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apache spark icelake

Intel Core i7-1065G7 testing with a Dell 06CDVY (1.0.9 BIOS) and Intel Iris Plus ICL GT2 16GB on Ubuntu 22.04 via the Phoronix Test Suite.

Automated Executive Summary

C had the most wins, coming in first place for 61% of the tests.

Based on the geometric mean of all complete results, the fastest (C) was 1.048x the speed of the slowest (A). B was 0.977x the speed of C and A was 0.977x the speed of B.

The results with the greatest spread from best to worst included:

Apache Spark (Row Count: 1000000 - Partitions: 500 - Group By Test Time) at 1.323x
Apache Spark (Row Count: 1000000 - Partitions: 500 - Broadcast Inner Join Test Time) at 1.299x
Apache Spark (Row Count: 10000000 - Partitions: 1000 - Group By Test Time) at 1.224x
Apache Spark (Row Count: 1000000 - Partitions: 100 - Broadcast Inner Join Test Time) at 1.199x
Apache Spark (Row Count: 1000000 - Partitions: 2000 - SHA-512 Benchmark Time) at 1.19x
Apache Spark (Row Count: 1000000 - Partitions: 1000 - Broadcast Inner Join Test Time) at 1.188x
Apache Spark (Row Count: 1000000 - Partitions: 1000 - Inner Join Test Time) at 1.184x
Apache Spark (Row Count: 40000000 - Partitions: 500 - Group By Test Time) at 1.152x
Apache Spark (Row Count: 1000000 - Partitions: 100 - Calculate Pi Benchmark) at 1.151x

Apache Spark (Row Count: 1000000 - Partitions: 2000 - Broadcast Inner Join Test Time) at 1.145x.

Test Systems:

A

B

C

Processor: Intel Core i7-1065G7 @ 3.90GHz (4 Cores / 8 Threads), Motherboard: Dell 06CDVY (1.0.9 BIOS), Chipset: Intel Ice Lake-LP DRAM, Memory: 16GB, Disk: Toshiba KBG40ZPZ512G NVMe 512GB, Graphics: Intel Iris Plus ICL GT2 16GB (1100MHz), Audio: Realtek ALC289, Network: Intel Ice Lake-LP PCH CNVi WiFi

OS: Ubuntu 22.04, Kernel: 5.18.8-051808-generic (x86_64), Desktop: GNOME Shell 42.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.0.1, Vulkan: 1.3.204, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1200

Kernel Notes: Transparent Huge Pages: madvise
Processor Notes: Scaling Governor: intel_pstate powersave (EPP: balance_performance) - CPU Microcode: 0xb0 - Thermald 2.4.9
Java Notes: OpenJDK Runtime Environment (build 11.0.15+10-Ubuntu-0ubuntu0.22.04.1)
Python Notes: Python 3.10.4
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Mitigation of Clear buffers; SMT vulnerable + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Enhanced IBRS IBPB: conditional RSB filling + srbds: Mitigation of Microcode + tsx_async_abort: Not affected

	A	B	C
Apache Spark - 1000000 - 100 - S.5.B.T (sec)	**6.049590741**	**6.34**	6.30
Normalized	100%	95.42%	96.03%
Apache Spark - 1000000 - 100 - C.P.B (sec)	**656.977167662**	**756.272521214**	714.633339087
Normalized	100%	86.87%	91.93%
Apache Spark - 1000000 - 100 - C.P.B.U.D (sec)	**35.819807451**	37.98	**38.098774824**
Normalized	100%	94.31%	94.02%
Apache Spark - 1000000 - 100 - Group By Test Time (sec)	**5.005407545**	**4.79**	4.83
Normalized	95.7%	100%	99.17%
Apache Spark - 1000000 - 100 - R.T.T (sec)	**5.342907891**	5.09	**5.03**
Normalized	94.14%	98.82%	100%
Apache Spark - 1000000 - 100 - I.J.T.T (sec)	**3.701479768**	**3.427888708**	3.69
Normalized	92.61%	100%	92.9%
Apache Spark - 1000000 - 100 - B.I.J.T.T (sec)	3.032268713	**2.87**	**3.44**
Normalized	94.65%	100%	83.43%
Apache Spark - 1000000 - 500 - S.5.B.T (sec)	9.13	**9.55**	**8.67**
Normalized	94.96%	90.79%	100%

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Apache Spark - 1000000 - 500 - C.P.B (sec)	**780.338059795**	**817.019507233**	796.494586275
Normalized	100%	95.51%	97.97%
Apache Spark - 1000000 - 500 - C.P.B.U.D (sec)	**37.297529764**	**38.75**	38.22
Normalized	100%	96.25%	97.59%
Apache Spark - 1000000 - 500 - Group By Test Time (sec)	**5.91**	**7.82**	7.81
Normalized	100%	75.58%	75.67%
Apache Spark - 1000000 - 500 - R.T.T (sec)	**8.03**	**8.62**	8.47
Normalized	100%	93.16%	94.81%
Apache Spark - 1000000 - 500 - I.J.T.T (sec)	**6.12**	6.11	**5.77**
Normalized	94.28%	94.44%	100%
Apache Spark - 1000000 - 500 - B.I.J.T.T (sec)	**6.286490085**	5.66	**4.84**
Normalized	76.99%	85.51%	100%
Apache Spark - 1000000 - 1000 - S.5.B.T	**9.44831342**	**9.96**	9.65
Normalized	100%	94.86%	97.91%
Apache Spark - 1000000 - 1000 - C.P.B (sec)	805.216325167	**833.795673477**	**798.743946523**
Normalized	99.2%	95.8%	100%
Apache Spark - 1000000 - 1000 - C.P.B.U.D (sec)	37.879221829	**38.389332534**	**36.68**
Normalized	96.83%	95.55%	100%
Apache Spark - 1000000 - 1000 - Group By Test Time (sec)	**8.62**	8.88	**8.93**
Normalized	100%	97.07%	96.53%
Apache Spark - 1000000 - 1000 - R.T.T (sec)	9.26	**9.67**	**9.09**
Normalized	98.16%	94%	100%
Apache Spark - 1000000 - 1000 - I.J.T.T (sec)	**6.501183247**	**7.70**	6.54
Normalized	100%	84.43%	99.41%
Apache Spark - 1000000 - 1000 - B.I.J.T.T	5.50	**5.88**	**4.95**
Normalized	90%	84.18%	100%
Apache Spark - 1000000 - 2000 - S.5.B.T	10.791488701	**12.54**	**10.54**
Normalized	97.67%	84.05%	100%
Apache Spark - 1000000 - 2000 - C.P.B (sec)	797.262329906	**820.186780864**	**795.781426828**
Normalized	99.81%	97.02%	100%
Apache Spark - 1000000 - 2000 - C.P.B.U.D (sec)	**37.984363801**	**38.36**	38.21
Normalized	100%	99.02%	99.41%
Apache Spark - 1000000 - 2000 - Group By Test Time (sec)	**9.736214644**	**10.71**	9.90
Normalized	100%	90.91%	98.35%
Apache Spark - 1000000 - 2000 - R.T.T (sec)	9.77	**10.770249391**	**9.62**
Normalized	98.46%	89.32%	100%
Apache Spark - 1000000 - 2000 - I.J.T.T (sec)	**8.35**	**9.47**	8.88
Normalized	100%	88.17%	94.03%
Apache Spark - 1000000 - 2000 - B.I.J.T.T	7.37	**7.98**	**6.97**
Normalized	94.57%	87.34%	100%
Apache Spark - 10000000 - 100 - S.5.B.T	44.592154298	**45.274790681**	**42.39**
Normalized	95.06%	93.63%	100%
Apache Spark - 10000000 - 100 - C.P.B (sec)	819.853400677	**823.828782247**	**805.054762338**
Normalized	98.19%	97.72%	100%

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Apache Spark - 10000000 - 100 - C.P.B.U.D (sec)	**38.824599743**	38.18	**38.14**
Normalized	98.24%	99.9%	100%
Apache Spark - 10000000 - 100 - Group By Test Time (sec)	20.765927601	**21.595155961**	**20.75**
Normalized	99.92%	96.09%	100%
Apache Spark - 10000000 - 100 - R.T.T (sec)	**36.92066761**	34.44	**34.123336097**
Normalized	92.42%	99.08%	100%
Apache Spark - 10000000 - 100 - I.J.T.T (sec)	41.40471838	**42.26**	**38.62**
Normalized	93.27%	91.39%	100%
Apache Spark - 10000000 - 100 - B.I.J.T.T	37.884062556	**38.23134337**	**37.43**
Normalized	98.8%	97.9%	100%
Apache Spark - 10000000 - 500 - S.5.B.T	**44.786022854**	42.73	**41.92**
Normalized	93.6%	98.1%	100%
Apache Spark - 10000000 - 500 - C.P.B (sec)	**834.224825936**	815.966354358	**805.280886841**
Normalized	96.53%	98.69%	100%
Apache Spark - 10000000 - 500 - C.P.B.U.D (sec)	**39.221685756**	38.72	**37.79**
Normalized	96.35%	97.6%	100%
Apache Spark - 10000000 - 500 - Group By Test Time (sec)	**21.687867935**	**22.74**	21.78
Normalized	100%	95.37%	99.58%
Apache Spark - 10000000 - 500 - R.T.T (sec)	**35.838202595**	35.595730424	**33.730534347**
Normalized	94.12%	94.76%	100%
Apache Spark - 10000000 - 500 - I.J.T.T (sec)	**40.502618181**	39.91	**37.038531086**
Normalized	91.45%	92.81%	100%
Apache Spark - 10000000 - 500 - B.I.J.T.T	**37.478879572**	37.29	**34.48**
Normalized	92%	92.46%	100%
Apache Spark - 20000000 - 100 - S.5.B.T	**80.941820528**	80.93	**77.38**
Normalized	95.6%	95.61%	100%
Apache Spark - 20000000 - 100 - C.P.B (sec)	817.003402582	**822.653222251**	**802.029896509**
Normalized	98.17%	97.49%	100%
Apache Spark - 20000000 - 100 - C.P.B.U.D (sec)	**38.607960476**	38.21	**37.82**
Normalized	97.96%	98.98%	100%
Apache Spark - 20000000 - 100 - Group By Test Time (sec)	**36.490257948**	33.69	**33.20**
Normalized	90.98%	98.55%	100%
Apache Spark - 20000000 - 100 - R.T.T (sec)	**69.11422958**	68.169496225	**61.60**
Normalized	89.13%	90.36%	100%
Apache Spark - 20000000 - 100 - I.J.T.T (sec)	**75.944871034**	**74.6362243**	74.85
Normalized	98.28%	100%	99.71%
Apache Spark - 20000000 - 100 - B.I.J.T.T	**73.587998852**	73.36	**68.51**
Normalized	93.1%	93.39%	100%
Apache Spark - 20000000 - 500 - S.5.B.T	**84.595126196**	**74.355486457**	76.496092244
Normalized	87.9%	100%	97.2%
Apache Spark - 20000000 - 500 - C.P.B (sec)	**851.473091216**	**784.907582126**	803.02
Normalized	92.18%	100%	97.74%
Apache Spark - 20000000 - 500 - C.P.B.U.D (sec)	**39.41**	**37.73**	38.21
Normalized	95.74%	100%	98.74%

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Apache Spark - 20000000 - 500 - Group By Test Time (sec)	36.96	35.668669559	33.63
Normalized	90.99%	94.28%	100%
Apache Spark - 20000000 - 500 - R.T.T (sec)	69.754054698	66.42	62.45
Normalized	89.53%	94.02%	100%
Apache Spark - 20000000 - 500 - I.J.T.T (sec)	78.509005725	79.667147516	72.20
Normalized	91.96%	90.63%	100%
Apache Spark - 20000000 - 500 - B.I.J.T.T	74.45	66.80	68.02
Normalized	89.72%	100%	98.21%
Apache Spark - 40000000 - 100 - S.5.B.T	163.576097618	147.430565786	149.26136547
Normalized	90.13%	100%	98.77%
Apache Spark - 40000000 - 100 - C.P.B (sec)	839.479059608	801.085672427	801.21171681
Normalized	95.43%	100%	99.98%
Apache Spark - 40000000 - 100 - C.P.B.U.D (sec)	39.103291162	37.64	37.76
Normalized	96.26%	100%	99.68%
Apache Spark - 40000000 - 100 - Group By Test Time (sec)	89.62	78.29	79.63
Normalized	87.36%	100%	98.32%
Apache Spark - 40000000 - 100 - R.T.T (sec)	133.263955872	120.412094205	120.315032442
Normalized	90.28%	99.92%	100%
Apache Spark - 40000000 - 100 - I.J.T.T (sec)	161.404652351	150.730462062	146.81646165
Normalized	90.96%	97.4%	100%
Apache Spark - 40000000 - 100 - B.I.J.T.T	150.511698363	138.765601167	137.469145149
Normalized	91.33%	99.07%	100%
Apache Spark - 40000000 - 500 - S.5.B.T	159.54547467	142.600051266	146.31
Normalized	89.38%	100%	97.46%
Apache Spark - 40000000 - 500 - C.P.B (sec)	832.455253404	801.084068659	797.578604278
Normalized	95.81%	99.56%	100%
Apache Spark - 40000000 - 500 - C.P.B.U.D (sec)	38.75	38.03	37.88
Normalized	97.75%	99.61%	100%
Apache Spark - 40000000 - 500 - Group By Test Time (sec)	85.773888439	74.432861881	76.05
Normalized	86.78%	100%	97.87%
Apache Spark - 40000000 - 500 - R.T.T (sec)	131.35188078	118.71923975	119.480365579
Normalized	90.38%	100%	99.36%
Apache Spark - 40000000 - 500 - I.J.T.T (sec)	158.849166297	152.509124448	144.381109229
Normalized	90.89%	94.67%	100%
Apache Spark - 40000000 - 500 - B.I.J.T.T	145.277407541	134.978937018	133.539421839
Normalized	91.92%	98.93%	100%
Apache Spark - 10000000 - 1000 - S.5.B.T (sec)	46.371588974	40.59	41.86
Normalized	87.53%	100%	96.97%
Apache Spark - 10000000 - 1000 - C.P.B (sec)	819.955939424	804.483681087	793.881532479
Normalized	96.82%	98.68%	100%
Apache Spark - 10000000 - 1000 - C.P.B.U.D (sec)	39.34	38.39	37.79
Normalized	96.06%	98.44%	100%
Apache Spark - 10000000 - 1000 - Group By Test Time (sec)	24.58	20.087644353	21.86
Normalized	81.72%	100%	91.89%

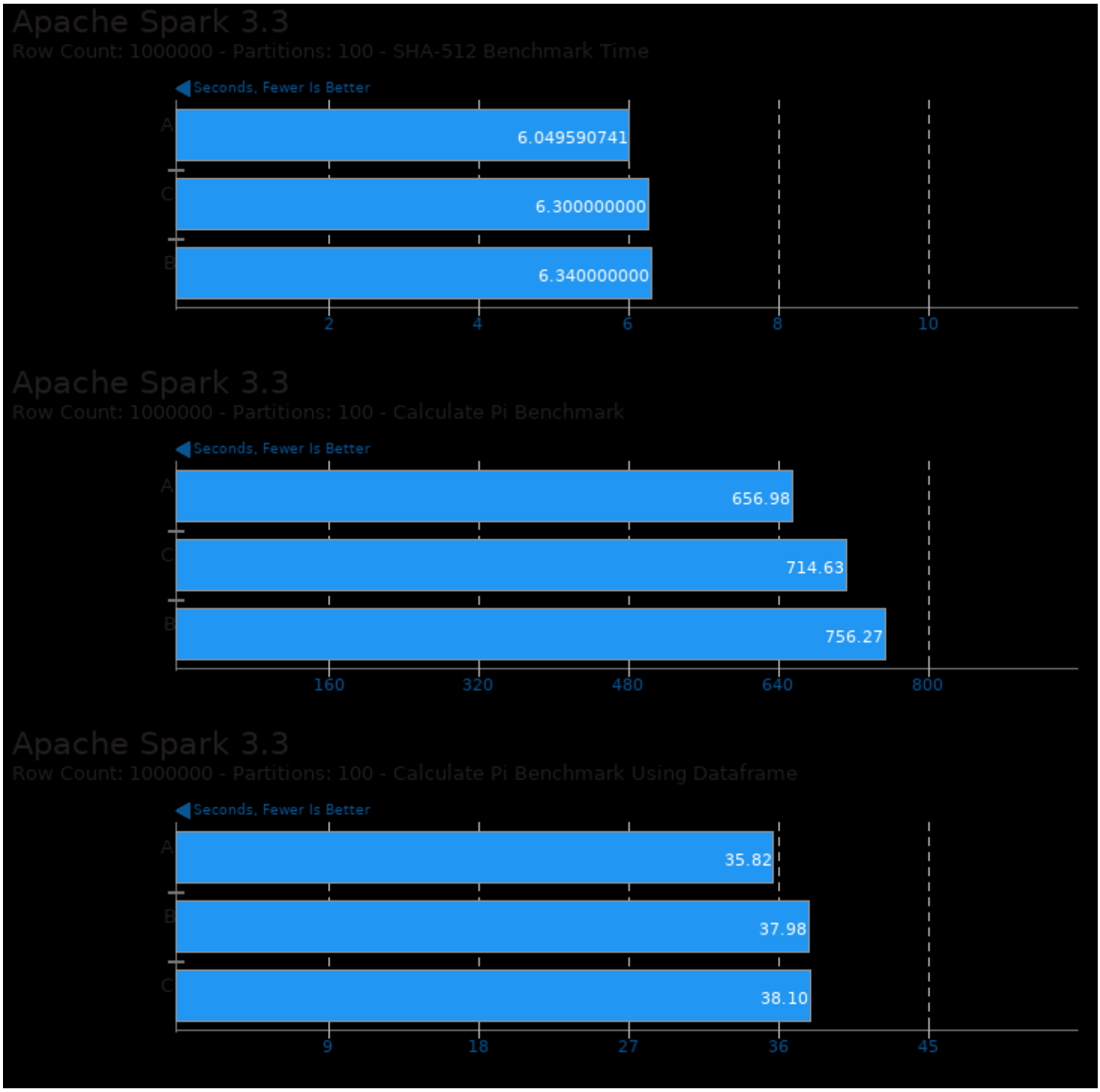
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Apache Spark - 10000000 - 1000 - R.T.T (sec)	**35.36**	34.11	**32.92**
Normalized	93.1%	96.51%	100%
Apache Spark - 10000000 - 1000 - I.J.T.T	**41.613175023**	38.36	**38.11**
Normalized	91.58%	99.35%	100%
Apache Spark - 10000000 - 1000 - B.I.J.T.T (sec)	**38.133989545**	35.88	**35.39**
Normalized	92.8%	98.63%	100%
Apache Spark - 10000000 - 2000 - S.5.B.T (sec)	**47.27**	**42.42**	43.04
Normalized	89.74%	100%	98.56%
Apache Spark - 10000000 - 2000 - C.P.B (sec)	**822.137420573**	801.781039457	**794.367989986**
Normalized	96.62%	99.08%	100%
Apache Spark - 10000000 - 2000 - C.P.B.U.D (sec)	**38.271783864**	**37.69**	37.82
Normalized	98.48%	100%	99.66%
Apache Spark - 10000000 - 2000 - Group By Test Time (sec)	**25.224830351**	**22.84**	23.23
Normalized	90.55%	100%	98.32%
Apache Spark - 10000000 - 2000 - R.T.T (sec)	**38.74102815**	**34.76**	34.82
Normalized	89.72%	100%	99.83%
Apache Spark - 10000000 - 2000 - I.J.T.T	**43.558666998**	**39.72**	39.78
Normalized	91.19%	100%	99.85%
Apache Spark - 10000000 - 2000 - B.I.J.T.T (sec)	37.43	**38.92**	**36.71**
Normalized	98.08%	94.32%	100%
Apache Spark - 20000000 - 1000 - S.5.B.T (sec)	**81.259191534**	**77.57**	77.58
Normalized	95.46%	100%	99.99%
Apache Spark - 20000000 - 1000 - C.P.B (sec)	**818.243225423**	802.187302839	**791.658712313**
Normalized	96.75%	98.69%	100%
Apache Spark - 20000000 - 1000 - C.P.B.U.D (sec)	**38.68**	36.55	**35.51**
Normalized	91.8%	97.15%	100%
Apache Spark - 20000000 - 1000 - Group By Test Time (sec)	**36.502119941**	**34.60**	35.284636482
Normalized	94.79%	100%	98.06%
Apache Spark - 20000000 - 1000 - R.T.T (sec)	**62.964181952**	**66.79**	65.685136959
Normalized	100%	94.27%	95.86%
Apache Spark - 20000000 - 1000 - I.J.T.T	**77.889132905**	72.88	**72.36**
Normalized	92.9%	99.29%	100%
Apache Spark - 20000000 - 1000 - B.I.J.T.T (sec)	**75.45**	68.66	**68.57**
Normalized	90.88%	99.87%	100%
Apache Spark - 20000000 - 2000 - S.5.B.T (sec)	**84.814532331**	79.12	**78.19**
Normalized	92.19%	98.82%	100%
Apache Spark - 20000000 - 2000 - C.P.B (sec)	**852.969777741**	803.54	**792.713391807**
Normalized	92.94%	98.65%	100%
Apache Spark - 20000000 - 2000 - C.P.B.U.D (sec)	**39.01**	**37.70**	38.03
Normalized	96.64%	100%	99.13%

