Almost all AutoCAD and PractiCAD commands (basic and automatic tools) are available as Menu commands, Toolbar buttons, and keywords in Command line and associated keyboard shortcut combinations.

To activate a command:
- **Menu**: select a category (series of left clicks on menu elements) ► **Menu**: select a command (left click) or
- **Toolbar**: select a button (left click) or
- **Command line**: type the command name ► Enter key or Press a predefined shortcut combination

To deactivate a command:
- Activate another command or Press Esc key

To customize PractiCAD tools:
- **Toolbar area (empty space)**: right click ► **Popup menu**: move your mouse over PractiCAD ► **Toolbars Window caption**: drag-and-drop the Toolbars window over the Toolbar area or
- **Toolbar area**: right click ► **check or uncheck the tool categories (left click)** ►
- **Toolbars Window caption**: drag-and-drop the Toolbars window over the Toolbar area

To assign a shortcut combination to a command:
- **Toolbars area**: right click ► **Popup menu**: Customize ► **Customize dialog**: Keyboard bookmark ► **Customize dialog**: select a command and press a new shortcut key ► **Customize dialog**: Close button

**PractiCAD** provides you extensive fitting libraries, catalogs of architectural items, materials, allowance and tools to draw and detail architectural background and duct of rectangular, round and oval shape satisfied predefined system specifications. Also you can create your own libraries of tags and parametrizes automatic tools. You can get access to all available architectural, fitting, tag items and predefined parametrized automatic tools using working bins. A working bin is a custom selection of PractiCAD objects and automatic tools, assembled by you.

You can have as many bins as you want, and every bin can have any configuration. Any bin can be floated, or it can be docked. **When a bin is docked**: During data input, it is positioned along a screen side. You can slide it along the screen side, and moving your mouse cursor over the bin caption will open and close the bin. **When a bin is floated**: During data input, it can be positioned anywhere on the screen by dragging it into a desired position, and can be opened / closed by using a toggle button on the bin caption. Once a bin is open, you can select any bin element by clicking it once.
You can compose your fittings library of catalogs and set up your working bins with Fittings Library Editor.

To create a new catalog:  
Fitting Library Editor :  Catalogs list :  New Catalogue

To delete a catalog:  
Fitting Library Editor :  Catalogs list :  Delete Catalogue

To add a fitting to a catalog:  
Catalogs list : select a catalog ►  New Item

To delete a fitting from a catalog:  
Fittings list : select a fitting ►  Delete Item

To set up the fitting parameters:  
Fittings list : select a fitting ►  Parameters list : type the parameter values

Lock / Unlock all fittings for edit:  
Catalogs list : select a catalog ►  Lock All / Unlock All

Lock / Unlock a fitting for edit:  
Fittings list : check box at the left of the parameter : check / uncheck the fitting

Lock / Unlock all fittings for edit:  
Catalogs list : select a catalog ►  Lock All / Unlock All

To add a fitting to a bin:  
Fitting library or Fittings list :  drag-and-drop a fitting item into any existing fitting bin or onto empty space on your screen

To move a fitting within a bin:  
Bin : select a fitting ►  drag-and-drop the fitting to a desired position

To delete a fitting from a bin:  
Bin : select a fitting ►  drag-and-drop the fitting into Burning bin

To delete a bin:  
Delete all fittings from the bin

To dock a bin:  
Bin : Dock

To change alignment of a bin:  
Bin : Unlock (if docked) ►  Bin : Change Alignment ►  Bin : Dock

To float a bin:  
Bin : Unlock (if docked) ►  drag the bin caption

To show a bin (if minimized):  
Move your mouse over the bin caption

To show a bin maximized:  
Move your mouse over the bin caption ►  Bin : Maximize

To show a bin minimized:  
Move your mouse over the bin caption ►  Bin : Minimize

To show / hide a bin:  
Move your mouse over the bin caption ►  Bin : Show / Hide

To switch all fitting bins on / off:  
Toolbar : Show / Hide Fittings

You can customize Item box alignment and position exactly the same way as you do with fitting bins.

To add a fitting(s) to a drawing:  
Add fittings you need to a bin ►  Move your mouse over the docked bin caption ►  a fitting bin : select a fitting (left click) ►  Item box : specify hold point ►  Item box : specify method of placement ►  Item box : edit fitting parameters ►  Specify fitting position and rotation

Colored box at the left bottom of a fitting icon describes the fittings set being represented with the icon.

