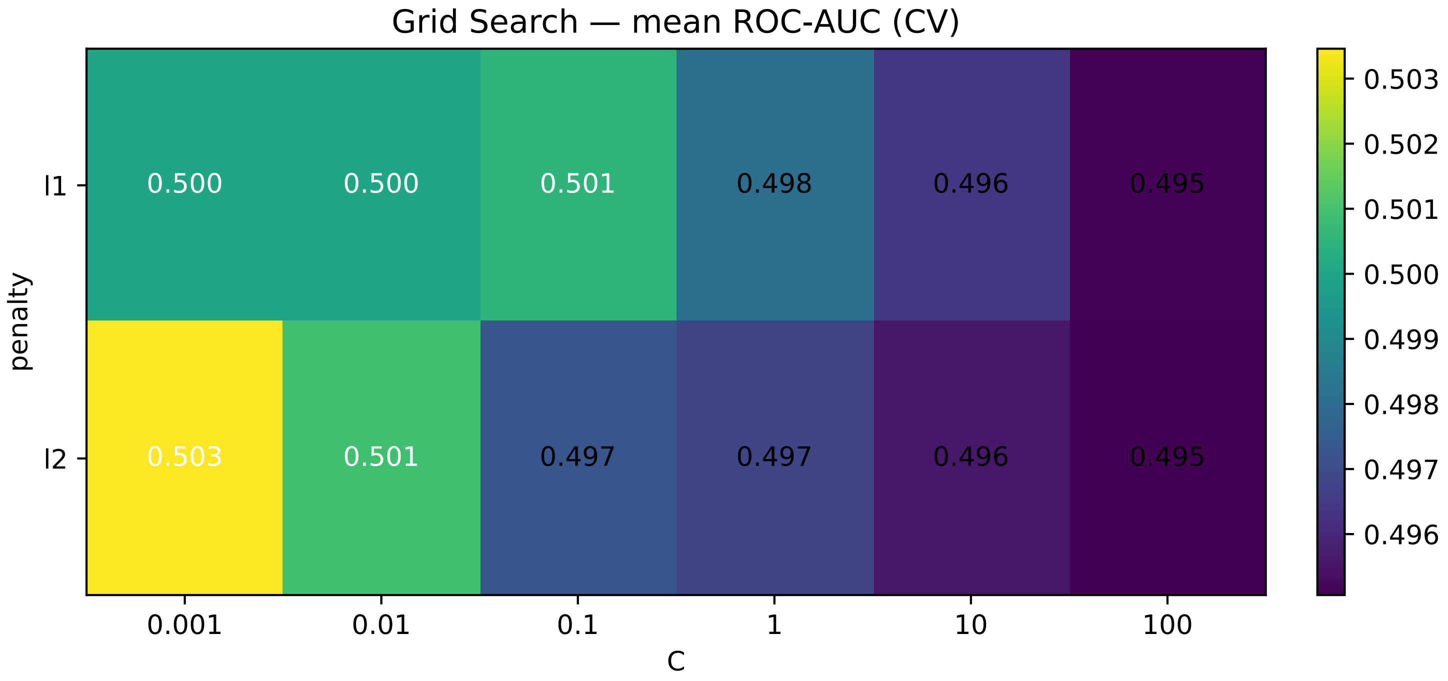
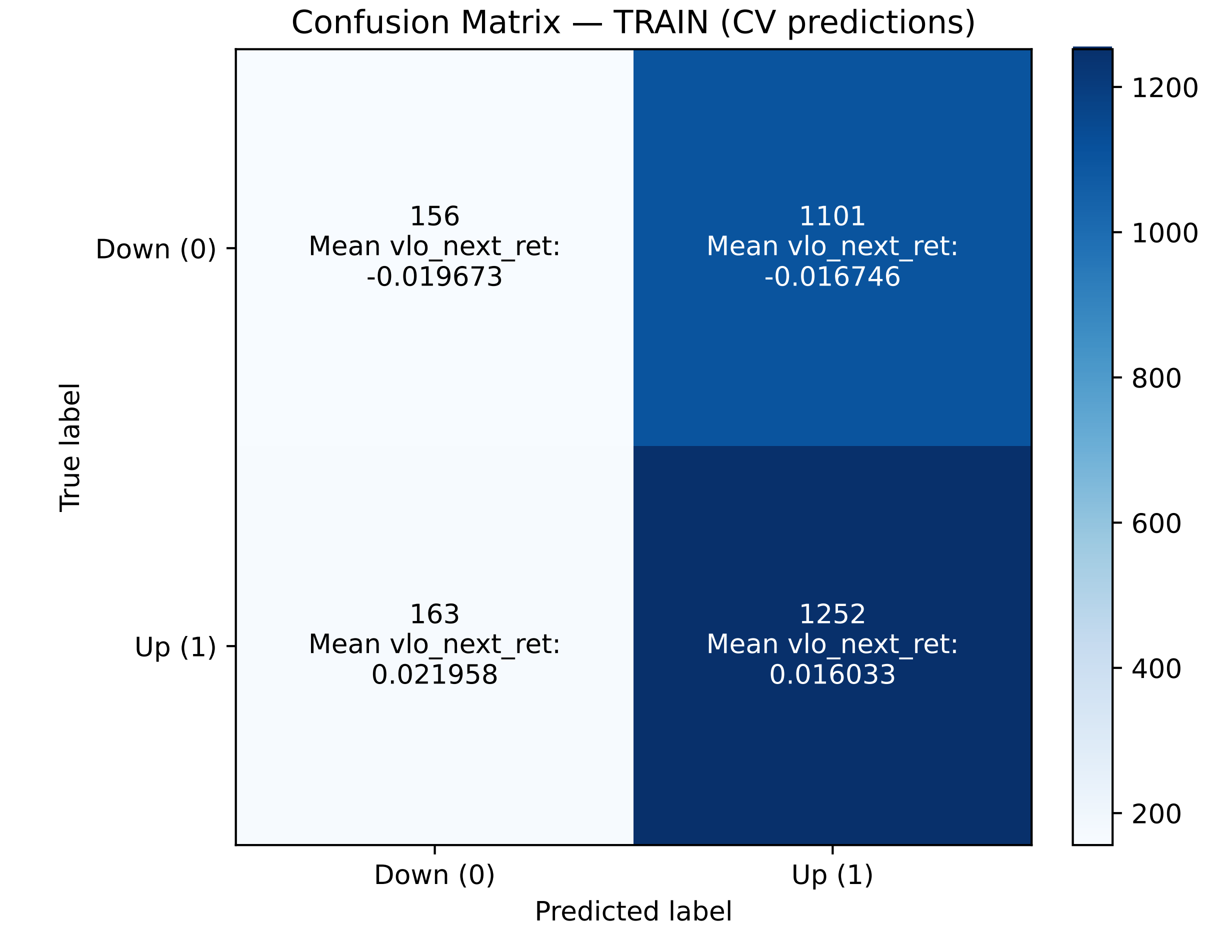
ession (L1/L2 Grid, Refit by ROC-AUC) — VLO Next

