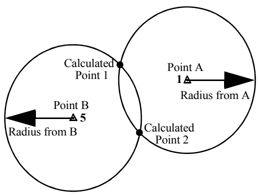
1.3 Offset through points



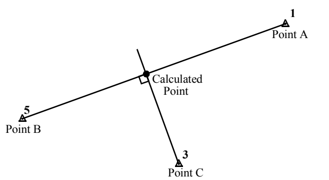
1.4 Right angle intersection



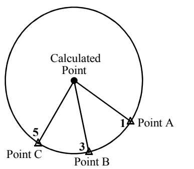
2.1 Point on a curve



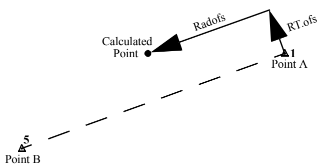
2.2 Curve intersection



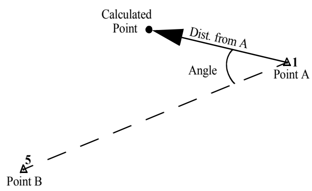
3.1 Perpendicular offset



3.2 Centre of a circle



3.3 Station and offset



3.4 Angle and distance

Coordinate list

In the following examples we have chosen to use an example from real life. Here below you can find a list of the point coordinates:

Pno	N	E
1	88345.862	99136.879
2	88343.971	99153.527
3	88313.151	99157.173
4	88296.446	99155.277
5	88279.753	99153.375
6	88273.289	99145.428
7	88276.149	99120.184

Fetching point data from an Area file

In the following examples you can use pre-stored point data. You will then be prompted to enter in which Area file these points are stored and in which memory device, Imem or Xmem. To speed up this process you can configure the program to use the first entered Area and memory for the following points.

To simplify the manual and also to use less paper, we have chosen not to show every display that concerns the Area and memory. Instead of these displays we will show the following text block. This means that you are able to key in the Area file you wish to fetch point coordinates from and also to enter in which memory device this file is stored:

Enter Area &
Select device

Configuration

To speed up the program you can configure it so it fits your needs. The configuration part can be accessed from every section of the program, under menu option 5 from the line intersection menu, under menu option 3 from the curve intersection menu and under menu option 5 from the miscellaneous menu.

Here follows an explanation of the feature.

Config. 10:17
1 Area change? Yes
2 Store all? No
3 Set out? No

ENT

Press the option number you wish to change.

Press NO to step from the second screen to the first again.

Config. 10:17
4 Confirm? Yes
5 Keep AB? No

Area change

If this is enabled, you are prompted to key in a new area file for each point you enter. If this is disabled, you will only be prompted for the area for the first point.

Store all

If this is enabled, the program automatically stores all keyed in point coordinates.

Set out

If this is enabled, the program gives you the opportunity to turn to set out mode for each point that is calculated. Set out is similar to program 23.

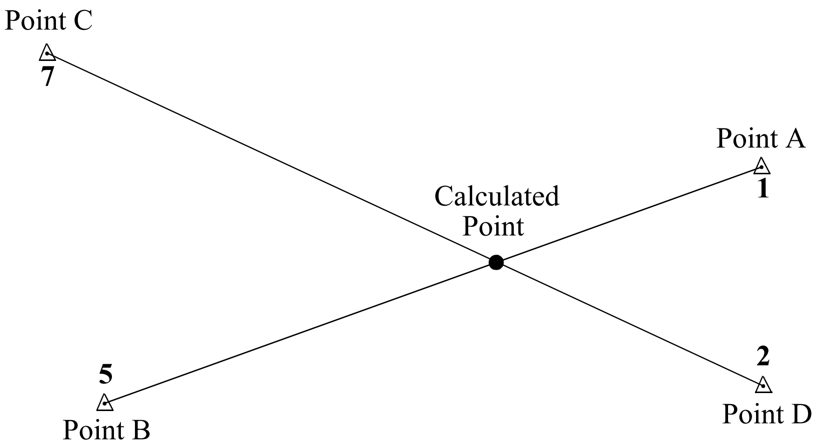
Confirm

If this is enabled, you are prompted to confirm the coordinates for each point that has been fetched from the area file.

Keep AB (does not work in 2, Circle intersections or 3.2 Centre of an circle)

If this is enabled, the program remembers the coordinates for the first line between A and B.

Line Intersections



1.1 - Intersection Between Lines

This program calculates the intersection between the lines A-B and C-D.

Select program 61 and press ENT.

PRG 6 1 ENT

Select 1 (Line intersec.).

Select 10:17
1 Line intersec.
2 Curve inters.
3 Miscellaneous

1

Select 1 (Int. b/w lines)

```
Select        10:17
1 Int. b/w lines
2 Offs.intersec.
3 Offs.thr.pts
```

1

Key in the point number for point A and press ENT.

```
P61           10:17

Point A
Pno=_
```

1 **ENT**

Key in the name of the Area file in which the points are stored and press ENT. If you wish to key in the coordinates manually, leave the line blank and press ENT.

In this case we have stored the points in Area no 1.

```
P61           10:17

Area=_

```

1 **ENT**

Select in which memory unit you have stored the Area file and press ENT.

Sel.dev. 10:17

1 Imem
2 Xmem

1 ENT

Press ENT to accept the chosen point or NO to choose another point.

P61 10:17
Ok?
N=88345.862
E=99136.879

ENT

Key in the point number for point B and press ENT.

P61 10:17

Point B
Pno=_

5 ENT

Enter Area &
Select device

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88279.753
E=99153.375
```

ENT

Key in the point number for point C and press ENT.

```
P61          10:17

Point C
Pno=_
```

7 **ENT**

```

Enter Area &
Select device

```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88276.149
E=99120.184
```

ENT

Key in the point number for point D and press ENT.

```
P61          10:17

Point D
Pno=_
```

2 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88343.971
E=99153.527
```

This is the calculated point coordinates. Press ENT to store the point or NO to cancel.

```
P61          10:17
N=88322.145
E=99142.797
Store?
```

ENT

Key in a number for the calculated point and press ENT.

```
P61          10:17

Pno=_
```

ENT

Key in the name of the Areafile in which you wish to store the calculated point and press ENT.

```
P61          10:17

Area=_
```

ENT

Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point “TP”.

```
P61          10:17

Pcode=
```

ENT

Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

```
P61          10:17

Pcode=
ELE=?
```

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

```
P61          10:17

Pcode=TP
ELE=12.125
```

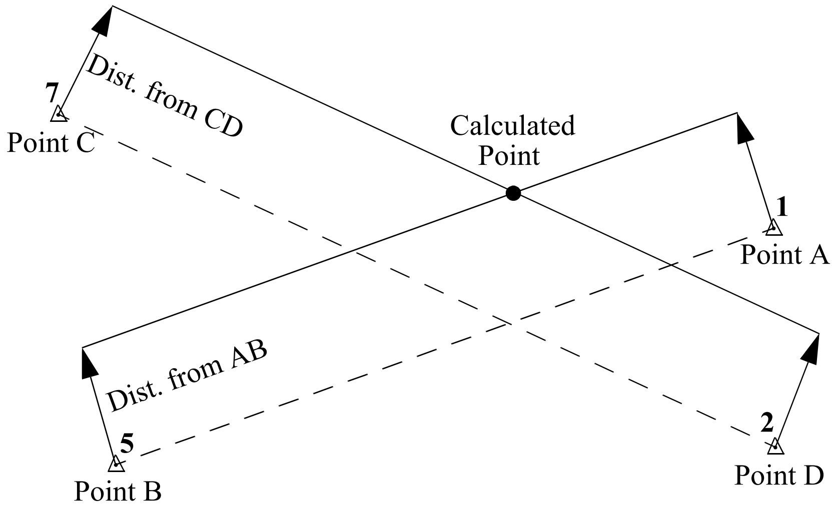
ENT

```
P61          10:17

Point stored
```

Now you return to the Line intersection menu. If you wish to step to the main menu, press 6.

```
Select       10:17
1 Int. b/w lines
2 Offs.intersec.
3 Offs.thr.pts
```



1.2 - Offset Intersection

This program calculates the intersection between the lines A-B and C-D if they are dislocated with two offsets, Dist. from AB and Dist. from CD.

Select program 61 and press ENT.

PRG 6 1 ENT

Select 1 (Line intersec.).

```
Select       10:17
1 Line intersec.
2 Curve inters.
3 Miscellaneous
```

1

Select 2 (Offs. intersec.)

```
Select       10:17
1 Int. b/w lines
2 Offs.intersec.
3 Offs.thr.pts
```

2

Key in the point number for point A and press ENT.

```
 P61         10:17

Point A
Pno=_
```

1 **ENT**

```

Enter Area &
Select device

```

Press ENT to accept the chosen point or NO to choose another point.

```
P61            10:17
Ok?
N=88345.862
E=99136.879
```

ENT

Key in the point number for point B and press ENT.

