

Deleting an alignment



CALYPSO can save, load and delete alignments again during a CNC run. In the definition template for the **Delete Alignment** utility, enter the file name for the alignment to be deleted.

All alignments are listed in the `<user directory>\workarea\basesystems` directory.

If the file name contains backslashes “\”, the program will branch to the appropriate subdirectory.

The file you specified in the definition template is deleted during the CNC run.

If the file is not present, the run will continue without a message. The symbol for the utility in the measurement plan will turn red. If the file is write-protected, an error message will appear. The CNC run is resumed.

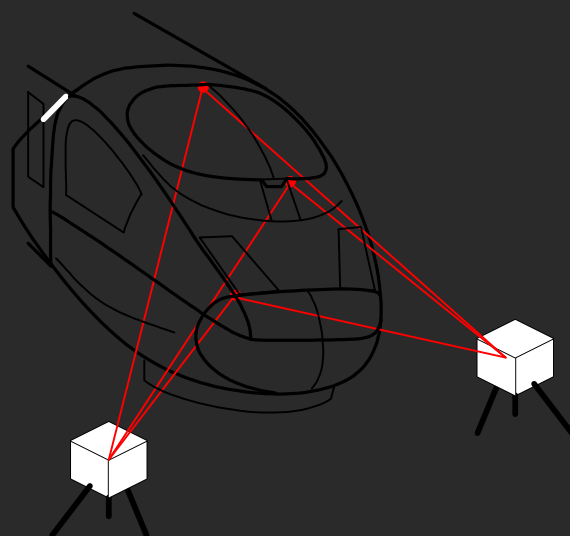
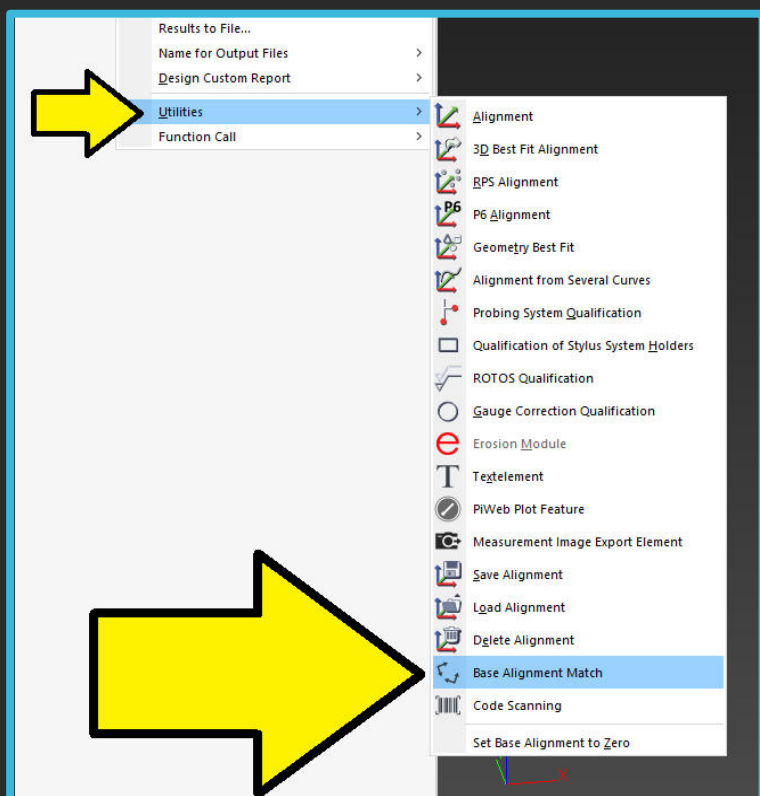


Base Alignment Match utility

Basics about the Base Alignment Match utility

Purpose

Mobile measuring systems, e.g. a Leica laser tracker, allow you to measure very large parts. However, the position of the measuring system must be changed during the CNC run. To ensure that the data recorded beforehand and afterwards match, the coordinate systems must be converted.





