

JUMBO BLOCK ENGINEERING SUITE

JUMBO BLOCK Tables

User Manual · Version 1.6.0

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1. Overview

JUMBO BLOCK Tables is the fully local spreadsheet application of the JUMBO BLOCK Engineering Suite: multiple worksheets, its own formula engine with circular-reference detection, comprehensive cell formatting, bar and line charts, and a native .jbtav storage format with SHA-256 integrity checking.

Tables also supports direct import and export to common exchange formats: XLSX (with formatting preserved), CSV, and native .jbtav files. The program runs entirely locally in the browser as a single HTML file. There is no cloud connection, no server, and no user account.

Like CALC, UNITS and NOTE, TABLES does not exchange data with the suite's shared project.dbm used by HYDRO, PLAN, BUDGET, STATIC and TEMP. TABLES is a standalone, general-purpose spreadsheet tool for arbitrary calculations, lists and evaluations — not tied to a specific technical subject of the suite.

2. Getting Started

When tables.html is opened for the first time, an empty worksheet with 26 columns (A–Z) and 100 rows is ready; cell A1 is selected. The data-exchange status is not yet visible at this point (the hash display appears only after the first export or import).

There is no persistent storage in the browser. The current working state exists only in the memory of the open page until it is deliberately saved as a file via “Export (.jbtav)” (chapter 14); reloading the page discards it.

3. The Workspace

Above the grid sit three layers: the main toolbar (data exchange, rows/columns, chart, print, reset), the format toolbar (font, colours, alignment, number format, borders, merge), and the formula bar with cell-reference display, fx button, and input field.

The grid itself shows column headers (A, B, C, ...) and row headers (1, 2, 3, ...); below the grid is the sheet bar with tabs for the individual worksheets (chapter 10). A “Your name (for log)” field sits at the top right; it currently serves purely as a note for the user and is not automatically carried into export, print report, or checksum.

4. Selecting and Editing Cells

Clicking a cell selects it and shows its reference (e.g. "A1") and its content in the formula bar. Clicking and dragging selects a contiguous range of cells; this range serves as the basis for formula functions with range arguments as well as for chart creation (chapter 11).

Double-clicking a cell, or typing directly on the keyboard, opens the cell editor right in the cell. The formula bar offers the same editing access from above. Enter confirms the entry and moves one row down, Tab confirms and moves one column to the right, Escape discards the entry.

5. Formulas: Basics and Operators

Formulas always start with an equals sign "=" — without this sign, cell content is treated as plain text. Available operators are + (addition), - (subtraction), * (multiplication), / (division), and ^ (power, e.g. =3^5). Cell references (e.g. A1, B2:B10) and numbers can be freely combined.

Five possible error values indicate a problem with a formula: #WERT! (wrong value type), #DIV/0! (division by zero), #NAME? (unknown function or reference), #BEZUG! (invalid cell or range reference), and #ZIRKEL! (circular reference — the formula refers, directly or indirectly, to itself). Tables detects circular references automatically and stops the calculation with this error instead of getting caught in an infinite loop.

6. Formula Functions (fx Button)

The fx button next to the formula bar opens a list of all available formula functions with a short description. Clicking a function inserts it at the current input position. All functions can be used under both their German and their English name, regardless of the currently selected interface language:

- SUM / SUMME – Sum of a range, e.g. SUM(A1:A10)
- AVERAGE / MITTELWERT – Average of a range
- MIN – Smallest value in a range
- MAX – Largest value in a range
- COUNT / ANZAHL – Count of numeric cells
- IF / WENN – Condition, e.g. IF(A1>10,"big","small")
- VLOOKUP / SVERWEIS – Look up a value in a table
- AND / UND – True if all conditions are true
- OR / ODER – True if any condition is true
- ROUND / RUNDEN – Round a number, e.g. ROUND(A1,2)

7. Inserting/Deleting Rows and Columns

The four buttons “Row” (insert/delete) and “Column” (insert/delete) in the main toolbar act on the currently selected cell or range: a new row is inserted above, a new column to the left of the selection; deleting removes the selection's row or column entirely. Formula references within the sheet are not automatically adjusted when this happens.