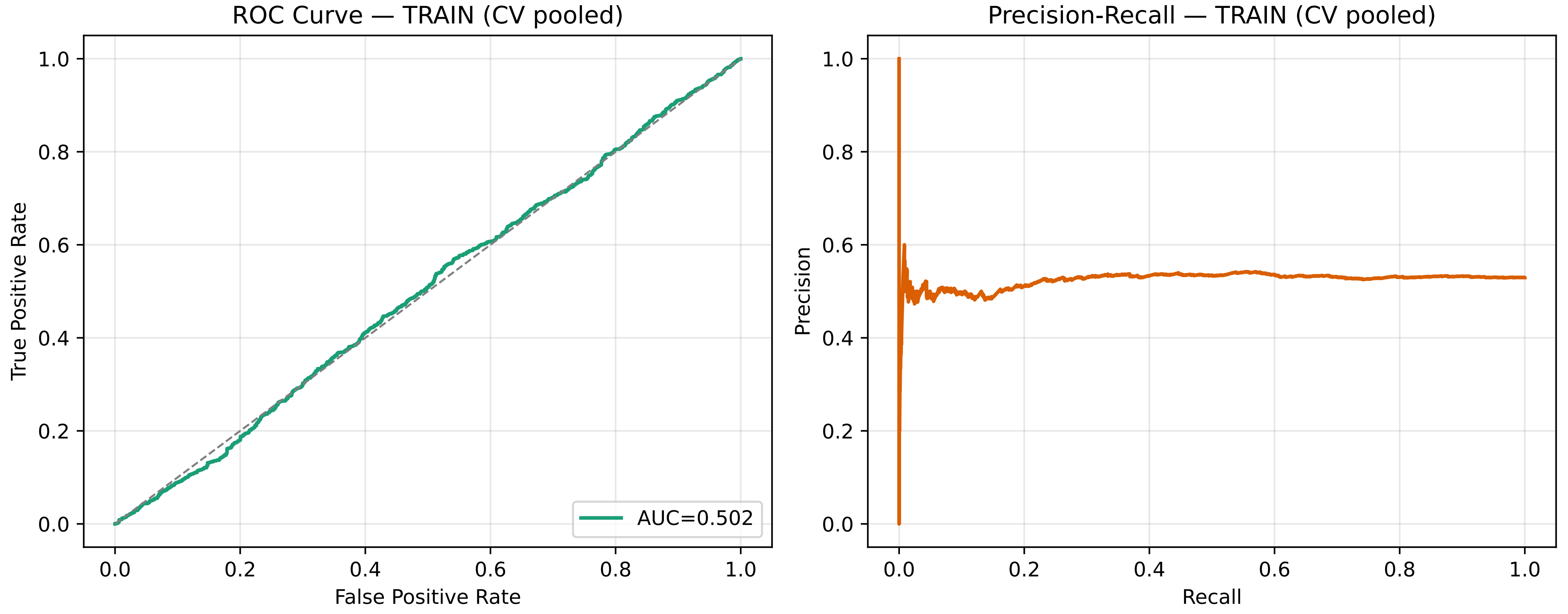
Generated: 2026-02-25 17:17:26
TRAIN period: ≤ 2022-12-31 | TEST period: ≥ 2023-01-01
TRAIN size: 2,672 | TEST size: 787
Features — scaled (float + VOL_*): 72 | passthrough: 5
=['l1', 'l2'], C=[np.float64(0.001), np.float64(0.01), np.float64(0.1), np.float64(1.0), np.float64(10.0), np.float64
Best params (CV): {'clf__C': np.float64(0.001), 'clf__penalty': 'l2'}
Best CV ROC-AUC: 0.5035