```
 P61           10:17

Point B
Pno=_
```

5 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61            10:17
Ok?
N=88279.753
E=99153.375
```

ENT

Key in the offset, Dist. from AB and press ENT. A positive value means that you are dislocating the line at the right

from point A. In this example we have chosen
the offset +1m.

```
 P61        10:17
Offs. intersec.
Dist.from AB
Dist.=
```

1 ENT

Key in the point number for point C and press ENT.

```
 P61        10:17

Point C
Pno=_
```

7 ENT

```

Enter Area &
Select device

```

Press ENT to accept the chosen point or NO to choose another point.

```
P61         10:17
Ok?
N=88276.149
E=99120.184
```

ENT

Key in the point number for point D and press ENT.

```
P61          10:17

Point D
Pno=_
```

2 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88343.971
E=99153.527
```

ENT

Key in the offset, Dist. from CD and press ENT. A positive value means that you are dislocating the line at the right from point C. In this example we have chosen the offset -1m.

```
P61          10:17
Offs. intersec.
Dist.from CD
Dist.=
```

- **1** **ENT**

This is the calculated point coordinates. Press ENT to store the point or NO to cancel.

```
P61          10:17
N=88322.258
E=99141.738
Store?
```

ENT

Key in a number for the calculated point and press ENT.

```
P61          10:17

Pno=_
```

ENT

Key in the name of the Area file in which you wish to store the calculated point and press ENT.

```
P61          10:17

Area=_
```

ENT

Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point “TP”.

P61	**10:17**
Pcode=	

ENT

Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

P61	**10:17**
Pcode=	
ELE=?	

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

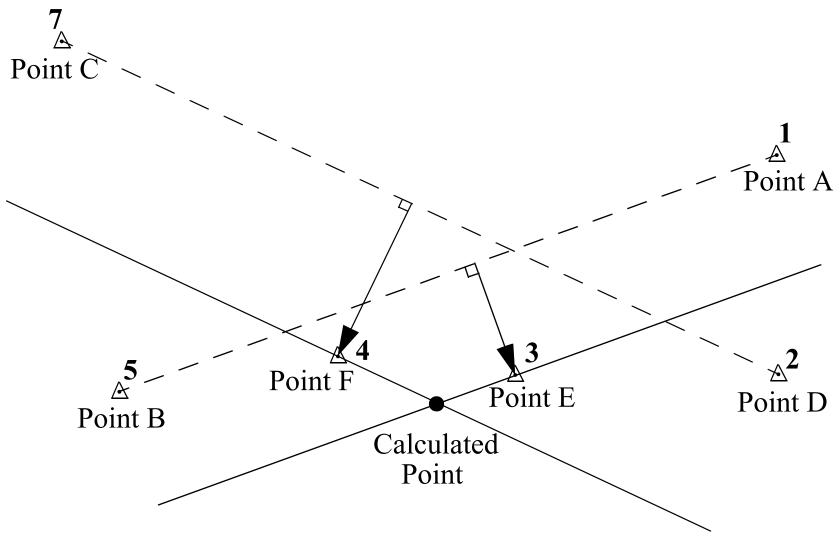
P61	**10:17**
Pcode=TP	
ELE=12.125	

ENT

P61	**10:17**
Point stored	

Now you return to the Line intersection menu. If you wish to step to the main menu, press 6.

Select 10:17
1 Int. b/w lines
2 Offs.intersec.
3 Offs.thr.pts



1.3 - Offset Through Points

This program calculates the intersection between the lines A-B and C-D if they are dislocated to the points E resp. F.

Select program 61 and press ENT.

PRG **6** **1** **ENT**

Select 1 (Line intersec.).

```
Select        10:17
1 Line intersec.
2 Curve inters.
3 Miscellaneous
```

1

Select 3 (Offs. thr. pts)

```
Select        10:17
1 Int. b/w lines
2 Offs.intersec.
3 Offs.thr.pts
```

3

Key in the point number for point A and press ENT.

```
  P61         10:17

Point A
Pno=_
```

1 **ENT**

```

Enter Area &
Select device

```

Press ENT to accept the chosen point or NO to choose another point.

```
P61           10:17
Ok?
N=88345.862
E=99136.879
```

Key in the point number for point B and press ENT.

```
P61          10:17

Point B
Pno=_
```

5 **ENT**

```

Enter Area &
Select device

```

Press ENT to accept the chosen point or NO to choose another point.

```
P61           10:17
Ok?
N=88279.753
E=99153.375
```

ENT

Key in the point number for point E and press ENT.

```
P61        10:17

Point E
Pno=_
```

3 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61        10:17
Ok?
N=88313.151
E=99157.173
```

ENT

Key in the point number for point C and press ENT.

```
P61        10:17

Point C
Pno=_
```

7 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88276.149
E=99120.184
```

ENT

Key in the point number for point D and press ENT.

```
 P61         10:17

Point D
Pno=_
```

2 **ENT**

```

Enter Area &
Select device

```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88343.971
E=99153.527
```

ENT

Key in the point number for point F and press ENT.

```
P61          10:17

Point F
Pno=_
```

4 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88296.446
E=99155.277
```

ENT

This is the calculated point coordinates. Press ENT to store the point or NO to cancel.

```
P61          10:17
N=88304.628
E=99159.299
Store?
```

ENT

Key in a number for the calculated point and press ENT.

```
P61         10:17

Pno=_
```

ENT

Key in the name of the Areafile in which you wish to store the calculated point and press ENT.

```
P61         10:17

Area=_
```

ENT

Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point “TP”.

```
P61         10:17

Pcode=
```

ENT

Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

```
P61          10:17

Pcode=TP
ELE=?
```

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

```
P61          10:17

Pcode=TP
ELE=12.125
```

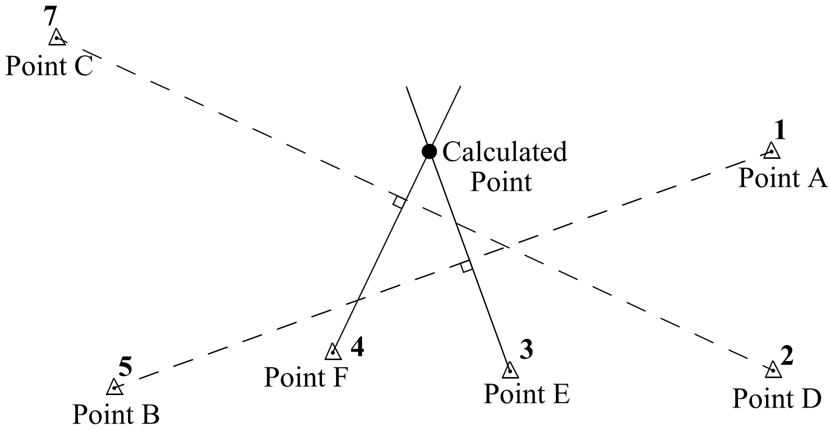
ENT

```
P61          10:17

Point stored
```

Now you return to the Line intersection menu. If you wish to step to the main menu, press 6.

```
Select      10:17
1 Int. b/w lines
2 Offs.intersec.
3 Offs.thr.pts
```



1.4 - Right Angle Intersection

This program calculates the intersection between the line going through point E, perpendicular to the line A-B, and the line going through point F, perpendicular to the line C-D.

Select program 61 and press ENT.

PRG 6 1 ENT

Select 1 (Line intersec.) and press ENT.*

```
Select       10:17
1 Line intersec.
2 Curve inters.
3 Miscellaneous
```

1 ENT

Select 4 (Rt ang. int.)*

```
Select       10:17
4 Rt ang. int.
5 Config.
6 Main menu
```

4

Note – ** You can also press 1 and 4 directly.*

Key in the point number for point A and press ENT.

```
 P61       10:17

Point A
Pno=_
```

1 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88345.862
E=99136.879
```

ENT

Key in the point number for point B and press ENT.

```
P61          10:17

Point B
Pno=_
```

5 ENT

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88279.753
E=99153.375
```

ENT

Key in the point number for point E and press ENT.

```
P61          10:17

Point E
Pno=_
```

3 ENT

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88313.151
E=99157.173
```

ENT

Key in the point number for point C and press ENT.

```
P61          10:17

Point C
Pno=_
```

7 ENT

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88276.149
E=99120.184
```

ENT

Key in the point number for point D and press ENT.

```
P61        10:17

Point D
Pno=_
```

2 ENT

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61        10:17
Ok?
N=88343.971
E=99153.527
```

ENT

Key in the point number for point F and press ENT.

```
P61        10:17

Point F
Pno=_
```

4 ENT

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88296.446
E=99155.277
```

ENT

This is the calculated point coordinates. Press ENT to store the point or NO to cancel.

```
P61          10:17
N=88307.213
E=99133.376
Store?
```

ENT

Key in a number for the calculated point and press ENT.

```
P61          10:17

Pno=_
```

ENT

Key in the name of the Areafile in which you wish to store the calculated point and press ENT.

```
P61          10:17

Area=_
```

ENT

Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point "TP".

