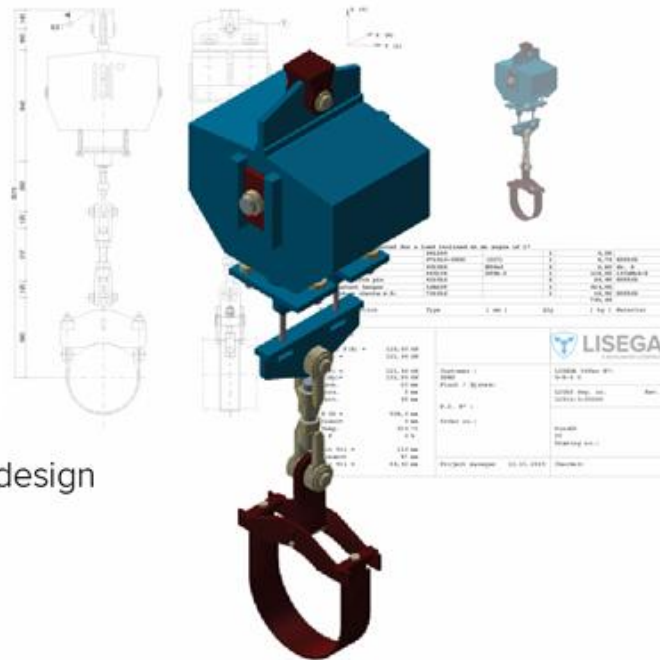




LICAD®

The intelligent planning and design software for pipe supports



# Manual LICAD

Edition 2026.x

LISEGA SE

[Terms of use](#)

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# 1. Introduction

## 1.1 An introduction to LICAD

By using the free of cost LICAD program, you can considerably reduce project-planning expenses and thereby cutback costs for the planning of supports for piping systems. With LICAD, more than 90% of the normal support positions can be covered as standard cases.

The time-consuming and thereby cost-intensive work that used to come up in the form of preparing sketches, installation drawings and 'combing through' catalogues, can be significantly optimized with LICAD.

The specific data of the support points (force, pipe diameter, travel, etc.) is entered with menu-controlled program guidance. A support configuration appropriate to local circumstances is selected by dialogue and by a symbolic representation of standard supports. Automatically LICAD carries out the selection and determination of components that are suitable for a given load in a support configuration. Further Intervention on the part of the operator is no longer required. The result is presented on the screen to the user in a scaled graphic form including a parts list indicating weights and materials and can be changed as required. In addition, a site plan can be filled if desired.

With the selection of variable spring and constant hangers, general guidelines for the selection of pipe supports (ASME, VGB, etc.) are automatically allowed for with the appropriate specifications of basic data.

All support positions dealt with are automatically saved by the program and can be called up and, if required, altered at any time. In addition to printing out drawings, LICAD also supplies detailed as well as compiled materials lists. For later processing of the supports as a 3D graphics in CAD programs export functions can be used. Furthermore, various interfaces to major software vendors are available.

Interfaces/component libraries are available for among others:

**AutoCAD® and AutoCAD® Plant 3D, Autodesk**  
**TEKLA® Structures, Trimble**  
**Intergraph Smart® 3D, Hexagon®**  
**SUPPORT MODELER®, Hexagon®**  
**PASS/START-PROF, PASS Team**  
**CAESAR II®, Hexagon®**  
**AutoPipe, Bentley Systems®**

**BricsCAD®, Bricsys**  
**MicroStation®, Bentley Systems®**  
**CADMATIC 3D Plant Design, CADMATIC™**  
**PDMS® und E3D®, AVEVA™**  
**ROHR2, Sigma®**  
**dPIPE, CKTI-VIBROSEISM LTD.**

The basis of the program, a completely new development by LISEGA, forms a comprehensive data bank system of the LISEGA standard components catalogues (Standard Supports 2020). The program can be operated in any of thirteen languages.

Thanks to the continuous further development of the program, in particular by considering customer requirements, LISEGA is setting a standard for the future in the field of pipe support design with the new LICAD Version 12 program.

Frank Sarnoch

## 1.2 Installation, Start and Registration

Software requirements

Microsoft Windows 10 or higher.

**NOTE: Updating existing LICAD 10 versions (refer chapter 7.7)!**

Important: For installation, you should have administrator rights on the computer.

Make sure that no anti-virus program blocks the installation program nor any utility installed and executed during installation!

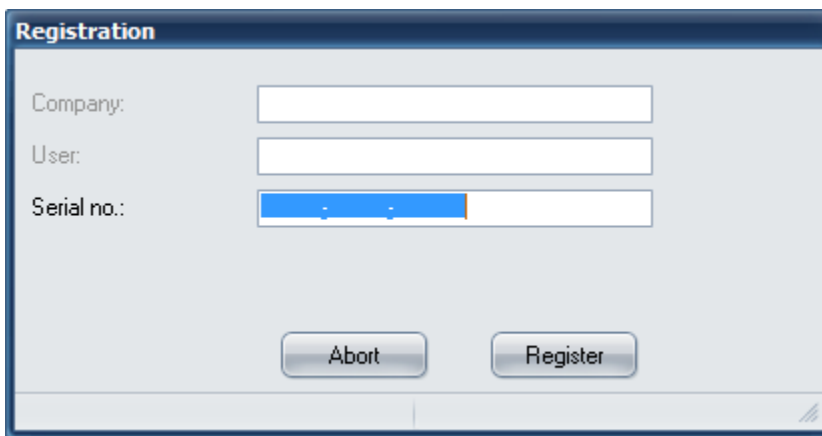
To install LICAD locally on the PC, start the program LICADV10\_SETUP (V 10.x.x.x).exe.

Further variants are available for installation. Please read the detailed descriptions for this in the attachment (7).

Please follow the instructions on the screen for installation of the program.

Open the menu "Start - programs - LISEGA - LICAD" in the task bar.

On the initial program start, the following window appears:



The user information and the serial number are now requested.

Please use an individual serial number for each workstation, as the drawing number follows from this. If you install LICAD on different computers using the same serial number, you will be given the same drawing number with different drawings.

You can obtain additional serial numbers free of charge from LISEGA.

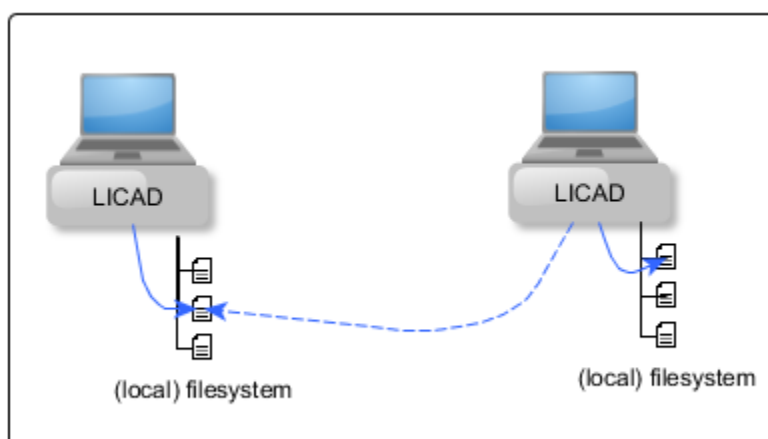
Before you now start arranging pipe supports you should familiarize yourself with the program points "project administration" (project administration) and "project data" (project data).

### 1.3 Instructions for sharing projects

For projects involving a number of users, it should be ensured that each user is given his own personally allocated project file.

A network drive allows multiple users to access the same project file. However, simultaneous access is not possible.

The individual supports in the project files can be grouped together via an LBF (LICAD Backup File) file transfer in a so-called 'master project'.



**Note:** LICAD also supports multi-user operation with central project management. Such a setup is not included in the standard installation setup! Please contact us for further information on multi-user operation (mail to: [licad@de.lisega.com](mailto:licad@de.lisega.com))

### 1.4 Note regarding selection of clamps

The load-bearing capacity of the clamp depends on the offset or diagonal pull caused by a lateral and/or horizontal pipe movement.

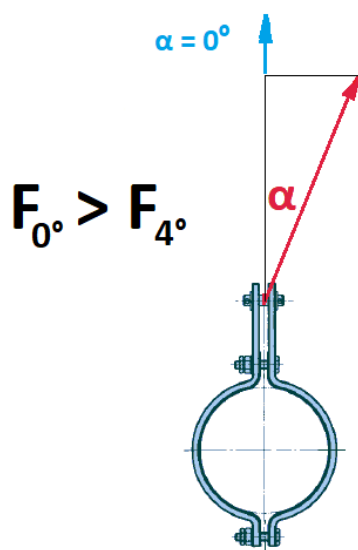


Figure 1: Offset in clamps

As can be seen in the diagram, higher loads are permissible for clamps used for offset assembly with smaller diagonal traction than  $4^\circ$  (or  $6^\circ$  in dynamic clamps). The corresponding angles are calculated in

LICAD and the permissible loads taken from the table. The advantages are clear: the clamps are thereby selected more economically.

The extended tables for clamp selection are available in LICAD and can be accessed via the help menu.

An example of this can be found in the following table. Different solutions are found for the same input values. The solution, under consideration of the actually existing angle (green), is the more economical variant compared with the conservative choice, which assumes an angle of 4°.

type	Alpha	permissible load [kN]														weight [kg]	
		100°C	250°C	350°C	450°C	500°C	510°C	530°C	560°C	580°C	600°C	610°C	620°C	630°C	640°C		650°C
445145	1°								32,5	24	17,8						42,0
445145	2°							29,3	21,6	16							
445145	3°							24,7	19,5	14,3							
445145	4°	Catalog values							19,2	15,2	11,5						
445146	1°							56,4	41,4	30,7						63,0	
445146	2°							51,1	37,6	27,8							
445146	3°							46,8	34,4	25,4							
445146	4°	Catalog value:							40,8	31,1	22,8						
445151	1°								26,9	26,3	25,9	25,6	25,2	24,8		54,0	
445151	2°								25,3	24,7	24,4	24	23,7	21,6			
445151	3°								21,9	21,4	21,1	20,5	17,6	15,1			
445151	4°	Catalog values							19,3	18,8	18	15,7	13,5	11,6			
445152	1°								58,4	57,2	56,4	55,6	54,8	54	92,0		
445152	2°								50,4	49,3	48,6	47,9	47,2	41,7			
445152	3°								44,2	43,2	42,6	41,4	35,6	29,7			
445152	4°	Catalog values							39,3	38,4	36,6	32,1	27,6	23,1			

F = 20kN T=580°C alpha=2° → 445146 (4°)

F = 20kN T=580°C alpha=2° → 445145 (2°)

Table 1: Permissible loads for offset

The value marked in red corresponds to the catalog value for 4° offset.

The extended selection tables are available in the main menu help as PDF files.

The selection tables take Types 36, 37, 44, 46 and 48 into consideration. All other pipe-surrounding components remain unaffected and the date published in the catalog apply.

### 1.5 Note regarding the selection of clamp bases

The permissible loads for clamp bases stand in direct relationship to the friction value  $\mu$  that is assumed present between the pipe shoe and the ground. A value of 0.3 is normally assumed for  $\mu$ , which signifies

so much as steel on steel. In the Catalog 2020, the permissible loads for clamp bases are published, under consideration of this assumption.

For the selection of a single clamp base, steel on steel is assumed. However, if a clamp base with a slide plate standing on a sliding base is selected, the friction value is than reduced and the permissible load is increased ->

For reduced lateral forces, as e.g. in sliding components or on trapezes, the tensions in the base are also reduced, or otherwise expressed; the permissible loads can be thereby increased.

To use these bases as efficiently as possible LISEGA has implemented friction values 0.1, 0.18, 0.25, 0.3 of partial standing surface. The following diagram provides information on the pairings stainless steel slide plate/sliding base:

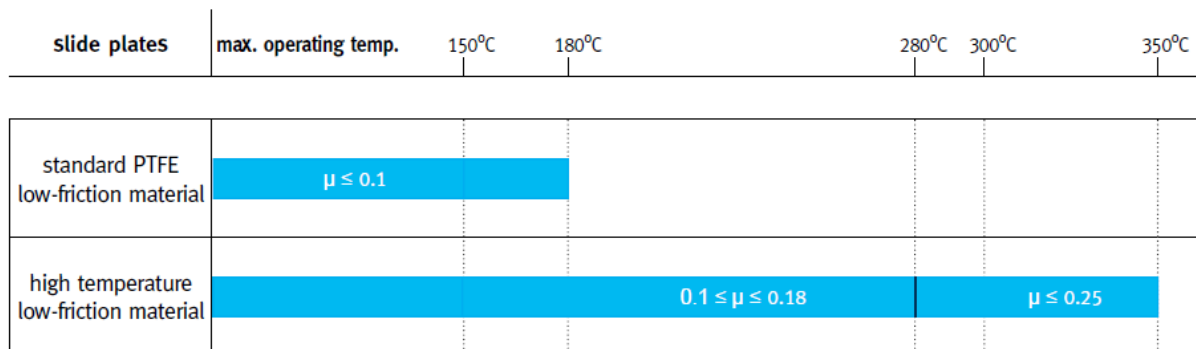


Figure 2: tion factors for clamp bases

If a clamp base is mounted on a trapeze, a friction value of 0.1 is assumed.

The permissible loads can thereby be significantly higher than those published in the catalog can.

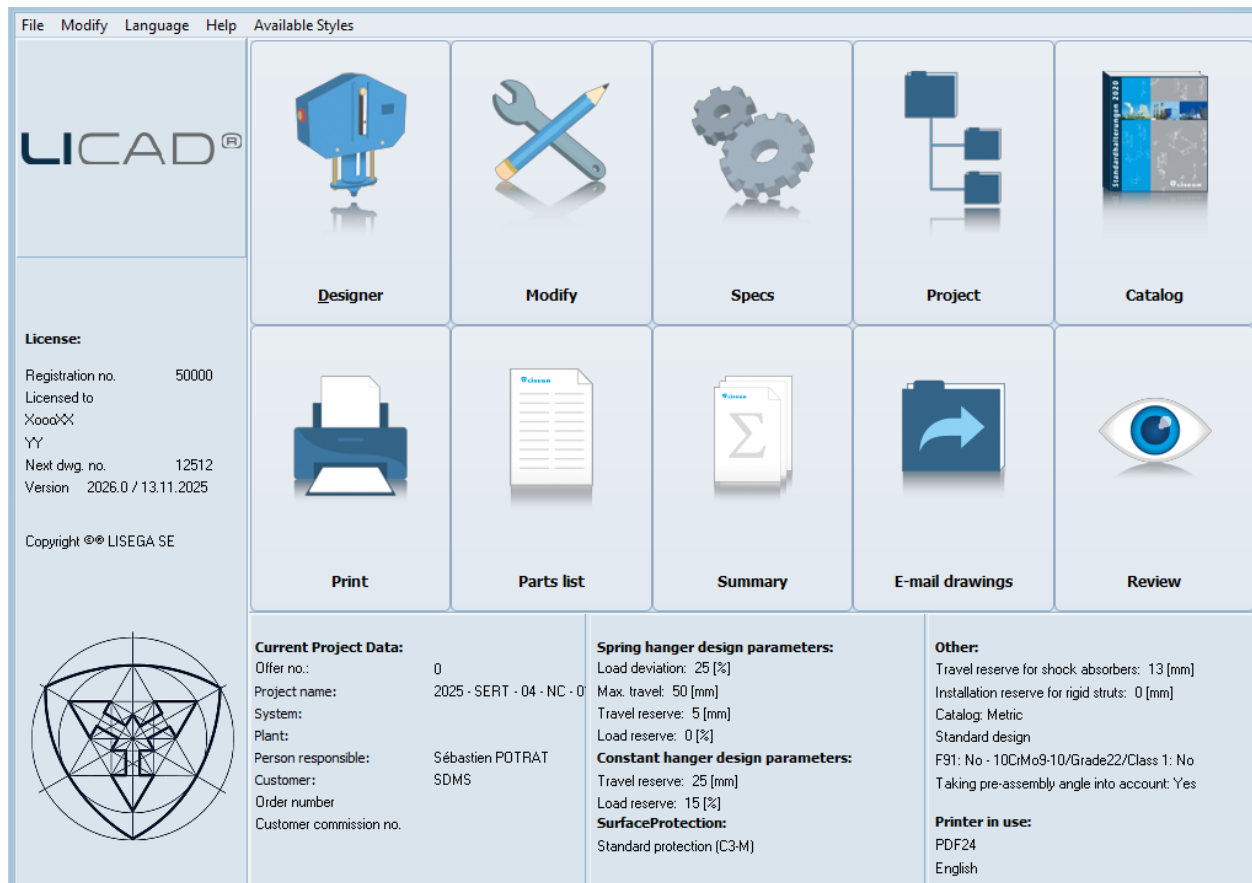
The extended selection tables are in the main menu - help as PDF file.

## 2. Program description, main menu

### 2.1 The main menu screen

Figure 3 shows the LICAD main menu screen.

Working from this menu the individual programs can be called up by entering a letter.



Before the first drawing is prepared the specifications and other parameters (refer to 2.4 et seq.) first have

Figure 3: LICAD main menu

to be set in the program. For this, click on the 'Specs' button in the main menu. On the screen that follows, using the cursor keys you can choose between the items Project Data, Specifications, Service, Settings, Configurations, Additional Services, Printing and System Settings.

## 2.2 Help menu

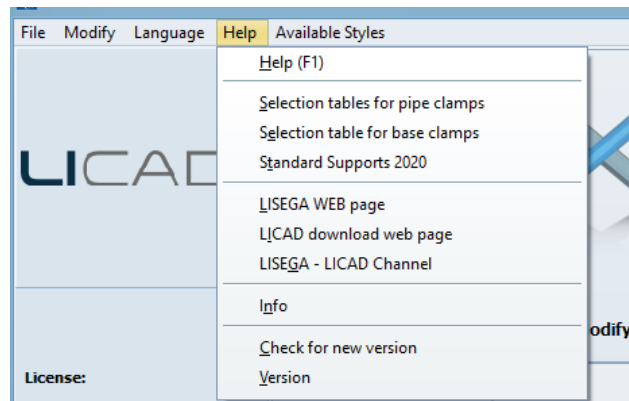


Figure 4: Help menu within main window

The Help menu (Figure 4) can be accessed from LICAD main window. Various information on software, the PDF catalog or the LISEGA website can be accessed here.

### 2.2.1 Help and Search via key word

By way of the menu, point Help the table of contents of online help is accessed. Click on the desired heading to obtain further information.

**Note:** At every point in the program you can click on F1 to obtain context-related help

### 2.2.2 Catalog 2020

Insofar as the option to copy the LISEGA catalog on to the computer was selected on installation, the catalog can be opened by clicking on this menu point. The catalog is available as a PDF file.

On later installation, the path for the LICAD PDF files should be made known. This is done via the LISEGA.INI file in the <LICAD installation directory>. The path must be entered there under the heading CATALOG for the corresponding language.

### 2.2.3 LISEGA WEB- and Download-Site

Under this heading, we heartily invite you to a trip through our world of pipe supports.

With a click on the LICAD Download Site you can get information on the latest downloads

### 2.2.4 Info-Screen and About LICAD

If you need further information and would like to get in touch with LISEGA, you will find telephone numbers and addresses of the various company locations under 'Help - Info'.

**Note:** You can click on the LISEGA symbol in the main menu to open the same window.

Exact details of the LICAD version can be found under 'Help - via'. In the lower right-hand corner, the revision number and date are displayed. This information is important for queries.

## 2.3 Language choice

Setting of the menu language and the printer language is made working from the main menu. For this, select the menu point 'Language' in the menu line.

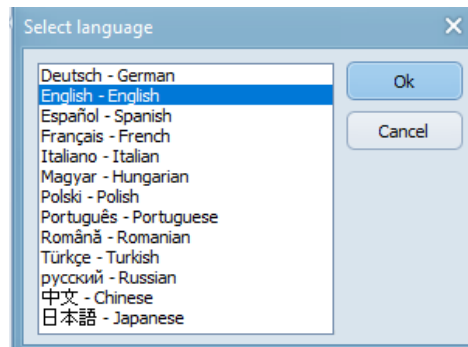


Figure 5: Auxiliary window for choosing the program language

The menu guidance can be done in eleven languages:

Chinese, English, French, German, Hungarian, Italian, Japanese, Polish, Portuguese, Romanian, Russian, Spanish, Turkish

The printing language can be selected under the options Print - Language.

**Note:** Drawings and materials lists are always given out in the language set at the time. Drawings that have been saved can be printed out in any of the languages named above. Just make the appropriate setting before printing.

The menu languages are independent of the Windows system setting. The settings relating to countries are therefore to be modified under NT 4.0 if, for example, the menu is to appear in Polish but the country-related setting stands at Germany. This is not possible with Windows 95. The languages not supported by Windows are not listed in the selection. With Windows 7 although all languages are displayed but the corresponding languages have to be reloaded with Windows.

## 2.4 Project data

In addition to the drawing number, the specific project data should be entered for the administration of drawings and for the documentation.

The program adds the data entered in this mask to each additional drawing prepared and saves it.

The following data can be entered individually:

1. Name of ordering party
2. Designation of the facility
3. Designation of the system
4. Name of the person in charge of the project
5. Commission number of the ordering party
6. Customer's order number
7. A so-called heading space or free space. (This space can be freely defined and the appropriate entry can later be used as search criterion.)
8. Comments can be entered here together with space 10.
9. LISEGA Order number

## 2.5 Clear hanger mark number

The program can check, on input, whether the hanger mark number already exists in the project. For this, the entry "checking of hanger mark number for uniqueness when generating new drawings" is to be found in the options ("project data").

The work screen allows considerably increased setting possibilities (input of pipe support data). Beside the above-mentioned possibilities, all possible variations of units can also be set.

The screenshot shows the 'Project data' form with the following fields and options:

- Customer (who has ordered)**: Text input field
- Responsible person**: Text input field
- Plant number**: Text input field
- LISEGA offer number**: Input field with format  0 - 8 -  0  0
- System designation**: Text input field
- Additional field in title block**:
  - Field description**: Text input field
  - Field information**: Text input field
- Customer commission number**: Text input field
- Further information fields**:
  - Text input field
  - Text input field
- Order number**: Text input field
- Project options** (highlighted with a red box):
  - Check Hanger marker number on uniqueness when creating new drawings
  - Use of internal LICAD revision number instead of Customer revision number

## 2.5.1 Special characters in the U-position number

It is essential to ensure that, if possible, no special characters are included in the U-position number. For example, quotation marks are interpreted incorrectly during further processing in other programs (ABAS, ...).

## 2.6 Specification data

On the screen shown below you specify the criteria according to which the functional components such as variable spring/constant hangers or snubbers are to be selected by the program. In addition, general basic conditions for the program are stipulated here.

The following specifications should be checked:

The screenshot shows a software configuration window with the following elements:

- Menu Bar:** Project data | Specifications | Settings | Configurations | Additional services | Surface Protection | Select parts for Surface Protection | Print | System settings
- Parameters:**
  - Permissible load difference for spring hangers: 25 [%]
  - Maximum permissible travel for spring hangers: 300 [mm] / 11.811 [inch]
  - Load reserve for spring hangers: 0 [%]
  - Load reserve for constant hangers: 15 [%]
  - Travel reserve for spring hangers. (to each side): 5 [mm] / 0.197 [inch] / 10 [%]
  - Travel reserve for constant hangers: 25 [mm] / 0.984 [inch] / 10 [%]
  - Travel reserve for shock absorbers. (to each side): 13 [mm] / 0.512 [inch]
  - Built-in adjustment for rigid struts ±: 25 [mm] / 0.984 [inch]
  - Permissible angle (static load case only): 4 [degrees]
  - Load reserve for pipe surrounding parts: 0 [%]
  - Permissible stress for rigid supports according with ASME B31.1:
  - Quotient temperature pipe base plate/medium temperature: 50
- Fast Selection:**
  - Use fast selection
  - No Reserves
  - ASME / B31.1 & B31.3 \*
  - VGB \*
  - EN 13480-3
  - (\*only to specific parameters!)
- PDF Buttons:**
  - Selection tables for pipe clamps types 36/37, 44 and 48: PDF
  - Selection table for clamp bases type 49: PDF
- Footer:**
  - Project database: D:\Data\LICAD\_V12\licad\DBs\Projects\LICADV120PRJDB.FDB (Port for private FB: 27400)
  - Project name: Default
  - Icons: File, Print, Mail, Close, Password protection

The specific VGB guidelines can be set with the VGB button.

For rigid supports, the selection of the support chain can be made additionally according to the ASME B31.1 guideline. If the option is set, the design is arranged according to the load grouping 'H/Normal' (see Appendix 7.3).

### 2.6.1 Permissible force difference between cold and warm position with variable spring hangers/variable supports

Variable spring hangers or variable supports are to be used when minor shifts of piping resulting from heat expansion are to be spanned and the additional reaction forces that thereby arise, caused by the spring travel, are structurally justifiable for the strength of the piping.

The difference between the cold and warm positions acts in the piping system as an additional reaction power on the point of attachment. This additional reaction power is limited in its size by the respective design regulations that apply. According to general guidelines, the permissible deviation of force should not exceed 25%.

$$\Delta F = \frac{F_{\text{hot}} - F_{\text{cold}}}{F_{\text{hot}}} * 100\%$$

The difference in force is defined in the LICAD program as follows:

Should it not be possible to find a standard variable spring hanger due to the spring rates, then constant hangers are automatically selected by the program.

### 2.6.2 Maximum permissible range of movement for variable spring hangers

As already mentioned above, variable spring hangers are only used in piping construction within a certain working range. In addition to the difference in force, a general travel limit can also be given for the use of variable spring hangers. If the total travel exceeds this limit then the program automatically selects a constant hanger.

(If the permissible range of movement is set at zero then only constant hangers are selected by the program.)

### 2.6.3 Load reserves for variable spring and constant hangers

The selection of constant hangers is made within the range of capacity. The operating load is within a range of between 40% and 100% of the respective rated load of the constant hanger. You can find additional information in the LISEGA catalogue.

For variable spring hangers, the given travel reserve always refers to a particular direction; for constant hangers the given travel reserve has absolute consideration.

When a load reserve is entered, the program checks whether a corresponding load variance can be taken on by the hanger selected and in the case of a change that the working space available is sufficient. If necessary, the program automatically selects another hanger.

### 2.6.4 Travel reserve for variable spring and constant hangers

The program also checks, according to the load reserve, whether a larger working range of the piping might be acceptable for the type of hanger selected. In doing so LICAD checks whether in the case of an enlargement of the working range, the permissible difference in force is not exceeded or whether a new hanger has to be selected due to the enlarged working space.

If, for example, with a travel of 30 mm a travel reserve of 10% is specified then the program checks whether the hanger can also be used with 33 mm.

For spring hangers the travel reserve entered corresponds in each case to a direction, for constant hangers the travel reserve is considered absolutely.

Always be sure that by entering a travel or load reserve simultaneously, the possible selection of a hanger is narrowed down more and more and a correspondingly heavy hanger is selected.

There is an AND/OR link between the two selection criteria above (2.6.3 + 2.6.4) in case of constants. For spring hangers the relation is OR only.

### 2.6.5 The travel reserve for snubbers

Recommended travel reserve for snubbers: The travel reserve for snubbers is understood to be the position of the piston rod in relation to the end position. A safety clearance of 10 mm for the piston end position is recommended for the proper use of snubbers.

### 2.6.6 The installation reserve for rigid supports

Tolerances for the assembly dimension are allowed for in the selection of rigid supports by the size of the installation reserve.

### 2.6.7 Load reserve for pipe-surrounding components

Although not expressly required by the VGB guidelines, a load reserve when selecting is also taken into account for pipe clamps and clamp bases analogously to the spring and constant supports. There is not much sense in the rest of a support chain distributing a higher load if the pipe-surrounding component has already reached its limits.

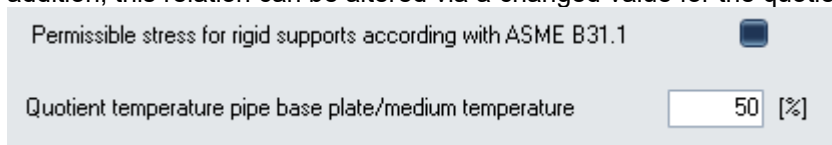
### 2.6.8 Pre-adjustments according to VGB, EN13480, ASME and Reset

To design the supports according to VGB, EN13480-3 or ASME guidelines, the VGB or ASME buttons on the page for options/specifications can be selected. The corresponding values are then set. In addition, it must be taken into account that the selection of clamps is limited in temperature in accordance with the requirements of the material. Moreover, the cold load is taken for the load input, and that the pipe surrounding components have to bear an additional load reserve. Both can be set on the options/ settings page.

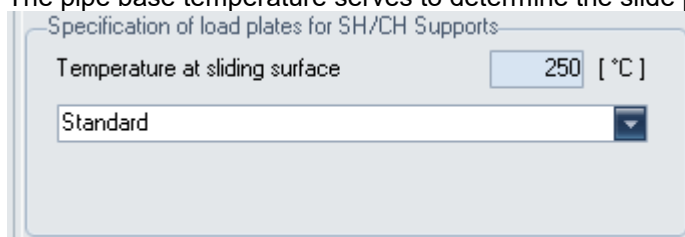
When selecting the reset button, all reserves are reset to zero. No further changes are made.

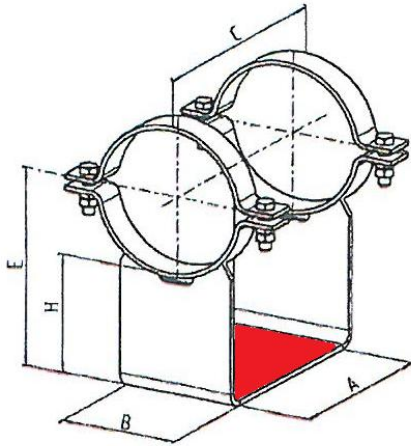
### 2.6.9 Quotient temperature of medium to that of base plate

This concerns the temperature deviation within a clamp base. The temperature decreases from the pipe downwards to the foot of the clamp base. In general, the temperature falls by 50 %, but can vary. In addition, this relation can be altered via a changed value for the quotient.



The pipe base temperature serves to determine the slide plate.





Pipe base plate (red)

## 2.7 Adjustments

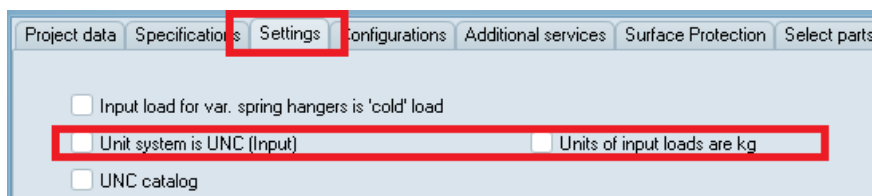
### 2.7.1 Hot/cold loads for variable spring hangers

Whether the operating load or the cold load is entered is of special importance for the selection of variable spring hangers. LICAD calculates each opposite load case and puts these out in the drawing. Furthermore, the preset load of the hanger is put out. The preset load consists of the cold load and the additional load of the component that encloses the pipe.

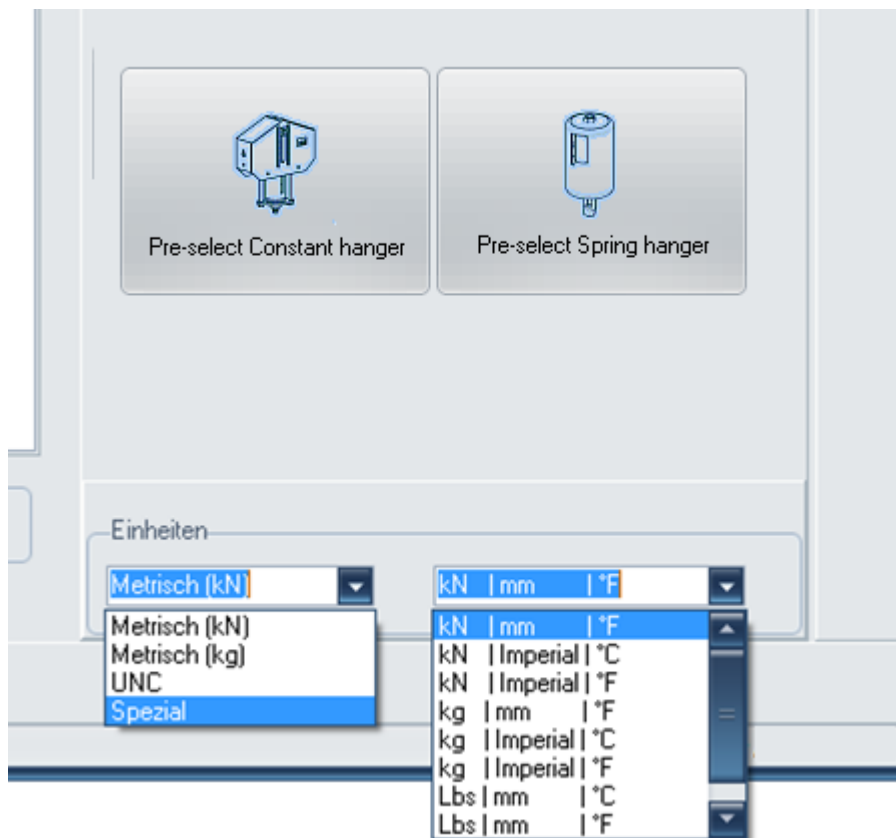
The preset load is made up of the cold and the additional loads. The additional load is calculated from the load chain parts situated below the hanger (incl. the pipe-surrounding components).

### 2.7.2 Selection of the units

LICAD distinguishes between two systems of units. One is the SI unit system, the other being the American system (**Imperial System**), which is based on inches and pounds. Deviating to the SI system, the temperatures are indicated in Celsius [°C]. With ID entries the American LISEGA catalog are selected by the program as a basis.



The work screen allows a much more enhanced adjustment (enter the pipe support data). In addition to the options above, there is still the possibility to set of all possible variations of units.



### 2.7.3 Selection of catalogs

LICAD can calculate the load chains from LISEGA's metric and American (UNC) catalog independently of the units selected for input.

### 2.7.4 Entering the load in kg or kN

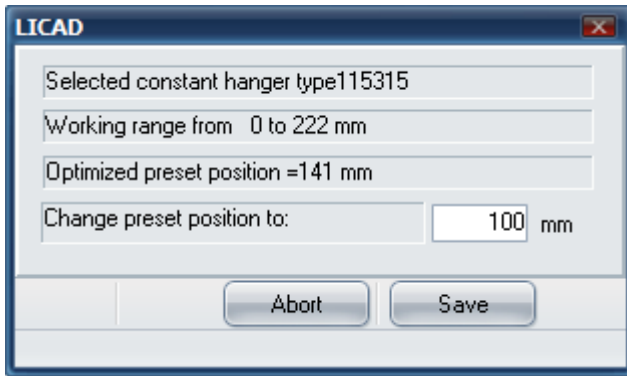
If desired the loads can also be entered in kilograms. Input values in (kg) are internally recalculated by a factor of  $9.81 \text{ m/s}^2$  in (Newton). For technical reasons specific to the program the input space is defined as deca-kg.

### 2.7.5 Check hydro-load

With a *static stress* of supports, in addition to the operating load the *so-called hydro-load* can also be checked. In doing so the program checks whether the support selected will carry the specified water load with *preset* hangers. The permissible hydraulic load can be taken out from the table "[Maximum permissible load for statically determined components](#)" (Column HZ/emergency  $80^\circ\text{C}$ ).

### 2.7.6 Preset blocking position for constant hangers

The preset position with constant hangers and constant supports can be specified by the user. The travel stop position can only be selected within the prescribed limits. The optimized travel stop position is indicated to the user.



This option is only available if the constant hanger type is selected beforehand by the user.

## 2.7.7 Welds

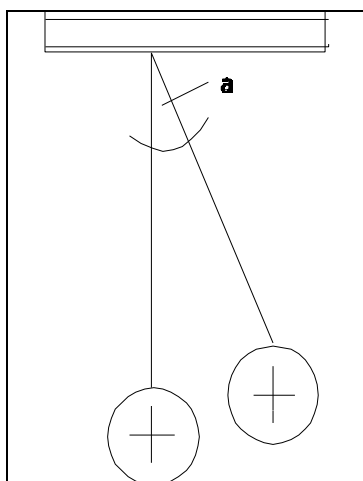
For the building attachment parts (product group 7), the weld thickness required for assembly are given by the program. This 'minimum weld thickness' is designed such that the permissible tensions are only exploited to 50% in favor of high safety. A force applied at 6° in the weld was taken as a basis for the design. The weld thicknesses can be changed later if you enter N.

## 2.7.8 The angulation for pipe supports

### 2.7.8.1 Taking the pre-assembly angle into account

LICAD offers the possibility of having the angulation, which results from the movement between the cold position and the warm position of the pipe support (in relation to the point of attachment of the pipe support on the beam), checked for size. Figure 6 shows a diagrammatic example of the pre-assembly angle.

The program is based on the assumption that where a specified angle is exceeded (refer to Figure 6) as the result of excursion in the plane, the pipe support must be pre-fitted by half of the working range (in the horizontal or lateral direction). The angle is virtually reduced to one-half by halving the range. If the angle is still too large in spite of the halving, the program stops with an appropriate message on the angle calculated and the support is to redesign.



a := pre-fitted angle or angulation

Figure 6: Pre-fitted angle for pipe supports

**Note:** The length for the calculation of the angle is determined from the distance between the points of the axis of rotation of the structural connection and the pin axis for the pipe clamp connection.

In the drawing, the result is shown using so-called pre-fitted triangles. From these the total pipe movement is apparent on the one hand and on the other the direction in which and how much the pipe support has to be pre-fitted is given.

**Note:** Splitting of the horizontal movement is only taken into account for statically determinate parts. Rigid struts, even if they are to be determined statically, are not included. A permissible deflection angle of 6° always applies here.

**2.7.8.2 The appropriate critical angle for the presetting is to be entered here.**

Permissible angulation and loads for weld-on brackets Type 35  
 Care must be taken that lateral deflection to the angle of displacement of the weld-on brackets is limited to 6°. The installation position must therefore be checked for the possibility of free movement on thermal expansion.

When the angle of displacement increases to 90°, the permissible loads are reduced by approx. 15% at constant welding-scum thickness.

**2.7.9 The permissible loads on the clamps depending on the load inclined angle**

The tables for the selection of clamps of types 36/37, 44 and 48 have been revised. Previously, according to the catalog, a permissible load was given for the respective temperatures, which was valid for a maximum load angle of 4 ° for static and 6 ° for dynamic designs.

type	permissible load [kN] ⓘ									
	100	250	350	450	500	510	530	560	580	600°C
36 16 24	59	54	49	43	40					
36 16 31					16	15	13	8.8		
36 16 34			46	44	41	40	34	22		
36 16 41								11	8.8	6.7

With version 11 of LICAD, the tables were expanded with regard to the load angle.

TYPE	angle ° X-/Y-dir	permissible load [kN]									
		100	250	350	450	500	510	530	560	580	600°C
361624	1	100	99,1	90,7	79	72,9					
361624	2	90,1	82,9	75,8	66	61					
361624	3	77,5	71,2	65,2	56,8	52,4					
361624	4	70,1	64,5	59	51,4	47,4					
361624	5	64,2	59	54	47	43,4					
361624	6	59,2	54,5	49,8	43,4	40,1					
361631	1					18	18	18	16,3		
361631	2					18	18	18	14,9		
361631	3					18	18	18	12,4		
361631	4					18	18	16,7	10,8		
361631	5					17,9	17,6	14,9	9,7		
361631	6					16,2	15,9	13,5	8,8		
361634	1			46	46	46	46	46	34,8		
361634	2			46	46	46	46	46	33,8		
361634	3			46	46	46	46	44,9	29,2		
361634	4			46	46	46	46	40,6	26,4		
361634	5			46	46	44,5	43,8	37,3	24,2		
361634	6			46	44,6	41,2	40,5	34,5	22,4		
361641	1								18	16,2	12
361641	2								18	15	11,2
361641	3								15,9	12,5	9,4
361641	4								13,9	10,9	8,2
361641	5								12,5	9,8	7,4
361641	6								11,3	8,8	6,7

It can be clearly seen that the number of data has increased by 4 or 6 times.

Since LICAD calculates the angle of deflection (see above), the selection of the clamps is also determined by the angle of attack. The consequence of this is that a lighter clamp can be used at low angles.

The new tables can be loaded as a PDF document in LICAD under Settings - Specifications.

### 2.7.10 Designation of coordinate axes

When LICAD was introduced, LISEGA intentionally broke away from the conventional designation of the coordinate axes. As misunderstandings in the transfer of data arose in some countries because of varying axes designations, a way was sought to do justice to all users by a neutral designation of the axes.

The vertical axis is defined as positive upwards. The horizontal axis points into the screen (generally in

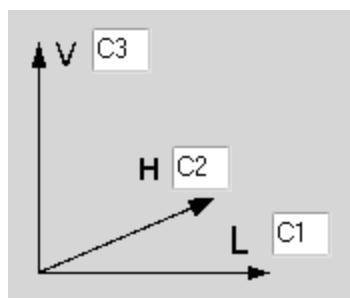


Figure 7: Input window for defining coordinate axes

the piping axis). The lateral axis is perpendicular to the other two axes and is positive towards the right.

However, LICAD also offers the user the possibility of using his or her own designations for the coordinate axes. On the following screen, each of the individual axes can be assigned two characters.

### 2.7.11 Reduced temperature range for clamps

In accordance with the VGB guidelines, the permissible application ranges with regard to temperature must be limited in LICAD. The following values are thereby considered:

Temperatures	Material
Up to 350°C/660°F	S235JR, S355J2
Up to 500°C/930°F	16Mo3
Up to 530°C/985°F	13CrMo4-5
Up to 580°C/1075°F	10CrMo9-10
Up to 650°C/1200°F	x10CeMoVNb9-1 (F91)

### 2.7.12 No consideration of low temperature clamp bases.

This option prevents selection of clamp bases designed for the temperature range up to 350°C/660°F (Material S235, S355). The idea behind this is that even at lower temperatures and comparatively smaller insulation thickness, clamp bases with higher installation dimensions can be selected.

### 2.7.13 Length of the threaded rods

It has proved expedient to limit the length of threaded rods for the transport of supports to sites. For design purposes the maximum length of threaded rods can therefore be limited to 2000 mm. 3000 mm is chosen as standard, 12 feet in UNC.

## 2.8 Configurations

### 2.8.1 Determination of load group for static components

The nominal load is used to determine the load group. For statically determined components in the product groups 1, 2, 4, 6 and 7, the nominal load corresponds to the max. adjustment load of the spring components such as spring and constant hangers. Selection is made according to the table for statically determined components, Catalog Page 0.5.

### 2.8.2 Determination of load group for rigid supports

Determination of the load group for rigid supports is made according to the table for statically determined components, Catalog Page 0.5 or Appendix, Section 7.3, load case H 80°C. If B31.1 was selected, the design is made according to load case H. The maximum permissible operating load (load case H) lies, when implemented as a rigid support considerably higher than the nominal load. In addition, is adjusted to the load capacity of the connection thread.

**Note:** Should the smallest possible connection of a clamp be higher than the load group for the rods, the program will automatically increase the load group for the rods until the threaded connection fits the clamp.

### 2.8.3 Determination of load group for dynamic components

For dynamically determined components, the specification of the nominal loads follows from the meaningful classification of the standardizable load spectrum. At the same time, the nominal load corresponds here to the operating load for load case H (or level A/B in ASME). Selection is made according to the table for dynamically determined components, Catalog Page 0.5 or Appendix.

**Note:** It should be noted that for extensions the permissible loads are reduced. The program automatically increases the load group if the permissible load is exceeded due to the extra length.

## 2.8.4 Building attachments

Similar to item, supports can also be designed without building attachments such as weld-on eye plates and clevises.

## 2.8.5 Special connection sizes

Pipe clamps and bearings are based on the LISEGA 2010 catalog (product group 4). This guarantees compatibility with the LISEGA construction kit system in relation to load groups and connection geometry. As in some cases with fume pipes, clamps with large pipe diameters cannot always be attached to hangers of a relatively small load group, it is still possible for the program to select appropriate clamps. These clamps are identified in the materials list as special components, since the connection geometry does not correspond to the standard.

## 2.8.6 Selection of two-bolt clamps

The option of two-bolt or three-bolt clamps is available to the user for the selection of supports. Supports are standardly designed with three-hole clamps (type 43). Type 42 clamps are then available when the support is to be designed without insulation.

## 2.8.7 Positioning of the pipe support in the operating position

The positioning of the pipe support in the operating and assembly position: depending on the design guidelines, the program should be informed as to whether the pipe support is to be vertically installed in the assembly or operating state. The pipe movements should be entered in such a way that the sense of direction from the assembly position refers to the operating position. The support length entered always refers to the vertical state.

