

JUMBO BLOCK INSPECT

Maintenance and inspection log



Manual · Version 1.0.0

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Contents

1. Overview
2. Workflow
3. Base data from the project.dbm
4. Asset tree
5. Check catalogue
6. Due dates and event checks
7. Carrying out an inspection
8. Defects
9. Reports
10. File and integrity
11. Settings

1. Overview

INSPECT is the maintenance and inspection log of the JUMBO BLOCK Engineering Suite. It documents the operation of an installation over its entire service life: which components exist, what must be checked when, what was found at each inspection and how defects were remedied.

The program runs fully offline in the browser – including directly from a USB stick (`file://`). There is no account and no cloud; all data stays on the device.

- **One file per installation:** everything – master data, asset tree, catalogue, inspections, defects and photos – is stored in one `inspect.dbm`.
- **Base data from design:** the `project.dbm` from Hydro, Plan, Static and Temp provides the installation's basic inventory.
- **Freely extensible:** items and checks can be added, replaced and adapted at any time – regardless of size and equipment.
- **Verifiable:** completed logs are locked and linked in a chain via SHA-256.

2. Workflow

1. **Load project.dbm** – apply base data and item suggestions (tab *Data exchange* or *Asset tree*).
2. **Complete the asset tree** – add shafts, inlets, pre-treatment and accessories from the catalogue.
3. **Enter master data and commissioning** (tab *Installation*) – the commissioning date is the starting point for the first due dates.
4. **Review due dates** and create an inspection.
5. **Carry out the inspection** – record results, measurements, photos and defects.
6. **Complete** – the log is locked and added to the hash chain.
7. **Print the report** or save it as PDF.
8. **Save inspect.dbm.**

The status bar shows unsaved changes. INSPECT also keeps a local working copy in the browser; it does not replace saving the file.

3. Base data from the project.dbm

Use *Load project.dbm* to select the suite's project file (.dbm or .json). INSPECT only reads it – Hydro, Plan, Static and Temp remain unchanged.

- **Hash check:** the SHA-256 of the project.dbm is recalculated. The result (verified / mismatch / no hash) is shown and stored with the source.
- **Master data:** project name, location, client and designer are copied into empty fields.
- **Key data:** modules, grid, dimensions, net storage, slabs, sealing, design values from Hydro and DWA-A 117, traffic load, groundwater, concrete class and Temp infrastructure.
- **Item suggestions:** rules derive items – e.g. storage body with grid, cover and side slabs, infiltration base for infiltration, throttle only if Hydro contains a throttle outflow q_{Dr} , groundwater/uplift, cable or pipe routes from Temp.
- **Design values:** the throttle outflow q_{Dr} [l/s] is attached to the throttle as a design value and shown during inspection next to the check "Measured outflow". Like all design values it can be changed and deleted (chapter 4). The infiltration rate q_{Sick} is a hydraulic design parameter and only appears in the base data.
- **Event threshold:** if a Hydro heavy-rain scenario is rated tight or exceeded, its rainfall is suggested as the threshold for event checks.