8. Cell Formatting

The format toolbar offers Bold, Italic, Underline, text colour, and background colour, horizontal alignment (Left/Centre/Right), and vertical alignment (Top/Middle/Bottom) for the current selection.

A number-format dropdown provides six display types: General, Integer, Decimal (2 places), Currency €, Percent, and Date. Formatting affects display only; the underlying cell value remains unchanged and feeds into formulas unaffected.

The “Clear formatting” button removes all formatting (font, colours, alignment, number format, borders) of the current selection and resets it to the default, without changing the cell content.

9. Borders and Merging Cells

Four border buttons (top, right, bottom, left) each toggle the corresponding border line of the selection individually; a colour picker sets the border colour, and “Clear borders” removes all border lines of the selection at once.

“Merge” combines a selected cell range into a single, larger cell (the content of the top-left cell is preserved); “Unmerge” reverts a previously merged cell back into its original individual cells.

10. Multiple Worksheets

The sheet bar below the grid shows all worksheets of the current workbook as tabs. An icon next to each tab renames the sheet; another icon closes (deletes) it. Tabs can be reordered by dragging.

Each worksheet holds its own cells, formatting, column widths/row heights, and charts; formula references are limited to their own sheet (no cross-sheet references).

11. Charts

To create a chart, first select a data range (at least two cells), then click “Chart” and choose bar chart or line chart. Tables automatically detects the data structure: the first row of the range is interpreted as series labels, the first column as category labels (with a simplified fallback for a simpler range selection).

An inserted chart appears as a floating object over the sheet: it can be freely moved via its title bar and resized via its corner handle. A small toolbar above the chart allows switching between bar and line display and deleting the chart.

Charts remain live-linked to their original data range: if a value in the range changes, the chart updates automatically. Rendering is done as hand-written SVG, with no additional external library.

Charts are part of the sheet data and are automatically included in .jbtav (chapter 14) and in the print report (chapter 12). Deliberately not included is XLSX export of charts: Excel's native chart-drawing format is considerably more complex than plain cell formatting and has not been implemented for now — an XLSX export retains only the underlying numeric values, not the chart objects themselves.

12. Print / PDF

The “Print / PDF” button opens a standalone, cleanly formatted report in a new window: print area, selected paper size and orientation, the table itself (using the worksheet's actual column widths, not automatically recalculated), all charts on the sheet, and a footer with tool version, creation time, and SHA-256 checksum.

Within the report window, the gridlines toggle can be switched again right there, independently of the setting in the main toolbar; a “Print / Save as PDF” button triggers the browser's print dialog.

A recalculation happens automatically before the report is generated, so the report always reflects the current state.

13. Paper Size and Orientation

Two dropdowns in the main toolbar set paper size (A4, A3, or A2) and orientation (Landscape as the default, or Portrait) for the print report. A “Print gridlines” checkbox determines whether cell borders are visible in the printed report; both settings can also be adjusted again directly within the opened print window, as described in chapter 12.

14. Data Exchange: .jbtap (Native Format)

“Export (.jbtap)” is Tables' primary, lossless storage format. It saves the entire workbook with all worksheets, every formula, all cell formatting, and all charts as a ZIP container (technically a workbook.json file inside a ZIP archive, produced with JSZip) named YYYYMMDD_HHMMSS_table.jbtap.

The file additionally contains a SHA-256 hash over the stored dataset (chapter 17), the tool name and version, and the export timestamp. “Import” accepts .jbtap, .json, and .zip files; if the chosen file is not a valid .jbtap format (no readable workbook.json with at least one worksheet), an error notice appears and nothing is applied.

A successful import completely replaces the currently open workbook with the contents of the imported file.

15. Data Exchange: XLSX Import/Export

“Export XLSX” produces a genuine .xlsx file (YYYYMMDD_HHMMSS_table.xlsx) for further use in Microsoft Excel, LibreOffice Calc, or similar programs. Transferred are: all worksheets, cell values, formulas (in Excel's own format, so Excel/LibreOffice can recalculate them natively), column widths, and merged cells.

