1200B scope → 405-line TV: parts list for the add-on box

3 October 2026. For the conversion report (`Scope_1200B_405_TV_conversion.pdf`) and the VCR139A monitor's figs 01, 02, 03 rev B, 05 (Q1–Q3 only) and 06. **Prices are rough UK estimates (inc. VAT), not quotes.** ☐ = still to buy; tick what you have in `Parts_Lists/Parts_Lists.xlsx` (sheet **1200B TV Box**), the one to edit.

- **Not needed from fig 05:** its 10 nF 2 kV capacitor, 1 M, grid clamp diode and 100 k. C4, R18 and the new 1N4007 inside the scope do those jobs.
- **Not needed at all:** fig 04 (deflection amplifiers), the inverter (fig 08) and the CRT heater supply. The scope provides them.
- **Inside the scope:** your earlier restoration may already cover C1, C3, C5, C6 and C7. Tick those off once you've checked them; the clamp diode and the 2 kV C4 are still new.
- **BC547s:** BC548 or BC549 work anywhere in the box; everything runs on 12 V.
- **BC557s:** BC556 or BC558 work in all three PNP positions (line Q2, field Q1 and Q2).
- **Shared stock:** BC547, BC557, MJE340 and 1N4148 are also on the VCR139A monitor list. If you build both, you need both quantities.

Parts — about £69.78 (still to buy £69.78)

Have	Section	Ref	Part	Value / spec	Part number	Qty	Each	Line	Supplier
☐	Sync separator (fig 01)	S-Q1–Q4	Transistor BC547	BC548 or BC549 fine (all run on 12 V)	BC547B	4	£0.10	£0.40	CPC / Bitsbox
☐		S-R	Resistors 0.25 W 5 %	75 Ω, 47 k, 2 × 10 k, 6 × 4.7 k, 2 × 1 k, 470 k, 22 k, 56 k	generic	15	£0.05	£0.75	CPC
☐		S-C	Capacitors	10 µF 16 V, 1 µF, 330 pF, 2 × 4.7 nF	generic	5	£0.15	£0.75	CPC
☐	Line timebase (fig 02)	L-Q1,3–5	Transistor BC547	BC548 or BC549 fine (all run on 12 V)	BC547B	4	£0.10	£0.40	CPC / Bitsbox
☐		L-Q2	Transistor BC557	constant-current charge; BC556 or BC558 fine	BC557B	1	£0.10	£0.10	CPC / Bitsbox
☐		L-Ct	Capacitor 4.7 nF film (polypropylene or polyester)	ramp timing, good linearity	generic	1	£0.25	£0.25	CPC
☐		L-R	Resistors 0.25 W 5 %	4.7 k, 2 × 10 k, 2 × 2.2 k, 100 k, 15 k, 6.8 k, 1.5 k, 1.2 k	generic	10	£0.05	£0.50	CPC

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☐		L-C	Capacitors	1 µF, 10 µF 16 V, 100 µF 16 V (+5 V FLOOR)	generic	3	£0.15	£0.45	CPC
☐		L-VR	Preset 4.7 k (WIDTH)	or a panel pot	generic	1	£0.30	£0.30	CPC
☐	Field timebase (fig 03 rev B)	F-Q1, Q2	Transistor BC557	BC556 or BC558 fine	BC557B	2	£0.10	£0.20	CPC / Bitsbox
☐		F-Q3–Q6	Transistor BC547	BC548 or BC549 fine (all run on 12 V)	BC547B	4	£0.10	£0.40	CPC / Bitsbox
☐		F-Ct	Capacitor 1 µF film	Ct, plus the 1 µF film filter	generic	2	£0.50	£1.00	CPC
☐		F-R	Resistors 0.25 W 5 %	4.7 k, 2 × 10 k, 2.2 k, 100 k, 2 × 330 Ω, 15 k, 2 × 6.8 k, 4.7 k, 22 k	generic	13	£0.05	£0.65	CPC
☐		F-C	Capacitors	220 µF 16 V, 10 µF 16 V	generic	2	£0.20	£0.40	CPC
☐		F-VR	Preset 2.2 k (HEIGHT)	or a panel pot	generic	1	£0.30	£0.30	CPC
☐	Video amp (fig 05, Q1–Q3)	V-Q1, Q3	Transistor BC547	BC548 or BC549 fine (all run on 12 V)	BC547B	2	£0.10	£0.20	CPC / Bitsbox
☐		V-Q2	Transistor MJE340 + small TO-126 heatsink	≈ 1.5 W	onsemi MJE340G	1	£1.10	£1.10	CPC
☐		V-D	Diode 1N4148	input clamp + 3 blanking OR diodes	1N4148	4	£0.05	£0.20	CPC / Bitsbox
☐		V-L1	Inductor 150 µH axial	peaking (or wind on a pot core)	generic	1	£0.40	£0.40	CPC
☐		V-R10k	Resistor 10 k 3 W	Q2 collector load	generic	1	£0.40	£0.40	CPC
☐		V-R	Resistors 0.25 W 5 %	470 k, 6.8 k, 2 × 1 k, 1.5 k, 470 Ω, 4.7 k, 10 k	generic	8	£0.05	£0.40	CPC
☐		V-C	Electrolytic 10 µF 16 V	input coupling, clamp reference	generic	2	£0.10	£0.20	CPC
☐		V-PCB	Small stripboard + standoffs	mounts on the scope's rear panel	generic	1	£1.50	£1.50	CPC
☐	Spot-kill (fig 06)	K-Q1, Q2	Transistor BC547	BC548 or BC549 fine (all run on 12 V)	BC547B	2	£0.10	£0.20	CPC / Bitsbox

