

Public Bench Note F2-001

Nikon F2 Wind Lever, Frame Counter and Shutter Release: the Take-up Middle Plate (D-3)

Why the wind feels heavy, the frame counter misbehaves or T will not release. Component reference, mechanism and troubleshooting

Speybench, Scottish Highlands | speybench.com/bench-notes/f2-001 | Rev E, October 2026

In brief

The take-up middle plate is the small plate under the Nikon F2's wind lever that carries three things you use on every frame: the wind lever's one-way drive, the frame counter, and the shutter release with its T and L collar. Nikon calls it subassembly D-3, and built all three onto one plate so their relationships are fixed.

Typical symptoms are a wind lever that feels stiff, slips or is slow to return; a frame counter that skips, stops between numbers or will not reset to S when the back is opened; and, on T, a shutter button that stays down after winding.

A heavy wind is not always this plate. Nikon names causes elsewhere in the transport as well, and the plate's own mounting position affects how heavy the wind feels. Symptoms & troubleshooting, below, separates them.

Not an owner adjustment. The plate sits under the top cover, its position is itself an adjustment, and the counter spring is held under tension, so it is a bench job. This note explains what is happening and what to look for; it is not a service procedure.

Overview

The take-up middle plate is a matchbox-sized carrier holding three systems that live under the right-hand top cover and run off the same wind cycle: the **wind input** (lever to one-way drum), the **frame counter** with its reset, and the **shutter release** with its T-L collar. Nikon built them onto one plate so the relationships between them are fixed and the unit can be assembled and checked off the body. D-3 comprises 54 component pieces: 32 fitted direct to the plate (including five 811 screws and two 434 nuts) and 22 in six nested subassemblies (D1, D2-1, D3, D4-2, D5, D6-2). The release mount screw 887 is shown in Fig. 4 but is not part of D-3 and is not counted.

What a Public Bench Note is for. It explains what each part does, how the mechanism works, what a fault points to, what Nikon specifies and what Speybench has observed. It should answer more questions than it raises, but it is not a service procedure: strip-down and reassembly sequences, tooling and the full Speybench workshop process sit outside it. Every technical claim carries its provenance, so the reader can see what is Nikon's, what is read from Nikon's drawings, and what is Speybench's own.

N

Nikon text. Stated by the manual, or by the part's English or Japanese name in the parts list.

D

Nikon drawings. Read from position and relationship in Figs. 4 and 12.

B

Bench verified. Observed and confirmed by Speybench on a physical assembly. None yet in this revision.

I

Speybench inference. From name and position only. Verify on the bench before relying on it.

S

Speybench practice. Bench procedure, not Nikon instruction. Marks whole sections; inside rows it appears as Bench note.

In the component tables every part number, name, subassembly and quantity is Nikon's, and each row describes the part as the manual documents it. In the fault table the mark rates the link between symptom and mechanism. Grey **JP** lines are Speybench translations of the Japanese names printed beside the English in the parts list. Text after **Bench note** is Speybench practice and is not covered by its row's mark. Part numbers in the fault table link to their component rows.

How the module works

Wind input. The lever stroke goes down the lever shaft into a one-way drum whose ratchet claws drive the transport and cocking train below the plate on the wind stroke and slip on the return. A spring returns the lever; a stopper sets where it comes to rest.

Frame counter. The counter is not driven from the lever shaft. Its drive comes up from the **sprocket shaft**: cross pin 1007-1 turns coupling ring 255-2, which turns eccentric 256-2, which reciprocates the advance claw once per sprocket revolution (Fig. 12). The sprocket is gear-driven from the wind, so the count follows the wind with or without film. A lock claw holds each step against the return spring, and opening the back lifts both claws so the spring drives the dial to S.

Shutter release. The button and its shaft carry the release down into the body. The T-L collar selects time or lock. At T the button stays down until the camera is wound (Nikon's functional check); the T release pin on the drum and the time release lever are the parts named for that release.