```
P61          10:17

Pcode=
```

ENT

Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

```
P61          10:17

Pcode=TP
ELE=?
```

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

```
P61          10:17

Pcode=TP
ELE=12.125
```

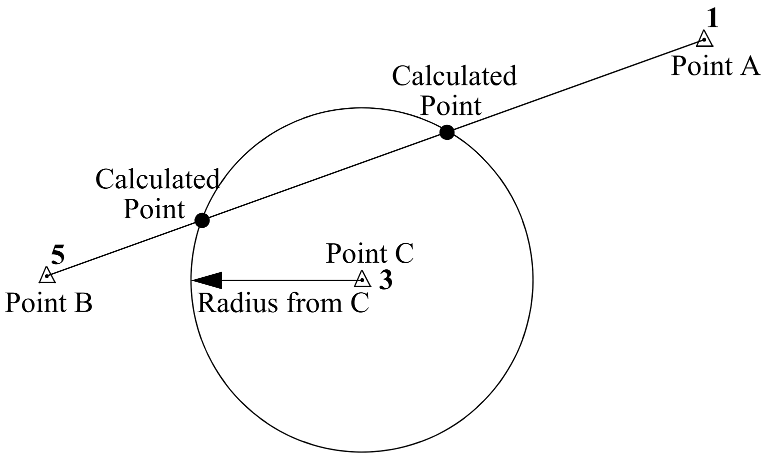
ENT

```
P61          10:17

Point stored
```

Now you return to the Line intersection menu. If you wish to step to the main menu, press 6.

```
Select       10:17
1 Int. b/w lines
2 Offs.intersec.
3 Offs.thr.pts
```



2.1 - Points on a Curve

This program calculates the intersection between the line A-B and the circle at the centre of point C and with a radius of, “Radius from C”.

Select program 61 and press ENT.

PRG 6 1 ENT

Select 2 (Curve intersec.).

```
Select       10:17
1 Line intersec.
2 Curve inters.
3 Miscellaneous
```

2

Select 1 (Pts on a curve)

```
Select       10:17
1 Pts on a curve
2 Curve inters.
3 Config
```

1

Key in the point number for point A and press ENT.

```
P61          10:17

Point A
Pno=_
```

1 ENT

Enter Area &
Select device

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88345.862
E=99136.879
```

ENT

Key in the point number for point B and press ENT.

```
P61          10:17

Point B
Pno=_
```

5 **ENT**

Enter Area &
Select device

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88279.753
E=99153.375
```

ENT

Key in the point number for point C and press ENT.

```
P61          10:17

Point C
Pno=_
```

3 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88313.151
E=99157.173
```

ENT

Key in the radius from C, and press ENT.

If the radius is to small, that is if the circle does not intersect with the line AB, you will get an error message. In this example we key in 25m.

```
P61          10:17

Radius from C
Radius=
```

2 **5** **ENT**

This is the first calculated point coordinates. Press ENT to store the point or NO to cancel. In this example we choose only to store the second point.

```
P61          10:17
N=88331.701
E=99140.413
Store?
```

NO

This is the second calculated point coordinates. Press ENT to store the point or NO to cancel. In this example we choose to store it with ENT.

```
P61          10:17
N=88288.901
E=99151.092
Store?
```

ENT

Key in a number for the calculated point and press ENT.

P61 10:17

Pno=_

ENT

Key in the name of the Areafile in which you wish to store the calculated point and press ENT.

P61 10:17

Area=_

ENT

Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point “TP”.

P61 10:17

Pcode=

ENT

Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

```
P61          10:17

Pcode=TP
ELE=?
```

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

```
P61          10:17

Pcode=TP
ELE=12.125
```

ENT

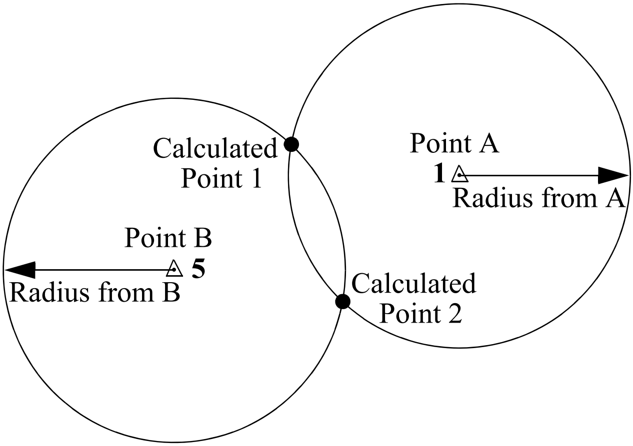
```
P61          10:17

Point stored

```

Now you return to the Curve intersection menu. If you wish to step to the main menu, press 4.

```
Select       10:17
1 Pts on a curve
2 Curve inters.
3 Config
```



2.2 - Curve Intersection

This program calculates the intersection between the circle at the centre of Point A and with a radius of “Radius from A”, and the circle at the centre of Point B and with a radius of “Radius from B”.

Select program 61 and press ENT.

PRG **6** **1** **ENT**

Select 2 (Curve inters.)

```
Select        10:17
1 Line intersec.
2 Curve inters.
3 Miscellaneous
```

2

Select 2 (Curve inters.)

```
Select        10:17
1 Pts on a curve
2 Curve inters.
3 Config
```

2

Key in the point number for point A and press ENT.

```
P61          10:17

Point A
Pno=_
```

1 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61           10:17
Ok?
N=88345.862
E=99136.879
```

ENT

Key in the point number for point B and press ENT.

```
P61          10:17

Point B
Pno=_
```

5 ENT

Key in the radius from A, and press ENT. In this example we key in 50m.

```
Enter Area &
Select device
```

Press ENT to accept the selected point or NO to choose another point.

```
P61          10:17
Ok?
N=88279.753
E=99153.375
```

ENT

Key in the radius from A and press ENT. In this example we key in 50m.

```
P61          10:17
Curve inters.
Radius from A
Radius=
```

5 0 ENT

Key in the radius from B and press ENT. In this example we key in 20m.

```
P61          10:17
Curve inters.
Radius from B
Radius=
```

2 **0** **ENT**

This is the first calculated point coordinates. Press ENT to store the point or NO to cancel. In this example we choose only to store the second point.

```
P61          10:17
N=88296.111
E=99141.868
Store?
```

NO

This is the second calculated point coordinates. Press ENT to store the point or NO to cancel. In this example we choose to store it with ENT.

```
P61          10:17
N=88299.599
E=99155.847
Store?
```

ENT

Key in a number for the calculated point and press ENT.

P61 10:17

Pno=_

ENT

Key in the name of the Area file in which you wish to store the calculated point and press ENT.

P61 10:17

Area=_

ENT

Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point “TP”.

P61 10:17

Pcode=

ENT

Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

```
P61          10:17

Pcode=TP
ELE=?
```

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

```
P61          10:17

Pcode=TP
ELE=12.125
```

ENT

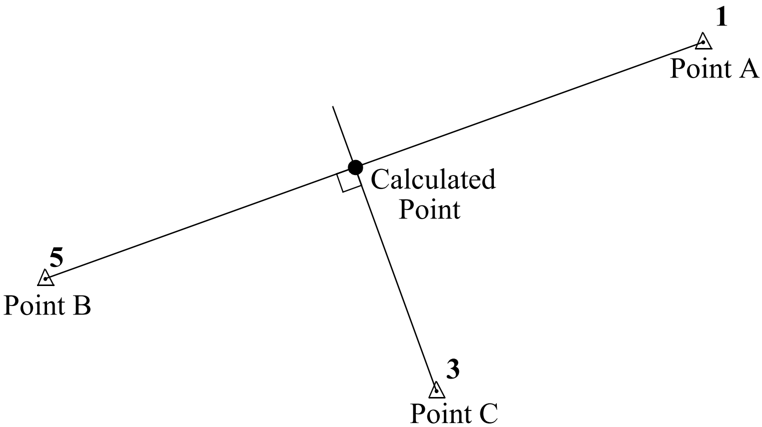
```
P61          10:17

Point stored
```

Now you return to the Curve intersection menu. If you wish to step to the main menu, press 4.

```
Select       10:17
1 Pts on a curve
2 Curve inters.
```

Miscellaneous



3.1 - Perpendicular Offset

This program calculates the intersection between the line A-B and the line perpendicular to line A-B going through point C.

Select program 61 and press ENT.

PRG 6 1 ENT

Select 3 (Miscellaneous).

```
Select       10:17
1 Line intersec.
2 Curve inters.
3 Miscellaneous
```

3

Select 1 (Perpend.offset)

```
Select        10:17
1 Perpend.offset
2 Cent. of circle
3 Stn and offset
```

1

Key in the point number for point A and press ENT.

```
 P61          10:17

Point A
Pno=_
```

1 **ENT**

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61           10:17
Ok?
N=88345.862
E=99136.879
```

ENT

Key in the point number for point B and press ENT.

```
P61        10:17

Point B
Pno=_
```

5 ENT

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61        10:17
Ok?
N=88279.753
E=99153.375
```

ENT

Key in the point number for point C and press ENT.