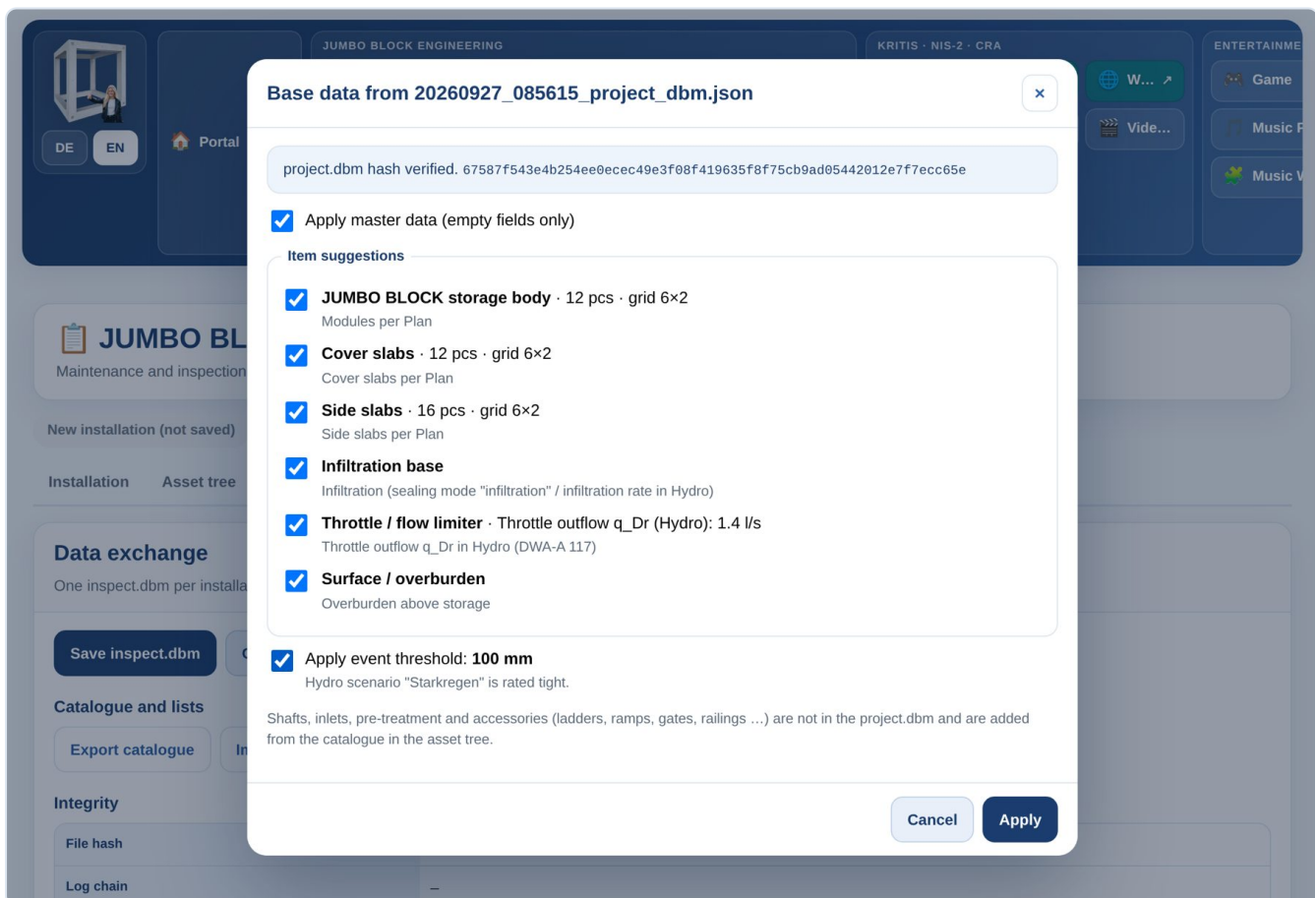


Fig. 1: Suggestions when loading a project.dbm with throttle and infiltration

Design changes

After an engineering change, load the new version again. INSPECT shows the changed base data (before → new), updates quantity and grid of existing items and suggests new items. Items whose rule no longer applies are only marked as *removed* on request – never deleted.

Design values you have not touched are updated automatically and recorded in the history. If you changed or deleted a design value and the new version contains a different value, it is listed under *Changed design values* for selection ("deleted → 2 l/s apply"). Without a tick your value remains; the same value is not asked for again at the next load.

Shafts, inlets, pre-treatment and accessories (ladders, ramps, gates, railings ...) are not in the project.dbm. They are added from the catalogue in the asset tree.

4. Asset tree

The asset tree represents the installation as a structure nested as deep as needed, e.g. *Installation* > *Shaft S1* > *Ladder*. Each item has a catalogue type, a label, a quantity and optionally a grid.

- **+ Item / + Sub-item:** choose type, enter label, set parent.
- **Replace:** changes an item's type (e.g. another ladder model). The item keeps its ID and all previous logs; the replacement is recorded with date and note in the history.
- **Remove / Delete:** items with logs or defects are only marked as removed (can be reactivated). Unused items can be deleted.
- **Grid:** items with a grid (e.g. 6 × 2 from Plan) allow defects to be located exactly – e.g. "X4 / Y2, cover slab".

When an item is created, the catalogue type is copied into it. Later catalogue changes therefore do not alter existing items or completed logs.

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Maintenance and inspection log for installations · fully local, no cloud

New installation (not saved) **Unsaved changes**

Installation **Asset tree** Due dates **7** Inspections Defects Catalogue Report Data exchange

Asset tree + Item Load project.dbm ☐ Show removed

Nest as deep as needed. Replacing changes an item's type – history and past logs are kept.