About this document. Written and drawn by Speybench from bench work and from the Nikon F2 Repair Manual, Revised-1 (30FB-R.2012.B), which is cited by page throughout. Part numbers and names are given for identification. No figures, tables or text from the manual are reproduced, and this revision contains no diagrams. Free to share unaltered with attribution to speybench.com. Nikon, Nikon F and F2 are trademarks of Nikon Corporation. Speybench is independent and not affiliated with or endorsed by Nikon. Supplied as a reference for understanding and diagnosis, not as a service procedure; work on your camera is at your own risk.

Corrections and observations are welcome at service@speybench.com; anything verified on the bench is recorded in the revision history.

Frame counter drive path

Drive chain (traced from Fig. 12 and the parts list)

- Sprocket shaft 251-3, cross pin 1007-1
- ↓ coupling ring 255-2, below the plate
- ↓ eccentric 256-2, above the plate
- ↓ advance claw 210-1, one stroke per revolution
- ↓ ratchet 208-1 steps one tooth
- ↓ lock claw 211 holds; dial 206 reads

Consequence for diagnosis

256-2 sets the timing of the step within the wind, not where the dial comes to rest.

Dial sits between numbers: rest-position fault. Dial indexed wrongly on 208-1, lock claw 211 not seating (945), or index plate 212.

Count steps early, late or not at all: drive fault. 255-2 on 1007-1, 256-2, or 210-1.

Symptoms & troubleshooting

By what can be observed on the assembled camera. Each entry points to the part of the mechanism worth examining; it is not a repair procedure. Where the correction is not yet established on the bench, the entry says so. The mark rates how firmly the symptom is tied to the mechanism.

Symptom	Likely area	What to inspect	Resolution / finding	
Wind lever stiff or heavy	Plate position; wind train below the plate	Where the plate sits within the float of its four screws (265-1). Drum 214-1 free on shaft 213-1. Outside D-3, Nikon also names spool gear contact, no thrust slack and front brake spring tension (Assembling points 3, 4, 10).	Nikon: release the four attaching screws once and fasten them where winding is not heavy and the lever returns correctly (Assembling point 1, PDF p.35).	N
Wind lever slow to return	Lever return spring; drum; plate position; return stop	Spring 429 seated and sprung. Drum 214-1 for gummed lubricant. Stopper 277 and pin 312. Plate position as above.	Nikon: the same plate-position adjustment names lever return (Assembling point 1). For spring and drum: Verify on bench.	N
Wind lever slips or feels vague	One-way drum clutch	Ratchet claws 217 on axles 763; claw spring 937 and its screw 815; claw tips and the take-up ratchet they drive (215, below the plate).	Verify on bench. A tired 937 is the first suspect.	I
Frame counter does not advance	Counter drive path	Coupling ring 255-2 engaged on cross pin 1007-1; eccentric 256-2 turning; advance claw 210-1 riding on it and reaching ratchet 208-1. Reverse lever 291 not holding the claws lifted.	Verify on bench. Whether 256-2 can be fitted out of key is an open item.	D
Frame counter skips frames	Claw engagement	Spring 945 keeping the claws on the ratchet; tip of 210-1; teeth of 208-1.	Verify on bench.	I

Symptom	Likely area	What to inspect	Resolution / finding	
Frame counter counts two at once	Claw system	Spring 945; 210-1 on 256-2; 208-1 teeth; lock claw 211 holding between steps.	Verify on bench. No mechanism for a double step is established yet; the entry records where to look.	I
Frame counter stops between numbers	Rest position, not drive	Lock claw 211 on axle 218 seating in the tooth; spring 945; dial 206 indexed correctly on ratchet 208-1; index plate 212.	Not an adjustment of 256-2, which is a drive eccentric (Fig. 12). Verify on bench.	D
Frame counter creeps back towards S	Lock claw	Lock claw 211 and axle 218; spring 945; worn ratchet teeth on 208-1.	Verify on bench.	I
Frame counter will not return to S	Return spring preload; counter stack friction	Preload on return spring 209-1; counter stack free on bearing 205 under nut 204; both claws fully lifted by 291.	Speybench practice: record 209-1 turns and direction on strip-down and restore them on reassembly. Cause in a given body: Verify on bench.	I
Frame counter does not reset when the back opens	Reset path	Reverse lever 291 with pin 287 on axle 799-1; spring 931; collar 1015. The back-opening linkage that moves 291 lies outside D-3.	Operate 291 by hand. If the dial returns, look at the back-opening linkage; if not, at the reset path and counter stack. Verify on bench.	D
On T, the shutter button stays down after winding	T release	T release pin 289-2 on the drum; time release lever 325 on axle 879; T-L ring 261-1 position.	Nikon: the button must return when the lever is wound (Sect. 10 (iii) 4, PDF p.31). Trip point and stroke are open items. Verify on bench.	N