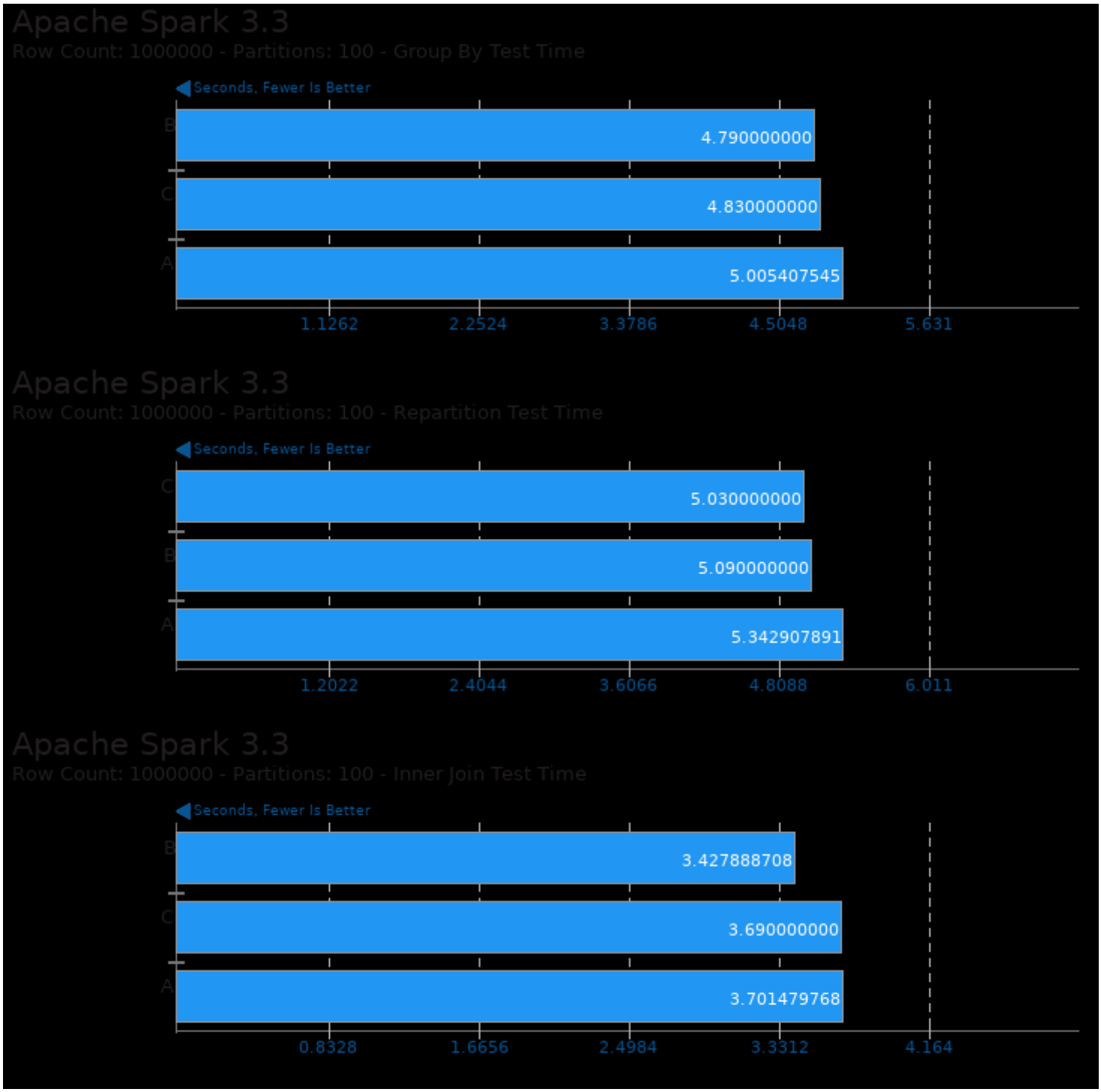
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Apache Spark - 20000000 - 2000 - Group By Test Time (sec)	39.06	35.03	37.38
Normalized	89.68%	100%	93.71%
Apache Spark - 20000000 - 2000 - R.T.T (sec)	67.937768058	63.23	61.39
Normalized	90.36%	97.09%	100%
Apache Spark - 20000000 - 2000 - I.J.T.T	79.92	74.51	74.35149624
Normalized	93.03%	99.79%	100%
Apache Spark - 20000000 - 2000 - B.I.J.T.T (sec)	73.69	69.81	69.94
Normalized	94.73%	100%	99.81%
Apache Spark - 40000000 - 1000 - S.5.B.T (sec)	158.150162258	147.596151292	145.940465756
Normalized	92.28%	98.88%	100%
Apache Spark - 40000000 - 1000 - C.P.B (sec)	825.830341009	807.061667554	805.3988434
Normalized	97.53%	99.79%	100%
Apache Spark - 40000000 - 1000 - C.P.B.U.D (sec)	38.74	37.79	37.760739792
Normalized	97.47%	99.92%	100%
Apache Spark - 40000000 - 1000 - Group By Test Time (sec)	81.85	77.14	74.02
Normalized	90.43%	95.96%	100%
Apache Spark - 40000000 - 1000 - R.T.T (sec)	132.389630627	119.293181443	119.331142898
Normalized	90.11%	100%	99.97%
Apache Spark - 40000000 - 1000 - I.J.T.T	159.23714378	147.56	144.71
Normalized	90.88%	98.07%	100%
Apache Spark - 40000000 - 1000 - B.I.J.T.T (sec)	144.77612878	137.482703518	135.328314263
Normalized	93.47%	98.43%	100%
Apache Spark - 40000000 - 2000 - S.5.B.T (sec)	158.068422266	153.119995555	149.685117688
Normalized	94.7%	97.76%	100%
Apache Spark - 40000000 - 2000 - C.P.B (sec)	817.877180085	805.078697098	796.05
Normalized	97.33%	98.88%	100%
Apache Spark - 40000000 - 2000 - C.P.B.U.D (sec)	38.39	40.25	37.72
Normalized	98.25%	93.71%	100%
Apache Spark - 40000000 - 2000 - Group By Test Time (sec)	79.593955392	79.05	75.18
Normalized	94.45%	95.1%	100%
Apache Spark - 40000000 - 2000 - R.T.T (sec)	130.729877469	123.722711702	120.754963272
Normalized	92.37%	97.6%	100%
Apache Spark - 40000000 - 2000 - I.J.T.T	166.142747806	151.219413691	149.071991585
Normalized	89.73%	98.58%	100%
Apache Spark - 40000000 - 2000 - B.I.J.T.T (sec)	146.862978063	138.55	136.883149475
Normalized	93.2%	98.8%	100%

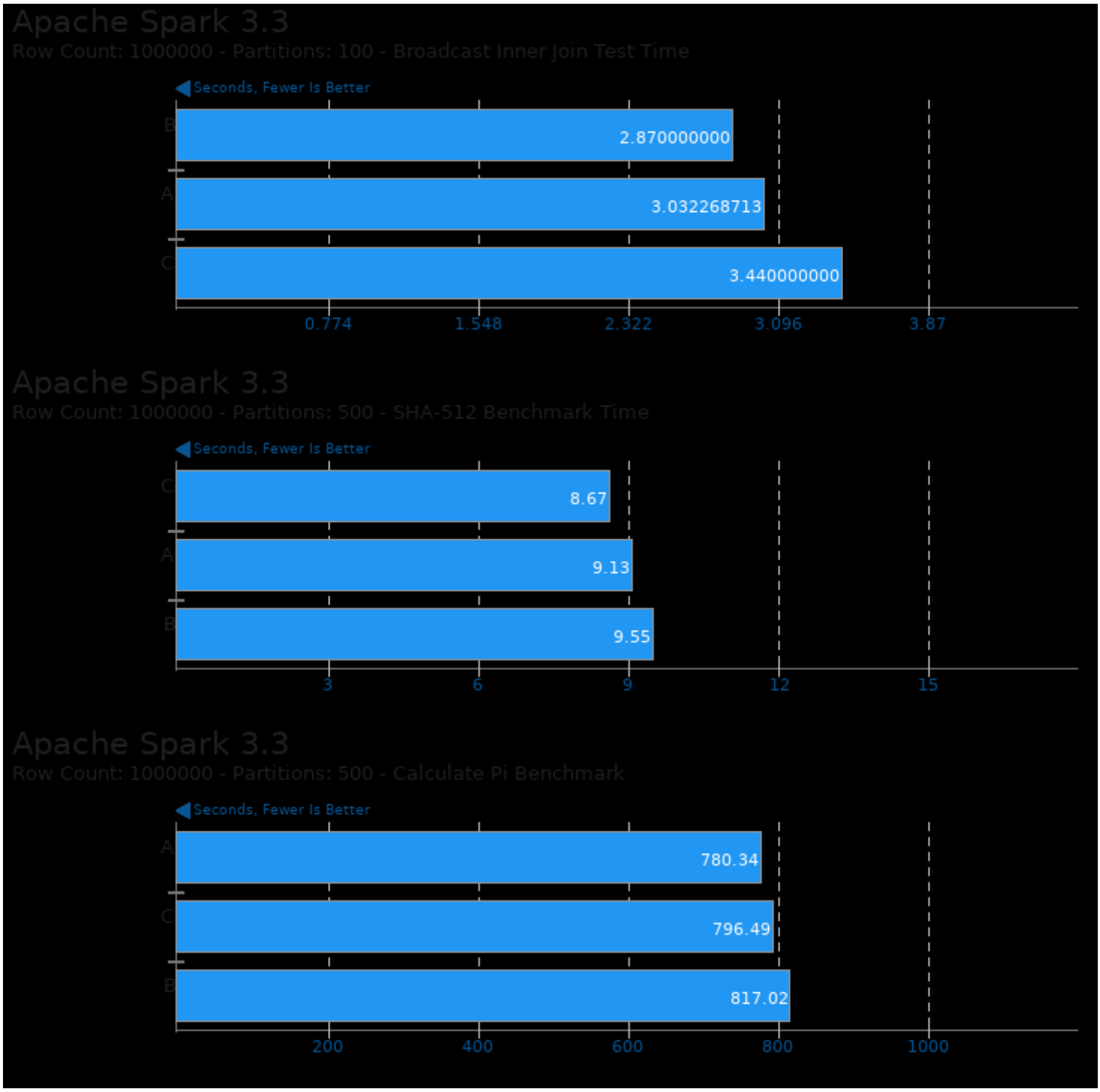
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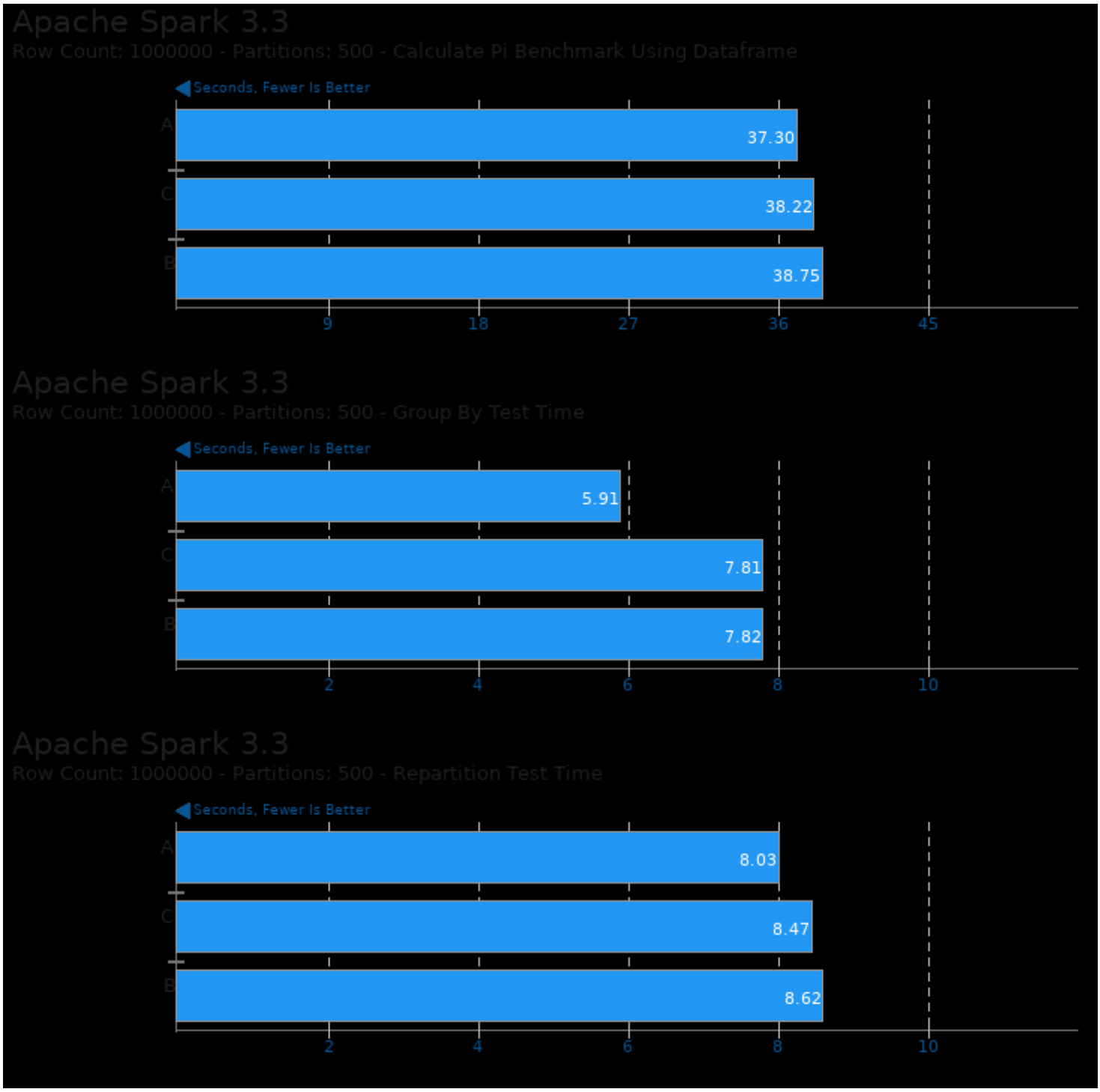
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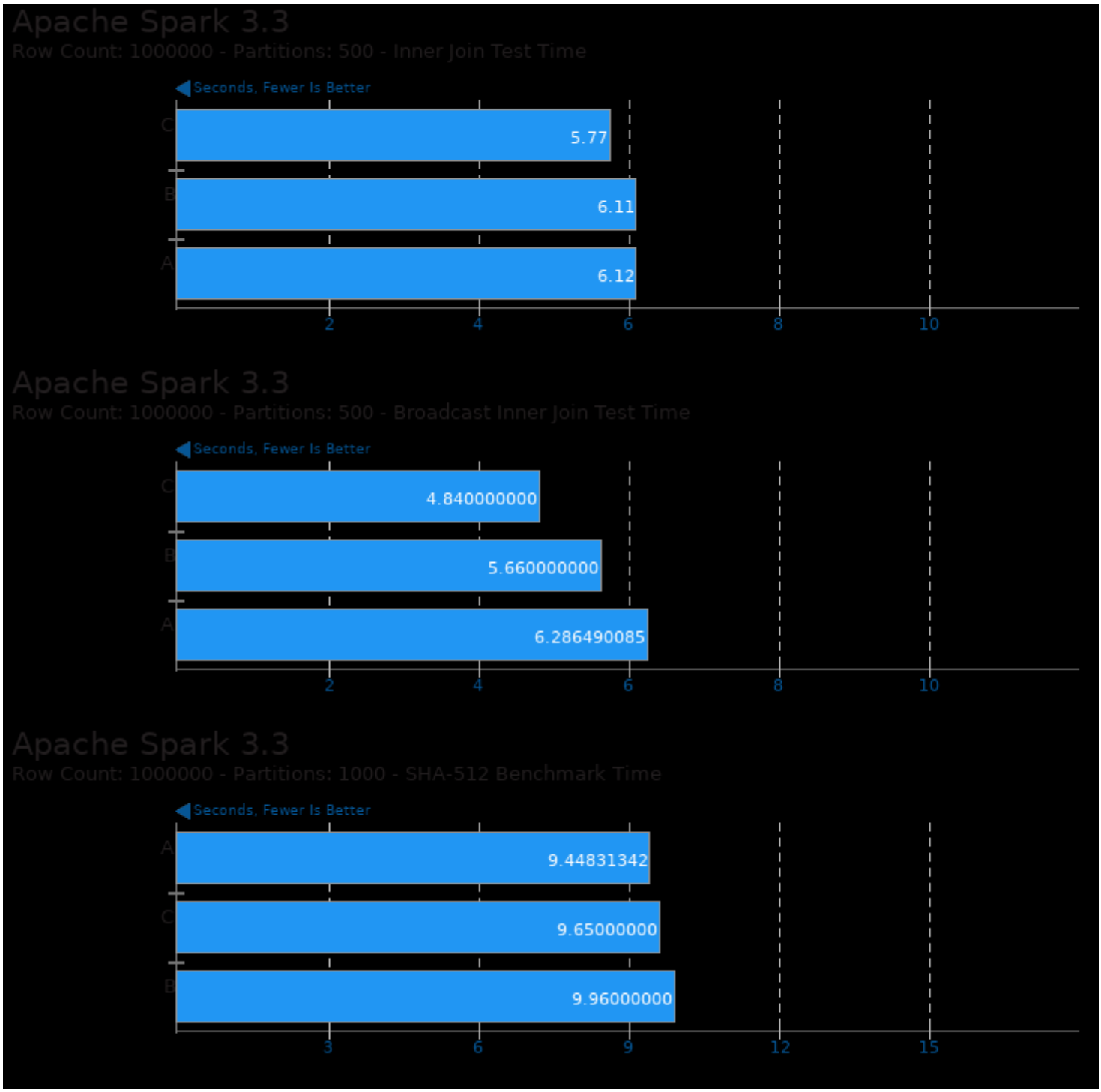
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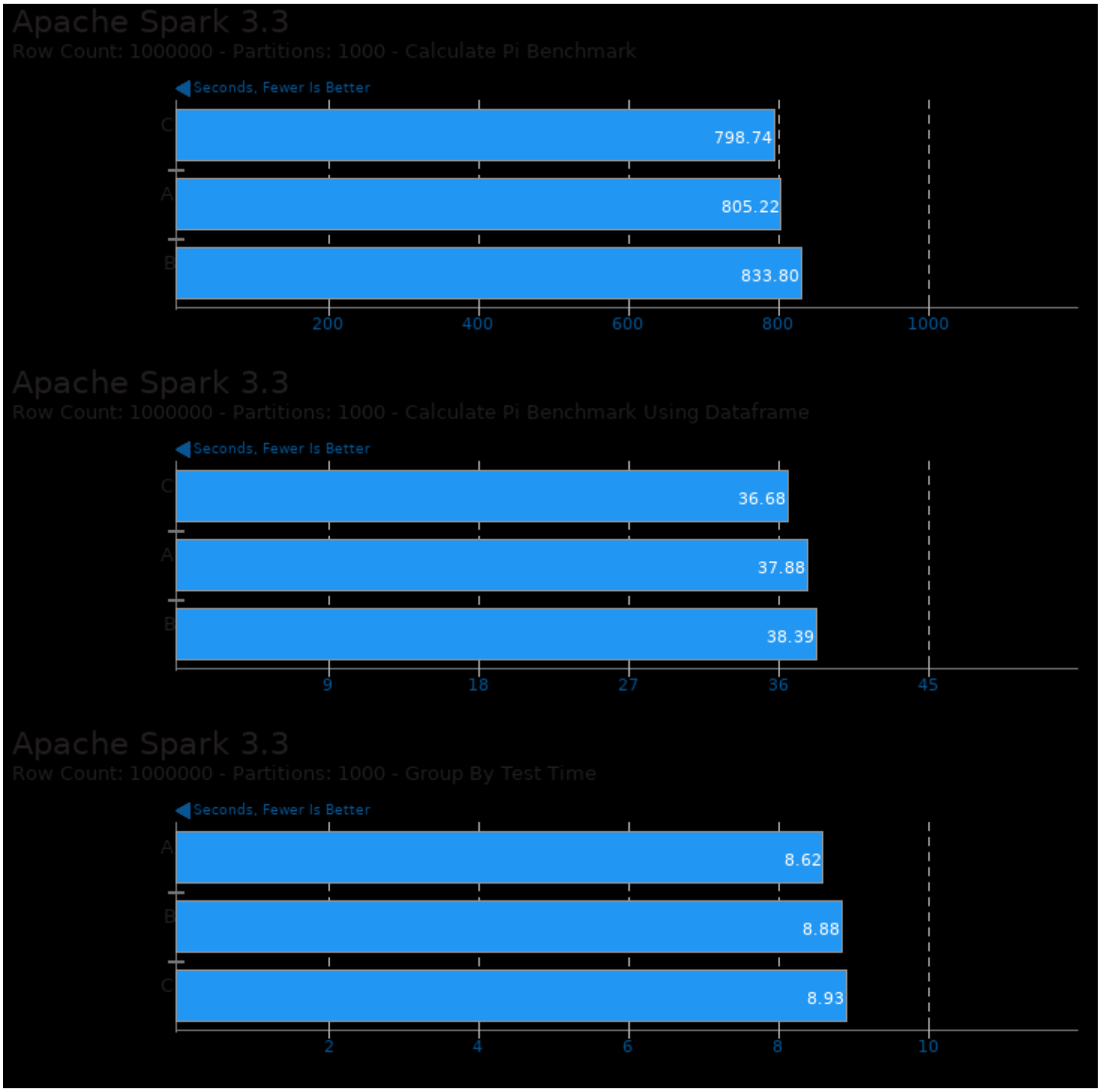
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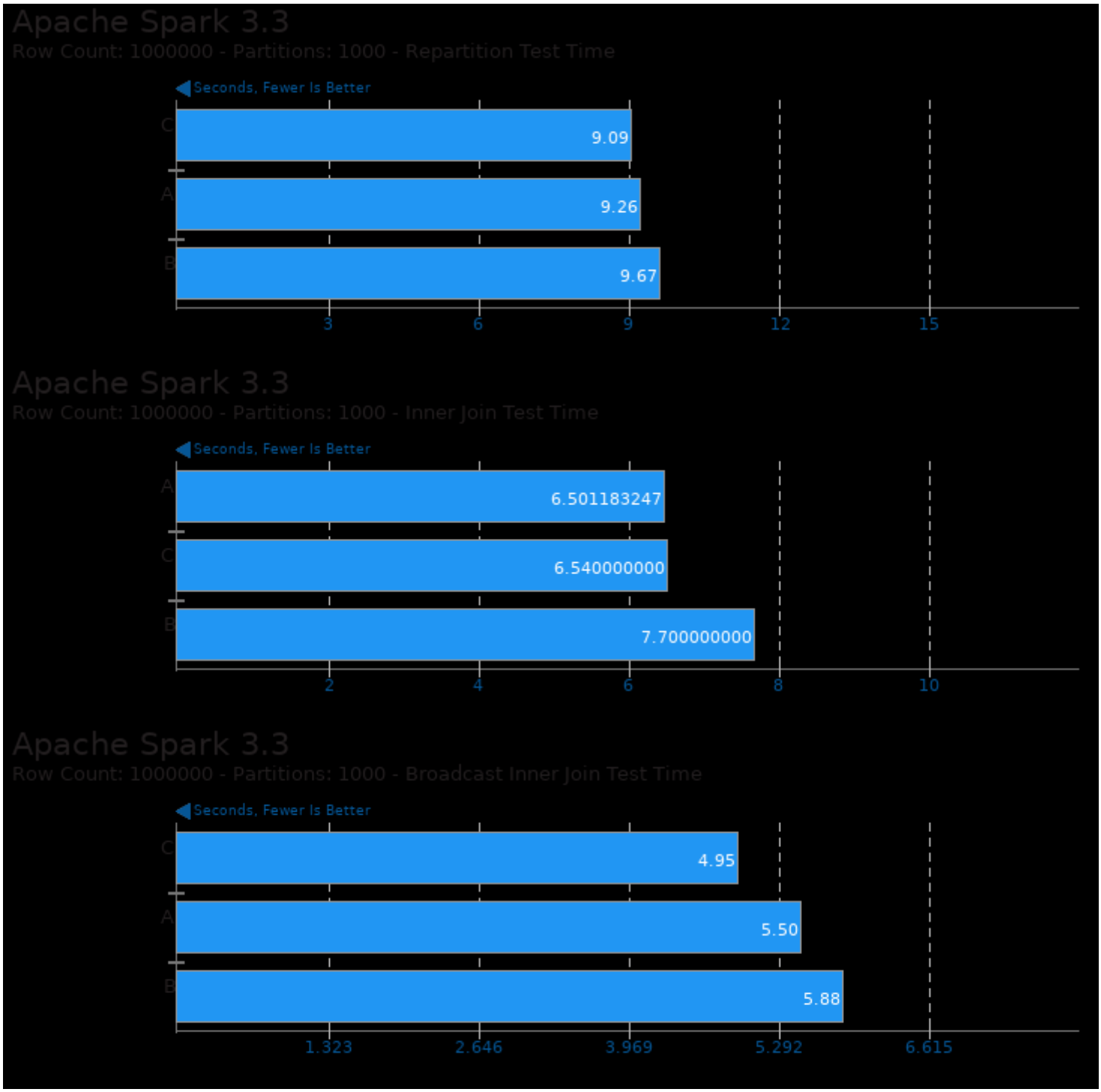
apache spark icelake