- JUMBO BLOCK storage body**
JUMBO BLOCK storage body 12 pcs Grid 6×2 project.dbm 5 checks + Sub-item Edit Replace History Delete
- Cover slabs**
Cover slabs 12 pcs Grid 6×2 project.dbm 2 checks + Sub-item Edit Replace History Delete
- Side slabs**
Side slabs 16 pcs Grid 6×2 project.dbm 2 checks + Sub-item Edit Replace History Delete
- Infiltration base**
Infiltration base project.dbm 3 checks + Sub-item Edit Replace History Delete
- Throttle / flow limiter**
Throttle / flow limiter project.dbm Throttle outflow q_{Dr} (Hydro): 1.4 l/s 3 checks + Sub-item Edit Replace History Delete
- Surface / overburden**
Surface / overburden project.dbm 3 checks + Sub-item Edit Replace History Delete
- Schacht S1**
Inspection shaft inspection after change pending 3 checks + Sub-item Edit Replace History Delete
- Ladder / step irons** + Sub-item Edit Replace History Delete

Fig. 2: Asset tree with basic inventory from the project.dbm and added items

Design values and limits

Inspect is used for physical, mostly mechanical checks on site. Values from the design are therefore only starting values. Under *Edit* you define for each check of an item:

- **Design value** with unit and label (DE/EN) – e.g. throttle outflow, gap width, torque, opening cross-section, switching point.
- **Min / Max** – limits for this item only. They take precedence over the catalogue; a measurement outside is automatically "not OK".
- **Delete values** – clears the fields; with *Apply* the value is deleted. A deleted value from the project.dbm stays deleted until you deliberately restore it when loading.

Each value shows its origin (*project.dbm*, *changed manually*, *manual*). Every change is recorded in the history with date and old/new value, e.g. "Measured outflow: design value 1.4 l/s → 1.6 l/s; Max – → 1.8". Open inspection drafts take over changes immediately; completed logs keep the values valid at the time of inspection.

Fig. 3: Editing design values and limits of an item

Structural change

Once the installation is in operation (commissioning date reached or a log completed), Inspect marks every newly added or replaced item as well as items whose quantity or grid changes through a design change. These items appear under *Due dates* > *After structural change* until an "inspection after structural change" covering them is completed. *Not required* closes an item with a reason; this is also recorded in the history.

5. Check catalogue

The catalogue contains the templates for items, grouped by category (storage body, components, inflow, pre-treatment, outflow/infiltration, shafts, technology, accessories, surface, other). Each type consists of checks with:

Field	Meaning
Text DE / EN	bilingual check instruction
Type	visual check, function test, cleaning/service, measurement, selection, free text, photo
Interval	in months; empty = no fixed interval
after event	check after heavy rain
Unit, min, max	for measurements; outside the limits "not OK" is set automatically
Selection options	one per line, written "DE EN"
Safety note, source	shown during the check or documented

The intervals in the default catalogue are suggestions. They do not replace manufacturer, operator or regulatory requirements and must be reviewed and adapted for each installation.

- **New type / Duplicate:** unlimited custom types.
- **Apply to items:** appears when items carry an older version of the type. The update is recorded in the history.
- **Add default types:** adds missing types from the default catalogue.
- **Export / import catalogue** (tab *Data exchange*): share catalogues including rules, inspection reasons and event types as a separate file, e.g. as an operator standard.

