Failure codes — the same words for every failure, and the time to failure each one records

Menu: CMMS ▸ Failure Codes...

Part 1 — What the function does

What it does. A failure code names a failure in the same words everywhere, so that failures can be counted, compared and analysed. CMMS ▸ Failure Codes... shows the code list; the Failure event form, which opens when a corrective order is closed, records one failure against a code. With them you

Action	What ReliaEn does
Open CMMS ▸ Failure Codes...	Shows the 77 codes of the starter subset of the standard ISO 14224: the root ROT, four classes (CO compressors, EM electric motors, GT gas turbines, PU pumps) and eighteen failure modes under each class. The first opening on a file puts the codes into it
Fill in the Failure event form	Takes the code and mode, the cause, the mechanism, the detection, the downtime and the repair type; a blank among these is refused and nothing is written
Preview TTF	Shows the time to failure (TTF) the event will store
OK	Records the event and freezes the TTF: it is never recalculated

From what data. The open CMMS file: the asset's install date and install meter reading, its primary meter, and its earlier failure events. No worksheet is used.

How the TTF is found. ReliaEn measures from the last renewal: the asset's latest earlier failure with repair type replace, or its installation if there is none. With a meter, TTF = meter at failure − meter at the renewal, in hours. Without one, TTF = failure date − renewal date, in days.

When an engineer uses it. Every time a corrective order is closed; ReliaEn asks for the event. Use CMMS ▸ Failure Codes... to look up a code and its meaning.

Do not use it when

Situation	Use instead
You want the full ISO 14224 Annex B code set	Bring it in through CMMS ▸ Import Wizard... when you have it as a file (chapter 6.9)
You want to analyse failure modes before failures happen	System ▸ FMEA Study... (chapter 4.2)
You want to raise and cost the order itself	CMMS ▸ Work Orders... (chapter 6.2)

Part 2 — The example's input data

Setting. The example plant's cooling-water system has three centrifugal pumps. PUMP-102 has criticality B and run-hours meter RH-102, installed at a reading of 12,000 hours. PUMP-103 has criticality C and no meter, installed on 4 March 2026. The supervisor u-sup records five failures as they are closed, each on its own corrective order: four seal leaks on PUMP-102, then a bearing failure on PUMP-103.

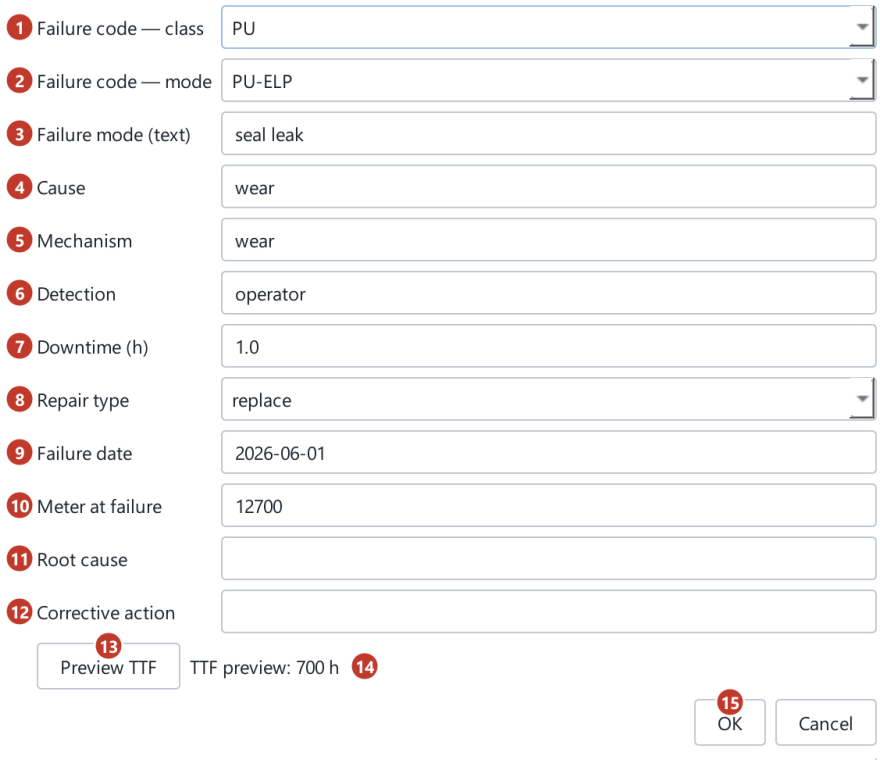
Each order	Entry
Asset	PUMP-102 (the fifth order: PUMP-103)
Type	CM
Description	seal leak (the fifth order: bearing)

Failure date	Meter at failure	Repair type	The order
2026-06-01	12700	replace	WO-000001
2026-07-01	12800	repair	WO-000002
2026-08-01	12900	adjust	WO-000003
2026-08-15	13000	replace	WO-000004
2026-08-30	blank	replace	WO-000005

Failure event form	PUMP-102	PUMP-103
Failure code — class	PU	PU
Failure code — mode	PU-ELP	PU-BRD
Failure mode (text)	seal leak	bearing
Cause	wear	fatigue
Mechanism	wear	wear
Detection	operator	operator
Downtime (h)	1.0	3.0
Root cause, Corrective action	blank	blank

File in the worked-example zip	6-Work-Orders/CMMS-Example-Plant.reliaen - the example plant's CMMS file

The first event as Part 3 types it, in the form:

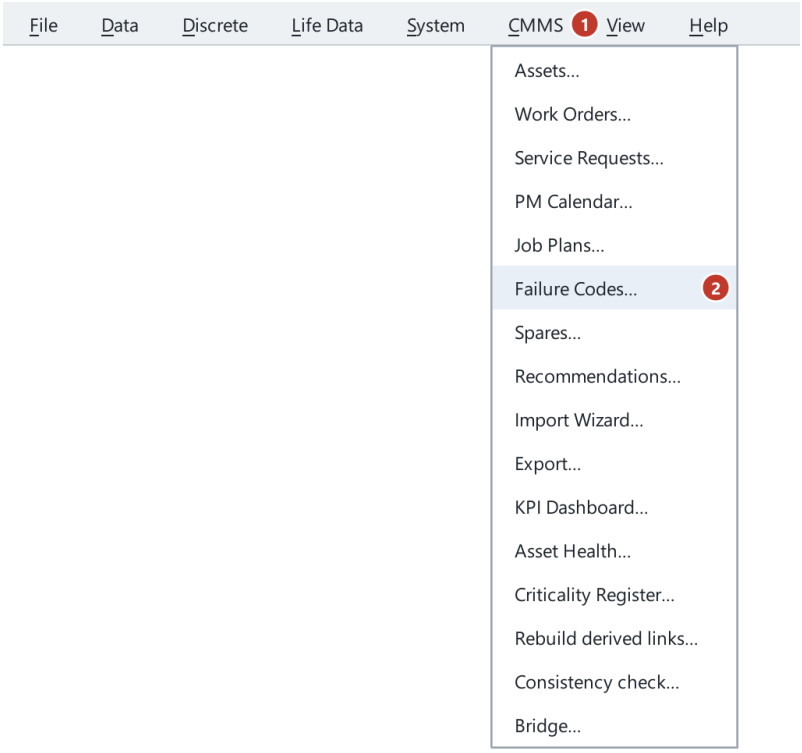


The first event in the form

- ① to ⑩ the form's entries, from Failure code — class to Meter at failure; ⑪ Root cause, ⑫ Corrective action.
- ⑬ Preview TTF; ⑭ the preview; ⑮ OK.

Part 3 — How to use it, step by step

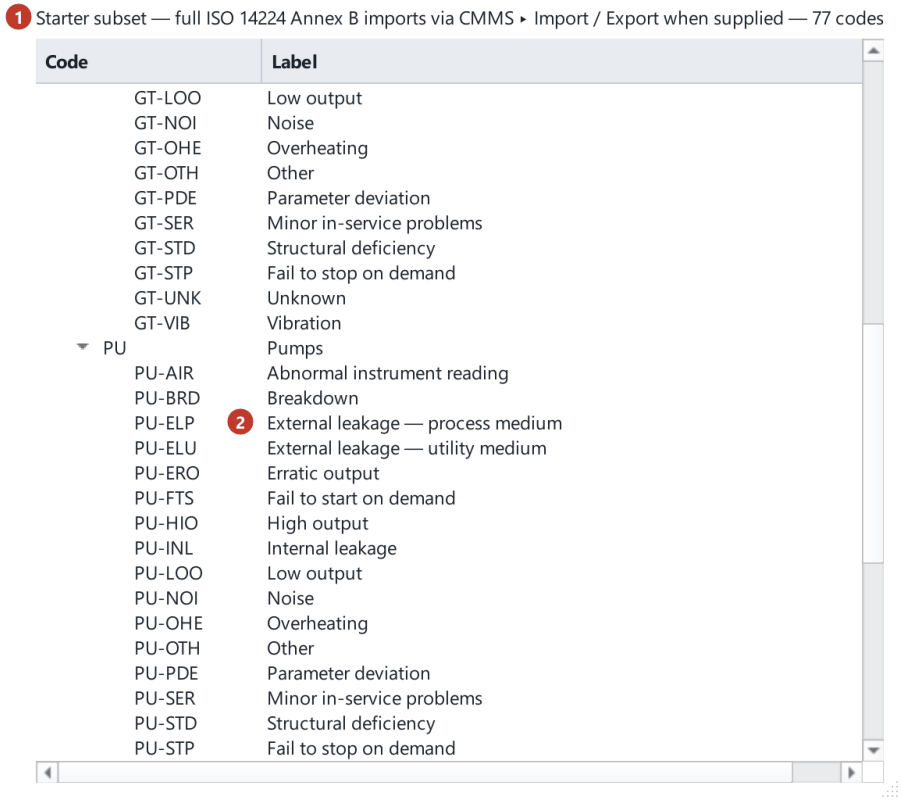
1. **Open the example's CMMS file, then choose CMMS ▸ Failure Codes…** in the menu bar. The window CMMS — Failure Codes opens.



Step 1 — the menu path

- ① CMMS: the menu.
- ② Failure Codes…: the entry to click.