Adjustment and functional checks

Plate position. *Nikon* (Assembling point 1, PDF p.35): release the four attaching screws once, and fasten them in a position where winding is not heavy and the lever returns correctly. Incorrect plate positioning can produce a heavy wind even when the mechanism itself is clean. *Speybench practice:* snug the screws, cycle the lever, find the position, then tighten and log it on the bench record.

T release. *Nikon* (Sect. 10 (iii) 3 and 4, PDF p.31): two pass/fail checks. At T the shutter releases with the button staying depressed, and the button (259) returns to its original position when the lever is wound. No trip point is given. *Speybench practice:* record the lever angle from rest, in degrees, at which the button lifts, as a comparison baseline across bodies. It is not a Nikon tolerance.

Counter. *Speybench practice:* before undoing nut 204, record the dial position against the index, then the number of turns and the direction of 209-1 preload as it unwinds, viewed from above. After reassembly the counter should step one number per full wind, hold each position, and return to S when the reverse lever (291) is operated by hand. Too little preload and the dial stalls short of S; the turns recorded on strip-down are the reassembly figure.

Lubrication SPEYBENCH PRACTICE

The manual's lubricant list (PDF pp.5 to 6) catalogues Nikon's internal lubricant codes but gives no lubrication map for D-3, and Fig. 4 carries no lubrication marks. What follows is Speybench workshop practice and is not presented as Nikon's specification. Working rule: pivots and axles (763, 218, 799-1, 879, the claw pivots) get a single drop of light pivot oil from a watchmaker's oiler (Nyoil II on this bench); metal-to-metal sliding surfaces (drum interior, lever shaft) get a thin film of light synthetic grease. The lock claw axle 218 and the eccentric 256-2 running in the bore of 210-1 take a trace of oil only. Ratchet teeth, claw tips and the counter springs stay dry. Keep oil to a minimum above the release shaft and around the counter; oil migrates.

Bench record SPEYBENCH PRACTICE

One per body. Fill in on strip-down and again on reassembly.

Item	Record	Strip-down	Reassembly
Body serial	F2 serial and finder fitted		
Dial at strip-down	Number against index 212		
209-1 preload	Turns, and CW or CCW viewed from above		
Plate position	Witness marks or screw positions within float		
Wind feel	Light / heavy; lever return clean / slow		
T trip angle	Lever degrees from rest at which 259 lifts		
Counter function	Steps per wind; holds; returns to S		

Components

Each part as Nikon documents it: number, name, subassembly and quantity from the parts list, with the Japanese name where it says more than the English. Every row is N. Where a part's working relationship is still open, it is listed once under Open items rather than repeated row by row.

A. The plate

The carrier for the wind input, frame counter and release. Its mounting position is itself an adjustment.

Part	Name	Sub	Qty	Function and why	
265-1	Take-up middle plate	D-3	1	Mounts the wind input, frame counter and release as one unit so their relationships are fixed and it can be built and checked off the body. Nikon: release the four attaching screws once and fasten them where winding is not heavy and the lever returns correctly (Assembling point 1, PDF p.35). Fig. 12 flags the plate with the same marker.	N

B. Wind input

Lever stroke in, one-way drive out to the transport and cocking train below the plate.

