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CEBM021403

# Shop Manual

# 860E-1KT

## DUMP TRUCK

SERIAL NUMBERS **A30001 - A30003**

# KOMATSU®

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# DUMP TRUCK

## 860E

Machine model	Serial number
860E-1KT	A30003

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## Composition of shop manual

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Note 1: Always keep the latest version of this manual in accordance with this list and utilize accordingly.

The marks shown to the right of Form No. denote the following:

□: New module (to be filed additionally) ●: Revision (to be replaced for each Form No.)

Note 2: To file this shop manual in the special binder for management, handle it as follows:

- Place a divider on the top of each section in the file after matching the Tab No. with No. indicated next to each Section Name shown in the table below:
- File overview and other materials in sections in the order shown below and utilize them accordingly.

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 Fault Code A309: No brakes applied when expected ..... 10  
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2 L3C SYS: Time slice overflow CPU T2 .....	6
3 L3C SYS: Time slice overflow CPU T3 .....	6
4 L3C SYS: Time slice overflow CPU T4 .....	6
5 L3C SYS: Time slice overflow CPU T5 .....	6
6 L3C SYS: Time slice overflow CPU T6 .....	6
7 L3C SYS: Time slice overflow CPU T7 .....	6
8 L3C SYS: Time slice overflow CPU T8 .....	6
10 L2A SYS: Pulse inhibit/asa inhibit PSU–ONLINE .....	7
11 L3D SYS: Pulse inhibit/asa inhibit PSU–Start-up .....	8
12 L1A SYS: SIBAS® blower fault .....	9
13 L1B SYS: Undervoltage in SIBAS® battery for BRAM .....	10
14 L3C SYS: SIBAS® power supply failure 24V for pulse amplifier .....	11
15 L3C SYS: SIBAS® power supply failure +5V .....	12
16 L3C SYS: SIBAS® power supply failure +15V .....	13
17 L3C SYS: SIBAS® power supply failure –15V .....	14
18 L3C SYS: SIBAS® power supply failure +24V .....	15
19 L3C SYS: SIBAS® power supply failure –24V .....	16
21 L3C SYS: FPGA clock missing for PSU .....	18
22 L3C SYS: Pulse inhibit by reset in PSU from CPU .....	19
24 L3C SYS: General protection error (G10) .....	20
25 L3C SYS: Total block .....	21
26 L1B SYS: Permanent inhibit fault active .....	22
27 L1B SYS: Regular inhibit fault active .....	23
28 L1A SYS: GW Test stopped by A/D converter faulty .....	24
30 L3C DSP A: Initialization fault detected by DSP .....	25
31 L3C DSP A: SW-WatchdoG .....	26
32 L3C DSP A: Initialization fault detected by CPU .....	27
33 L1B DSP A: SW-Traco triggered .....	28
34 L1B DSP A: SW-Traco full .....	29
35 L3C DSP A: Time slice overflow T1 .....	30
36 L3C DSP A: Time slice overflow T2 .....	30
37 L3C DSP A: Time slice overflow T3 .....	30
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39 L1A DSP A: Communication HSCX data from DSP B missing .....	31
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41 L3C DSP A: Current offset during pulse block .....	33
42 L3C DSP A: Current offset during no pulse block .....	34
43 L3A DSP A: Overcurrent fault .....	35
44 L3C DSP A: Current transducer defective phase U .....	36
45 L3C DSP A: Current transducer defective phase W .....	37
48 L1A DSP A: Modulation software fault .....	38
49 L3A DSP A: Active current controller at limit .....	39