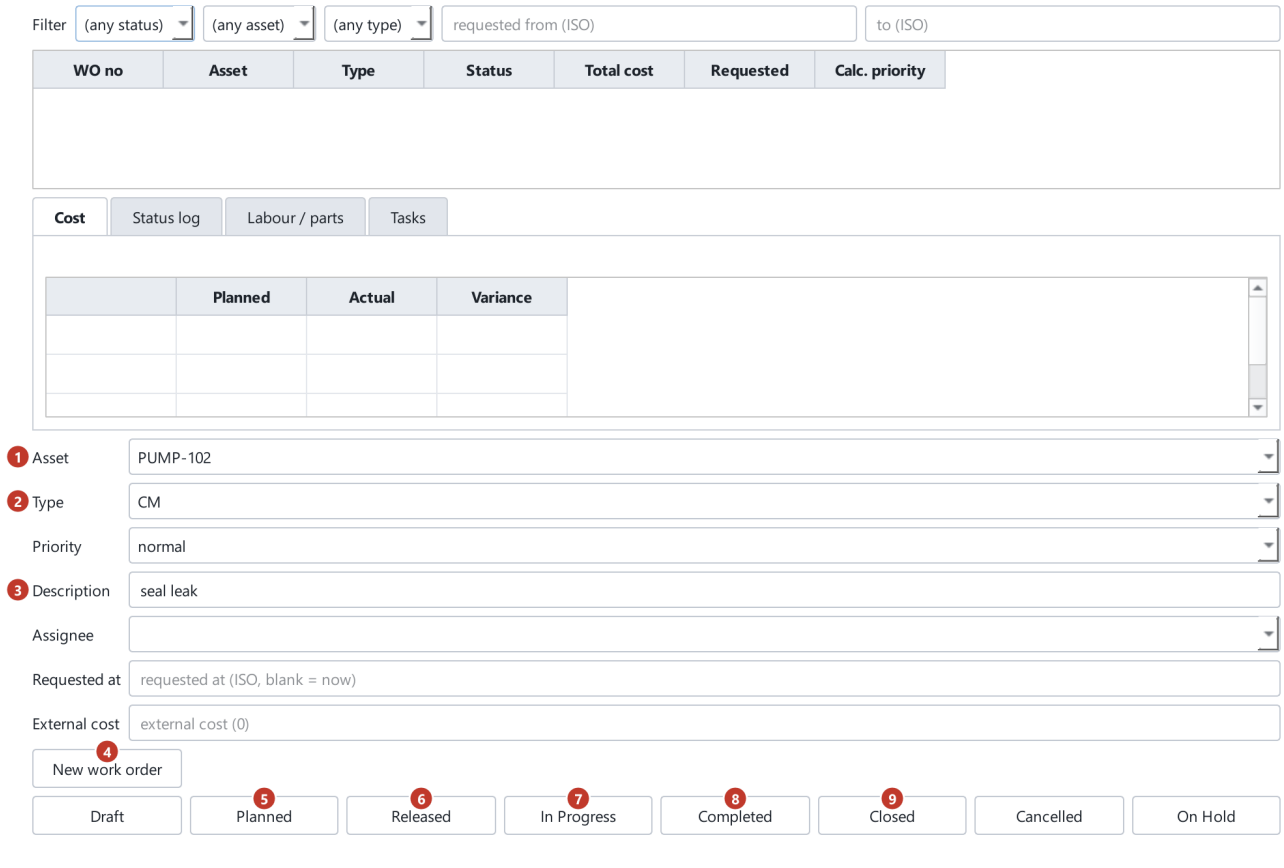
2. **Find PU-ELP in the list, then close the window.** The code is the one a leaking pump seal takes:



Step 2 — the code list

- ① The header: Starter subset — full ISO 14224 Annex B imports via CMMS ▸ Import / Export when supplied — 77 codes.
- ② PU-ELP, with its label External leakage — process medium.

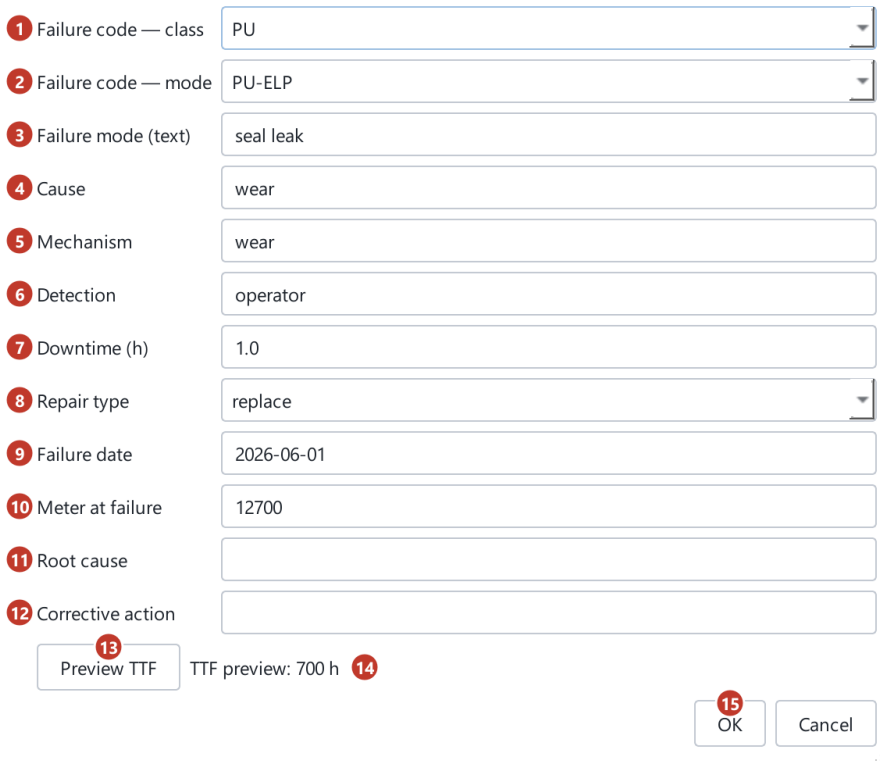
3. **Choose CMMS ▸ Work Orders….** Steps 4 to 9 raise the first order and bring it to the refusal:



Steps 4 to 9 — the first order typed

4. ① **In Asset, choose PUMP-102.**
5. ② **Check that Type reads CM.**
6. ③ **In Description, type seal leak.**
7. ④ **Click New work order.**
8. ⑤ to ⑧ **Click Planned, Released, In Progress and Completed** in turn, as chapter 6.2 shows.
9. ⑨ **Click Closed.** ReliaEn refuses, as the order has no failure event yet, and opens the Failure event form.