Part	Name	Sub	Qty	Function and why	
213-1	Take-up lever shaft JP: wind lever shaft	D-3	1	Carries the lever stroke down through the plate into the drum. Its upper end also locates the frame counter stack (Fig. 12).	N
214-1	Take-up barrel drum	D4-2	1	Body of the one-way clutch. Turns with the lever and carries the ratchet claws that drive the take-up ratchet (215, subassembly A9) below the plate (Fig. 12).	N
217	Ratchet claw	D4-2	2	Engage on the wind stroke and slip on the return, so the lever comes back without unwinding anything. This is also what permits winding in several short strokes.	N
763	Ratchet axle JP: ratchet claw axle	D4-2	2	Pivots for the two ratchet claws.	N
937	Ratchet claw spring (d=0.28)	D4-2	1	Holds the claws into engagement. Bench note: a tired spring gives a wind that slips or feels vague under load.	N
815	Ratchet claw spring holder JP: ratchet claw spring screw	D4-2	1	A screw, per the Japanese name, anchoring the ratchet claw spring.	N
289-2	T release pin	D4-2	1	Pin on the take-up drum named for the T (time) release; works with time release lever 325. Nikon's check: at T the button returns when the camera is wound (Sect. 10 (iii) 4, PDF p.31).	N

Part	Name	Sub	Qty	Function and why	
429	Take-up spring JP: wind lever mainspring	D-3	1	Returns the lever to rest after every stroke. Bench note: weak return points here, at a gummed drum, or at a plate fixed in a poor position.	N
813	Screw ø2R-3(S) JP: take-up barrel fixing screw	D-3	1	Secures the take-up barrel drum.	N
277	Take-up lever stopper JP: wind lever return-limit spring	D5	1	Limits the lever's return travel so it stops at a consistent rest position instead of striking the body.	N
312	Stopper pin JP: limit spring stopper pin	D5	1	Anchor pin for the lever stopper spring.	N
835	Stopper spring holder JP: limit spring fixing screw	D-3	1	A screw, per the Japanese name, fixing the limit spring (277).	N
434	Nut JP: limit spring fixing nut	D-3	2	Retain the limit spring fixing. Two off: parts list quantity 2 and two callouts in Fig. 4, although the D-3 constituent list writes 434 once (PDF pp.76, 121).	N

C. Frame counter

Counts sprocket revolutions, one tooth per frame. The dial is always held against its own return spring.

Part	Name	Sub	Qty	Function and why	
204	Frame counter nut	D-3	1	Retains the counter stack on its bearing. Bench note: undoing it releases the 209-1 preload; record first (see Counter, below).	N
206	Frame counter dial	D-3	1	The printed S, 0 to 40 scale. Bench note: keep out of solvent and ultrasonic; clean dry.	N
208-1	Frame counter ratchet	D-3	1	Toothed wheel under the dial. Stepped one tooth per frame by the advance claw.	N
209-1	Frame counter spring JP: frame counter return mainspring	D-3	1	Constantly pulls the dial back towards S. Its preload is what resets the counter when the back opens. The manual gives neither turns nor direction of preload.	N
205	Frame counter bearing	D-3	1	Bearing for the counter stack, mounted under the plate.	N
811	Screw ø1.4Q-2(1) JP: counter bearing fixing screw	D-3	5	Secure the frame counter bearing.	N
255-2	Frame counter coupling ring JP: frame counter linkage ring	D-3	1	Sits on the top of the sprocket shaft and is turned by its cross pin 1007-1; transmits sprocket rotation up through the plate to 256-2 (Fig. 12).	N
256-2	Frame counter eccentric	D-3	1	Drive eccentric on the sprocket axis, above the plate. Fig. 4 draws the advance claw's large bore on this axis: one sprocket revolution swings 210-1 through one feed stroke. A drive cam, not a rest-position adjuster.	N
210-1	Take-up claw D2-1 list: Advance claw JP: feed claw	D2-1	1	Rides on eccentric 256-2 and steps the counter ratchet one tooth per sprocket revolution.	N
211	Lock claw	D3	1	Holds the ratchet after each step so the dial cannot slip back against 209-1. Bench note: its seating in the tooth sets where the dial rests; a dial between numbers points here first.	N
218	Frame counter retainer JP: frame counter stop-claw axle	D-3	1	Pivot axle for the lock claw (211), per the Japanese name. Not the advance claw's pivot: 210-1 is carried on 256-2.	N
762	Spring holder	D2-1, D3	2	Anchors for the claw springs, one in each claw subassembly.	N
945	Frame counter spring (d=0.35)	D-3	1	Wire spring acting on the frame counter claws. Bench note: missed or doubled counts point here.	N