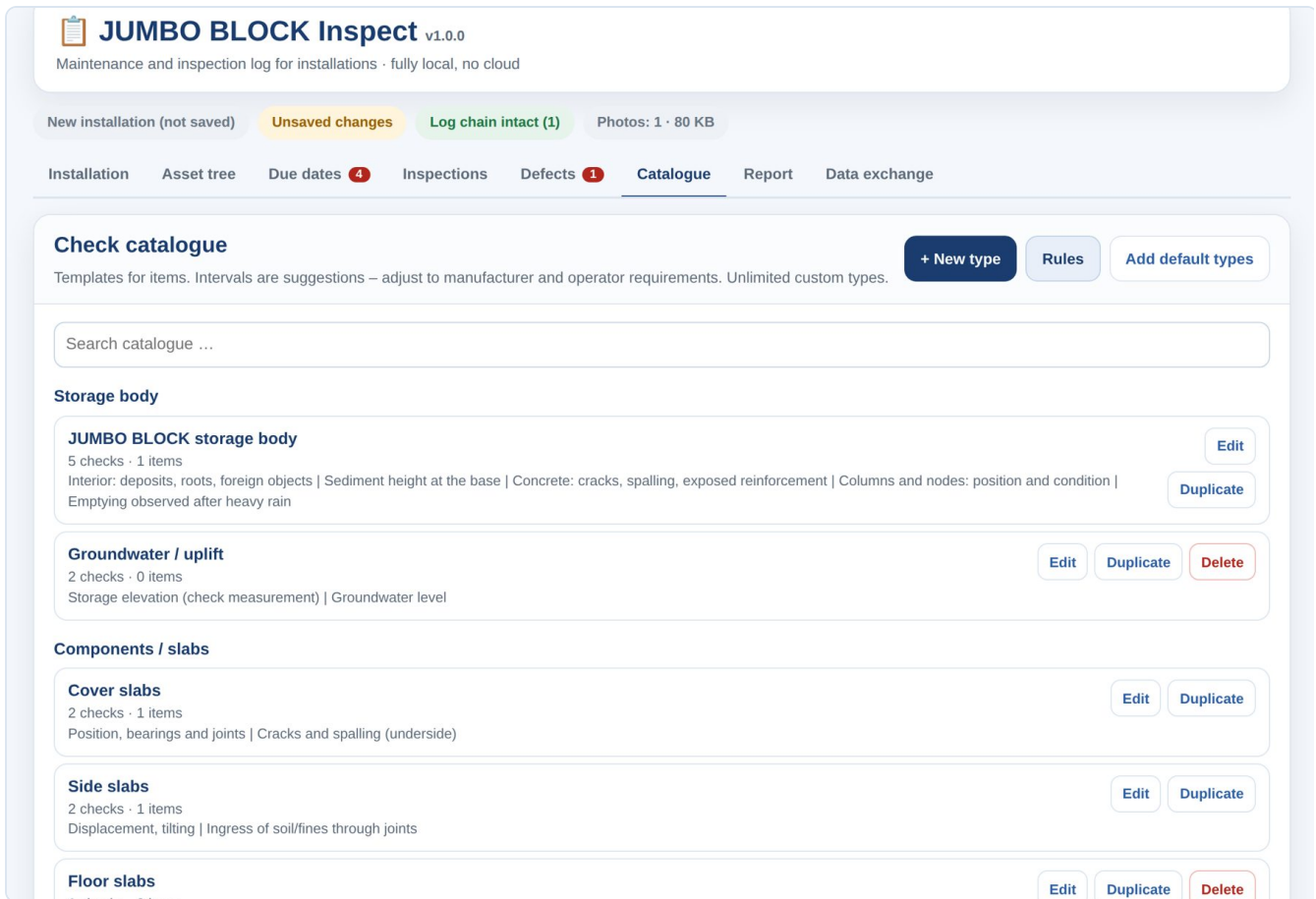


Fig. 4: Check catalogue

Derivation rules

The rules that derive items from the project.dbm are data and can be edited as JSON under *Rules*.

Example:

```
{ "id": "r_throttle",
  "oder": [ { "pfad": "a117Input_qDr", "op": "gt", "wert": 0 } ],
  "typ": "drossel",
  "sollwerte": [ { "pId": "q", "pfad": "a117Input_qDr", "einheit": "l/s" } ] }
```

"wenn" requires all conditions, "oder" at least one. Operators: gt, lt, eq, ne, startsWith, contains, truthy. Instead of "pfad", "muster" checks all fields whose name matches a regular expression. Optional: "anzahlPfad", "raster" and "sollwerte". *Restore default* resets the supplied rules.

Inspection reasons and event types

Inspection reasons are catalogue data too. Each reason has a default scope and its own additional fields:

Inspection reason	Default scope	Additional fields
Annual inspection	due by cut-off date (date + 12 months)	–
Inspection after event	event checks and selected items	event type*, event date*, rainfall [mm], description
Inspection after structural change	affected items (all checks)	type of change*, contractor, related design change
Acceptance / initial inspection	all checks	handed over to, participants
Warranty inspection	all checks	end of warranty*
Inspection after repair	items with completed defects	related defects
Special inspection	selected items	reason*

* required

+ *Inspection reason* creates custom reasons (name DE/EN, default scope, additional fields as text, multi-line text, date, number, event type or defect reference, each optionally required). Reasons can be edited, deactivated and – as long as no log uses them – deleted.