Custom fitting  No box  Selected fitting from a specified catalog  Red box
Fittings of a specified type from a specified catalog  Blue box  Fittings of a specified type from all catalogs  Green box

If You select a fitting marked with the blue or green box, Fitting selection dialog will appear, and You will have to select a fitting exemplar with it.
**Work with Fittings**

**To edit the fitting parameters**
- **Model space**: select the fitting (left double click)
- **Appeared pop-up menu**: Properties ► Property Window: type the fitting property value(s)

Note: If Change Duct to Transition option is selected, the preceding or the following fitting will be changed to transition. The preceding fitting will be changed to transition if you hold fittings by input opening, and the following fitting – if you hold them by output opening.

**Duct Line Fitting Editing**

**PractiCAD** allows you to edit fitting parameters in duct lines. The preceding and the following fittings in the duct line will be adjusted in accordance with duct line editing options.

- **To edit the fitting parameters**
  - **Model space**: select the fitting (left double click)
  - **Appeared pop-up menu**: Properties ► Property Window: type the fitting property value(s)

**Takeoff Export**

- **To export a takeoff**: Toolbar: Takeoff ► Takeoff Export Editor: Set up selection method, selection conditions, grouping method, and destination folder and file name
- **To set up selection method**: Takeoff Export Editor: Selection
- **To set up selection conditions**: Takeoff Export Editor: Conditions
- **To set up grouping method**: Takeoff Export Editor: Group
- **To set destination folder**: Takeoff Export Editor: Takeoff

**Duct Line Fitting Editing**

<table>
<thead>
<tr>
<th>Placement methods:</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Continue or &lt;C&gt;</strong></td>
<td>Place the fitting at the end of preceding duct line.</td>
</tr>
<tr>
<td><strong>Tap or &lt;T&gt;</strong></td>
<td>Place the fitting as a tap.</td>
</tr>
<tr>
<td><strong>Rotation or &lt;R&gt;</strong></td>
<td>Rotate the fitting.</td>
</tr>
<tr>
<td><strong>New or &lt;N&gt;</strong></td>
<td>Start new duct line.</td>
</tr>
<tr>
<td><strong>Piece or &lt;P&gt;</strong></td>
<td>Single fitting or single standard length of duct by itself.</td>
</tr>
<tr>
<td><strong>Single or &lt;SI&gt;</strong></td>
<td>Places duct or fitting as one single piece no matter how long.</td>
</tr>
<tr>
<td><strong>Smart or &lt;SM&gt;</strong></td>
<td>For fittings only, lengthens straights of fittings to eliminate short pieces.</td>
</tr>
</tbody>
</table>

**PractiCAD** allows you to edit fitting parameters in duct lines. The preceding and the following fittings in the duct line will be adjusted in accordance with duct line editing options.

**To edit the fitting parameters**
- **Model space**: select the fitting (left double click)
- **Appeared pop-up menu**: Properties ► Property Window: type the fitting property value(s)

Note: If Change Duct to Transition option is selected, the preceding or the following fitting will be changed to transition. The preceding fitting will be changed to transition if you hold fittings by input opening, and the following fitting – if you hold them by output opening.
Your manufacturing standards. You can use SMACNA-based specifications (Sheet Metal and Air Conditioning Contractors' National Association), as well as any other conceivable specification sets.

**Work box : Specification sets list : select a specification set**

**Specification Editing**

- To add a specification set: Specification sets list : add a specification set ► rename the specification set ► edit
- To rename a specification set: Specification sets list : select a specification set + left click ► type a name ► Enter key
- To edit a specification set: Specification sets list : select a specification set ► Condition type : select condition type (None / Lager / Custom) ► add and edit size break condition sets for Lager and Custom types ► Condition value ranges : edit ► Target fitting sets : select a fittings set ► Parameters and values : edit values (for all fitting categories and condition value ranges)

Work with specifications in PractiCAD is based on rule – exception principle. All fittings are hierarchically organized in categories. Rules specified for more general categories work for all its subsets if only no exception rules are defined for those subsets.

If you create a specification table for some fitting set it will be automatically duplicated for all its subsets up to individual fitting.

- To add a specification table: Target fitting sets : select a fitting category (up to individual fitting) ► Condition type : select condition type (None / Lager / Custom) ► add and edit a size break condition set ► Condition Editor : specify condition properties ► Condition Editor : OK ► Condition value ranges : edit

- To add a size break condition set: Size break condition sets : add a size break condition ► Condition Editor : specify condition properties ► Condition Editor : OK

- To delete a size break condition set: Size break condition sets : select a size break condition set ► Size break condition sets : delete a size break condition

- To add a condition value range: Condition value ranges list : select last range ► type a value instead of ANY (last range will be splitted in two ranges) ► Enter key

- To edit a condition value range: Condition value ranges list : select a range ► type a value instead ► Enter key

When your specification tables are created and condition value ranges are specified, you can edit your specification table rules.