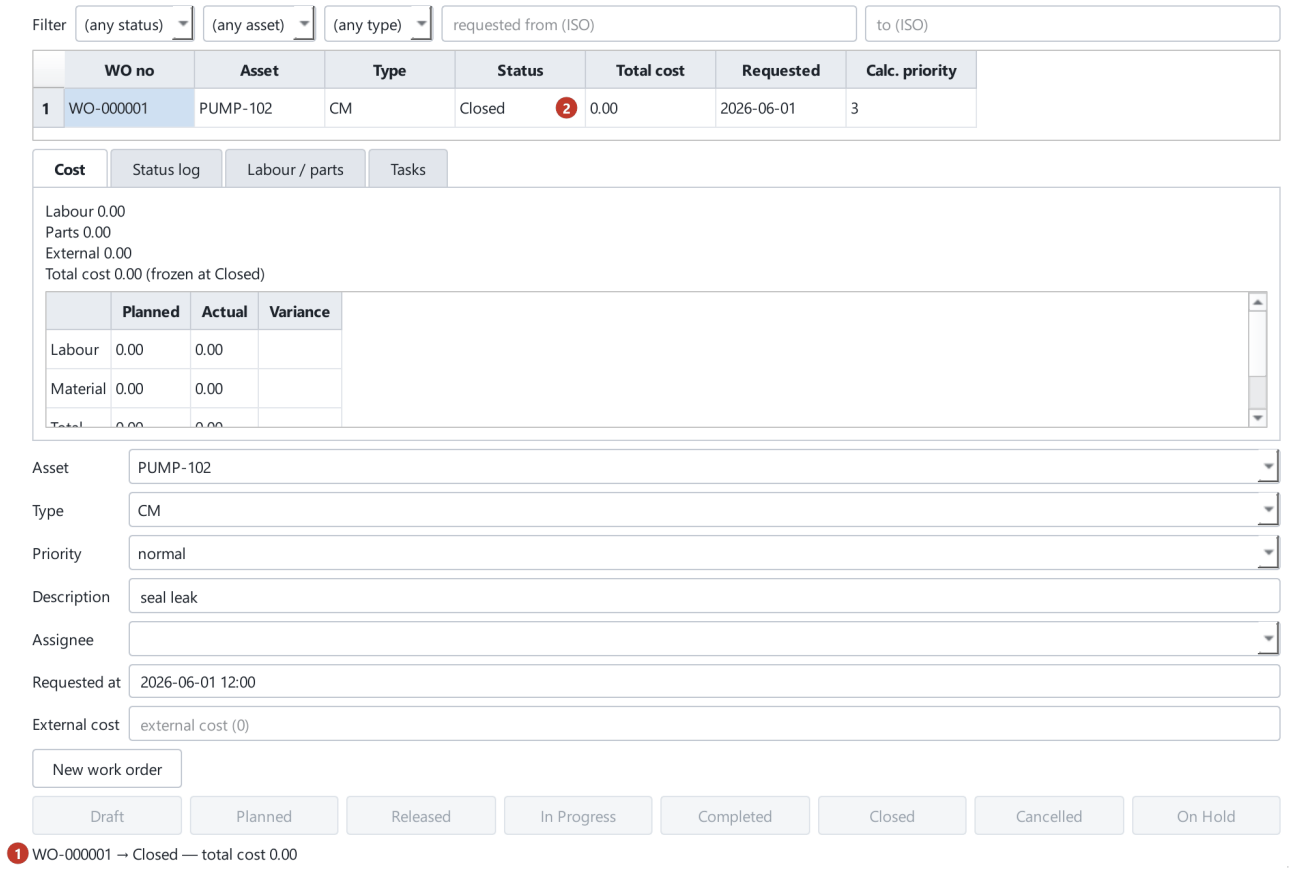
10. **Fill in the form**, as steps 11 to 25 do:



Steps 11 to 25 — the Failure event form

11. ① **In Failure code — class, choose PU.**
12. ② **In Failure code — mode, choose PU-ELP.** The list offers only the modes of the class above.
13. ③ **In Failure mode (text), type seal leak.**
14. ④ **In Cause, type wear.**
15. ⑤ **In Mechanism, type wear.**
16. ⑥ **In Detection, type operator.**
17. ⑦ **In Downtime (h), type 1.0.**
18. ⑧ **In Repair type, choose replace.**
19. ⑨ **In Failure date, type 2026-06-01.**
20. ⑩ **In Meter at failure, type 12700.**
21. ⑪ **Leave Root cause blank.** PUMP-102 has criticality B, so the label does not say required.
22. ⑫ **Leave Corrective action blank,** for the same reason.
23. ⑬ **Click Preview TTF.**
24. ⑭ **Check that the line reads TTF preview: 700 h.**
25. ⑮ **Click OK.** The form records the event and closes.