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☐		K-D	Diode 1N4148		1N4148	4	£0.05	£0.20	CPC / Bitsbox
☐		K-R	Resistors 0.25 W 5 %	2 × 1 M, 2 × 47 k, 10 k	generic	5	£0.05	£0.25	CPC
☐		K-C	Capacitors	100 nF, 1 µF, 2 × 10 µF 16 V	generic	4	£0.15	£0.60	CPC
☐	Ramp interface (fig S2a)	X/Y LEVEL	Preset 10 k	X LEVEL, Y LEVEL	generic	2	£0.30	£0.60	CPC
☐		C-Y	Capacitor 10 µF 63 V MKT film	Y coupling (or 2 × 22 µF electrolytic back to back)	generic	1	£1.50	£1.50	CPC
☐	+250 V regulator (fig S2c)	R-Q1	MOSFET IRF840 (500 V)	source follower	Vishay IRF840PBF	1	£0.90	£0.90	CPC / Mouser
☐		R-HS	Heatsink TO-220 + insulating pad and bush	tab is the drain	generic	1	£1.10	£1.10	CPC
☐		R-ZA	Zener 1N4764A 100 V 1 W	256 V reference	1N4764A	2	£0.15	£0.30	CPC
☐		R-ZB	Zener 1N4758A 56 V 1 W	256 V reference	1N4758A	1	£0.15	£0.15	CPC
☐		R-ZG	Zener 15 V 0.5 W	gate-source protection	BZX79-C15	1	£0.05	£0.05	CPC / Bitsbox
☐		R-R	Resistors 100 k 1 W, 1 k 0.5 W		generic	2	£0.15	£0.30	CPC
☐		R-C	Electrolytic 10 µF 450 V 105 °C	input, gate and output	generic	3	£0.60	£1.80	CPC
☐	Power & box	PSU1	Mean Well IRM-10-12 (12 V 0.85 A)	PCB-mount mains module	Mean Well IRM-10-12	1	£8.00	£8.00	CPC / Mouser
☐		J1	IEC inlet, fused, switched	with T500 mA fuse	generic	1	£4.00	£4.00	CPC
☐		DEC	Decoupling 100 µF 16 V + 100 nF	one pair per board	generic	5	£0.20	£1.00	CPC
☐		J2	BNC panel socket	VIDEO IN	generic	1	£1.50	£1.50	CPC
☐		P1	International octal plug (B8)	scope rear power socket: check pins with a meter	generic	1	£3.00	£3.00	eBay
☐		P2	4 mm plugs	X, Y, E, GRID to the scope terminals (check their type)	generic	6	£0.50	£3.00	CPC
☐		W1	Screened lead RG174, 2 m	ramp leads	generic	1	£2.00	£2.00	CPC

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☐		PCB	Stripboard 100 × 160 mm	sync, timebases, spot-kill, regulator	generic	2	£2.50	£5.00	CPC
☐		BOX	Aluminium box ≈ 200 × 120 × 75 mm		generic	1	£10.00	£10.00	CPC / your stock
☐	Inside the scope (report §4, §7)	D-clamp	Diode 1N4007	grid clamp across R18	1N4007	1	£0.08	£0.08	CPC
☐		C4	Capacitor 10 nF 2 kV film	grid coupling	generic	1	£1.20	£1.20	CPC / Mouser
☐		C5, C6	Capacitor 0.1 µF 2 kV film	EHT (skip if already replaced)	generic	2	£2.50	£5.00	Mouser
☐		C1, C3	Capacitor 0.1 µF 630 V film	Y and X input coupling (skip if replaced)	generic	2	£0.40	£0.80	CPC
☐		C7	Electrolytics 10 µF + 22 µF 500 V 105 °C	replaces 8 + 16 µF (skip if replaced)	generic	2	£3.00	£6.00	CPC

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