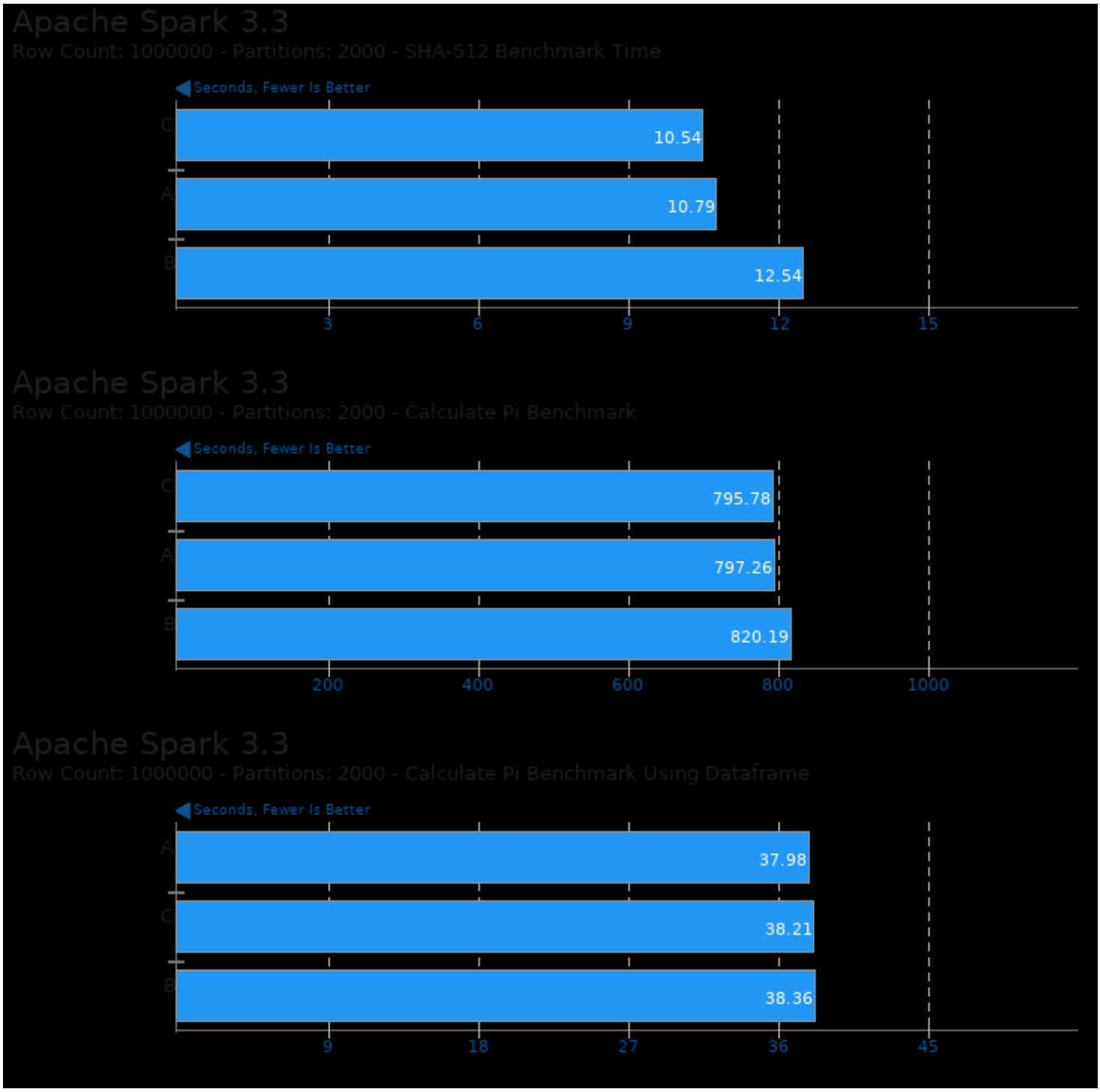
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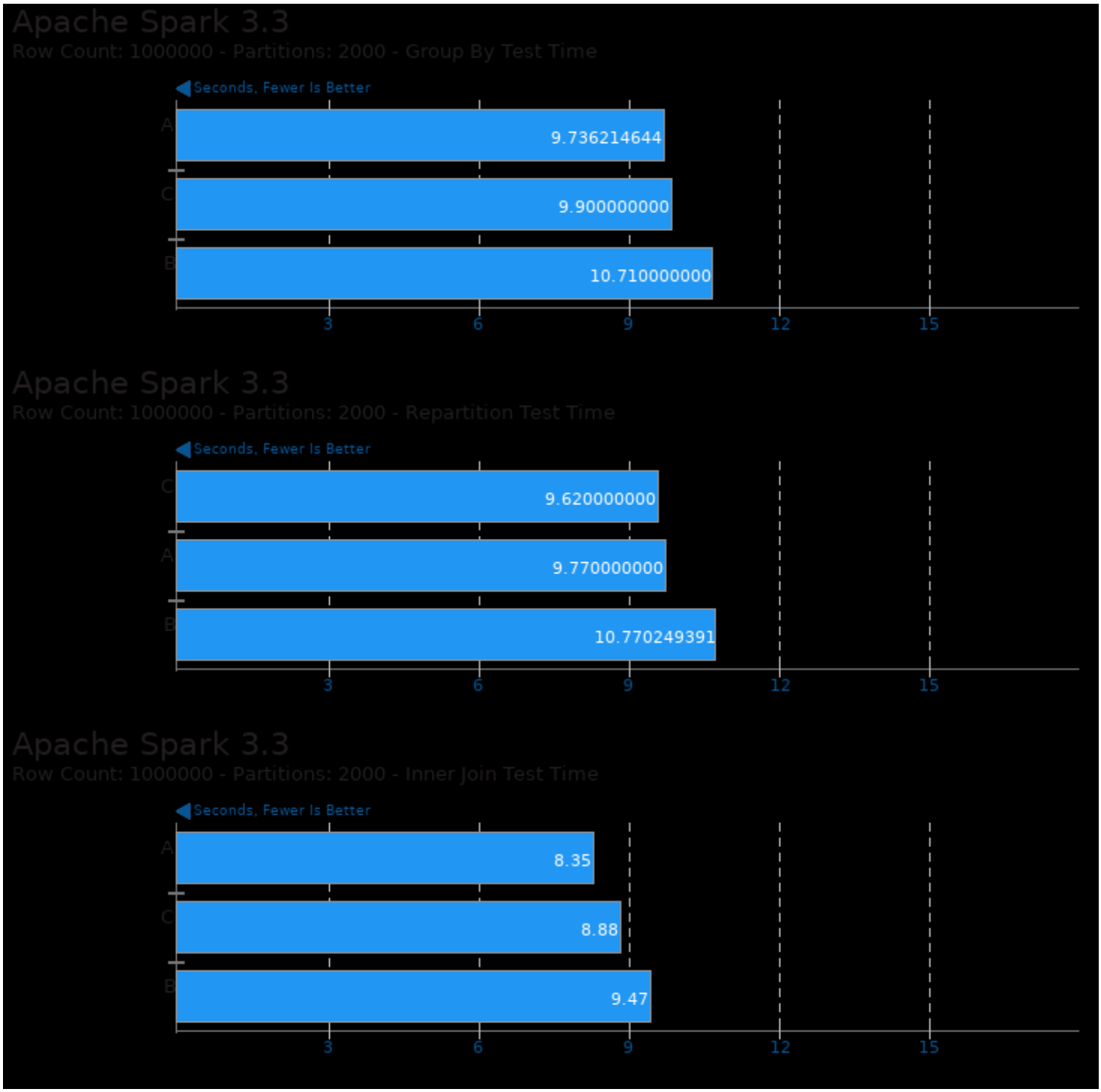
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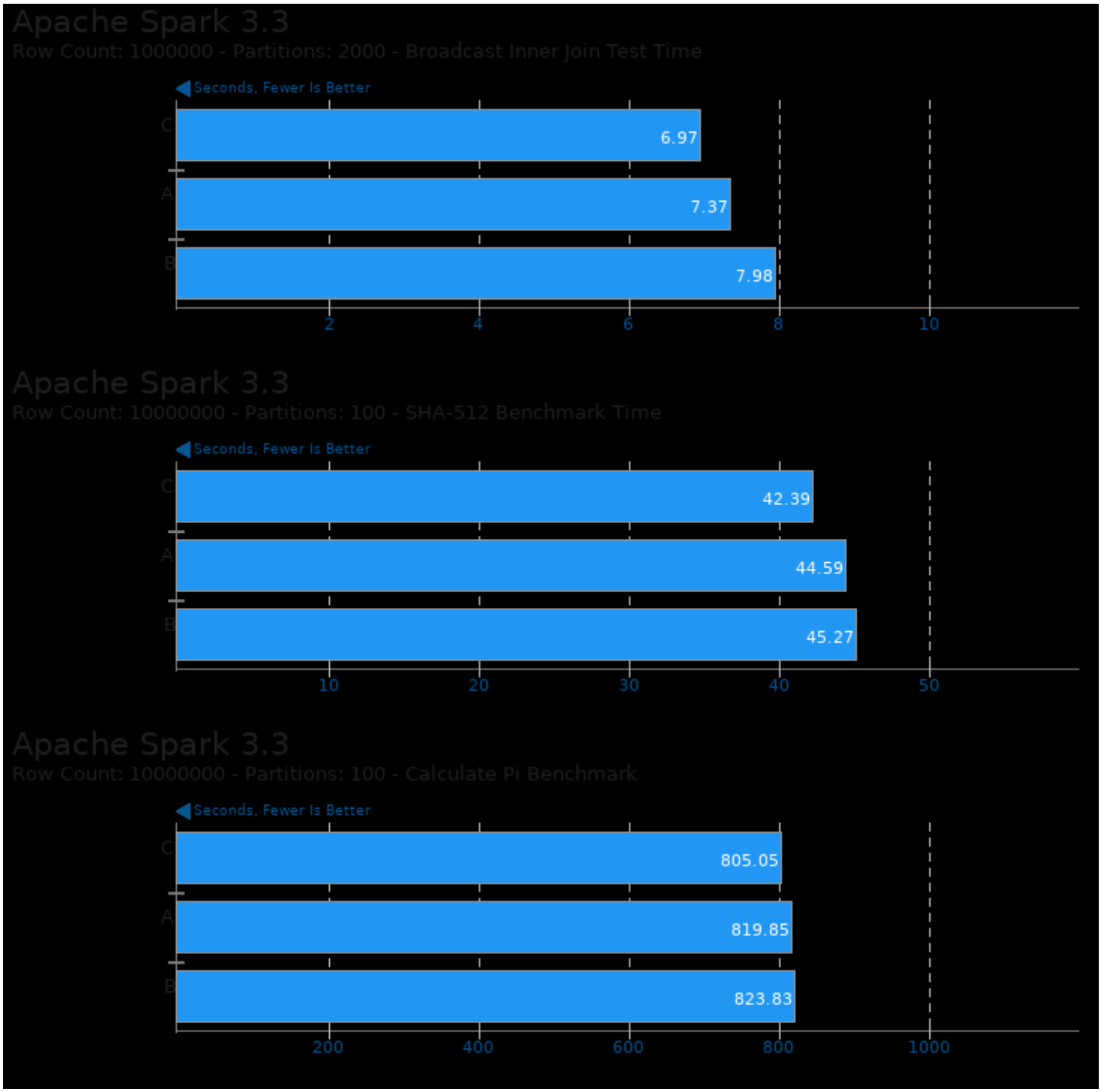
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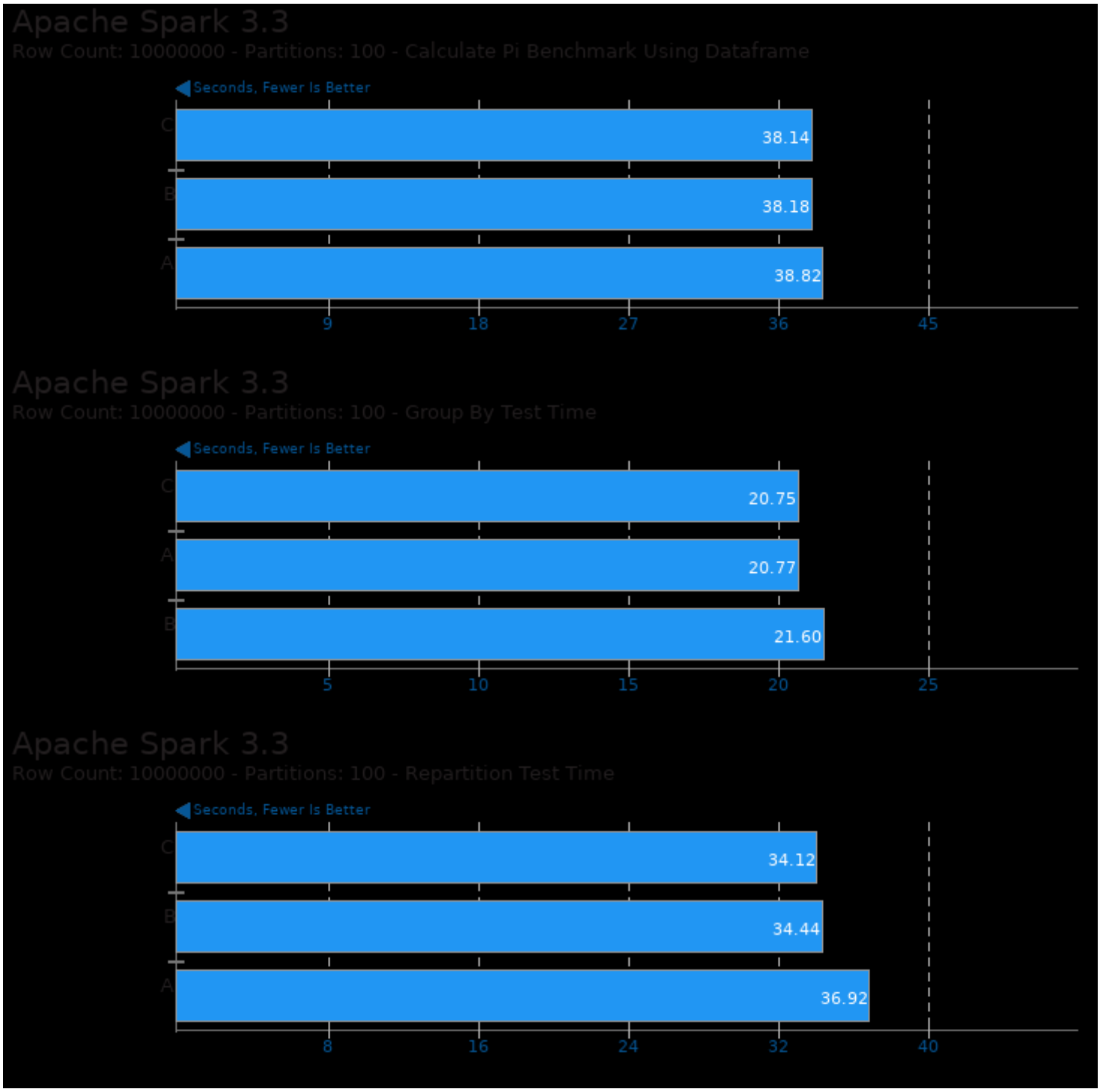
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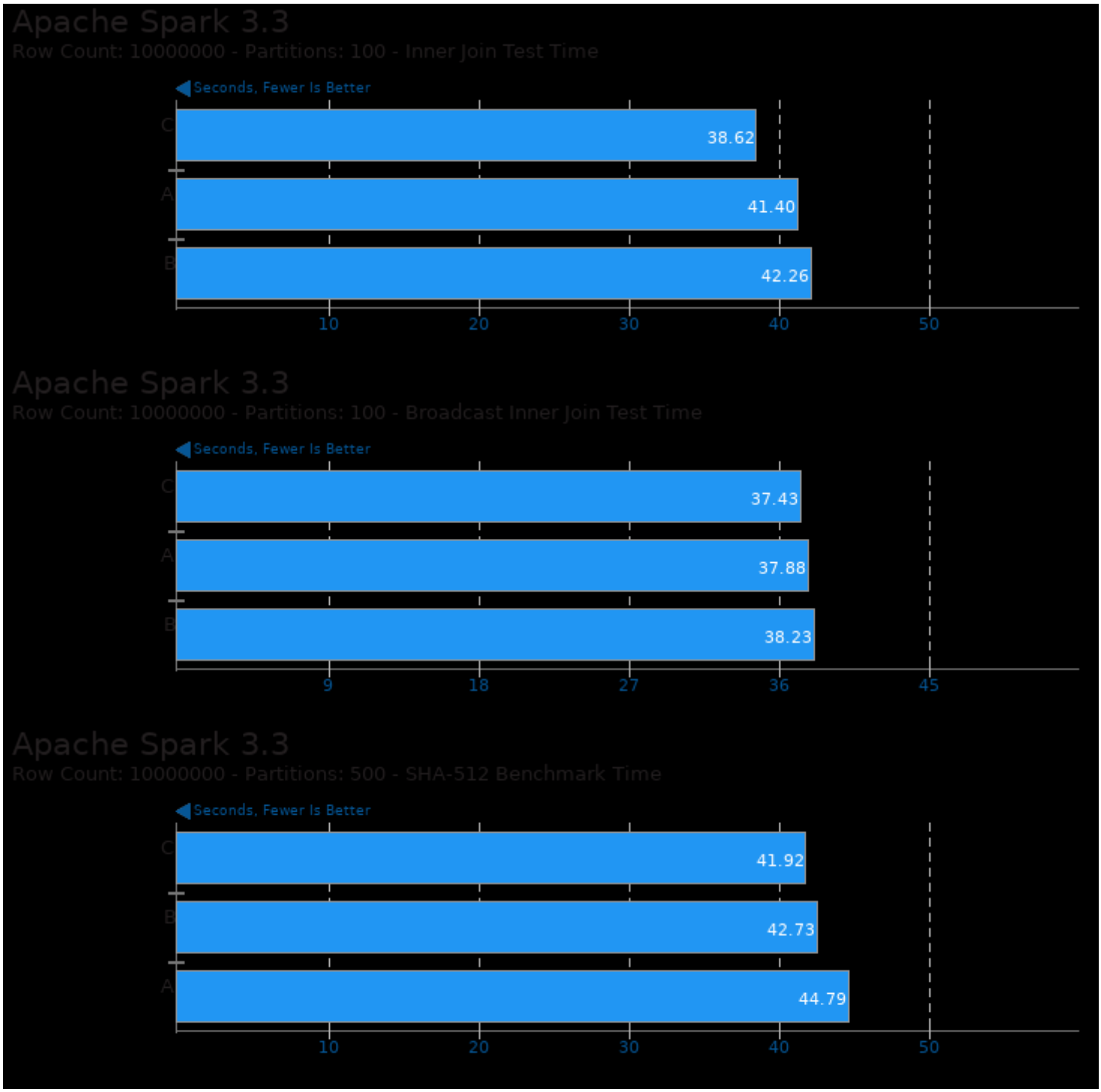
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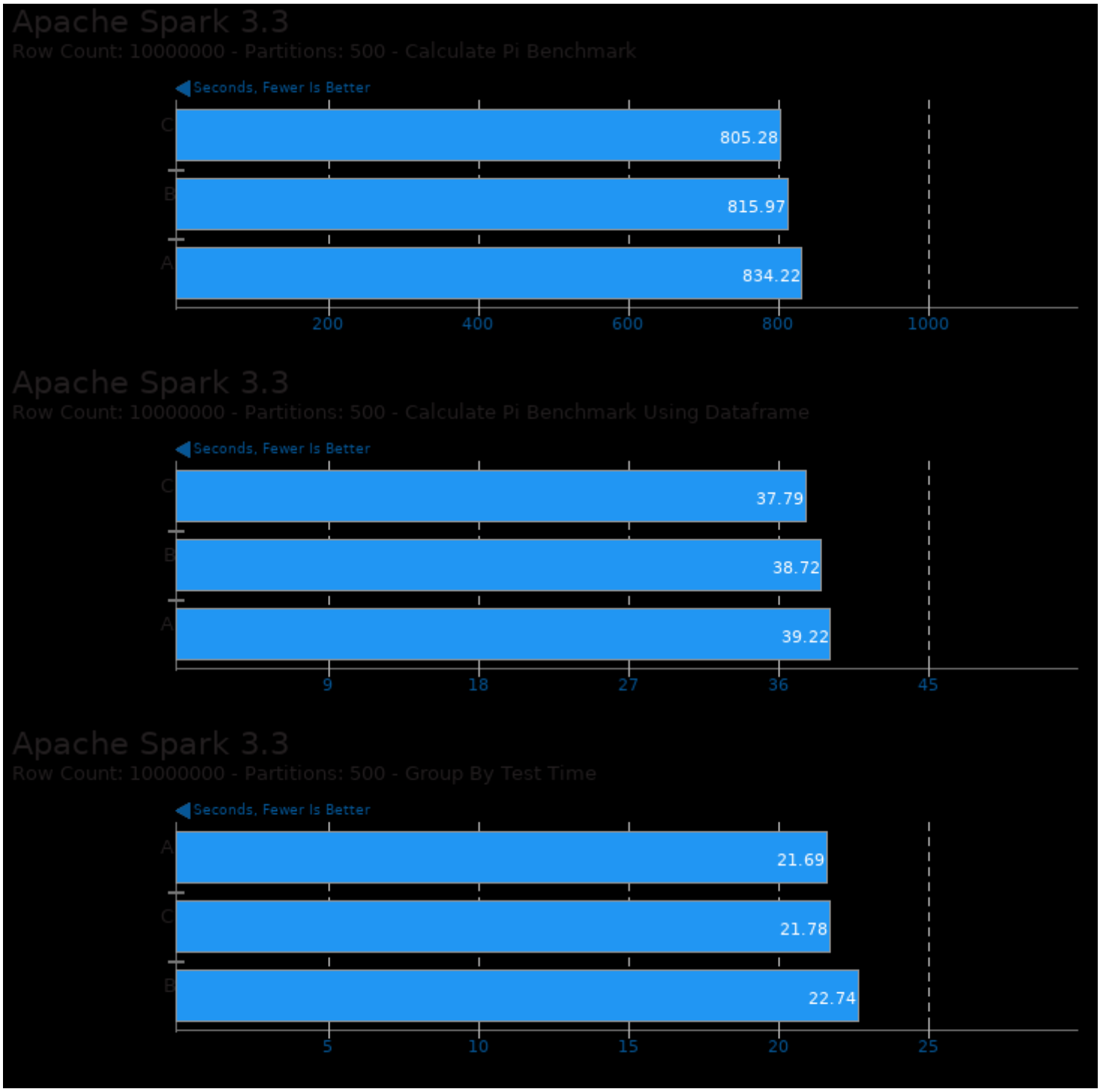