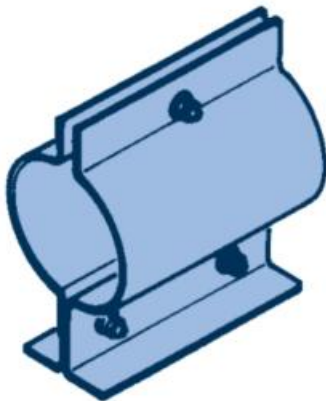
## 2.8.8 Shock absorber extensions

As an option, dashpots can be designed with or without extensions.

(**Important:** in a design without extension the range of the required installation dimension is quite limited.)

## 2.8.9 Selection of omega base clamps (type 49 .. 11/12)

The so-called omega base clamps (two omega-shaped halves) can be excluded from the selection if desired. This can be set in the program in the Options/Configurations area.



Omega base clamp

## 2.8.10 Suspension clamp type 49 ... 17

This clamp can be used as a construction clamp or suspension clamp for cold pipes. The selection can be selected or deselected in the Options/Configurations area.

### 2.8.11 Consider tare

In LICAD, the dead weight of the relevant support elements is taken into account when determining the springs (tare). The user is free to change this setting. There is a corresponding switch in the Options/Configurations area.

### 2.8.12 Long variable spring hangers

In general, only variable hangers with spring travel up to 200 mm are considered by the program. This corresponds to the travel ranges 1, 2 and 3. If required, spring hangers with extra-long spring travel of 300 and 400 mm can be used. On installing this hanger, one must however consider that the actual load deviation caused by additional friction in the hanger increases. It is therefore recommended that constant hangers be used for longer travel.

### 2.8.13 Seated constant and spring hangers incl. support or base plate

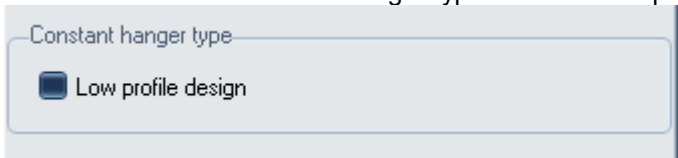
Seated constant or spring hangers are supplied with supports or base plates as standard. If so desired, these seated hangers can also be supplied without these components, whereby constant and spring hangers are seated directly on the housing.

**Note:** The independent support configurations for directly placed constant hangers in earlier LICAD versions have been withdrawn.

### 2.8.14 Selection of constant hanger design

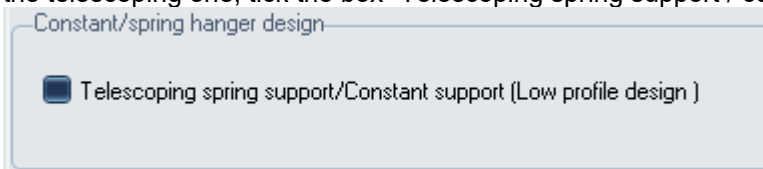
The respective design of the constant hanger must be determined when configuring of the support. This is done exclusively on the designer work screen when entering the loads.

To switch from the standard design Type 11 to the low-profile design Type 18, tick the “low profile” box.



### 2.8.15 Selection of spring supports

The respective design of spring support must be determined when configuring the support. This is done exclusively on the “designer” work screen when entering the loads. To switch from the standard design to the telescoping one, tick the box “Telescoping spring support / constant hanger low-profile design”.



### 2.8.16 Selection of constant supports

The respective design of constant support must be determined when configuring the support. This is done exclusively on the “designer” work screen when entering loads. To switch from standard design Type 16 to low-profile design Type 19, tick the box “Telescoping spring support / low-profile constant hanger design”.

### 2.8.17 Selection of Stanchion pipe supports

When selecting Type 58 pipe supports, four different criteria are used to determine the maximum permissible loads.

- Vertical load only

- Sliding, with a friction factor of  $\mu=0.1$  (in combination with sliding plate and sliding plate)
- Sliding, with a friction factor of  $\mu=0.3$
- Fix point clamp

The values apply up to a temperature of 80°C.

If stanchions are selected together with spring props, the following must be taken into account when selecting them:

No horizontal movements are permitted without sliding elements, selection according to vertical load.

With sliding elements, the determination is carried out according to sliding with a friction factor of  $\mu=0.1$ .

## **2.9 Additional Services**

### **2.9.1 Pre-assembly**

Pre-assembly: On request, the pipe supports can be pre-assembled by the manufacturer. This item is accordingly added to the materials list.

### **2.9.2 Presetting**

Presetting: Variable spring hangers and variable supports can be prestressed and preset by the manufacturer on request. The corresponding information is added to the materials list.

### **2.9.3 Additional coating**

Additional outer paint coat for clamps is based on LISEGA standard steel blasted and additional zinc dust primer.

### **2.9.4 Further nameplate for spring or constant hanger**

Spring or constant hangers can each be equipped with a further type plate. The constant hangers of the 11 series can also be supplied with a further load and travel scale.

### **2.9.5 Increased requirements design**

Pipe supports can optionally be prepared in standard design or increased requirements engineering design. This is identified in the materials list by a different article number.

## 2.10 Extended surface protection



### 2.10.1 Standard surface protection

The LISEGA products are delivered with a standard surface protection (C3-M) in accordance with DIN EN ISO 12944. Further information about this can be found here in the appendix or in the program, if you press the button "Continue reading".

In addition to the standard surface protection, an extended surface protection can also be selected.

### 2.10.2 Hot-dip galvanized design

For extra surface protection, a large part of the product groups 1, 2, 4 and 6 can also be hot-dip galvanized. If this option does not exist for a component within a load chain, this component will then be supplied as standard.

### 2.10.3 C4-M based on DIN EN ISO 12944

This option can be selected if the mission is "moderate salinity coastal atmosphere".

### 2.10.4 C4-H based on DIN EN ISO 12944

This option can be selected if the use of "aggressive atmosphere coastal atmosphere. Extra-long protection period "corresponds.

### 2.10.5 C5M-M based on DIN EN ISO 12944

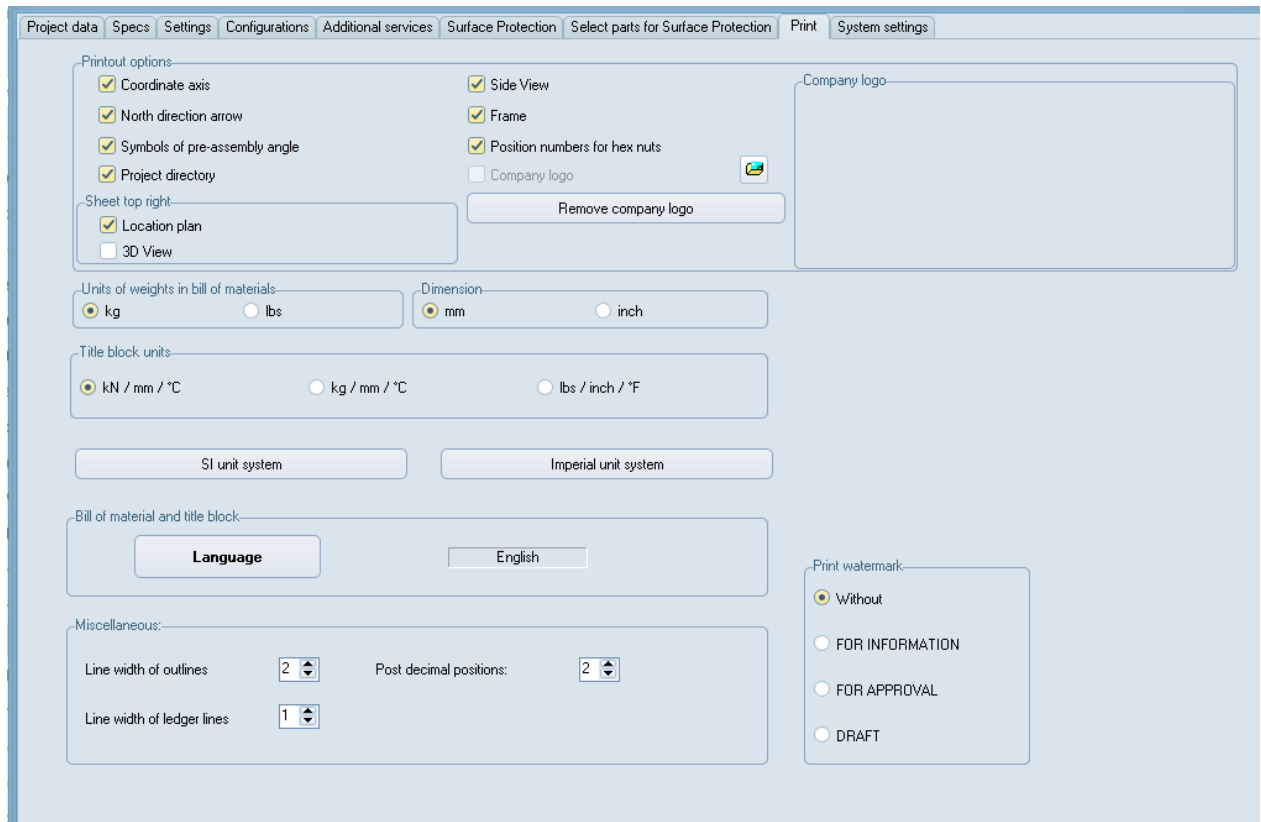
This option can be selected if the mission is "Very Aggressive Coastal Atmosphere, Offshore with Aggressive Salinity".

### 2.10.6 C5M-H based on DIN EN ISO 12944

This option can be selected if the mission is "Very Aggressive Coastal Atmosphere, Offshore with Aggressive Salinity. Extra-long protection period "corresponds.

Note: The extended surface protection leads to an increase in the costs!

## 2.11 Printing



### 2.11.1 Printed picture options

#### 2.11.1.1 Side view

The option “Side view” controls whether, when printing, a second view appears with the printout. This is however not available for all configurations.

#### 2.11.1.2 Position numbers for hexagon nuts

No position numbers are allocated as standard to hexagon nuts in the graphics.

#### 2.11.1.3 Location plan


If required the position of the pipe support can be identified in a building layout. The basic structure of the location plan corresponds to that of a conventional building.

In addition to identification of the building axes, the layout of the piping can also be given.

Checking the option only means that the plan is printed by default. The entry can always be made as a matter of course. This option can also be changed afterwards.

#### 2.11.1.4 Pre-setting symbols, coordinate cross and north point

If desired, the pictograms can be printed out with the site plan as standard.

If a **company logo** is to be included in the print out, the corresponding option should be set. The desired graphic can be selected via the ‘Open Picture Dialog’ button . (Opening a Bitmap file, see 6.1)

#### 2.11.1.5 Weight specifications in the parts list

The weights specified in the parts list can be given in kg or lbs as required, independently of the entries.

### **2.11.1.6 Units in the letter head**

The data in the header can be specified in different unit systems as required, independently of the entries.

### **2.11.1.7 Units of the dimensioning**

The dimensioning of the drawing can be made in mm or inch independently of the units set for input.

### **2.11.1.8 Language for printing**

Printouts can be made in various languages independently of the menu language selected. The choice of languages depends not on the operation system but on the printer.

### **2.11.1.9 Line widths in drawings and places after the comma**

The widths for the layout and auxiliary lines can be freely selected. A suitable value for the base line would be 2 or 3. The auxiliary lines should always be finer.

The places after the comma of the values for the pipe displacements can be adjusted to suit. For this, the values 0 (without following comma), 1 and 2 places after the comma are available.

### **2.11.1.10 Name of the project directory**

As an additional option, the name of the project directory can also be displayed on the drawing.

### **2.11.1.11 Printed image with watermark**

Optionally, drawings that have already been saved can also be printed with a watermark. The setting for this must be made directly before starting the printing process in Options - Print - Watermark.

Attention: This setting is not saved

## **2.12 System settings**

The following program parameters can be set in the system settings field.

Font: For most program masks, individual fonts can be set.

Background color: For graphic representation of supports, the background color can be changed. 'Current color of buttons' of the Windows settings is entered there as standard (mostly light grey). To copy the support as a graphic into another document the color of the background, e.g. on white, can be altered.

Languages selection: As described in 'Language control', only the languages supported by the relevant operation system are shown in LICAD. If all the available languages are to be shown, the switch for language selection must set on 'Show all available' and stored. The text display can however be incorrect in this case!

Language: The language for the program can be set here.

Ser. No. : This abbreviation stands for Serial LICAD drawing number.

The user can amend this number. Attention however; if the number is set back: if a corresponding number is already present in the current project path, then a serious error can occur. The drawing number is then to be set on the next free number.

'Project manager', 'addition' and 'registered for...' These entries can also be changed. Amend the entries; then store them with the 'Update entries' switch (Store with a tick below the window).

The type of lettering for the input fields in LICAD can be freely selected under 'Options - System settings'. Note that not all fields are displayed if too large lettering is chosen.

Under 'Options - System settings' the color for the background to the graphics can be set. This is especially useful when supports graphics are to be copied into other programs with the aid of the clipboard.

## 2.13 Export and import of option-settings

Most settings in the options can be saved in a text file and accessed again. For this, use the buttons 'File - save' and 'File - open'.

**Note:** Under certain circumstances, it is a good idea for questions about a LICAD problem to include a corresponding file with the current settings.

## 2.14 Securing settings with a password

The values set in options can be secured using a password. For this, click on the button "Password security". Following this, you are asked to enter a password not exceeding 10 characters. This must be repeated to confirm.

**Note:** Password security is optional and need not be activated!

After the button has been activated, changes can only be made by entering the correct password. The changes are rejected if a false entry is made. This applies both to new drawings and to changes in drawings.

Background: It is quite normal for companies to lay down standards regarding the design of pipe supports. This applies especially to reserves, permissible load deviations etc. These values should not be altered by the user and may only be modified in exceptional cases in consultation with a supervisor.

Repeated clicking on the password button deactivates the protection.

## 3. Drawing up pipe supports

### 3.1 Entering data on pipe supports

#### 3.1.1 Type of stress condition


In general, the **permissible loads for statically** determined parts and **permissible loads from dynamic** sources are differentiated for operational reasons. Dashpots and jointed supports as well as all parts in product group 3 in the LISEGA catalogue are designed for dynamic loads.

For roller bearings and pipe saddles (Product Group 5) a further program point, 'Cryogenics and bearings', is available in the main menu.

#### 3.1.2 Static stress

Figure 8 shows the appropriate input screen for the SI unit system and for static stress.

The internal *LICAD Drawing No.* is displayed in the uppermost space. The first two numbers in this space are issued by the program and cannot be altered. The third part of the number is provided for a project or system number. The issuance of these numbers makes it possible to search faster within a project for drawings of a certain system. Following this the *Customer Drawing Number*, the *Hanger Mark Number* and the *Calculation Point Number* can be entered.


The letter following the space labeled *Load* refers to the specified load: hot or operating load **>>hot<<** or cold load **>>cold<<**. The setting is carried under 'Specifications' or can be altered via double click on the field in this screen or by clicking on buttons. .

The program processes loads from 0.04 kN to 400 kN for static stresses with spring elements and to as much as 545 kN with rigid supports.



Figure 8: Mask for the input of pipe support data

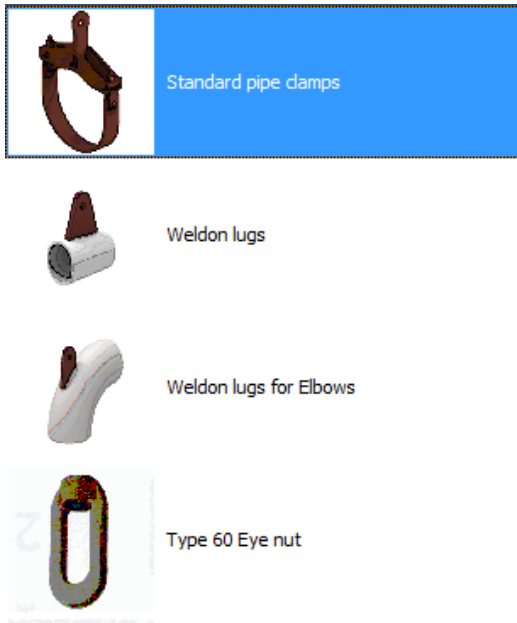
The program always considers the entered loads as total loads of the support.

The value for the *Pipe diameter* refers to the outer diameter of the pipe. Via a double click in this field or clicking on the button,  a help screen with standard pipe diameters can be called up. Observe the following:

1. If the value entered is within the tolerance range indicated then LICAD assigns this value to the corresponding standard pipe diameter.
2. If the value is outside of the tolerance range then it is a special diameter. The consequence is that a clamp with the next higher rated diameter is selected. The clamp is labeled as a special article. The holding values of the special clamp correspond to the next higher catalog clamp. Analogously, this also goes for the weight and list price (if activated).

For trapeze supports with piping laid on, LICAD checks to make sure the insulation of the piping does not collide with the threaded parts, variable spring hangers, or constant hangers leading alongside it. The minimum width of a trapeze or riser clamp is displayed on the screen.

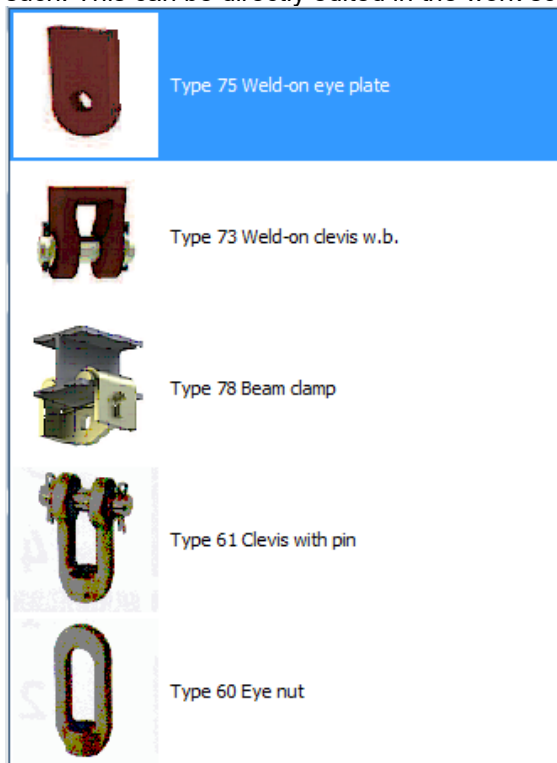
### 3.1.3 Lower Connection



The input for this setting was removed from the sub-menu “options”. The control for this is made via the option for the lower or upper connection in the work screen.

### 3.1.4 Top Connection

The setting “Without building connection” was removed from the “options” sub-menu, but not deleted as such. This can be directly edited in the work screen with the input data:



### 3.1.5 Definition of Pipe movements

The *Pipe movements* are entered in three directions. The axes of the directions of movement are defined as in Figure 9 (or as described above).

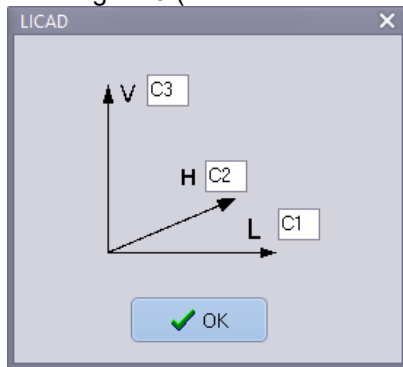



Figure 9: Definition of the directions of movement

A resulting component is calculated from the three path components. The maximum total path is limited to 900 mm.

Support data can also be read in from files insofar as they are

available. The file menu is opened via the 'Open File' button.  The file ending 'LIF' (LICAD Input File) is preset. The values deposited there are accordingly filled into the input fields of the mask. The values can however still be edited or supplemented.

The LIF files format corresponds to ASCII, the frame for a so-called INI file. These files can be made with PDMS or INTERGRAPH software.

To enable the alternative input screen refer to Option settings – System setup.

### 3.1.6 Dynamic loads

Figure 10 shows the corresponding screen for dynamically stressed supports.

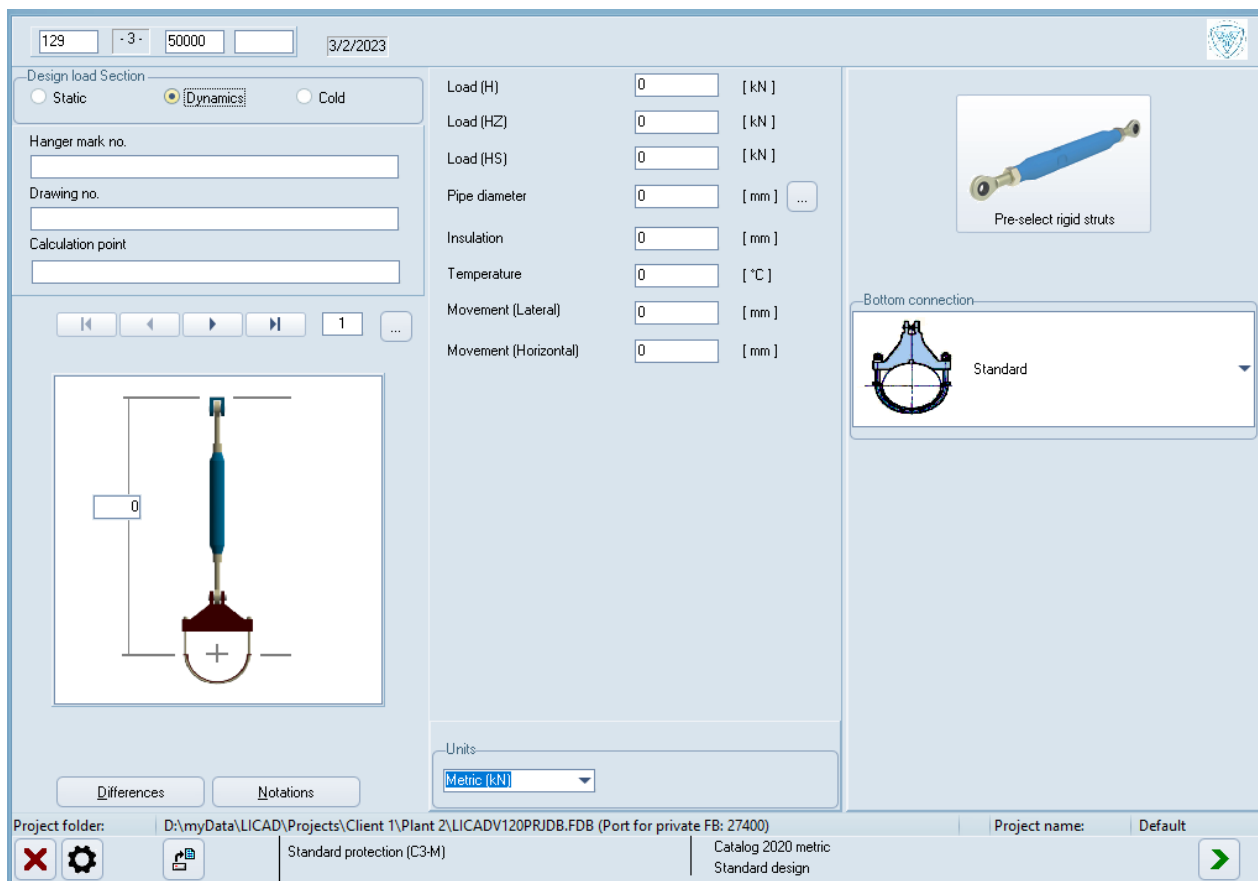


Figure 10: Mask for the input of dynamic nuclear pipe support data

The entries for the LICAD drawing number, the customer drawing number and the hanger mark number are to be done analogously to item 0.

For dynamic stress a maximum of 1000 kN for normal operation is permitted.

Snubbers and rigid supports as well as all components of product group 3 in the LISEGA catalog are designed for dynamic stress (See also Table 2 in Appendix 6.3).

With the *dynamic* components, a distinction is made for the design of the size according to three load cases:

3. *Normal/Upset (H/Level A/B)*: This includes all dynamic loads which might arise from the operation of the facility including water hammer forces resulting from switching, an operational basic earthquake, etc..
4. *Case of emergency (HZ/Level C)*: This includes all dynamic loads that are outside of operation according to regulations, possibly a safety shutdown earthquake. After each such case, a check of the entire pipe support is recommended.
5. *Case of damage (HS/Level D)*: Dynamic loads from cases of damage. At the specified loads the yielding point of the components is reached. Exchange of components is recommended in any such case.

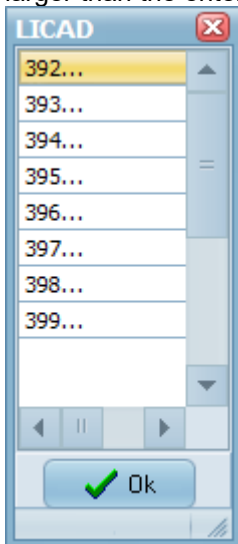
Therefore, for design according to nuclear engineering criteria, three input fields are provided corresponding to the various load cases.

The selection of pipe diameter is to be done analogously to item 0. The permissible temperatures are limited to 350 C for nuclear engineering applications.

With *dynamically* stressed supports, the screen changes with regard to the input of the pipe directions: instead of three path components, the possible inputs reduce to a 'positive' and a 'negative' path component. '+' means lengthening of the snubber by the value entered and '-' means contraction in the snubber. Do *not* enter any negative values for dynamic stresses. Rigid supports are only selected when the path equals zero.

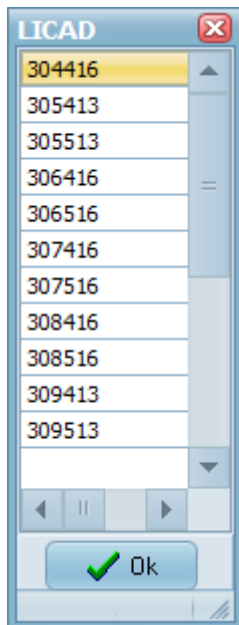
### 3.1.6.1 Preselection of rigid struts

The load size of the rigid struts can be specified via the type number. This means that the automatic determination can be overwritten by the program. This means that the rigid struts can be determined to be larger than the entered load.

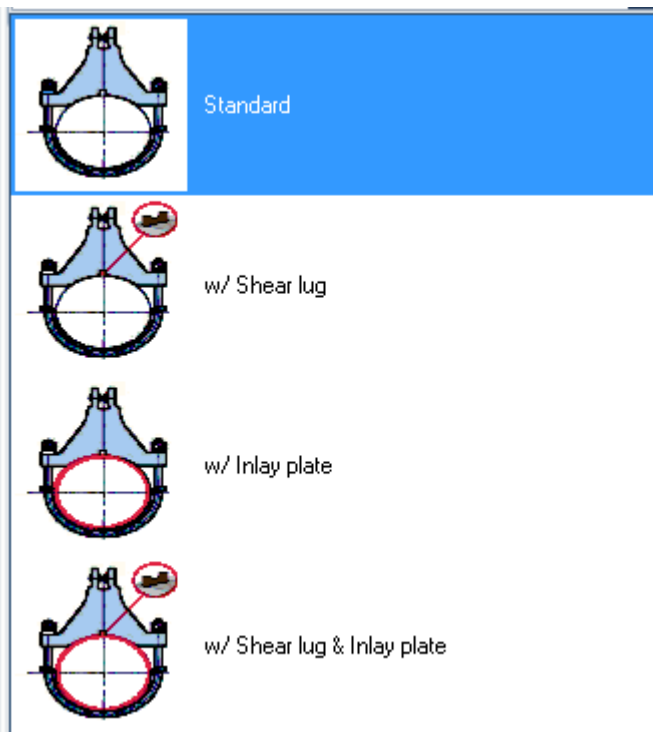


### 3.1.6.2 Preselection of snubbers with long strokes

The load size of the snubbers can be specified via the type number. This means that the automatic determination can be overwritten by the program. The snubbers can therefore be determined to be larger than the entered load. However, manual selection is limited to snubbers with long strokes in travel ranges 4 and 5.



### 3.1.7 Shear lugs and Inlay plates



#### 3.1.7.1 Shear lugs

The twist restraints ensure the positioning of the dynamic clamps in the expected direction of force and are practically unloaded. Even in a load case no lateral forces worth mentioning develop, as the friction forces at the contact surface of the piping under load ensure firm positioning. Due to the minimal forces to be absorbed, the weld seam stresses can be kept low, despite the small dimensions of the twist restraints. As a rule they lie 25 % below the yield strength / creep stress limit for load case H, in accordance with the DIN / ASME permissible values.

In the case of shear lugs, the material must be specified! The materials specified for shear lugs are available ex-stock and can be supplied at short notice. The customer holds responsibility for both the piping material on hand and the weld seam dimensions!

type number						7 <sup>th</sup> place	8 <sup>th</sup> place	material ⓘ
1 <sup>st</sup> place	2 <sup>nd</sup> place	3 <sup>rd</sup> place	4 <sup>th</sup> place	5 <sup>th</sup> place	6 <sup>th</sup> place			
3	L	.	.	.	.	— 0	1	S235JR
		} — 0				2	S355J2	
		3 <sup>rd</sup> – 6 <sup>th</sup> places of pipe dampers				— 0	3	16Mo3
		type numbers e.g.: 36 22 31				— 0	4	13CrMo4-5
		2	2	3	1	— 0	5	10CrMo9-10
						— 0	6	X10CrMoVNb9-1

### 3.1.7.2 Inlay plates

For the support of austenitic pipe systems all LISEGA pipe clamps and clamp bases can be fitted with stainless steel inlay plates made from the material 1.4301 (X5CrNi18-10). These panels are ordered separately.

### 3.1.8 Pipe saddles & clamp bases for cold block (cryogenic) systems

The components in LISEGA product group 5 can be selected under this program item. These include:

- Roller bearings, type 51 to 53
- Pipe saddles, type 54
- Lift-off restraints, type 55
- Cold block clamp bases, type 56
- Stanchions, type 58
- U-bolts, type 40

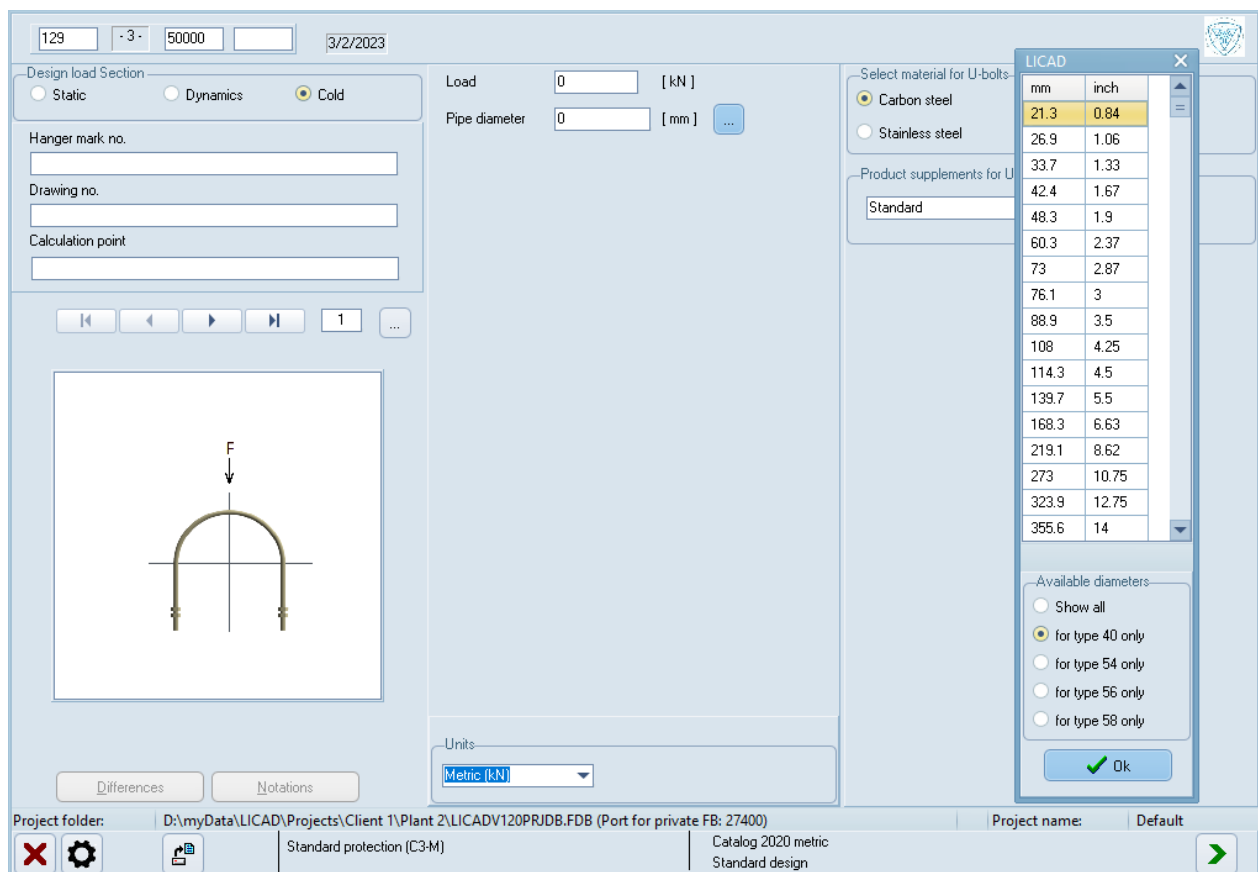


Figure 11: Entry mask for the design of pipe saddles and bearings

**Note:** Weld-on clamp bases type 57 can be selected under the static support configurations instead of standard clamp bases type 49.

**Note:** In contrast to the static and dynamic input screens, the pipe diameter must be entered exactly. It is recommended to use the values in the auxiliary table.

The input screen is to be used analogously to the static selection. In the first screen only the load and pipe diameter are required. The components or configurations are to be selected in the next screen. Further data must thereby be entered according to the configuration:

The material for U-bolts can be selected as in the catalog. The pipe diameter is required for the selection of clamp bases (configurations 2 to 6 0). A double cylinder roller bearing with or without lift-off restraint can also be additionally selected. The lift-off restraints are designed for LISEGA pipe saddles type 53.

To select pipe saddles (configurations 7-9 0) the radius must be indicated.

The insulation thickness is required for cold block base clamp.

To select stanchions (configurations 11 to 16 0) the type of connection is to be indicated, besides the required installation height.

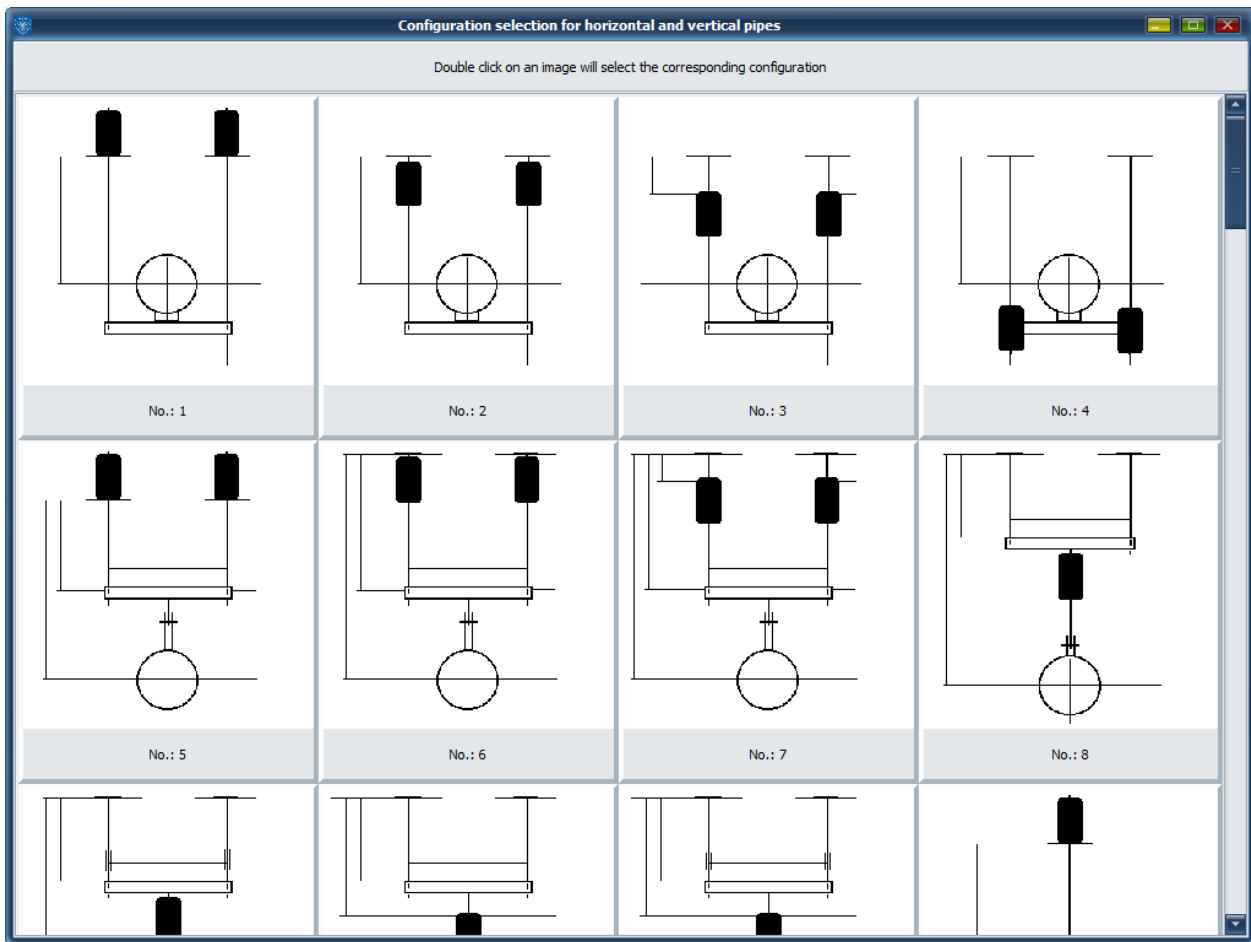
### 3.2 Selection of the support configuration

By entering the appropriate number, the correspondingly suitable support configuration can be selected from a list of the commonest configurations. This is done via the navigation button or by entering a number.

**Note:** An overview of all available support configurations is obtained by clicking on the button next to the numbers field. Scroll down through the configurations in the screen that follows. Select a configuration by double-clicking - the screen is then closed.



After editing and saving, a revision number is to be entered. This is alphanumerical and can be freely edited. No revision of any kind is made.



**Note:** Pressing the END or RETURN key or clicking on the picture gets the same result.

**Note:** The RETURN key has the same function on this screen as the tab key.

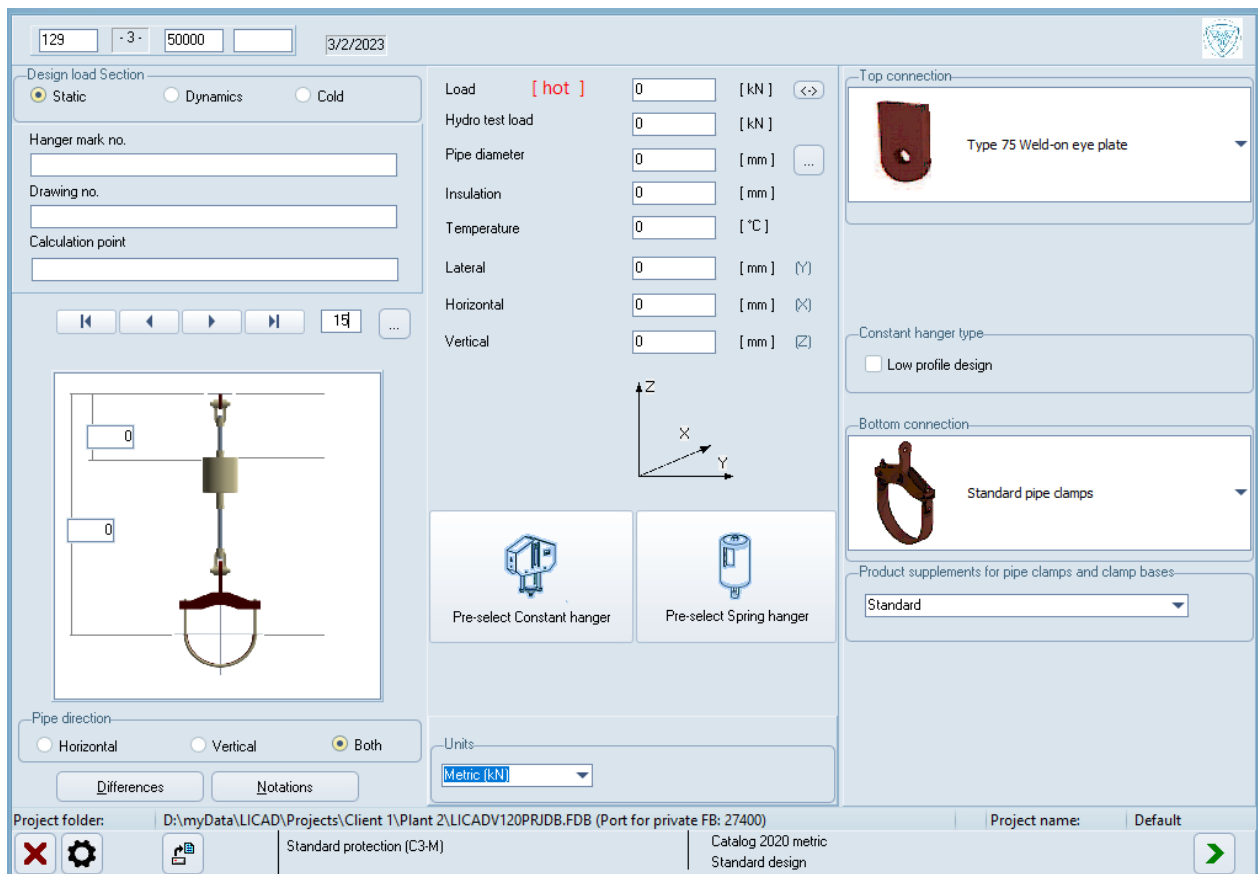
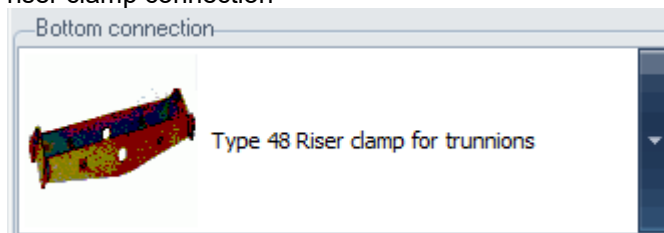
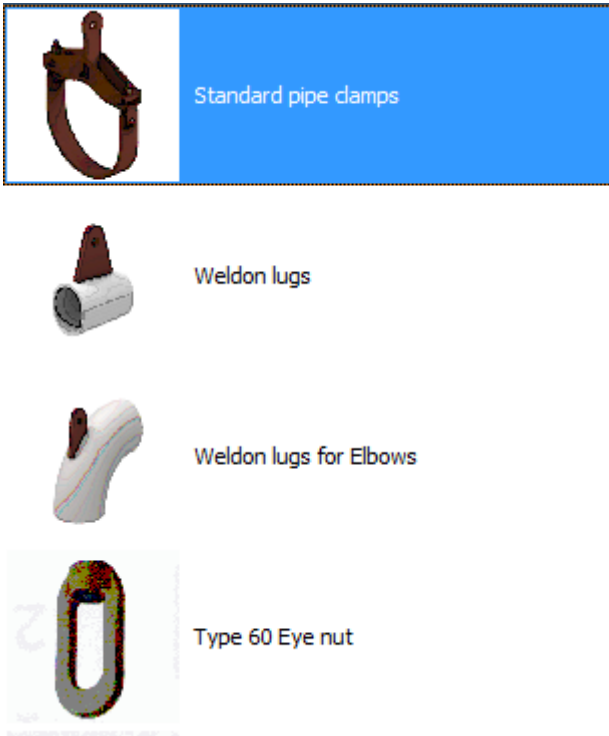


Figure 12: Display of pipe supports configuration

If further options are available for the configurations selected, they are displayed in the right side of the window (see Figure 123). These include the type of structural attachment, the type of horizontal pipe or riser clamp connection



or the final component , if no pipe-surrounding component is desired.



### 3.3 Entering elevation and widths

After selecting a support, the input screen for the elevations or elevation differences will then appear.

Now the type of structural attachment (weld-on eye plate, weld-on clevis or beam clamp) is first to be determined for the suspensions. The program standardly suggests type 75 (weld-on eye plate) as the most cost-effective solution as standard.

The elevation is entered either in *Elevation differences* or in *cotes*.

With specifications for the widths of trapezes or riser clamps, the minimum and maximum sizes possible are displayed by the program. The minimum width is dependent on the pipe diameter and the insulation thickness entered.

Note: For reasons of production optimization for type 46 and 48 vertical clamps, the input values for the spans are rounded to 10 mm.

If the heights are below the minimum installation dimension for the selected support configuration, a HELP screen displays the number of the entry field and the feasible minimum dimension.

The maximum installation dimensions are therefore also displayed for Shock absorbers, whereby the parameters *with* and *without extension* are differentiated.

The maximum values shown for rigid struts also contain excess lengths that, as far as the nominal load is concerned, are only available for reduced load values.