- To edit specification rules: Condition value ranges list : select a range ► Parameters and values : edit parameters

- To import a specification set from PractiCAM: PractiCAM versions list : select a version (select all, deselect all) ► PractiCAM specification sets list ► Import specifications

**Layout**

- Use the Layout tools to draw the layout lines on which you later place pipe, duct, or other objects.

- To create a layout: Item box : Layout page : Number of lines : select (=1) ► Toolbar : New Layout ► Model space : specify series of exact / relative vertexes positions ► Esc or Enter key

- To create a rack with multiple parallel lines: Item box : Layout page : Number of lines : select (>1) ► Toolbar : New Layout ► Item box : Layout page : Hold by line : select the line number ► Model space : specify start point for every rack ► Model space : specify series of exact / relative vertexes positions for selected rack ► Esc or Enter key

- To convert AutoCAD 3D lines into layout: Toolbar : Add Layout Lines Model space : select 3D lines

- To split a segment: Toolbar : Add Layout Lines Model space : move your mouse over a segment ► Model space : left click

- To move a layout vertex: Model space : select vertex adjoining segments ► Model space : drag-and-drop the vertex into desired position or Command line : specify the vertex position

- To move a layout: Model space : select the branch segments ► Model space : move your mouse over a segment ► Model space : left click
**Automatic Layout**

To route layout automatically:

- Toolbar: ➤ Automatic Layout ➤
- Auto Layout Editor:
  - set up layout routing options ➤ OK ➤
  - Model space: select air-devices ➤ Enter key ➤
  - Model space: select entry point to the layout (a layout segment or a fitting opening)

**Auto Duct**

**PractiCAD** allows you to route a duct line between 2 duct openings, by layout or autoroute duct line from specified point to an air-devices set.

To route a duct line between 2 duct openings:

- Auto Duct Editor: ➤ Detection ➤ Selection ➤
  - Interactive connector selection ➤ OK ➤
  - Model space: select In and Out connectors

To detail a layout:

- Auto Duct Editor: ➤ Detection ➤ Selection ➤
  - Interactive layout selection ➤ OK ➤
  - Model space: select entry segment of a layout (Make sure that airflow is non-zero for the terminal segments of the layout)

To auto route a duct line from a point to an air-devices set:

- Auto Duct Editor: ➤ Detection ➤
  - Automatic Layout ➤
  - Automatics list: select an automatic ➤ OK ➤
  - Model space: Enter ➤ select air-devices ➤ Model space: select duct line entry point (Make sure that airflow is non-zero for the air-devices)

To specify a detailing method:

- Auto Duct Editor: ➤ Routing ➤
  - Duct shape (Rectangular / Round / Oval): select ➤
  - Wallness (Single / Double): select ➤
  - Nodes list: select a node ➤
  - Fittings list: select a fitting ➤
  - repeat for all nodes

To set sizing options:

- Auto Duct Editor: ➤ Routing ➤
  - Sizing method: select ➤
  - Air velocity: Enter key ➤
  - Width to depth ratio (for rectangular and oval): Enter key ➤
  - Standard sizes list: set up

**Auto Flexing**

Attach air-devices to a duct line with flexes:

- Toolbar: ➤ Auto Flexing ➤
- Auto Flexing dialog:
  - set flexing options ➤ OK ➤
  - Model space: select air-devices ➤ Enter key ➤
  - Drawing area: select a duct line ➤ Enter key

To select air-devices manually:

- Auto Flexing dialog:
  - Select Air Devices: check mark

To select fittings manually:

- Auto Flexing dialog:
  - Select fittings: check mark

To attach air-devices to a preset duct line:

- Duct selection: Current selection set

To attach air-devices to a interactively selected duct line:

- Duct selection: Interactive selection

To attach air-devices during auto routing:

- Duct selection: Automatic ➤

- Automatics list: select an automatic

- Air-devices selection: Current selection set

To attach interactively selected air-devices:

- Air-devices selection: Interactive selection

To attach air-devices:

- Flexes list: select ➤
  - Collars list: select ➤
  - Duct selection: set ➤
  - Air-devices selection: set ➤ OK
Use the Checking collision tool to check whether items in your drawing collide with each other. You can check for collisions between one drawing item against another, check the entire drawing, or restrict checking to any types and groups of items you like. PractiCAD marks each collision with round mark. Size and color of the mark can be defined by you. This tool cannot automatically rectify the problems it finds. You must decide in each case what change is called for, and then revise the drawing accordingly.