Part	Name	Sub	Qty	Function and why	
212	Frame index plate	D-3	1	Carries the index the dial numbers read against.	N
842	Screw $\emptyset 1.4R-1.4(S)$ JP: leaf spring screw	D-3	1	Fixing for a leaf spring on the counter side of the plate.	N

D. Counter reset

Opening the back releases the claws and the return spring drives the dial to S.

Part	Name	Sub	Qty	Function and why	
291	Counter reverse lever JP: zero-return lever	D1	1	Moved by the back-opening linkage; lifts the advance and lock claws clear so spring 209-1 returns the dial to S.	N
287	Frame counter lever pin JP: zero-return lever pin	D1	1	Pin on the reverse lever that acts on the claws.	N
799-1	Frame counter lever axle JP: zero-return lever axle	D-3	1	Pivot for the counter reverse lever.	N
931	Counter reverse lever spring (d=0.6)	D-3	1	Spring for counter reverse lever 291.	N
1015	Collar (2.5x1.5x3.2) JP: zero-return lever collar	D-3	1	Spacer collar setting the reverse lever's height on its axle.	N

E. Shutter release and T-L ring

The release button, its cable release thread, and the T (time) and L (lock) collar.

Part	Name	Sub	Qty	Function and why	
259	Shutter release button	D6-2	1	The release button itself.	N
260-1	Shutter release shaft	D6-2	1	Transmits the button travel down into the body release linkage.	N
949	Shutter button spring (d=0.23)	D6-2	1	Returns the release button.	N
797	Shutter button spring holder	D-3	1	Seats the button spring.	N
262-2	Release screw mount JP: release screw	D6-2	1	Threaded boss for the cable release; houses the release shaft.	N
887	Screw $\emptyset 1.4Q-3(1)$ JP: release screw fixing screw, long	none	1	Secures the release screw mount. Shown in Fig. 4 but in no subassembly, and the parts list gives it no figure reference (PDF p.101).	N
261-1	T-L coupling ring JP: T-L rotating ring	D6-2	1	The collar under the release button that selects T (time) or L (lock).	N
263	T-L ring click pin	D-3	1	Gives the T-L collar its detent positions.	N
266	T-L spring	D-3	1	Loads the click pin into the detents.	N
435	T-L connecting pin	D-3	1	Links the T-L ring to its internal action.	N
264	Snap ring	D6-2	1	Retains the release assembly.	N
325	Time release lever	D-3	1	Time release lever, pivoting on axle 879; part of the T release with pin 289-2.	N
879	T release lever axle	D-3	1	Pivot for the time release lever.	N

Open items for bench verification

289-2 / 325	Establish whether the T release pin trips the time release lever on the forward stroke or the return, and at what lever angle. Record against the worksheet.
256-2	The notches on the eccentric's rim (Fig. 4) suggest it keys to 255-2. Establish whether it can be fitted in more than one position, and if so whether that shifts the counter's step within the wind. Do not treat it as a rest-position adjuster until shown otherwise.
945, 931	Confirm each spring's anchor points against Figs. 12 to 15 with the plate on the bench.
866	Fig. 4 labels a screw 866 near the stopper group, but the parts list assigns 866 to C-1 and C3-1 (Figs. 2 and 17) and the D-3 list does not include it. 834 is struck from the D-3 list. Identify what is actually fitted at that position.

These points remain open for physical verification. As they are established on the bench, this note will be revised and the revision history will record what changed.