Principle

The *Base Alignment Match* utility makes it possible to obtain again a valid coordinate system after changing the position of the measuring system. Use **Resources** → **Utilities** → **Base Alignment Match** to add it to the measurement plan.

For the base alignment match, CALYPSO measures a number of features once in the “old” position and once in the “new” position.

- At the “old” position (prior to changing the position), it is possible for CALYPSO measure the selected features automatically during the CNC run.
- After changing the position, CALYPSO does not recognize the locations of the features. Therefore, you must probe these features manually. This corresponds to the manual probing of the base alignment at the beginning of the CNC run with unknown position of the workpiece in the CMM measuring range.

NOTE

For the base alignment match, it is irrelevant whether the position of the measuring system or workpiece has been changed, the procedure is the same for both applications.

CALYPSO uses the coordinates of the feature datum targets to carry out an internal 3D best fit. The resulting coordinate system becomes the new internal base alignment in the CNC run.

The new base alignment is saved under the name of the base alignment match in the `<user directory>\workarea\basesystems` directory. During the automatic run, the file name is assigned the “(CNC)” extension.

Bundle Alignment

If your mobile measuring system has the corresponding equipment, you can also use the more accurate *Bundle Alignment* trigonometric method. CALYPSO is familiar with this calculation method.

Changing the position several times

It is possible to change the position of the mobile measuring system several times and use an additional base alignment match for this. This will enable you to measure also larger workpieces with the corresponding precision.

Run according to list of characteristics

The CNC run differs depending on whether the measurement according to list of features or list of characteristics method is used. When using run according to list of characteristics, the base alignment match is performed as soon as the feature is to be measured. No preparations are required for the run according to list of characteristics.

Run according to list of features

The run according to list of features is performed differently. To enable CALYPSO to carry out the run according to list of features, each feature must “know” to which base alignment it is assigned.

Therefore, you must add the “Base Alignment Match” utility to the measurement plan and go to the **Measurement Plan Editor Features** to define for each feature the position from which it is to be measured.

Warning limit

You can enter and define a warning limit for the standard deviation so that CALYPSO stops as soon as the limit is exceeded during the measurement. It is possible to repeat the measurement or to cancel the run.

Printout

The results of the manually measured features in the new base alignment are saved in the default printout. The base alignment match is output in the printout in much the same way as a 3D best fit.

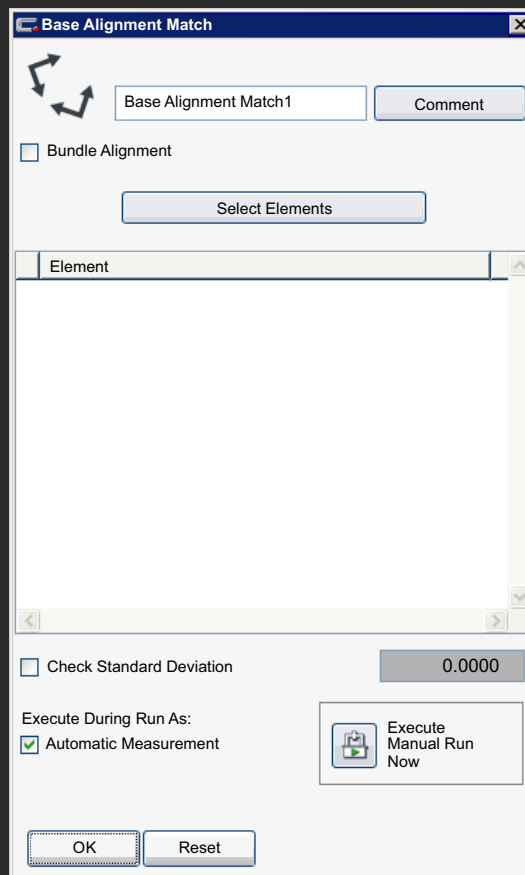
Preparing a base alignment match

Purpose

Mobile measuring systems, e.g. a Leica laser tracker, allow you to measure very large parts. However, the position of the measuring system must be changed during the CNC run. To ensure that the data recorded beforehand and afterwards match, the coordinate systems must be converted.