<table>
<thead>
<tr>
<th>To check collisions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>To check two items:</td>
<td>Collision Checking Editor: Two Objects</td>
</tr>
<tr>
<td>To check a group of items:</td>
<td>Collision Checking Editor: Group</td>
</tr>
<tr>
<td>To check all drawing:</td>
<td>Collision Checking Editor: All</td>
</tr>
<tr>
<td>To check a duct line:</td>
<td>Collision Checking Editor: Duct line</td>
</tr>
</tbody>
</table>

- **Selection Methods List**
  - select method of fitting selection
  - To objects
  - To check single collision: Model space: select 1st entity, Drouving space: select 2D entity
  - Croup
  - To check group collision: Model space: select group, Enter key
  - To select a duct line: Model space: select a duct line (left click somewhere on the duct line)
  - Duct line, From-To
  - Looks for collisions of a duct line part starting with selected fitting up to other selected fitting against all drawing items of predefined types.
  - To select a duct line part: Model space: select a starting fitting of the duct line (left click)
  - Duct line, Forward
  - Looks for collisions of a duct line part starting with selected fitting against all drawing items of the types selected for checking collisions with fitting items.
  - To select a duct line part: Model space: select finishing a fitting of the duct line
  - Duct line, Backward
  - Looks for collisions of a duct line part finishing with selected fitting against all drawing items of predefined types.
  - To select a duct line part: Model space: select finishing a fitting of the duct line

- **All**
  - Looks for collisions of all entities of the specified type against all entities of predefined types.

- **To define color of collision mark for the given item type**
  - Collision Checking Editor: Color column: left click in the item type correspondent line
  - Color selection dialog: select a color

**Architecture**

PractiCAD provides you libraries of 3D architectural items to create the architectural background for your work. You can create multiple catalogs of architectural items, place the items on working bins (palettes) and use them exactly the same way as you do with fittings (please, refer to Fittings). Item Box and Elevation Box are available also (please, refer to Coordinates Input).

- **To customize your architectural bins:** Toolbar: Architecturals or Command line: type prcd_archlib
- **To show / hide all architectural bins:** Toolbar: Show / Hide Architecturals or Command line: type prcd_archbin
- **To add an architectural items to your drawing:** Add items you need to a bin, Move your mouse over a docked bin caption, An architectural items bin, Select an item (left click), Item Box: General page, type item property values, Specify item position and rotation (Z axis rotation is implied)
- **To rotate an item around X axis:** Type "X", Enter key
- **To rotate an item around Y axis:** Type "Y", Enter key
- **To change an item Z elevation:** Elevation box: type absolute or top / bottom relative item coordinates
PractiCAD provides you extensive libraries of materials, gauges, allowance and various fitting accessories such as rods, vanes, spin collars and dampers. You can compose your own libraries or import libraries or selected items from PractiCAM installed on your computer.

**Allowances:**
- Connectors: prcd_conn
- Locks: prcd_lock
- Joints: prcd_joint
- Piping Joints: prcd_pipingjoint

**Accessories:**
- Spin collars: prcd_spincollar
- Radius vanes: prcd_vanerad
- Turning vanes: prcd_vaneturn
- Round vanes: prcd_vaneround
- Tie Rods: prcd_tierod
- Rods: prcd_rod
- Dampers: prcd_damper
- Stiffeners: prcd_stifext

To add an item to your library:
- **Activate the Library Editor** ► **Library Editor** : Add ► Library items list: rename the newly created item

To rename a library item:
- **Library items list** : select the item (left click) ► additional left click ► type a name ► Enter key

To delete a library item:
- **Library items list** : select the item (left click) ► **Library Editor** : Delete

To edit a library item:
- **Library items list** : select an item (left click) ► **Library item parameters** : type values

To import a library item from PractiCAM:
- **Library Editor** : **Version** : select PractiCAM installation ► **Library Editor** : Library items list: check or uncheck items (✓ - check all, ✓ - uncheck all) ► **Library Editor** : Import

**Libraries**
- PractiCAM ► Ductwork Libraries ► Accessory items ► Accessory parameters ► PractiCAM installations

**Fitting Accessories**
- **Toolbar** : activate a command of setting an accessory or **Command line** : type the command ►