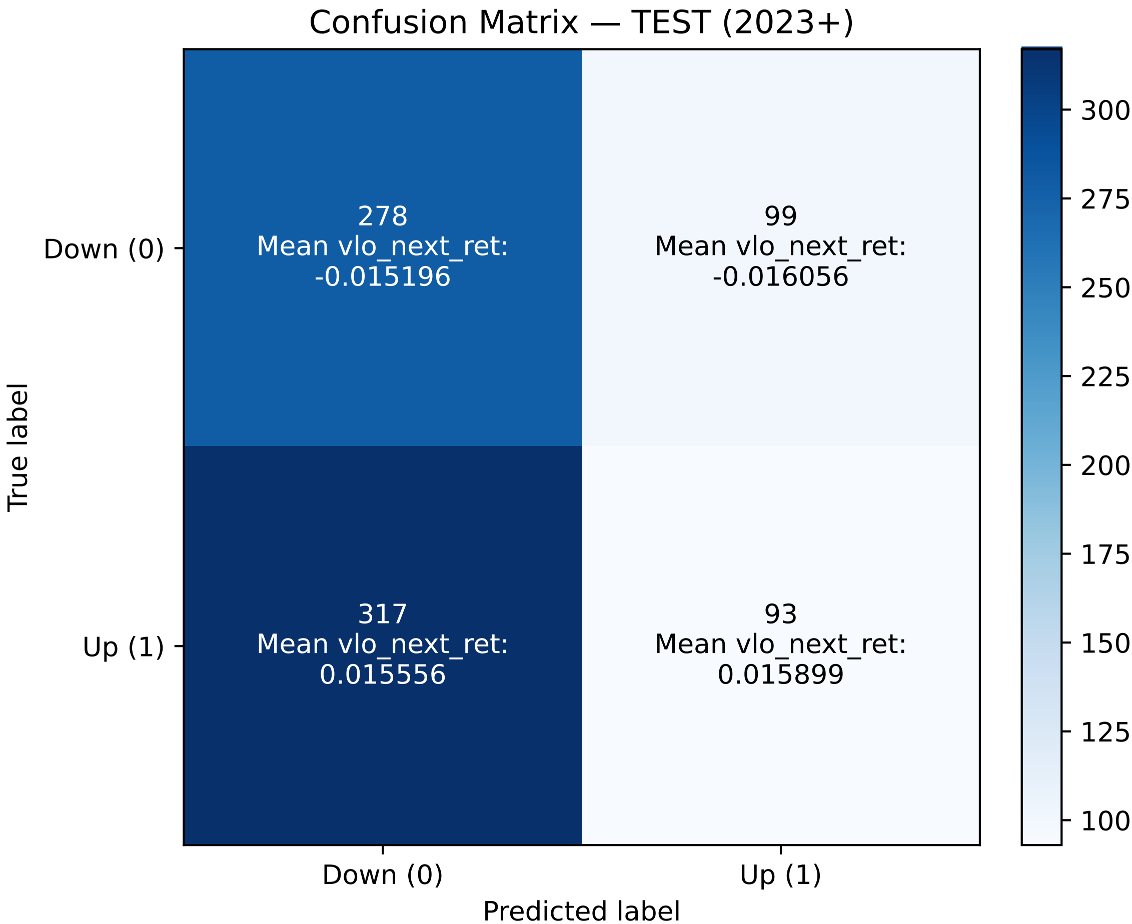

Grid Search — mean ROC-AUC (CV)
penalty
l1
l2
C
0.001
0.01
0.1
1
10
100
0.500
0.500
0.501
0.498
0.496
0.495
0.503
0.501
0.497
0.497
0.496
0.495
0.503
0.502
0.501
0.500
0.499
0.498
0.497
0.496