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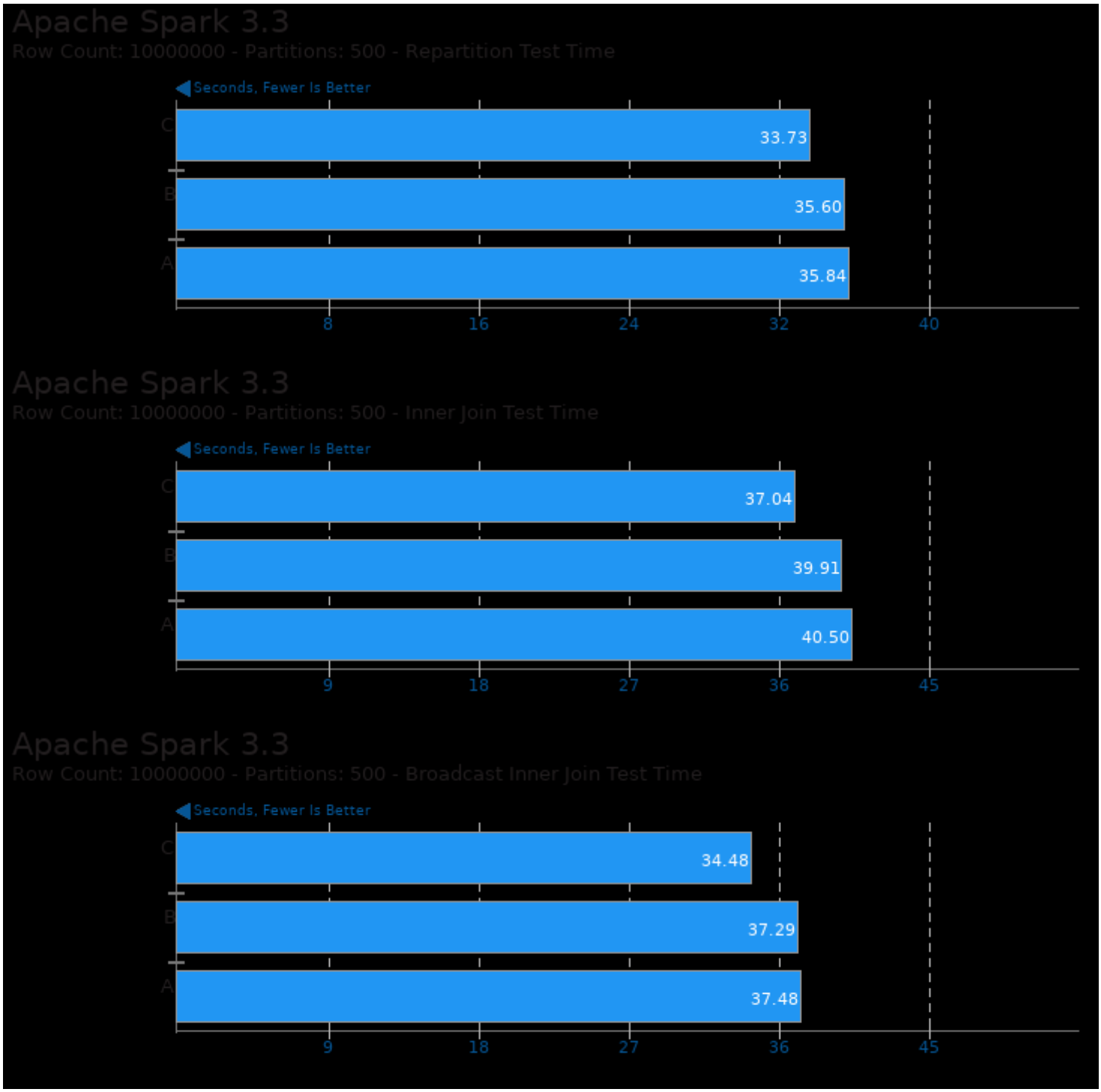
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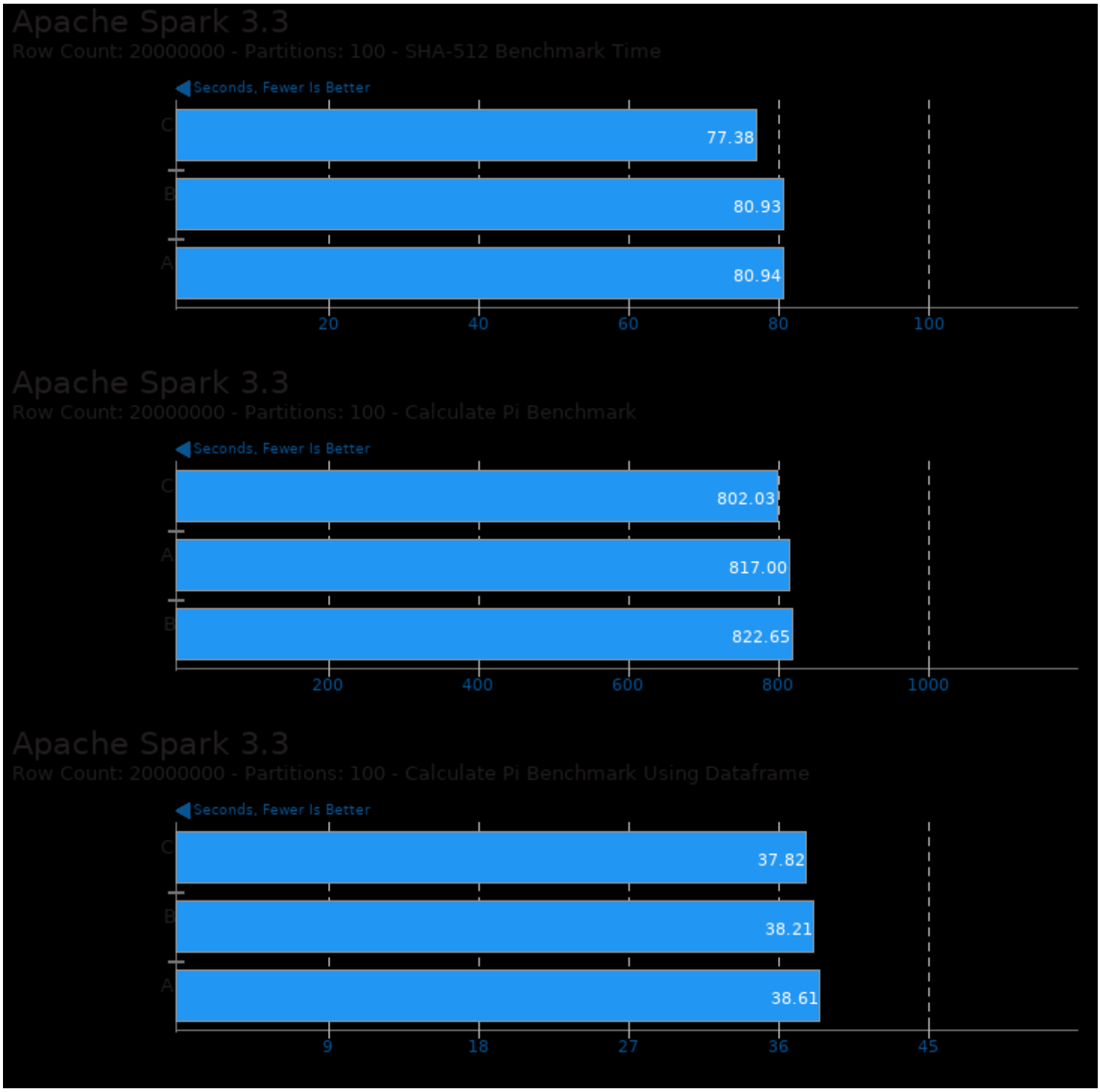
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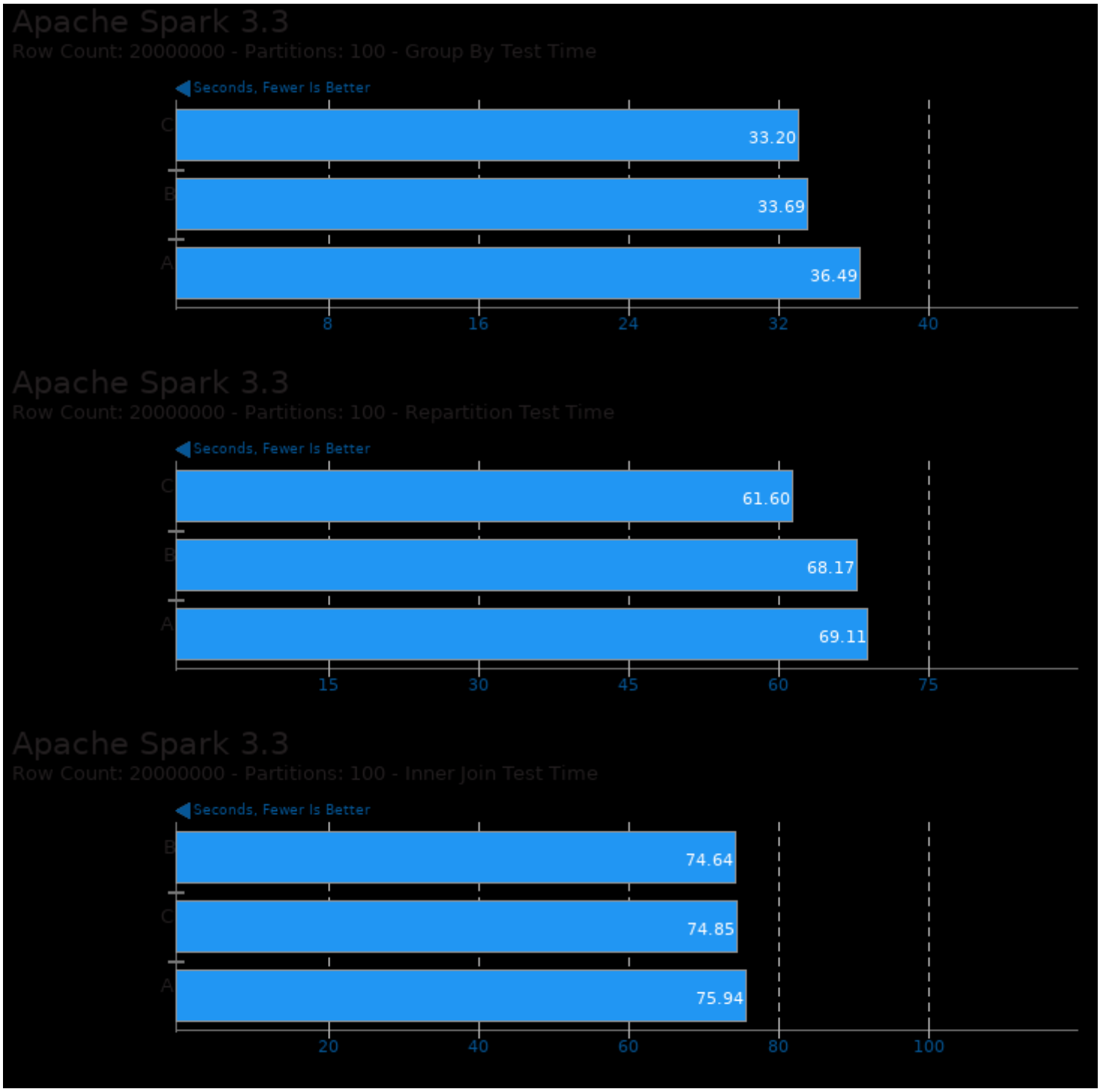
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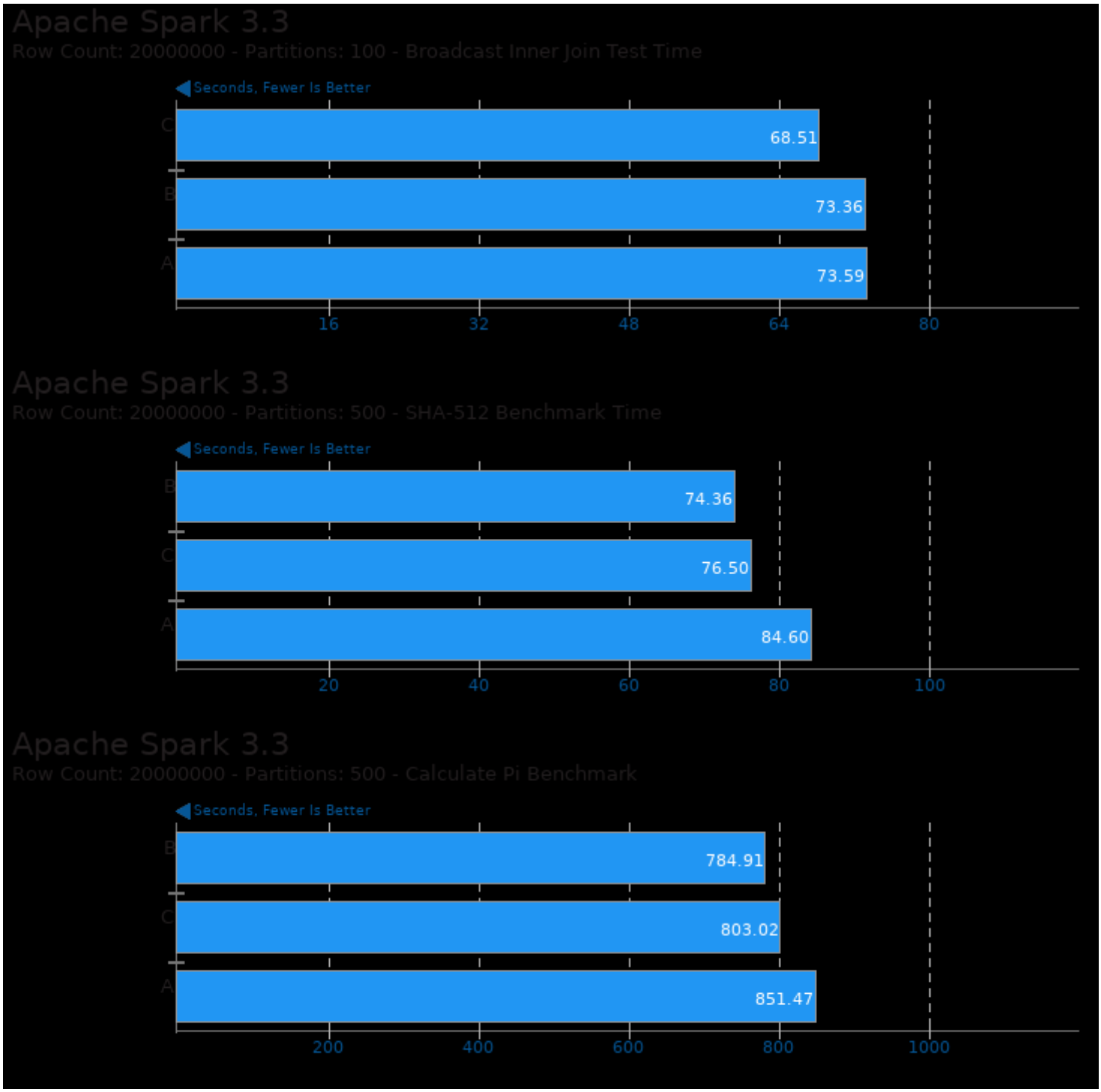
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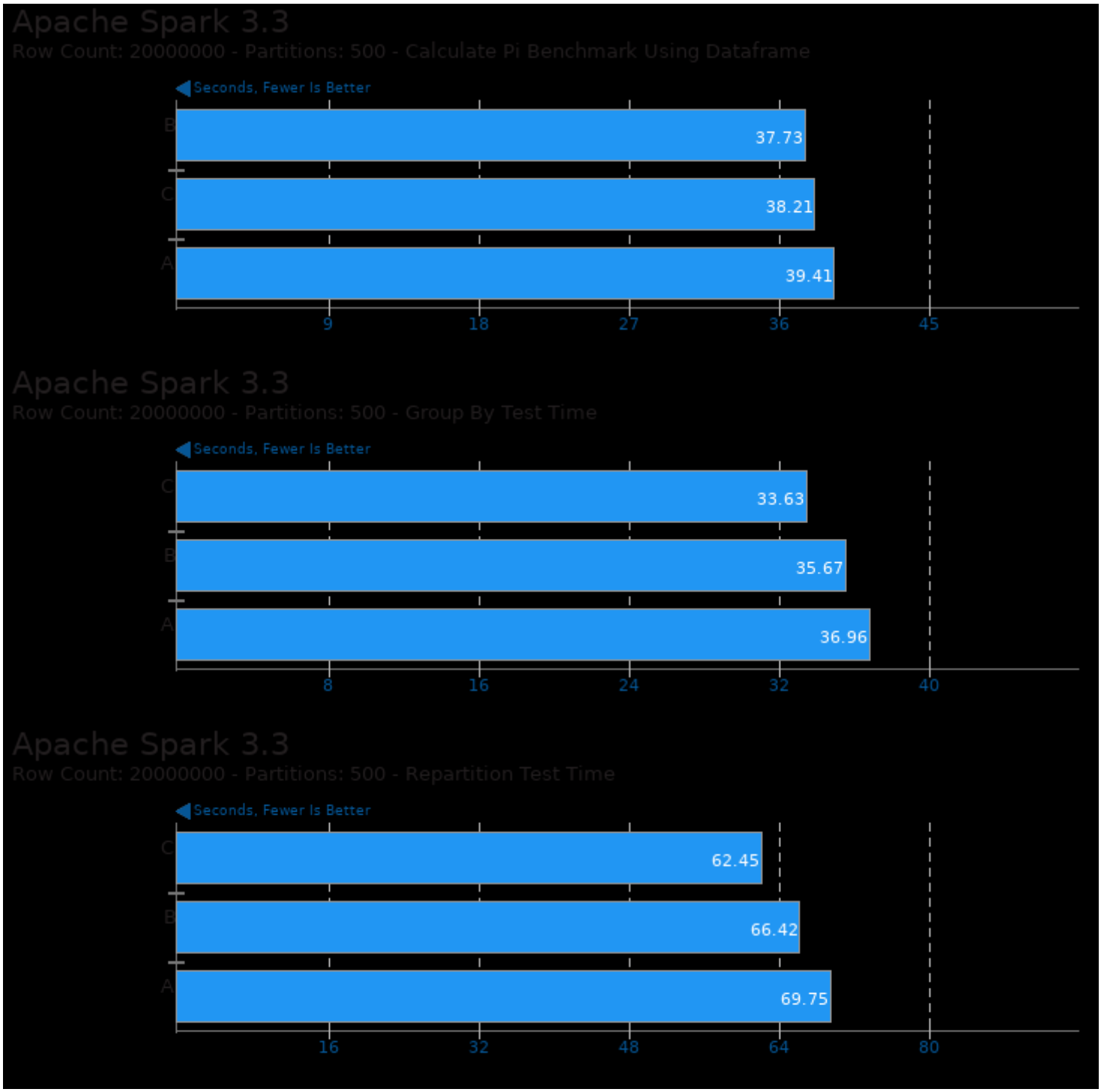