### 3.4 Specification of the type of hanger

Normally the program automatically selects the optimal variable spring or constant hanger using the performance data entered (load/path). However, in order to be able also to meet special customer specifications, manual specification of a certain type of hanger is also possible. With this procedure, only the specifications on load and path are checked by the program for compatibility with the hanger type. Values, which might be specified for reserves, are not taken into consideration.

Specification of the hanger is carried out on the same screen as for the elevations (Figure 20). Select the button 'hanger type' to denote the hanger and select the corresponding item number from the table.

LICAD	
25D21E	4,1
25D31E	2,1
251118	16,6
251218	8,3
251318	4,1
252118	33,3
252218	16,6
252318	8,3
253118	66,6
253218	33,3
253318	16,6
253418	11,1
253518	8,3
254118	133,3
254218	66,6
254318	33,3
254418	22,2
254518	16,6
255118	266,6
255218	133,3
255318	66,6
255418	44,4
255518	33,3
256118	533,3
256218	266,6
256318	133,3
256418	88,9
256518	66,6
257118	800
257218	400
257318	200
257418	133,3
257518	100
258118	1066,6
258218	533,3
258318	266,6
258418	177,8
258518	133,3

Ok



### 3.5 Alternative selection of clamp base

Based on the preset load and temperature, LICAD selects the most favorable pipe clamp base for the pipe diameter. If an insulation thickness is also preset, the program checks to make sure the insulation will not collide with the foot of the clamp base or even enclose it. In case of a problem, the program proposes an alternative selection of clamp base.

### 3.6 Selection of pipe supports

Using the installation heights supplied, LICAD assembles the components required in the support chain. For spring pipe supports, corresponding extensions Type 29 are employed.

**Note:** The use of Type 29 extensions is only possible if the spring hangers to be seated are selected with the 'PTFE slide plates' option.

**Note:** If the installation heights supplied are too low, LICAD will still select a support and correct the lower installation height correspondingly.

### 3.7 Graphic representation

After checking the values that have been entered a true to scale drawing will be displayed on the screen (Figure 136). The selection can either be confirmed or rejected.

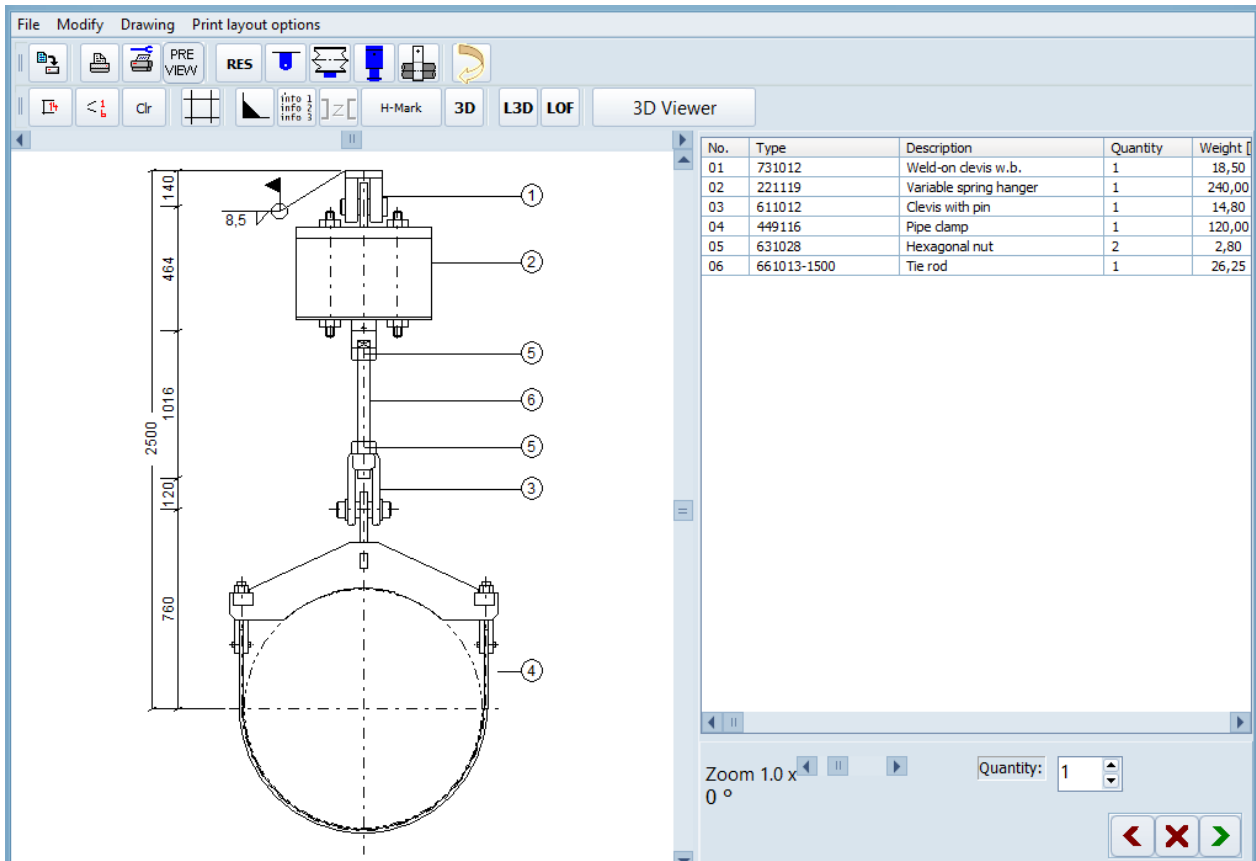


Figure 13: True to scale drawing of a pipe support

In addition to the drawing dimensioning, item numbers are displayed, as well as the parts lists that go with them, with article numbers and designations.

By clicking the right-hand mouse button the travel stop position, spring rate, load difference, the remaining travel are given and the welding thickness.

### 3.8 3D representation of the support

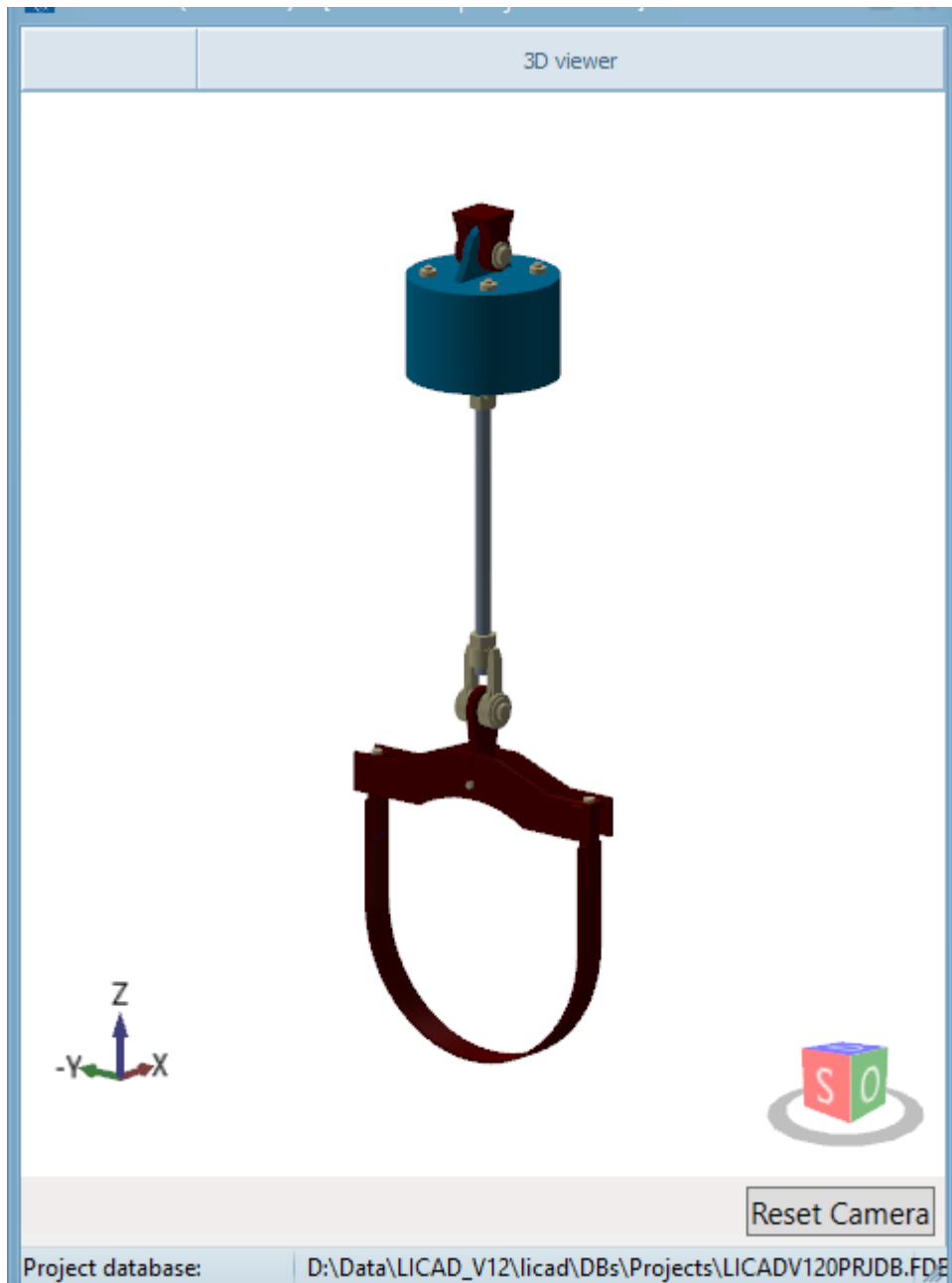
In addition to the to-scale representation of the support in 2D, there is also the option of displaying the support in 3D in a further "3D Viewer" window.

Note: In contrast to the 2D view, the threaded rods are not shown cut.

The 3D viewer offers a very good possibility for checking collisions within a fixture, for example in the case of a truss fixture with two constant hangers at different installation heights.

The mouse can be used to control the size and viewing direction in the 3D viewer.

The 3D image of the mount can also be printed instead of the site plan.



Note: if you move the mouse over the holder chain, the article numbers are displayed at the bottom of the screen.

### 3.9 Display of current hanger data

By moving the mouse over the drawing and pressing the right-hand mouse button, a table appears with the current setting parameters for the support created. Beside the support data entered, the following details are shown:

- The hot and cold loads calculated
- The blocking load
- The actual load difference in spring hangers
- The spring rate in spring hangers
- The actual possible travel in spring and constant hangers
- The blocking position
- The effective travel resulting from the 3 travel components

The remaining travel reserves upwards or downwards

The recommended weld seam thickness for the building connection component

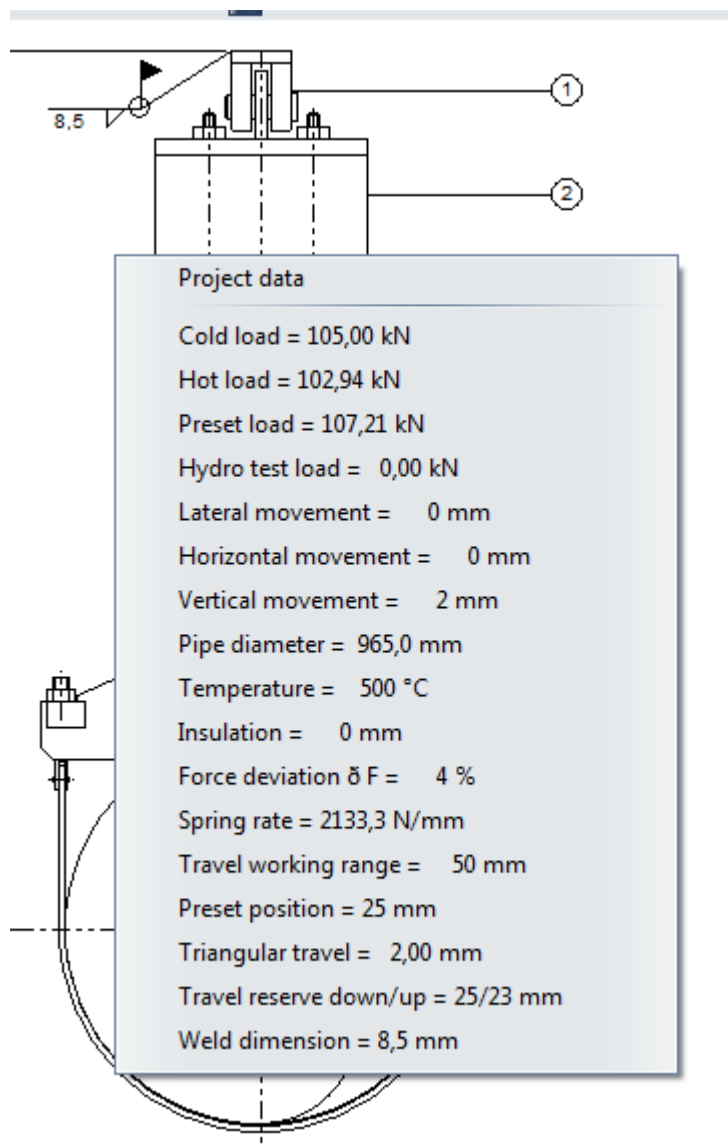


Figure 14: Popup menu with hanger data information

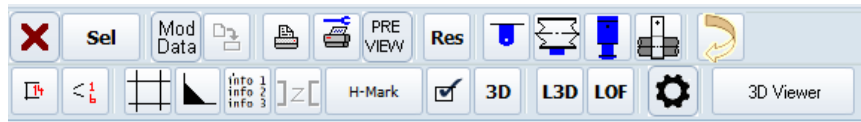


Figure 15: Section of graphics screen

### 3.10 Alternative Figures

Some components in the drawing can be rotated by entering a number for a second view. The structural attachment parts can be illustrated with the customer's sectional steel.

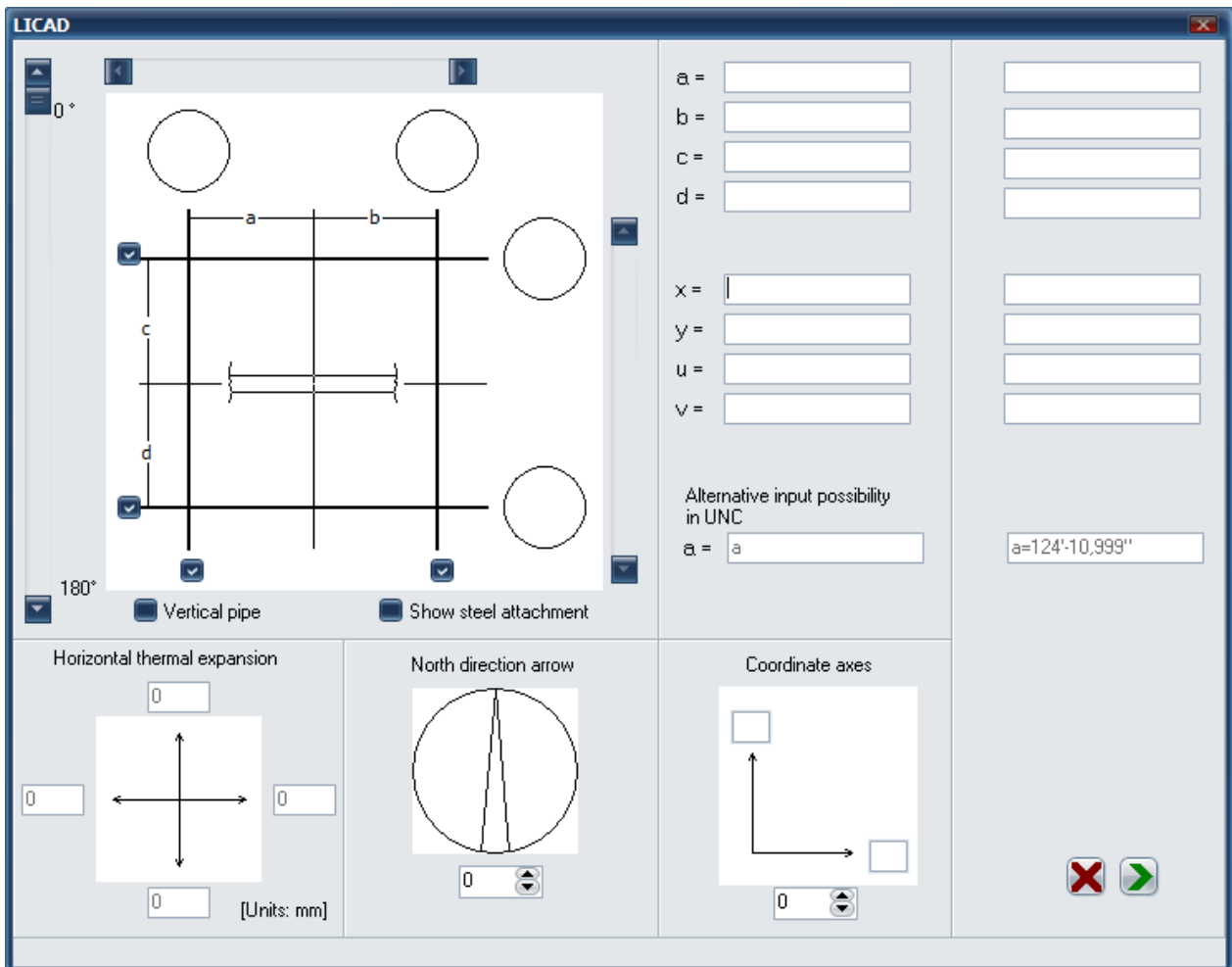
Use the button 'RES' if you wish to reset the modifications.

### 3.11 The location plan

In Figure 16 the position of the support in the site plan can be entered. The screen can be clicked in via the menu 'Processing - processing site plan'.

Five figures each can be assigned to the main directional axes of the building plan, furthermore, the position of

Figure 16: Location plan and schematic display of pipe axis

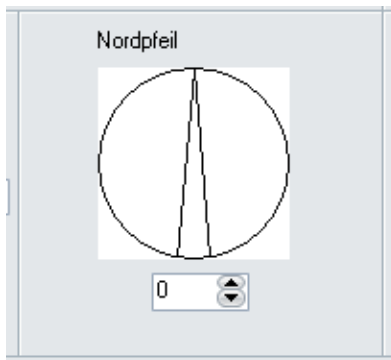


the pipe or clamp (PA), the position of the steel attachment (SA) and the corresponding angle can be set.

### 3.12 North direction arrow

Figure 17: Entry screen for north point

A north direction arrow can be defined for the drawing (Figure 17). This is printed beside the site plan insofar as it has been programmed into the options. The screen can be clicked in via the menu 'Processing - processing site plan'.



### 3.13 Changing weld seam thickness

As described under before, in LICAD the minimum weld seam thicknesses are supplied. This information can be edited via the menu point "Change weld seam", to be found in the Edit menu.

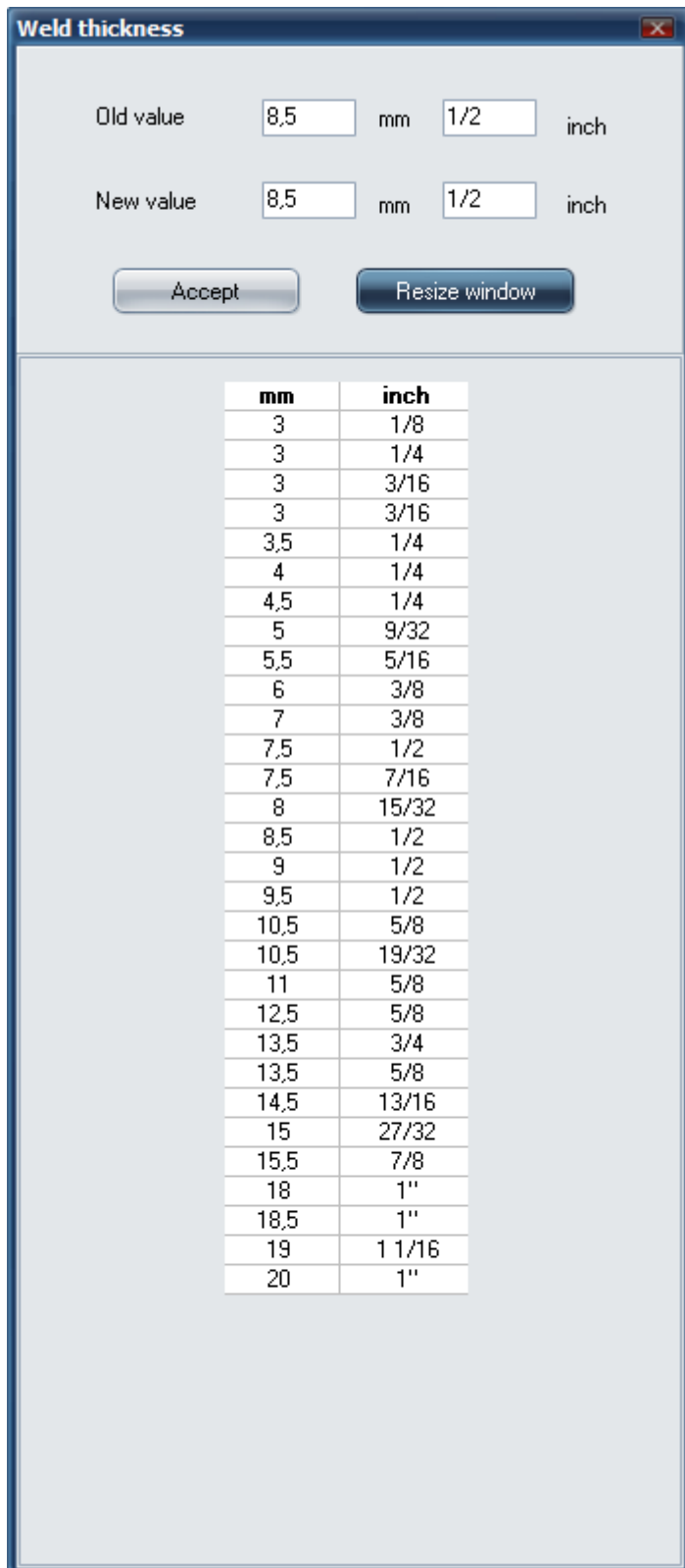


Figure 18: Changing weld seam thickness

### 3.14 3D Reference Coordinates

Under the menu 'Processing - 3D Reference Coordinates' call up the dialog as displayed in Figure 19. The input space 'Coordinates' has no significance for the normal use of the program. Reference coordinates based on the pipe centre are described only in the creation of 3D graphics (with the aid of the MDL application of Intergraph).

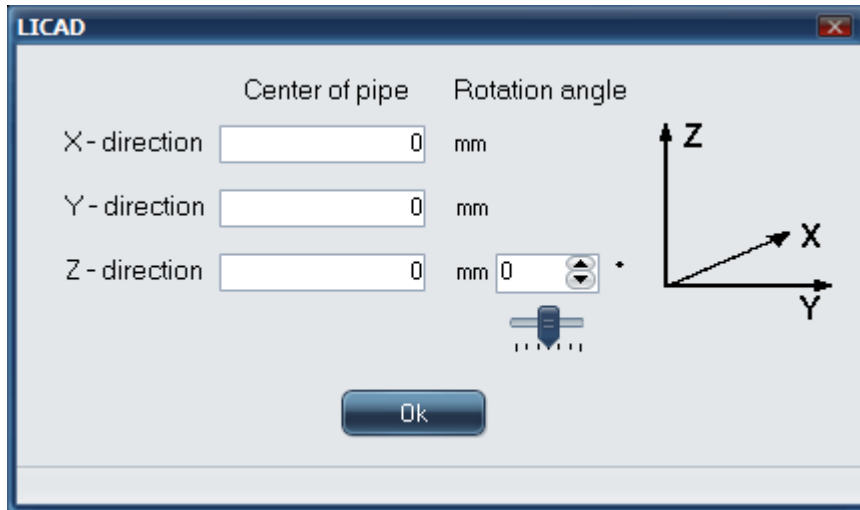
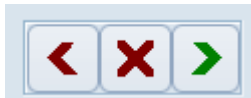


Figure 19: Entry screen for 3D Reference Coordinates

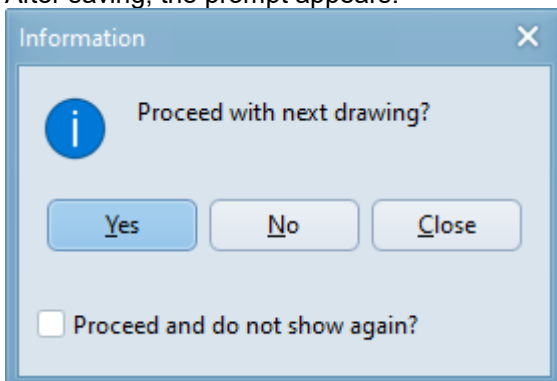
The table shown under the window can be displayed via the “Show table >>” button. Care must be taken that both the millimeter and inch details can be adequately modified.

### 3.15 Saving and printing out a drawing



The icons at the bottom right of the window have the following meanings from left to right:  
 Return to the previous window  
 Cancel and exit window  
 Continue and save drawing

After saving, the prompt appears:



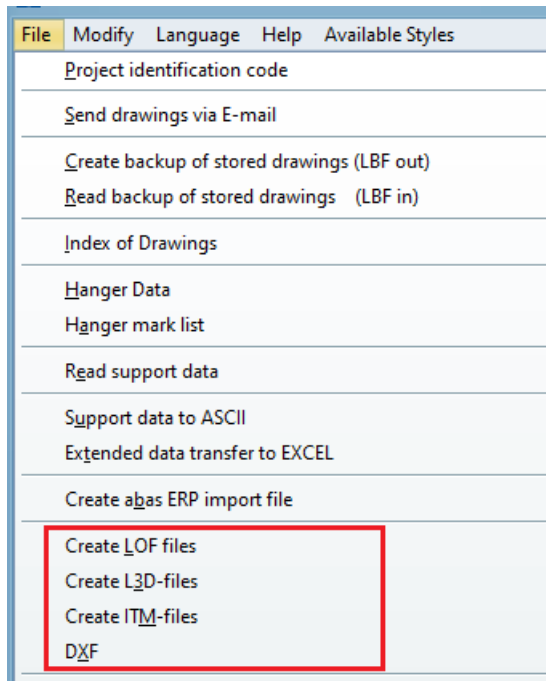
Note: The option "Proceed and do not show again?" would ensure that the input window is jumped to immediately after saving. It is possible to continue immediately with the input for the next drawing.

The drawing can be printed out at this point (Ctrl + P), checking the printer setting if necessary.

The drawings can as a matter of course be printed out later insofar as they have been saved.

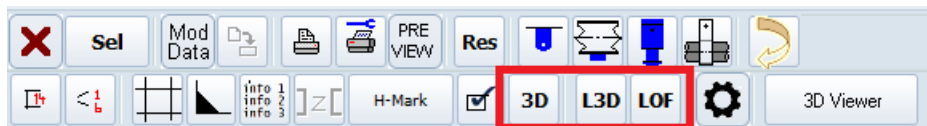
Note: Depending on the setting of the language for printing, each drawing can be output in different languages.

### 3.16 Generation of 3D transfer files



Saved drawings can be used in various CAD.

You can find more information here: [Additional sub-programs \(interfaces\)](#)

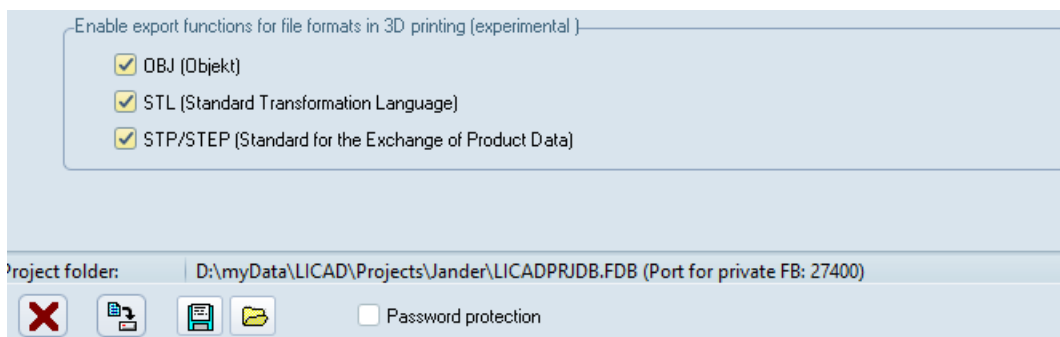


After creating a drawing, corresponding files can also be created directly in the graphics window.

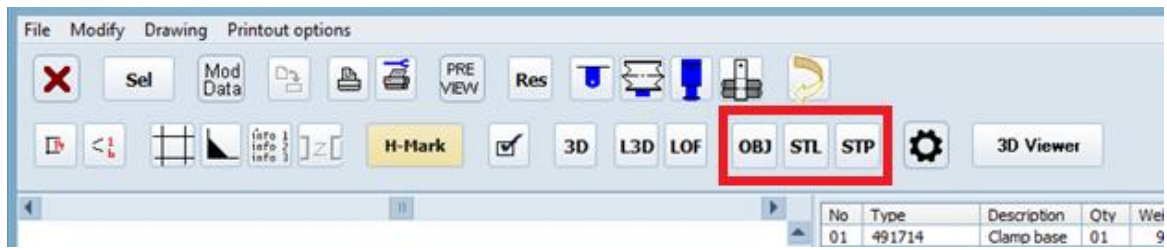
### 3.17 Export of drawings in STEP, OBJ, STL formats

On request, the drawings can also be exported in the formats as *Object* (OBJ), *Standard Transformation Language* (STL) and *Standard for the Exchange of Product Data* (STP/STEP).

The prerequisite for this is that the switches must be activated. To do this, activate the corresponding option in the Options - System settings - Export functions menu.



The corresponding buttons are then added to the screens for editing the drawings:



## 4. Additional programs

### 4.1 Supplementing a parts list

In order to supplement the parts list of a drawing with additional articles choose button 'Modify' from the main menu and double click to the bill of material (BOM).

The items of the standard supports will be displayed at the top of the screen and at the bottom of the screen the supplemented items. The number of items is limited to 10 per drawing.



No	Type	Description	Qty	Weight	Material	Dimension	Price
01	731012	Chape à souder	01	18,50	S355J2		184,00
02	221119	Support variable	01	240,00			2079,00
03	611012	Chape taraudée avec axe	01	14,80	S355J2		190,00
04	4497275	Colliers	01	193,00	16Mo3	D965,0	2137,00
05	631028	Ecrou hexagonal	02	2,80	Gr. 8	M56x4	25,40
06	671013	Tige filetée	01	17,50	S355J2	(910)	109,00

Figure 20: Supplementing parts lists

#### 4.1.1 Completion of parts list during the drawing process

Double click on the parts list, in picture 23, to open a new window. Here further positions can be added to the parts list. Use the button "New Positions" to add up to 10 lines. The respective last line may be deleted by pressing "Undo". Button "Finished" closes the window and the drawing may be printed. The added positions will be saved with the drawing.

### 4.2 Revising drawings

Saved drawings can later be loaded from the data bank into the program or altered.

A drawing to be altered should be called up with the appropriate LICAD drawing no. (which you can, for example, have displayed with the directory). An alteration is labeled by the program with the revision number. A modification can be signaled by the program via a modified revision number.

**Important:** No backup copies are automatically made by the program. Therefore, for this reason you should first copy the original drawing on a storage medium or make a backup copy with 'Copying drawings'.

Figure 21 shows the appropriate mask.

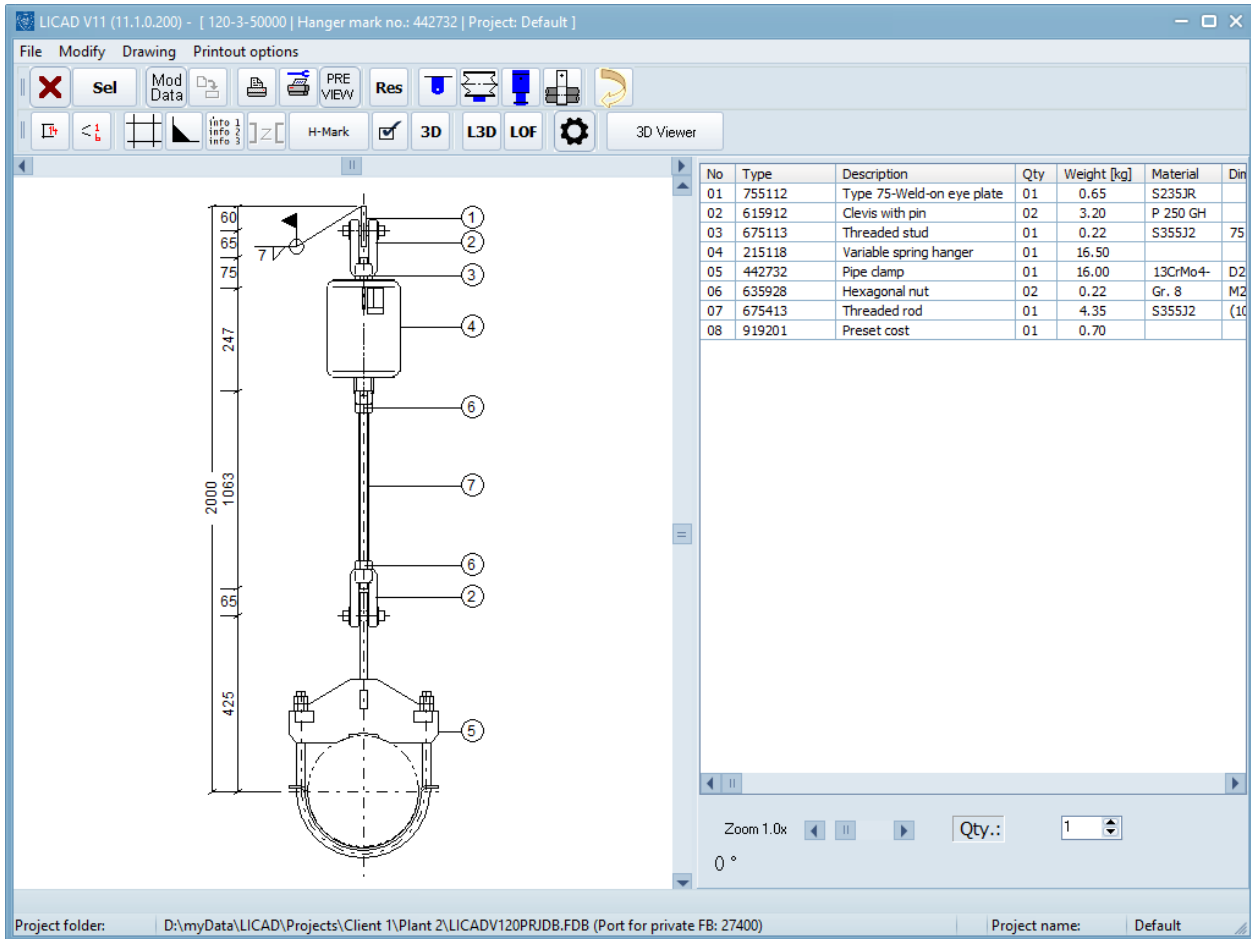
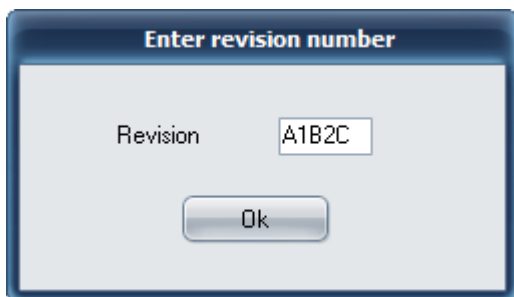


Figure 21: Example for calling up a drawing for revision

The configuration of the support can also of course be changed.

Under the menu 'Modify', tools for copying individual drawing components are available. The parts list or the drawing is transferred to the intermediate tray and can be copied from there into text programs. The background color of the graphic can be altered via 'Options - System Settings'.

After changing and saving, a revision number can be entered:



Entry of a revision number is not obligatory.  
The revision number is alphanumerical and can be freely edited.  
The revision number is not checked by the program.

### 4.3 Further menu points

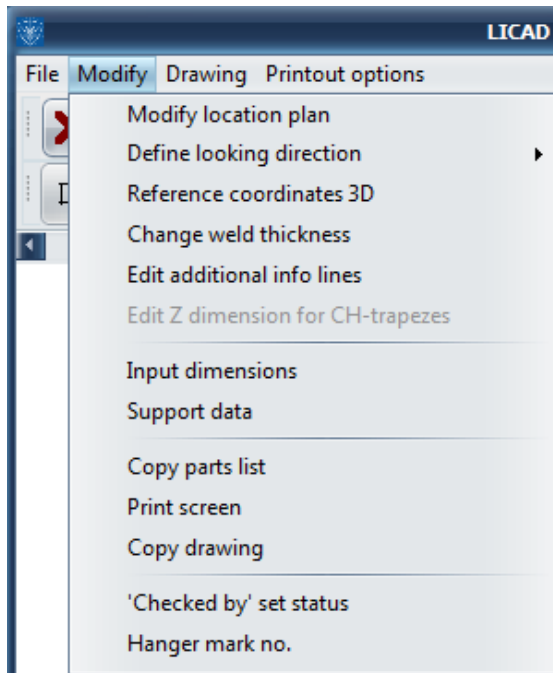


Fig. 36: Tool components for copying

Individual drawing components (as a picture) are available. The parts list or drawing is transferred to the clipboard and from there can be copied, for example, into text programs. The background color of the graphic can be altered under "Options" - system settings.

You will find tools for copying under the "Edit" menu.

### 4.4 Individual selection of hangers and pipe clamps/bearings

The program can also select variable spring and constant hangers or pipe bearings/clamps individually. After calling up the program 'Catalog' in the main menu Figure 22 will appear.

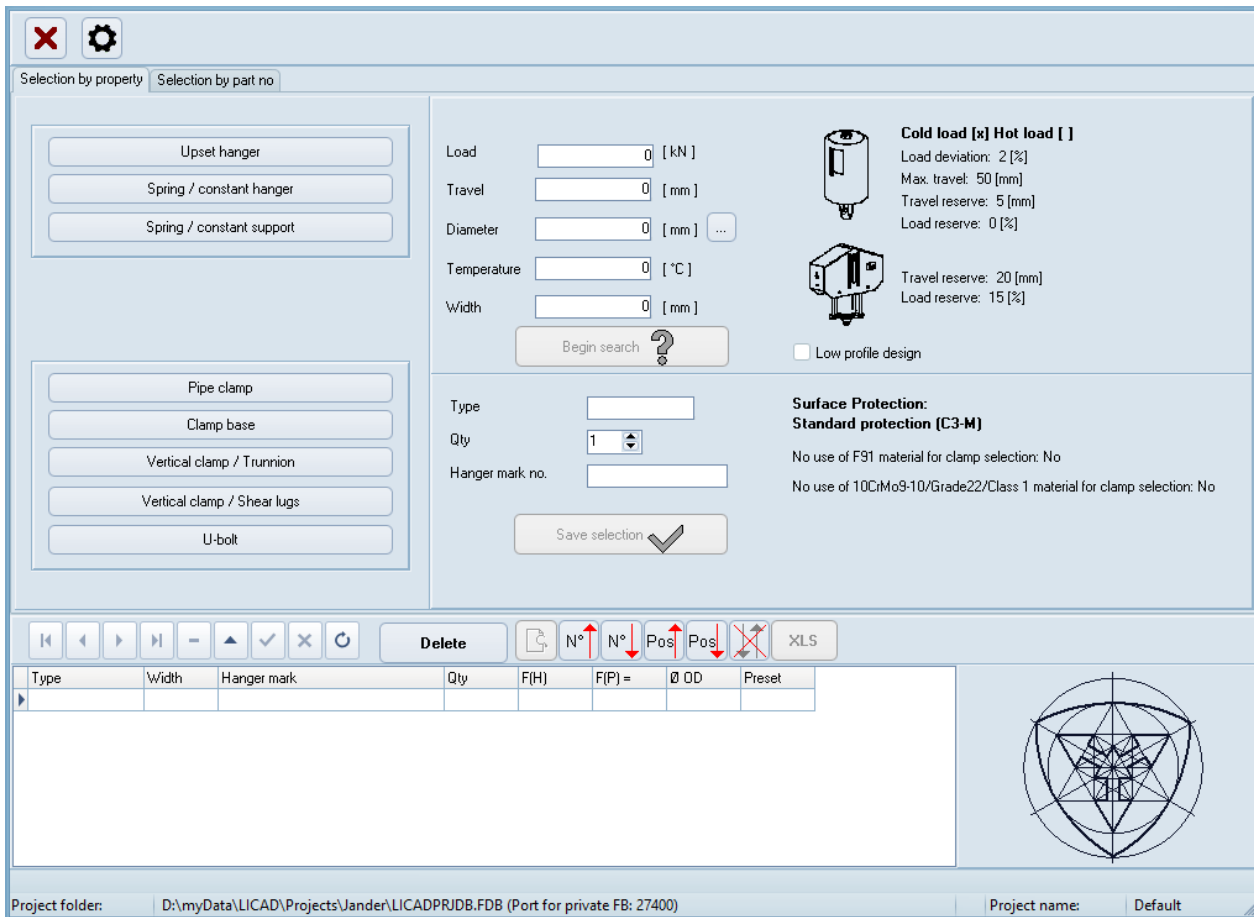
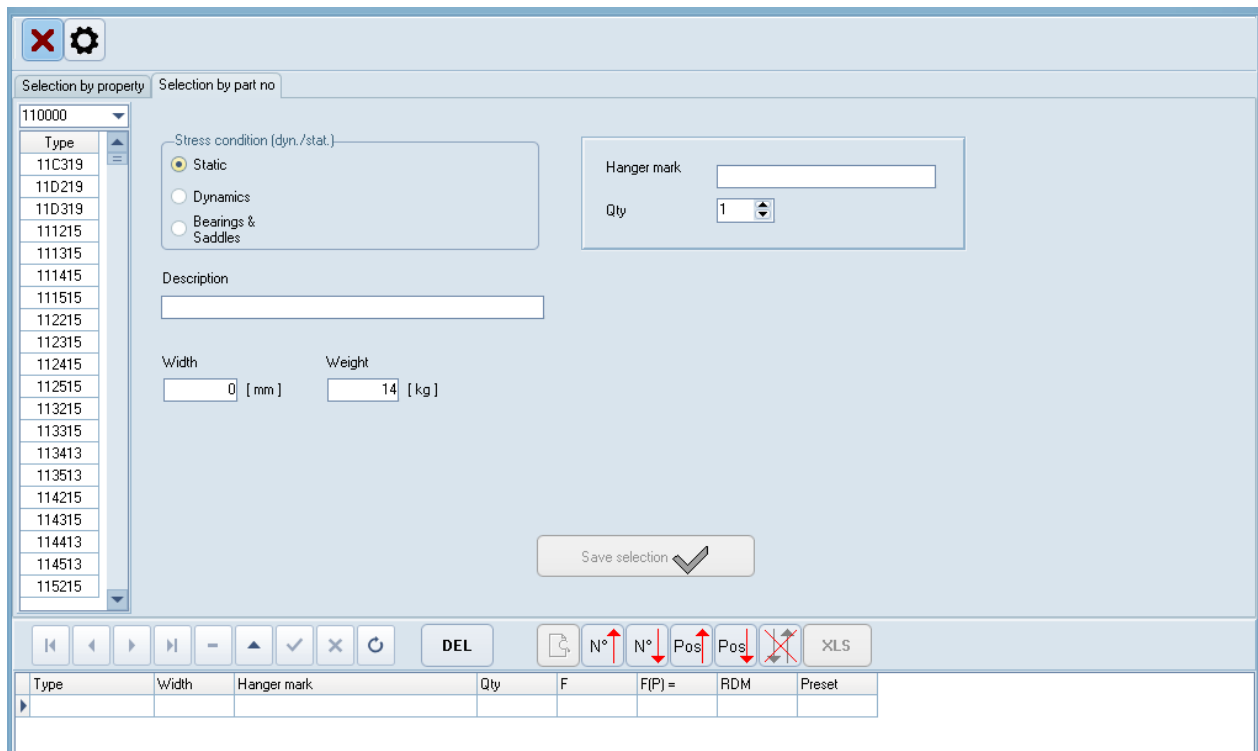


Figure 22: Menu screen for the selection of individual items

Before selecting parts, the specification data should be determined.

If a new list is to be drawn up then delete list with the 'DEL' button. Otherwise, additional articles can be added to the existing list.

The program will indicate the article chosen. If required enter a hanger mark number and the desired number of pieces for this article.



With the 'Further Catalog parts' button you can select the rest of the catalog parts. In the left upper window you can pre-select the LISEGA product groups.