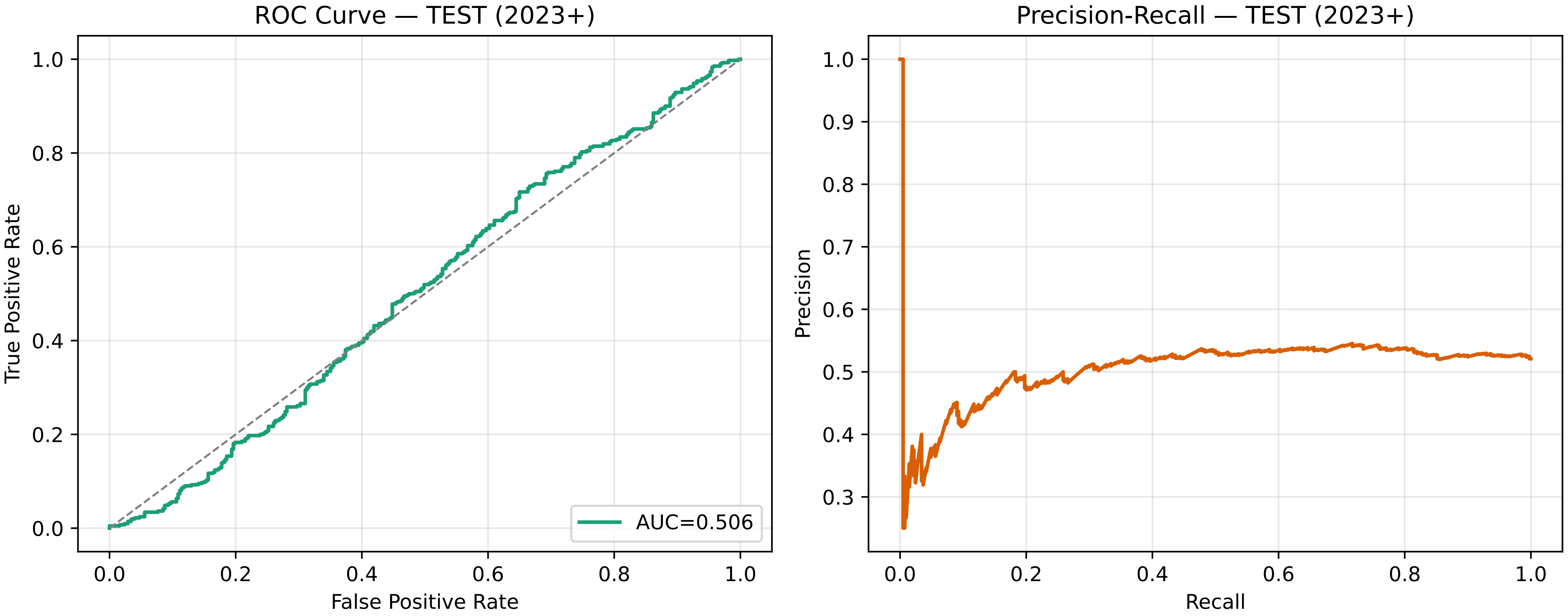
Cross-Validation ROC-AUC — Training Set (≤ 2022-12-31)

metric	value
mean ROC-AUC (CV folds)	0.5035
std ROC-AUC (CV folds)	0.0298


Confusion Matrix — TRAIN (CV predictions)
156
Mean vlo_next_ret:
-0.019673
1101
Mean vlo_next_ret:
-0.016746
163
Mean vlo_next_ret:
0.021958
1252
Mean vlo_next_ret:
0.016033
Down (0)
Up (1)
True label
Down (0)
Up (1)
Predicted label
1200
1000
800
600
400
200