```
P61        10:17

Point C
Pno=_
```

3 ENT

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88313.151
E=99157.173
```

ENT

This is the calculated point coordinates. Press ENT to store the point or NO to cancel.

```
P61          10:17
N=88310.301
E=99145.752
Store?
```

ENT

Key in a number for the calculated point and press ENT.

```
P61          10:17

Pno=_
```

ENT

Key in the name of the Areafile in which you wish to store the calculated point and press ENT.

```
P61          10:17

Area=_
```

ENT

Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point “TP”.

```
P61          10:17

Pcode=
```

ENT

Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

```
P61          10:17

Pcode=TP
ELE=?
```

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

```
P61            10:17

Pcode=TP
ELE=12.125
```

ENT

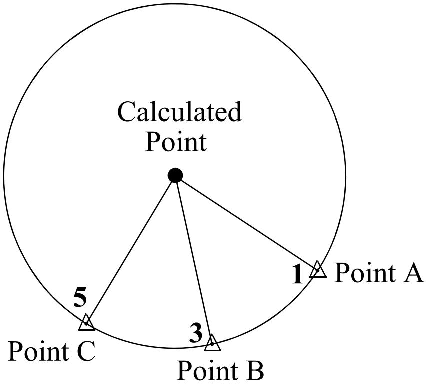
```
P61            10:17

Point stored

```

Now you return to the Miscellaneous menu. If you wish to step to the main menu, press 6.

```
Select         10:17
1 Perpend.offset
2 Cent. of circle
3 Stn and offset
```

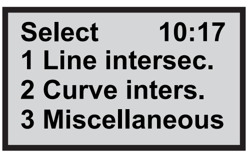


3.2 - Centre of Circle

This program calculates the centre of a circle going through the points A, B and C.

Select program 61 and press ENT.

Select 3 (Miscellaneous).



Select 2 (Cent.of circle)

```
Select        10:17
1 Perpend.offset
2 Cent. of circle
3 Stn and offset
```

2

Key in the point number for point A and press ENT.

```
P61           10:17

Point A
Pno=_
```

1 **ENT**

```

Enter Area &
Select device

```

Press ENT to accept the chosen point or NO to choose another point.

```
P61           10:17
Ok?
N=88345.862
E=99136.879
```

ENT

Key in the point number for point B and press ENT.

```
  P61          10:17

Point B
Pno=_
```

3 ENT

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61            10:17
Ok?
N=88331.151
E=99157.173
```

ENT

Key in the point number for point C and press ENT.

```
  P61          10:17

Point C
Pno=_
```

5 ENT

```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88279.753
E=99153.375
```

ENT

This is the calculated point coordinates. Press ENT to store the point or NO to cancel.

```
P61          10:17
N=88302.364
E=99103.277
Store?
```

ENT

Key in a number for the calculated point and press ENT.

```
P61          10:17

Pno=_
```

ENT

Key in the name of the Areafile in which you wish to store the calculated point and press ENT.

```
  P61        10:17

Area=_
```

ENT

Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point “TP”.

```
  P61        10:17

Pcode==_
```

ENT

Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

```
  P61        10:17

Pcode=TP
ELE=?
```

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

```
P61          10:17

Pcode=TP
ELE=12.125
```

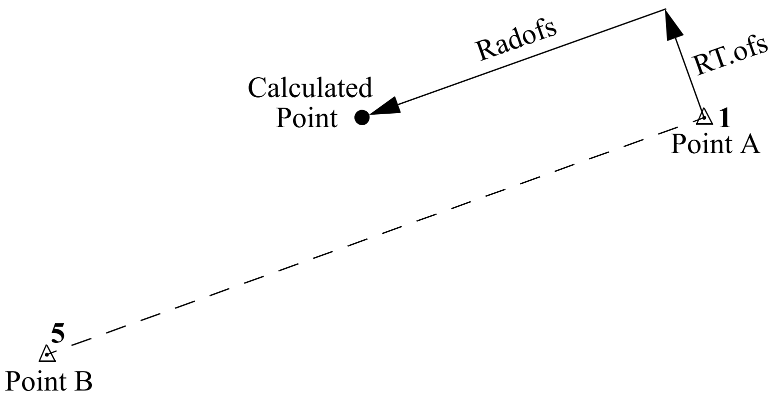
ENT

```
P61          10:17

Point stored
```

Now you return to the Miscellaneous menu. If you wish to step to the main menu, press 6.

```
Select       10:17
1 Perpend.offset
2 Cent. of circle
3 Stn and offset
```



3.3 - Station and Offset

This program calculates a point which lies at an Right angle offset and a Radial offset from the line A-B.

Select program 61 and press ENT.

PRG 6 1 ENT

Select 3 (Miscellaneous).

```
Select        10:17
1 Line intersec.
2 Curve inters.
3 Miscellaneous
```

3 ENT

Select 3 (Stn and offset)

```
Select        10:17
1 Perpend.offset
2 Cent. of circle
3 Stn and offset
```

3

Key in the point number for point A and press ENT.

```
 P61          10:17

Point A
Pno=_
```

1 ENT

Enter Area &
Select device

Press ENT to accept the chosen point or NO to choose another point.

P61 10:17
Ok?
N=88345.862
E=99136.879

ENT

Key in the point number for point B and press ENT.

P61 10:17

Point B
Pno=_

5 **ENT**

Enter Area &
Select device

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88279.753
E=99153.375
```

ENT

Key in the radial offset from point A and press ENT. A positive value means that the offset is towards point B. In this example we have chosen the offset of +30m.

```
P61          10:17

Stn and offset
Radofs=_
```

3 0 ENT

Key in the right angle offset from point A and press ENT. A positive value means that the offset is at the right from point A. In this example we have chosen the offset of +10m.

```
P61          10:17
Stn and offset
Radofs=30
Rt.ofs=
```

1 0 ENT

This is the calculated point coordinates. Press ENT to store the point or NO to cancel.

```
P61          10:17
N=88310.301
E=99145.752
Store?
```

ENT

Key in a number for the calculated point and press ENT.

```
P61          10:17

Pno=_
```

ENT

Key in the name of the Areafile in which you wish to store the calculated point and press ENT.

```
P61          10:17

Area=_
```

ENT

Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point “TP”.

```
P61        10:17

Pcode=_
```

ENT

Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

```
P61        10:17

Pcode=_
ELE=?
```

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

```
P61        10:17

Pcode=_
ELE=12.125
```

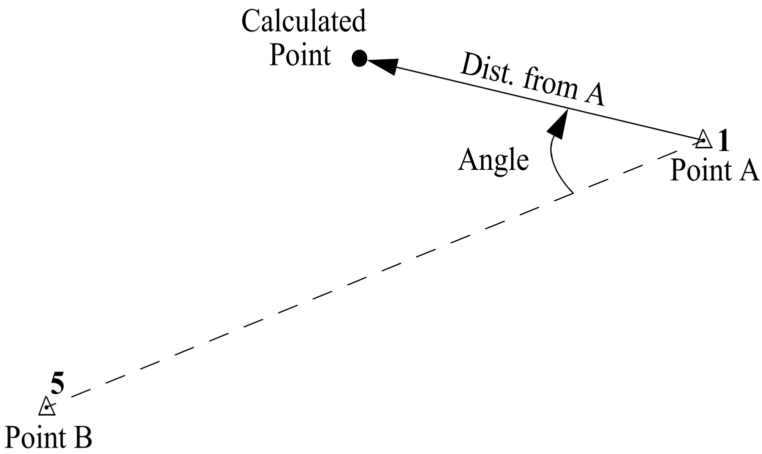
ENT

```
P61        10:17

Point stored
```

Now you return to the Miscellaneous menu. If you wish to step to the main menu, press 6.

```
Select       10:17
1 Perpend.offset
2 Cent. of circle
3 Stn and offset
```



3.4 - Angle and Distance

This program calculates a point which lies at an certain angle and a certain offset from the line A-B.

Select program 61 and press ENT.

PRG 6 1 ENT

Select 3 (Miscellaneous) and press ENT.

```
Select        10:17
1 Line intersec.
2 Curve inters.
3 Miscellaneous
```

3

Select 4 (Angle & dist.)

```
Select        10:17
4 Angle & dist.
5 Config
6 Main menu
```

4

Key in the point number for point A and press ENT.

```
 P61          10:17

Point A
Pno=_
```

1 **ENT**

```

Enter Area &
Select device

```

Press ENT to accept the chosen point or NO to choose another point.

```
P61          10:17
Ok?
N=88345.862
E=99136.879
```

ENT

Key in the point number for point B and press ENT.

```
P61          10:17

Point B
Pno=_
```

5 **ENT**

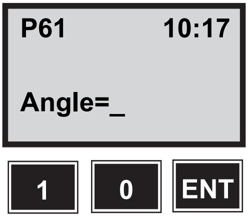
```
Enter Area &
Select device
```

Press ENT to accept the chosen point or NO to choose another point.