Mechanism diagrams FORTHCOMING

No diagram is published until it has been checked against a physical D-3 assembly. A drawing carries more authority than its caveats, and a spring route, lever contact or direction of rotation drawn slightly wrong would be trusted over the text. Each will be produced from the mechanism itself: physical assembly, controlled photographs, component geometry traced from them, a reconstructed illustration, then verification against the assembly in operation.

Diagram 1: wind and take-up

Parts: 213-1 shaft, 214-1 drum, 217 claws, 763 axles, 937 spring, 289-2 T release pin, 429 lever spring, 277 stopper.

To show: direction of lever travel; direction of drum and take-up ratchet; claw engagement on the wind stroke and slip on the return, as numbered strokes; where 289-2 meets 325.

Diagram 2: frame counter and reset

Parts: 256-2 eccentric, 210-1 advance claw, 211 lock claw on 218, 208-1 ratchet, 209-1 return spring, 945 claw spring, 291 reverse lever, 287 pin.

To show: the eccentric's throw per sprocket revolution; direction of ratchet rotation and which way each claw hooks; lock claw seating; the back-opening reset with both claws lifted.

Each will carry the caption *Speybench mechanism illustration, traced from a photographed D-3 assembly and verified against it. Not a Nikon factory drawing.*

Sources and provenance

Source	Manual reference	PDF page	Printed page
Exploded view	Fig. 4	p. 13	11
Sectional view, spool and sprocket	Fig. 12	p. 21	19
Accuracy adjustments, T check	Sect. 10 (iii) 3 to 4	p. 31	29
Assembling points	Sect. 11, Nos. 1, 3, 4, 10	p. 35	33
Parts list (D-3 parts throughout)	In part-number order	pp. 55 to 116	15 to 76
Subassembly list	D-3, D1 to D6-2	pp. 120 to 121	80 to 81

The manual's printed folios differ from the PDF page count; both are given. Page references in the text are PDF pages.

Revision history

Rev	Date	Change
A	Oct 2026	First issue.
B	Oct 2026	Intermediate revision, superseded before issue. Not distributed. Its corrections are carried into Rev C, which is the reference to use.
C	Oct 2026	Changes from Rev A. Rechecked line by line against Figs. 4 and 12, the parts list and the subassembly list. Counter drive traced to the sprocket shaft: 255-2, 256-2 and 210-1 rewritten, 256-2 now a drive eccentric rather than a rest-position adjuster. 434 quantity corrected to 2; count stated as 54 component pieces. 949 moved to D6-2; 887 recorded as outside D-3 with no figure reference. Names given as the parts list prints them, with the Japanese names translated: 218 confirmed as the lock claw axle, 210-1 listed as Take-up claw, 815 and 835 identified as screws. Provenance marks N, D, I and S replace C and I; workshop observations in rows prefixed Bench note; oil points moved to the lubrication section. Procedures and lubrication marked as Speybench practice. Bench record sheet, open items for 256-2 keying and the 866 discrepancy added. Mechanism diagrams reserved for hand sketches from a physical assembly.
D	Oct 2026	Issued as Public Bench Note F2-001, the first in the series. Added Symptoms & troubleshooting: eleven symptoms linked to mechanism and component, each marked for evidence, with corrections given only where Nikon states them and the rest marked Verify on bench. Heavy-wind causes outside D-3 cited from Assembling points 3, 4 and 10. Added a statement of what a Public Bench Note covers, a How the module works section, and links from fault entries to component rows. Sources moved to the end. Mechanism illustration method revised to traced geometry from photographed components; diagrams remain unpublished until verified. Added the B mark for bench-verified observations, so verified findings no longer have to be described as promotions to N or D. Published alongside an HTML edition at speybench.com/bench-notes/f2-001 . Component descriptions, piece count and existing marks carried over from Rev C unchanged.
E	Oct 2026	Brought to the F2-002 standard. Retitled in the terms owners search for, with an In brief summary for owners first and the diagnostic sections ahead of the component reference. Symptoms renamed as an owner would describe them. Every component row is now N, describing the part as the manual documents it; the four inferred rows (289-2, 325, 931, 945) rewritten as descriptions, their open questions kept under Open items. Corrections address added. Part data and counts unchanged from Rev D.