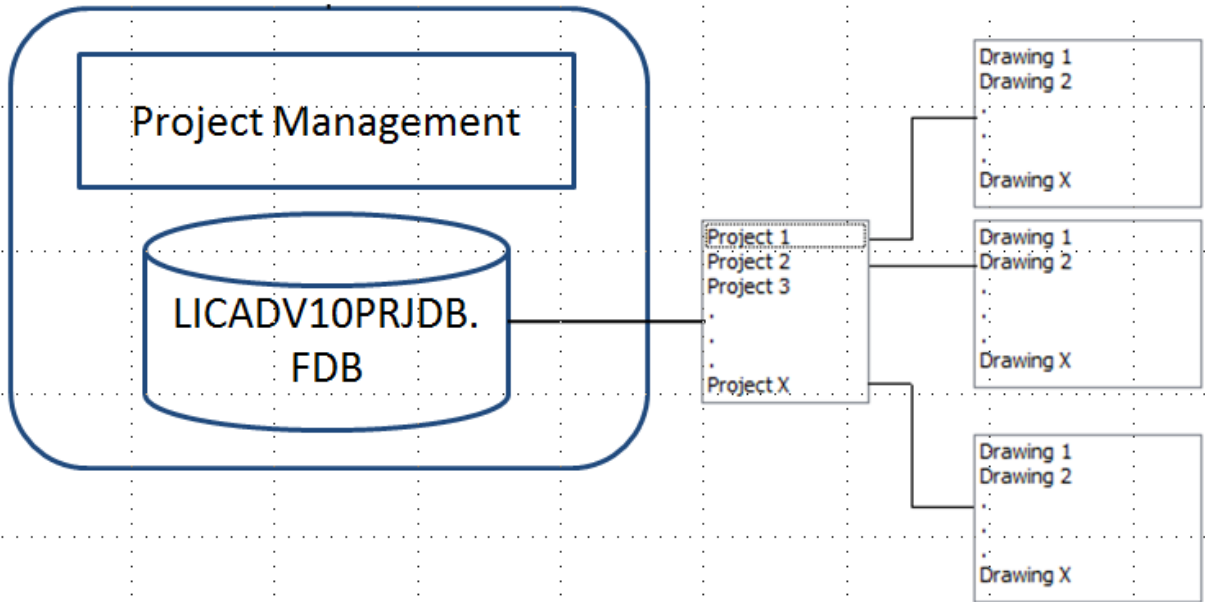
If a new table is to be created, the old table must first be deleted with the 'Del' button; otherwise, further articles can be added to the existing list.

To print the complete parts list change to the 'Print' button. The contents of the table can be seen via the 'Page Preview / Print' button. As an option, the table can be sorted according to position or article numbers and worked on via the 'MOD' button.

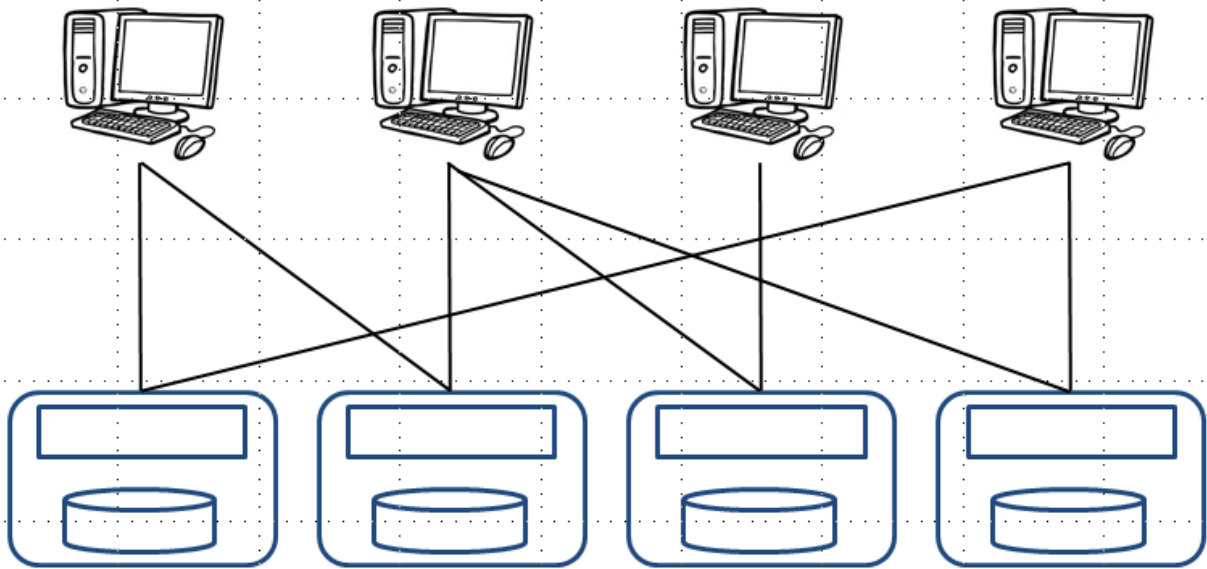
## 4.5 Project administration

### 4.5.1 Project file and project structure

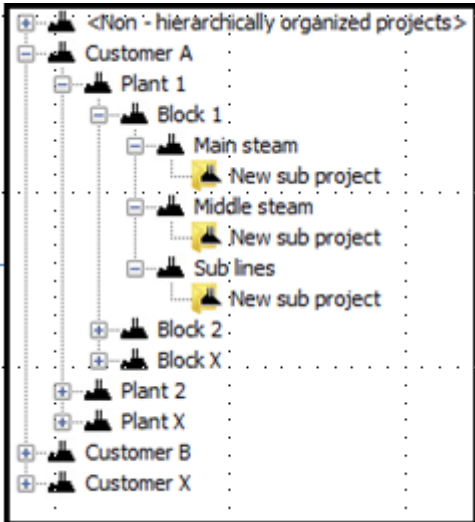
The drawings of pipe supports created with LICAD are stored in a project file. Multiple project files can be created. These can be local or on the network. Several projects can be created in one project file. This can be done according to a hierarchy. See below.



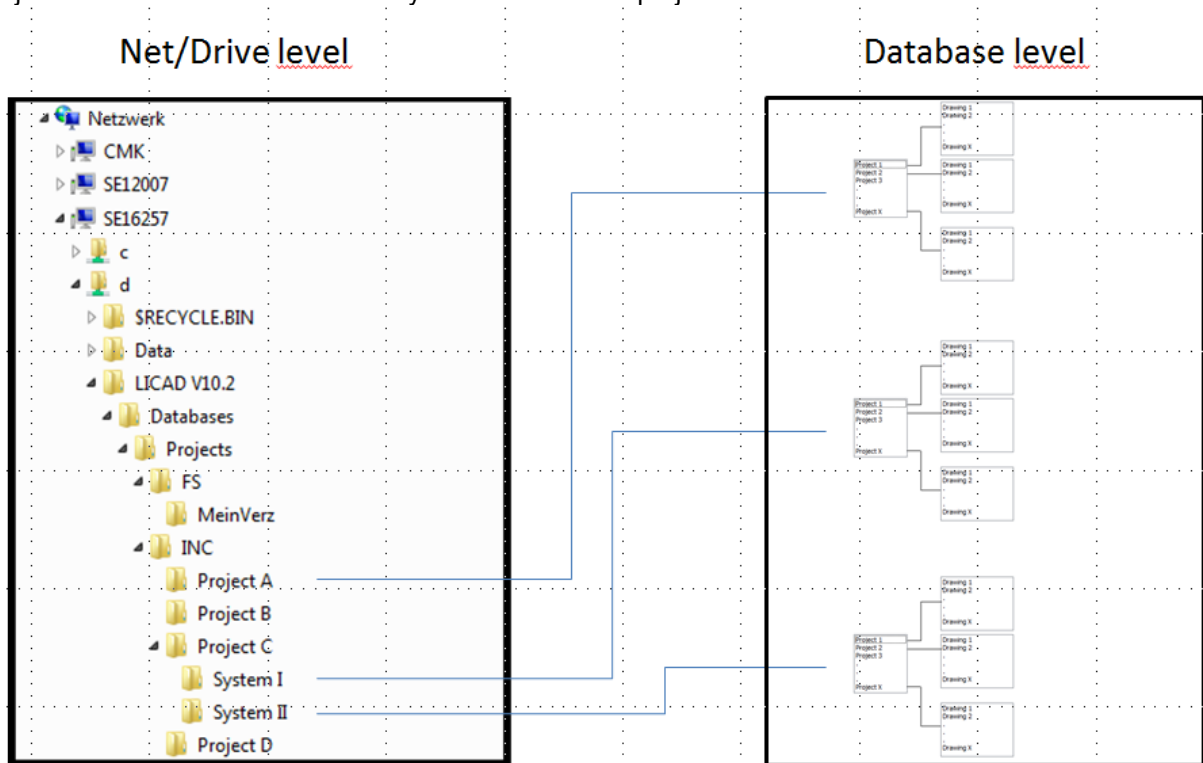
A project file with project structure.



Possible links between different workstations, each with a project file.



Projects can be created in a hierarchy structure within a project file.



Possible scenario of different project files on a network drive and shown with related projects.

## 4.5.2 Changing the project file and projects

The project management menu is accessed from the main screen. After calling the program, the current project is displayed under selected project directory. The Database Explorer tab is active. Change the project file in that way, use the left explorer window you change to a directory where a file LICADV102PRJDB.FDB is stored. The corresponding projects are displayed in the middle window. The corresponding drawings and descriptions are listed in the right-hand windows.

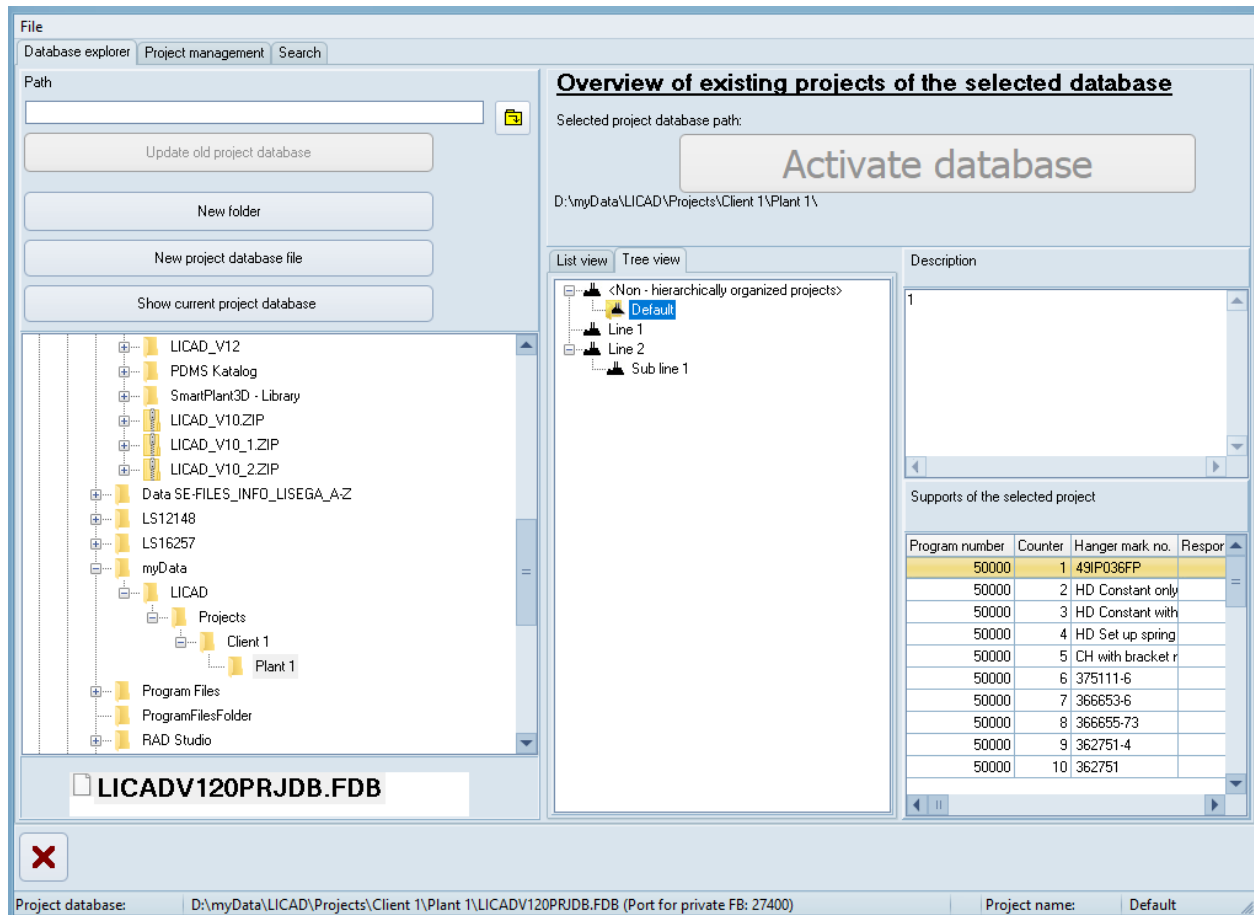
How to change the projects:

### 4.5.2.1 Changing the project file and the project

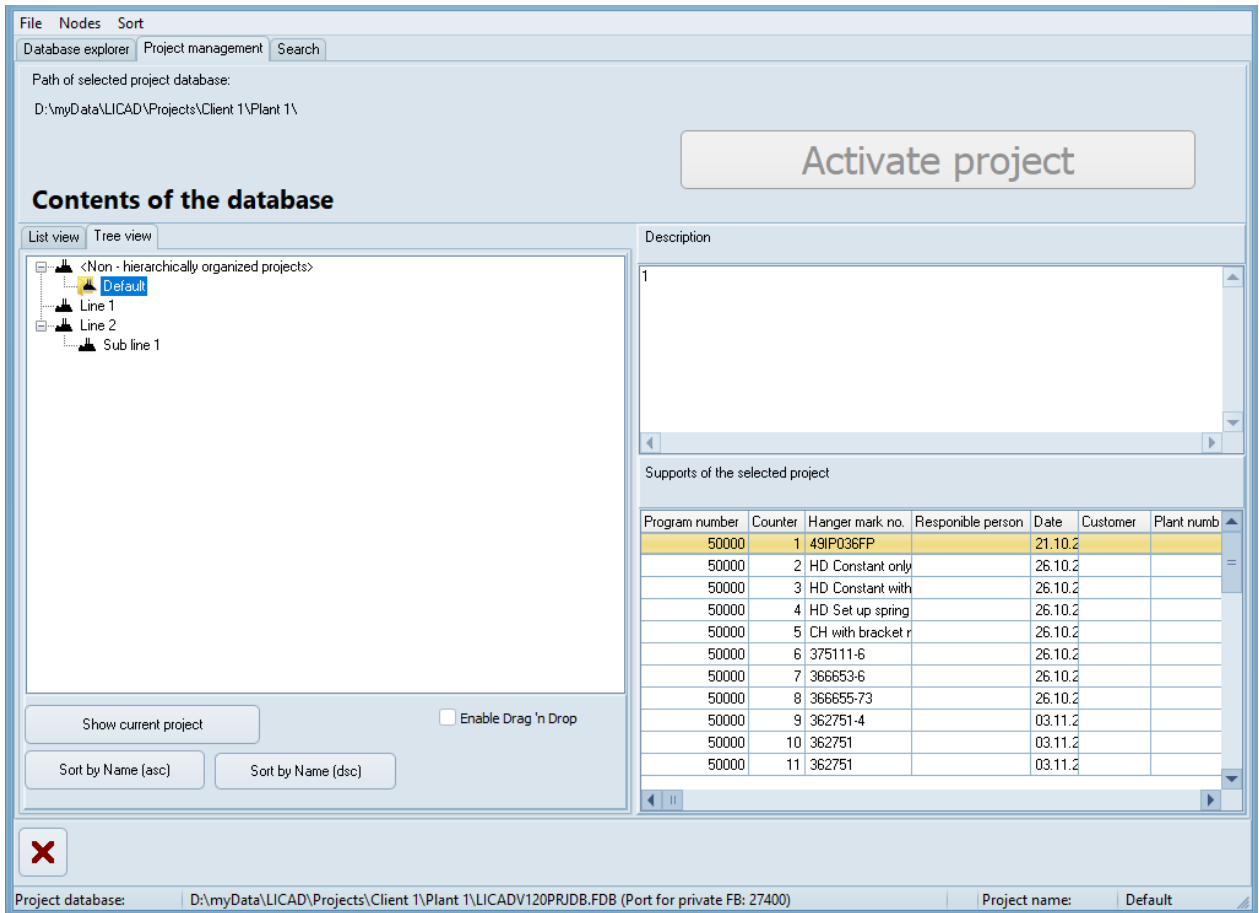
In the left pane select the path and then click to enable project file. Switch to the project management tab. (View for selecting project management). Select the project from the List View or Tree View, and then click to Enable Project.

### 4.5.2.2 Only change the project

Switch to the project manager's tab. (View for selecting project management). Select the project from the List View or Tree View, and then click to Enable Project.



View for the selection of the project file



View for selecting project management

Information on creating, changing and deleting projects can be found here:

## 4.5.3 Manage Projects - Create

### 4.5.3.1 Method via list view

Switch to the project manager's tab. (View for selecting project management). Switch to List view and select Add in the project menu. On the screen that follows, enter the information that you believe is necessary.

Note: It is not necessary to create a project.

#### 4.5.3.2 Method using tree view, create hierarchy

Switch to the project manager's tab. (View for selecting project management). Switch to tree view. Click with the mouse in the left window and press the right mouse button. Select Add Top level node from the context menu and enter a name for node, e.g. the customer name. Now click to the node point and press the right mouse button again. Select Add Sub-Level Nodes and enter a name for the node, e.g. the name of a plant. You can repeat the last step as desired.

As the last step, select from the context menu Add project at current node. On the next screen, enter the information that you believe is necessary. See screen above.

Note: It is not necessary to create a tree structure.

#### 4.5.4 Creating a project file

In the Project window, select Database Explorer. Change to an already existing directory or create a new directory using the right mouse button. Use the mouse to point to the directory where you want to serve as a project file and select New Project Database File with the right mouse button. Note: The file name is fixed and cannot be changed.

## 4.5.5 Manage Projects - Change

Turn on the project management tab. Select one of the two views (TreeView or ListView), use the mouse to select the project you want to change, and select Modify using the right mouse button.

## 4.6 Deleting drawings

This program point can be found in the main screen under the menu 'Edit - Delete drawings'.

Select one or more drawings from the left-hand window (use the 'Shift' and/or 'Ctrl' buttons for multiple marking) and shift these with the aid of the '>>' button to the right-hand window.

Each deletion must be individually confirmed or enter 'A' if all drawings are to be deleted with confirmation request. The sub-item number and the system designation that go with them are also displayed as a means of checking. The deleted drawing numbers are blocked by the program for further use.

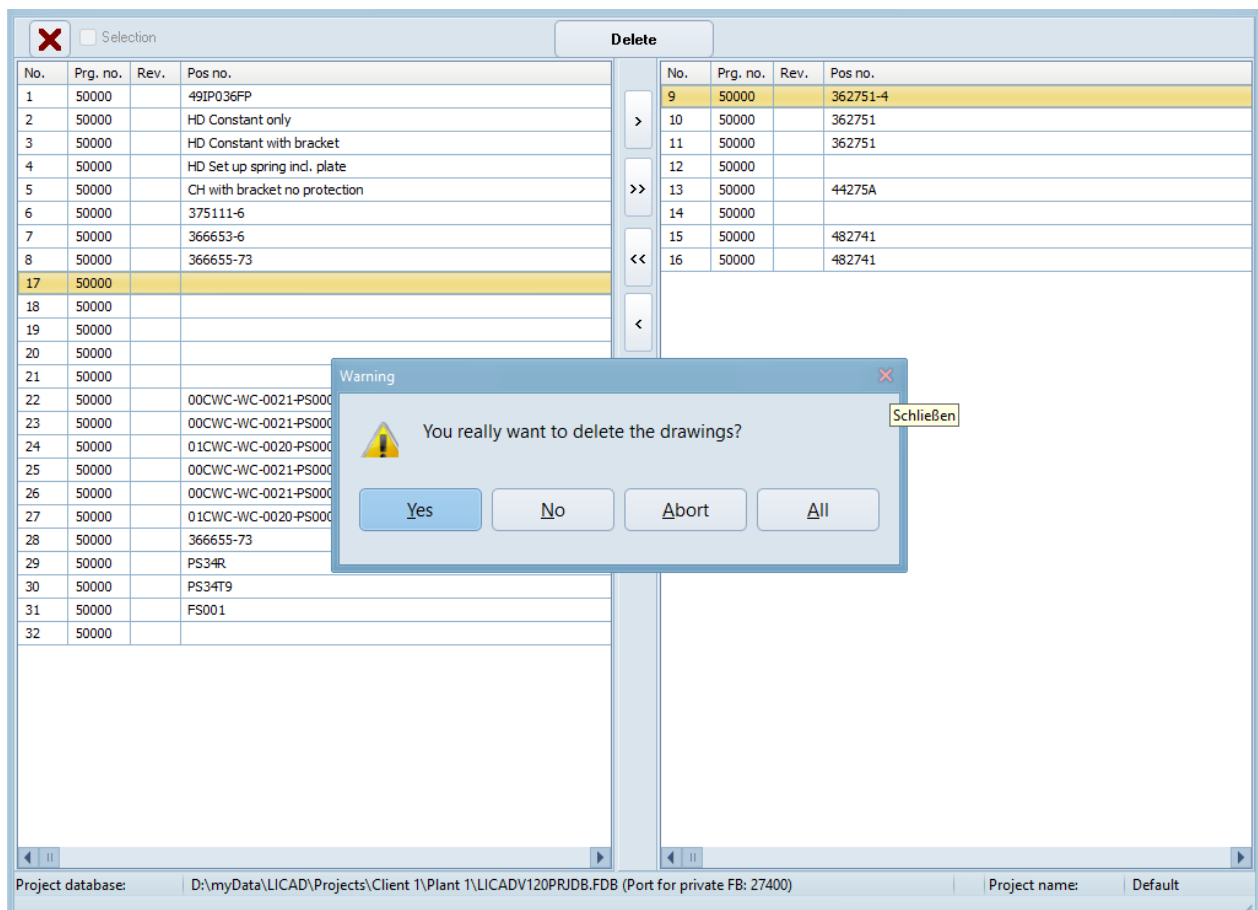


Figure 23: Deleting drawings

## 4.7 Copy and move drawings

A basic distinction must be made between two variants:

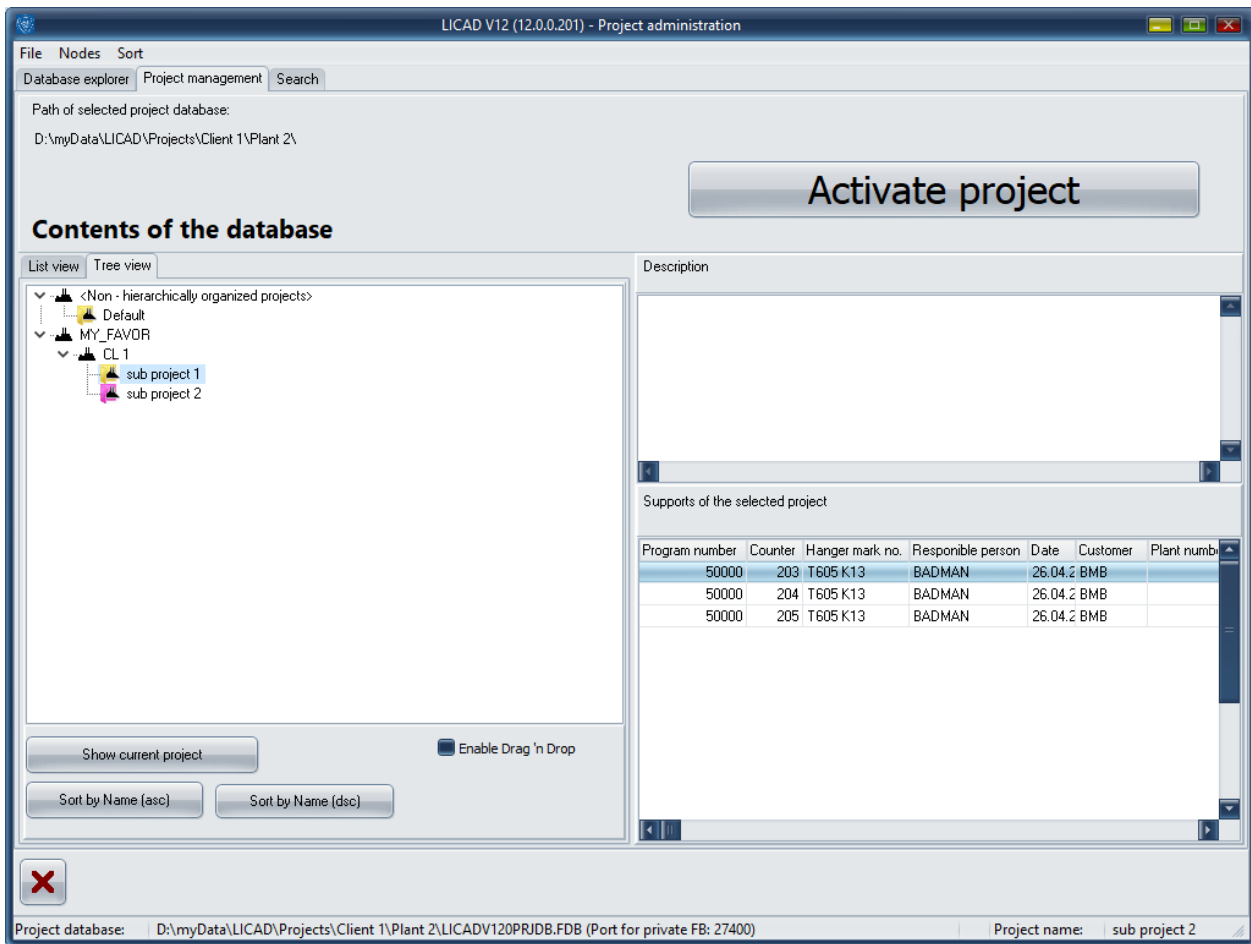
You actually have two or more project files

or else

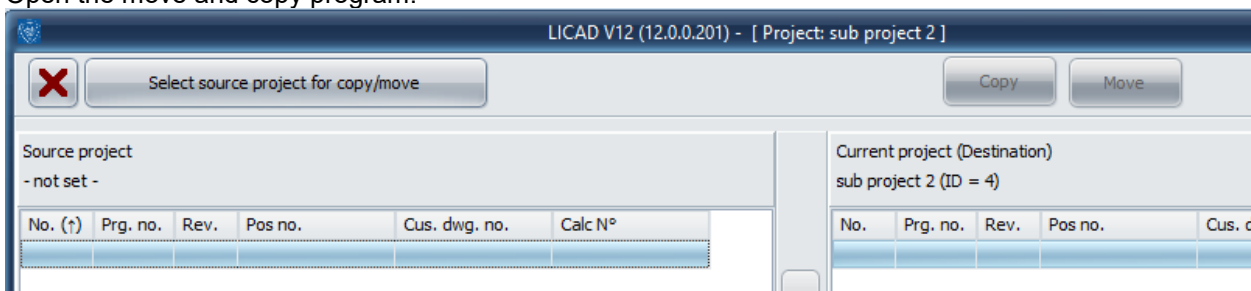
one project file with two or more projects.

To move drawings from one project file to another, use the LBF IN/OUT (LICAD Backup File) functionality. You can create several project files in LICAD and switch between them.

The other possibility is to have several projects in one file. This could look like this:

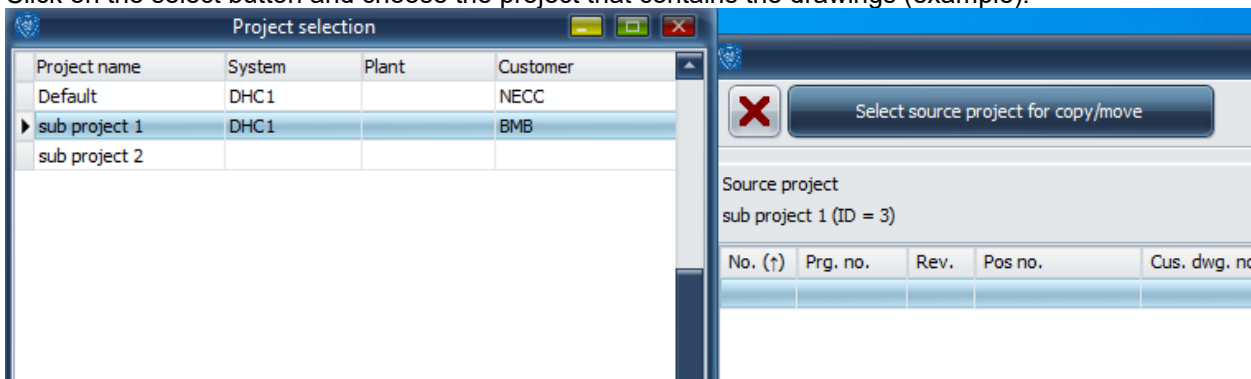


To move drawings, switch to the project you want to include the drawings in. Open the move and copy program:

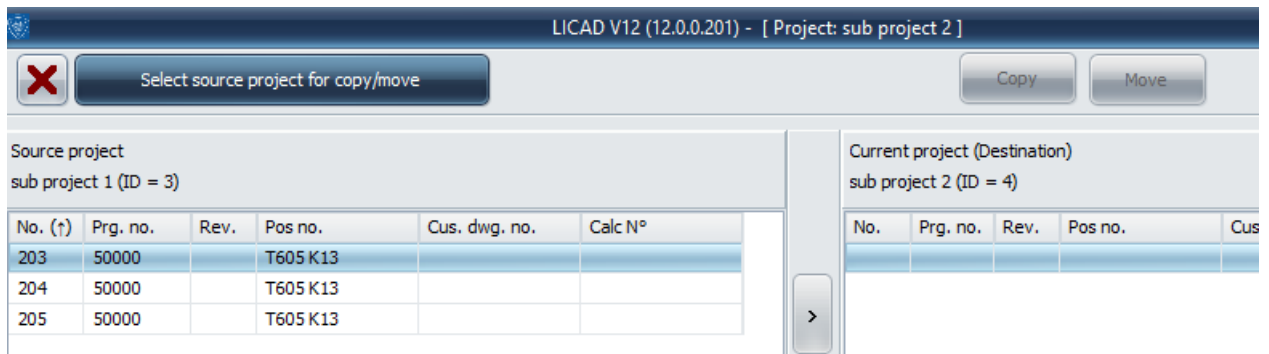


The right window is the currently set project. In the left window, you still have to make settings.

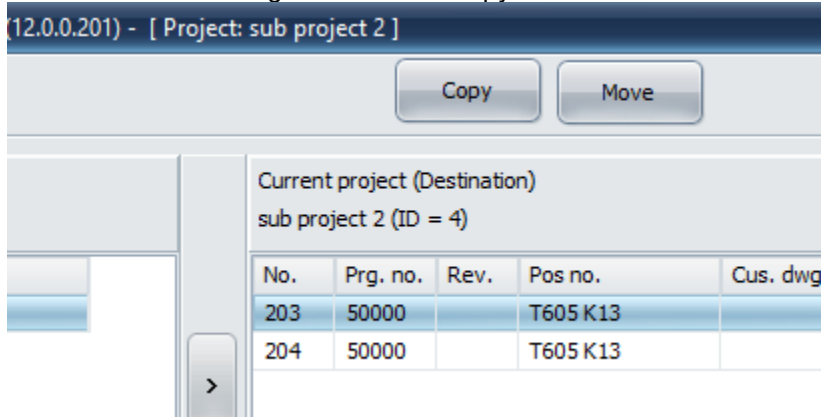
Click on the select button and choose the project that contains the drawings (example):



Click Select in the selection window and you will see this (example).



Now select the drawings and choose Copy or Move:



**A note on copying:** In LICAD it is not possible to have two drawings with the same drawing number in one project file. Therefore, when copying, the numbers are changed or created.

## 4.8 Determining number of drawings

The number of drawings in a project is displayed in the status bar of diverse selection windows, as exemplified in the next screen.

No. (↑)	Prg. no.	Rev.	Pos no.	Cus. dwg. no.	Calc N°
1	50000		49IP036FP		
2	50000		HD Constant only		
3	50000		HD Constant with brack		
4	50000		HD Set up spring incl.		
5	50000		CH with bracket no pr		
6	50000		375111-6		
7	50000		366653-6		
8	50000		366655-73		
9	50000		362751-4		
10	50000		362751	3L2751-05	
11	50000		362751	Inlay angewählt	
12	50000				
13	50000		44275A		
14	50000				
15	50000		482741		
16	50000		482741	482741-IP	
17	50000				
18	50000				
19	50000				
20	50000				
21	50000				
22	50000		00CWC-WC-0021-PSC		INSIDE
23	50000		00CWC-WC-0021-PSC		INSIDE
24	50000		01CWC-WC-0020-PSC		INSIDE
25	50000		00CWC-WC-0021-PSC		INSIDE
26	50000		00CWC-WC-0021-PSC		INSIDE
27	50000		01CWC-WC-0020-PSC		INSIDE
28	50000		366655-73		A2
29	50000		PS34R		
30	50000		PS34T9		
31	50000		FS001		
32	50000				

Number of records: 32

Figure 24: Display of number of drawings

## 4.9 Backup and copy drawings

With the program item 'Create backup of stored drawings' three functions are made possible: The *saving* of drawings, or preparing drawings for an electronic order or transferring them to another LICAD user.

The program is called up from the main screen under the menu 'File - Create backup of stored drawings'.

**Note:** Special attention is drawn to the possibility of electronic ordering.

On transfer, supplements to the parts lists are also copied into the security file together with the drawings data from the current project directory.  
 Save data at regular intervals. Unfortunately, computers tend to crash at unexpected moments!

The drawing data are stored in one archive file. How does the process work? The relevant drawings must first be selected from the left-hand selection window and put in the window on the right. The target directory for securing data is to be determined in the directory window. A file name is to be entered after

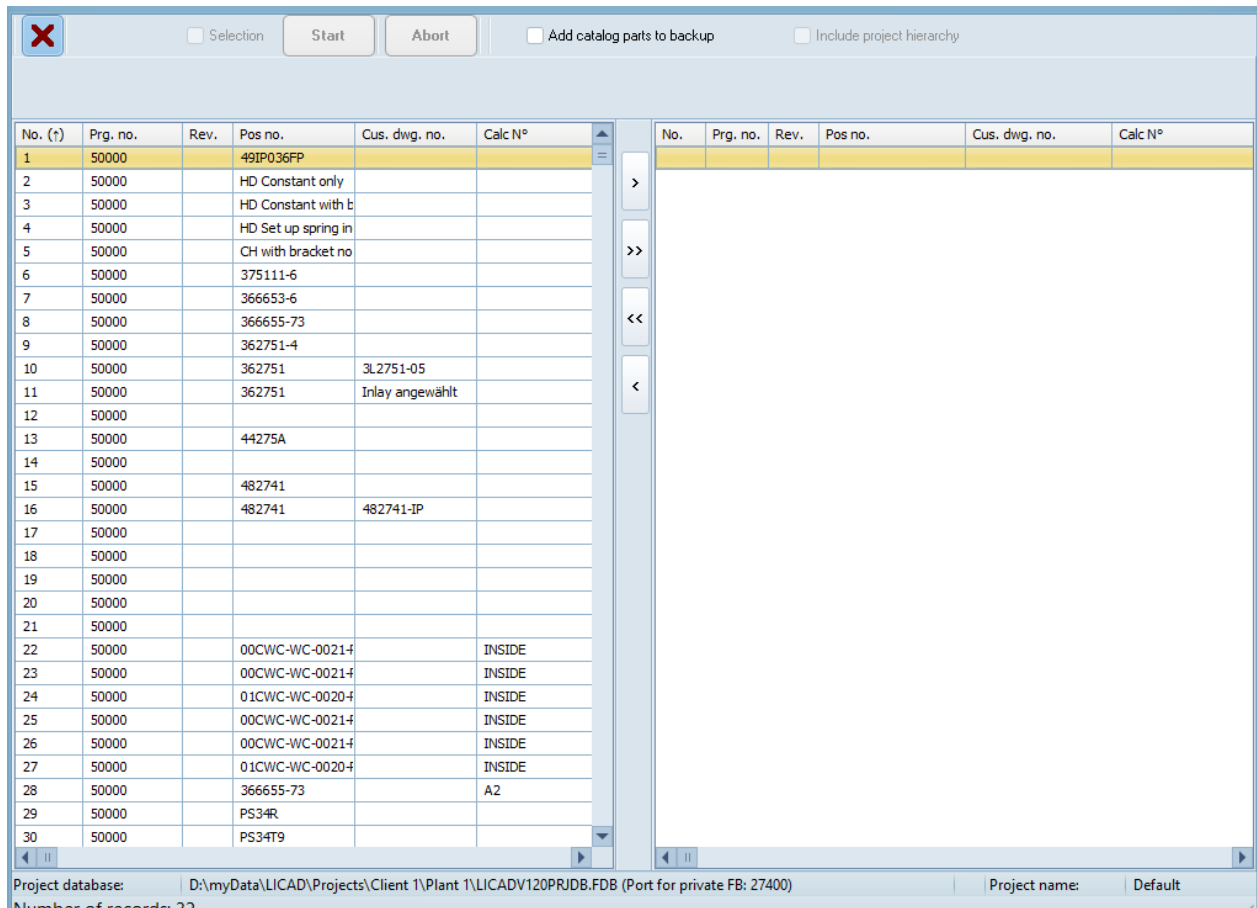


Figure 25: Screen for saving data

pressing the 'Begin' button. The file will get the ending LBF automatically.

## 4.10 Reading in backed up drawings

To feed back (saved) drawings select the appropriate directory and archive file (\*.LBF). Check to see whether old drawing numbers (possibly with a higher revision number) could be overwritten. All or only part of the drawings can be fed back from the archive.

It does not matter from which LICAD user the drawings come. The content of the archive can be looked at with the relevant program item. First, check the current project directory.

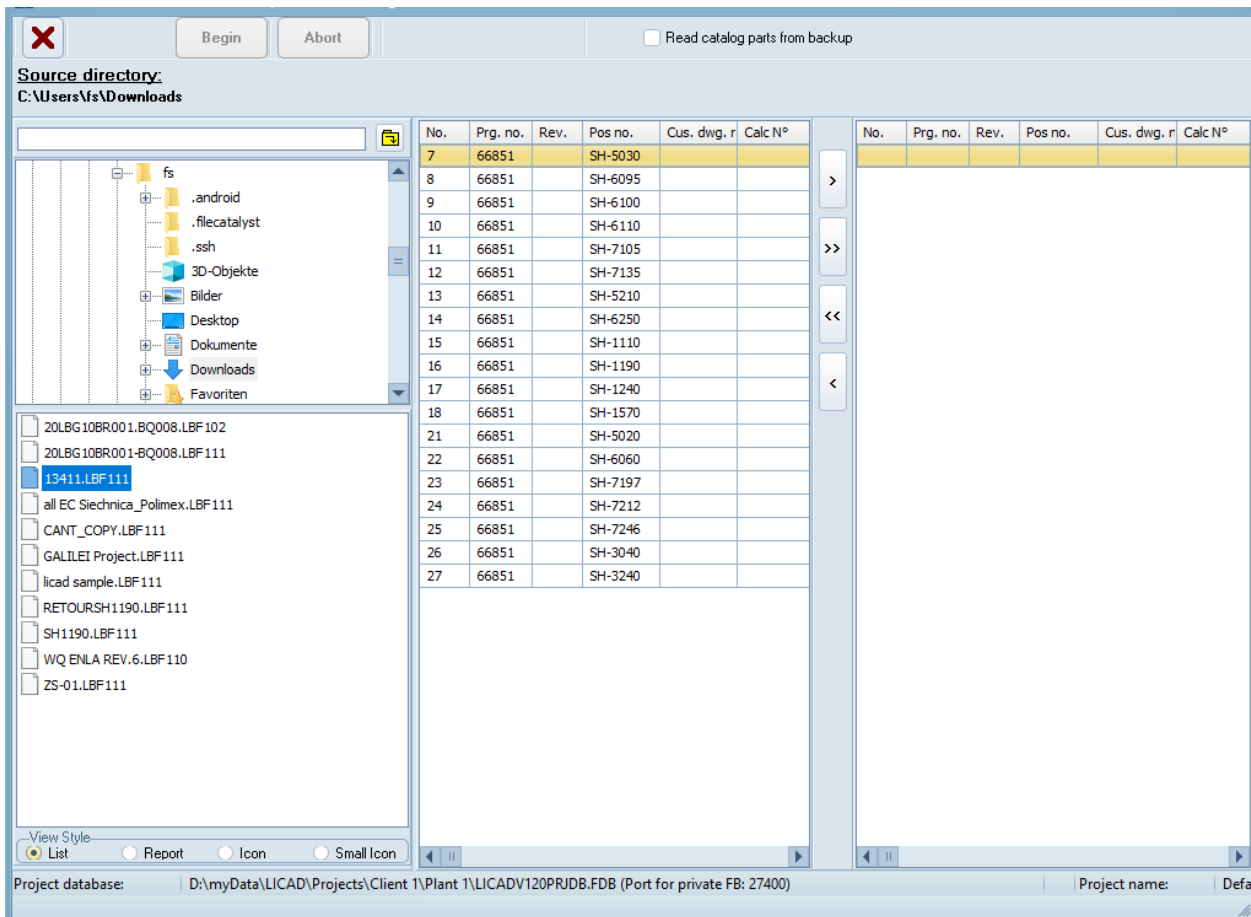


Figure 26: Control screen for reading back stored drawings

In the lower left-hand window a selection of archive data appears with the ending ‘\*.LBF’. To have drawings from an archive file displayed, click on an LBF file and it will be shown in the middle window.

### 4.11 Sending drawings by e-mail

Drawings can be send by e-mail, if a mail program is installed, using the MAPI interface (e.g.. MS-Outlook or MS-Outlook Express).

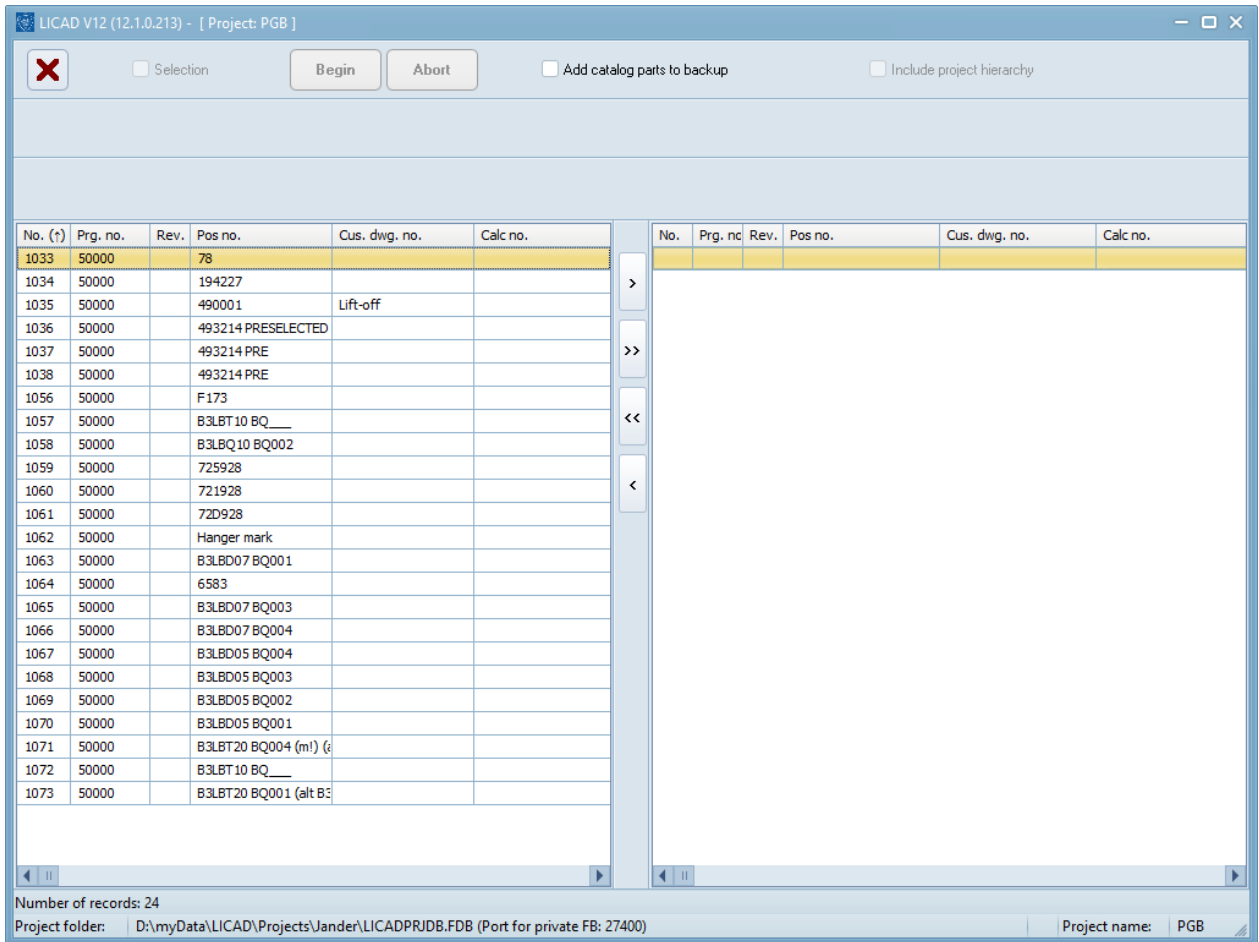


Figure 27: Send drawings by e-mail

Select the drawings as usual that are to be sent, then press 'Start' button. The drawings selected are thereby stored and transferred as attachments to the E-mail program. The window for sending a new message is opened automatically. Enter the receiver here. In the e-mail text, this list of the transferred drawings is issued automatically.