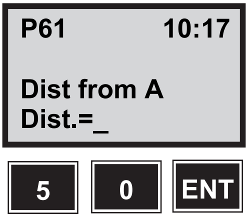
```
P61          10:17
Ok?
N=88279.753
E=99153.375
```

ENT

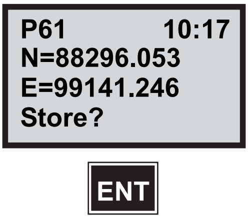
Key in the angle from point A and press ENT. A positive value means a clockwise angle. In this example we have chosen the angle of +10 grads.



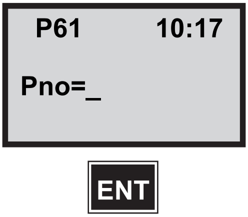
Key in the distance from point A and press ENT. A positive value means that the offset is towards point B. In this example we have chosen the offset of +50m.



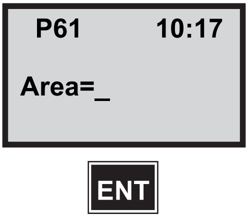
This is the calculated point coordinates. Press ENT to store the point or NO to cancel.



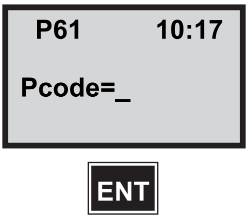
Key in a number for the calculated point and press ENT.



Key in the name of the Areafile in which you wish to store the calculated point and press ENT.



Here you have the opportunity to choose a Pcode for the calculated point. In this case we choose the call the point “TP”.



Do you wish to add an elevation to the point before you store it? If so, press ENT, otherwise press NO.

```
  P61        10:17

Pcode=TP
ELE=?
```

ENT

Accept the keyed in elevation with ENT or press NO to re-enter it.

```
  P61        10:17

Pcode=TP
ELE=12.125
```

ENT

```
P61          10:17

Point stored

```

Now you return to the Miscellaneous menu. If you wish to step to the main menu, press 6.

```
Select       10:17
1 Perpend.offset
2 Cent. of circle
3 Stn and offset
```

CHAPTER

3

P65 Field Application

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In General

Program 65, field Application, is a program for solving coordinate calculations in the field.

Corner + Angle

When you measure an inner corner with a Direct Reflex instrument using reflectorless technology, you can encounter problems with reflections from the wall. When you measure towards an outer corner, reflections from objects in the background can easily disturb your measurement. This program will help you to obtain the exact distance to the error.

Corner + Distance

If the corner you want to measure is hidden, you can simply measure the remaining distance with a tape measure.

Two lines Intersection

When you have to deal with a hidden object, in spite of how you set up the instrument, this intersection program will calculate the point for you.

Eccentric object

When you measure an object you normally want the centre point. This program automatically calculates the centre of the object measured and also the diameter.

Surface

You can automatically measure a surface. Just define the surface and then select the grid you want to use and the instrument will automatically scan that surface.

Corner + Angle

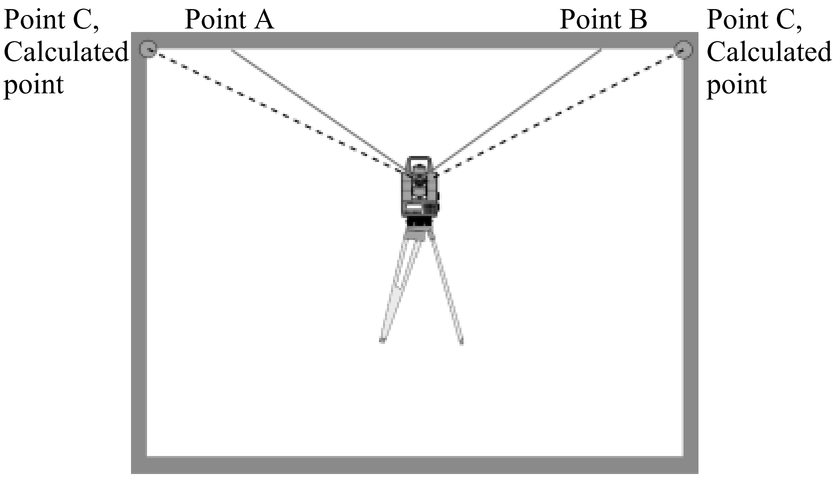


Figure 3.2 Measure Corner + Angle.

Start program 65.

PRG 6 5 ENT

Press 1 to measure a corner and angle.

STD P65 12:18
1 Corner (angle)
2 Corner (dist)
3 Two lines int.

1

Key in the number or name of the Job file in which you want to store data.

```
STD  P65   12:18

Job No=
```

ENT

Note – *To show display, see Menu 6.1*

Choose in which memory unit you want to store your Job file.

```
STD  P65   12:18
1: Imem off
2: Xmem off
3: Serial off
```

ENT

Note – *Only displayed if Job/Mem is switched on (MNU61)*

Measure A.

Measure point A and press ENT.

```
STD  P65   12:18

meas A?
```

ENT

Aim to your point, then press A/M to measure the distance.

```
STD  P65   12:18
HA:
VA:
```

A/M

Note – *To display Pno, Pcode and store, see "Configure" page 3-4*

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

```
STD  P65   12:18
HA:
VA:
SD:
```

REG

Measure B.

Measure point B and press ENT.

```
STD  P65   12:18

meas B?
```

ENT

Aim to your point, then press A/M to measure the distance.

```
STD  P65   12:18
HA:
VA:
```

A/M

Note – To display Pno, Pcode and store, see “Configure” on page 3-4

The instrument displays HA, VA, and SD for the point.
Press REG, to register the measurement.

```
STD  P65   12:18
HA:
VA:
SD:
```

REG

Measure C.

Aim to the point that you want to calculate.
Press REG.

```
STD  P65   12:18

Aim to C
Press REG
```

REG

The program automatically increments the Pno by 1. You can also key in another Pno.

Press ENT to accept.

```
STD  P65   12:18

Pno=
```

ENT

You can choose to enter a Pcode for the point, the last Pcode used is proposed.

If you leave it blank, this question will not appear for the next point

Press ENT to accept.

```
STD  P65   12:18

Pcode=
```

ENT

Calculated raw data to point C is displayed.

```
STD  P65   12:18
HA=
VA=
SD=
```

ENT

Calculated coordinate to point C is displayed.

```
STD  P65   12:18
N=
E=
ELE=
```

ENT

Press 1 to continue, page 3-7.

Press 2 to measure a new point A and B, page 3-5.

```
STD  P65   12:18
1 Continue
2 New A and B
3 Distance
```

3

Press 3 - The horizontal distance between the two last calculated points will be displayed.

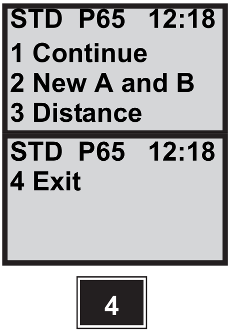
Press YES to store.

```
STD  P65   12:18

HD=
Store?
```

YES / **NO**

Press 4 to exit to program 0.



Corner + Distance

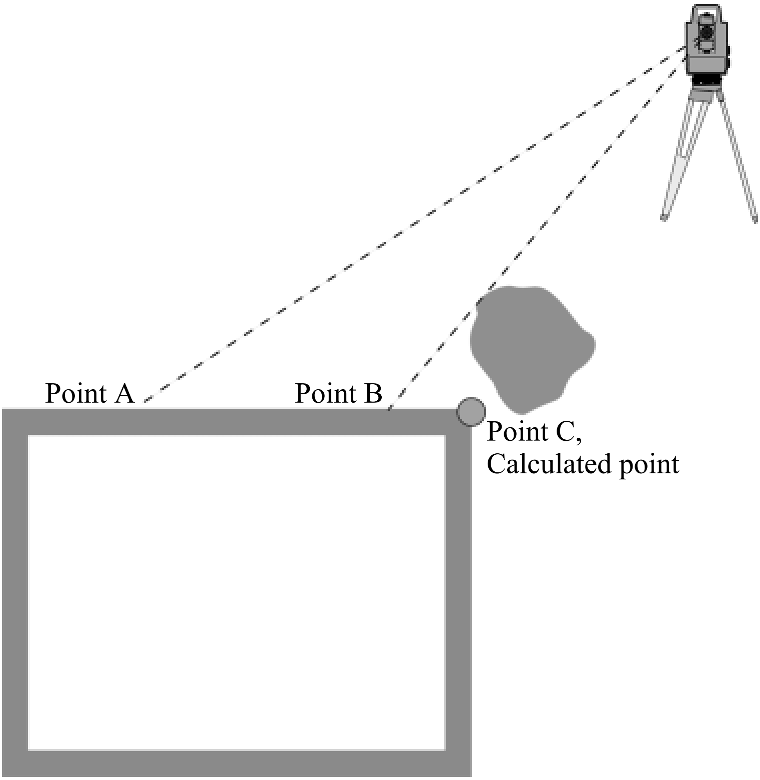
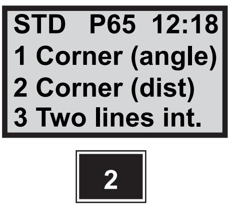


Figure 3.3 Measure Corner + Distance.