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52 L3C DSP A: Phase unbalance too large .....	5
53 L3A DSP A: Pulse block by DSP software.....	6
54 L3C DSP A: U/F Card defective.....	7
55 L3C DSP A: Difference in current of phase U overlimit.....	8
56 L3C DSP A: Difference in current of phase W over limit.....	9
60 L3C DSP B: Initialization fault detected by DSP .....	10
61 L3C DSP B: SW-Watchdog.....	11
62 L3C DSP B: Initialization fault detected by CPU .....	12
63 L1B DSP B: SW-Traco triggered.....	13
64 L1B DSP B: SW-Traco full .....	14
65 L3C DSP B: Time slice overflow T1 .....	15
66 L3C DSP B: Time slice overflow T2 .....	15
67 L3C DSP B: Time slice overflow T3 .....	15
68 L3C DSP B: Time slice overflow T4 .....	15
69 L1A DSP B: Communication HSCX data from DSP A missing.....	16
70 L1A DSP B: Communication HSCX data from DSP T missing .....	17
71 L3C DSP B: Current offset during pulse block .....	18
72 L3C DSP B: Current offset during no pulse block.....	19
73 L3A DSP B: Overcurrent fault .....	20
74 L3C DSP B: Current transducer defective phase V .....	21
75 L3C DSP B: Current transducer defective phase W .....	22
78 L1A DSP B: Modulation software fault .....	23
79 L3A DSP B: Active current controller at limit.....	24
80 L3A DSP B: Active current reference at limit .....	25
81 L1A DSP B: Braking chopper controller at limit.....	26
82 L3C DSP B: Phase unbalance too large .....	27
83 L3A DSP B: Pulse block by DSP software.....	28
84 L3C DSP B: U/F Card defective.....	29
85 L3C DSP B: Difference in current of phase V over limit.....	30
86 L3C DSP B: Difference in current of phase W over limit.....	31
90 L3C DSP T: Initialization fault detected by DSP .....	32
91 L3C DSP T: SW-Watchdog .....	33
92 L3C DSP T: Initialization fault detected by CPU.....	34
93 L1B DSP T: SW-Traco triggered .....	35
94 L1B DSP T: SW-Traco full .....	36
95 L3C DSP T: Time slice overflow T1 .....	37
96 L3C DSP T: Time slice overflow T2.....	37
97 L3C DSP T: Time slice overflow T3.....	37
98 L3C DSP T: Time slice overflow T4.....	37
99 L1A DSP T: Communication HSCX data from DSP A missing .....	38

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100 L1A DSP T: Communication HSCX data from DSP B missing.....	3
101 L3C DSP T: Current offset during pulse block.....	4
102 L3C DSP T: Current offset during no pulse block.....	5
103 L3A DSP T: Overcurrent fault.....	6
104 L3C DSP T: Current transducer defective phase U.....	7
105 L3C DSP T: Current transducer defective phase V.....	8
106 L3C DSP T: Current transducer defective phase W.....	9
107 L3C DSP T: Sum of output current not equal zero.....	10
108 L1A DSP T: Modulation software fault.....	11
109 L1A DSP T: Voltage controller at limit.....	12
112 L3C DSP T: Phase unbalance too large.....	13
113 L3A DSP T: Pulse block by DSP software.....	14
114 L3C DSP T: U/F Card defective.....	15
117 L3C DSP T: Crowbar fired by DSP T.....	16
119 L1C DSP T: Voltage transducer U34 not ok.....	17
120 L3C IO: Supervision bus clock.....	18
121 L3C IO: Supervision I/O clock.....	19
122 L3C IO: Incorrect FPGA version identifier.....	20
123 L3C IO: Incorrect FPGA application version identifier.....	21
124 L3C IO: Incorrect module version identifier.....	22
125 L3C/L1A IO: AD Converter faulty.....	23
126 L3C IO: GW Comparator faulty during start-up test.....	24
127 L3C IO: Test voltage not equal zero.....	25
128 L1A IO: SIBAS® Temperature out of range.....	26
129 L3C IO: Incorrect EBIN card identifier.....	27
130 L3C IO: Front plug monitoring.....	28
131 L3C IO: CPU Watchdog triggered.....	29
132 L3C IO: DSP A Watchdog triggered.....	30
133 L3C IO: DSP B Watchdog triggered.....	31
135 L3C IO: CPU Reset triggered.....	33
138 L1B IO: CPU Traco triggered.....	34
146 L3A IO: Pulse block from I/O.....	35
150 L3A IO: DC link voltage A level 1 exceeded.....	36
151 L3A IO: DC link voltage B level 1 exceeded.....	37
152 L3C IO: Trolley line overvoltage.....	38
154 L3B IO: Trolley line overcurrent.....	39
155 L2B IO: Trolley line current transducer faulty.....	40
156 L2B IO: Trolley line voltage transducer faulty.....	41
160 L3A IO: Throttle pedal out of range.....	42
161 L3A IO: Retard pedal out of range.....	43
162 L1A IO: Cruise speed control module out of range.....	44
180 L3C UWSA1: Supervision bus clock.....	45
181 L3C UWSA1: Supervision module clock.....	46
182 L3C UWSA1: Incorrect FPGA version identifier.....	47
183 L3C UWSA1: Incorrect FPGA project identifier.....	48