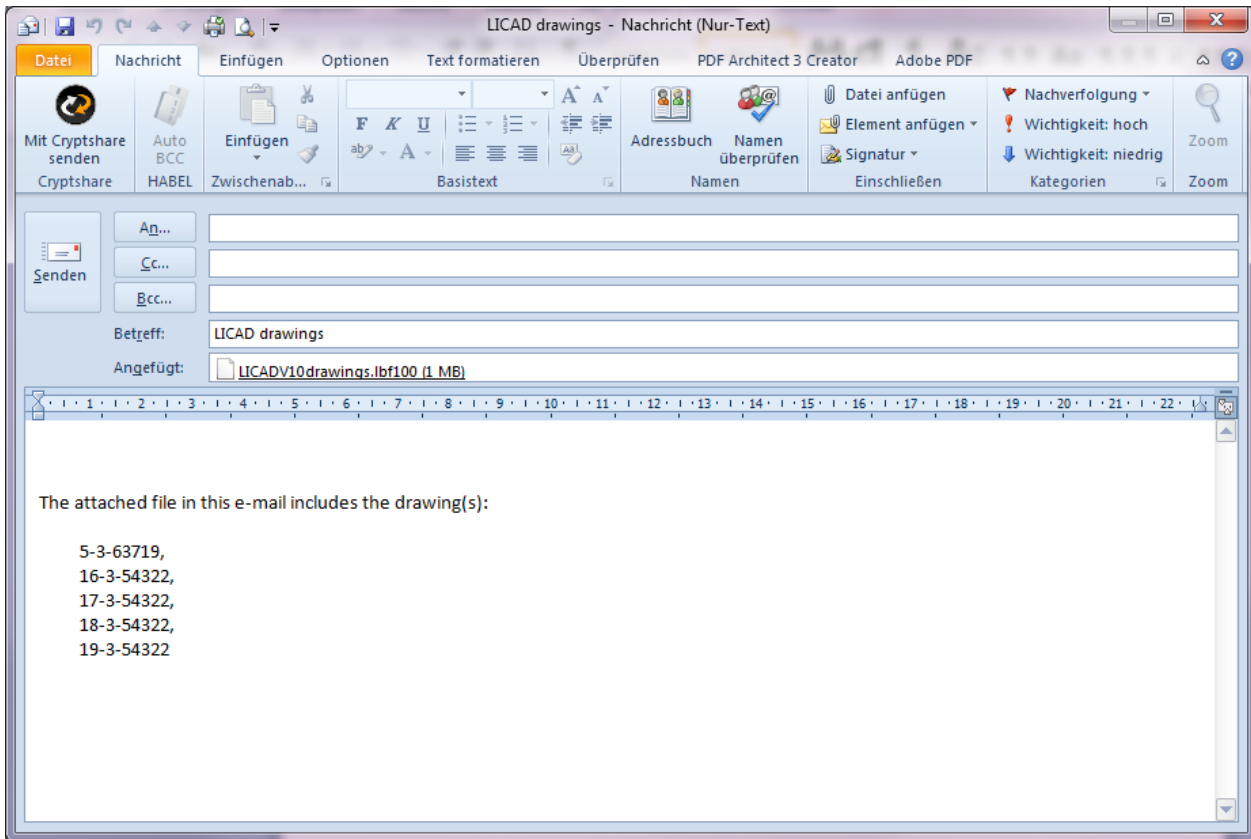


Figure 28: 'Send e-mail' window of the mail program

## 4.12 Selection of drawings

The program is called up from 'Main screen- File menu - Select drawings'.

The selection of drawings aims to simplify drawing management. Seven different parameters can be set according to Figure 29. The search process starts via the 'GO' button. The drawing selection is stored via the 'Save' button.

Dwg. no.	Fig.Id.	Plant	Rev.	Hanger mark no.	Customer drawing no.	Calculation point	Project manager
1	50000			49IP036FP			
2	50000			HD Constant only			
3	50000			HD Constant with bracket			
4	50000			HD Set up spring incl. plate			
5	50000			CH with bracket no protection			
6	50000			375111-6			
7	50000			366653-6			
8	50000			366655-73			
9	50000			362751-4			
10	50000			362751	3L2751-05		
11	50000			362751	Inlay angewählt		
12	50000						
13	50000			44275A			
14	50000						
15	50000			482741			
16	50000			482741	482741-IP		
17	50000						
18	50000						

Figure 29: Screen for drawing selection

The stored selection can be activated in the other Customer programs by checking on the selection field (see picture below).

N°	Fig.N°	Pos.No.
11	20000	LWQ23A1
12	20000	LAQW123
13	20000	LAQW123

Figure 30: Activating the drawing selection

LICAD notes the setting of the selection field. If the option is activated in a program part, it stays active until it is switched off again. At the start of the program, the stored setting is reactivated. At the end, the last setting is stored.

For searching so-called place holders or wild cards can be used. For example, the entry **ABC%** would filter all drawings with the combination **“ABC”**. Or **%A0%** would filter all drawings having an A at the second place and an **0** at the third.

### 4.13 Importing pipe support data

Support arrangements can also be created automatically if a corresponding EXCEL tables or text files list with data are available. For this, the program 'Import supports data' is accessed from the main menu. The following window then appears:

**Note:** The programs IsoGen/Hexagon, PASS/START-PROF, AutoPIPE/Bentley and ROHR2/Sigma provide special export files that can be read in directly here.

The reading program module is accessed from the main window by way of the menu entry 'Read support data' in the file menu. After that the following window appears:

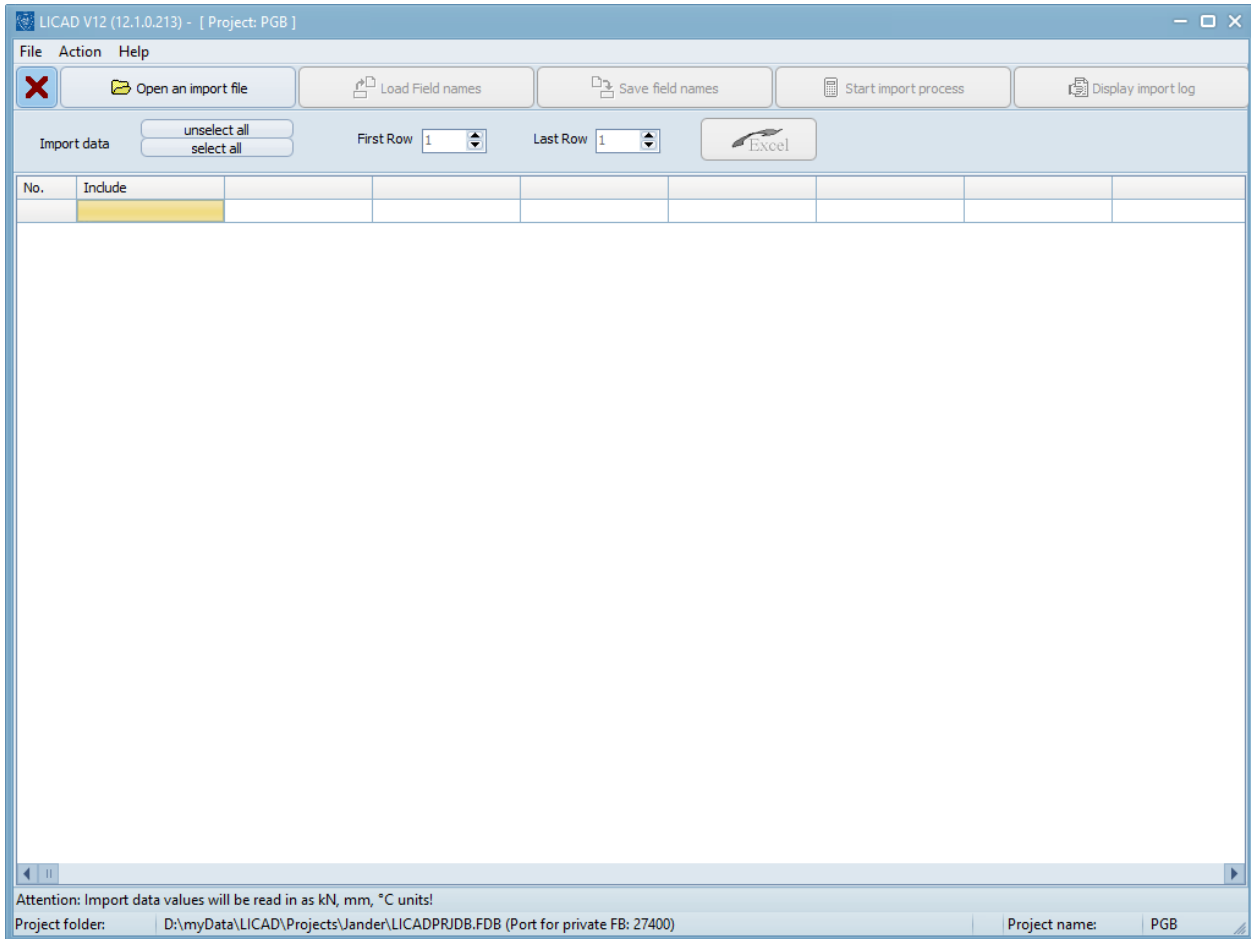


Figure 31: Importing configuration data from an Excel table

### 4.13.1 Procedure for reading in support data

The first step is to open a file with bracket data using the "Open an import file" button. This process is started automatically the first time the program is started and at least one of the file extensions shown above should be recognized.

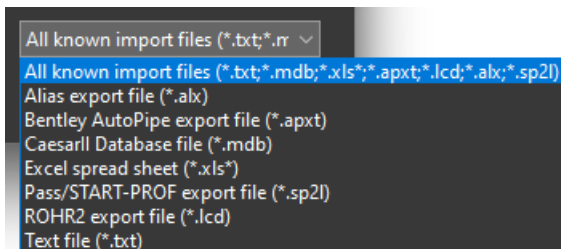


Figure 32: Various file types with possible data for reading into LICAD

After opening the import file, a window for the possible import settings is displayed.

The following is an example of an import from an EXCEL file. If the file is already formatted, the program must be informed that the column headings are to be taken from the file (see image below).

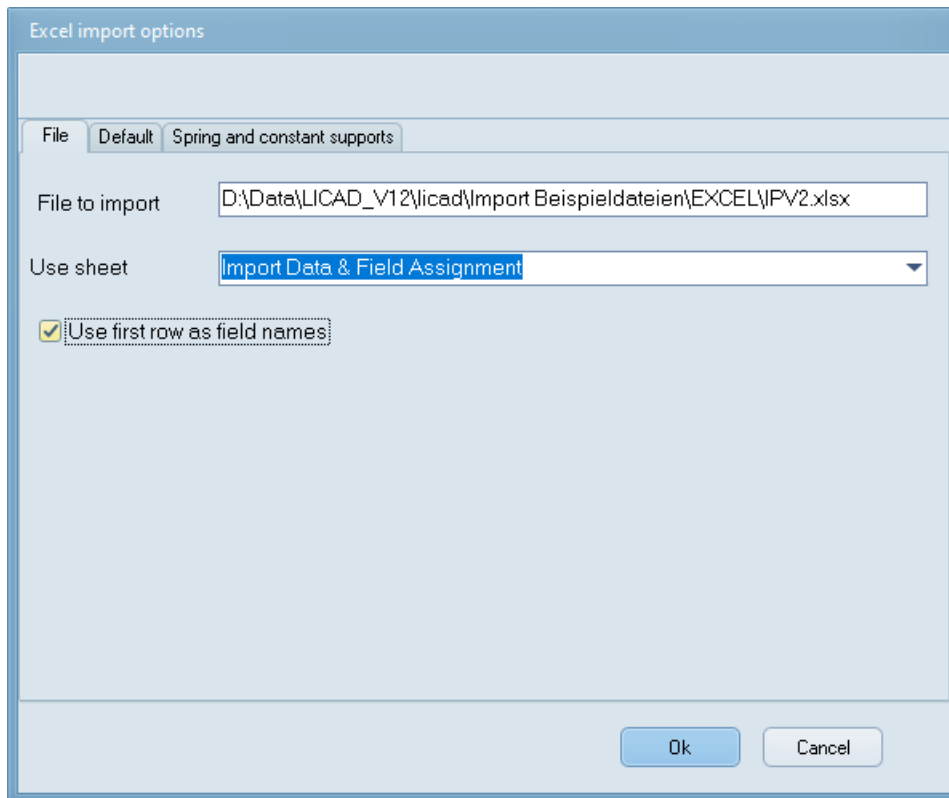


Figure 33: Import options - part 1

If there are several sheets in the EXCEL file, the respective active sheet must be selected.

Some "defaults" can also be set. If, for example, no installation heights are known in the calculation program, a value can be specified for this during import. This also applies to brackets for which a width specification is required.

If Feet or Inch values are used in the import file, the symbols for these should be checked.

**Note:** For riser clamps, a selection care be made between trunnions and shear lugs

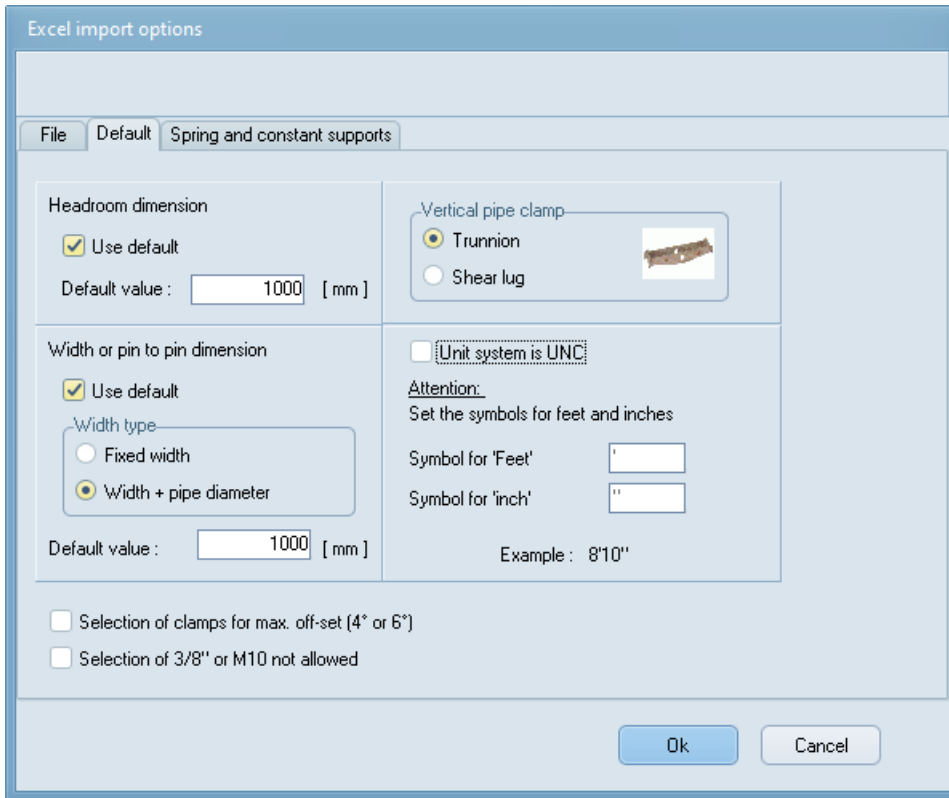


Figure 34: Import options - part 2

Under the third tab, specific settings can be made for the designs of spring and constant hangers or supports.

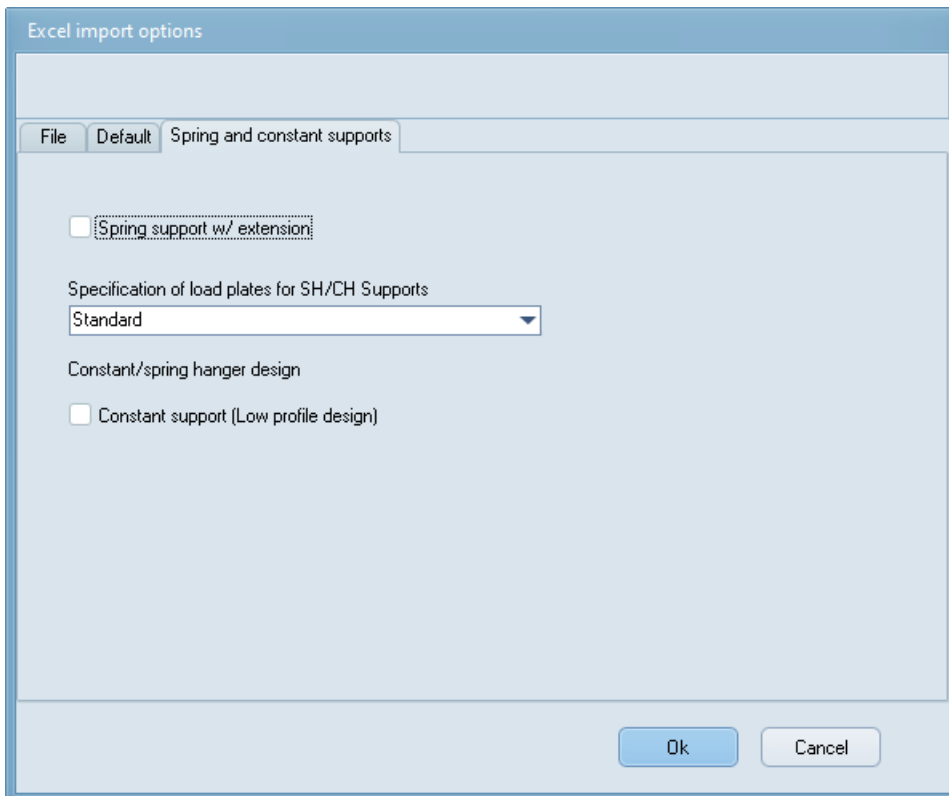


Figure 35: Import options - part 3

**Note on text files:** the data must be separated by semicolons.

**IMPORTANT:** A column with the support configurations is to be defined. These must conform according to section 6.2 in the manual.

**IMPORTANT:** Before importing, check and set the general options in LICAD.

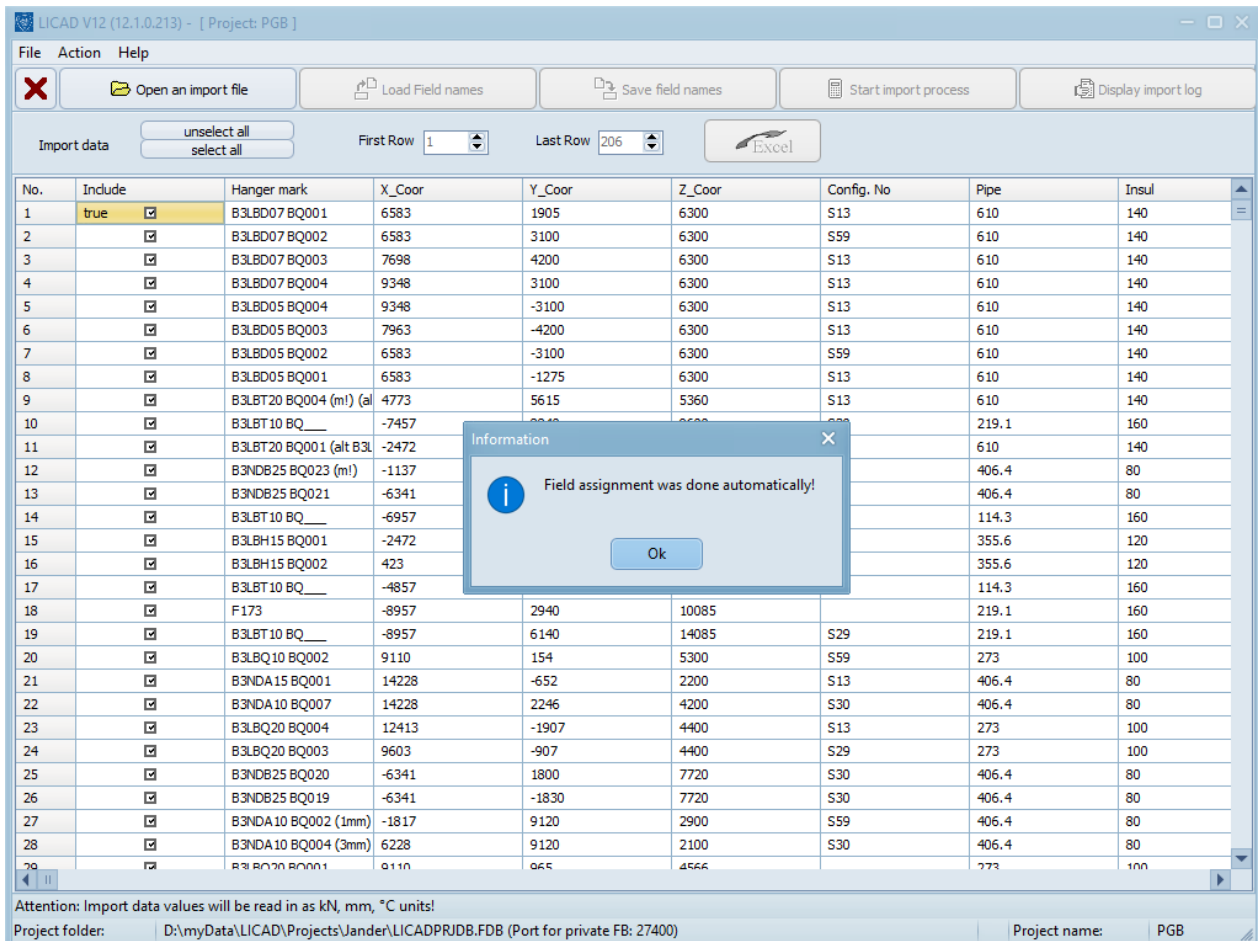


Figure 36: Example of an EXCEL file template

The example above shows the screen for an EXCEL table that already contains the column headings in the first row.

If the column headings have not yet been defined, follow the descriptions in the section: Defining the column headings.

Use the "First line" and "Last line" fields to specify which data is to be read in.

**Note:** Individual rows can be excluded for import in the "Included" column.

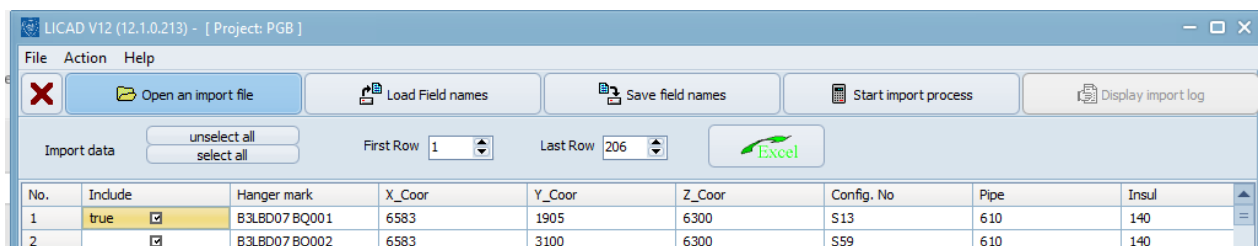


Figure 37: The data of the file is displayed

In the example shown above, the data is now available and the import process can be started using the "Start import process" button.

If problems occur during the calculation, these are logged. A screen with the import log is then called up automatically if errors or warnings occur during the calculation.

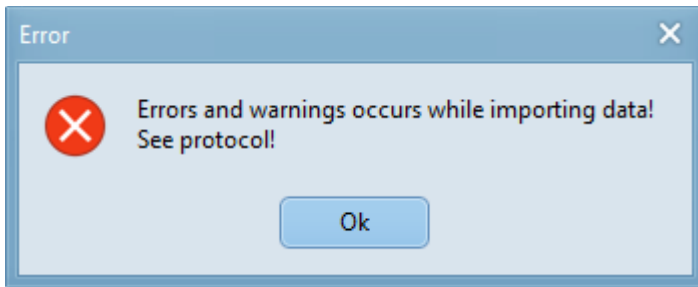


Figure 38: Error message

The window shown above indicates the following information.

### 4.13.2 Data import protocol

The import log displays notes collected during the import process in a graphical and a detailed view.

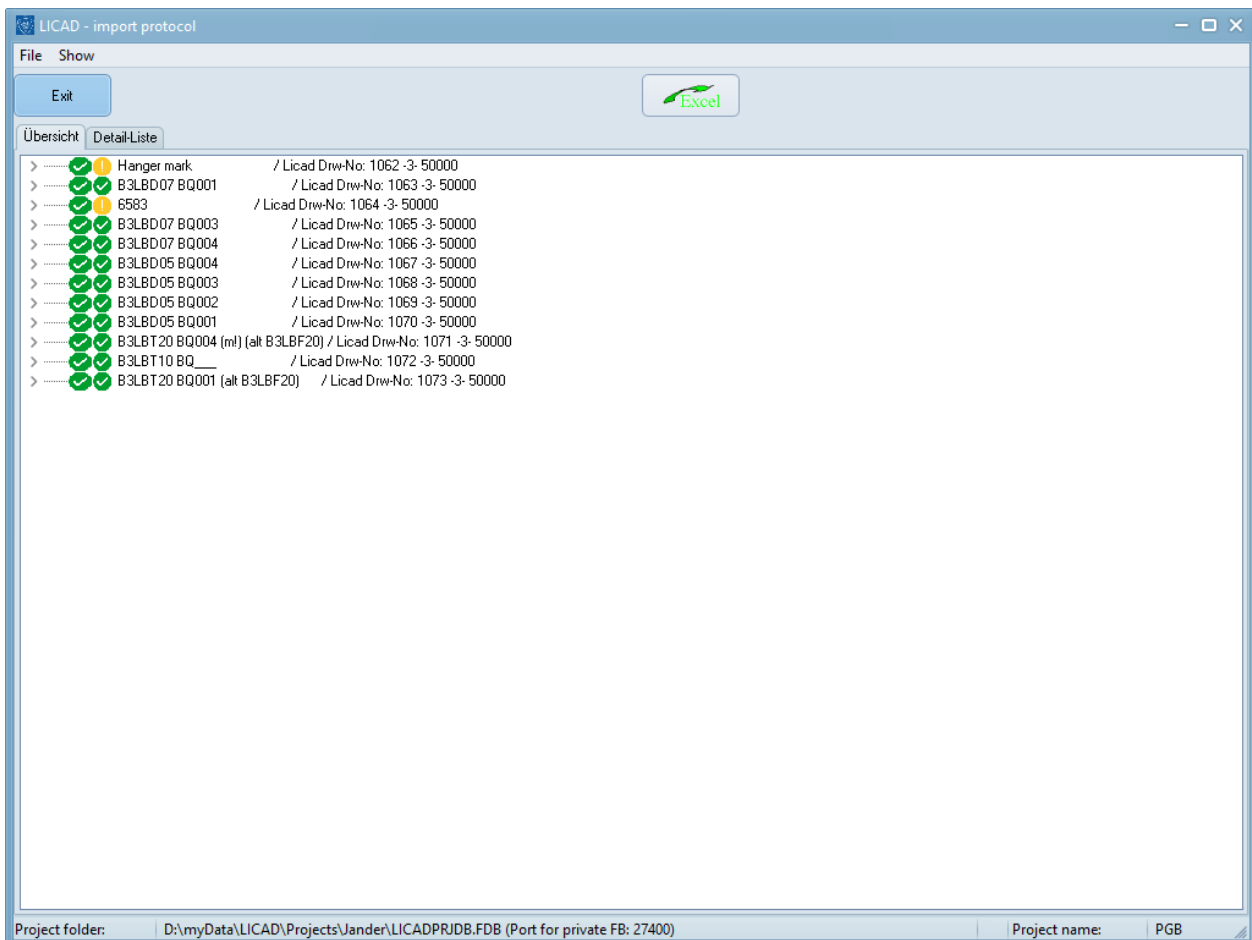


Figure 39: Import log in graphical view

Further selection options are available in the following screen: These are assigned to the buttons "Show all", "Show correct imports", "Show warnings & errors", "Show errors only", or "Show warnings only".

As in many other programs, the "Excel" button is used to export the displayed data to Excel.

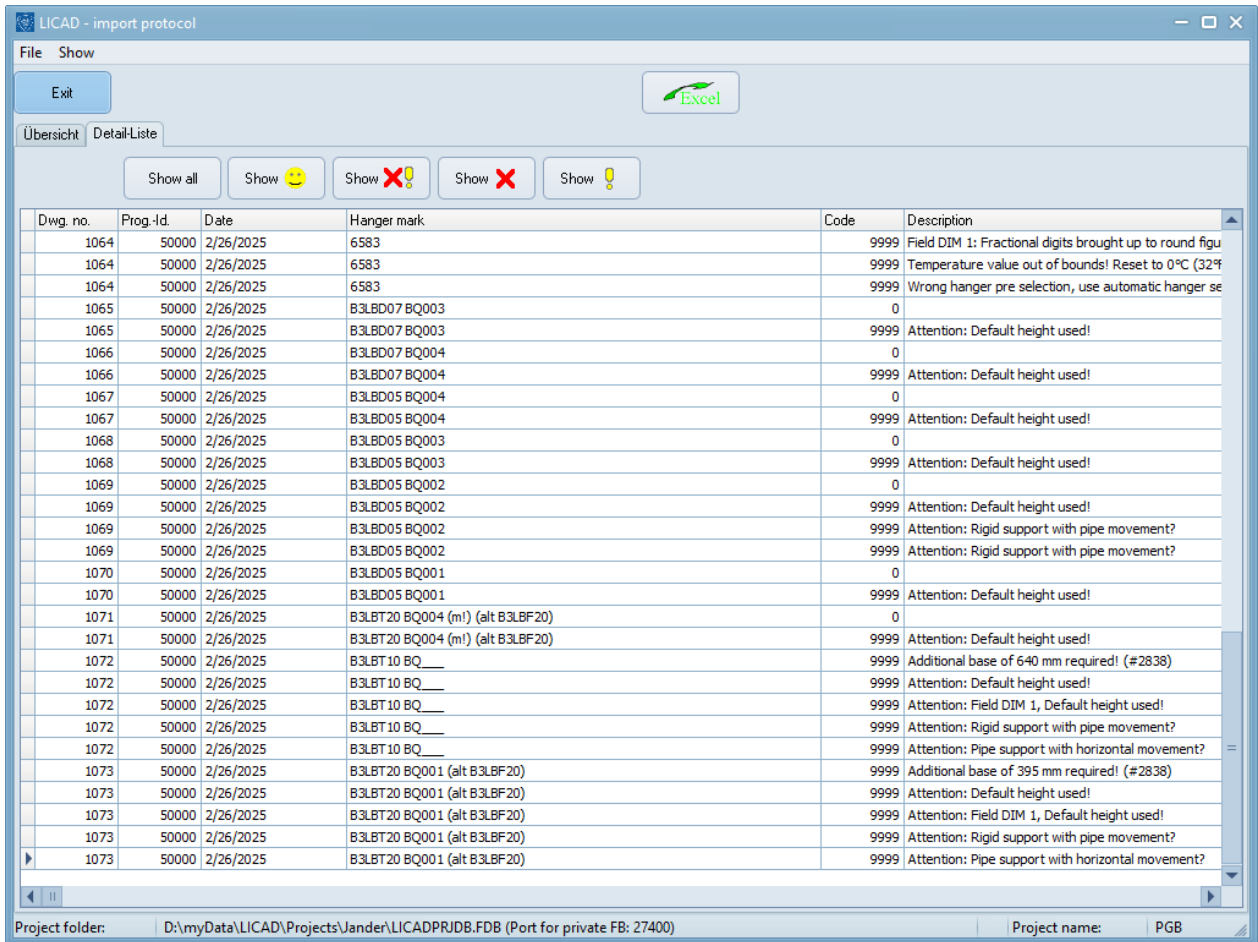


Figure 40: Import protocol with detailed information

### 4.13.3 Defining the column headings

The column headings must be defined before importing. To do this, click on the respective title line of a column.

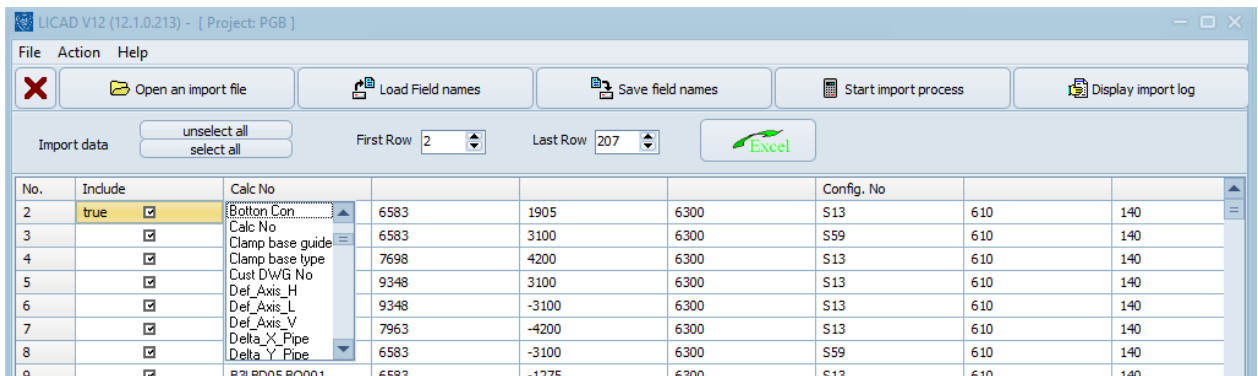


Figure 41: Assign headings to the columns

Select an appropriate entry (load, temperature, etc.) from the drop-down menu that then appears. Not all columns need to be defined, it is sufficient if the essential data for the design of a support (such as load, pipe diameter, temperature, Z-travel, support configuration and installation height) is available.

**Note:** The column headings are assigned automatically except for text and EXCEL files.

**Note:** Type 75 weld-on lugs are preset for the building connection, unless this is defined in the table itself.

**Note:** The column headings defined by the user can be stored in a file for later use (see below).

The "Info" button displays the import log together with the LICAD drawing numbers for the imported data. Furthermore, incorrectly converted drawings can be filtered out using an error code number.

Drawings with an error code number can be corrected accordingly in the "Change" menu item on the main screen.

#### 4.13.4 Storing and loading selection of column headings

The definition of column headings can be stored in a file. For this, click on the button 'Save field names' and choose a name for the file in the file save menu then appearing. The ending 'LFG' will be automatically added to the file name.

To download a file with information on the column headings, the button 'Load field names' is provided.

**IMPORTANT:** An installation height (ELEV X) and an installation difference (DIM X) can be used simultaneously as column headings. Then the installation differences are first taken over. If data are also available for the installation heights of a support, these are automatically applied.

#### 4.13.5 Transferring data from older LICAD versions

It is possible to export support data from LICAD. This can be called up via the program menu "Support data to ASCII". It is then possible to import this data back into the latest LICAD version.

**Important:** The new parts lists may have different article numbers to older ones. This is due to the fact that the LISEGA catalog 2010 or older was used as the basis before version 10.0.

The settings of the technical specifications for the selection of brackets must be set before import.

#### 4.13.6 Meaning of abbreviations for the column headings:

Axis 1	Marking of 1 axis in location plan (max. 5 places)
Axis 2	Marking of 2 axis in location plan (max. 5 places)
Axis 3	Marking of 3 axis in location plan (max. 5 places)
Axis 4	Marking of 4 axis in location plan (max. 5 places)
Base clamp type	Multi guided clamp base index( 0 = Standard   G2A = 2-way (right angle)   G2P = 2-way (parallel)   G3 = Triple-way   G4 = Quadruple-way )
BEWEGBER	Max. permissible travel for spring hangers
Botton Con	Lower connection part, if the support is designed without a clamp. (0,60, 61, 74, 63, 73, 75)
Calc No	Number of the Calculation point (max. 32 digits)
Clamp base guide/liftoff	Guide options (Possible values: LIFTOFF, GUIDE, Fx1.0, Fx1.7, Fx2.8, Fx4.7, <Beam-Name>)
Clamp base type	Clamp base type: Allowed values: 49 or 57
Config. No	Number of support configuration (see manual 6.2) Start with "S" for static supports, e.g. S13 Start with "Y" for dynamic supports, e.g. Y01 Start with "C" for so-called cold supports (C01 = U-bolt)
Cust DWG No	Customer drawing number (up to 25 digits)
Def_Axis_H	Co-ordinate cross description axis H
Def_Axis_L	Co-ordinate cross description axis L
Def_Axis_V	Co-ordinate cross description axis V
DIM 1	Difference installation height 1 (one or more differences are needed according to the configuration)

DIM 2	Difference installation height 2 (one or more differences are needed according to the configuration)
DIM 3	Difference installation height 3 (one or more differences are needed according to the configuration)
DIM 4	Difference installation height 4 (one or more differences are needed according to the configuration)
Dist A	Location plan: Distance between 1. axis and center of pipe
Dist B	Location plan: Distance between 2. axis and center of pipe
Dist C	Location plan: Distance between 3. axis and center of pipe
Dist D	Location plan: Distance between 4. axis and center of pipe
Drawing N°	LICAD drawing number (e.g. for taking over data from another LICAD version)
Dyn. load H	Dynamic Load (Load case H)
Dyn. load HS	Dynamic Load (Load case HS)
Dyn. load HZ	Dynamic Load (Load case HZ)
Dyn. move horizontal	Horizontal Pipe Movement (Display only value, value not taken into account in part selection!)
Dyn. move lateral	Lateral Pipe Movement (Display only value, value not taken into account in part selection!)
Dyn. move negative	Movement of shock absorber piston (negative direction = length decreases)
Dyn. move positive	Movement of shock absorber piston (positive direction = length increases)
Elev 1/L	1st height notation or left-hand notation in double structural attachment.
Elev 2/R	2nd height notation, or right-hand notation in double structural attachment
Elev 3	3rd height notation, or right-hand notation in double structural attachment
Elev 4	4th height notation, or right-hand notation in double structural attachment
Elev 5	4th height notation, or right-hand notation in double structural attachment
FDIFF	Load difference
Hanger mark	Hanger mark number or KKS etc. (max. 32 digits)
Hng_Type	Specification of the type of hanger (Input of a six-digit hanger type number, but limited to Type 11, 21 or 39. Other types are determined by the hanger configuration.)
Hydro Load	Load (e.g. for hydro static test load)
Info 1	Text for add. Information line 1
Info 2	Text for add. Information line 2
Info 3	Text for add. Information line 3
Insul	Pipe insulation thickness
Load	Cold or hot load (depends to specification settings)
Load type	Input load is hot or cold load
Move X	Pipe movement into pipe direction
Move Y	Pipe movement laterally to pipe direction
Move Z	Pipe movement in vertical direction
Option Inlay plate/Coreflex	Add. Pipe Connection Material (Possible values: INLAYPLATE, COREFLEX or STANDARD)
Pipe	Pipe diameter
Qty	Number of supports
Rot_Z_Turn	Rotation round vertical axis (L3D export)
Stanchion Feet att.	Stanchion Feet att. (Allowed Chars: (V)ertical load / (S)liding / (F)ixed)
Temp	Medium temperature

Top Con	Structural attachment type (73, 74, 75, 76, 78 if option 'Selection with connection parts to building structure' is set, otherwise 60, 61, 63)
Type 11/25 feet/plate	Type 11/25 with feet/plate (Allowed values: (Y)es or (N)o)
V_Cl_Type	Vertical pipe clamps (Type 46, 48) . Type 46 includes type 45.
Width	Pin to pin dimension of Trapezes or riser clamps
X_Coor	Reference point (X value) of pipe connection (pipe center point)
Y_Coor	Reference point (Y value) of pipe connection (pipe center point)
Z_Coor	Reference point (Z value) of pipe connection (pipe center point) (X_Coor, Y_Coor, Z_Coor are required for transferring the fixture to PDS or SmartPlant3D, for example)

Table 2: Definition of variables for import

**Attention:** The values taken over are treated as SI or UNC units depending on the setting in the import options.

### 4.13.7 Reading in UNC units

If you have activated the setting, 'Unit system is UNC' in the options, two further input fields appear, with the aid of which the symbols for the foot and inch units can be stipulated. The symbol system, as it is applied in LICAD, is preset.

The import routine can recognize the UNC data in the following formats:

Format	calculated value
<whole number ><symbol for foot units> <real number><inch symbol>	consisting of foot and inch value
<whole number ><symbol for foot units>	consisting only of foot value
<real number><inch symbol>	consisting only of inch value
<real number>	consisting only of inch value

Table 3: Possible format settings for UNC values

It can be seen from the table above that the import routine can automatically import different formats. Due to the possibility of freely defining the units, it should always be possible to import data in UNC units as well.

### 4.14 Export support data into a text or EXCEL file

The following program window can be accessed via the button 'Support data on ASCII' or 'Extended data transfer to EXCEL'.

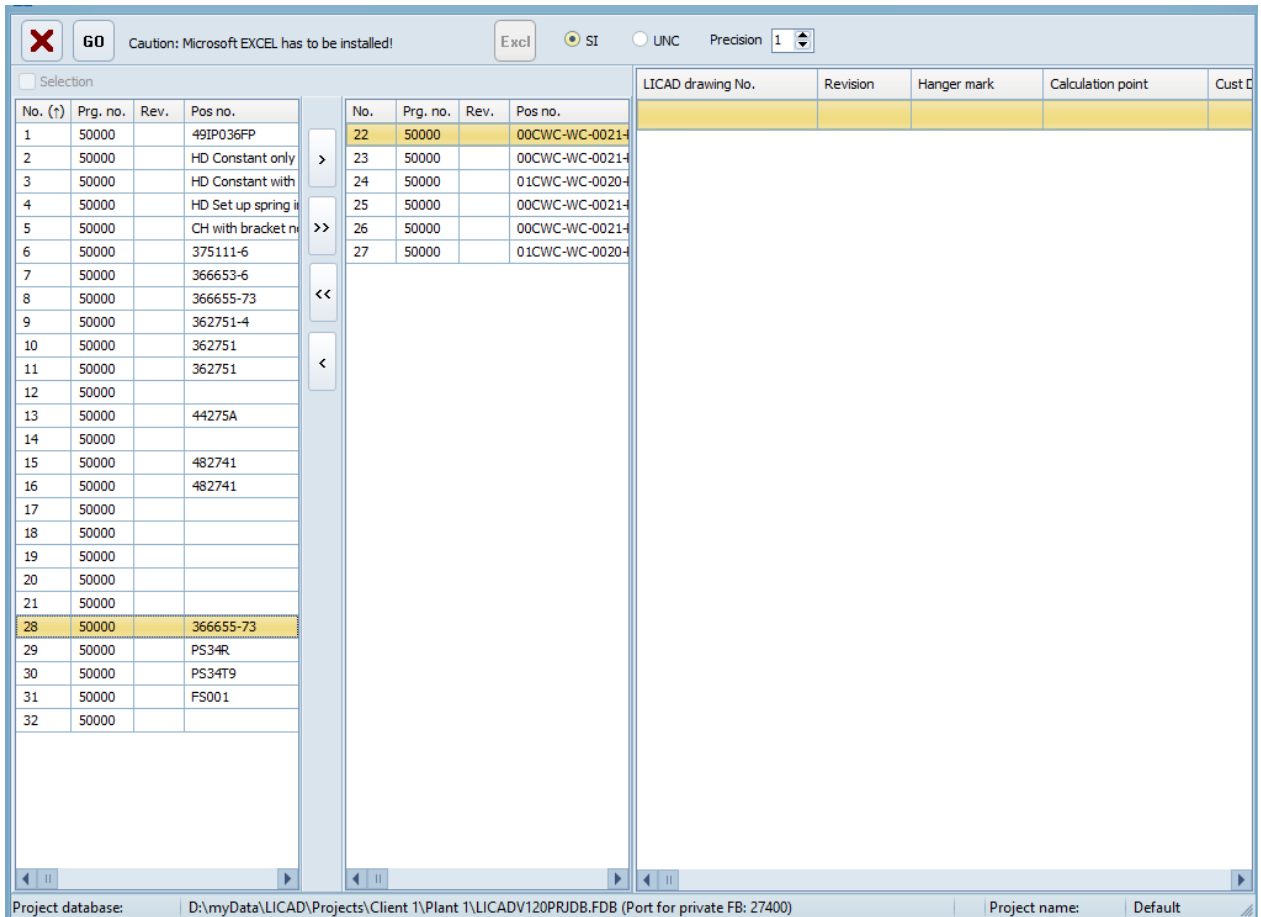


Figure 42: Export configuration data to Excel or a text file

This program point does nothing more than write the data put in by the user into a file. This file can be used among other things to copy LICAD drawings. For this, the program point 'Import support data' can be employed. Further, the file can be used to fill existing project tables with relevant information on the supports.