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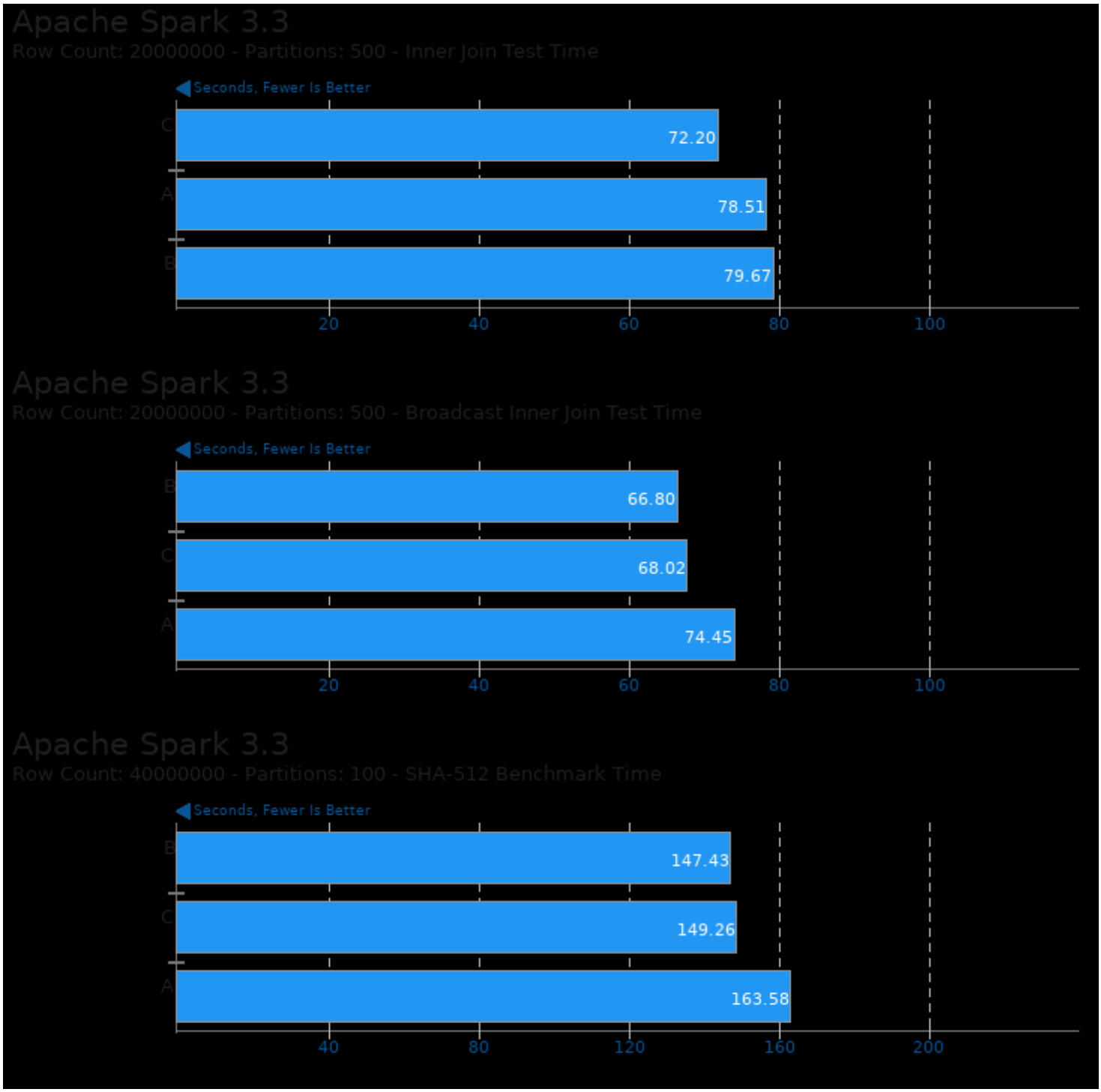
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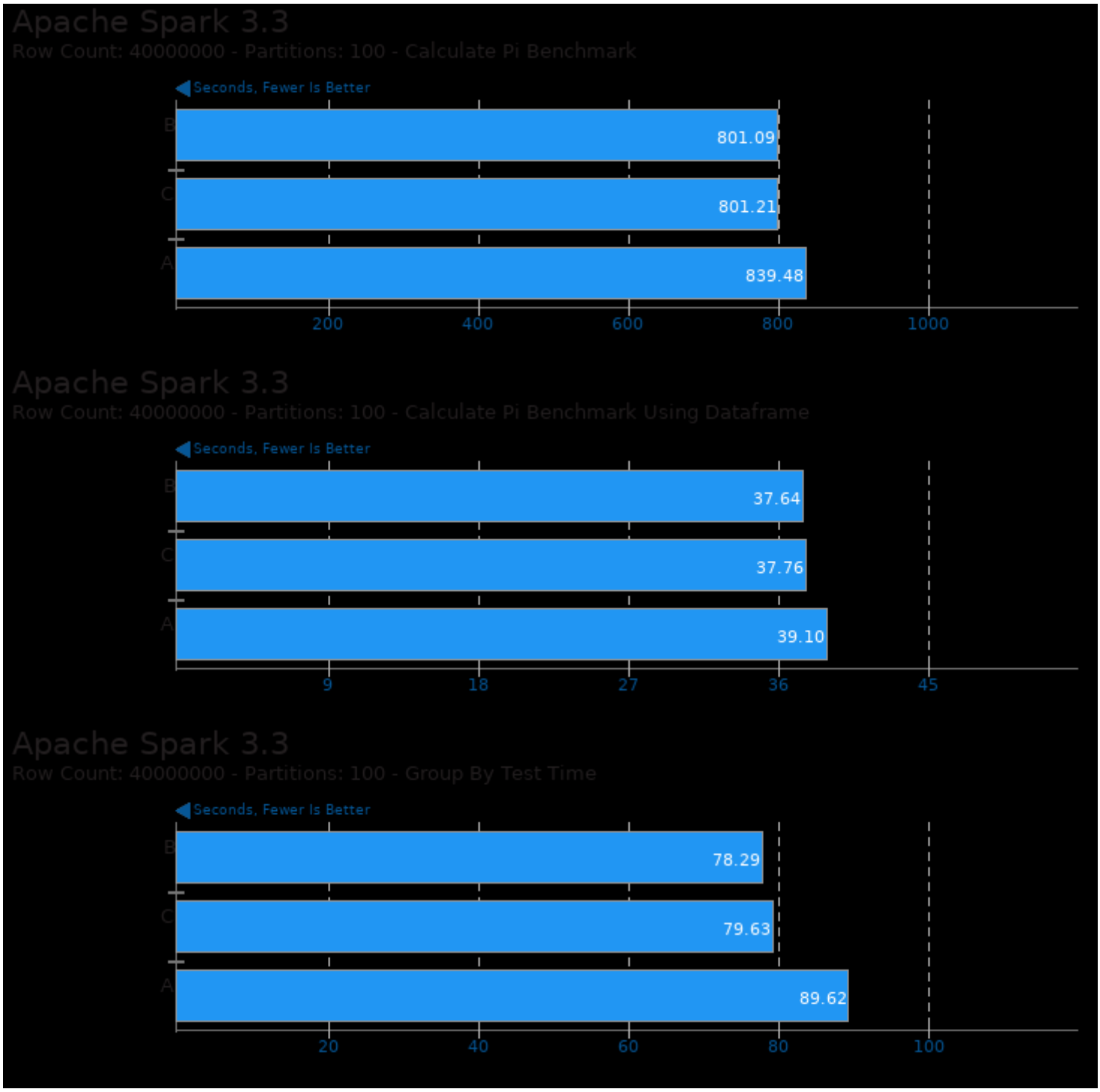
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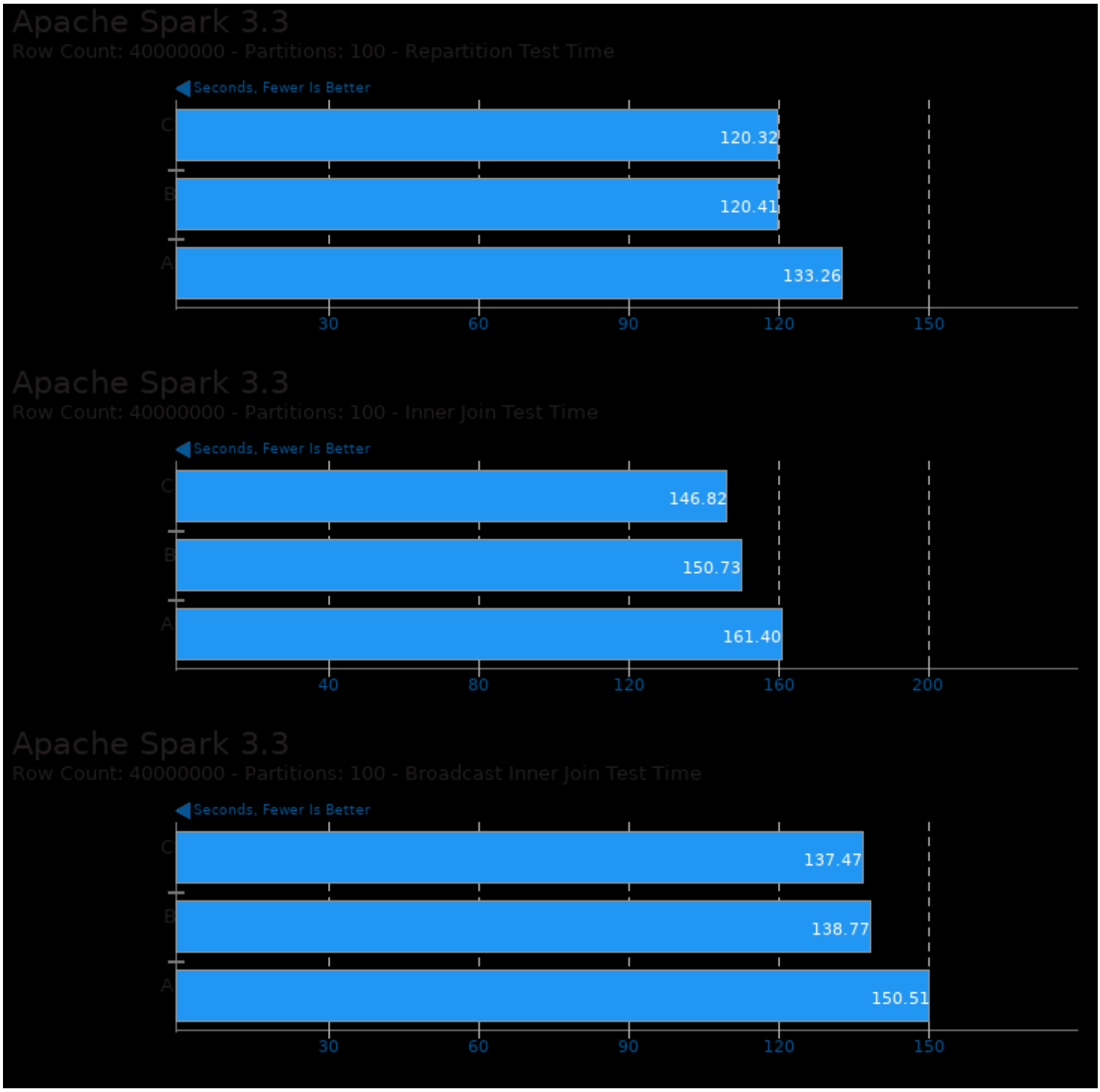
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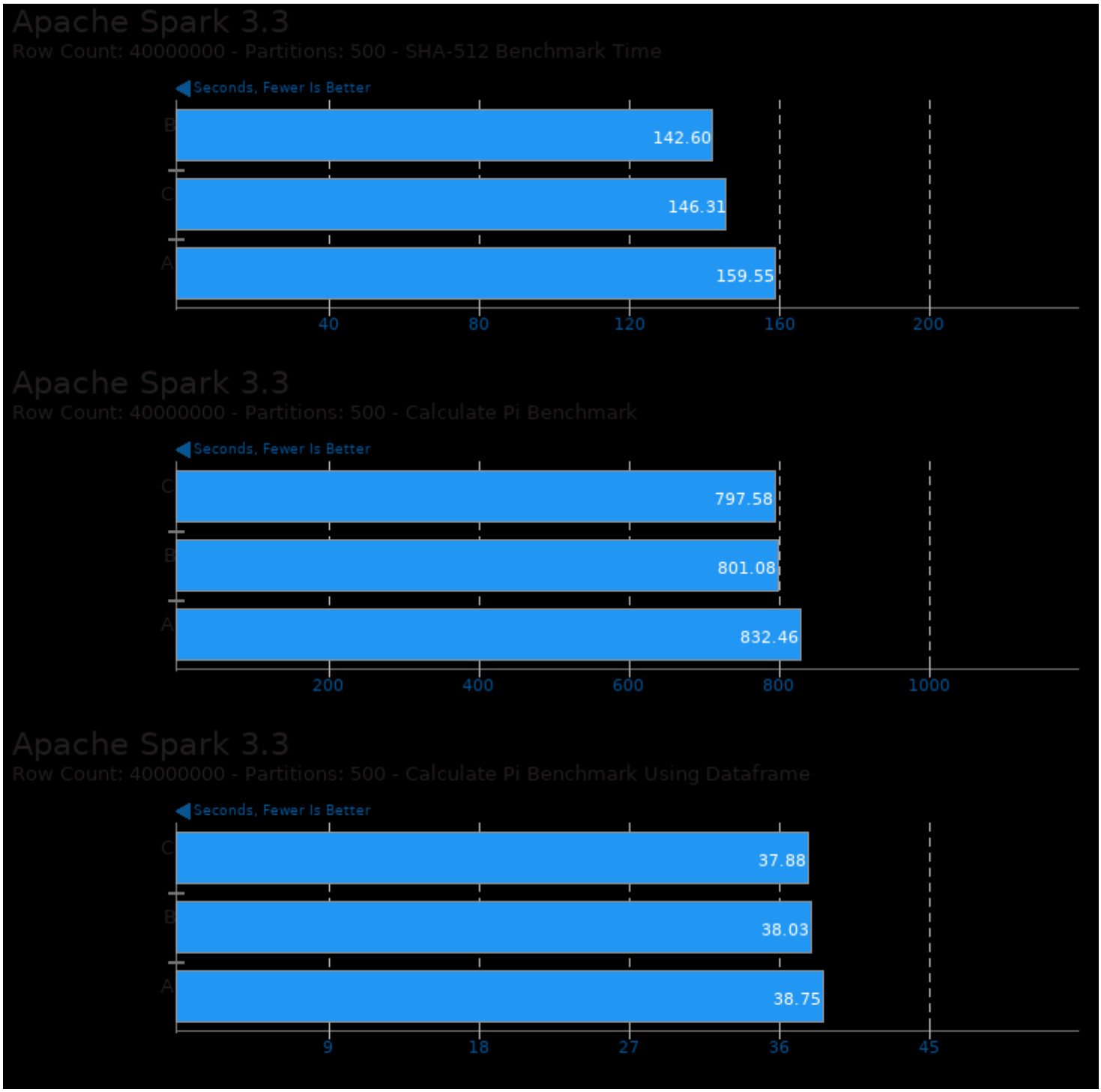
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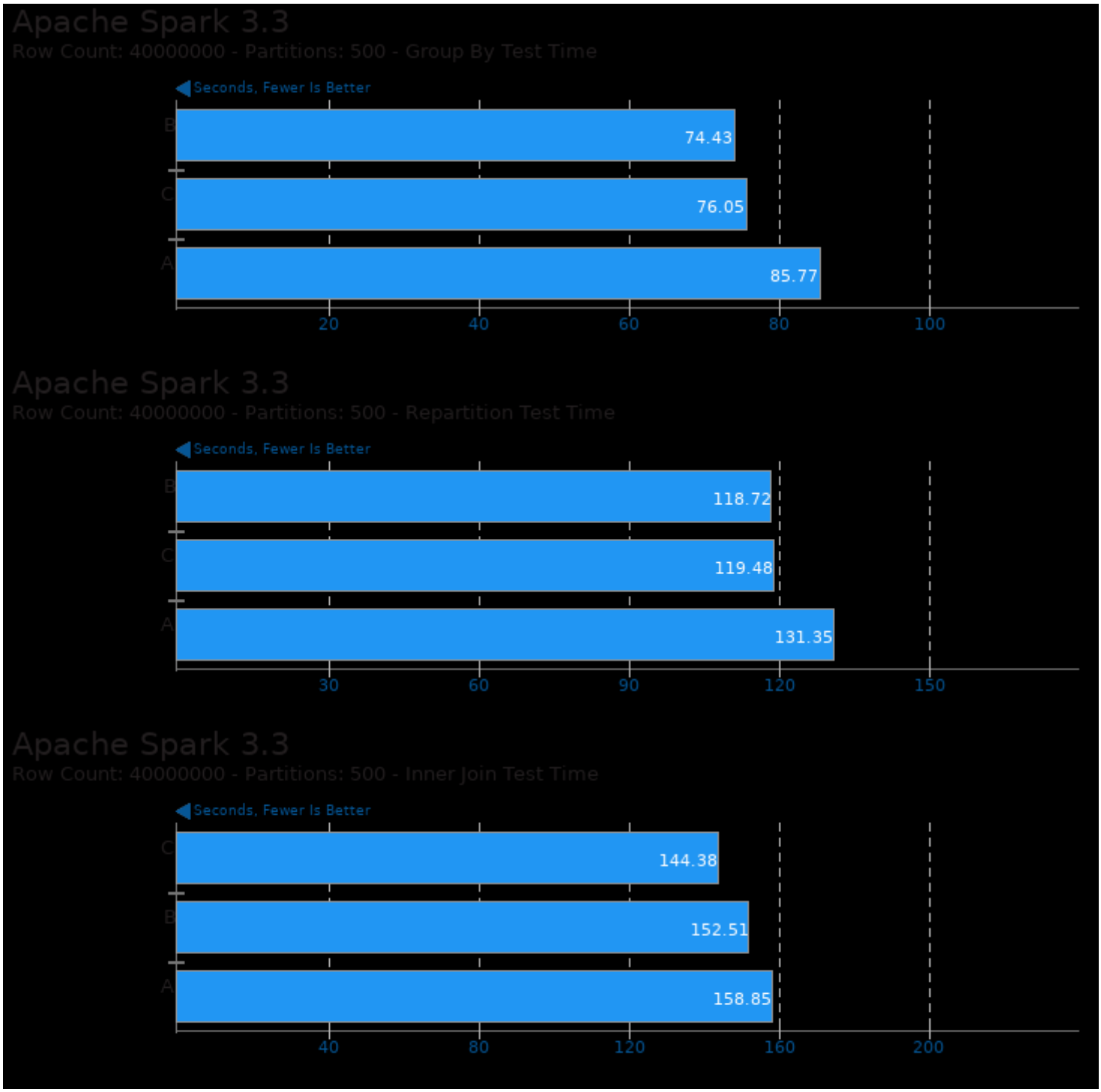