To add an accessory to a fitting:
- **Enter key** ► **Model space** : select a fitting (left click) ►
- **Fitting Accessory Editor** : Location name : select an accessory place by name (In / Out / Center) ►
- **Fitting Accessory Editor** : Accessory type : select an accessory type ►
- **Fitting Accessory Editor** : Accessory counter : set number of accessories ►
  edit the Accessories parameters ► **Fitting accessory Editor** : OK

To edit an accessory parameters:
- **Fitting Accessory Editor** : **Accessory items** : select an Accessory item (left click) ►
- **Fitting Accessory Editor** : Accessory parameters : type values (you can use arrow keys for moving around the list)

To delete a fitting accessory:
- **Toolbar** : activate a command of setting an Accessory or **Command line** : activate the command ►
- **Model space** : select a fitting (left click) ►
- **Fitting Accessory Editor** : **Accessory name** : select an Accessory place by name (In / Out / Center) ►
- **Fitting Accessory Editor** : Accessory counter : decrease the number of accessories ►
  **Fitting Accessory Editor** : OK

To change the type of fitting accessories:
- **Toolbar** : activate a command of setting an accessory or **Command line** : activate the command ►
- **Model space** : select a fitting (left click) ►
- **Fitting Accessory Editor** : **Location name** : select an Accessory place by name (In / Out / Center) ►
- **Fitting Accessory Editor** : **Accessory type** : select an Accessory type ► **Fitting Accessory Editor** : OK
While placing an item on a drawing you need to specify hold point and hold point relative cursor position.

**To specify the hold point:**
- Item box: In / Out option: select
- Item box: Top / Center / Bottom option: select
- Item box: Left / Center / Right option: select

**To specify hold point relative cursor position:**
Absolute cursor position can be set up by mouse click, snapping to an existing objects or typing coordinates in Command line.

**To specify absolute cursor coordinates:**
- Model space: left mouse click or Model space: snap to a drawing item or Command line: type coordinates
- Enter key

**To snap to a drawing item:**
- Status bar: depress option button
- Model space: move your mouse over the item
- Model space: select an appeared snap point (left click)

**To enter relative position in 2D:**
- Model space: move your mouse along desired direction
- Command line: type distance
- Enter key

**To zoom in your drawing space in Elevation box:**
- Elevation box: Zoom in

**To zoom out your drawing space in Elevation box:**
- Elevation box: Zoom out

**To set top elevation of your drawing space on / off:**
- Elevation box: move your mouse over its right side
- Elevation box: Top / Bottom selector: Top elevation sign: left click

**To set bottom elevation of your drawing space on / off:**
- Elevation box: move your mouse over its right side
- Elevation box: Top / Bottom selector: left click
- Elevation box: Top / Bottom selector: left click on Bottom elevation sign

**Frame space between Top and Bottom elevations:**
- Elevation box: Frame space between Top and Bottom

**Frame marked elevation drawing space:**
- Elevation box: Frame marked elevation model space

When the **top elevation of model space** is set on, the model space top elevation relative item coordinates appears in Elevation box:
- T – from item Top to model space Top distance
- C – from item Center to model space Top distance
- B – from item Bottom to model space Top distance

When the **bottom elevation of model space** is set on, the model space bottom elevation relative item coordinates appears in Elevation box:
- T – from item Top to model space Bottom distance
- C – from item Center to model space Bottom distance
- B – from item Bottom to model space Bottom distance

**To change an item elevation (while adding an item to a drawing):**
- Elevation box: type one of absolute or one of top / bottom relative item coordinates

**To change a drawing item elevation:**
- Model space: select an item or a group of items
- Elevation box: Items navigator: select an item
- Change elevation as you do it while adding an item to your drawing

---

**Coordinates Input**

**When**
- B – from item Bottom to model space Top distance
- C – from item Center to model space Top distance
- T – from item Top to model space Top distance

*top elevation relative item coordinates appears in Elevation box:

When along the side or over one of elevation marks
- or drag-and-drop your current elevation mark
- elevation value ► left click ► type value ► Enter

To edit current elevation:
- Elevation box: move your mouse over current elevation mark ► left click ► type value ► Enter key or drag-and-drop your elevation mark along the side or over one of elevation marks

To remove an elevation mark:
- drag-and-drop your elevation mark outside the Elevation box

To edit the elevation mark value:
- Elevation box: move your mouse over current elevation mark ► left click ► type value ► Enter
- or drag-and-drop your current elevation mark along the side or over one of elevation marks

To remove an elevation mark:
- drag-and-drop your elevation mark outside the Elevation box