Press 2 to measure corner and distance.



Key i the number or name of the Job file in which you want to store data.

```
STD   P65   10:18

Job No=
```

ENT

Note – *To show display, see menu 6.1*

Choose in which memory unit you want to store your Job file.

```
STD   P65   10:18
1: Imem off
2: Xmem off
3: Serial off
```

ENT

Note – *Only displayed if Job/Mem is switched on (MNU61)*

Measure A.

Measure point A and press ENT.

```
STD   P65   10:18

meas A?
```

ENT

Aim to your point, then press A/M to measure the distance.

```
STD  P65  10:18
HA:
VA:
```

A/M

Note – To display Pno, Pcode and store see "Configure" on page 3-4

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

```
STD  P65  10:18
HA:
VA:
SD:
```

REG

Measure B.

Measure point B and press ENT.

```
STD  P65  10:18

meas B?
```

ENT

Note – To display Pno, Pcode and store see "Configure" onpage 3-4.

Aim to your point, then press A/M to measure the distance.

```
STD   P65   10:18
HA:
VA:
```

A/M

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

```
STD   P65   10:18
HA:
VA:
SD:
```

REG

Measure distance.

The instrument will automatically position to Point A or B.

Select from which of the points (1 or 2), you manually want to measure the distance to the point that you want to calculate.

```
STD   P65   10:18
1 Dist. from A
2 Dist. from B
```

1 or **2**

Enter the Radofs to the point you want to calculate.

```
STD   P65   10:18

Radofs=
```

ENT

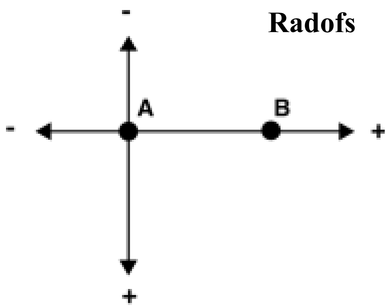


Figure 3.4 Radofs / RT.ofs

Enter the Right angle offset.

```
STD   P65   10:18

Rt.ofs=
```

ENT

The program automatically increments the pno by 1. You can also key in another Pno.

Press ENT to accept.

STD P65 10:18

Pno=

ENT

You can choose to enter a Pcode for the point, the last Pcode used is proposed.

Press ENT to accept.

STD P65 10:18

Pcode=

ENT

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

STD P65 10:18
HA=
VA=
SD=

ENT

Calculated coordinate to point C is displayed.

```
STD   P65   10:18
N=
E=
ELE=
```

ENT

Press 1 to continue, go to “Measure C” on page 3-7.

Press 2 to measure a new point A and B, go to “Measure C” on page 3-5.

Press 3 - The horizontal distance between the two last calculated points will be displayed.

Press 4 to exit to program P0.

```
STD  P65   12:18
1 Continue
2 New A and B
3 Distance
```

```
STD  P65   12:18
4 Exit
```

4

Typical Jobfile

0=Calculated point
5=
4=
70=
71=
7=
8=
9=
37=
38=
39=

Two Lines Intersection

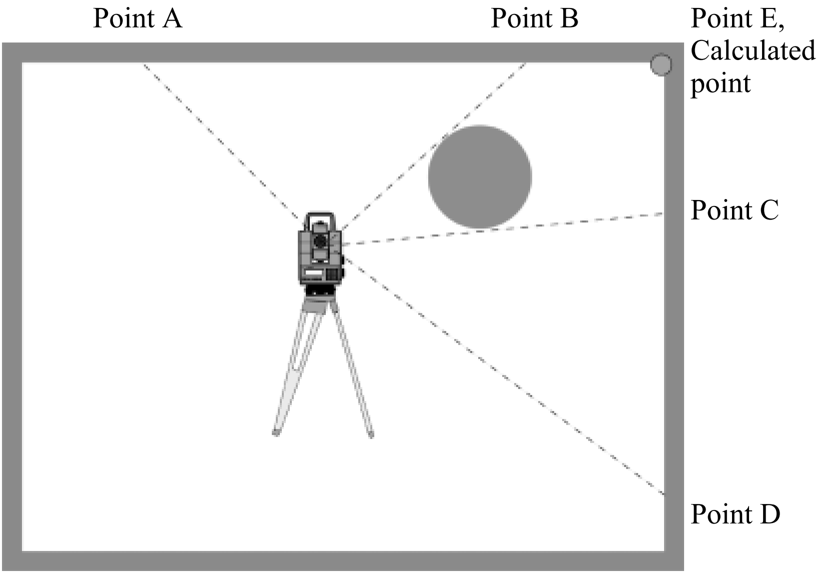


Figure 3.5 Two lines intersection.

Press 3 to measure two lines intersection.

```
STD   P65  12:18
1 Corner (angle)
2 Corner (dist)
3 Two lines int.
```

3

Key i the number or name of the Job file in which you want to store data.

```
STD  P65  10:18

Job No=
```

ENT

Note – To show display, see menu 6.1.

Choose in which memory unit you want to store your Job file.

```
STD  P65  10:18
1: Imem off
2: Xmem off
3: Serial off
```

ENT

Note – Only displayed if Job/Mem is switched on (MNU61)

Measure A.

Measure point A and press ENT.

```
STD  P65  10:18

meas A?
```

ENT

Note – *To display Pno, Pcode and store, see “Configure” on page 3-4*

Aim to your point, then press A/M to measure the distance.

```
STD   P65   10:18
HA:
VA:
```

A/M

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

```
STD   P65   10:18
HA=
VA=
SD=
```

REG

Measure B

Measure point B and press ENT.

```
STD   P65   10:18

meas B?
```

ENT

Note – *To display Pno, Pcode and store, see “Configure” on page 3-4*

Aim to your point, then press A/M to measure the distance.

```
STD   P65   10:18
HA:
VA:
```

A/M

The instrument displays HA, VA, and SD for the point.
Press REG, to register the measurement.

```
STD   P65   10:18
HA=
VA=
SD=
```

REG

Measure C

Measure point C and press ENT.

```
STD   P65   10:18

meas C?
```

ENT

Aim to your point, then press A/M to measure the distance.

```
STD   P65   10:18
HA:
VA:
```

A/M

The instrument displays HA, VA, and SD for the point.
Press REG, to register the measurement.

```
STD   P65   10:18
HA=
VA=
SD=
```

REG

Measure D

Measure point D and press ENT.

```
STD   P65   10:18

meas D?
```

ENT

Note – *To display Pno, Pcode and store, see “Configure” on page 3-4*

Aim to your point, then press A/M to measure the distance

```
STD  P65  10:18
HA:
VA:
```

A/M

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

```
STD  P65  10:18
HA=
VA=
SD=
```

REG

The program automatically increments the Pno by 1. You can also key in another Pno.

Press ENT to accept.

```
STD  P65  10:18

Pno=
```

ENT

You can choose to enter a Pcode for the point, the last Pcode used is proposed.

If you leave it blank, this question will not appear for the next point.

Press ENT to accept.

```
STD   P65   10:18

Pcode=
```

ENT

The instrument displays HA, VA, and SD for the point.

```
STD   P65   10:18
HA=
VA=
SD=
```

REG

Calculated coordinate to point E is displayed.

```
STD   P65   10:18
N=
E=
ELE=
```

ENT

Press 1 to continue, go to “Measure distance” on page 3-21.

Press 2 to measure a new point A and B, go to “Measure A”., on page 3-20.

Press 3 - The horizontal distance between the two last calculated points will be displayed.

Press 4 to exit to Program 0.

```
STD  P65   12:18
1 Continue
2 New A and B
3 Distance
```

```
STD  P65   12:18
4 Exit
```

Typical Jobfile

0=Calc.Point
5=
4=
7=
8=
9=
37
38
39

Eccentric Object

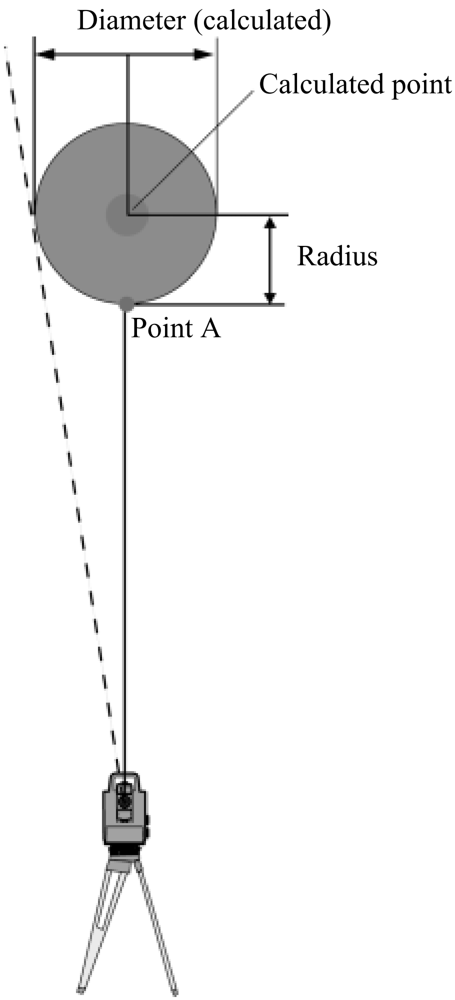


Figure 3.6 Eccentric Object.