Event types are freely maintainable. Supplied are heavy rain, flooding/backwater, overrun/overload, earthworks/compaction nearby, pollutant/oil ingress, frost/ice, vandalism and other. For event types "with rainfall" the rainfall [mm] field is shown additionally.

Inspection reasons

Each reason brings a default scope and its own information fields. Inactive reasons no longer appear for new inspections; completed logs remain unchanged.

+ Inspection reason

Event types

Annual inspection

Due by cut-off date (date + 12 months)
no additional fields

Edit

Deactivate

Inspection after event

Event checks and selected items
Event type * | Event date * | Rainfall [mm] | Description

Edit

Deactivate

Delete

Inspection after structural change

Affected items (all checks)
Type of change * | Contractor | Related design change

Edit

Deactivate

Delete

Acceptance / initial inspection

All checks
Handed over to | Participants

Edit

Deactivate

Delete

Warranty inspection

All checks
End of warranty *

Edit

Deactivate

Delete

Inspection after repair

Items with completed defects (all checks)
Related defects

Edit

Deactivate

Delete

Special inspection

Selected items (all checks)
Reason (suspicion, order ...) *

Edit

Deactivate

Delete

Fig. 5: Inspection reasons in the catalogue

6. Due dates and event checks

For every check with an interval INSPECT calculates the next due date: last completed check plus interval. Without a previous check the commissioning date applies; if it is missing, the check appears as *first time*.

Colour	Status
● Red	overdue
● Yellow	due within 30 days
● Blue	first time, no start date
● Green	ok

Event checks (e.g. emptying after heavy rain) have no fixed interval. Trigger them with *Start inspection after event* as soon as rainfall reaches the threshold set in the settings. The *After structural change* section lists marked items; the number of open items is shown together with the overdue ones on the *Due dates* tab.

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New installation (not saved) **Unsaved changes**

Installation Asset tree **Due dates 7** Inspections Defects Catalogue Report Data exchange

Due dates
Calculated from interval and last completed check. Without a check, the commissioning date counts.

open (due/first) Start annual inspection

Throttle / flow limiter
Throttle opening clear
Visual check · every 6 months · last –

2026-04-01
overdue

Sedimentation / pre-treatment
Sludge level
Measurement · every 6 months · last –

2026-04-01
overdue

Sedimentation / pre-treatment
Light liquids / floating matter
Visual check · every 6 months · last –

2026-04-01
overdue

JUMBO BLOCK storage body
Interior: deposits, roots, foreign objects
Visual check · every 12 months · last –

2026-10-01
within 30 days

JUMBO BLOCK storage body
Sediment height at the base
Measurement · every 12 months · last –

2026-10-01
within 30 days

JUMBO BLOCK storage body
Concrete: cracks, spalling, exposed reinforcement
Visual check · every 12 months · last –

2026-10-01
within 30 days

Fig. 6: Due dates with traffic-light status

JUMBO BLOCK INSPECT 1.0.0 – Manual

13 / 20

7. Carrying out an inspection

New inspection creates a draft. First choose the **inspection reason**: it sets the default scope and shows its additional fields (required fields marked *). The scope can then be changed:

Scope	Checks
Due by cut-off date	all checks due by inspection date + 12 months, plus first-time checks
Currently due	overdue, due within 30 days and first-time checks
Event checks	all event checks plus all checks of the selected items
Affected items	preselected: items with a pending structural change
Items with completed defects	preselected from the chosen defects
Selected items / All	freely chosen items or the entire installation

After structural change

These items were newly added since the last inspection.