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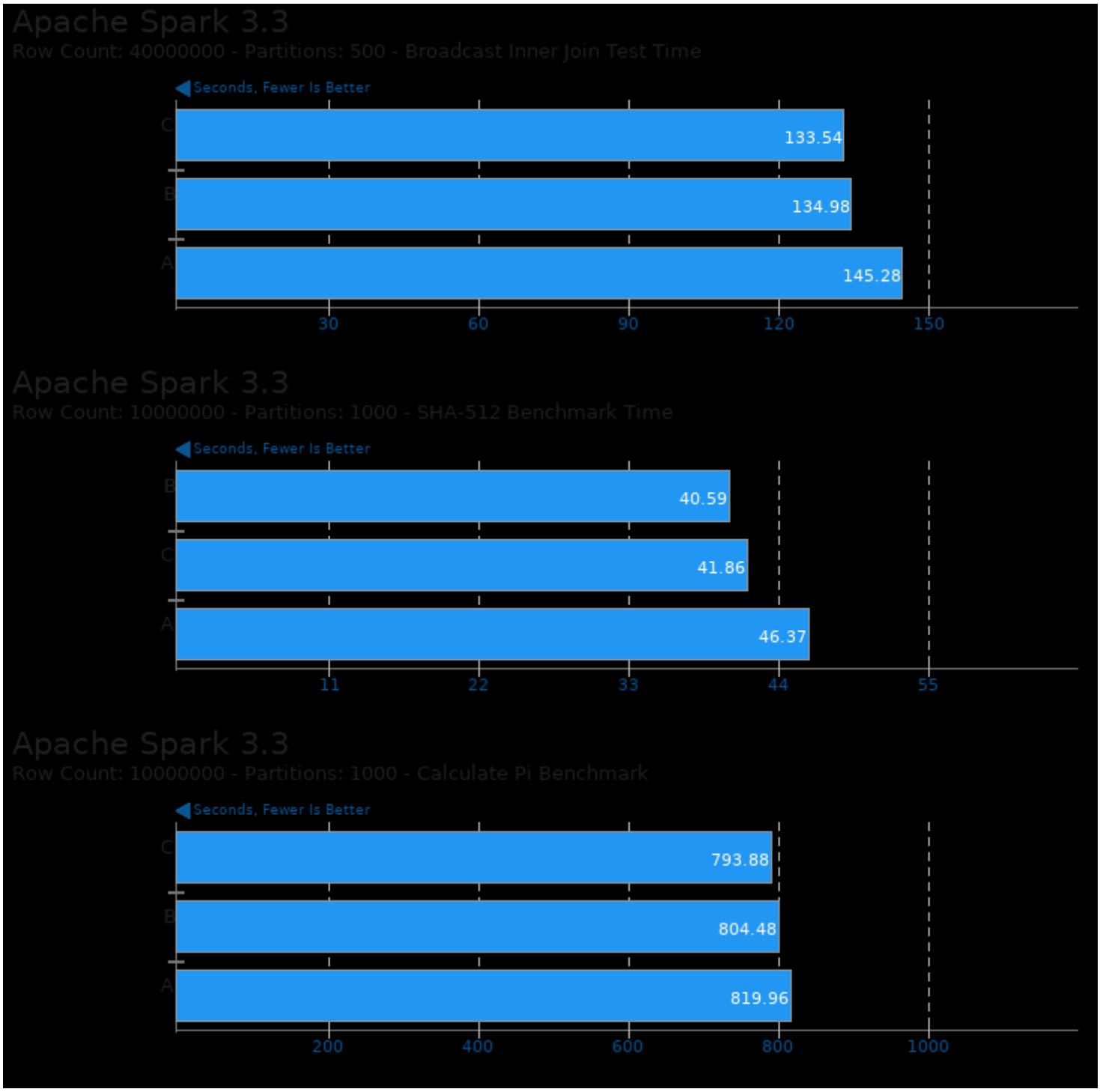
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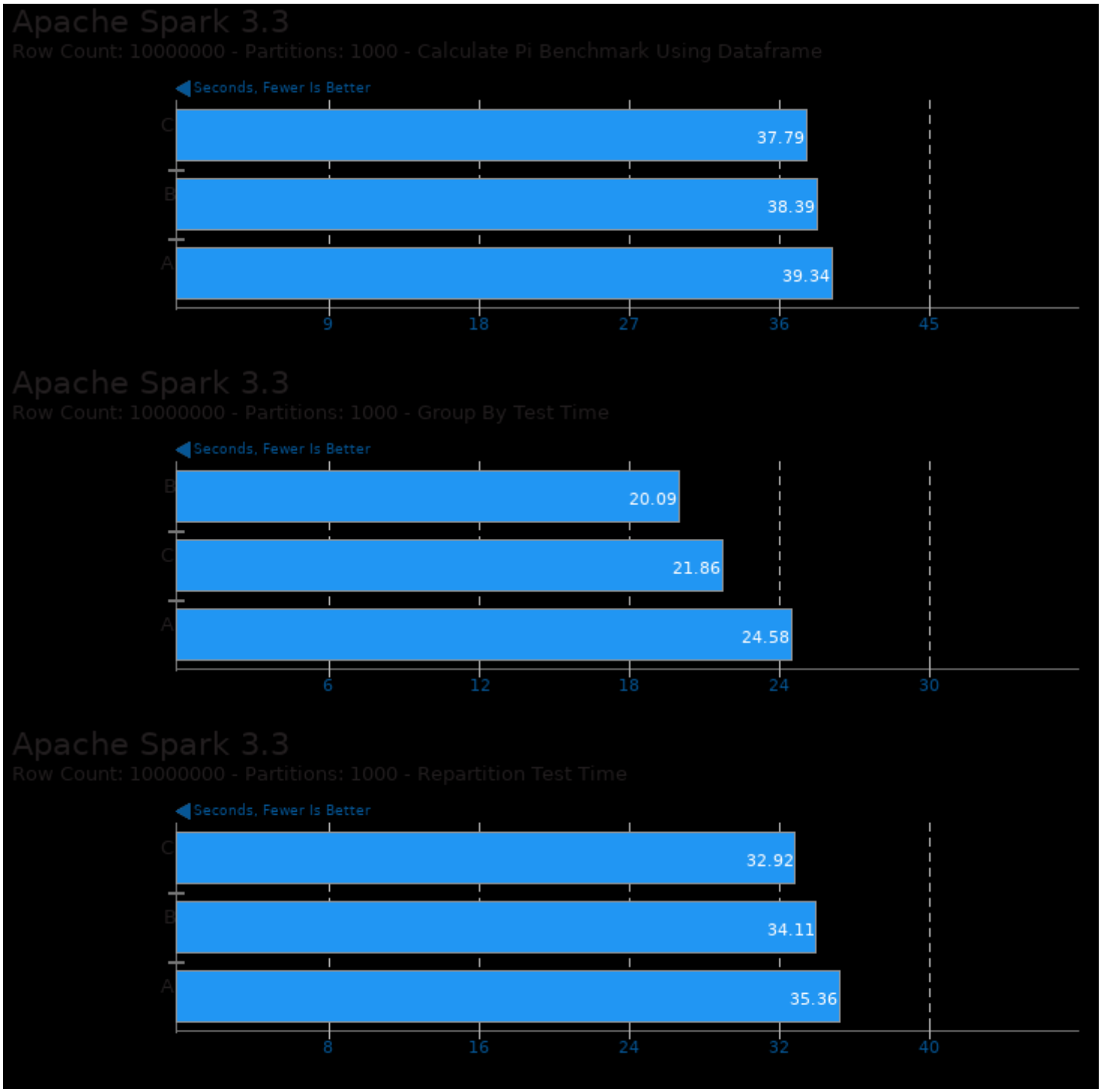
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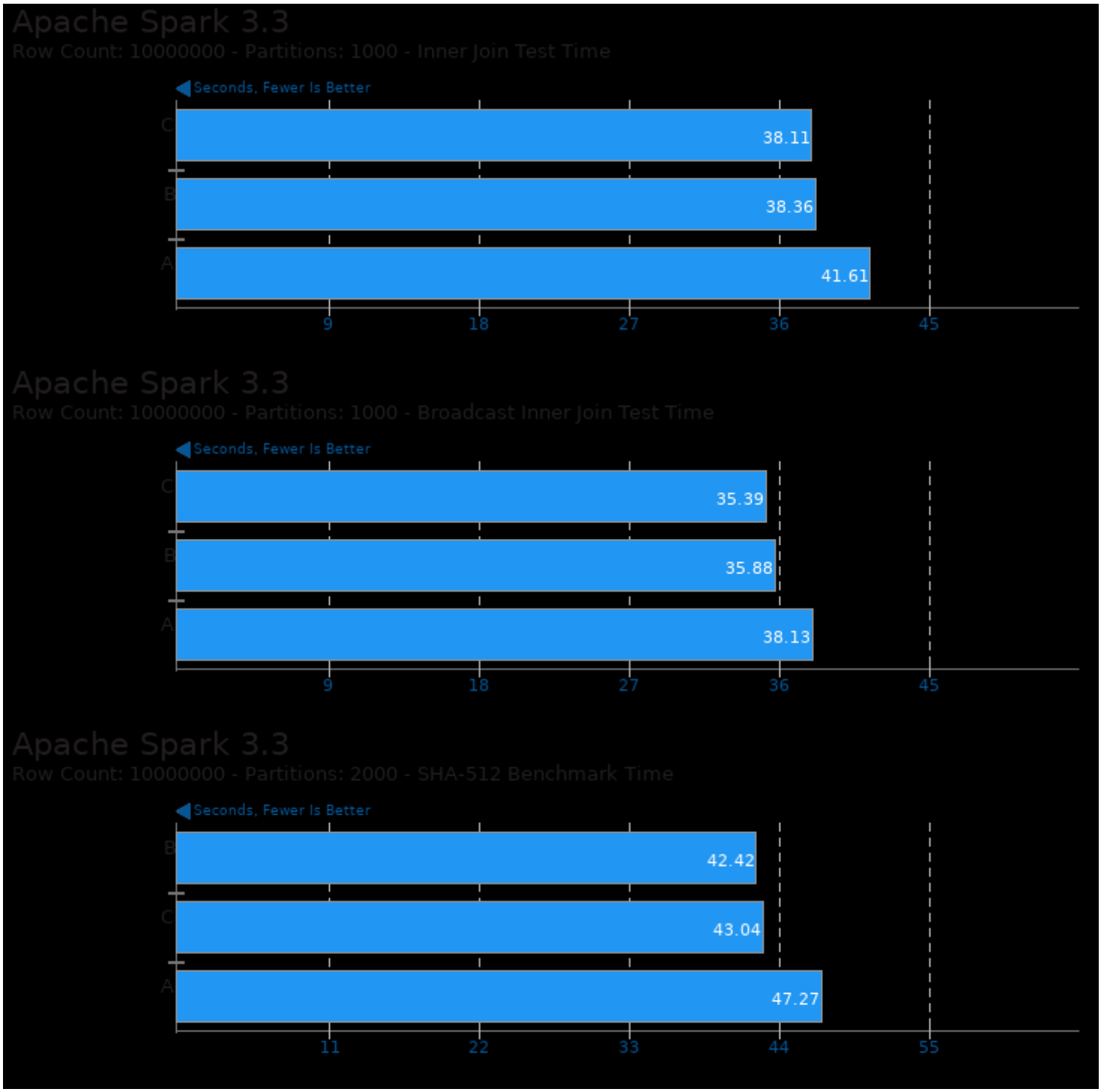
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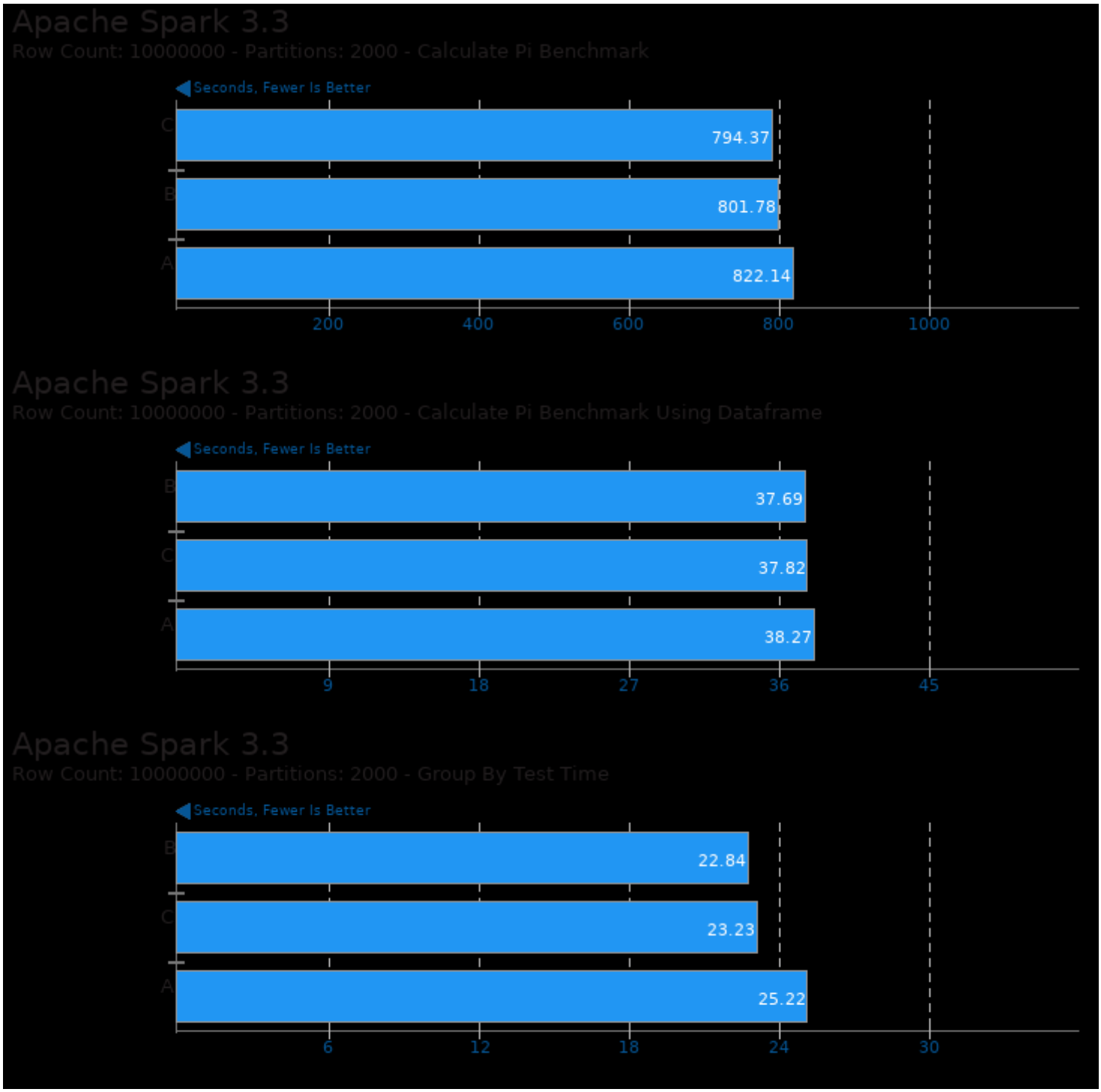
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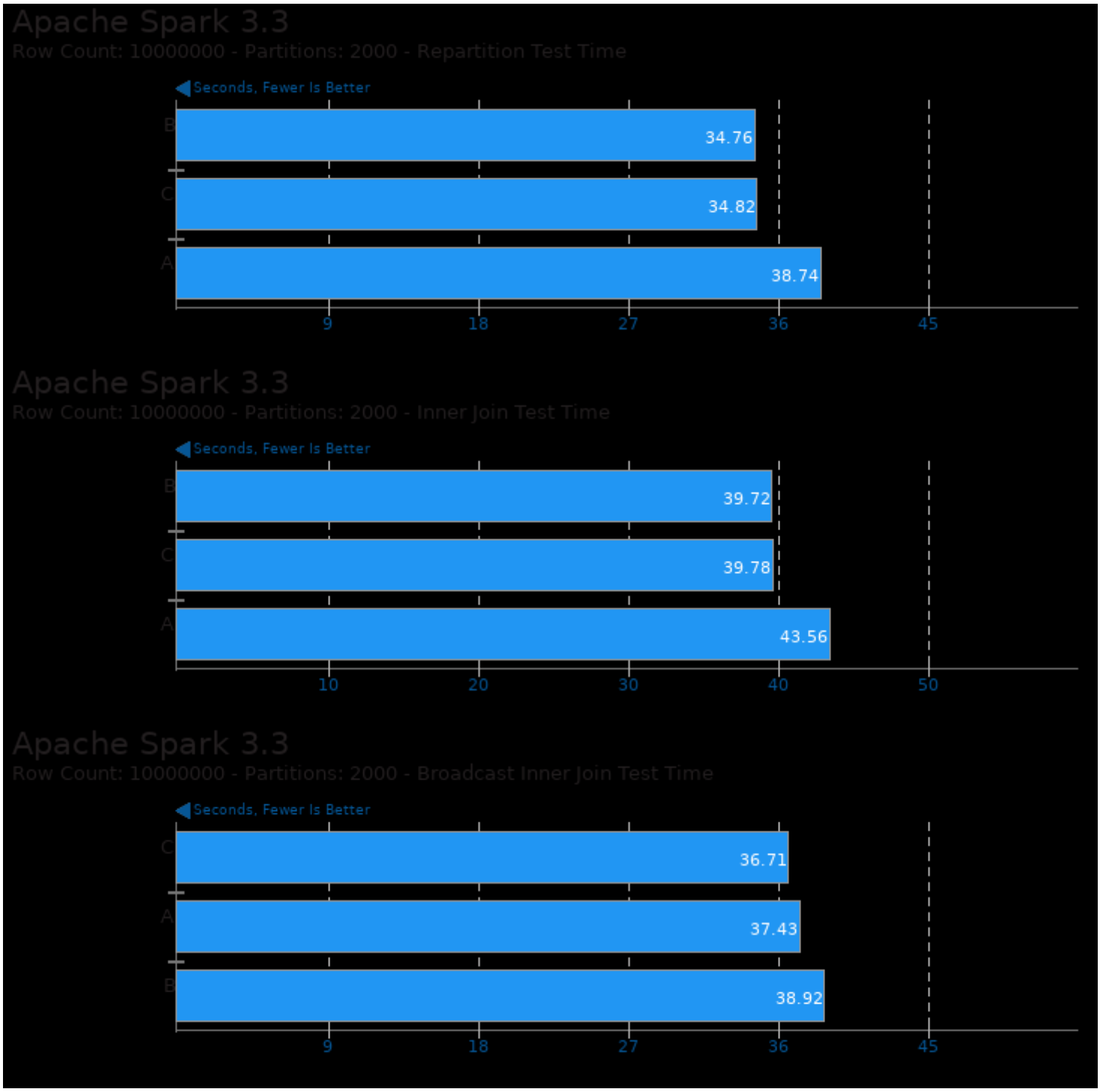