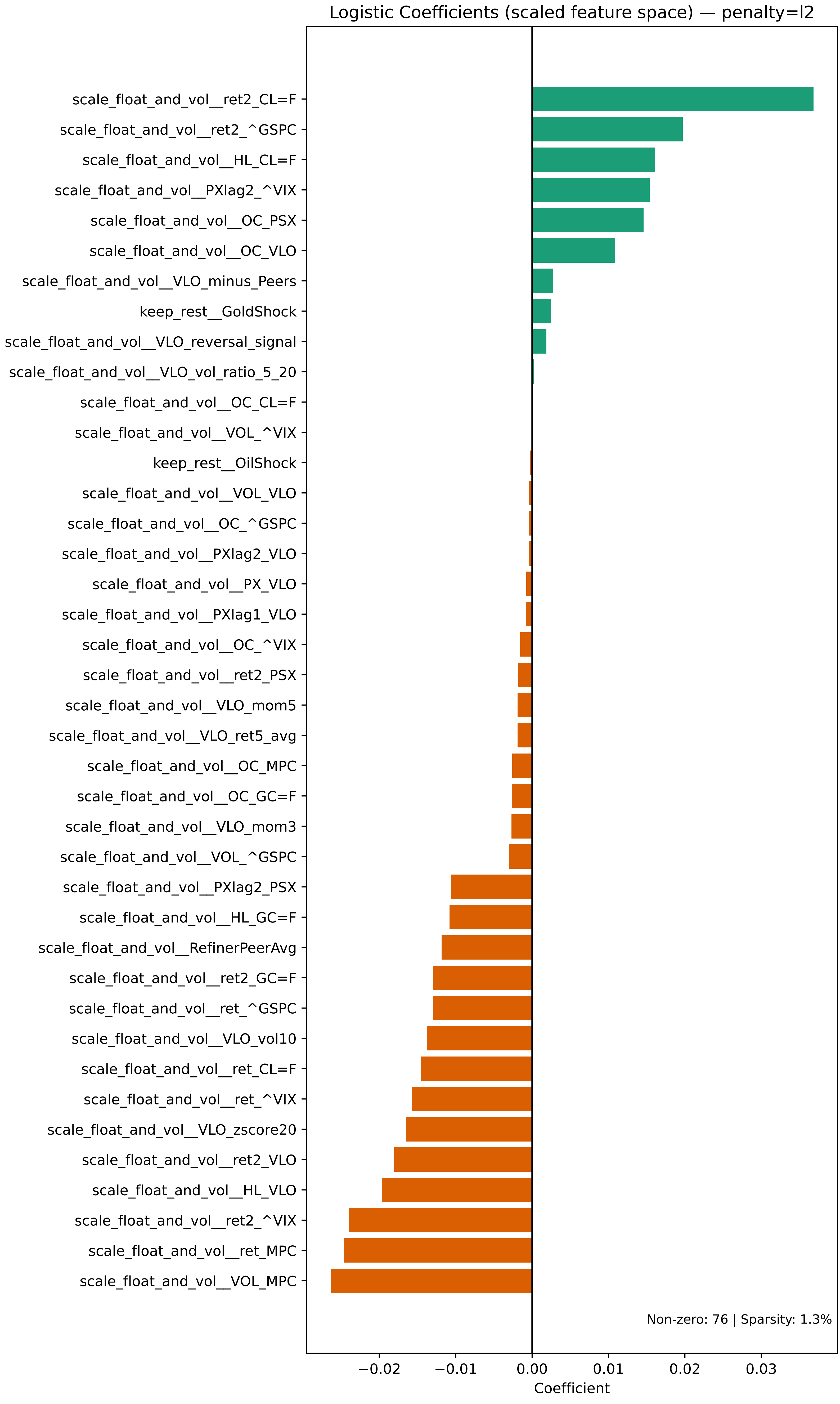

ROC Curve — TRAIN (CV pooled)
True Positive Rate
False Positive Rate
AUC=0.502
0.0
0.2
0.4
0.6
0.8
1.0
Precision-Recall — TRAIN (CV pooled)
Precision
Recall