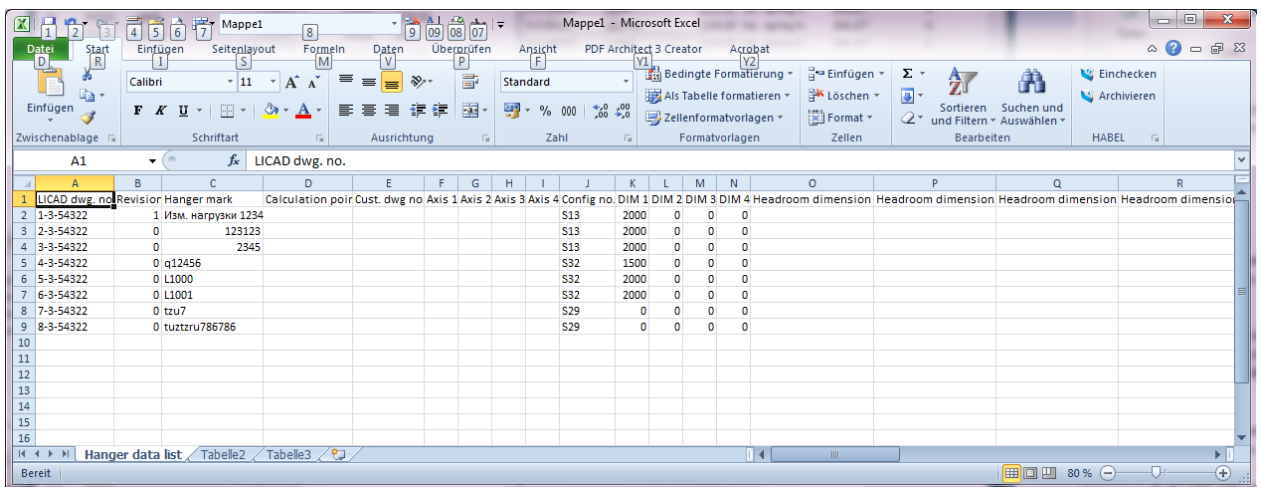


Figure 43 : Exporting configuration data to Excel or a text file

To create a text or EXCEL file a selection must first be made of the LICAD drawings (via the 'Selection' button). The corresponding data are displayed in the window. Next, the TXT or EXCL button is selected, then a name assigned to the file in the file dialog.

**Note:** To use the data for a copy of drawings, the settings for the options should also be secured so that they can be entered again correspondingly later.

### 4.15 Alteration of project data of existing drawings according to the stacking procedure

The project data (preset in the options) are stored with every drawing. This program item can be accessed for the simultaneous amendment of several drawings. Open the editing menu on the main screen and select 'Altering project data'. The corresponding screen mask is structured as follows:

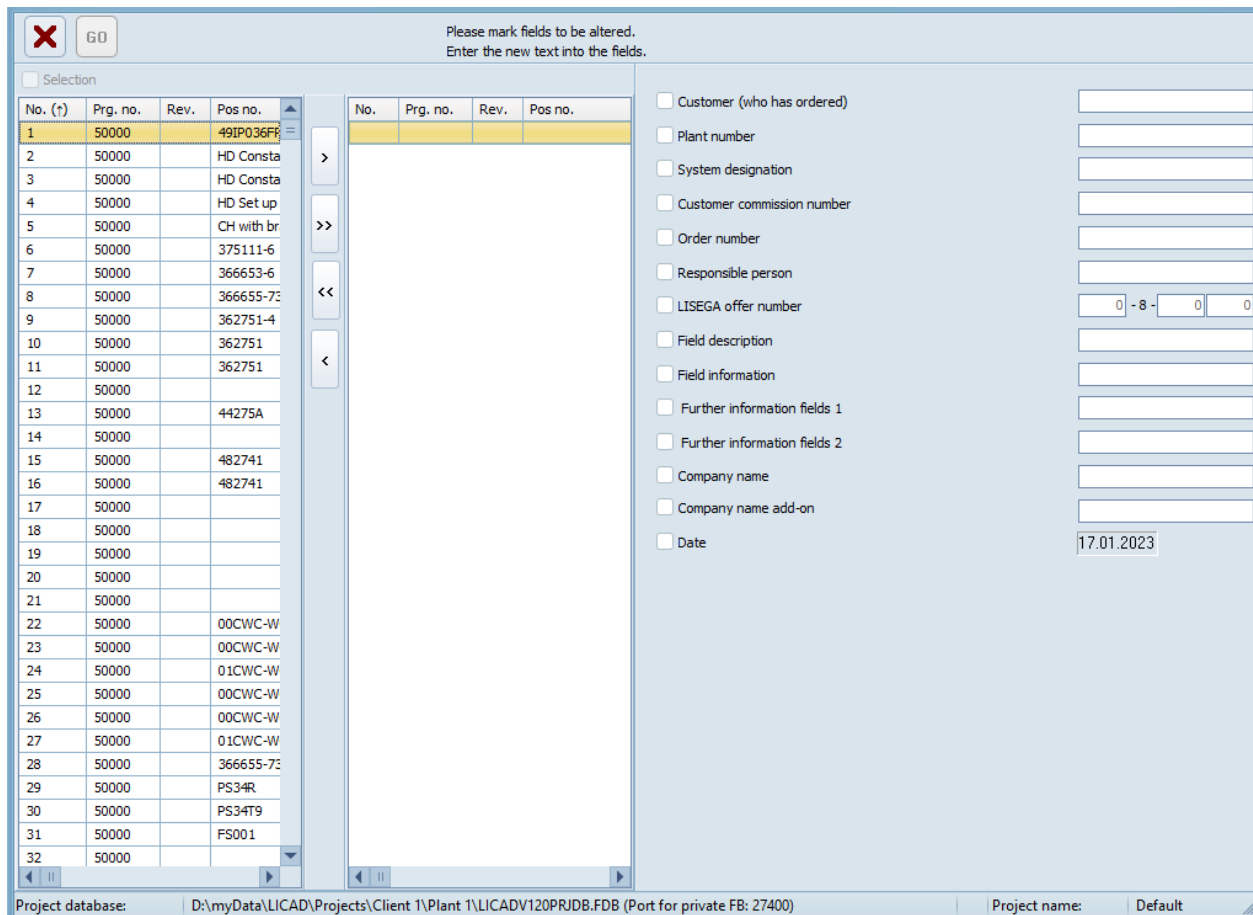


Figure 44: Altering project data in stored drawings

Functioning: Select the drawings to be amended from the left-hand window. Then select the fields that are to be overwritten with a new entry. Then enter the new text in the corresponding fields. Only the marked fields are amended. Important: the drawings are irreversibly amended with the new values.

### 4.16 Deletion of supplementary services

In options, additional services such as preassembly, extra coating of pipe-surrounding components or blocking of spring hangers can be preset. The bills of material are supplemented with the corresponding positions. If for any reason these services are no longer required, the relevant positions can be deleted from the individual drawings at this program item.

Open the 'Edit' menu on the main screen and select 'Delete of additional feats'.

The corresponding screen mask is arranged as follows:

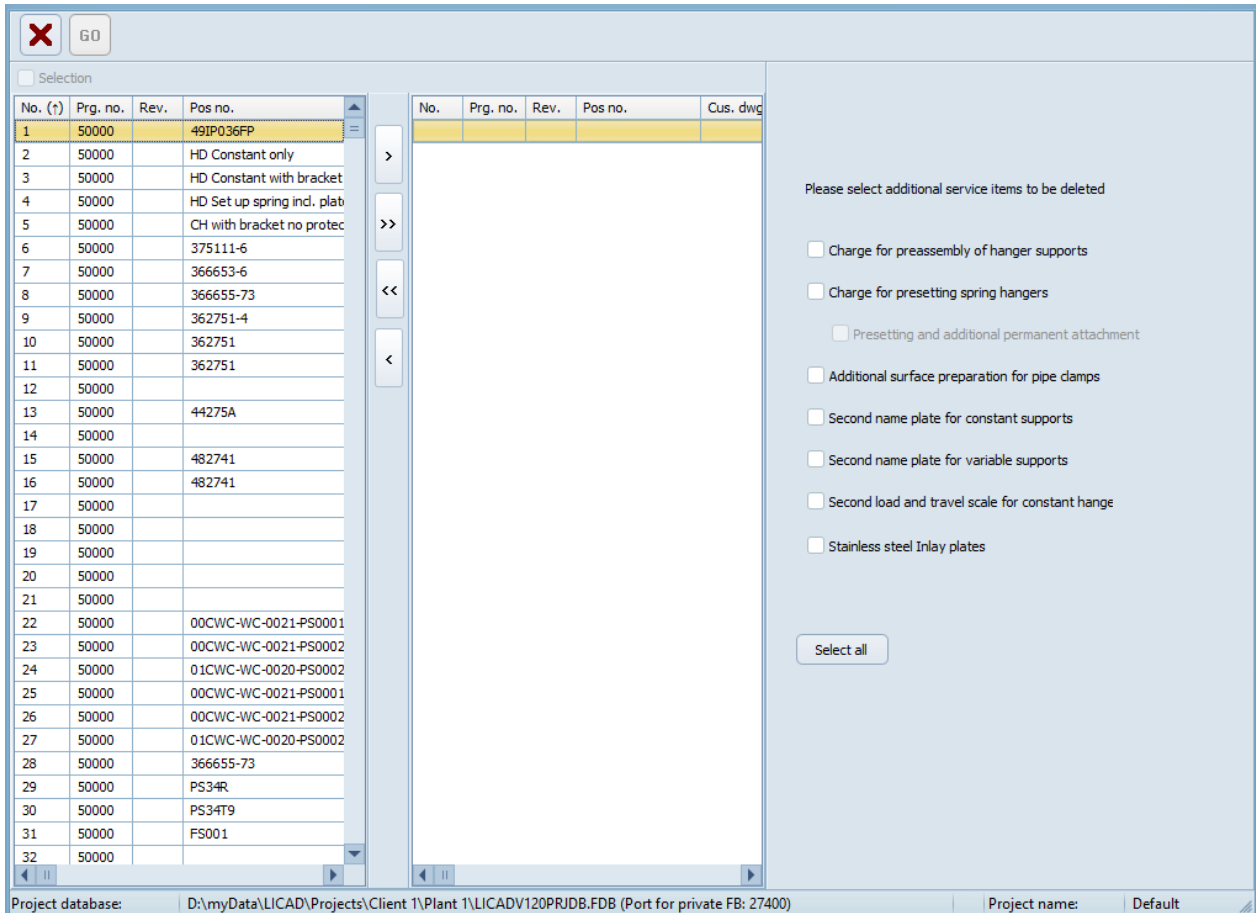


Figure 45: Deleting additional services in stored drawings

Functioning: Select the drawings to be altered from the left-hand windows. Then mark the positions to be deleted from the bills of materials.

**Important:** The positions are deleted irreversibly!

If necessary, make a security copy of the relevant project. See 'Creating a security copy' in this respect.

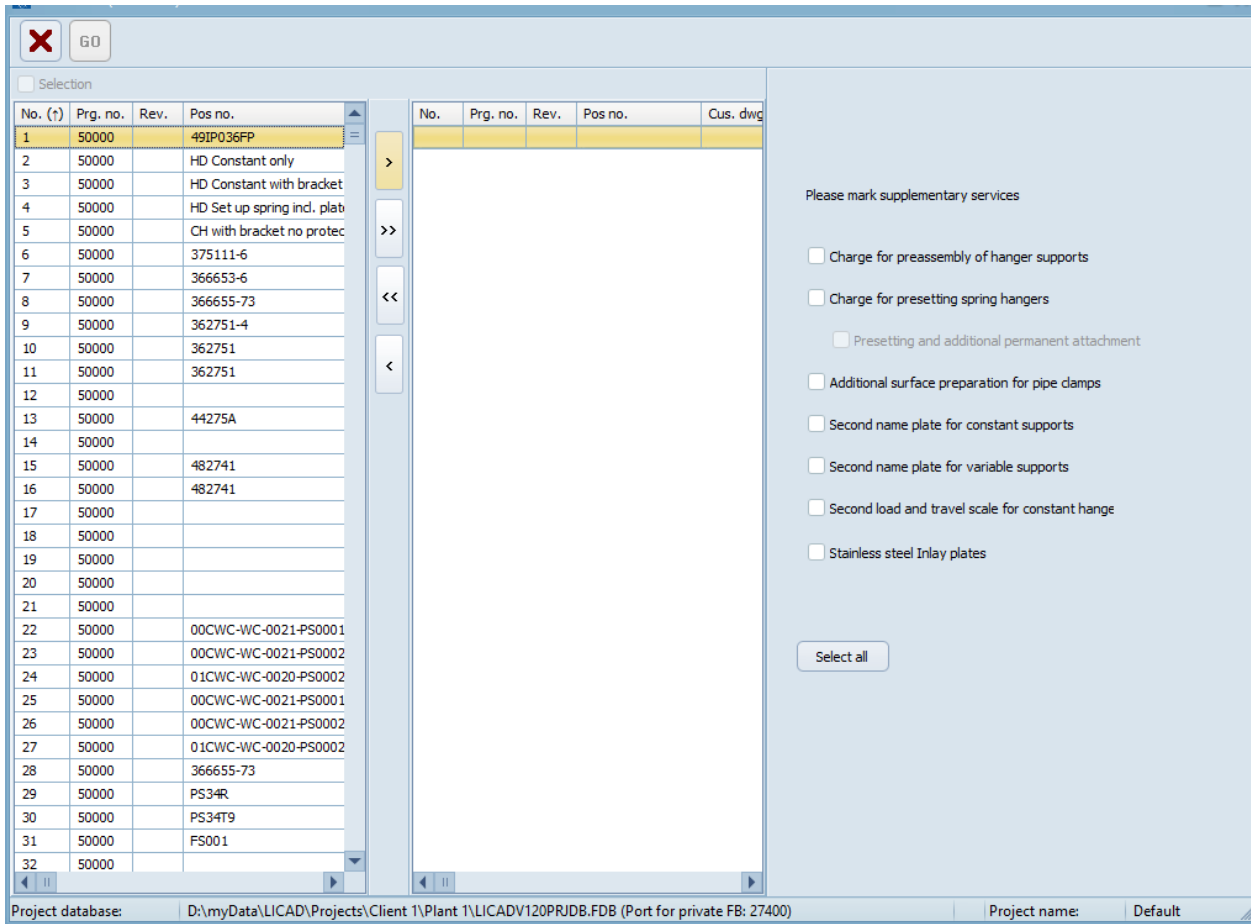
However, additional services can also be deleted or re-entered under "Change drawings".

## 4.17 Add additional feats

As shown before in options, additional services such as preassembly, extra coating of pipe-surrounding components or blocking of spring hangers can be preset. The bills of material are supplemented with the corresponding positions.

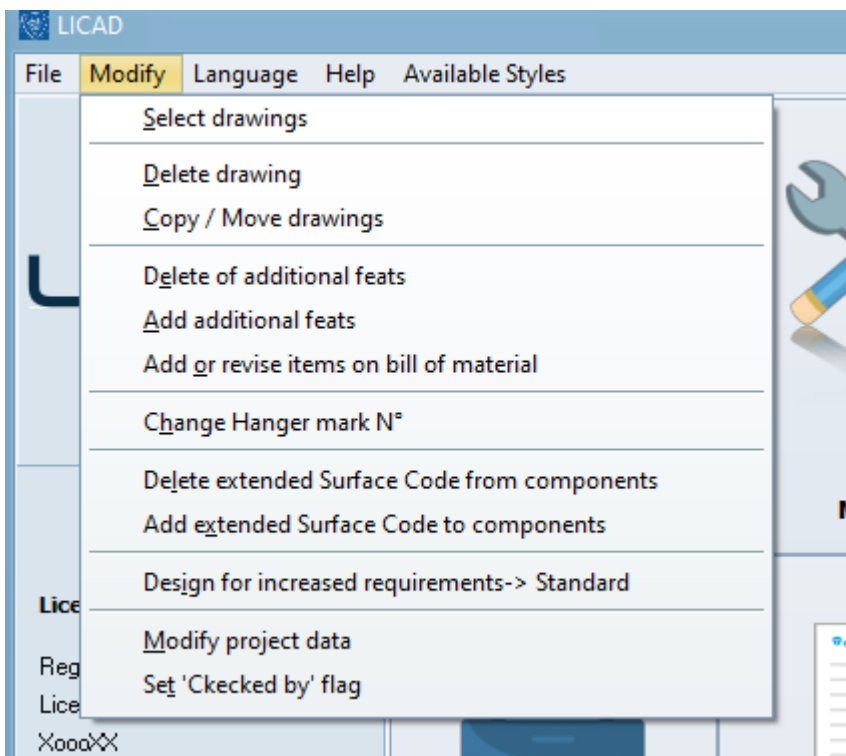
If for any reason these services were not set in the options, the relevant positions can be added to every individual drawing at this program item.

Open the 'Edit' menu on the main screen and select 'Add additional feats'.



### 4.18 Change the surface protection

According to the LISEGA surface protection system, the settings for already existing drawings can be subsequently changed. In the Modify menu of the main screen, two programs are provided for this purpose:



If an increased surface protection system has already been selected (<> C3M), then this can only be reset to C3M. Following this, another surface protection system can be selected.

Note: The background to these steps is that the BOM needs to be cleaned up of additional entries, and certain part numbers may change depending on the surface protection system chosen. Certain combinations with additional services can be excluded.

## 4.19 Index of drawings

Both drawings saved on the hard disk as well as those on a diskette can be displayed optionally on the screen or through the printer. The data of the current project path will be displayed.

In addition to the LICAD drawing number the program shows the drawing's revision number, facility designation, date prepared, sub-item number as well as who prepared it. The current working directory is shown in the screen label.

As an option, the list can be displayed clearly sorted according to position numbers, drawing numbers, or date. Clicking once again on the same column heading reverses the sorting sequence (sorted upwards / downwards)

Counter	Prg.Id.	Plant no.	Rev.	Hanger mark no.	Calculation node	Customer dwg no.	Manager
1	50000			49IP036FP			
2	50000			HD Constant only			
3	50000			HD Constant with bracket			
4	50000			HD Set up spring incl. plate			
5	50000			CH with bracket no protection			
6	50000			375111-6			
7	50000			366653-6			
8	50000			366655-73			
9	50000			362751-4			
10	50000			362751		3L2751-05	
11	50000			362751		Inlay angewählt	
12	50000						
13	50000			44275A			
14	50000						
15	50000			482741			
16	50000			482741		482741-IP	
17	50000						
18	50000						
19	50000						
20	50000						
21	50000						
22	50000			00CWC-WC-0021-PS0001	INSIDE		
23	50000			00CWC-WC-0021-PS0002	INSIDE		
24	50000			01CWC-WC-0020-PS0002	INSIDE		
25	50000			00CWC-WC-0021-PS0001	INSIDE		
26	50000			00CWC-WC-0021-PS0002	INSIDE		
27	50000			01CWC-WC-0020-PS0002	INSIDE		
28	50000			366655-73	A2		
29	50000			PS34R			
30	50000			PS34T9			
31	50000			FS001			
32	50000						

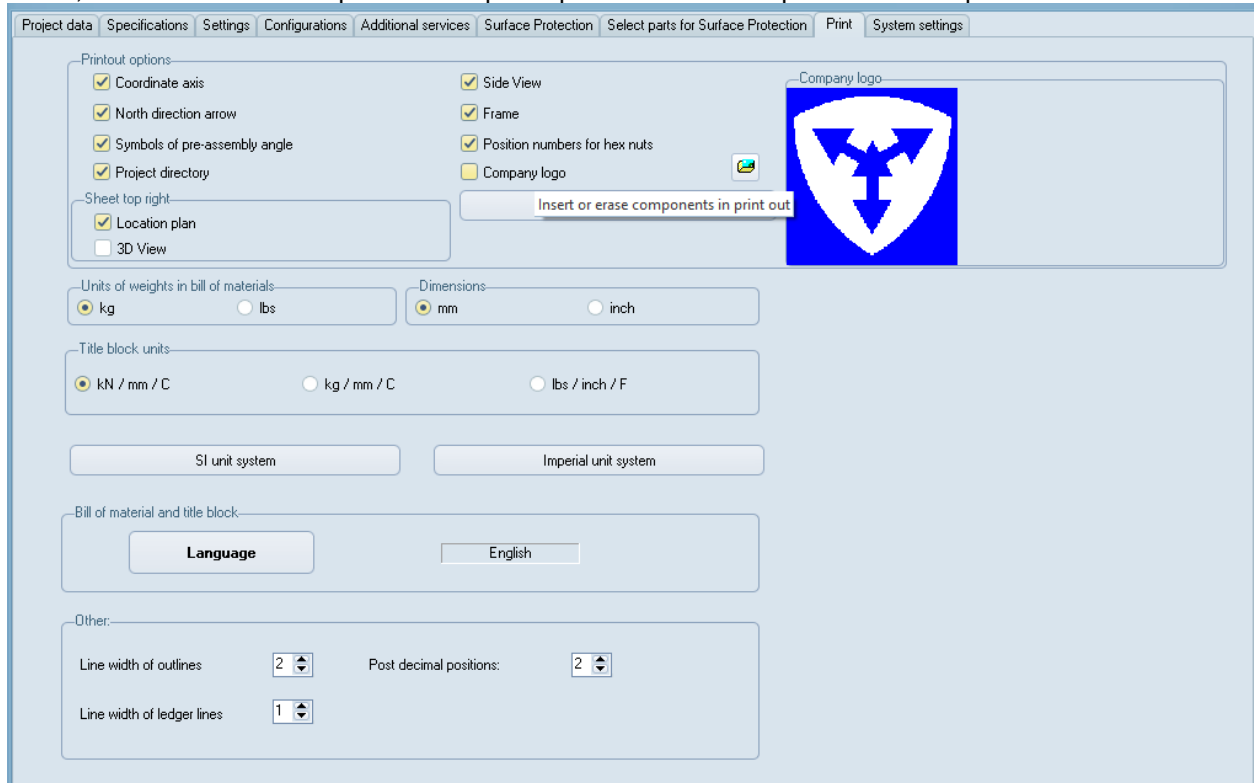
Number of records: 32  
 Project database: D:\myData\LICAD\Projects\Client 1\Plant 1\LICADV120PRJDB.FDB (Port for private FB: 27400) Project name: Default

## 4.20 Printing out drawings

Saved drawings can be printed either individually or in a so-called batch process.

Select one or more drawings from the left-hand window (use the 'Shift' and/or 'Ctrl' buttons for multiple marking) and shift these with the aid of the '>>' button to the right-hand window.

In the menu print options, different components can be altered for printout, for example with or without a frame, with or without a site plan. These print options can also be preset under 'Options – Print'.



In addition, the units for dimensioning, the parts list and the title block data can be set under 'Options - Print'.

## 4.21 Printing out individual parts lists

Instead of complete drawings individual parts lists can also be put out by the program. In these lists the article numbers, designations, sizes, weights and materials are listed. In addition, the entry data is put out along with these items.

The entries can be made as described under 4.204. Instead of the materials, the list prices (if activated) can also be calculated and put out by the program (as described under item 4.20).

## 4.22 Printing out complete parts lists

The materials list of all or individual supports can be compiled with this program item to a complete parts list.

The list is sorted by article number. It contains descriptions, numbers, weights, prices as well as total weight and total price (if activated).

The entry screen is structured analogously to Figure 46. Selection is also to be made as described under program item 4.20.

The lists can however also be exported to a text file or Excel worksheet file. In this way the parts list information can be further processed in other programs.

No. (↑)	Prg. no.	Rev.	Pos no.
19	50000		
20	50000		
21	50000		
22	50000	00CWC-WC-0021	
23	50000	00CWC-WC-0021	
24	50000	01CWC-WC-0020	
25	50000	00CWC-WC-0021	
26	50000	00CWC-WC-0021	
27	50000	01CWC-WC-0020	
28	50000	366655-73	
29	50000	PS34R	
30	50000	PS34T9	
31	50000	FS001	
32	50000		

No.	Prg. no.	Rev.	Pos no.
1	50000		49IP036FP
2	50000		HD Constant only
3	50000		HD Constant with b
4	50000		HD Set up spring in
5	50000		CH with bracket no
6	50000		375111-6
7	50000		366653-6
8	50000		366655-73
9	50000		362751-4
10	50000		362751
11	50000		362751
12	50000		
13	50000		44275A
14	50000		
15	50000		482741
16	50000		482741
17	50000		
18	50000		

Type	Description	Dimension	Qty	Weight	Price
115315	Constant hanger		3	345,00	
213118	Variable spring hang		6	25,80	
214118	Variable spring hang		3	27,60	
255118	Set up spring hang		1	14,50	
353913	Weld-on Bracket		1	0,30	
354913	Weld-on Bracket		3	1,50	
355919	Weld-on Bracket		1	1,00	
356919	Weld-on Bracket		2	7,40	
357919	Weld-on Bracket		1	7,90	
362411-LG5	Dynamic pipe clamp		1	15,30	
362751-LG3	Dynamic pipe clamp		1	16,00	
362751-LG4	Dynamic pipe clamp		3	48,00	
366653-LG6	Dynamic pipe clamp		1	115,00	
366655-LG7	Dynamic pipe clamp		1	431,90	
375111-LG6	Dynamic pipe clamp		1	46,70	
393124	Rigid Strut	(1347)	1	5,50	
394124	Rigid Strut	(1335)	3	24,00	
395124	Rigid Strut	(1205)	1	13,00	
396124	Rigid Strut	(1220)	1	21,00	
396154	Rigid Strut	(1410)	1	25,00	
397124	Rigid Strut	(1190)	1	34,00	
3L2751-05	Shear lug		1	0,00	
433219	Three bolt clamp	D323.9	4	64,00	
44275A	Pipe clamp	D273.0	3	63,00	
482741-0600	Vertical pipe clamp	D273.0	3	75,00	
482741-IP	Inlay Plate		1	0,09	
605912+HD	Eye nut		4	3,20	
613912	Clevis with pin		8	3,20	
613912+HD	Clevis with pin		4	1,60	
614912	Clevis with pin		6	6,00	
615912+HD	Clevis with pin		1	1,60	
633928	Hexagonal nut	M16	8	0,24	

Weight total: [kg]	Price total: [EUR]
1579,34	0/R*

Figure 46: Summary of bills of material

## 4.22.1 Description of buttons

Press the 'Go' button to start the sorting and accumulation for the drawings selected.

The 'Print' button serves to print the list directly. The printer can be selected or print settings made with the aid of the 'Printer setup' button.

Via the 'Preview' button, the list is displayed as a print preview and can be seen as a whole; press the button with the printer symbol to start printing.

With the aid of the TXT button the content of the list can be stored in a text file (can be edited with an ASCII editor) for further editing, or the content can be transferred directly to Microsoft Excel via the 'Excel' button, whereby Excel is started from LICAD, if necessary.

The list is sorted by article number. It contains descriptions, quantities, weights and prices as well as the total weight and total price (if activated). A report of the compiled drawings is put out on another sheet.

**Note:** So-called QuickReport files can be opened and viewed via the QReport Editor. These files can be generated under program point's xx and yy (diverse lists).

With the aid of the TXT button, the contents of the list in a text file (which can be worked on with an ASCII Editor) can be saved for further processing.

Via the 'EXCL' button the contents can also be transferred directly to Microsoft Excel, Excel is started from LICAD automatically.

### 4.23 Printing out lists sorted according to hanger mark no.

With this program, item lists sorted according to hanger marks are produced. Line by line they give the total price (if activated) and total weight of pipe supports. In addition, the hangers that are included in an item are also indicated. Selection is made as described under Point 4.20. The button functions are described under Point 4.22.1.

The selected drawings of the total list price and total weight of the individual supports are summarized line by line. In addition, the program also lists the supports contained in one position.

**Note:** So-called QuickReport files can be opened and viewed via the QReport Editor. Refer to chapter

### 4.24 Printing out adjustment lists

The technical information of the hangers are printed out for each support. Information about the total weight and price (if activated) are included.

The program is called up from the 'Main screen' via the button 'hanger data'.

The entries can be made as described under 4.20. A preview will be created via the button 'Print'.

Only drawing with variable spring hangers or with constant hangers will be taken into account.

**Note:** So-called QuickReport files can be opened and viewed via the QReport Editor.

Hanger list													
LICAD Dwg. n°	Hanger mark	Type	Description	Spring Rate	Horizont #	Lateral	Vertical	Blocking	F (H)	F (B)	Count	Weight/Total	Price/Total
16-3-54322	MyHangerMark465456No.AAAA AAAAAAA 121121	221119	Var. spring hanger	2133.33	0	0	2	26	102.94	107.21	1	486.20	4711.70
17-3-54322		223119	Var. spring hanger	3200	0	0	0	44	223.6	223.6	1	778.95	6222.00
19-3-54322	44646465	185127	Constant hanger (low design)	0	0	0	44	59	0	15.21	1	119.36	83.40
20-3-54322	44646465	185127	Constant hanger (low design)	0	0	0	44	59	0	15.21	2	119.36	83.40
21-3-54322	44646465w	185127	Constant hanger (low design)	0	0	0	44	59	0	15.21	1	119.36	83.40
22-3-54322	44646465w	185127	Constant hanger (low design)	0	0	0	44	59	0	15.21	1	119.36	83.40
5-3-63719	LP202001_LP202002	216218	Var. spring hanger	266.67	0	0	22	41	18.54	24.41	1	51.64	313.35
												1793.23	11580.65

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Figure 47: An example for a hanger data list

### 4.25 Tip for printer settings A4 and Letter

All reports are designed for A4 page size. When the print button is pressed, this page format is automatically used for printing.

To print on other page sizes, for example letter, use the print button in the print preview and set the desired properties:

N°	LICAD diag. No.	Rev.	Hanger mark	Customer diag. no. / Calculation point	Type	Description	Spring rate [kN/mm]	Horizontal [mm]	Lateral [mm]	Vertical [mm]	Preset [mm]	F(H) [kN]	F(P) [kN]	Count	Weight/Total [kg]
1	12511-3-90000		UP128235		128235 (x)	Constant hanger	0	5	20	65	87	120	121,96	1	791,65
2	262-3-68063		11BK00 BQ101	TC030-PRE-0122411 1 / 1 MAIN STEA	294118 (x)	Var. spring support	133,33	1,98	12,23	3,28	36	7,71	8,15	1	55,08
3	263-3-68063		11BK00 BQ105	TC030-PRE-0122411 2 / 2 MAIN STEA	294118 (x)	Var. spring support	133,33	0,93	7,24	3,14	42	8,59	9,01	1	54,95
4	8040-3-82755	1	2510_DN 100									0,94	1,04	1	10,50
5	8041-3-82755		2220_DN 80									1,08	0,95	1	8,10
6	8042-3-82755		620_DN 65									0,56	0,63	1	7,30
7	9000-3-82755		1260_DN 40									0,27	0,3	1	6,30
8	54-3-90745	1	1890_DN 200									3,17	2,56	1	23,90
9	55-3-90745	1	2480_DN 100									0,49	0,54	1	12,20
10	56-3-90745	1	2570_DN 100									1,43	1,57	1	12,70
11	57-3-90745	1	2920_DN 80									0,4	0,44	1	9,30
12	58-3-90745	1	3020_DN 80									1,32	1,46	1	11,70

1003,68 kg

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Select the scaling.

N°	LICAD diag. No.	Rev.	Hanger mark	Customer diag. no. / Calculation point	Type	Description	Spring rate [kN/mm]	Horizontal [mm]	Lateral [mm]	Vertical [mm]	Preset [mm]	F(H) [kN]	F(P) [kN]	Count	Weight/Total [kg]
1	12511-3-90000		UP128235		128235 (x)	Constant hanger	0	5	20	65	87	120	121,96	1	791,65
2	262-3-68063		11BK00 BQ101	TC030-PRE-0122411 1 / 1 MAIN STEA	294118 (x)	Var. spring support	133,33	1,98	12,23	3,28	36	7,71	8,15	1	55,08
3	263-3-68063		11BK00 BQ105	TC030-PRE-0122411 2 / 2 MAIN STEA	294118 (x)	Var. spring support	133,33	0,93	7,24	3,14	42	8,59	9,01	1	54,95
4	8040-3-82755	1	2510_DN 100									0,94	1,04	1	10,50
5	8041-3-82755		2220_DN 80									1,08	0,95	1	8,10
6	8042-3-82755		620_DN 65									0,56	0,63	1	7,30
7	9000-3-82755		1260_DN 40									0,27	0,3	1	6,30
8	54-3-90745	1	1890_DN 200									3,17	2,56	1	23,90
9	55-3-90745	1	2480_DN 100									0,49	0,54	1	12,20
10	56-3-90745	1	2570_DN 100									1,43	1,57	1	12,70
11	57-3-90745	1	2920_DN 80									0,4	0,44	1	9,30
12	58-3-90745	1	3020_DN 80									1,32	1,46	1	11,70

1003,68 kg

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Subsequently select the desired sheet size from the list. The print will now be scaled according to the sheet size.



# 5. Additional sub-programs (interfaces)

## 5.1 ASCII-/DXF interfaces export

With this software interface drawings and parts lists can be transferred to other programs. To this aim, three files are set up and put in the LICAD in any directory. The program is accessed via the DXF button from the main screen.

The selection of drawings proceeds as described under Point 4.20. The selection of the target directory is made from the right-hand window. If required, a new directory can be set up here. For this, enter the name of the directory to be created in the lower right-hand entry field and click on the button lying to the right or press the Return key after entering the new directory name.

The drawings are exported in the so-called DXF format. Besides the support drawing, the bill of material and other components can be transferred in DXF format (see below).

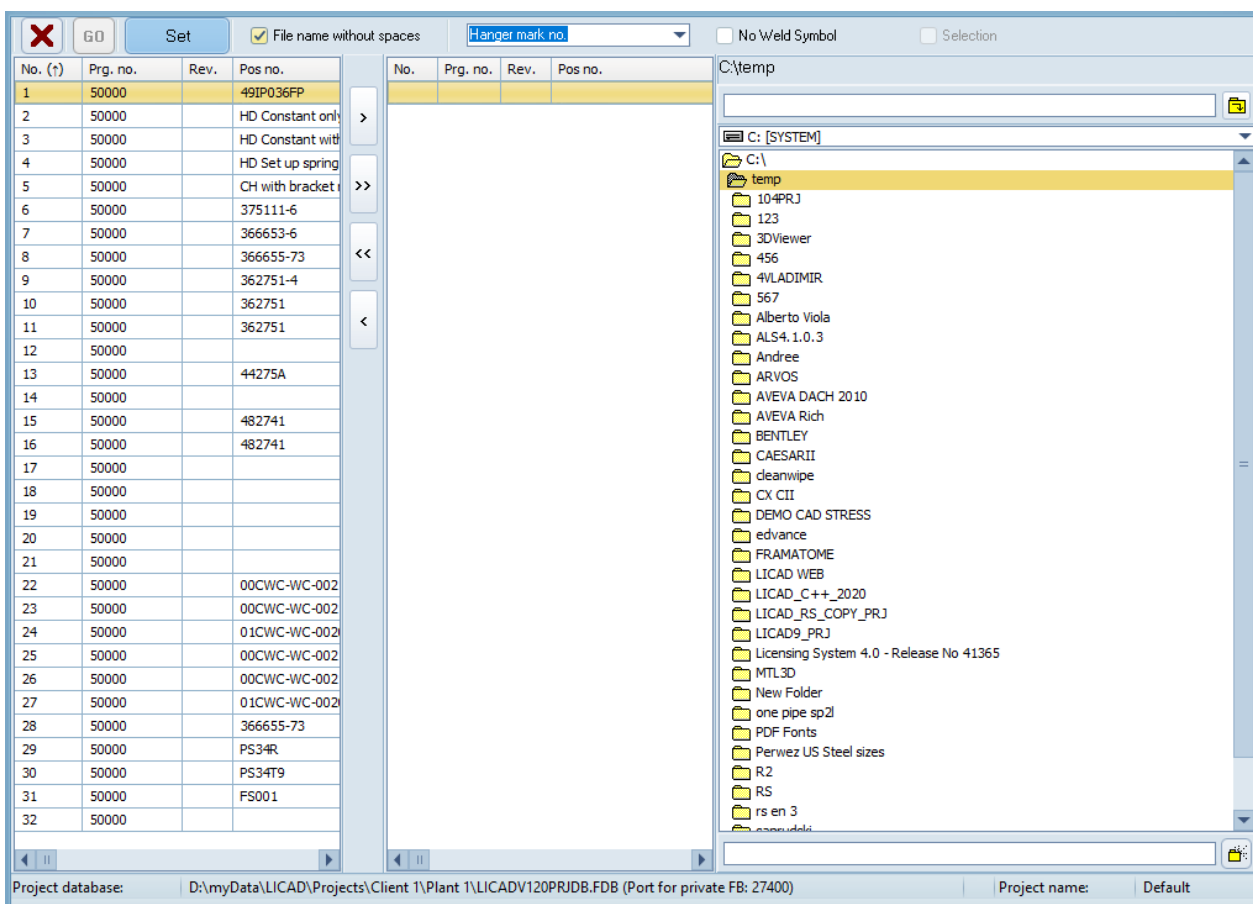


Figure 48: Exporting graphics

The file objects are unscaled, i.e., they are on a scale of 1:1.

**Note:** The insertion point of the graphic can be altered via the X/Y coordinates.

The file name consists of two parts. The file name can be formed either from the LICAD drawing number or from the support number. (The first part is formed of the five-digit counting number of the drawing plus the last three numbers of the LICAD program number. As a second part, the so-called extension, '.DXF', '.STL' or '.TEC' is added.) The parts list (ending '.STL') and the technical reference data file (ending '.TEC') are created in ASCII format and can be edited with a word processing program.

The following files are created for each drawing

- DXF: contains the graphic
- TEC: contains all technical attributes of a drawing
- STL: parts list, without headings
- TXT: as STL, but with headings

Whether an STL or TXT file is created depends on settings for DXF export.

Before the DXF file is set up, the values for the *Layer*, *Color* and *Text Height* can be set in the 'DXF.CFG' file.

In the options box a number of components can be activated that are transferred to the CAD system as graphic elements with the DXF file. If the 'Use options' box is set, the bill of material is also transferred in

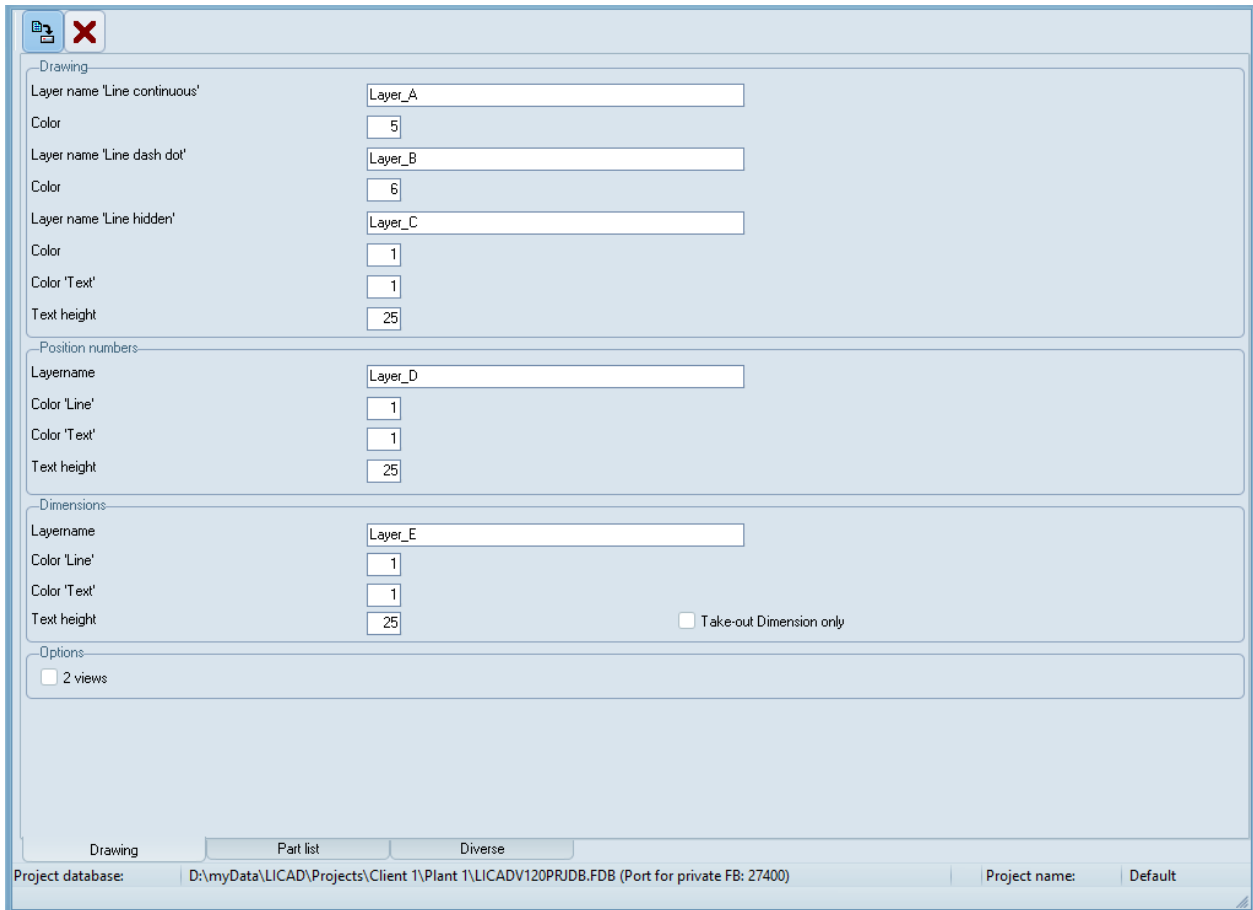


Figure 49: Settings for the **DXF-Export**

any case.

All inputs must be set for the DXF transfer! If inputs are missing, the program will notify the user accordingly.

**Note:** Via the switch 'Only total installation height', it can be decided whether the dimensioning of the support is to be provided with or without the individual components.

## 5.2 Interfaces and Component Libraries

The LICAD package contains a wide range of interfaces and component libraries for well-known CAE, CAD and steel work programs. Further plug-ins including component libraries are available for the applications listed below.

**Please take in mind:** to use the plug-Ins LICAD must already be installed

Additional apps can be downloaded from <https://www.lisega.de/licad/interfaces/>.

### **5.2.1 AutoCAD®/Plant 2D/3D Tools**

2D: AutoCAD plugin for creating front or side views of LISEGA parts. It contains only one command (Lis2Dcat) that will open a dialog where the selection which part and the required view that should be created can be selected. The part is attached to the mouse cursor until the insert position is accepted.

3D: AutoCAD and AutoCAD Plant 3D plugin for creating LISEGA pipe supports in the model. The plugin is able to load L3D files created by LICAD or it can communicate directly with LICAD to get the pipe support that should be created.

### **5.2.2 Smart3D® - Hanger and Support Plug-In**

Smart3D hanger and support task plugin for creating LISEGA pipe supports in the model. The plugin is able to load L3D files created by LICAD or it can communicate directly with LICAD to get the pipe support that should be created.

The LISEGA 2020 catalog from Hexagon must be loaded in Smart3D  
(See: Hexagon SmartSupport WEB-site (Downloads / Smart3D / Content))

### **5.2.3 BricsCAD**

BricsCAD plugin for creating LISEGA pipe supports in the model. The plugin is able to load L3D files created by LICAD or it can communicate directly with LICAD to get the pipe support that should be created.

### **5.2.4 Tools for PDMS™ & E3D™**

This is the actual version of the LISEGA catalog for AVEVA PDMS™ and AVEVA E3D™ and the relevant plugins. The catalog is compatible with older versions.

### **5.2.5 Tekla Structure Tools**

Tekla Structures extension package including LISEGA catalog and for creating LISEGA pipe supports in the model. The plugin is able to load L3D files created by LICAD or it can communicate directly with LICAD to get the pipe support that should be created.

### **5.2.6 MicroStation Connect Tool**

MicroStation Add-on application for creating LISEGA pipe supports in the model. The application is able to load L3D files created by LICAD or it can communicate directly with LICAD to get the pipe support that should be created.

### **5.2.7 MicroStation V8i Tool**

MicroStation Add-on application for creating LISEGA pipe supports in the model. The application is able to load L3D files created by LICAD or it can communicate directly with LICAD to get the pipe support that should be created.

### **5.2.8 SupportModeler™ Tool**

A new component library, based on the new catalog Standard Supports 2020, metric edition, is available for the SupportModeler™. This package contains a plugin, which allows a direct call from the SupportModeler™. Furthermore, the component libraries of the catalog Standard Supports 2020 are stored here. After calculation, the supports are automatically generated and displayed as 3D objects in the SupportModeler™ model. The data are also stored in the LICAD database.

## 6. Appendix

### 6.1 Insertion of one's own company emblem

LICAD requires any files in Bitmap format for the so-called customer logos. These can be created and edited by using the Microsoft Paint program, for example.