To zoom in your drawing space in Elevation box:
- Elevation box: Zoom in

To zoom out your drawing space in Elevation box:
- Elevation box: Zoom out

To set top elevation of your drawing space on / off:
- Elevation box: move your mouse over its right side
- Elevation box: Top / Bottom selector: Top elevation sign: left click

To set bottom elevation of your drawing space on / off:
- Elevation box: move your mouse over its right side
- Elevation box: Top / Bottom selector: left click
- Elevation box: Top / Bottom selector: left click on Bottom elevation sign

- Elevation box: Top / Bottom selector: left click on Bottom elevation sign

**Frame space between Top and Bottom elevations:**
- Elevation box: Frame space between Top and Bottom

**Frame marked elevation drawing space:**
- Elevation box: Frame marked elevation model space

When the **top elevation of model space** is set on, the model space top elevation relative item coordinates appears in Elevation box:
- T – from item Top to model space Top distance
- C – from item Center to model space Top distance
- B – from item Bottom to model space Top distance

When the **bottom elevation of model space** is set on, the model space bottom elevation relative item coordinates appears in Elevation box:
- T – from item Top to model space Bottom distance
- C – from item Center to model space Bottom distance
- B – from item Bottom to model space Bottom distance

**To change an item elevation (while adding an item to a drawing):**
- Elevation box: type one of absolute or one of top / bottom relative item coordinates

**To change a drawing item elevation:**
- Model space: select an item or a group of items
- Elevation box: Items navigator: select an item
- Change the item elevation as you do it while adding an item to your drawing

---

**Exact position in 3D**
- x,y,z
- d<α, h

**Relative position in 3D**
- @x,y,z
- @d<α, h
- @d<α< β
- @d<α< β
- @x,y< z

**Exact position in 2D**
- x,y
- d<α

**Relative position in 2D (Z is fixed)**
- @x,y
- @d<α

To customize the Elevation box:
- Toolbar: Containers ► Box container: drag-and-drop the box ► resize the box

To add an elevation mark:
- Elevation box: move your mouse over its left side until arrow appeared ► left click

To edit the elevation mark value:
- Elevation box: move your mouse over current elevation mark ► left click ► type value ► Enter key or drag-and-drop your elevation mark along the side or over one of elevation marks

To remove an elevation mark:
- drag-and-drop your elevation mark outside the Elevation box

To zoom in your drawing space:
- Elevation box: Zoom in

To zoom out your drawing space:
- Elevation box: Zoom out

---

**Top elevation**
- (usually red)

**Bottom elevation**
- (usually green)

**Elevation mark**
- (usually blue)

**Current elevation**
- in 3D (Z is fixed)

**Relative position in 2D**
- (Z is fixed)

**Exact position in 2D**
- (usually yellow)
Reports

To form a report:

- Toolbar: Report
- An automatics bin: select
- A report icon: select
- Model space: select items ➤ Enter key ➤
- Model space: place report (left click or Enter key)

Before create a report, you have to customize it. You can customize high usage reports once, save them to library, and use via bins. To create a report template please, see Report Library

To customzize a report:

- Report Editor: Selection ➤
  - set drawing item types and grouping method
  - sketch ➤
  - Sketch Report template: edit report template ➤
  - Page Setup: edit report view

To set the item selection, grouping and sorting method:

- Report Editor: Selection ➤
  - Selection sets list: Add selection sets ➤
  - for every selection set
  - Types list: select item types ➤
  - for every type
  - Item library: select items ➤
  - Conditions list: add and edit conditions ➤
  - Grouping parameters list: add and edit grouping parameters

Your report will consist of section for every selection set, and all data will be grouped and sorted by specified rules. You can specify a header and a footer for every selection set, every group, every section, every page and for all the report.

Your report template consists of fields. Please, assign a string, a parameter, or any expression with math operations and functions for every field.

To edit main section / header / footer:

- Report template: drag-and-drop a section separator down ➤
  - edit lines ➤ edit columns ➤ edit field

To split a column:

- Report template: move your cursor on the column header until mark ➤ left click

To split a line:

- Report template: move your cursor on the line header until mark ➤ left click

To change column width:

- Report template: drag-and-drop a column header separator

To change column height:

- Report template: drag-and-drop a line header separator

To change field size:

- Select a field (left click) ➤
  - Report template: drag-and-drog the field border separator

To edit a field:

- Field Editor: set field type ➤
  - Field Editor: set border sides ➤
  - Field Editor: set alignment ➤
  - Field Editor: edit field expression

To set up page:

- Report Editor: Page Setup ➤
  - Page Setup: edit report view

Reports Library

PractiCAD allows you to create exrended libraries of report templates with the Report Template Editor. Use the predefined report templates via bins exactly the same way as you do it with fittings.