Press 4 to measure an Eccentric object.

```
STD   P65  12:18
1 Corner (angle)
2 Corner (dist)
3 Two lines int.
```

```
STD   P65  12:18
 4 Eccentric
 5 Surface
 6 Config
```

4

Key i the number or name of the Job file in which you want to store data.

```
STD   P65   10:18

Job No=
```

ENT

Note – *To show display, see menu 6.1*

Choose in which memory unit you wish to store your Job file.

```
STD   P65   10:18
1: Imem off
2: Xmem off
3: Serial off
```

ENT

Note – *Only displayed if Job/Mem is switched on (MNU61)*

Measure A

Measure point A and press ENT.

```
STD  P65  10:18

meas A?
```

ENT

Note – *To display Pno, Pcode and store, see "Configure" on page 3-4*

Aim to your point, then press A/M to measure the distance

```
STD  P65  10:18
HA:
VA:
```

A/M

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

```
STD  P65  10:18
HA=
VA=
SD=
```

REG

Aim to the edge, press REG to register the measurement.

```
STD   P65   10:18

Aim to Edge
Press REG
```

REG

Calculated diameter of the measured object is displayed. Press ENT to accept.

```
STD   P65   10:18

Diam=
ok?
```

ENT

The program automatically increments the Pno by 1. You can also key in another Pno.

Press ENT to accept.

```
STD   P65   10:18

Pno=
```

ENT

You can choose to enter a Pcode for the point, the last Pcode used is proposed.

If you leave it blank, this question will not appear for the next point.

Press ENT to accept.

```
STD   P65   10:18

Pcode=
```

ENT

The instrument displays HA, VA, and SD for the calculated point.

Press REG, to register the measurement.

```
STD   P65   10:18
HA:
VA:
SD:
```

ENT

Calculated coordinate to the calculated point is displayed.

```
STD   P65   10:18
N=
E=
ELE=
```

ENT

Press 1 to continue, go to “Measure A”, on page 3-29.

Press 2 - The horizontal distance between the two last calculated points will be displayed.

Press 3 to exit to program 0.

```
STD   P65   10:18
1 Continue
2 Distance
3 Exit
```

Typical Jobfile

```
0=Calc.Point
5=
4=
63=
7=
8=
9=
37
38
39
```

Surface

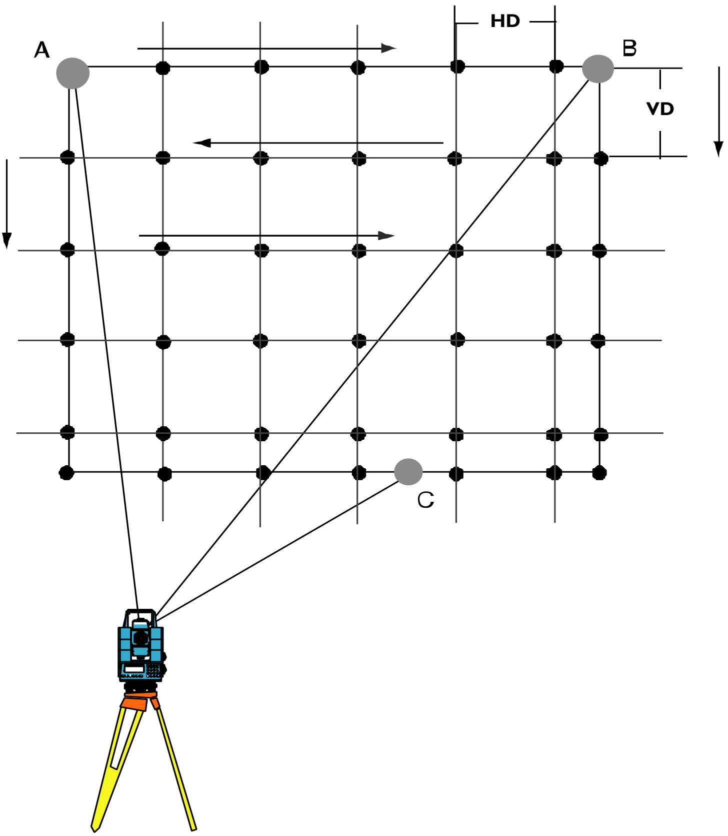


Figure 3.7

Press 5 to measure a surface

```
STD   P65  12:18
1 Corner (angle)
2 Corner (dist)
3 Two lines int.
```

```
STD   P65  12:18
4 Eccentric
5 Surface
6 Config
```

5

Key i the number or name of the Job file in which you want to store data.

```
STD  P65   12:18

Job No=

```

ENT

Note – *To show display, see Menu 6.1*

Choose in which memory unit you want to store your Job file.

```
STD  P65   12:18
1: Imem off
2: Xmem off
3: Serial off
```

ENT

Note – *Only displayed if Job/Mem is switched on (MNU61)*

Measure A.

Measure point A and press ENT.

```
STD  P65   12:18
meas A?
Upper left
```

ENT

Aim to your upper left point, then press A/M to measure the distance.

```
STD  P65   12:18
HA:
VA:
```

A/M

Note – *To display Pno, Pcode and store, see “Configure”* *page 3-4*

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

```
STD  P65   12:18
HA:
VA:
SD:
```

REG

Measure B.

Measure point B and press ENT.

```
STD  P65   12:18
meas B?
Upper right
```

ENT

Aim to your upper right point, then press A/M to measure the distance.

```
STD  P65   12:18
HA:
VA:
```

A/M

Note – *To display Pno, Pcode and store, see “Configure” on page 3-4*

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

```
STD  P65   12:18
HA:
VA:
SD:
```

REG

Measure C

Measure point C and press ENT.

```
STD   P65   10:18
meas C?
Bottom
```

ENT

Aim to your bottom point, then press A/M to measure the distance.

```
STD   P65   10:18
HA:
VA:
```

A/M

Note – *To display Pno, Pcode and store, see “Configure” on page 3-4*

The instrument displays HA, VA, and SD for the point.

Press REG, to register the measurement.

```
STD   P65   10:18
HA=
VA=
SD=
```

REG

Press 1 to do an automatic measurement.

```
Select
1 Automatic
2 Manual
3 New A and B
```

1

Key in the horizontal and vertical distance.

```
STD   P65   10:18
HD:
VD:
```

ENT

Calculated number of points to be measured is displayed and the time estimated to measure them. Press ENT to accept or press or NO if you want to change the keyed in HD and VD.

```
STD  P65  12:18
Points = XX
Time = X min
Ok?
```

ENT

Percentage of memory used is displayed.

```
STD  P65  12:18
Use of free mem
 8%
Ok?
```

ENT

Key in the Pno you want to start with. The program automatically increments. Press ENT to accept.

```
STD  P65  12:18

 Pno =

```

ENT

You can choose to enter a Pcode for the point, the last Pcode used is proposed. Press ENT to accept.

```
STD  P65  12:18

 Pcode =

```

ENT

A positioning is being made.

```
STD  P65  12:18
Aim to point x/xx
Please Wait
```

ENT

```
STD  P65  12:18

 Scanning......
```

Note – *Scanning only displayed on Direct Reflex instruments with reflectorless technology.*

The measurement will continue until all points are measured.

```
STD  P65  12:18

 Measuring......
 S.Dev = x.xxx
```

Note – *Note! If a point can not be measured or if the S.Dev is not reached, the measurement will stop after 15 s.*

The number of Good points (measured points) and Bad points (not measured points) are displayed. Press NO if you want to check the bad points. (Press YES to return to Program 65 main menu).

```
STD  P65  12:18
Good pts =
Bad pts =
Ok?
```

NO

If you have more than 10 bad points only the first 10 will be checked. Press YES to start. (Press NO to return to Program 65 main menu).

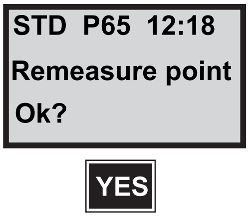
```
STD  P65  12:18
Check point
Ok?
```

YES

A positioning to the bad point is being made.

```
STD  P65  12:18
Aim to point x/xx
Please Wait
```

The instrument aims at the point that could not be measured. Press YES to remeasure the point. Press NO to check the next bad point.



Configure

Store, Calc

Select if you want to configure Store Measure points or Store Calculated points.

Press 1.

STD P65 10:18
1 Store, Measure
2 Store, Calc
3 Exit

1

Press 1.

STD P65 12:18
1 Other
2 Surface auto
3 Exit

1

Store

Store measured data by selecting 3. User table data for the "help points" can also be stored, normally this can be left empty.