Cell formatting (bold/italic/underline font, text and background colour, alignment, borders, number format) is also carried into the XLSX file: Tables writes its own styles.xml directly into the XLSX ZIP archive, since the free SheetJS library used otherwise silently discards formatting information when writing. This method has been verified against actually reading the produced file back. If this formatting step fails for an unexpected reason, a valid but unformatted XLSX file is still produced rather than aborting the export entirely. Charts are not carried into the XLSX file (see chapter 11).

“Import XLSX” reads an existing .xlsx, .xls, or .xlsm file and applies its worksheets, values, and formulas into Tables.

16. Data Exchange: CSV Import/Export

“Export CSV” and “Import CSV” work exclusively with the currently active worksheet (not the entire workbook) and exclusively with plain cell values — without formulas, formatting, charts, or additional worksheets. CSV is therefore suited to simple data exchange with other programs, not as a complete backup format.

17. Data Integrity (SHA-256)

The hash badge at the top right shows, after every export or import, a SHA-256 hash over the stored or just-loaded dataset (truncated to the first 16 characters, marked with "..."). This follows the same principle as in HYDRO, PLAN, BUDGET, STATIC, and TEMP.

The print report (chapter 12) contains the same hash in its footer, freshly recalculated at the time the report is created. Unlike in HYDRO/PLAN/BUDGET/STATIC/TEMP, this hash in TABLES serves solely for plausibility-checking the .jbtav format; no data exchange with the suite's shared project.dbm takes place (see chapter 1).

18. Language (German/English)

Language switching is handled via the suite's global menu (menue.js) above the tool. TABLES fully switches all labels, button titles, formula function names (chapter 6), and the print report between German and English, without altering the workbook's content. Formulas written with the German function names (e.g. SUMME) remain valid unchanged after a language switch, since both language variants map internally to the same function code (chapter 6).

19. Reset

The "Reset" button first asks, in an initial dialog, whether all data of the current workbook should really be discarded. If confirmed, a second dialog asks whether to export as .jbtav beforehand; if this is also confirmed, the export from chapter 14 runs automatically before the workbook is reset to a single empty worksheet with the technical default dimensions (26 columns, 100 rows).

20. Limitations, Notes and Best Practices

- TABLES does not exchange data with the shared project.dbm of the other suite tools; .jbtabs, XLSX, and CSV are standalone exchange formats specific to TABLES only.
- CSV transfers only the active worksheet and plain values only — formulas, formatting, additional worksheets, and charts are lost in the process. Only .jbtabs is suited to a complete backup.
- Charts are not exported to XLSX; after an XLSX export/import, only the underlying numeric values remain, not the chart objects themselves.
- When inserting or deleting rows/columns, formula references within the sheet are not automatically adjusted; affected formulas should be checked afterward.
- Formula references are limited to their own worksheet; a direct, cross-sheet cell reference is not supported.
- The “Your name (for log)” field in the main toolbar is currently a plain note field for the user; it is not automatically carried into export, print report, or checksum.
- Without persistent browser storage, the working state is lost when the page is closed or reloaded, unless an export has been made.
- The circular-reference error #ZIRKEL! appears as soon as a formula refers to itself, directly or indirectly through several intermediate cells; the affected cell must be adjusted for the calculation to succeed again.

21. Quick Reference of Icons and Buttons

Icon / Button	Meaning
fx	Opens the list of all formula functions with short descriptions
Export (.jbtap)	Saves the entire workbook losslessly in the native format
Import	Reads in a .jbtap, .json, or .zip file
Export XLSX / Import XLSX	Exchange with Excel/LibreOffice including formatting, without charts
Export CSV / Import CSV	Value exchange of the active worksheet without formulas/formatting
Row / Column (+/-)	Inserts or deletes a row/column at the selection
Chart	Opens the bar or line chart choice for the selected range
Print / PDF	Opens the print-ready report in a new window
Reset	Resets the workbook to an empty sheet after double confirmation
SHA-256 badge	Shows the current checksum hash after export/import
Merge / Unmerge	Combines a cell range into one cell, or splits it apart again
Clear formatting	Removes all formatting of the selection, without changing its content