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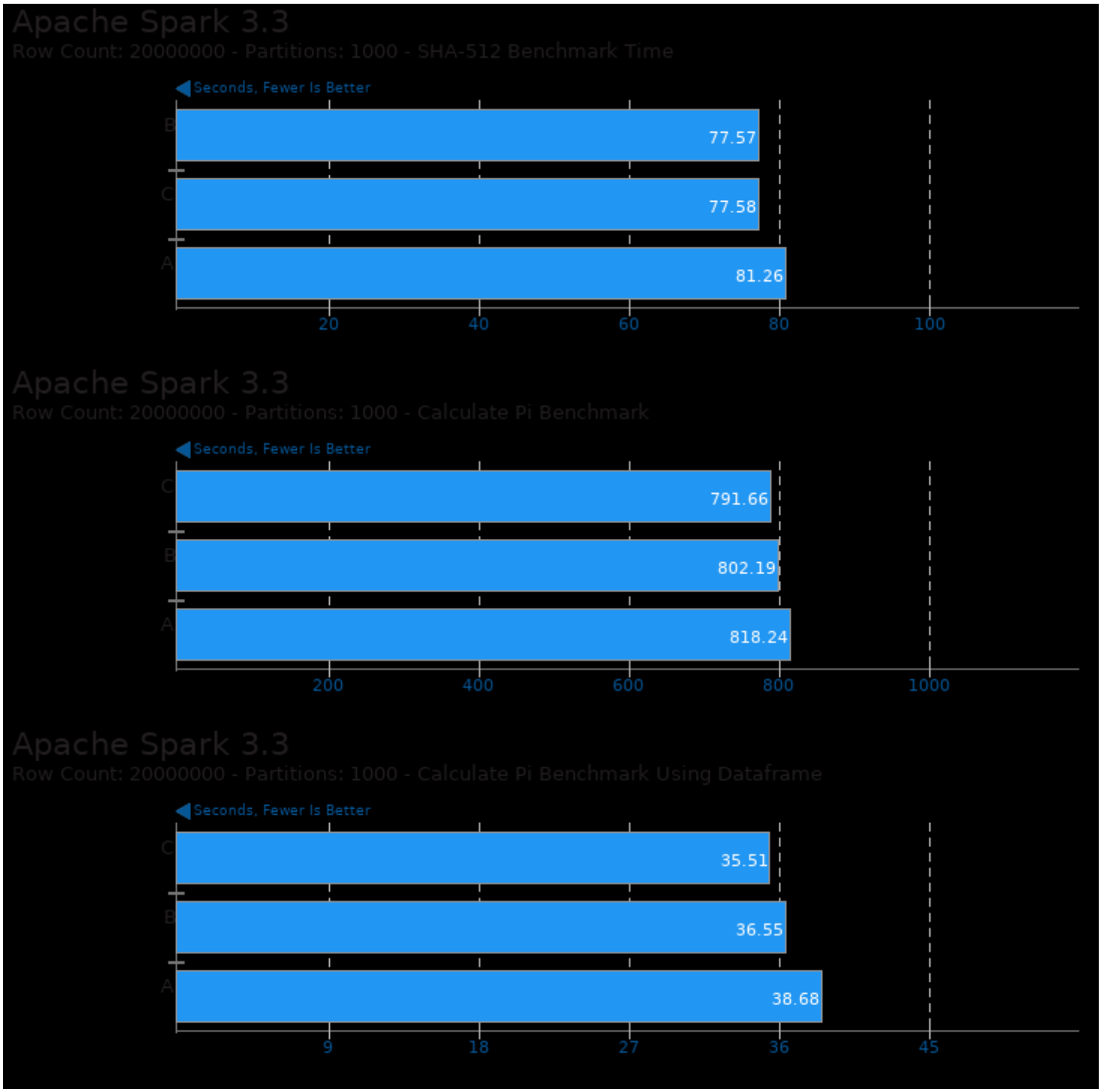
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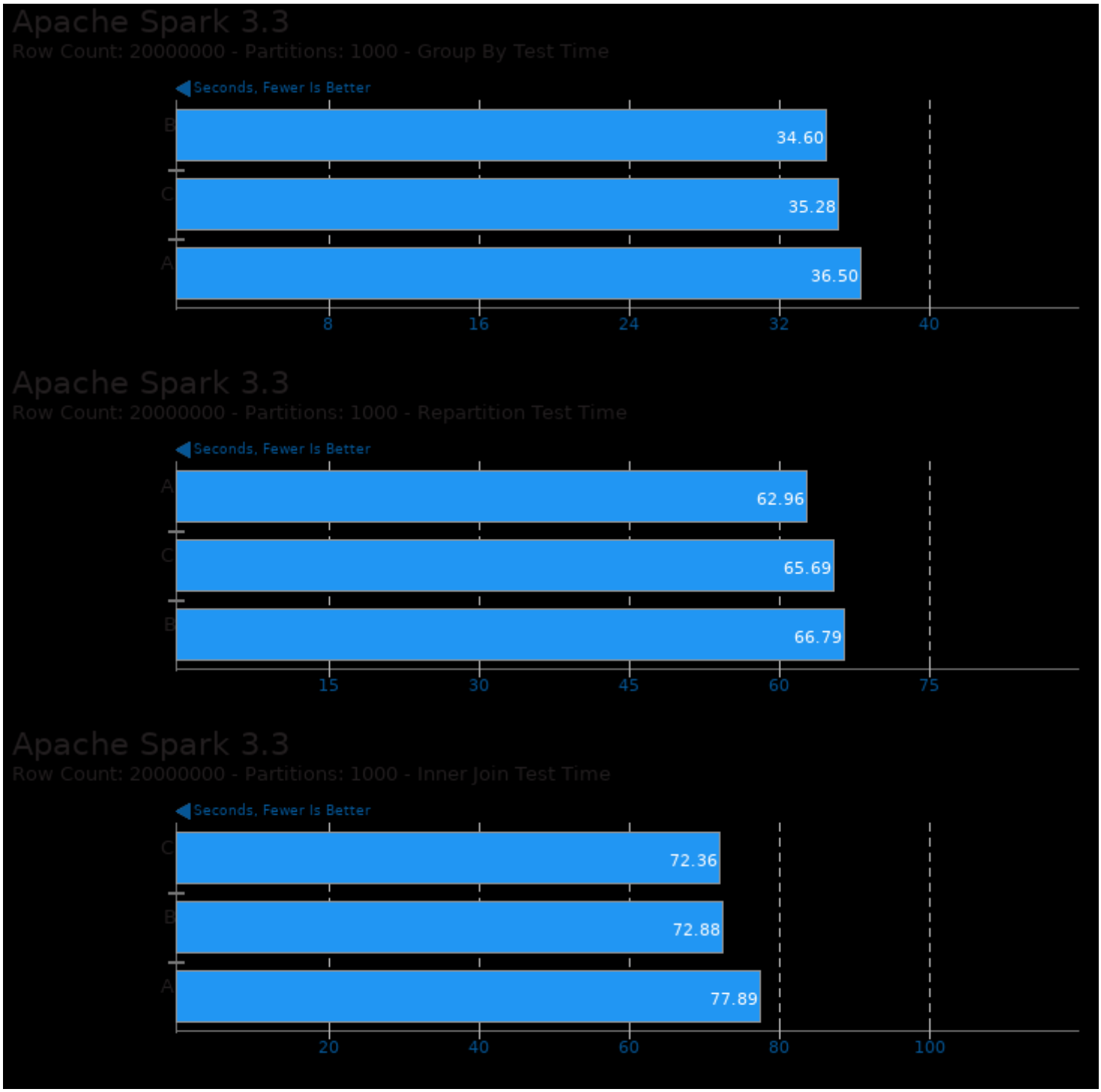
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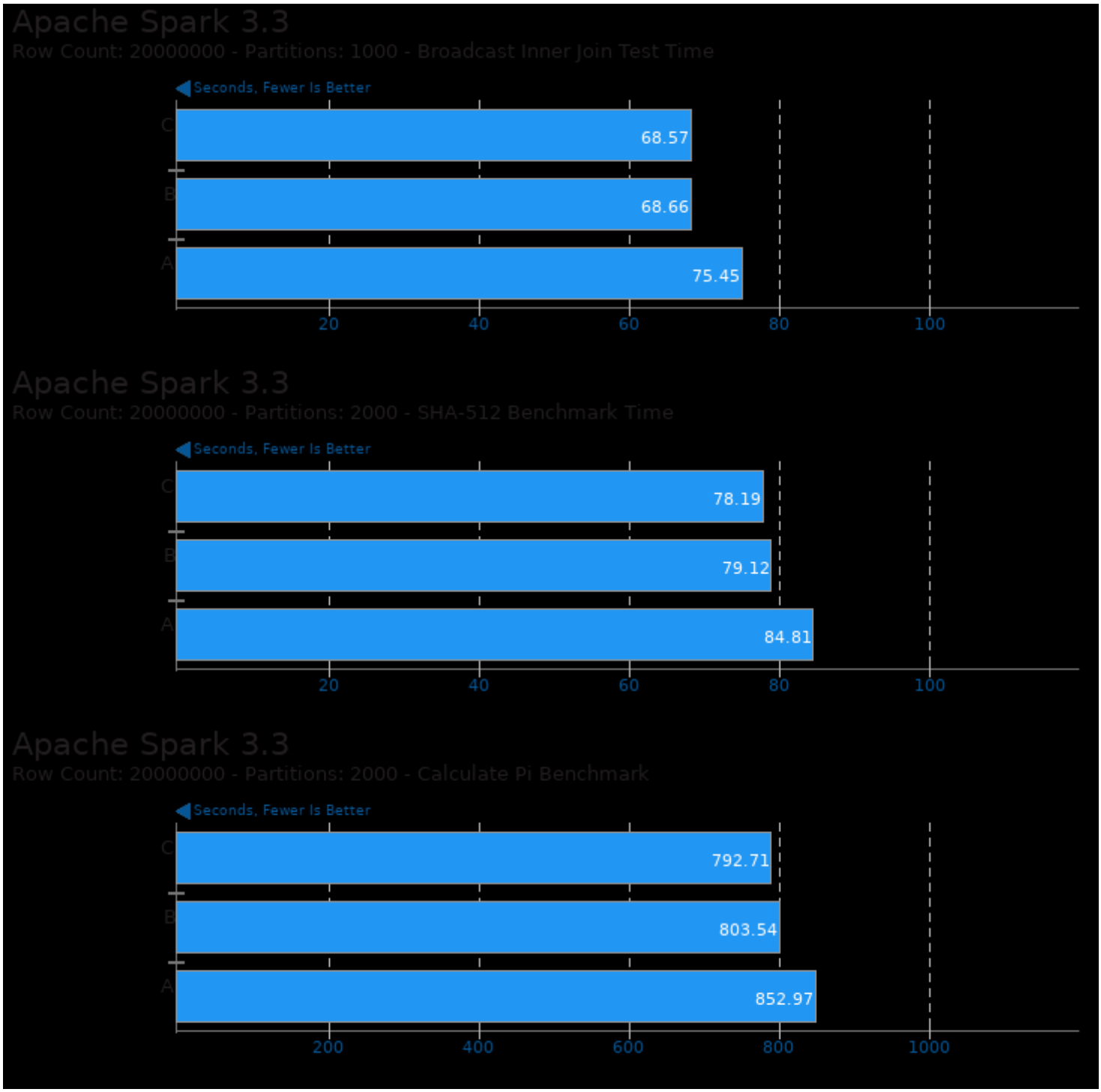
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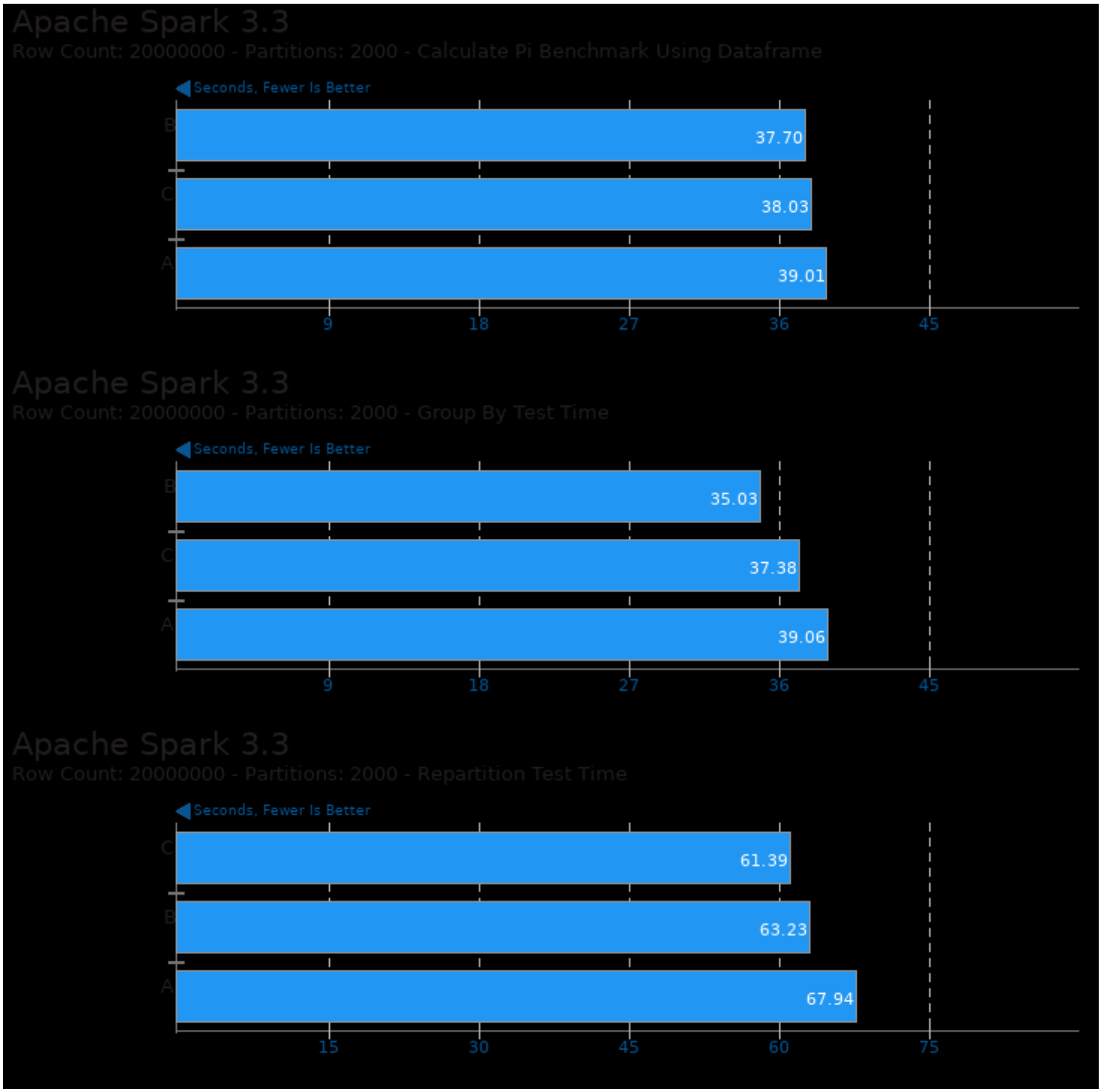
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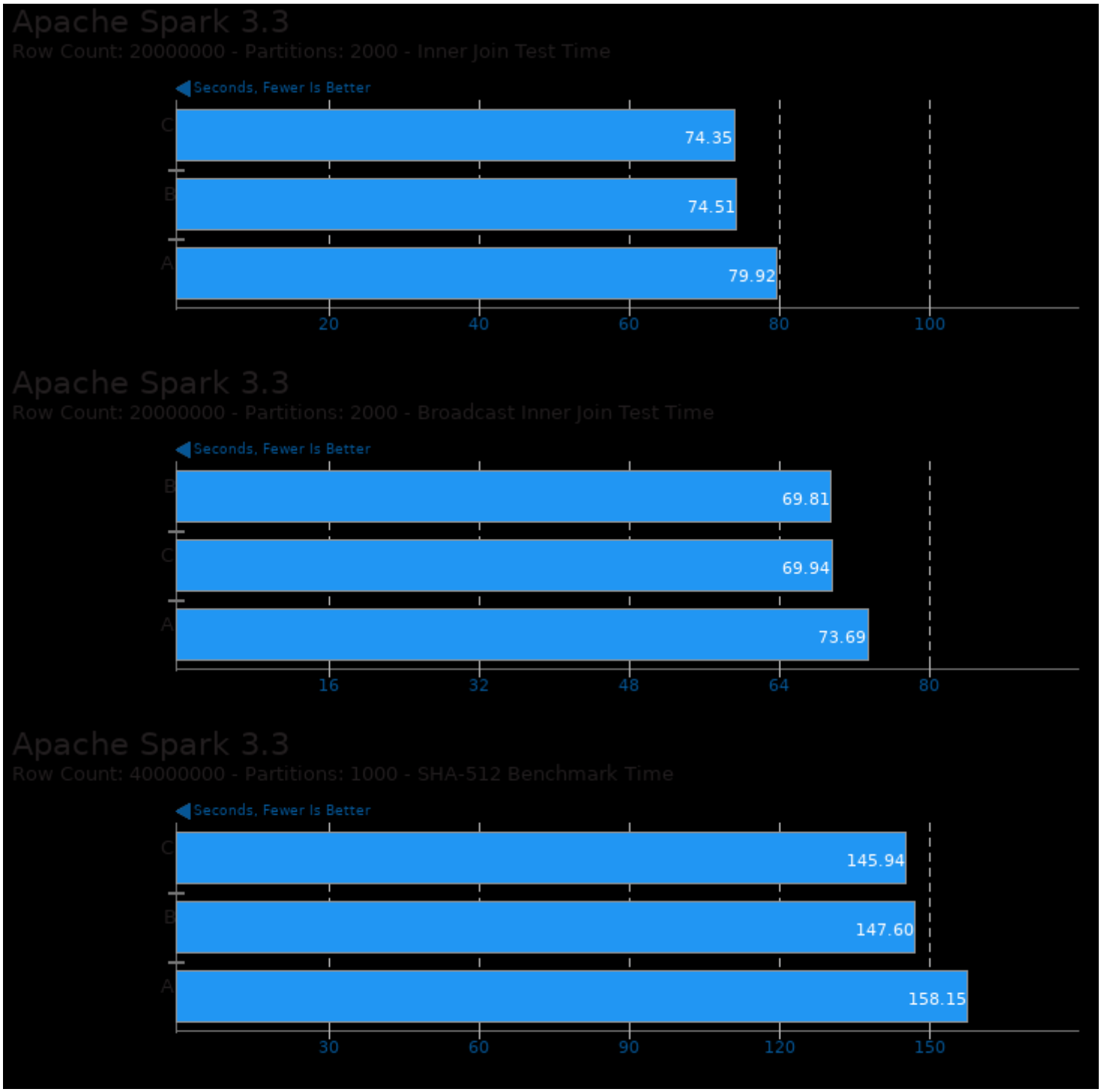