Start inspection after structural change

Schacht S1

Item newly added · since 09/27/2026

Schacht S1 › Ladder

Item newly added · since 09/27/2026

Schacht S1 › Manhole

Item newly added · since 09/27/2026

Sedimentation / pre-treatment

Item newly added · since 09/27/2026

Event-based checks

Trigger from 100 mm rainfall

Item	Last
JUMBO BLOCK storage body	–
Infiltration base	–
Infiltration base	–
Sedimentation / pre-treatment	–

New inspection

Inspection reason

Inspection after event

Date

09/27/2026

Inspector

Event type *

Heavy rain

Event date *

09/20/2026

Rainfall [mm]

64

Description

Scope

☐ Due by cut-off date (date + 12 months)

☐ Currently due and first-time checks

☒ Event checks and selected items

☐ Affected items (all checks) (4 open)

☐ Items with completed defects (all checks)

☐ Selected items (all checks)

☐ All checks

☐ JUMBO BLOCK storage body

☐ Cover slabs

☐ Side slabs

☐ Sedimentation / pre-treatment

Cancel

Create inspection

Fig. 7: New inspection after event with event type and rainfall

- **Result:** OK, not OK or n/a. A second click clears the selection.
- **Measurements:** comma or dot; with limits the result is set automatically – the item's limits apply, otherwise those of the catalogue. The design value is shown with its origin directly at the check.

- **Photos:** are downscaled (default 1600 px, JPEG 75 %) and embedded in the file. EXIF data – capture time, GPS position, altitude, direction, device – is kept in the image and appears in the report below the photo. The image is rotated correctly.
- **Defect:** opens defect recording for this check, for items with a grid including grid cell and component.

JUMBO BLOCK storage body

Interior: deposits, roots, foreign objects

Visual check

⚠ Entry only with gas measurement, fall protection and a second person.

OK

not OK

n/a

Remark

GPS

Photo

+ Defect

Sediment height at the base

Measurement

OK

not OK

n/a

Value [cm]

4,5

Remark

Photo

+ Defect

Concrete: cracks, spalling, exposed reinforcement

Visual check

OK

not OK

n/a

Fig. 8: Inspection draft with result, measurement, photo and safety note

Completing

Complete makes the log unchangeable. INSPECT assigns a sequence number, stores the hash of the previous log and calculates the SHA-256 over the entire log including program version, defect snapshot and photo hashes. Checks without result are documented as "not checked". Inspection reason, scope and additional fields are part of the hashed log. If a required field is missing, the log cannot be completed.

After completing an inspection after structural change, the markers of the inspected items are cleared; for an inspection after repair, the selected defects are marked as *re-inspected*.

Browsers usually cannot read HEIC images. Set the camera to JPEG ("most compatible") or export the images as JPEG.

8. Defects

Defects are recorded during an inspection or directly in the *Defects* tab. Each defect has an item, severity (minor, moderate, high – immediate), description, deadline, optionally grid cell and component, and photos.

Findings from a completed log are locked. Action, responsible person, completion date, evidence and photos after completion remain editable. Overdue deadlines are highlighted in red. Completed defects are offered for selection in an "inspection after repair" and are marked as *re-inspected* once it is completed.

The image shows a software interface for recording defects. A modal window titled "Record defect" is open, allowing users to input details for a new defect. The form includes dropdown menus for "Item" (JUMBO BLOCK storage body), "Severity" (moderate), "Grid X" (4), "Grid Y" (2), and "Component" (Cover slab). A date picker for "Deadline" is set to 11/30/2026. A text area for "Description" contains "Hairline crack on cover slab". Below this is a "Photo of finding" button. The "Action and completion" section has input fields for "Action", "Responsible", and "Completed on" (with a date format mm/dd/yyyy). An "Evidence / note" text area and a "Photo after completion" button are also present. "Cancel" and "Save" buttons are at the bottom right of the modal. The background shows a sidebar with inspection categories like "Concrete: cracks, spalls" and "Columns and nodes: p...", each with "OK", "not OK", and "n/a" status indicators.

Fig. 9: Recording a defect with grid coordinates

9. Reports

The *Report* tab offers three reports, each as an A4 print view:

- **Inspection report:** installation, base data, inspection reason with scope and additional fields, results per item with design values and limits, photos with EXIF/GPS details, defects, hash verification and signature fields.
- **Maintenance and inspection plan:** all checks with design values/limits, interval, last and next check.
- **Defect list:** open and completed defects with photos.

Print / PDF opens the browser's print dialog, where the report can also be saved as PDF. The *GPS data in report* switch hides coordinates when sharing with third parties – they remain in the file.