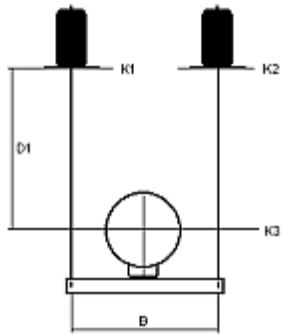
Users are free to choose the name and size of the file. The size of the graphic should however have a side ratio (breadth to height) of 1 : 4. This can be tested in Paint via the menu Picture - Attribute!

**Note:** The number of colours should be limited to 16.

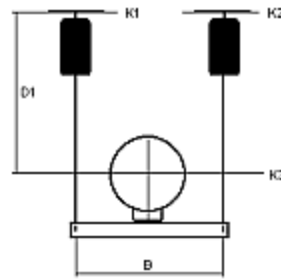
To include the logo in LICAD, call up the 'Option - Print' after starting the program. In the field 'printed picture' options, click on the button and look for the corresponding file name of the bitmap in the open dialog. The printing of the logo is activated by setting the switch 'company logo'.

## 6.2 The supports configurations (symbols)

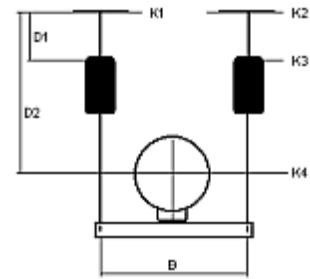
### 6.2.1 Configurations in the static field



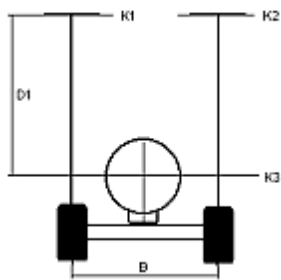
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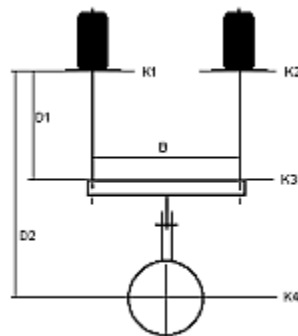
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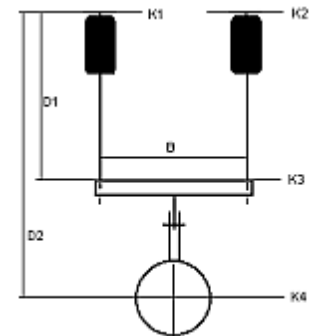
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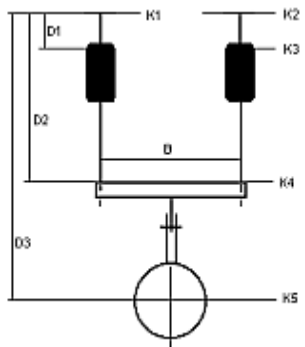
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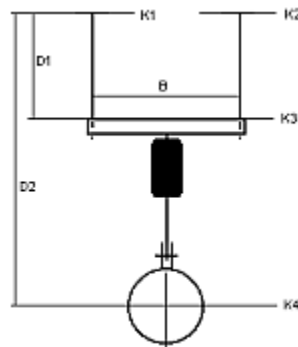
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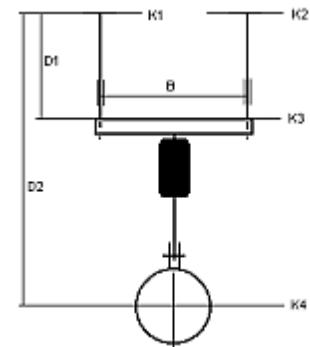
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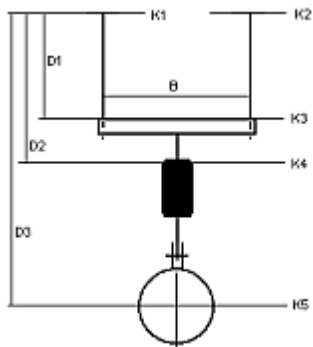
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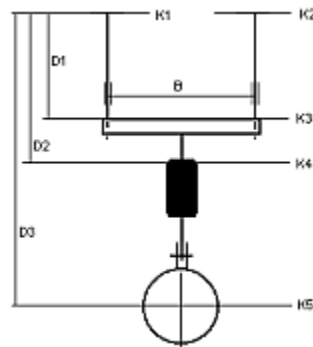
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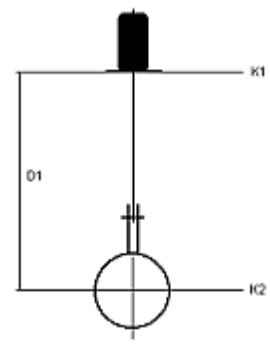
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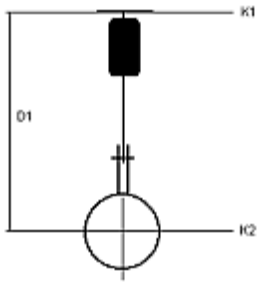
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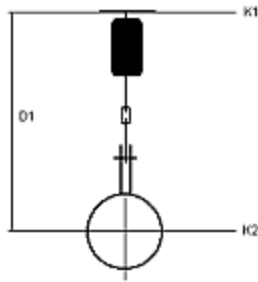
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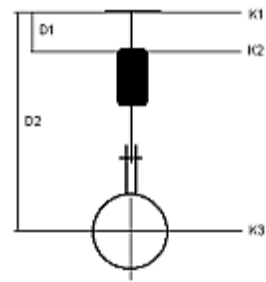
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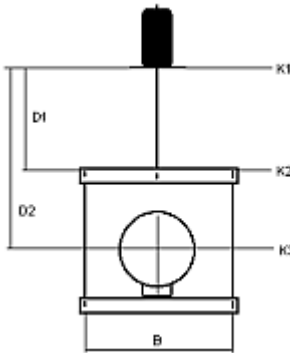
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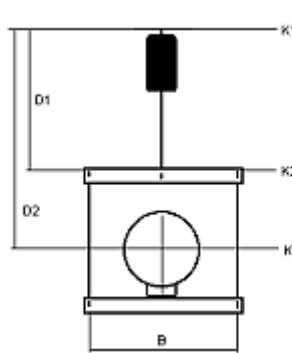
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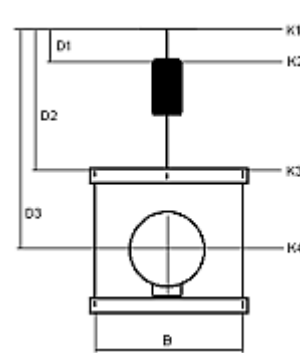
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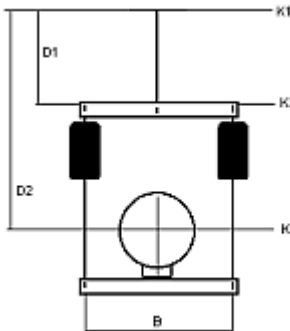
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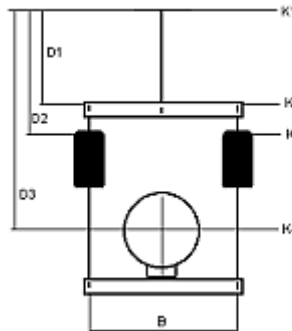
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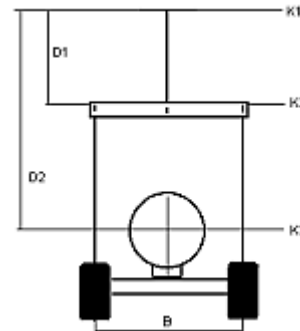
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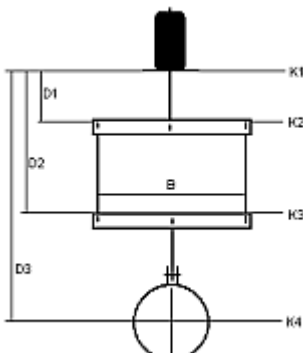
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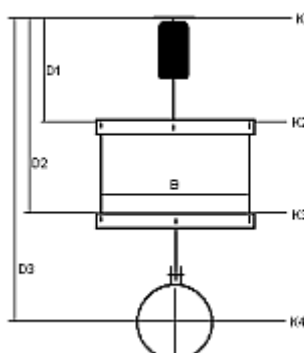
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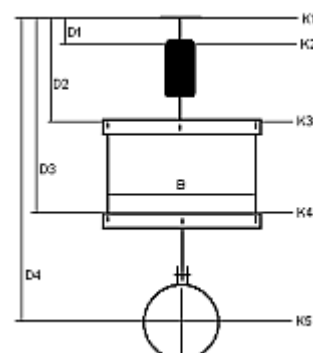
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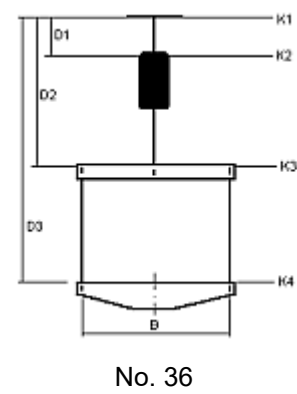
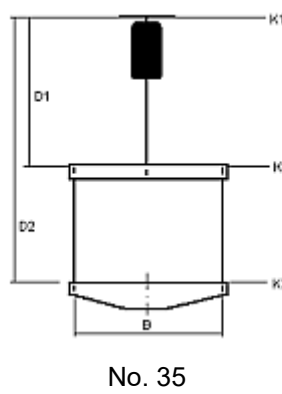
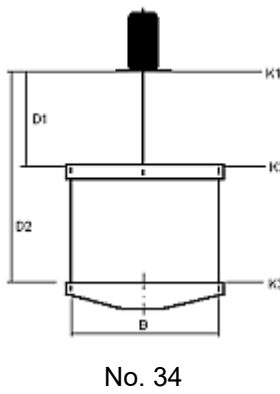
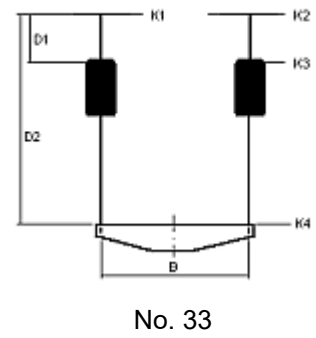
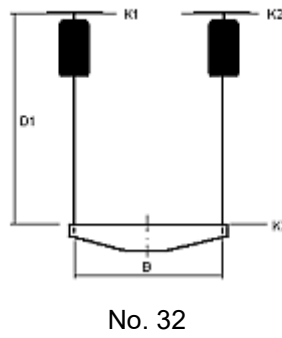
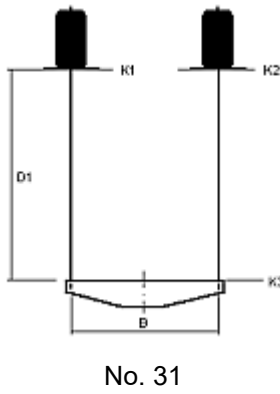
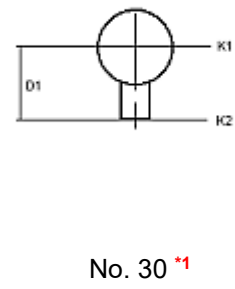
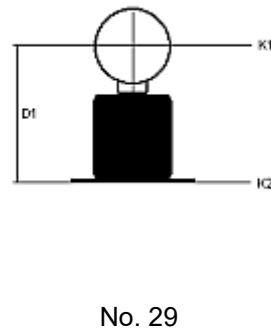
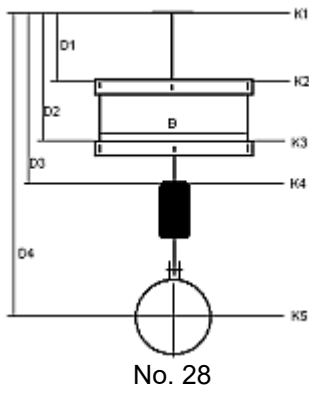
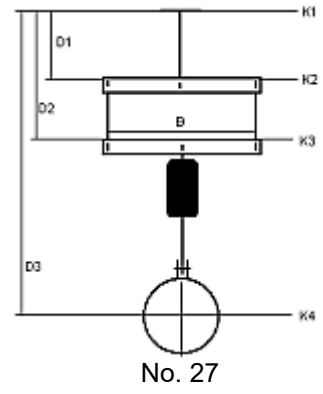
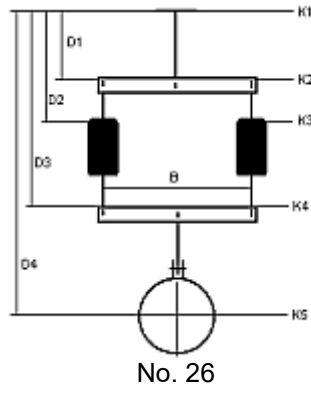
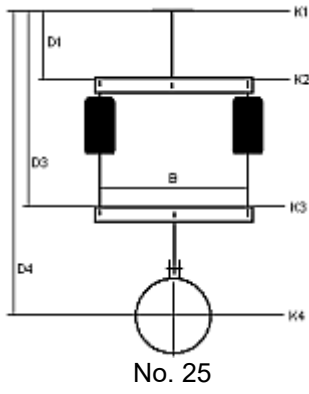
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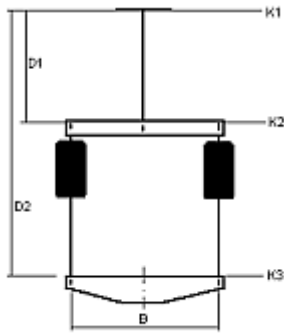


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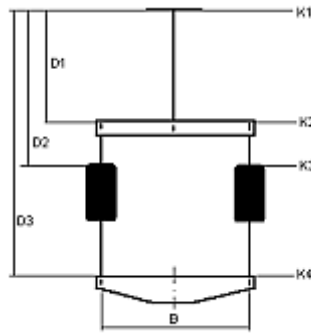


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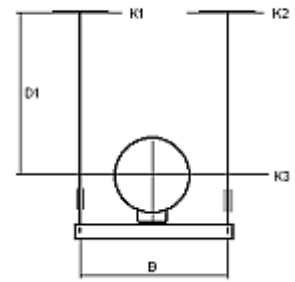




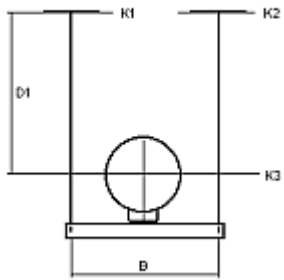
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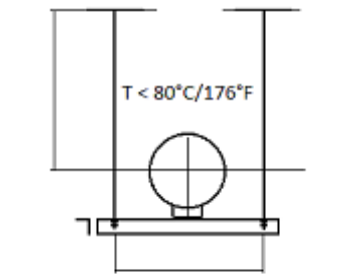
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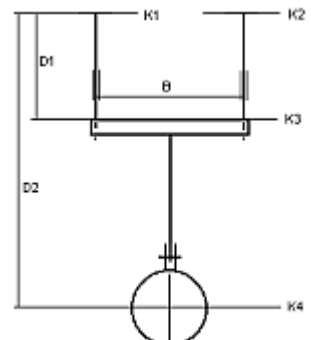
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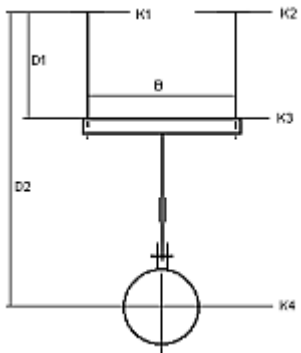
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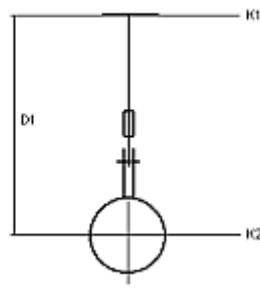
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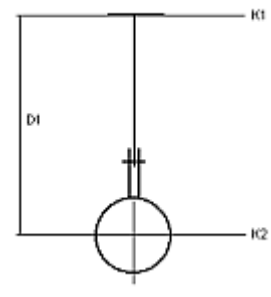
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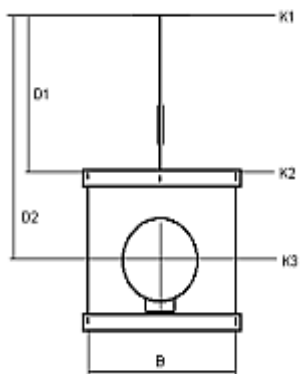
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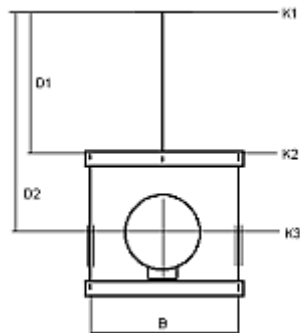
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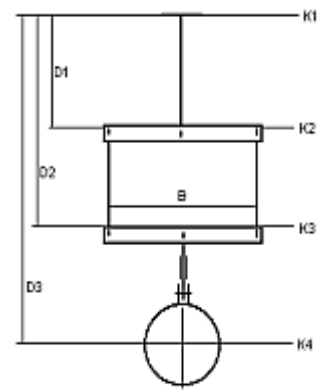
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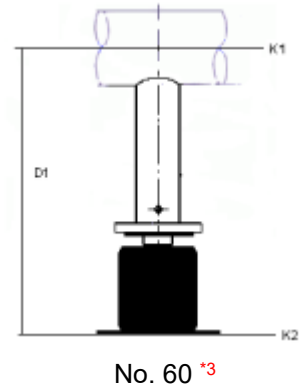
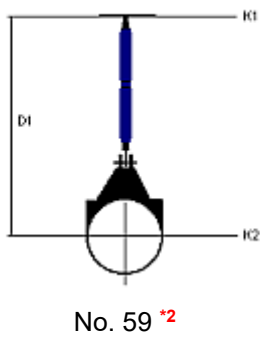
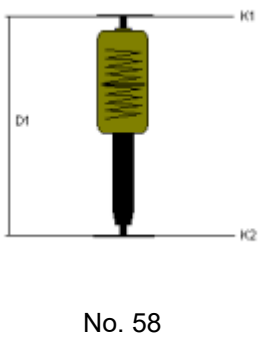
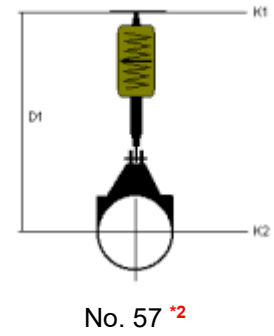
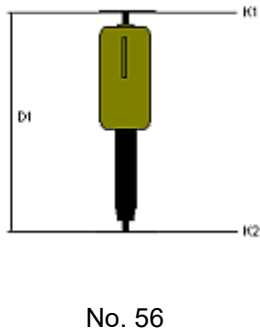
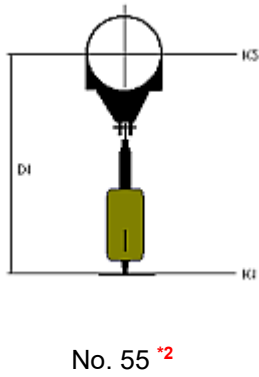
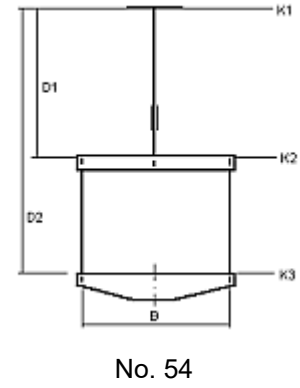
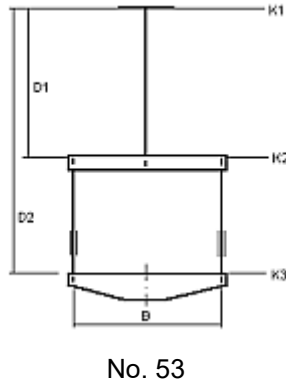
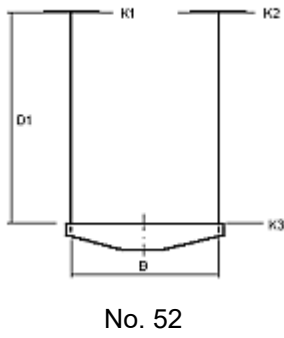
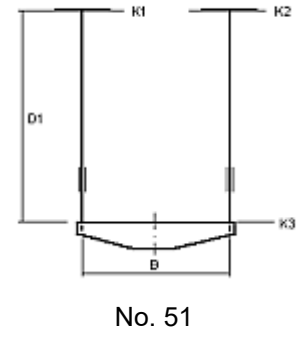
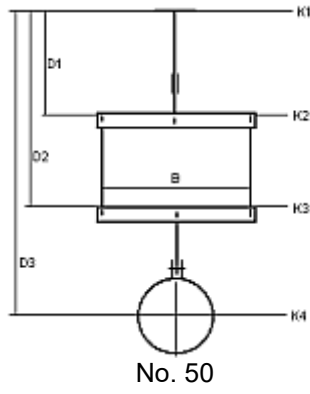
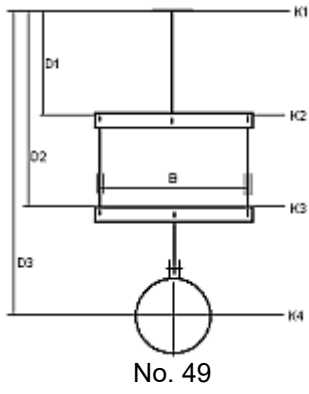
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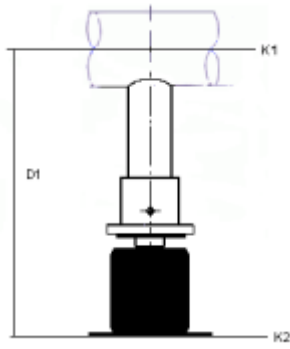


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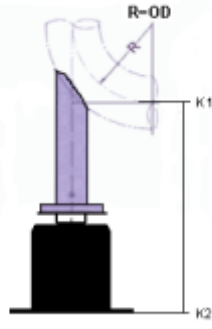


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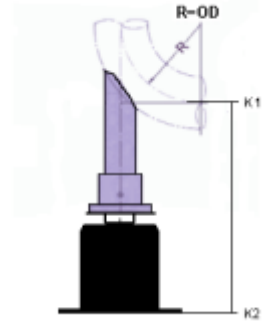




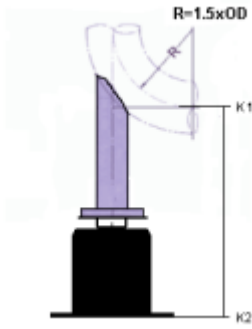
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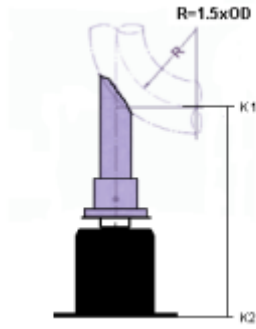
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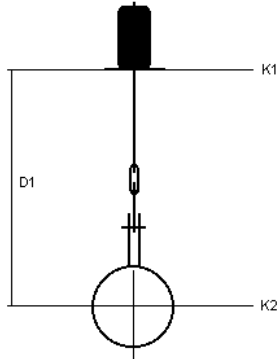
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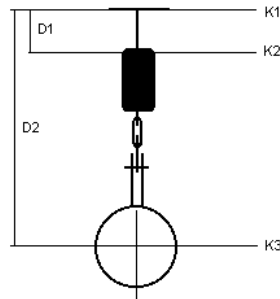
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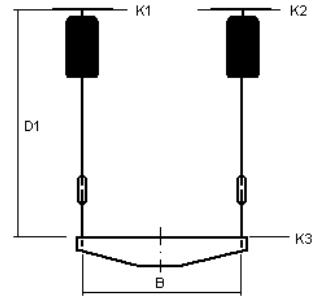
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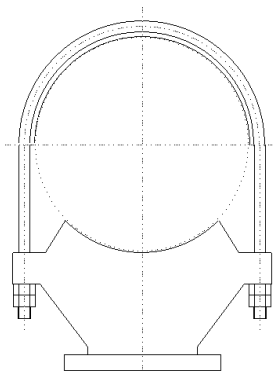
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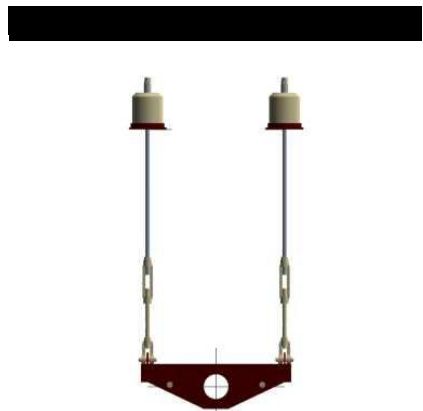
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No. 68



No.70



No.71



No.80

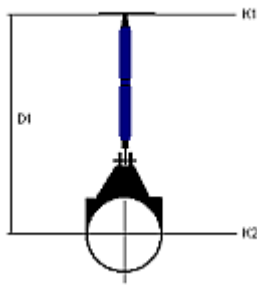
\*1) In addition, for clamp base Type 49, lift-off restraints, lateral guides, or even lateral guides combined with lift-off-restraints can be selected. For lateral guides, the fields for the beam profiles and maximum permissible lateral forces, or the lifting forces for lift-off restraints, must be filled out.

\*2) Dynamic pipe clamps as hanger clamps: The permissible loads are calculated for dynamic operation. In special cases these dynamic pipe clamps are exposed to permanent static stress. In this case the permissible loads are reduced according to the table section, 'Error! Reference source could not be found'.

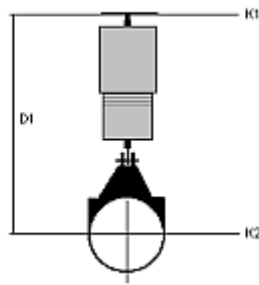
If the dynamic pipe clamps are exclusively subjected to pressure loads, the permissible loads are not reduced.

\*3) These configurations are only permissible for vertical travel/loads.

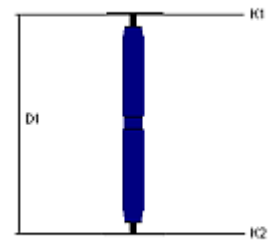
### 6.2.2 Configurations in the dynamic field



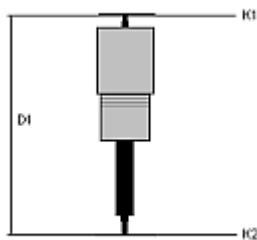
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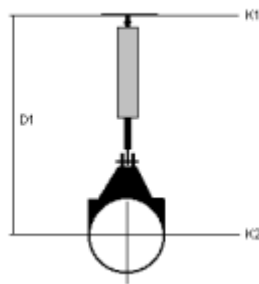
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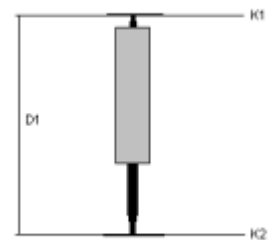
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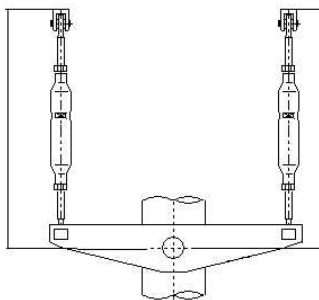
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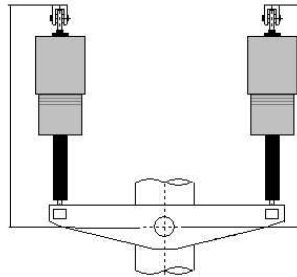
No. 05



No. 06

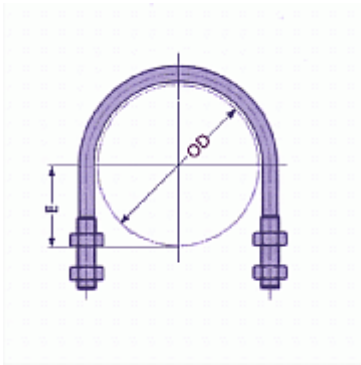


No. 07



No. 08

### 6.2.3 Configurations in pipe saddle and pipe bearing fields



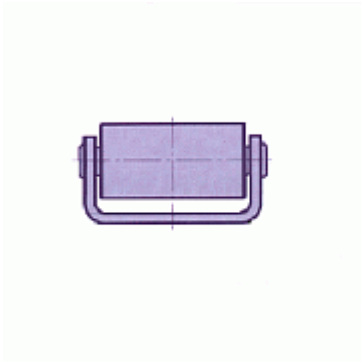
No. 01



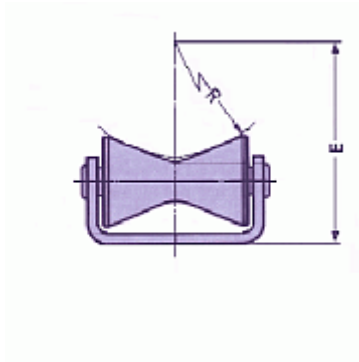
No. 02



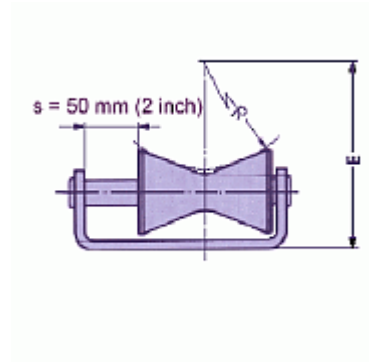
No. 03



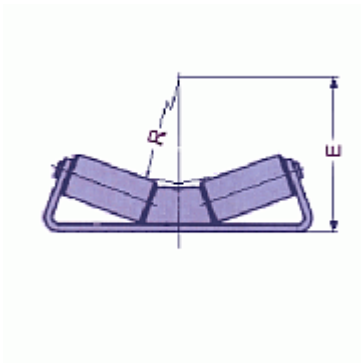
No. 04



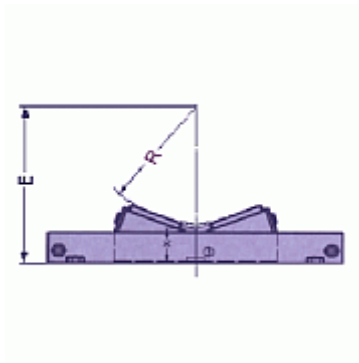
No. 05



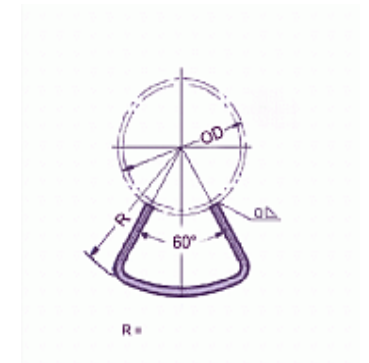
No. 06



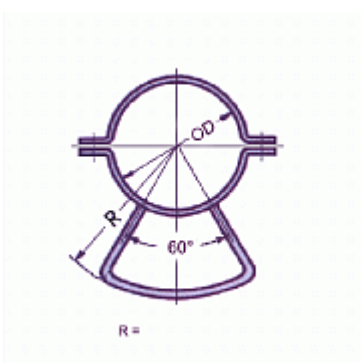
No. 07



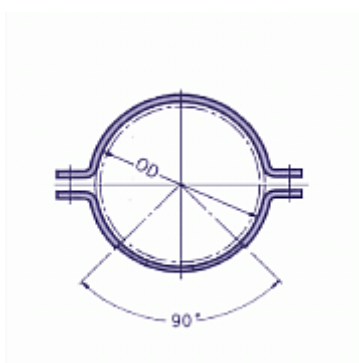
No. 08



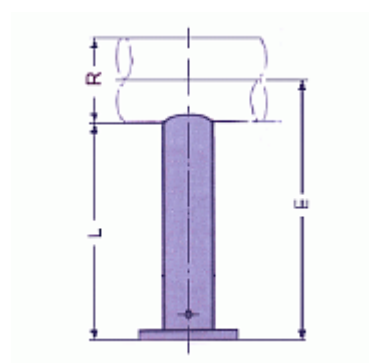
No. 09



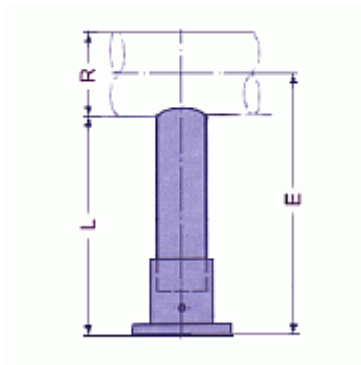
No. 10



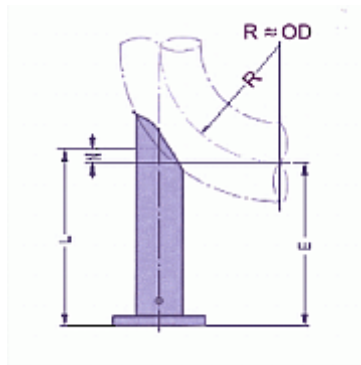
No. 11 \*4



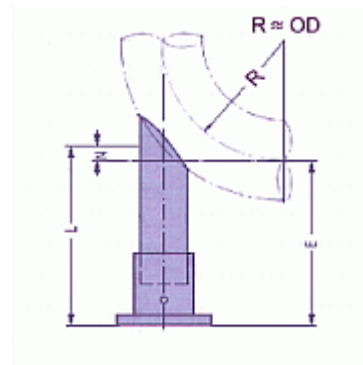
No. 12 \*4



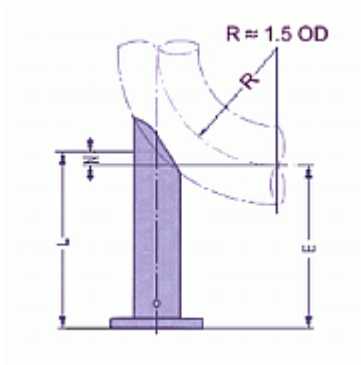
No. 13 \*4



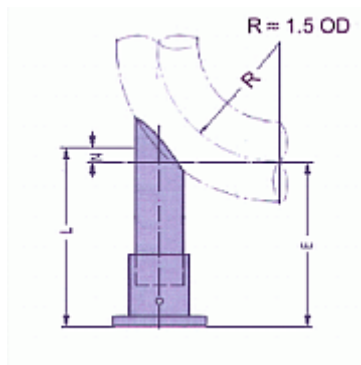
No. 14 \*4



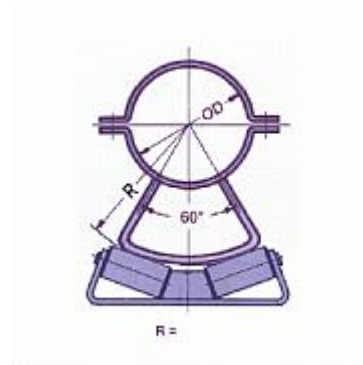
No. 15 \*4



No. 16 \*4



No. 17



No. 18

\*4) For pipe supports Type 58, the type of load must be entered: vertical load only, sliding or fixed anchor.

### 6.3 LISEGA sectioning of load groups

LISEGA LOAD GROUPS	Normal Operation			Disturbed Condition		Faulted Condition	
	Nominal	H / Normal	Upset	HZ/Emergency		HS / Faulted	
		80°C	150°C	80°C	150°C	80°C	150°C
C	0,31	0,8	0,7	1,1	1,0	1,4	1,3
D	0,62	2,5	2,2	3,3	2,9	4,3	3,8
1	1,25	4,2	3,7	5,6	5,0	7,2	6,4
2	2,5	6,7	6	9	8	13,3	12
3	5	11,3	10,1	15	13,4	22,2	20
4	10	23,3	20,9	31	27,8	41	37
5	20	34	30	46	41	61	55
6	40	56	50	74	66	96	86
7	60	83	74	108	97	140	126
8	80	114	102	150	135	195	175
9	100	151	135	196	176	255	230
10	160	222	199	295	265	381	343
20	200	297	266	395	355	512	461
30	240	340	305	452	406	585	526
40	300	380	340	505	450	650	585
50	400	490	440	650	585	840	755

Table 4: LISEGA Load group sectioning - Static stress

LISEGA- LOADGROUPS	Normal/Upset Level A/B		Emergency Level C		Faulted Level D	
	80°C	150°C	80°C	150°C	80°C	150°C
1	3	2,9	4,0	3,8	5,2	5,0
2	4	3,9	5,3	5,1	6,9	6,7
3	8	7,5	10,6	9,7	13,7	12,6
4	18	16,5	23,9	22,0	31,0	28,5
5	46	44,0	61,0	58,5	77,0	74,5
6	100	94,5	141,0	127,0	180,0	162,0
7	200	175,0	267,0	239,0	336,0	301,0
8	350	339,0	472,0	423,0	655,0	588,0
9	550	535,0	735,0	715,0	935,0	910,0

Table 5: LISEGA Load group sectioning - Dynamic stress

### 6.4 Dynamic pipe clamps as hanger clamps

pipe temperature	permiss. permanent tension stress
up to 350°C	100%
351°C – 450°C	100%
451°C – 500°C	80%
501°C – 510°C	80%
511°C – 530°C	65%
531°C – 560°C	55%
561°C – 580°C	65%
581°C – 600°C	60%

*These specifications relate to the creep strength dependent on time in the 200,000 hr range at temperature ≥ 450°C.*

Table 6: Reduced permissible loads due to permanent tensile (static) stress

### 6.5 Note on load adjustment for constant hangers type 11

Concerns type 11, 12, 13, 14, 16, and 79

The load adjustment is carried out by a pre-loading of the mainspring. As the characteristics of the resulting balancing force and the mainspring are the same, only a linear shifting of the initial force thereby occurs F1.

This way, the change in force is the same at every point of the movement and the ultimate load remains constant at each load setting.

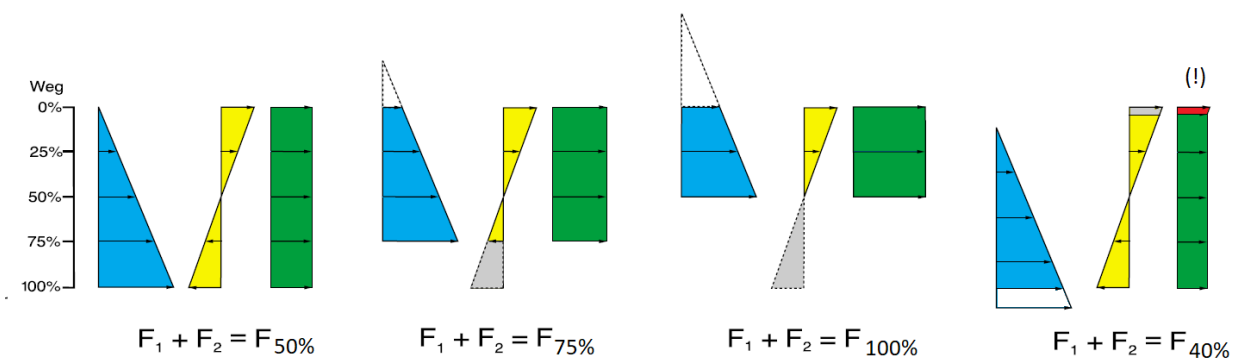



Figure 50: The load adjustment for type 11

The remaining travel range changes proportionally to the load alterations.

The maximum possible working range (0 - 100%) is reached at half nominal load (F50%). At nominal load (100%), half the working range (0 - 50%) is available.

Note that at 40% of the nominal load (F40%) only 90% of the working range (10 - 100%) is available. The travel range between 0 and 10% cannot be used for technical reasons. This fact is also taken into account in LICAD when calculating the blocking positions.

## 6.6 Title block description of a LICAD drawing

The Calculation Note Number 0003		
My Hanger Mark Number 0001		
Input F(C) = 15,00 kN F(H) = 13,86 kN F(C) = 15,20 kN F(P) = 15,20 kN F(Hy) = 19,00 kN Later. = 2 mm Horz. = 6 mm vert. = 5 mm	Customer : REMCO Podolsk Plant / System : No information needed Any system P.O. N° : 90001-00001 Bestell-Nr. : BSTNR: 0099	LISEGA Offer N° : 105-8-45003 258
∅ OD = 323,9 mm Insul = 100 mm Temp. = 450 °C ∂ F = 10 % Spring rate = 266,7 N/mm Tot Tvl = 50 mm Preset = 31 mm eff. Weg = 5,01 mm Tvl res dn/up = 19/26 mm	Eigener Titel Eintag	LICAD Dwg.- N° Rev 222-3-54322
	Project manager 18.12.2015 Herr Schulze	Infotext 1 Infotext 2 LISEGA SE Herr Sarnoch Drawing N° : My Drawing Number 00002 Checked:

The Calculation Note Number 0003	Calculation point number																								
My Hanger Mark Number 0001	Hanger mark number																								
<table border="1"> <tr><td>Input F(C) =</td><td>15,00</td><td>kN</td></tr> <tr><td>F(H) =</td><td>13,86</td><td>kN</td></tr> <tr><td>F(C) =</td><td>15,20</td><td>kN</td></tr> <tr><td>F(P) =</td><td>15,20</td><td>kN</td></tr> <tr><td>F(Hy) =</td><td>19,00</td><td>kN</td></tr> <tr><td>Later. =</td><td>2</td><td>mm</td></tr> <tr><td>Horz. =</td><td>6</td><td>mm</td></tr> <tr><td>vert. =</td><td>5</td><td>mm</td></tr> </table>	Input F(C) =	15,00	kN	F(H) =	13,86	kN	F(C) =	15,20	kN	F(P) =	15,20	kN	F(Hy) =	19,00	kN	Later. =	2	mm	Horz. =	6	mm	vert. =	5	mm	a) Input load (e.g. cold) b) Calculated hot load c) Calculated cold load d) Preset load e) Hydro test load
Input F(C) =	15,00	kN																							
F(H) =	13,86	kN																							
F(C) =	15,20	kN																							
F(P) =	15,20	kN																							
F(Hy) =	19,00	kN																							
Later. =	2	mm																							
Horz. =	6	mm																							
vert. =	5	mm																							
<table border="1"> <tr><td>∅ OD =</td><td>323,9</td><td>mm</td></tr> <tr><td>Insul =</td><td>100</td><td>mm</td></tr> <tr><td>Temp. =</td><td>450</td><td>°C</td></tr> </table>	∅ OD =	323,9	mm	Insul =	100	mm	Temp. =	450	°C	Pipe movement (input)															
∅ OD =	323,9	mm																							
Insul =	100	mm																							
Temp. =	450	°C																							
<table border="1"> <tr><td>∂ F =</td><td>10</td><td>%</td></tr> <tr><td>Spring rate =</td><td>266,7</td><td>N/mm</td></tr> <tr><td>Tot Tvl =</td><td>50</td><td>mm</td></tr> <tr><td>Preset =</td><td>31</td><td>mm</td></tr> <tr><td>eff. Weg =</td><td>5,01</td><td>mm</td></tr> <tr><td>Tvl res dn/up =</td><td>19/26</td><td>mm</td></tr> </table>	∂ F =	10	%	Spring rate =	266,7	N/mm	Tot Tvl =	50	mm	Preset =	31	mm	eff. Weg =	5,01	mm	Tvl res dn/up =	19/26	mm	Pipe data						
∂ F =	10	%																							
Spring rate =	266,7	N/mm																							
Tot Tvl =	50	mm																							
Preset =	31	mm																							
eff. Weg =	5,01	mm																							
Tvl res dn/up =	19/26	mm																							
	Load deviation, spring rate, working range of hanger, preset position, total movement as result of l-, h- and v- movements, travel reserve top and bottom																								



# 7. Notes on installation

## 7.1 Registration

Every user of LICAD must have a valid registration code (license). If you need a license, please fill out the registration form <https://www.lisega.de/licad/registrierung/> .

Additional licenses can be supplied upon request. If you only want to update LICAD, a new registration is not necessary. You can use this online registration form to request your personal LICAD license. The license is required to use the software. Please complete all fields and click "Register" to complete the registration process. After verification of your compliance information, you will then receive a confirmation of your request as an email.


**The registration is free of charge.**

## 7.2 Why does every LICAD user have a separate key?

This is due to the management of drawing numbers and the resulting possibility of exchanging drawings between users (LBF export / import).

The drawing number is generated using the five-digit key ("12345") and a numeric counter (1, 2, 3, ..., 9999).

An example of this is 6688-3-50000

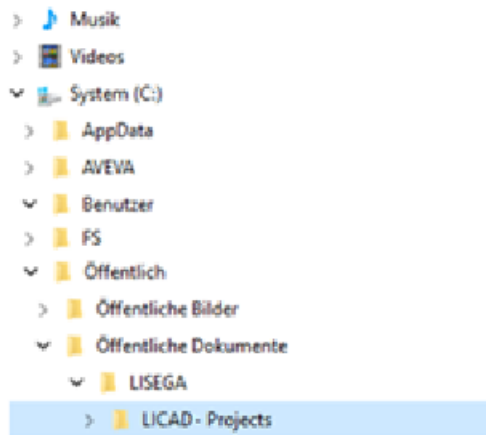
	
LISEGA Offer N°: 0-8-0 0	
LICAD dwg. no. 12511-3-50000	Rev.
XoooXX YY Drawing no.:	
Checked:	

Key number: 50000

Serial number: 6688

LISEGA internal switch: -3-

The drawings are stored in the set project directory. The project directory can be located locally on the computer and can be created at any other location.