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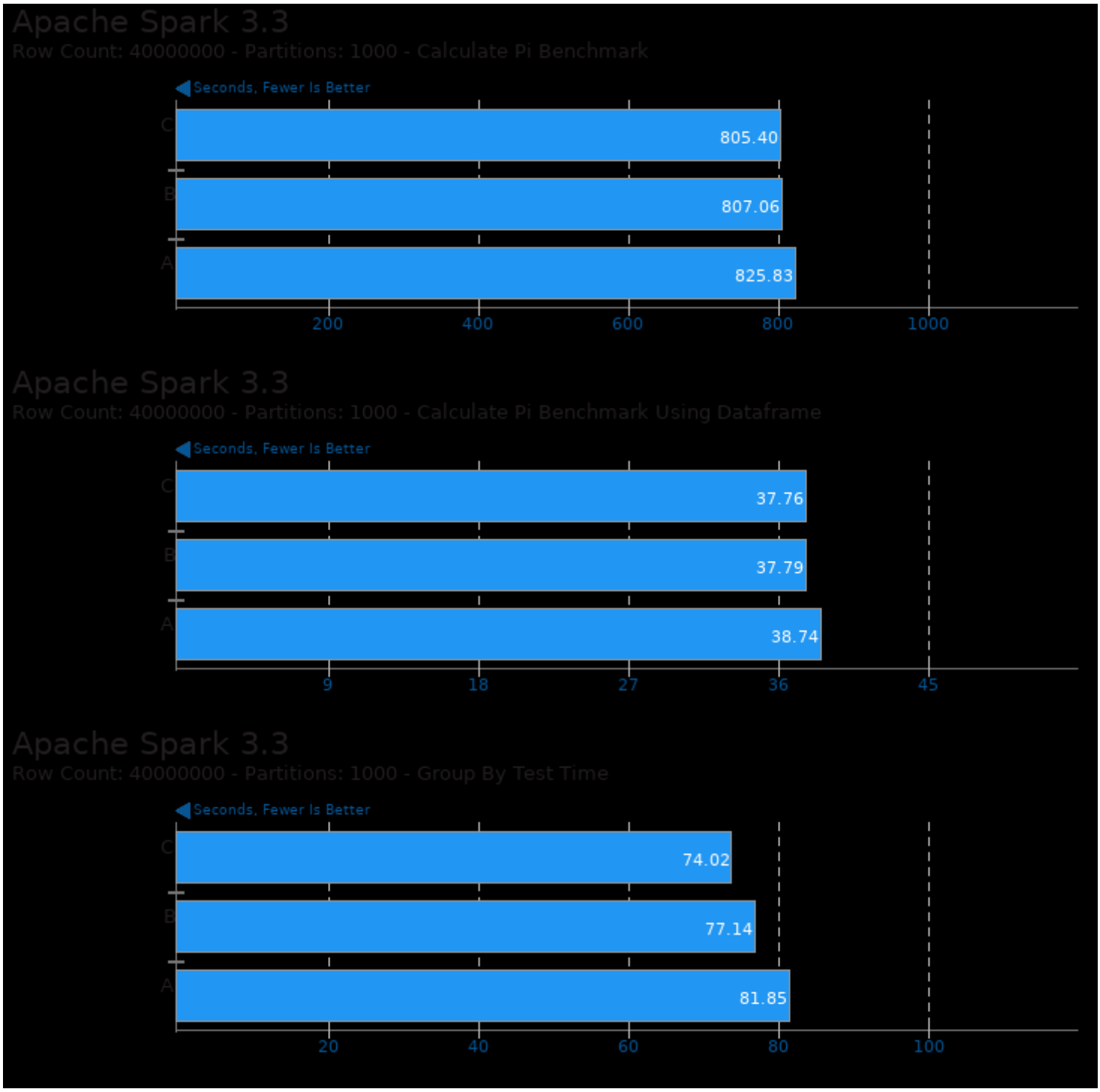
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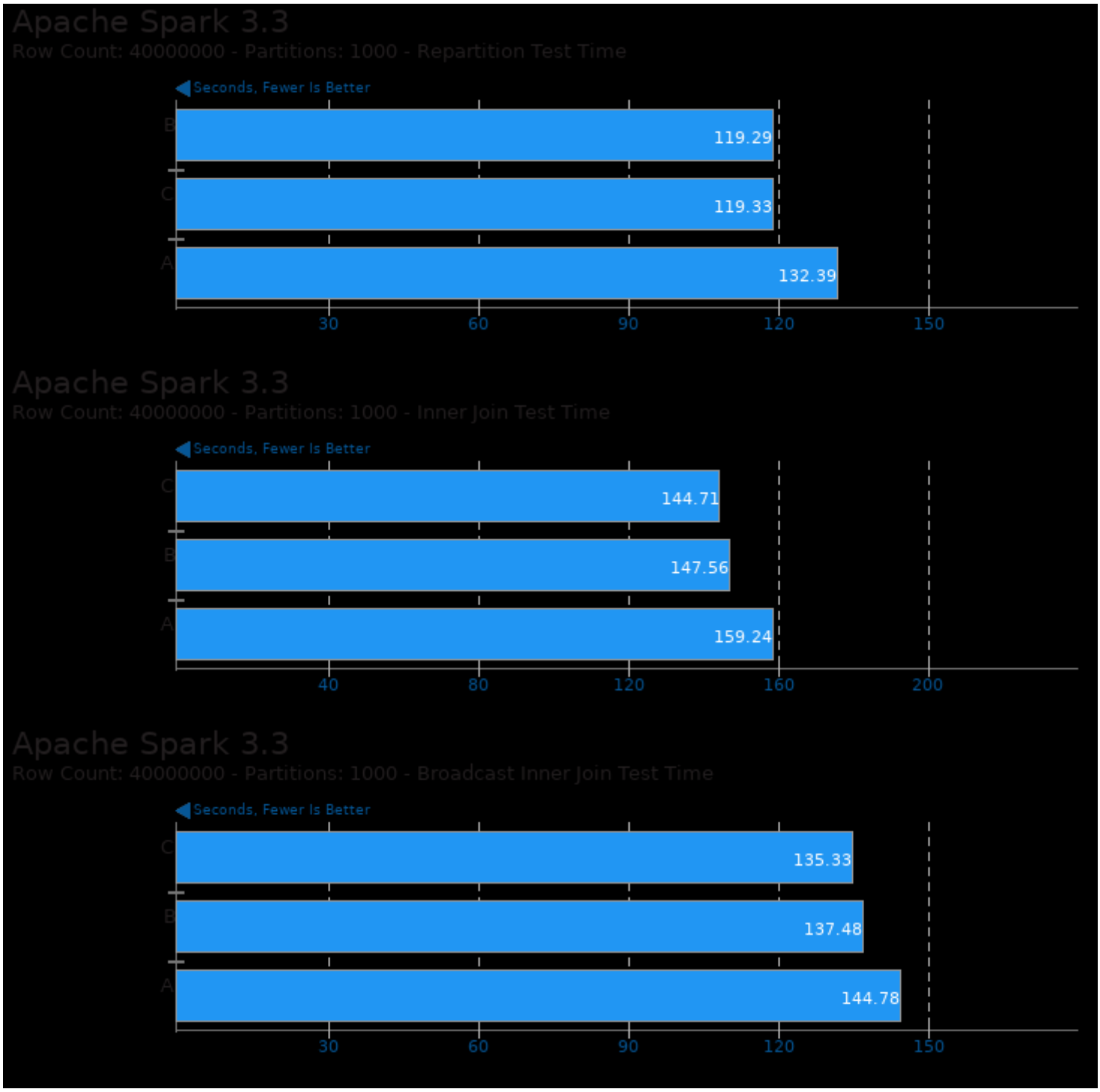
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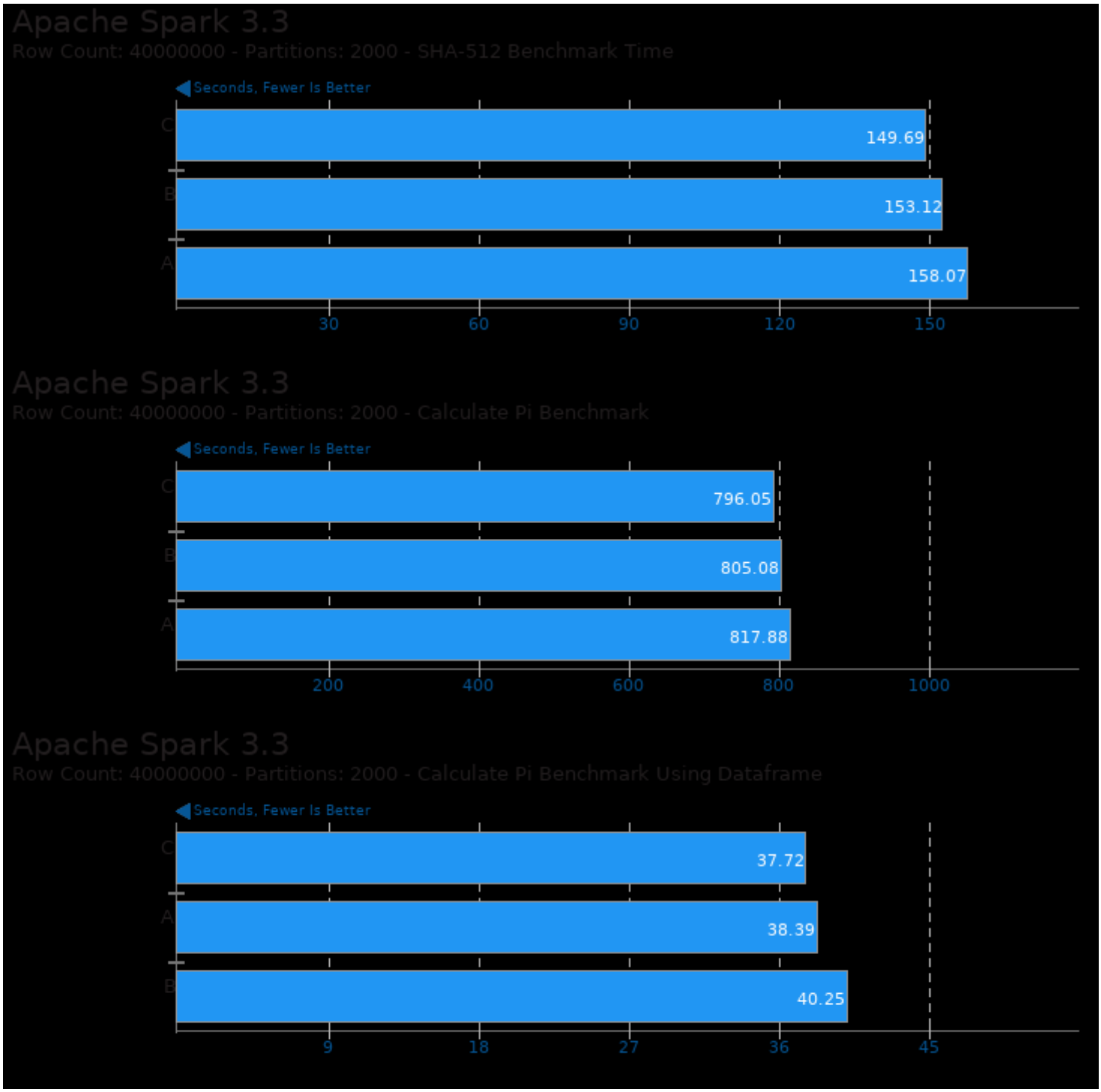
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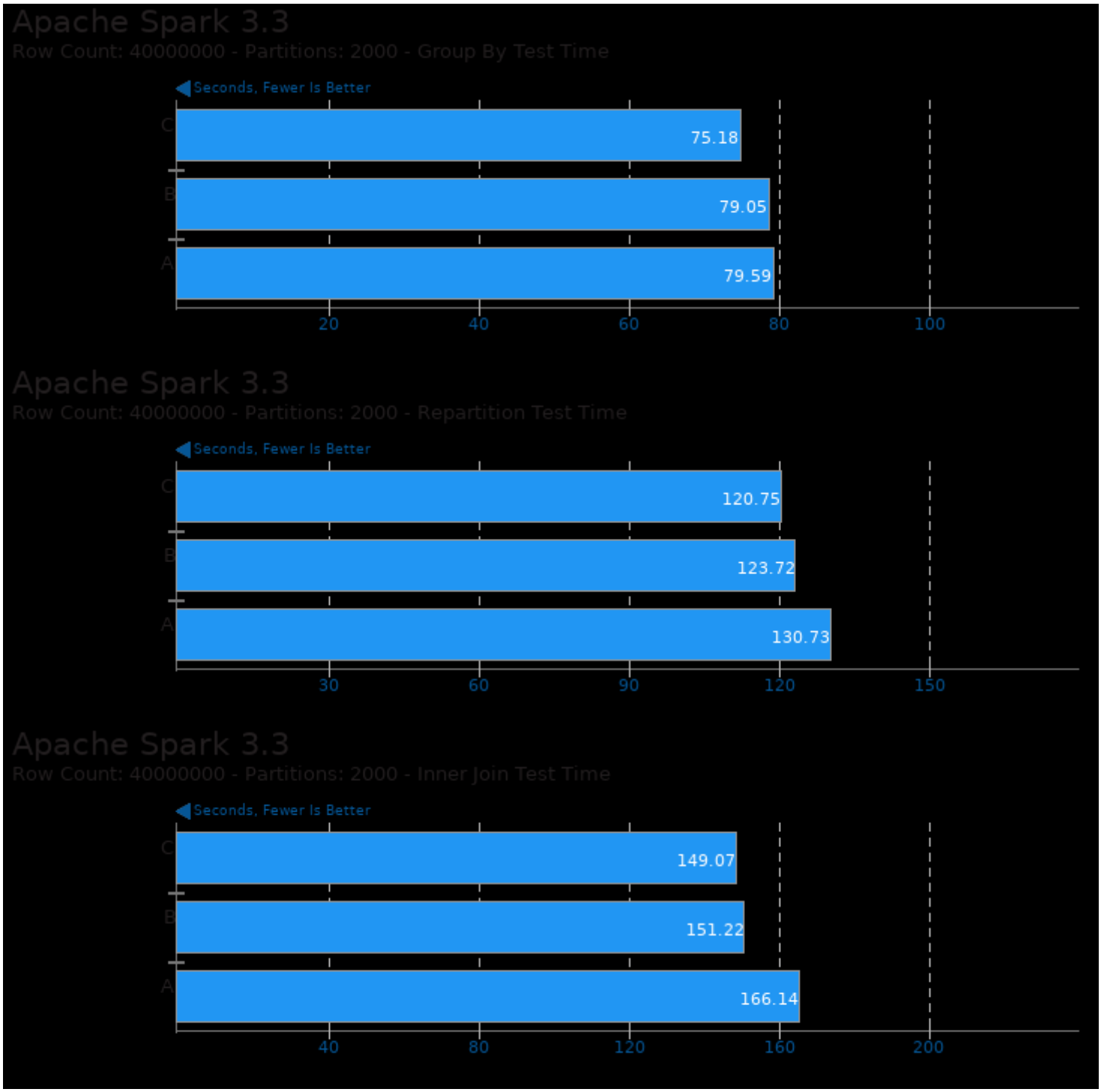
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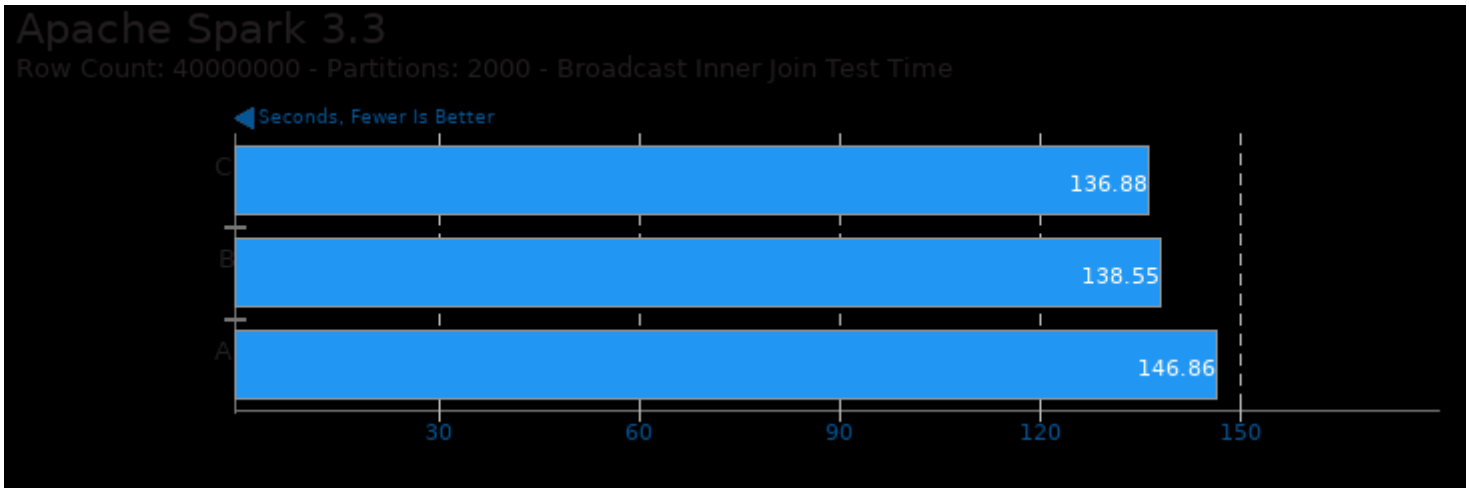
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