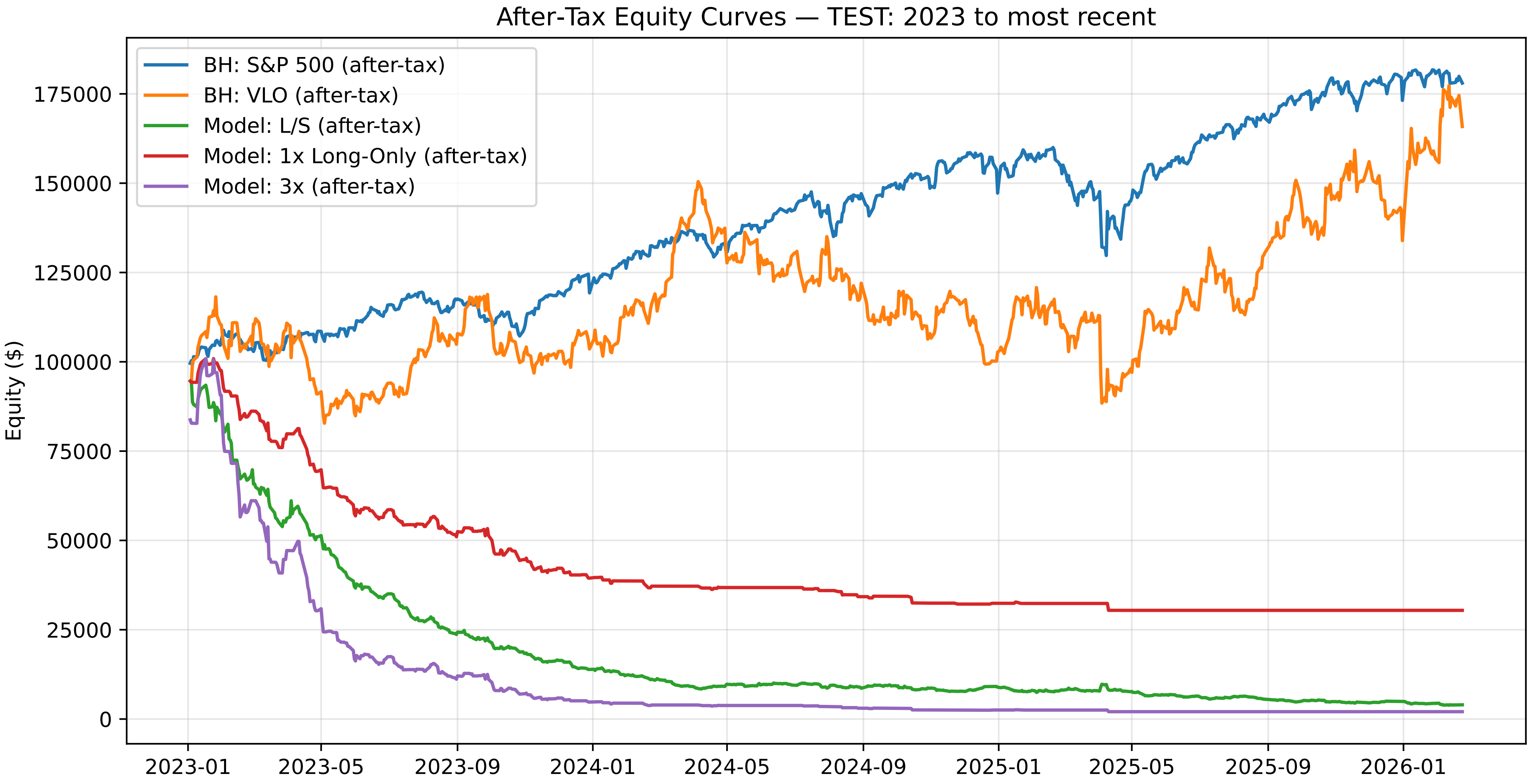

Confusion Matrix — TEST (2023+)
True label
Down (0)
Up (1)
278
Mean vlo_next_ret:
-0.015196
99
Mean vlo_next_ret:
-0.016056
317
Mean vlo_next_ret:
0.015556
93
Mean vlo_next_ret:
0.015899
Down (0)
Up (1)
Predicted label
300
275
250
225
200
175
150
125
100


ROC Curve — TEST (2023+)
True Positive Rate
False Positive Rate
AUC=0.506
0.0
0.2
0.4
0.6
0.8
1.0
Precision-Recall — TEST (2023+)
Precision
Recall
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0

Classification Report — TEST (2023+)

	precision	recall	f1-score	support
0	0.467	0.737	0.572	377
1	0.484	0.227	0.309	410
accuracy			0.471	787
macro avg	0.476	0.482	0.440	787
weighted avg	0.476	0.471	0.435	787


Logistic Coefficients (scaled feature space) — penalty=l2
scale_float_and_vol__ret2_CL=F
scale_float_and_vol__ret2_^GSPC
scale_float_and_vol__HL_CL=F
scale_float_and_vol__PXlag2_^VIX
scale_float_and_vol__OC_PSX
scale_float_and_vol__OC_VLO
scale_float_and_vol__VLO_minus_Peers
keep_rest__GoldShock
scale_float_and_vol__VLO_reversal_signal
scale_float_and_vol__VLO_vol_ratio_5_20
scale_float_and_vol__OC_CL=F
scale_float_and_vol__VOL_^VIX
keep_rest__OilShock
scale_float_and_vol__VOL_VLO
scale_float_and_vol__OC_^GSPC
scale_float_and_vol__PXlag2_VLO
scale_float_and_vol__PX_VLO
scale_float_and_vol__PXlag1_VLO
scale_float_and_vol__OC_^VIX
scale_float_and_vol__ret2_PSX
scale_float_and_vol__VLO_mom5
scale_float_and_vol__VLO_ret5_avg
scale_float_and_vol__OC_MPC
scale_float_and_vol__OC_GC=F
scale_float_and_vol__VLO_mom3
scale_float_and_vol__VOL_^GSPC
scale_float_and_vol__PXlag2_PSX
scale_float_and_vol__HL_GC=F
scale_float_and_vol__RefinerPeerAvg
scale_float_and_vol__ret2_GC=F
scale_float_and_vol__ret_^GSPC
scale_float_and_vol__VLO_vol10
scale_float_and_vol__ret_CL=F
scale_float_and_vol__ret_^VIX
scale_float_and_vol__VLO_zscore20
scale_float_and_vol__ret2_VLO
scale_float_and_vol__HL_VLO
scale_float_and_vol__ret2_^VIX
scale_float_and_vol__ret_MPC
scale_float_and_vol__VOL_MPC
Non-zero: 76 | Sparsity: 1.3%
−0.02
−0.01
0.00
0.01
0.02
0.03
Coefficient