- 1 Open the measurement plan.
- 2 In the list of characteristics, go to the position at which the measuring system must be changed.
- 3 Select **Resources** → **Utilities** → **Base Alignment Match**.
Here, you add the **Base Alignment Match** utility to the measurement plan.
- 4 Open the definition template for the base alignment match.





- 5 Click **Select Features** and add the features for the base alignment match.

Alternatively, It is also possible to select the features in the CAD view, extract them or probe them on the machine while the definition template is open. This can be compared to the alternative alignment methods (3D best fit, RPS, P6).

Note: The following features are suitable for the base alignment match: point, circle, circle on cone, sphere, ellipse, 3D point, rectangle, slot, torus, symmetry point, radius point, angle point and sphere point.

Note: When selecting the features for the base alignment match, observe that CALYPSO must measure all features required for the selected features. This also includes all features of a coordinate system, constructions, etc.

Note: To avoid that many of the features must be measured again, it is recommended to select only features in the base alignment for the base alignment match.

- 6 Activate **Check Standard Deviation** and enter the warning limit upon exceeding of which CALYPSO should stop and repetition of the measurement should be possible.

- 7 Activate **Automatic Run** if CALYPSO is required to probe again the comparison features in the CNC run after changing their position and probing them manually.

Thus, the base alignment match becomes more accurate.

- 8 If needed, add additional base alignment matches to the measurement plan.

- 9 To carry out the measuring run according to list of features: In the **Measurement Plan Editor Features**, select the **Travel → Sequence after base alignment match** item and assign either the base alignment or a base alignment match to each feature.

During the run according to list of features, CALYPSO sorts all features. The sequence of the measurements depends on the sequence of the base alignment matches in the list of characteristics.

- 10 Save the measurement plan.

Example of a run according to list of features

The measurement plan contains four features (Circle1 to Circle4) and three base alignment matches (Base Alignment Match1, Base Alignment Match2 and Base Alignment Match3 in this sequence).

The features are assigned to the base alignment matches:

Feature	Base Alignment Match
Circle1	Base Alignment Match2
Circle2	Base Alignment
Circle3	Base Alignment Match1
Circle4	Base Alignment Match3

The measurement sequence is as follows: Circle2, Circle3, Circle1, Circle4.

Performing base alignment match

Mobile measuring systems, e.g. a Leica laser tracker, allow you to measure very large parts. However, the position of the measuring system must be changed during the CNC run. To ensure that the data recorded beforehand and afterwards match, the coordinate systems must be converted.

- 1 Start the measurement plan with the base alignment match.

After execution of the characteristics that can be measured at the first position, CALYPSO measures the features that you defined in the Base Alignment Match utility in the CNC run.

Purpose

A remark window is displayed showing the name of the alignment feature and the text “Features for aligning the base alignment have to be measured manually”.

CALYPSO switches to manual control of the CMM.

- 2 Change the position of the mobile measuring system and click **OK**. CALYPSO instructs you which features must now be measured manually at the new position.
- 3 When prompted, measure all features that are required for the calculation of the alignment.

CALYPSO calculates a new base alignment and uses it internally for the rest of the run for the following characteristics.

If the standard deviation check is activated, an information window opens once the warning limit has been exceeded in which you can define the rest of the procedure: Cancel or repeat the last measurement.

If the alignment was not successful, the CNC run will be interrupted and the stop light will turn red. The message “CNC canceled: Base Alignment cannot be computed” appears on the status monitor.

The reason for the failed alignment may be, for example, that a feature could not be calculated due to insufficient number of points or incorrect probing strategy.

Performing the base alignment match in the dialog mode

By clicking **Execute Manual Run Now** in the definition template of the base alignment match, CALYPSO checks whether all features have been measured in the old base alignment. If not, the missing features must be measured again in the old base alignment. The remark “Features for aligning the base alignment have to be measured manually” is then displayed. You must now change the position of the mobile measuring system and measure all features manually at the new position for the alignment.

Code scanning utility

Basics of code scanning utility



Use **Resources** → **Utilities** → **Code scanning** to add the **Code scanning** utility to the measurement plan.