STD P65 10:18
1 Exit
2 View table
3 Enter user table

2

Press 2 to view table.
Press ENT.

STD P65 10:18
User tbl.
(Table empty)
Press ENT

ENT

Typical Data can look like this;

Label - 0, 5, 4, 7, 8, 9, 37, 38, 39

STD P65 10:18
User tbl. pos 1
Label no=

Calculated point

Press 2.

```
STD   P65   10:18
1 Store, Measure
2 Store, Calc
3 Exit
```

1

Set what you want to configure.
(Selection 2 in the config menu.)

```
STD   P65   10:18
1 Angle & 2 Lines
2 Dist
3 Eccentric pt
```

```
STD   P65   10:18
4 Surface (man)
5 Exit
```

Angle and two lines

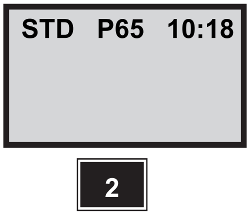
0, 5, 4, 7, 8, 9, 37, 38, 39 = Default
Info, Pno, Pcode, HA, VA, SD, N, E, ELE

```
STD   P65   10:18
```

1

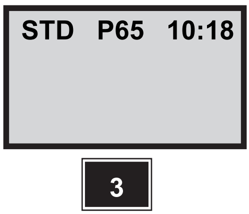
Distance

70, 71, 0, 5, 4, 7, 8, 9, 37, 38, 39 = Default
Info, Radolfs, Rtofs, Pno; Pcode, HA, VA, SD



Eccentric

0, 5, 4, 63, 7, 8, 9, 37, 38, 39 = Default
info, Pno, Pcode, Diam, Ha, VA, SD, N, E, Ele



CHAPTER

4

P66 Monitoring

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In General

Program 66, Monitoring, The Monitoring program for servo-driven instruments lets you monitor known points stored in an Area file. The software measures the current position of the known points to detect changes in their position.

Points are monitored in one of two modes: Automatic or Manual.

When the software is in Automatic mode, the servo-driven instrument automatically positions itself before measuring each point. If an active target (RMT) is used the complete movement will be detected (Slope Monitoring), if a prism is used the distance movement will be detected (Monitoring).

In Manual mode, the instrument positions itself, but fine adjustments might be needed (Slope Monitoring).

The Monitoring function is useful for many applications. For example, use it to make sure known points on a building or structure have not moved.

• Monitoring preparations:

– Establish the Station

– Determine and store coordinates of the points to be

monitored in an Area file

• Choice of performance:

– Single loop

Single loop will monitor points in a selected area file once.

– Number of loops “Loop=X”

Number of loops will monitor points in a selected area file a number of times. The number of times is set by the operator, the value can be set between 2 and 5000. The operator can also set the length of the pause between loops, the length of the pause can be between 0 and 2880 seconds (2 days).

– Loop “Pause=X”(minutes)

Loop will monitor points in a selected area file continuously. The operator can set the length of the pause between loops, the length of the pause can be between 0 and 2880 seconds (2 days).

The program will compare new positions with positions in the selected area file. The number of points within error limits will be displayed as good points, points deviating more than set error limits will be displayed as bad points.

Configuration

The configuration part can be accessed by a long press on the PRG-key. Press DIR and select program 66 Monitoring and press ENT.

The instrument will display the software version and the selected program P66.

```
Prg   P66    10:17
Inst.     632-10.00
Monitoring
Dir  <-     ->  Exit
```

ENT

Select 2 Config.

```
      P66      10:17

1 Run
2 Config
```

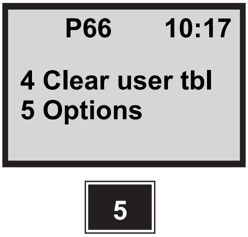
2

Press ENT.

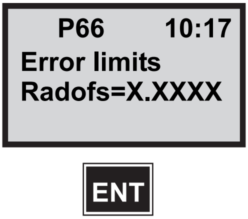
```
      P66      10:17

1 Exit
2 View table
3 Enter user tbl
```

ENT

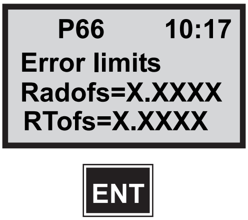
Select 5 Options to set the error limit.



Key in the selected error limit for Radofs and press ENT.



Key in the selected error limit for RTofs and press ENT.



Key in the selected error limit for DiffZ and press ENT.

Select 1 Exit to exit.

```
   P66        10:17
1 Exit
2 View table
3 Enter user tbl
```

1

The Monitoring program P66 can be started from here by pressing 1 Run.

How to use

Select program 66 monitoring.

PRG **6** **6** **ENT**

Key in the number of the Jobfile in which you want to store the data. Then press ENT.

```
         P66  10:17

Job No=_
```

ENT

Note – *Displayed if Job/Mem is switched on (MNU61)*

Activate the device you wish for storage of the Job file by choosing the appropriate number 1, 2 or 3.

```
      P66  10:17
1: Imem on
2: Xmem off
3: Serial off
```

1 **ENT**

Note – Only displayed if Job/Mem is switched on (MNU61)

This was the Station No. you entered in program 20, Station Establishment. Press ENT.

If no station establishment has been made, P66 will automatically propose establishment of a known or free station (P20) when you press ENT.

```
      P66  10:17

Stn=1000

```

ENT

Note – Only displayed if Stn is switched on (MNU61)

Key in the Area file number in which the point coordinates are stored and press ENT.

```
      P66  10:17

Area =_

```

ENT

Choose what type of device in which the points are stored.

```
        P66  10:17
1 Imem
2 Xmem
```

1

Key in the signal height and press enter.

```
        P66  10:17

SH=X.XXX
```

ENT

Select 1 Single loop, 2 Number of loops or 3 Loop.

```
Select P66  10:17
1 Single loop
2 Num. of loops
3 Loop
```

If 2 Number of loops is selected the operator can decide how many loops the instrument shall make and how long the pause between the loops shall be. The operator will be prompted to key in the number of loops, values between 2 and 5000 can be entered

```
        P66  10:17
Loop=X
```

ENT

The operator will then be prompted to key in the length of the pause between the loops, values between 0 and 2880 sec (2 days) can be entered.

```
        P66  10:17
Pause=X
```

ENT

If 3 Loop is selected the instrument will continue until stopped by operator. The operator can decide how long the pause between the loops shall be. The operator will be prompted to key in the length of the pause between the loops, values between 0 and 2880 sec (2 days) can be entered.

```
        P66  10:17
Pause=X
```

ENT

If 1 Single loop is selected the instrument will make one loop and stop. In this case we will select 1 Single Loop.

Select P66 10:17

1 Single loop
2 Num. of loops
3 Loop

1

Select the type of target used, 1 Reflector, 2 DR (Only Direct Reflex instruments with reflectorless technology) or 3 Active target (Only instrument with tracker). In this case we will select 1 Reflector. If 3 Active target is selected the program will skip the selection of manual or automatic mode and go directly to the selection of measuring mode.

Select P66 10:17

1 Reflector
2 DR
3 Active target

1

Select 1 Manual or 2 Automatic mode, in this case we will select 1 Manual mode.

Select P66 10:17

1 Manual
2 Automatic

1

Select 1 Std for standard measurement or 2 D_bar. In this case we will select 1 Std.

```
Select P66  10:17

1 Std
2 D_bar
```

1

If automatic has been selected and D_bar is selected at his moment then the operator will be prompted to select the number of measurments.Key in the selected number of measurements and press ENT

```
        P66  10:17


No.of meas.=X
```

ENT

If you have entered a Pcode for the point you can enter the desired Pcode here. The program will then seek for the point with that Pcode. If you have no Pcode just leave the line blank and press ENT.

```
        P66  10:17

Pcode =_
```

ENT

Wait for the instrument to find and measure the selected position.

```
        P66  10:17

Please wait
```

The horizontal and vertical angle is displayed when the position is found. If needed adjust the aiming of the instrument and press A/M to measure the point. This display is not shown if Automatic mode has been selected.

```
STD    P66  10:17
HA: 310.8390
VA: 98.1720
```

A/M

The measured position is displayed, press REG to save. This display is not shown if Automatic mode has been selected.

```
STD    P66  10:17
dHA: X.XXXX
dVA: X.XXX
dHT: X.XXX
```

REG

Wait for the instrument to calculate the next point.

```
        P66  10:17

Please wait
```

After the last point in the area file has been measured the instrument will display the number of good and bad points. The measured points are compared with the values set by the operator in the configuration. If OK press ENT to return to program 0 (P0).

```
STD   P66  10:17
Good pts=X
Bad pts=X
OK?
```

ENT

If the instrument has been set to make several loops and a pause has been set between the loops the instrument will display the time until the next loop begins. Press ENT to return to program 0 (P0).

```
STD   P66  10:17
Good pts=X
Bad pts=X
Pause x min.....
```

ENT

The program will return to program 0.

```
STD   P0   10:17

Temp=XX

```

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