After-Tax Equity Curves — TEST: 2023 to most recent
BH: S&P 500 (after-tax)
BH: VLO (after-tax)
Model: L/S (after-tax)
Model: 1x Long-Only (after-tax)
Model: 3x (after-tax)
Equity ($)
175000
150000
125000
100000
75000
50000
25000
0
2023-01
2023-05
2023-09
2024-01
2024-05
2024-09
2025-01
2025-05
2025-09
2026-01

Annual After-Tax Performance (2023+), incl. Average

	BH: S&P 500 (after-tax)	BH: VLO (after-tax)	Model: L/S (after-tax)	Model: 1x Long-Only (after-	Model: 3x (after-tax)
2023	19.78%	9.50%	-85.34%	-58.31%	-94.32%
2024	19.21%	-3.45%	-36.14%	-18.26%	-47.59%
2025	13.32%	29.79%	-43.61%	-6.09%	-18.43%
2026	-0.32%	16.09%	-18.87%	0.00%	0.00%
Average	13.00%	12.98%	-45.99%	-20.66%	-40.09%

Sharpe Ratios (Annualized, Daily Returns) — TEST (2023+ only)

	Sharpe
BH: S&P 500	1.311
BH: VLO	0.682
Model: L/S	-2.936
Model: 1x Long-Only	-2.691
Model: 3x	-2.771

Run Metadata & Time-Split Summary

```
Report saved: /mnt/batch/tasks/shared/LS_root/mounts/clusters/dvandyk1/code/Users/dva
Scaler saved: /mnt/batch/tasks/shared/LS_root/mounts/clusters/dvandyk1/code/Users/dva
Model  saved: /mnt/batch/tasks/shared/LS_root/mounts/clusters/dvandyk1/code/Users/dva

TRAIN period: ≤ 2022-12-31 | TEST period: ≥ 2023-01-01
TRAIN size: 2,672 | TEST size: 787
CV folds: 5
Scaled features (float + VOL_*): 72
Passthrough numeric features: 5
Grid best params: {'clf__C': np.float64(0.001), 'clf__penalty': 'l2'}
Grid best CV ROC-AUC (refit metric): 0.5035
TEST ROC-AUC: 0.5055 | TEST Accuracy: 0.4714

Backtest assumptions (TEST period only, AFTER-TAX curves shown):
  Initial capital: $100,000
  Tx cost per side: 2.00 bps
  Taxes (annual on positive P&L, loss carry-forward):
    - Long-term (buy & hold): 20.0%
    - Short-term (active): 37.0%
  Short borrow APR (L/S shorts): 0.30%
  3x long-only daily cost (financing+expense): 0.0595%
  Stop-loss: NOT APPLIED

Sharpe ratios (annualized, daily returns; computed from daily strategy returns net of
  BH: S&P 500:         1.311
  BH: VLO:             0.682
  Model: L/S:          -2.936
  Model: 1x Long-Only: -2.691
  Model: 3x:           -2.771

Feature exclusions (pre-model): vlo_next_ret, vlo_next_dir
```