

Production and withdrawal kanban

Trace a container and its two authorizations, reconcile the replenishment quantity, and respond to a quality hold without inventing another signal.



One request, two different permissions

Fictional training case: Alder Components supplies bracket B17 from a supermarket to assembly cell C2. At 09:10 the cell starts a 12-piece container and returns withdrawal card W04. Material handler Maya must collect the next container. This exercise follows one transaction, not the sizing of the whole system.

Your role and the reference condition

Material handler, supported by the producing-process leader and quality owner.

Normal: Each eligible full container holds 12 verified B17 brackets. Item, quantity, source, destination and card identity agree. A withdrawal signal permits a move; the released production signal permits its replacement.

Gap: A supervisor suggests making three extra containers while the producer has spare time. One stock container also has uncertain quality status. Neither fact grants another production authorization.

Work within these conditions

1. The example uses a simple one-card-per-container arrangement with a defined card exchange point.
2. Quality status must be verified before conveyance; card count is controlled by the process owner.

Fictional teaching case. Supplied observations support the exercise; proposed actions are not verified customer results.

See how the method works

The two signals answer different questions. A withdrawal signal authorizes the material handler to convey a defined quantity to the consuming process. Removing that quantity from the supermarket returns a production signal, authorizing replacement. Keep item identity, quantity and destination attached to the loop. Follow one container through both actions and check that cards cannot silently multiply. The drawing should distinguish material movement from information returning upstream. This is a physical replenishment mechanism; a board that merely displays tasks does not automatically implement the same control. Investigate missing signals and quality holds before replenishing blindly.



Connected method map: Producing process, Supermarket, Consuming process, Material handler. Every authored connection is shown with a numbered arrow and named legend.

Follow the evidence and decisions

Inspect the supplied case inputs

Evidence at 09:10	Declared value
Returned signal	W04; B17; 12 pieces; supermarket to C2
Eligible stock	C21 and C22, each 12 B17; P21 and P22 attached
Held stock	C23, 12 B17; status HOLD; P23 attached
Producer queue	No outstanding B17 production cards
Request outside system	Make 36 additional pieces because machine is free

01 / Read the request before touching stock

Maya matches W04 to B17, the 12-piece quantity and C2 destination. She checks that the signal is genuine and not a duplicate of an already fulfilled request.

Why: An empty shelf or free machine is incomplete evidence of permission. Identity and transaction status prevent the wrong item or a second fulfillment.

Evidence / check: W04 is outstanding and specifies exactly one container.

02 / Choose a container that can move

She selects eligible C21, verifies its item/count/status, and leaves C23 in the controlled hold location. She does not treat the hold label as a request to consume or replace that stock.

Why: Material authorization and product suitability are separate checks. A full container is not necessarily available stock.

Evidence / check: C21 has 12 verified B17 and P21; C23 remains blocked.

03 / Exchange and route the signals

At the supermarket exchange point she removes P21 for the production collection point and attaches W04 to C21 for delivery. The producer receives P21 through the defined return route.

Why: The material moves toward C2 while the replenishment information returns upstream. Drawing both as one forward arrow hides the two permissions.

Evidence / check: C21 travels with W04; one P21 enters the producer queue.

04 / Make the authorized replacement

The producing process accepts P21 for one 12-piece replacement, verifies the output and returns that replenishment with its production identification. It declines the unsolicited 36-piece request.

Why: The example changes location and replenishes a withdrawal; it does not increase the authorized circulating quantity.

Evidence / check: One production instruction for 12 pieces; no instruction for three extras.

05 / Close the trace and expose the exception

Maya records delivery to C2 and the producer records replacement completion. The leader assigns the C23 hold to quality and tracks the effect on eligible supply separately.

Why: A reconciliation makes missing or duplicate cards visible. Hiding the hold with extra inventory would conceal the response problem.

Evidence / check: W04 fulfillment and P21 completion are linked; P22 stays with C22 and P23 stays controlled with C23.

Completed signal and container trace - fictional example

Event	Material/status	Authorization / decision
1. Request	C2 begins its current container	W04 requests 12 B17
2. Exchange	C21 eligible; C23 held	W04 onto C21; P21 returned
3. Convey	C21 delivered to C2	One withdrawal fulfilled
4. Replenish	One replacement: 12 verified B17	P21 permits make; no extra 36
5. Reconcile	C22 eligible; C23 still held	P22/P23 remain accounted for

The selected container is held at the last check

Before exchange, quality changes C21 to HOLD. C22 is still verified and the same item/quantity.