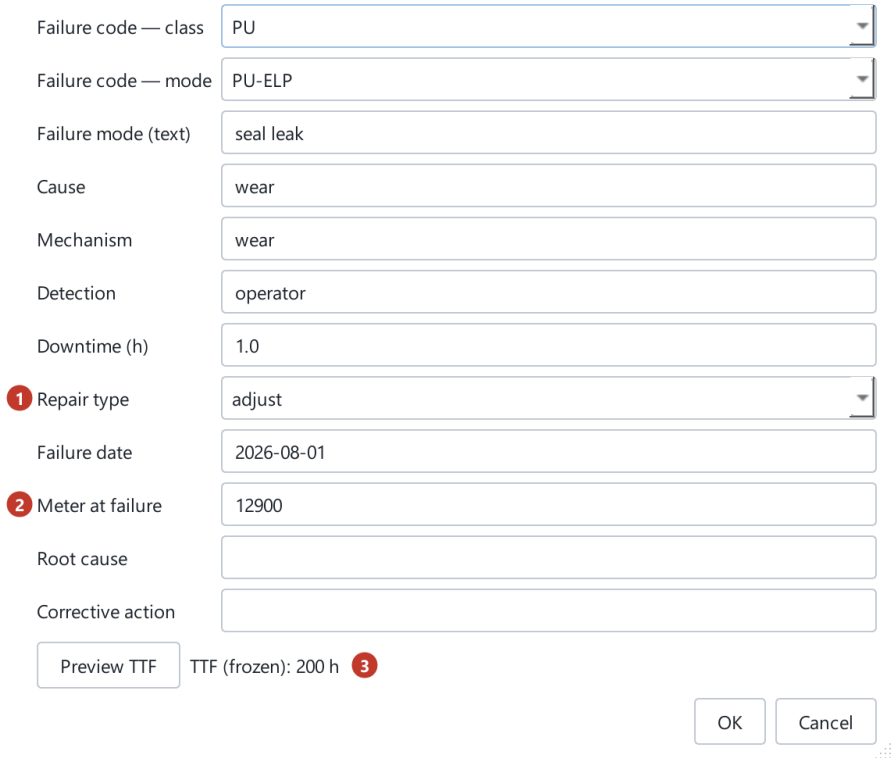
26. **Click Closed again.** The order closes:



Step 26 — the order closed

- ① The line under the state buttons.
- ② The list row's Status.

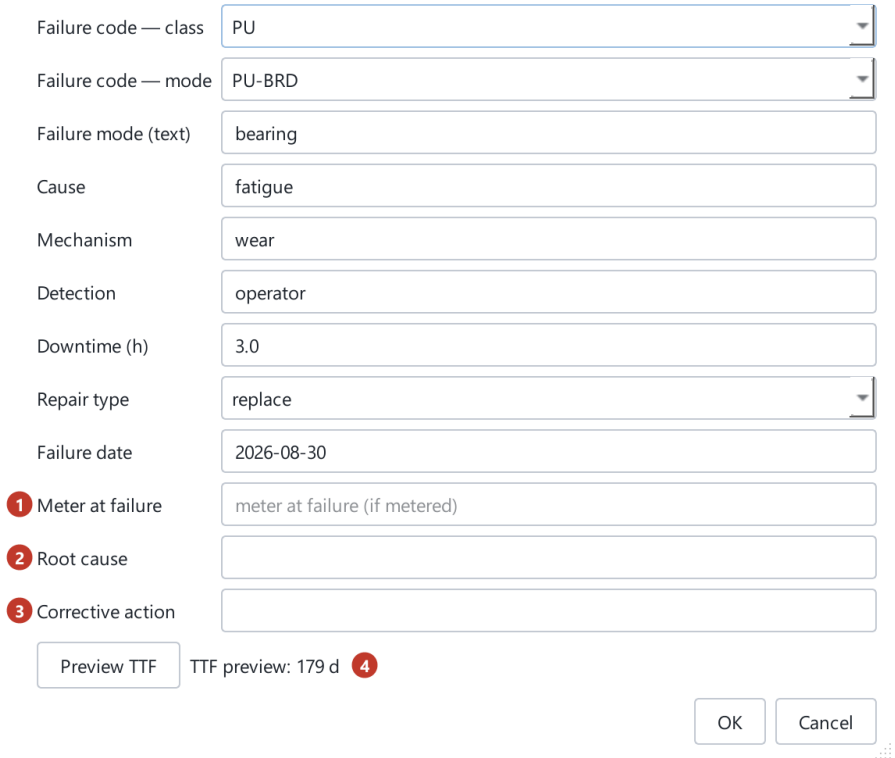
27. **Do steps 4 to 26 again for WO-000002, WO-000003 and WO-000004**, with the dates, meter readings and repair types of Part 2's table. The third event, after OK:



Step 27 — the third event after OK

- ① Repair type, ② Meter at failure, ③ TTF (frozen):, as in Part 2's table and Part 4.

28. **Do steps 4 to 26 once more for WO-000005 on PUMP-103**, with the PUMP-103 column of Part 2's table and Meter at failure left blank:

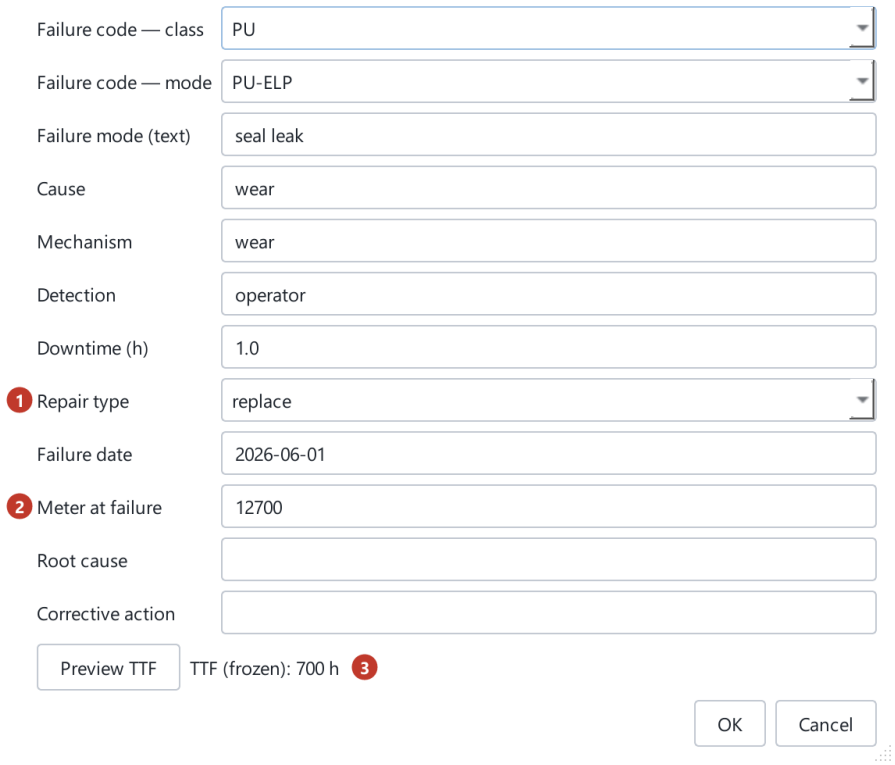


Step 28 — PUMP-103's event after Preview TTF

- ① Meter at failure, left blank.
- ② Root cause and ③ Corrective action, left blank.
- ④ The preview.

Part 4 — The result, picture by picture

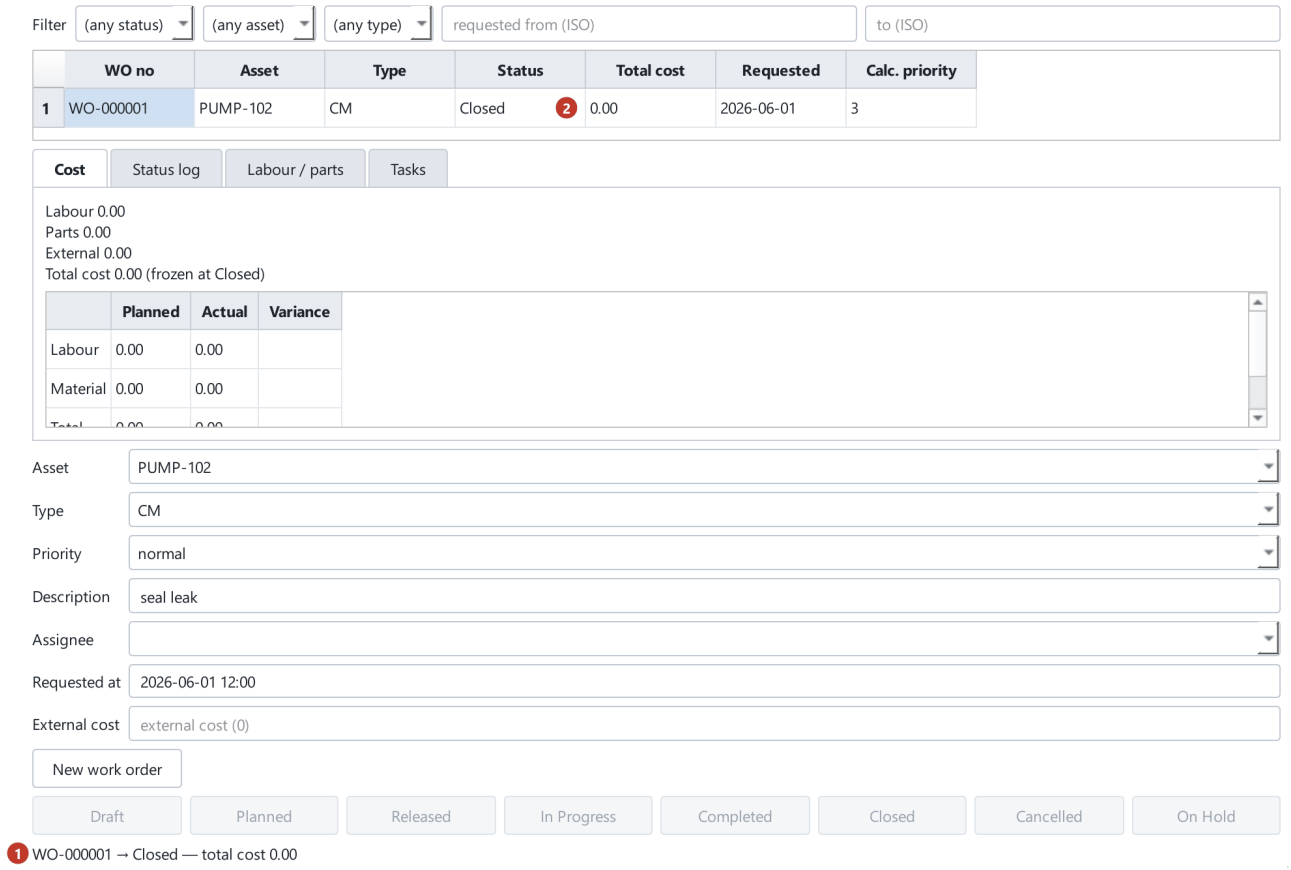
After OK on the first event:



The first event after OK

- ① Repair type: replace.
- ② Meter at failure: 12700.
- ③ TTF (frozen): 700 h: 12,700 − 12,000 hours, measured from the installation. It is stored with the event and never recalculated.