Report type

Inspection report

Inspection

2026-09-27 – Annual inspection #1

☒ GPS data in report

Inspection report

Neubau einer Werkhalle mit Bürogebäude in der Gemarkung Hille, Flur 21, in der Gemeinde Hille, Ortschaft Hille · 32479 Hille

Installation

Owner / client	Schäffer Grundbesitz GmbH, Schürenbruch 11, 32479 Hille
Operator	Schäffer Grundbesitz GmbH
Designer	INGENIEURBÜRO WESTERMANN, Herr Wilhelm Westermann
Commissioning	2025-10-01
Base data	20260927_085615_project_dbm.json · SHA-256 67587f543e4b254ee0ecec49e3f08f419635f8f75cb9ad05442012e7f7ecc65e (verified)
Storage	12 modules · grid 6×2 · 166.8 m³

Inspection

Date	2026-09-27
Occasion	Annual inspection
Scope	All checks
Inspector	A. Zanni
Result	29 OK · 0 not OK · 0 n/a · 0 not checked

JUMBO BLOCK storage body

Check	Type	Value	Result	Remark
Interior: deposits, roots, foreign objects	Visual check		OK	(1 photo(s))
Sediment height at the base	Measurement	4,5 cm	OK	
Concrete: cracks, spalling, exposed reinforcement	Visual check		OK	
Columns and nodes: position and condition	Visual check		OK	
Emptying observed after heavy rain	Function test		OK	

Fig. 10: Inspection report with photo and EXIF/GPS details

10. File and integrity

The `inspect.dbm` is a JSON file with the same envelope as the `project.dbm`: `_hashAlgorithm`, `_hash` and below that the keys `inspect_anlage`, `inspect_quelle`, `inspect_katalog`, `inspect_baum`, `inspect_inspektionen`, `inspect_maengel`, `inspect_medien` and `inspect_einstellungen`.

Check	Method
File hash	SHA-256 over compact JSON with sorted keys, excluding fields starting with "_" – the same rule as for the <code>project.dbm</code>
Log chain	each completed log contains the hash of the previous one; numbering and hashes are verified on opening
Photos	each embedded image is stored under its own SHA-256 and recalculated on opening

Results are shown in the status bar and in the *Data exchange* tab (*Verify now*). "File hash mismatch" or "Log chain broken" means the file was modified outside INSPECT.

The check proves that logs, images and metadata are unchanged since completion or attachment. Whether information – such as a photo's EXIF data – was correct beforehand cannot be proven by the program.

The screenshot shows the JUMBO BLOCK Inspect v1.0.0 application interface. At the top, there's a header bar with a clipboard icon and the text "JUMBO BLOCK Inspect v1.0.0". Below this, a subtitle reads "Maintenance and inspection log for installations · fully local, no cloud".

The main interface has a top navigation bar with several buttons: "New installation (not saved)", "Unsaved changes", "Log chain intact (1)", and "Photos: 1 · 80 KB". Below this is a secondary navigation bar with tabs: "Installation", "Asset tree", "Due dates 4", "Inspections", "Defects 1", "Catalogue", "Report", and "Data exchange" (which is currently selected).

The "Data exchange" tab is active, showing a section titled "Data exchange" with the subtitle "One inspect.dbm per installation. Photos are embedded – the file is complete and readable without other files." Below this subtitle are four buttons: "Save inspect.dbm", "Open inspect.dbm", "Load project.dbm", and "New installation".

Below the buttons is a section titled "Catalogue and lists" with four buttons: "Export catalogue", "Import catalogue", "CSV defects", and "CSV due dates".

At the bottom of the "Data exchange" tab is a section titled "Integrity" containing a table with the following data:

File hash	not saved yet
Log chain	intact 1 logs
Photos	–
Photo data in file	80 KB

Below the table is a button labeled "Verify now".

Fig. 11: Data exchange and integrity check

Further functions: CSV export of defects and due dates (semicolon-separated, for spreadsheets), catalogue export/import and *New installation*. Since photos are embedded, the file grows with each inspection; from about 50 MB INSPECT shows a notice.

11. Settings

Setting	Effect
Photo: longest edge	1280 / 1600 / 2048 / 2560 px
Photo: JPEG quality	60 – 90 %
Event check from rainfall	threshold in mm for event checks
GPS data in report	show coordinates, altitude and direction in the report

The language is switched via the suite's shared menu (DE / EN).