Decision

Use C22 only after checking its status; return P22, not P21. Keep C21/P21 under the hold procedure and record the changed selection.

Reasoning

The replenishment trace must follow the container actually withdrawn. Swapping cards casually would create false stock and production records.

What would change the decision?

The revised trace names W04, C22 and P22; C21 has no delivery event.

Practise with a changed case

Two requests and one duplicate

New fictional case: card W11 and card W12 each request eight clips K8 for cell D1. A photocopy of W11 arrives in the same collection batch. Container H31 and H32 each hold eight verified K8 with P31/P32; H33 holds eight K8 on quality hold.

Input	Status
W11	Outstanding; 8 K8
W12	Outstanding; 8 K8
Copy of W11	Same identity; not another authorization
H31 / H32	Eligible; P31 / P32 attached
H33	HOLD; P33 controlled

Your task

1. Complete a trace for the two valid deliveries and their replacement signals.
2. Calculate the authorized replacement quantity and identify the duplicate handling.
3. Explain what changes if H32 becomes held before exchange.

Use the next page to record your reasoning before reading the answer.

Your practice worksheet

Two requests and one duplicate

Request identity and validity

Selected container / quality status

Returned production signal

Authorized quantity with units

Blocked request, owner and next evidence

Complete your reasoning before turning to the answer. Use the separate learner workbook for group practice.

Check your reasoning and transfer it

1. Two distinct valid withdrawal requests permit two eligible eight-piece containers: $2 \times 8 = 16$ clips. The W11 copy is reconciled, not counted.
2. W11/H31/P31 and W12/H32/P32 are one acceptable allocation; reversing the two eligible containers is also valid if the trace remains consistent.
3. If H32 is held, only H31 can fulfill a request from supplied stock. Escalate the unfilled request and hold disposition; do not transfer H33 or manufacture an unauthorized card.

Suggested completed record

Request / variant	Container / status	Authorization and quantity
W11	H31 eligible	P31 returns; 8 clips
W12	H32 eligible	P32 returns; 8 clips
W11 copy	Duplicate	No second move or make
H32 held variant	Second request unfilled	Only 8 supplied from H31; escalate

Plausible wrong turns

1. A withdrawal card is not a production instruction.
2. A duplicate signal or quality hold does not automatically enlarge the authorized system.

Evidence of a sound answer

1. Trace item, quantity and both distinct permissions correctly.
2. Explain the held-stock branch without losing card identity.
3. Name the missing evidence and owner before proposing a system change.

Take the learning back to work

Commitment	Agreed follow-through
Owner	Material-flow owner with quality and producing-process representatives
Record	One observed container/card trace and unresolved signal log
Review	At the next route review, then across representative replenishment cycles
Verification evidence	Matching identity/quantity, timely return, eligible stock status and no duplicate fulfillment
If unresolved	Escalate lost signals, hold delays or unreliable supply; revise the approved loop through its owner rather than adding informal cards.

Help someone else apply the method

Prepare

1. Printed case and blank trace
2. Two differently marked card types and three container tokens
3. Answer held back until pairs complete practice

Minutes	Activity and coaching prompt
4	Frame the decision What evidence would let Maya move a container?
7	Demonstrate the exchange using tokens Which object travels downstream and which instruction returns?
9	Pairs complete practice and hold variant Account for every card, including the copy.
5	Debrief and transfer Which shortcut creates an unrecorded authorization?

Debrief

1. Ask a learner to defend a different valid container allocation.
2. If a learner counts 24 clips, identify the duplicate before correcting the arithmetic.

Individual or remote practice

Draw material and information in different line styles; explain each permission aloud before opening the answer.

Connect the method and check its boundaries

Before application

1. Known container quantity
2. Reliable return route and quality status

Outside this lesson

1. A task board is not this replenishment mechanism
2. Cards do not justify producing rejected stock

LEI: Kanban

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Production and withdrawal signals authorize different actions

Method reference; original OPEX scenario and diagram are synthetic teaching content, not source case results.

[Open this lesson and its visual aids](#)