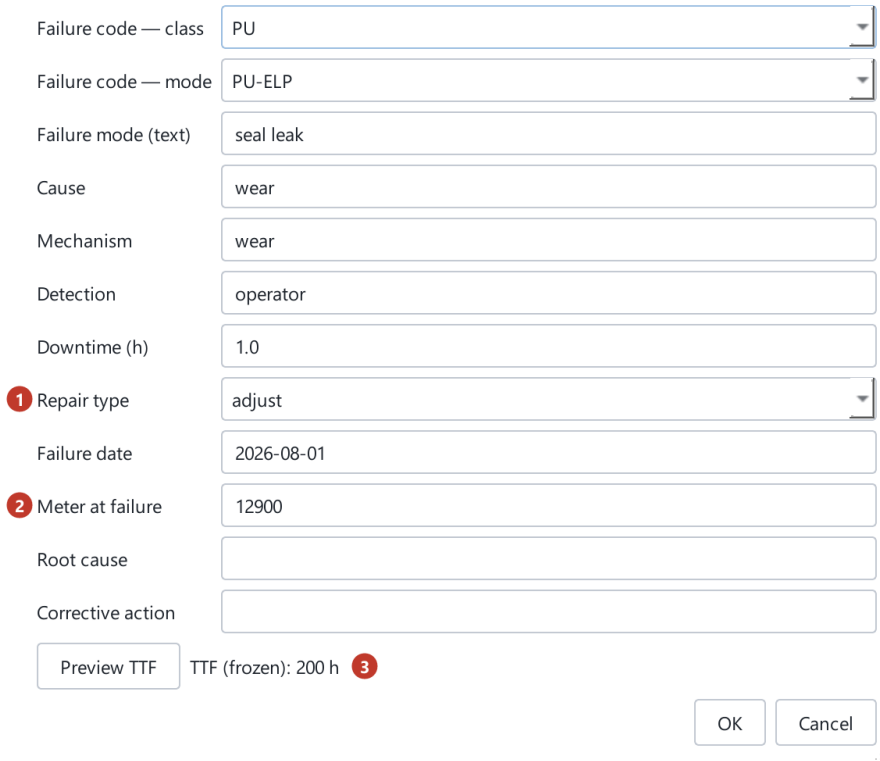
After the second Closed of step 26:



The Work Orders window after Closed

- ① The line under the state buttons: WO-000001 → Closed — total cost 0.00. This example books no labour or parts; chapter 6.2 does.
- ② The list row's Status: Closed.

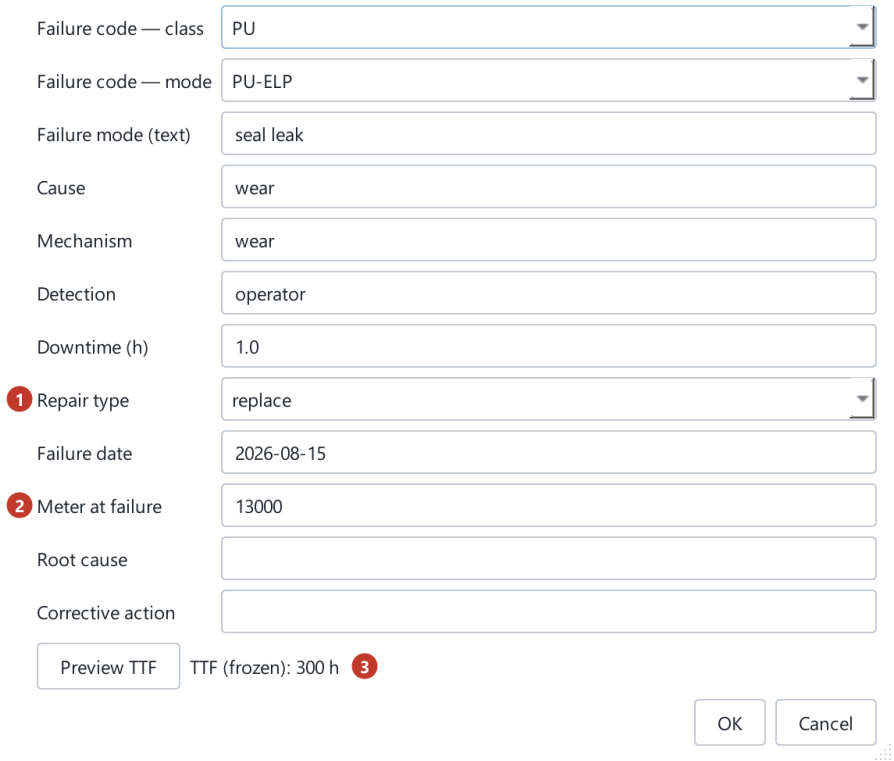
The third event, after OK:



The third event after OK

- ① Repair type: adjust.
- ② Meter at failure: 12900.
- ③ TTF (frozen): 200 h: 12,900 − 12,700 hours. It is measured from the replacement at 12,700, because the repair at 12,800 renewed nothing.

The fourth event, after OK:



The fourth event after OK

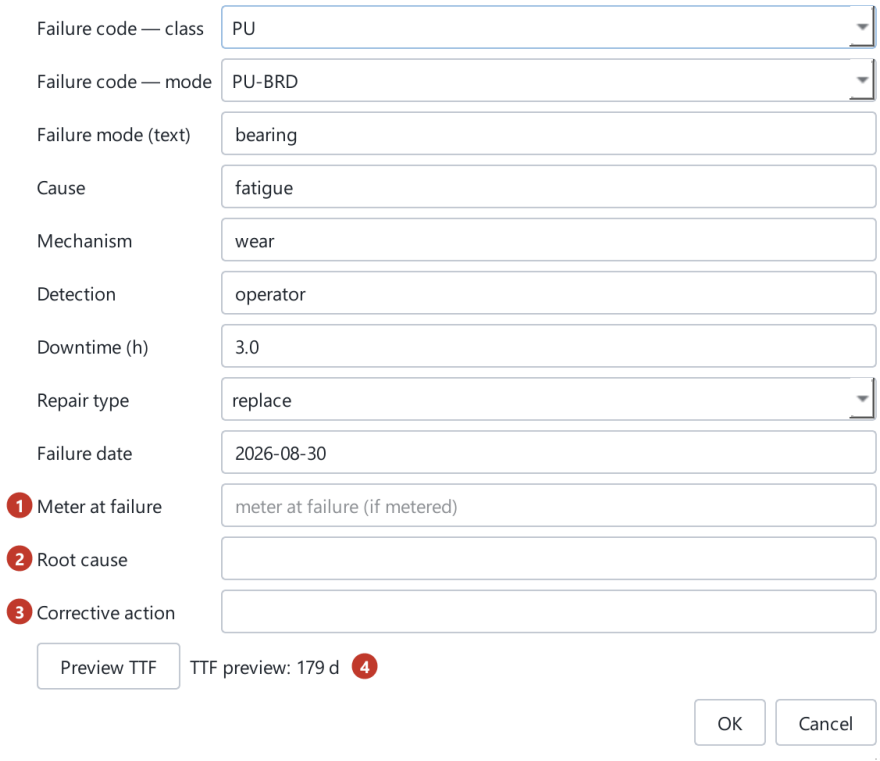
- ① Repair type: replace.
- ② Meter at failure: 13000.
- ③ TTF (frozen): 300 h: 13,000 − 12,700 hours. The adjust renewed nothing either. This replace is the new starting point for the pump's next failure.