The following files are in the project directory:

LICADPRJDB.FDB - the current project file as of version 12.0

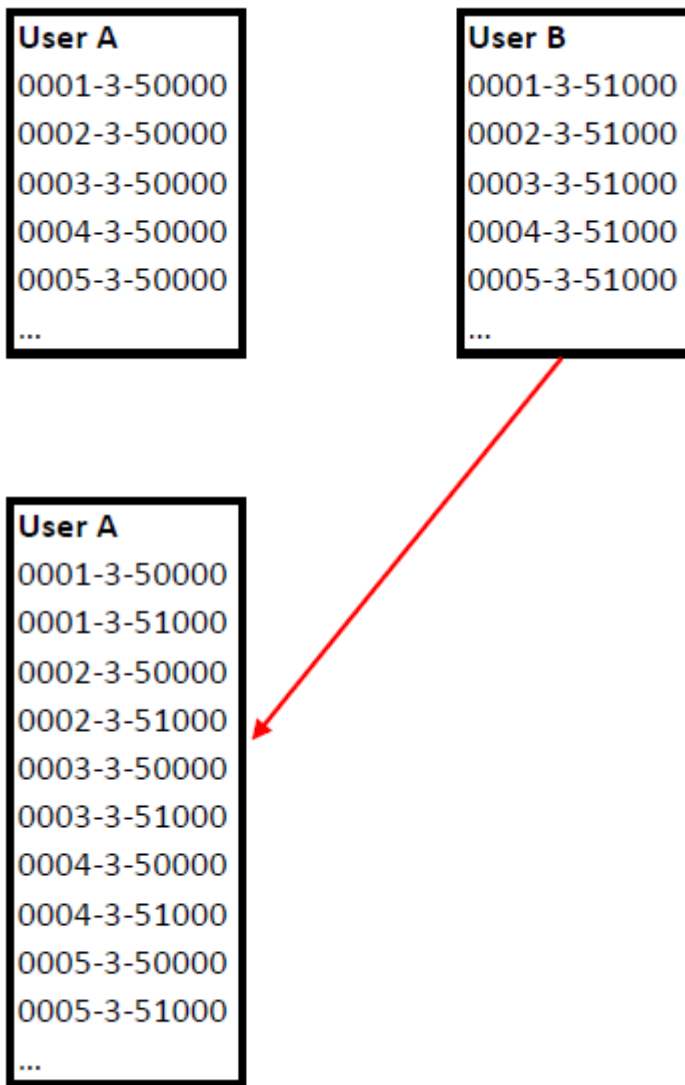
LICADVxxxPRJDB.FDB - Project files from version 10 (xxx stands for the respective LICAD version)

Let us assume that user A has received the key 50000. Then the first drawing number it creates is 0001-3-50000. The next 0002-3-50000 etc.

User B has received the key 51000. Therefore, the first number is 0001-3-51000.

Users A and B then continuously generate drawings according to the following scheme.

If user B sends his drawings to user A (via LBF), then user A will be able to recognize user B's drawings using the key (51000).

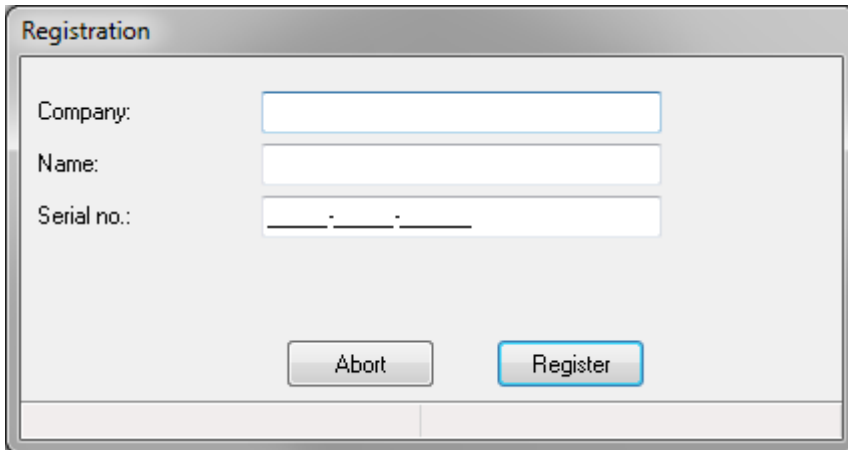


**Hint:** If both users had the same key, it would not be possible to exchange the drawings. Because both users would generate the same drawing numbers.

**As long as the drawings are not to be exchanged (Project B -> Project A), all users can use the same key. However, this is not recommended.**

### 7.3 Starting LICAD the first time

The user information including the serial number must be entered.



This dialog will be shown for each user starting LICAD the first time. Each user must enter its own serial number. Two users with the same serial number are not possible.

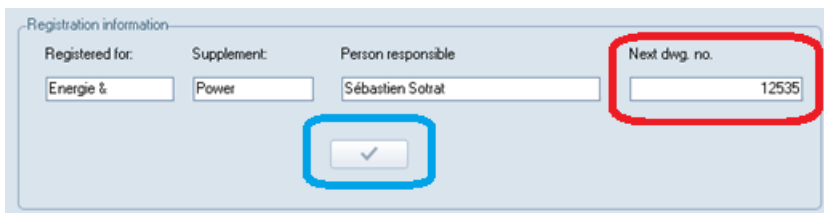
## 7.4 Install LICAD 12 again

### 7.4.1 Resetting the LICAD drawing number, company name, and clerk

It is necessary to reset the counter number of the LICAD drawing number if

- the program was reinstalled and existing drawings have to be considered
- the serial number was wrongly set through a system error

The first step is to determine the last drawing number assigned. Access the program point 'Contents' in LICAD and note the drawing with the highest number (e.g. 1004-3-57500). In LICAD, go to Options - System settings and in the field Current settings, click on the "System settings" button. Next dwg. no. field, overwrite the value with e.g. **12536**.



Click on the [button](#) below it to save it. The next new drawing would then be assigned, for example, the number 1006-3-57500.

## 7.5 Important information about upgrading from version 10.0-10.2 to current version

If you have not already installed LICAD 12, you can ignore this section! No further adjustments need to be made.

**Older versions of LICAD 10 must first be uninstalled.**

**Please note (summary):**

- 1. Back up old project files**
- 2. Delete older version**
- 3. Install from 10.4**
- 4. Convert old project files**

Please read more here:

## 7.5.1 Preparation

Before you install 12.0, you must create a backup copy of the project file from versions 10.0, 10.1 or 10.2. (not 10.3) The project file contains the LICAD drawings. Further on it is necessary to note the current drawing number. The creation of so-called LBF files (LICAD backup files) is not necessary here.

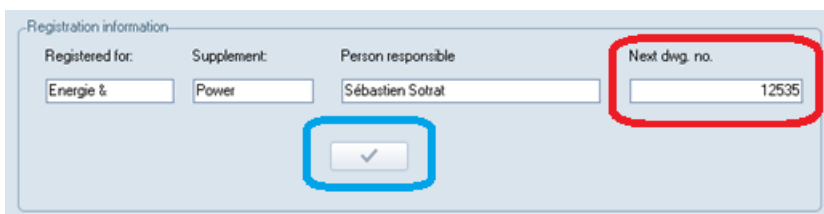
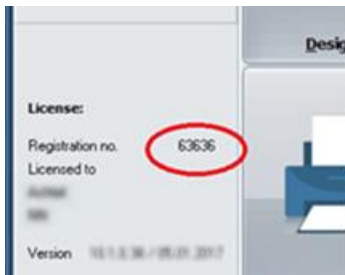
## 7.5.2 Create a backup project file of drawings

To do this, copy the project database (LICADV10xPRJDB.FDB) to another directory. The project database is located in this directory: c:\Users\Public\Documents\LISEGA\LICAD V10\  
It is recommended to copy these data to a location that can also be used later for project management. For example d:\data\LISEGA\LICAD V10\Projects\

## 7.5.3 Note current drawing number

The information about the registration key is required, as shown in the left-hand screenshot below.

It is also recommended to note the current drawing number for future use. Therefore, open the Specifications - System settings, as shown in the right-hand screenshot below. Otherwise, the Program would report that the drawing number already existed.



## 7.5.4 Uninstall LICAD V10.x

Open the Windows System control panel and select programs and functions (or Apps and features Window10). Choose LICAD and uninstall (right-hand mouse button).

## 7.5.5 Install and run the new version

Run the program LICADV11\_SETUP (V 11.0.0.xx).exe.

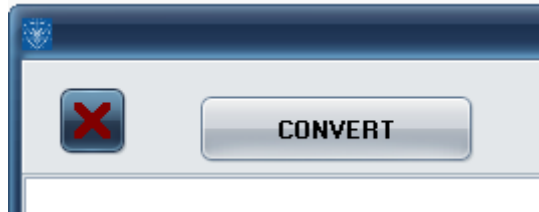
After the installation start LICADV10.EXE. The software will ask for the Registration key. If you no longer have the information for the registration, ask for the key at licad@de.liseqa.com. Please enter the number of the old registration key.

To reset the drawing number please refer to chapter Reset the drawing number.

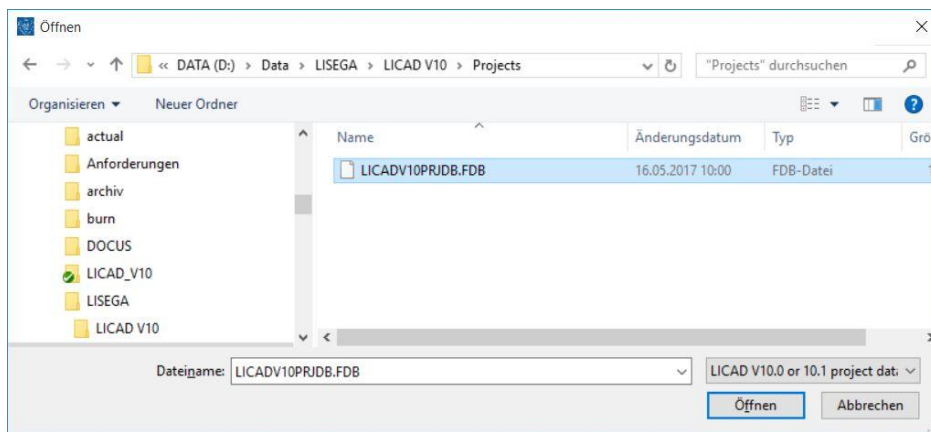
## 7.5.6 Convert old project database into V12.x

Please open from the main screen file menu and choose 'Convert older project databases to current version'.

Click to the CONVERT button



In the File open menu (as shown below), select the directory into which you previously copied the project backup file. (For example, use d:\data\LISEGA\LICAD V10\Projects\.)



If the file LICADV10xPRJDB.FDB is visible, click on it and choose 'Open'. After that, the database is converted and the last message should be there: All scripts have been successfully executed (as shown on the screen below).

As a result, a new project file LICADV104PRJDB.FDB was created in the same directory.

To use the new project file with the converted drawings, open the Project menu on the main screen and select the backup directory you have used for the conversion before. (For example d:\data\LISEGA\LICAD V10\Projects\.)

For more information, see chapter Project Management in the LICAD manual.

```
Convert L
[ X ] [ CONVERT ]
Script "10_00_00_0009" is skipped because database already contains this change
Add script "10_02_00_0038" to execute list:
Try to run the scripts ...
FDScript1 ConsolePut: Running script [10_02_00_0038] ...
FDScript1 ConsolePut: /***** ...
FDScript1 ConsolePut: Ok [00:00:00.000].
FDScript1 ConsolePut:
/***** ...
FDScript1 ConsolePut: Ok [00:00:00.031].
FDScript1 ConsolePut:
/***** ...
FDScript1 ConsolePut: Ok [00:00:00.000].
FDScript1 ConsolePut:
/***** ...
FDScript1 ConsolePut: Ok [00:00:00.000].
FDScript1 ConsolePut:
CREATE UNIQUE INDEX PRJ_HIERARCHY_IDX1
ON PRJ ...
FDScript1 ConsolePut: Ok [00:00:00.000].
FDScript1 ConsolePut:
CREATE TRIGGER PRJ_HIERARCHY_BI FOR PRJ_HIERARCH ...
FDScript1 ConsolePut: Ok [00:00:00.000].
FDScript1 ConsolePut:
/* RECONNECT; */

ALTER TABLE PRJ_HIERARCHY AD ...
FDScript1 ConsolePut: Ok [00:00:00.000].
FDScript1 ConsolePut:
/***** ...
FDScript1 ConsolePut: Ok [00:00:00.015].
FDScript1 ConsolePut:
/***** ...
FDScript1 ConsolePut: Ok [00:00:00.000].
FDScript1 ConsolePut:
/***** ...
FDScript1 ConsolePut: Ok [00:00:00.000].
FDScript1 ConsolePut: Script [10_02_00_0038] finished without errors [00:00:00.078].
FDScript1 ConsolePut:
FDScript1 ConsolePut: insert into InfoTab ( version, executed_sql ) valu ...
FDScript1 ConsolePut: Ok [00:00:00.016].
All scripts have been successfully executed ...
```

Reset the drawing number if necessary. See 7.4.1  
'Resetting the LICAD drawing number.'

## 7.6 Setup command line parameters

The LICAD setup was created with Inno Setup, so all default Inno Setup command line parameters can be used and two new parameters were added.

### 7.6.1 LICAD V10.2 specific command line parameters

**/SYS\_DBS\_FOLDER ="x:\dirname"**

Overrides the default directory name displayed on the *Select System database files Destination Location* wizard page. A fully qualified pathname must be specified.

**/PRJ\_DB\_FOLDER ="x:\dirname"**

Overrides the default directory name displayed on the *Select project database file Destination Location* wizard page. A fully qualified pathname must be specified.

### 7.6.2 Default Inno Setup command line parameters

NOTE: The following information is taken from the help of Inno Setup!

The Setup program accepts optional command line parameters. These can be useful to system administrators, and to other programs calling the Setup program.

**/HELP, /?**

Shows a summary of this information. Ignored if the UseSetupLdr [Setup] section directive was set to no.

**/SP-**

Disables the '*This will install... Do you wish to continue?*' prompt at the beginning of Setup. Of course, this will have no effect if the DisableStartupPrompt [Setup] section directive was set to yes.

**/SILENT, /VERYSILENT**

Instructs Setup to be silent or very silent. When Setup is silent, the wizard and the background window are not displayed but the installation progress window is. When a setup is very silent this installation progress window is not displayed. Everything else is normal so for example error messages during installation are displayed and the startup prompt is (if you have not disabled it with DisableStartupPrompt or the '/SP-' command line option explained above).

If a restart is necessary and the '/NORESTART' command is not used (see below) and Setup is silent, it will display a '*Reboot now?*' message box. If it is very silent, it will reboot without asking.

**/SUPPRESSMSGBOXES**

Instructs Setup to suppress message boxes. Only has an effect when combined with '/SILENT' or '/VERYSILENT'.

The default response in situations where there is a choice is:

- Yes in a 'Keep newer file?' situation.
- No in a 'File exists, confirm overwrite.' situation.
- Abort in Abort/Retry situations.
- Cancel in Retry/Cancel situations.
- Yes (=continue) in a DiskSpaceWarning/DirExists/DirDoesntExist/NoUninstallWarning/ExitSetupMessage/ConfirmUninstall situation.
- Yes (=restart) in a FinishedRestartMessage/UninstalledAndNeedsRestart situation.

Five message boxes are not suppressible:

- The 'About Setup' message box.
- The 'Exit Setup?' message box.
- The FileNotInDir2 message box displayed when Setup requires a new disk to be inserted and the disk was not found.
- Any (error) message box displayed before Setup (or Uninstall) could read the command line parameters.
- Any message box displayed by [Code] support function MsgBox.

## **/LOG**

- Causes Setup to create a log file in the user's TEMP directory detailing file installation and [Run] actions taken during the installation process. This can be a helpful debugging aid. For example, if you suspect a file is not being replaced when you believe it should be (or vice versa), the log file will tell you if the file was really skipped, and why.
- The log file is created with a unique name based on the current date. (It will not overwrite or append to existing files.)
- The information contained in the log file is technical in nature and therefore not intended to be understandable by end users. Nor is it designed to be machine-parsable; the format of the file is subject to change without notice.

### **/LOG="filename"**

- Same as /LOG, except it allows you to specify a fixed path/filename to use for the log file. If a file with the specified name already exists, it will be overwritten. If the file cannot be created, Setup will abort with an error message.

## **/NOCANCEL**

- Prevents the user from cancelling during the installation process, by disabling the Cancel button and ignoring clicks on the close button. Useful along with '/SILENT' or '/VERYSILENT'.

## **/NORESTART**

- Prevents Setup from restarting the system following a successful installation, or after a *Preparing to install* failure that requests a restart. Typically used along with /SILENT or /VERYSILENT.

### **/RESTARTEXITCODE=exit code**

- Specifies a custom exit code that Setup is to return when the system needs to be restarted following a successful installation. (By default, 0 is returned in this case.) Typically used along with /NORESTART. See also: [Setup Exit Codes](#)

## **/CLOSEAPPLICATIONS**

- Instructs Setup to close applications using files that need to be updated by Setup if possible.

#### **/NOCLOSEAPPLICATIONS**

- Prevents Setup from closing applications using files that need to be updated by Setup. If /CLOSEAPPLICATIONS was also used, this command line parameter is ignored.

#### **/FORCECLOSEAPPLICATIONS**

- Instructs Setup to force close when closing applications.

#### **/NOFORCECLOSEAPPLICATIONS**

- Prevents Setup from force closing when closing applications. If /FORCECLOSEAPPLICATIONS was also used, this command line parameter is ignored.

#### **/RESTARTAPPLICATIONS**

- Instructs Setup to restart applications if possible. Only has an effect when combined with '/CLOSEAPPLICATIONS'.

#### **/NORESTARTAPPLICATIONS**

- Prevents Setup from restarting applications. If /RESTARTAPPLICATIONS was also used, this command line parameter is ignored.

#### **/LOADINF="*filename*"**

- Instructs Setup to load the settings from the specified file after having checked the command line. This file can be prepared using the '/SAVEINF=' command as explained below.
- Do not forget to use quotes if the filename contains spaces.

#### **/SAVEINF="*filename*"**

- Instructs Setup to save installation settings to the specified file.
- Do not forget to use quotes if the filename contains spaces.

#### **/LANG=*language***

- Specifies the language to use. *Language* specifies the internal name of the language as specified in a [Languages] section entry.
- When a valid /LANG parameter is used, the *Select Language* dialog will be suppressed.

#### **/DIR="*x:dirname*"**

- Overrides the default directory name displayed on the *Select Destination Location* wizard page. A fully qualified pathname must be specified. May include an "expand:" prefix which instructs Setup to expand any constants in the name. For example: '/DIR=expand:{pf}\My Program'.

#### **/GROUP="*folder name*"**

- Overrides the default folder name displayed on the *Select Start Menu Folder* wizard page. May include an "expand:" prefix, see '/DIR='. If the [Setup] section directive DisableProgramGroupPage was set to yes, this command line parameter is ignored.

### **/NOICONS**

- Instructs Setup to initially check the *Do not create a Start Menu folder* check box on the *Select Start Menu Folder* wizard page.

### **/TYPE=type name**

- Overrides the default [setup type](#).
- If the specified type exists and is not a custom type, then any /COMPONENTS parameter will be ignored.

### **/COMPONENTS="comma separated list of component names"**

- Overrides the default [component](#) settings. Using this command line parameter causes 'Setup to automatically select a custom type'. If no custom type is defined, this parameter is ignored.
- Only the specified components will be selected; the rest will be deselected.
- If a component name is prefixed with a "\*" character, any child components will be selected as well (except for those that include the dontinheritcheck flag). If a component name is prefixed with a "!" character, the component will be deselected.
- This parameter does not change the state of components that include the fixed flag.
- Example:  
Deselect all components, then select the "help" and "plugins" components:  
/COMPONENTS="help,plugins"
- Example:  
Deselect all components, then select a parent component and all of its children with the exception of one:  
/COMPONENTS="\*parent,!parent\child"

### **/TASKS="comma separated list of task names"**

- Specifies a list of [tasks](#) that should be initially selected.
- Only the specified tasks will be selected; the rest will be deselected. Use the /MERGETASKS parameter instead if you want to keep the default set of tasks and only select/deselect some of them.
- If a task name is prefixed with a "\*" character, any child tasks will be selected as well (except for those that include the dontinheritcheck flag). If a task name is prefixed with a "!" character, the task will be deselected.
- Example:  
Deselect all tasks, then select the "desktopicon" and "fileassoc" tasks:  
/TASKS="desktopicon,fileassoc"
- Example:  
Deselect all tasks, then select a parent task and all of its children with the exception of one:  
/TASKS="\*parent,!parent\child"

### **/MERGETASKS="comma separated list of task names"**

- Like the /TASKS parameter, except the specified tasks will be merged with the set of tasks that would have otherwise been selected by default.

- If [UsePreviousTasks](#) is set to yes, the specified tasks will be selected/deselected after any previous tasks are restored.
- Example:  
Keep the default set of selected tasks, but additionally select the "desktopicon" and "fileassoc" tasks:  
`/MERGETASKS="desktopicon,fileassoc"`
- Example:  
Keep the default set of selected tasks, but deselect the "desktopicon" task:  
`/MERGETASKS="!desktopicon"`

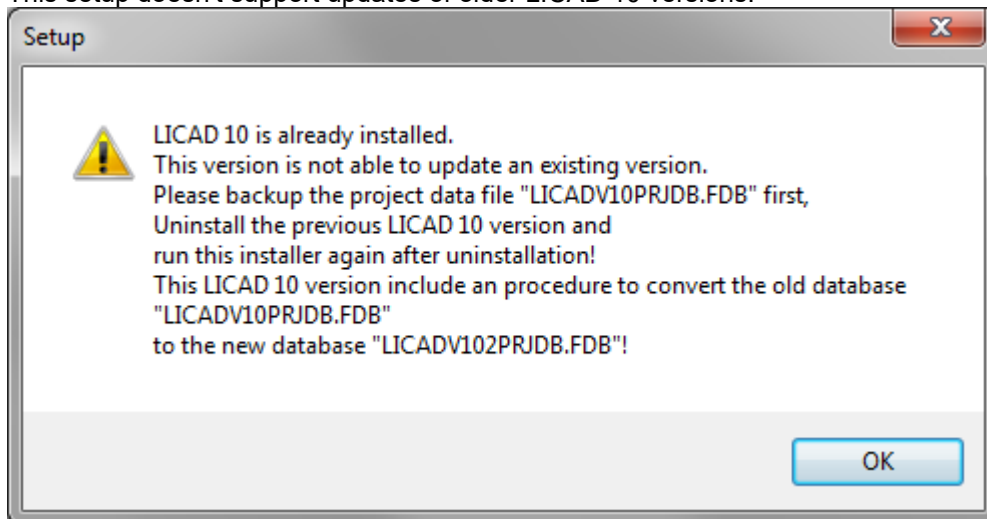
***/PASSWORD=password***

- Specifies the password to use. If the [Setup] section directive Password was not set, this command line parameter is ignored.
- When an invalid password is specified, this command line parameter is also ignored.

## 7.7 Updating existing versions

### 7.7.1 Update LICAD 10 version prior 10.2

This setup doesn't support updates of older LICAD 10 versions.

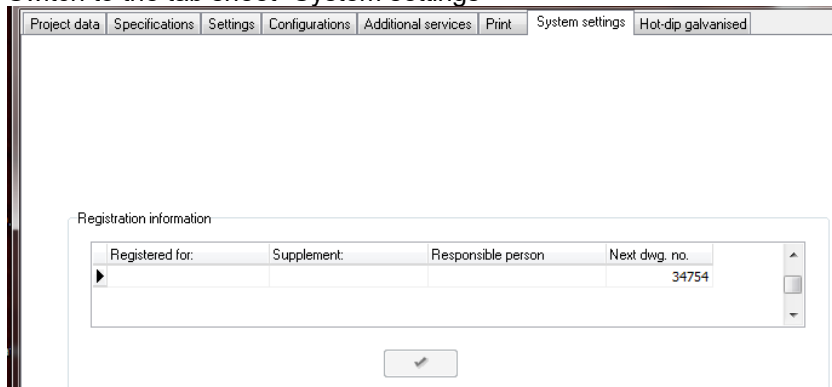


Five steps must be done to prepare the computer to install of LICAD 10.2.

Step 1:

Start the currently installed LICAD 10 version and click on button "Specs".

Switch to the tab sheet "System settings"



Remember the next drawing number shown. You need it for the first start of LICAD 10.2.

Close LICAD application.

Step 2:

Make sure LICAD V10 is not started!

The current project file "LICADV10PRJDB.FDB" of the installed LICAD 10 version needs to be backup manually. Therefore, copy the file "LICADV10PRJDB.FDB" into a new directory. The default installation location is:

"<Common Documents>\LISEGA\LICAD V10\"

Step 3:

Uninstall the previous version of LICAD 10. This will also delete the current project file "LICADV10PRJDB.FDB". That is the reason why a manual backup of this file is necessary!

Step 4:

Install LICAD V10.2, start LICAD, enter the user information and your serial number.

Now reset the next drawing number to the remembered value (from step 1). Go to "Specs" -> "System settings" and change the value 1 to the value from step 1.

This will avoid duplicate drawing numbers and/or the error "Key violation error".

Step 5:

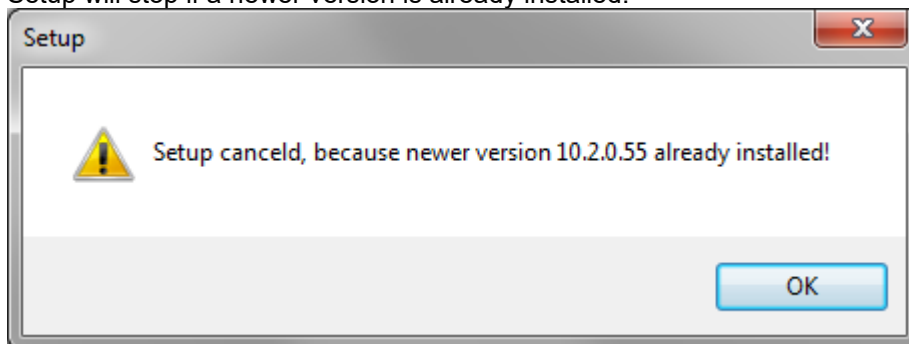
Convert the old project file "LICADV10PRJDB.FDB" to the new format using LICAD 10.2 (File menu -> "Convert V10.0/V10.1 project database")

Now the update is complete and you can continue using LICAD.

## 7.7.2 Installing over a newer version

Installing an older version is not supported.

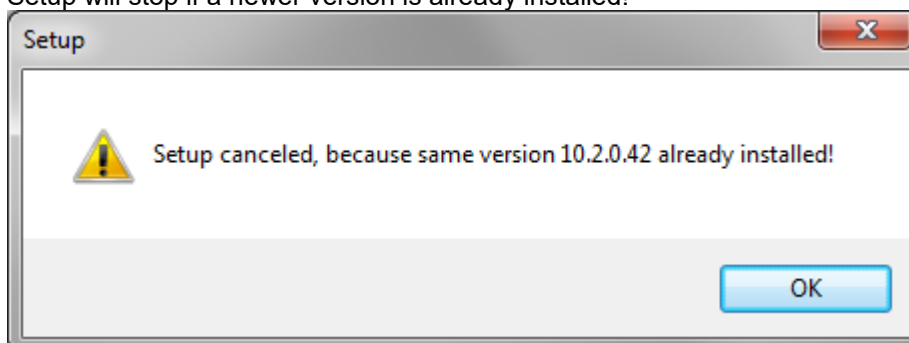
Setup will stop if a newer version is already installed!



## 7.7.3 Installing the same version

Installing the same version again isn't supported.

Setup will stop if a newer version is already installed!



## 7.7.4 Examples to start up installation program

### 7.7.5 Installation with defined log file

Specifying the /LOG="file name" command line parameter will do that.

e.g.: "LICADV10\_SETUP (V 10.2.0.42).exe" /LOG=C:\temp\licad10\_2\_setup.log

By default a log file named like "Setup Log <date> #<counter>.txt" is created in the TEMP folder of the admin user that is installing LICAD.

## 7.7.6 Interactive installation with predefined directories

This command line only changes the directory names that are displayed first on the corresponding pages of wizard directory selection.

The user can change them during installation as normal.

```
"LICADV10_SETUP (V 10.2.0.42).exe" ↵  
  /DIR="C:\Progs\LICAD_10\" ↵  
  /SYS_DBS_FOLDER="C:\Progs\LICAD_10\databases" ↵  
  /PRJ_DB_FOLDER="C:\Progs\LICAD_10\databases"
```

## 7.7.7 Silent installation

```
"LICADV10_SETUP (V 10.2.0.42).exe" /VERYSILENT /SUPPRESSMSGBOXES
```

This will install LICAD without any user interaction in the default directories.

## 7.7.8 Silent installation with defined directories and log file

```
"LICADV10_SETUP (V 10.2.0.42).exe" ↵  
  /VERYSILENT ↵  
  /SUPPRESSMSGBOXES ↵  
  /DIR="C:\Progs\LICAD_10\" ↵  
  /SYS_DBS_FOLDER="C:\Progs\LICAD_10\sysdbs" ↵  
  /PRJ_DB_FOLDER="C:\Progs\LICAD_10\prjdb" ↵  
  /LOG=C:\temp\licad10_2_setup.log
```

This will do a complete autoinstall of LICAD 10 without any user interaction. All files are stored in the path "C:\Progs\LICAD\_10\" including the databases that are stored in sub directories according to the command line parameters. The log file is set to "C:\temp\licad10\_2\_setup.log".

# 8. History

## 8.1 Notes about version 2026.1

Type 26 shown without bolted connections (blocking devices) in 2D views

Min-max values for load group connections for Type 36 in the E3D LISEGA catalogue have been revised

Maximum L-dimension changed from 395 mm to 295 mm for type 334318

U-bolts 400538 and 400588 added

Type 405627 material corrected

Information window dynamic supports displays the unit for the insulation in mm when "UNC" has been selected

Tvl res dn/up' not shown on drawing except type 39

Path selection button not visible in Transfer app to ABAS ERP

The TEC file has been expanded to include additional fields in the DXF transfer

## 8.2 Notes about version 2026.0

### 1. New added

Printout of drawings with watermark optionally possible

New Base clamps type 49..15 added incl. multi guides

New types 25..15 as replacement for type 25..18 incl. base plates for travel ranges 1 to 3

Exclusion of type 58 with increased surface protection possible

Combination of spring supports and stanchions optionally with sliding elements

Program 'Index of drawings' expanded to include CSV export option

Export of 3D drawings via STEP format completely revised

### 2. Changes

Stanchions, type 58, with Sliding Plate option. Horizontal movements allowed

Number of Fixpoint Clamps numbers shifted from 49 .. 15 to 49 .. 16

Pipe base clamps (type 49 only) receive revised values for permissible loads and hydraulic loads

If individual PG4 articles are deselected for extended surface protection, 934500 is also deactivated

Option for L3D or L3DX export added (L3DX is a XML file containing the same information as a L3D file)

LICAD internal data exchange with 3D viewer is now done via L3DX

Read of ROHR2 files as UTF8 formatted

Pipe clamp selection tables.pdf modified (Various articles were missing)

E dimension of type 49-SP base clamp (incl. stainless steel sliding plate) reduced by 1 mm

Error message extended in the support configuration Shock absorbers and vertical clamps

No use of F91 material for clamp selection': Default value is True on first start

LISEGA Logo changed

No printer available, problem solved if not printer is installed

### 3. Bug fix

LICAD doesn't warn us for the second time (Modification), even there is a clash

Base clamps 49 46/51/56/61 25 added for 100°C (option no low temperature material)

Error when trying to filter drawings (Calculation point - Scope Check Error)

The value of the minimum L dimension was not rounded to 10 mm during the check.

UK/US profiles added to type 76 (graphic)

Design of type 79..19 spring trapezes always with blocking costs

Block-by-block addition of blocking costs to BOM without information of details for weights

Multiple items of blocking costs for type 79..19 possible with subsequent addition

Endless loop if rigid strut is selected higher than the largest possible clamp connection

The selected installation height for type 19 constant supports is not displayed if the adjustment is included

Message 'Displacement of base clamp outside permissible bounds!' was not displayed if the hanger is preselected  
Check Hanger Mark Number for problem characters (; or #)  
Correction Graphic Type 197317 and 197127 (A-Mass, M-Mass)  
Missing label 'S' for dynamic supports with very small diameters (< 33.7 mm)  
Incorrect representation of inlay plates for type 4H (height-adjustable base clamps)  
LOF output: Blocking position was not appended to the DESP for type 16..16/17  
Not all values were displayed when specifying the reserves ( Tvl res dn/up) for Rigid struts  
Preselection of type 49xx5x as multiple guide no longer possible at Temperature < 600°C

### 8.3 Notes about version 12.1

Deselection of the HD option of individual product groups (VH-, CH-traverses, and Slide Plates for bolts).  
Revised 'Version control' display.  
Help text for import description "Base clamp type" changed to G2A, G2P, G3, and G4 instead of 1, 2, 3, and 4.  
Selection routines for type 27 adapted. The maximum trailer loads are calculated more precisely.  
Selection of dynamic clamps (type 36/37) revised (T > 100°C).  
Selection of dynamic clamps in the static area revised, dead weight is also taken into account.  
Changes to the diameter of the trunnions adopted for fixed-point base clamps.  
Calculation of the weight for stanchions (type 58) changed.  
When transferred to EKS, the L value for stanchions was only written with three digits.  
Indication on the printout of the adjustment option '+30mm' for spring supports and '+60mm' for constant supports.  
Utilization of the adjustment option (+60mm) for constant supports (types 16 + 19).  
Control logic: extension and specification for flat constant support type 19.  
EURO & US\$ price list revised 01/24.  
Version information of LICADSYSDB changed to 12.1.0.0212  
Conversion project-DB 12.0.0.0 failed.

### 8.4 Notes about version 12.0

The main changes to the previous version can be found here.

#### 1. Newly added

New pipe clamps and base clamps (type 36, 44, 48, 49) for temperature range up to 620°C/1200°F  
Export of support drawings in STEP, STL and PNG format (Experimental)

#### 2. Changes

Reading of support data: Selection of multiple guide base clamps possible.  
Non-usable EXCEL cells are ignored when reading in support data.  
Error message: 'ABHGLesen: Parameter A\_NR\_Search = 0' changed to 'Configuration number required!  
Type 57 optionally available in hot-dip galvanized.  
Blue/red indicator for hot or cold input load.  
MSG 'One or more parts do not match selected surface protection' for retracted sliding plates.  
New window size management. High screen resolution vs. font size.  
Menu 'language selection table' is bilingual.  
For type 43, no text appears above the parts list regarding the angle.  
Blockings appear in the parts list with weight information.  
Subroutine "Catalog" completely revised.

#### 3. Bug fix

When switching from preview to modify, another drawing was opened if the filter was set.  
Print does not take into account the rotation of the displayed beam.  
Wrong (too small) values for hydro load for coupled pipe clamps type 44.  
Correction of material table for Shear Lugs 13CrMo4-5 /A387 Grade 12.  
Add extended surface code to components: Supports for increased requirements must be excluded.  
Incorrect type number in LOF file for SPRE SPCO /LISEGA3.0/34T916.

Rename parts from 499615FP/499665FP to 499715FP/499765FP.  
Update 3D view, when rotating parts.  
Infinite loop when determining dynamic clamps with angle greater than zero and too high load input.  
Error in displaying type 21C219 in 3D.  
Graphic error when combining 49xxyy and 7600xx (overlapping of parts).  
Static supports incl. type 35 are allowed up to 6° deflection angle.  
Text 'Hanger type selected from user manual' may also have been printed for rigid supports.  
Type 36: E dimension correction in L3D plug-ins.  
Unexpected error messages when importing UNC support data if the units in the options are UNC.

#### 4. Further

Floating-point error when printing 44xx5xi after program start (DXF, PRINT).  
Error reading the PASS file with '.' (dot) occurred in the second line. Extension '.ctp' is now checked.  
Problem reading CAESAR II files and UTF8 character set (Chinese).  
Correction of insertion tape width for type 44.  
Weight of part 704611 changed from 3.5 to 3.6 kg.  
Possible wrong value displayed after changing pre-assembly option.  
Case sensitivity in kN case.  
Glyph symbol for option buttons changed.  
Diameter of threaded rods for type 36 in 3D catalogs adjusted.  
Catalog modification for weights of type C pipe supports.  
Special character '&' removed from translation strings.  
New note on the "Select diameter" button.  
New note on the switches "Total load" and "Total hydraulic load".  
New note: "Select cold or hot as input load".  
List of LISEGA subsidiaries revised.

## 8.5 Notes about version 11.1

The main changes to the previous version can be found here.

### 1. newly added

New entry in the main menu: LISEGA LICAD Channel

Load table for pipe clamp bases (EN/US).pdf added

L3D export as XML file

Search fields added in drawing selection dialog

Preselection of clamp bases

Maximum length of threaded rods can be limited to 1500 mm

**Height adjustable base clamps Type 4H** incl. -SP, Coreflex & -IP option, prices, new config. No. 80 static

Transfer file of ROHR2 extended by the field node name (version 2.0)

### 3D Viewer integrated

Interface extension: Reading in PASS/STAR-PROF files

### 2. Changes

Angulating spring support: Additional note on printout if length of extensions is below min. value (Extension size not adjustable)

Prices for type 952202 and 952102 Second name plates

Polish translation missing for Second name plates

File 'Pipe clamp\_selection\_table' (EN) replaced with Load table for pipe clamp bases (US)

The version window of the program version included again

Message when closing Designer or Modification: Save & Exit

Version info LBF/Project file description changed into LICAD

Text changed 'Pipe clamp is selected for a load inclined at an angle of 0° (0° -> 1°)

Interpolation in the design of dynamic clamps as a function of horizontal movements

Revised data sheets of surface protection codes

For constant hangers (type 18/19) the hydro loads have been increased to 2 x set load

Revised loads and weights for pipe bearings made of ST material  
Revised PDF files 'Load table for pipe clamp bases (EN/US).pdf'

### 3. Bug fix

Incorrect calculation of the weight for types 760021 and 760022  
Bug fix L3D file export (Error message: Index exceeds the maximum (4))  
LOF files for PDMS: incorrect output of type 3L if no material specified (3Lxxxx-0-1)  
Incorrect prices while reading in LBF with extended surface codes (KB\_SURFACE)  
When changing cold/warm option, the input may be ignored if the preview was called beforehand  
L3D export did not take care on building connection rotation when beam clamps are used  
Translation error in Italian at LBF-OUT  
Switching the maximum threaded rod length is not recognized as a change  
Possibly too short threaded rod if the 2000 mm option is set for maximum length (4 x 1500)  
No pre-selection of type 18/19, constants, at a load of 0.21 kN or 47,2 lbs  
In 'Add additional service', inlay plates were added to dynamic clamps although not selected  
Types 586611, 587111, 586621, 587121 shown with wrong L-Dimension  
Checking and correction of the input width for vertical clamps to 10mm steps  
Checking hydro load according of horizontal movements at type 36/37  
Interpolation in the design of dynamic clamps as a function of temperature below 100°C  
Option to consider type 42 blocked the selection of type 43 under certain circumstances

## 8.6 Notes about version 11.0

The main changes to the previous version can be found here.  
Type 16..25 Angulating Constant Support added  
Slide Plates for Omega Base Clamps available  
The design of support is canceled when the limit angle is exceeded (4°)  
Extended data transfer to EXCEL\*  
Manual specification of snubber and rigid strut revised  
Load reserve for dynamic clamps withdrawn  
Revised load data for type 43  
Revised factors for HZ=1.15 and HS=1.5 (regarding clamps)  
Shim plates for U-Bolts added

**The permissible loads on the clamps depending on the load application angle.** A new chapter has been added to this in this manual

Type 40 with Coreflex tape 420004 selectable  
Material description for type 40 (UNC) changed  
Project Initialization screen adjusted

Revised data sheets of surface protection codes

Checking tolerance range for the pipe diameter  
Symbols of pre-assembly angle are hidden in case of Fix Point clamps

### Fixed bugs:

Recalculate prices for type 3L failed while changing surface protection  
While modifying drawing 3L-00 not set correctly  
Quantity of Threaded rods (underneath double hanger type 18)  
"Splitting" message for rigid struts in the static design below 6 degrees incorrect  
Information of Diameter and Load group not shown in BOM if not special  
Data errors with different types 44 in connection sizes  
Rounding to values of 10 for Vertical clamps may not work  
Number of brackets, type 35, depending on the version number 10.4.0.83  
Type number of Beam clamps included spaces (in case of HD+)  
Routine for deterring min. Pin-to-pin dimension of trapezes without pipe clamps revised  
Value of the insulation at Cryo-support is not displayed when changing  
Certain weights for type 56 corrected  
Data mismatch for selection of type 444622 at 450°C

Error 615500 fixed

Constant hanger selection type 18D327 for loads between 0,37 kN and 0,72 kN only  
Text 'Clamp requires painting on site' doesn't come up after add option HD in features  
Article 934000 appears incorrectly in EKS (In connection with article 934500 only)

## 8.7 Notes about version 10.4

Below are changes that are more important.

- New type 16..16 and 16..17 added (with gliding plate)
- Preselection of type 27 (sway brace) added
- Type 35 can be deselected as HD
- Type 36/37 can be deselected as HD
- Type 37 now including with bracket type 35
- Changed the selection of clamps with special connections for rigid supports
- The threaded rods are summarized in the summary BOM
- American W-profiles added
- UK Universal beams added
- Convert drawings from increased to standard design
- Type 34 is available as a special diameter
- Type 78..11-HD replaced by type 78..11 (hot dip galvanized as standard)
- Selection logic for type 42 clamps revised
- C4H surface standard with HD for product group 2
- Permissible loads for pipe clamps in connection with sliding plates revised

The changes made in version 10.3 are also mentioned here.

- Block with optional blocking piece fixings
- Second travel scale and nameplate for spring and constant hangers
- Shock absorbers with long strokes
- Extended surface protection up to C5M-H
- New constant hanger types 127215 & 127315
- Extended selection range for pipe diameters up to 1800mm for types 34, 37, 44, 48, 49

Note: It should be noted here that the extended surface protection would result in additional costs.

In addition, the following points, which were reported to us by users, were processed:

- Project path name optionally on the printout
- Spacer plate for locking bearings on trusses also in HD version
- Additional information on the load reserve for special clamps (R%)
- The telescopic spring supports have been withdrawn
- The gap dimension Z for constant hanger traverses may be omitted (omega bearings)

An important topic is the area of interfaces. All component libraries and plug-ins have been revised and adapted to the new LICAD version. Therefore, they have to be reinstalled.

## 8.8 Notes about version 10.3

In the current version, new features have been added again. The most important of them are listed below.

- Blocking with optional blocking piece attachments
- Second travel scale and nameplate for spring and constant hangers
- Shock brakes with long travel ranges
- Extended surface protection up to C5M-H
- New constant hanger types 127215 & 127315
- Extended range for tube diameters up to 1800mm for types 34, 37, 44, 48, 49

Note: It should be noted that the extended surface protection would result in additional costs.

In addition, the following items reported to us by users have been edited:

- Project path name optional on printout
- Spacer plate to lock bearings on crossheads also in HD version
- Additional note of load reserve for special clamps (R%)
- The telescopic spring supports have been withdrawn
- The gap dimension Z for constant hanger beams can be omitted if necessary (Omega bearings)

Furthermore, various messages and notes have been made in numerous places for easier and safer handling of the software.

An important topic is the area of interfaces. All component libraries and plug-ins have been revised and adapted to the new LICAD version. Therefore, these must also be reinstalled.

### **8.9 Notes about LICAD 10.2**

The LICAD version 10.2 introduces an extended Project Management function. This is the major improvement to the previous versions 10.0 / 10.1. The Project Management function allows the users to store the project files (databases) in different places, either on the local computer or in the network. The handling would again be comparable to the versions 9 or older. A detailed description of the project management function can be found in chapter Project management of the LICAD User Manual.

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## 9.2 Open Asset Import Library

### Open Asset Import Library (assimp)

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## 9.4 Firebird 2.5.9 with CVE-2025-54989 fix by IBPhoenix

A bug in the Firebird server was found by the Zero Day Initiative (ZDI) program. The bug exploits a weakness in Firebird's remote protocol.

The vulnerability allows remote unauthenticated users to cause a denial of service via a NULL pointer dereference and subsequent crash of the server.

A malicious user can cause a DoS attack on a Firebird server by sending a specific sequence of bytes. It is not necessary to be logged in to the server. To exploit the vulnerability, it is sufficient to have access to the Firebird port.

It should be noted that the Classic server architecture is less vulnerable, inasmuch as existing connections will remain active. However if the attack is sustained no new connections will be possible for the lifetime of the attack, no matter which architecture is used.

It is not known if a proof of concept has been developed. However, once the vulnerability is published one should expect rogue users to develop an attack. With increased access to AI based code generation models the bar to exploit development has been lowered considerably.

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