To create a report template:

- Toolbar: ➤ Reports ➤
  - Reports Editor: Reports library: create a new template report ➤
  - rename report template ➤ edit report template

To rename a report template:

- Reports library: select a report (left double click) ➤ type name ➤ Enter key

To delete a report template:

- Reports library: select a report ➤
  - delete the selected report template

To add a report to a bin:

- Reports library: select a report ➤
  - drag-and-drop the report to Model space
PractiCAD enables you to place dynamic tags on 3D objects, containing a description you select. Every time you change parameters of a referee object or relocate it, the tag content will change automatically to conform to the object. Once you place a tag on the drawing, only you can change its position and callout line; PractiCAD does not do so automatically.

**To create a single tag:**
- Toolbar: Create tag
- Command line: `prcd_tag`
- Model space: select a fitting
- Tag Editor: edit tag appearance
- Tag Editor: edit tag content
- Tag Editor: OK
- Model space: specify tag position (left click)
- Model space: specify tag orientation
- Model space: specify callout line start position
- Model space: specify callout line end position

**To edit a tag:**
- Model space: select a tag (right click)
- Popup menu: Edit tag
- Tag Editor: edit tag appearance
- Tag Editor: edit tag content
- Tag Editor: OK

**To delete a tag:**
- Model space: select a tag (left click)
- Keyboard: Del or model space: select a tag (right click)
- Popup menu: Erase

### General Tags

**To edit a general tag:**
- Tag Editor: Tag type: General
- Tag Editor: Properties list: set up

**To exclude a property from a tag or switch property value on / off:**
- Tag Editor: Tag type: General
- Tag Editor: Properties list: select a property value (left click)

**To show a property on a tag or switch property name on / off:**
- Tag Editor: Tag type: General
- Tag Editor: Properties list: select a property name (left click)

* All you will see on your tag are grey.

### Size Tags

**To edit a size tag:**
- Tag Editor: Tag type: Size
- Tag Editor: Target shape: select shape
- Tag Editor: Properties: type prefix
- Tag Editor: Properties: Size1: select property
- Tag Editor: Properties: type separator
- Tag Editor: Properties: Size2: select property
- Tag Editor: Properties: type suffix

### Elevation Tags

**To edit an elevation tag:**
- Tag Editor: Tag type: Elevation
- Tag Editor: select a type of elevation
- Tag Editor: type section header
- Tag Editor: type section footer
- Tag Editor: type item Top coordinate prefix / suffix
- Tag Editor: type item Center coordinate prefix / suffix
- Tag Editor: type item Center coordinate prefix / suffix
- Tag Editor: check / uncheck items coordinates to show
- repeat the procedure for all types of elevation: Absolute, Relative to Top, Relative to Bottom

### Airflow Tags

**To edit an airflow tag:**
- Tag Editor: Tag type: Arrow
- Tag Editor: select an arrow type
- Tag Editor: select an arrow size
To split a tag column: Tag Editor : Tag Layout : move your mouse over the tag column caption until ► appears ► left click
To split a tag row: Tag Editor : Tag Layout : move your mouse over the tag row caption until ↑ appears ► left click
To change a column width: Tag Editor : Tag Layout : move your mouse over the tag column caption separator until | appears ► drag-and-drop the separator
To change a column height: Tag Editor : Tag Layout : move your mouse over the tag row caption separator until ↑ appears ► drag-and-drop the separator
To change a field size: Tag Editor : Tag Layout : left click on the field ► Tag Editor : Tag Layout : move your mouse over the field bound until [ or ] appears ► drag-and-drop the bound
To edit a field: Field Editor : select a field value type ► Field Editor : depress border sides to be drawn ► Field Editor : depress a field alignment type ► Field Editor : edit the field expression
The field expression is a combination of text, numeric and item property data combined with general arithmetic operations and braces.
To add a text to the field expression: Field Editor : Text input field : type the text ► Field Editor : click button at the right of the text
To add an item property to the field expression: Field Editor : Properties list : select a property ► Field Editor : click button at the right of the property
To add a number or a sign of arithmetic operation or a brace: Field Editor : Keypad : click the button
To delete the last data from the field expression: Field Editor : click button at the right of the field expression
To clear the field expression: Field Editor : click button

To create a tag template: Toolbar : Tags ► Tags Library Editor : Tags Library : select a tag category ► Tags Library Editor : New ► Tags Library Editor : Target sets : select a target set up to individual item ► Tags Library Editor : edit the tag
To rename a tag template: Tags Library Editor : Tags library : double left click on the tag template name ► type new name ► Enter key
To delete a tag template: Tags Library Editor : Tags library : select a tag template ► Tags Library Editor : Remove
To add a tag template to a working bin: Tags Library Editor : Tags library : select a tag template ► drag-and-drop the template outside Tags Library Editor

PractiCAD provides an ability to create extensive libraries of predefined tag templates. You can get access to them using working bins exactly the same way as you do it with fittings.