The four events of PUMP-102 together:

Failure date	Meter at failure	Repair type	TTF (frozen):	Measured from
2026-06-01	12700	replace	700 h	the installation, 12,000
2026-07-01	12800	repair	100 h	the replacement at 12,700
2026-08-01	12900	adjust	200 h	the replacement at 12,700
2026-08-15	13000	replace	300 h	the replacement at 12,700

What to decide. Choose Repair type by what was done to the item: only replace restarts the clock. If the seal was in fact renewed at 12,800 or 12,900 hours, record replace.

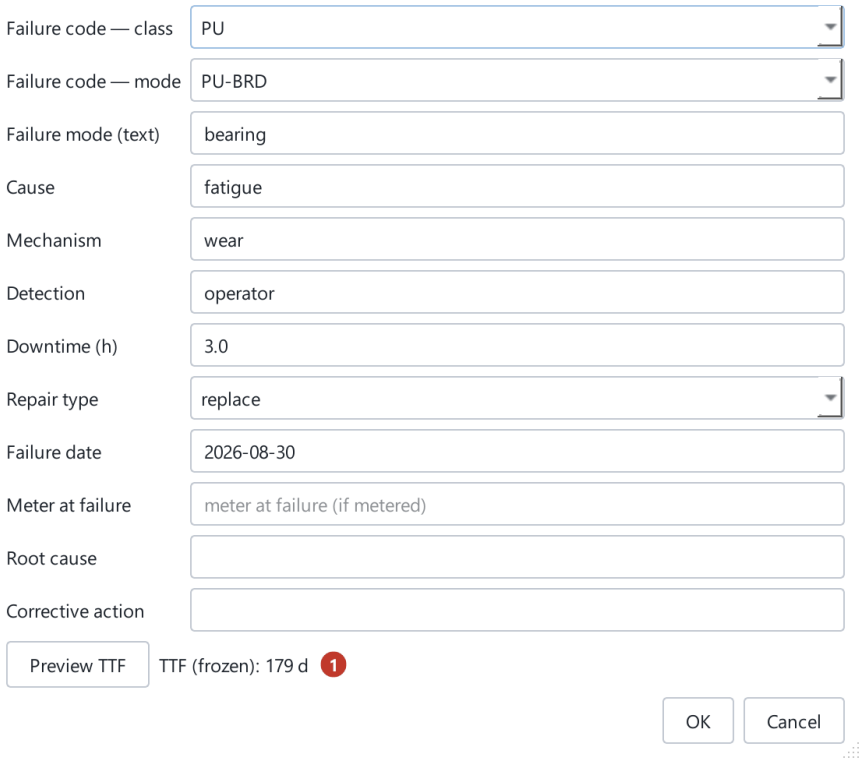
The fifth event, on PUMP-103, after Preview TTF:



PUMP-103's event after Preview TTF

- ① Meter at failure: empty. PUMP-103 has no meter, so ReliaEn counts days.
- ② Root cause: empty, without the word required; PUMP-103 has criticality C.
- ③ Corrective action: empty, for the same reason.
- ④ TTF preview: 179 d: from the installation on 2026-03-04 to 2026-08-30.

After OK:



PUMP-103's event after OK

- ① TTF (frozen): 179 d.

What to decide. This life is in days and PUMP-102's are in hours: do not put the two in one analysis. Give the pump a meter if its next failures should count in hours.

Part 5 — How to interpret the results

What the codes are for. Choose the class by the equipment and the mode by what was seen: a leaking pump seal is PU-ELP, not PU-OTH. Failure mode (text) then says it in your own words.

How to read the list. In version 1.0.0 the modes of some classes stand at the top of the list beside ROT, not under their class, and which ones changes from file to file. The first letters of the code always name the class: PU-ELP is a pump mode wherever it stands. The form's two lists are not affected.

What the 700, 100, 200 and 300 hours are. The first failure is measured from the installation. A repair or an adjust does not renew the pump, so the next two are measured from the same replacement at 12,700 hours, and so is the fourth. These times to failure are the ages the reliability analyses of ReliaEn read.

Why hours or days. A pump with a meter gives hours; a pump without one gives days. An analysis needs one unit across its data.

When there is no starting point. An asset with a meter but no install reading and no earlier replacement has nothing to measure from: the form reads TTF: no renewal baseline on record — left blank and the event is stored without a time to failure. Record the install reading in CMMS ▸ Assets… so that later failures can be measured.

Why the meter matters before OK. The time to failure is frozen when the event is recorded. A wrong meter reading gives a wrong age in every analysis, so read the preview first.