Tags Library
Ultimatics allows you to create, set up, and store to library high usage operating sequences of automatics and use them via bins exactly the same way as you do it with simple automatic tools.

To create an ultimatic:
- New (at the left side of Editor)
- File selection dialog: select a file with icon
- Rename the ultimatic
- Add automatics to the ultimatic
- Set automatics order

To delete an ultimatic:
- Remove (at the left side of editor)

To export an ultimatic to a file:
- Ultimatics list: select an ultimatic
- Export

To import an ultimatic from a file:
- Import

To add an automatic to an ultimatic:
- File open dialog: select a file
- Open
- Ultimatics list: select an ultimatic
- Add (at the right side of Editor)

To delete an automatic from an ultimatic:
- Ultimatics list: select an ultimatic
- Remove

Set automatics order:
- Automatics list: select an automatic
- Move Up
- Move Down

Some automatics (auto tags and number) allows view plane selection and item relative drawing placement in accordance with space item orientation.

To set item relative placement:
- Placement
- Views list: select a view
- Direction ranges list: add ranges for every range
- Direction diagram: select sectors (left click)
- Item relative position: set

To set automatic conditions:
- Conditions:
  - Select item types and selection rules
  - Properties list: select a property
  - Select condition (equal, not equal)
  - Properties list: checkmark the properties that should exist for true condition

Automatic specific settings:
- Tag for tag automatics

To set automatic conditions:
- Conditions:
  - Select item types and library items
  - Properties list: select a property
  - Conditions: select condition (equal, not equal)
  - Conditions: select or type property value
  - Properties list: checkmark the properties that should exist for true condition

Fittings library
Condition properties and values
Condition descriptions
Direction ranges list
Views list
Direction diagram
PractiCAD Options

To select a view mode:

PractiCAD Options Editor: General ► General 
View mode: Entity types list:
select item type ►
View mode: check mark 3D or single line

To set standard duct length:

PractiCAD Options Editor: General ► General 
Duct line:
enter standard duct length for every shape ►
Use Duct Stock Length check mark

To set minimal duct leftover length:

PractiCAD Options Editor: General ► General 
Duct line:
enter minimal leftover length for every shape ►
Use Minimal Leftover check mark

Layers

To place entities of a given type on a current layer:

PractiCAD Options Editor: General ► General 
Entity types list: select a type ►
Layer: select Current

To place entities of a given type on a given layer:

PractiCAD Options Editor: General ► General 
Entity types list: select a type ►
Layer: With name select ►
Layer: select

To place entities of a given type by conditions on a separate layer:

PractiCAD Options Editor: General ► General 
Entity types list: select a type ►
Layer: With name select ►
Additional layers list: Add a new layer ►
Additional layers list: rename the layer ►
set layer placement conditions

To set layer placement conditions:

Properties list: select a property ►
Conditions: select condition (equal, not equal) ►
Conditions: select at the right side ►
elect or enter the property value ►
Properties list: check mark necessary properties for condition truth

To export layers settings:

PractiCAD Options Editor: General ► General 
Layer: Export ►
File Save dialog: select destination folder and file name ► Save

Measure Units

PractiCAD uses standard AutoCAD measure units settings for lengths and angles. These are drawing settings. Besides, there are a set of PractiCAD specific measure units settings, controlling area, weight, volume, price and time representation. These are PractiCAD interface settings. Unless specified other, drawing and interface settings are used for values representation on tags and reports. Besides, tag and report field editor allows you to specify special value type and measure units for every field.

To set measure units for length and angles:

Menu: Format: To export layers settings: Units

To set PractiCAD measure units:

Menu: PractiCAD: PractiCAD options ►
PractiCAD Options Editor: Measurement ► Measure units

To set representation measure units for a tag / report field:

Field Editor: Field type: select Custom ►
Field Editor: Field type: select field type (length / area / value / money / time) ►
Field Editor: Field type: select measure units