184 L3C UWSA1: GW Comparator faulty during start-up test .....	49
185 L1A UWSA1: ADC Faulty .....	50
186 L3C UWSA1: Configuration failure .....	51
187 L1A UWSA1: Hardware failure counter / processor .....	52
188 L3A UWSA1: Peak current protection active .....	53
189 L3D UWSA1: Peak current protection pulse start .....	54
190 L3D UWSA1: Number of peak current protection >limit .....	55
191 L3D UWSA1: Supervision switching frequency .....	56
193 L1A UWSA1: Overvoltage level 1 exceeded .....	57
196 L3D UWSA1: Limit 5 overcurrent phase U .....	58
197 L3D UWSA1: Limit 5 overcurrent phase V .....	58
198 L3D UWSA1: Limit 5 overcurrent phase W .....	58
199 L3D UWSA1: Limit 5 overvoltage DC bus .....	59

## Drive system fault code table, part 4

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201 L3D UWSA1: Checkback INVA1 L1U faulty .....	4
202 L3D UWSA1: Checkback INVA1 L1L faulty .....	4
203 L3D UWSA1: Checkback INVA1 L2U faulty .....	4
204 L3D UWSA1: Checkback INVA1 L2L faulty .....	4
205 L3D UWSA1: Checkback INVA1 L3U faulty .....	4
206 L3D UWSA1: Checkback INVA1 L3L faulty .....	4
207 L3D UWSA1: Checkback chopper A faulty .....	4
210 L3C UWSB1: Supervision bus clock .....	5
211 L3C UWSB1: Supervision module clock .....	6
212 L3C UWSB1: Incorrect FPGA version identifier .....	7
213 L3C UWSB1: Incorrect FPGA project identifier .....	8
214 L3C UWSB1: GW Comparator faulty during start-up test .....	9
215 L1A UWSB1: ADC Faulty .....	10
216 L3C UWSB1: Configuration failure .....	11
217 L1A UWSB1: Hardware failure counter / processor .....	12
218 L3A UWSB1: Peak current protection active .....	13
219 L3D UWSB1: Peak current protection pulse start .....	14
220 L3D UWSB1: Number of peak current protection >limit .....	15
221 L3D UWSB1: Supervision switching frequency .....	16
223 L1A UWSB1: Overvoltage level 1 exceeded .....	17
226 L3D UWSB1: Limit 5 overcurrent phase V .....	18
227 L3D UWSB1: Limit 5 overcurrent phase U .....	18
228 L3D UWSB1: Limit 5 overcurrent phase W .....	18
229 L3D UWSB1: Limit 5 overvoltage DC bus .....	19
231 L3D UWSB1: Checkback INVB1 L1U Faulty .....	20
232 L3D UWSB1: Checkback INVB1 L1L Faulty .....	20
233 L3D UWSB1: Checkback INVB1 L2U Faulty .....	20
234 L3D UWSB1: Checkback INVB1 L2L Faulty .....	20
235 L3D UWSB1: Checkback INVB1 L3U Faulty .....	20
236 L3D UWSB1: Checkback INVB1 L3L Faulty .....	20
237 L3D UWSB1: Checkback chopper B Faulty .....	20

240 L3C UWSA2: Supervision bus clock .....	21
241 L3C UWSA2: Supervision module clock .....	22
242 L3C UWSA2: Incorrect FPGA version identifier .....	23
243 L3C UWSA2: Incorrect FPGA project identifier .....	24
244 L3C UWSA2: GW Comparator faulty during start-up test .....	25
245 L1A UWSA2: ADC Faulty .....	26
246 L3C UWSA2: Configuration failure .....	27
247 L1A UWSA2: Hardware failure counter / processor .....	28
248 L3A UWSA2: Peak current protection active .....	29
249 L3D UWSA2: Peak current protection pulse start .....	30
250 L3D UWSA2: Number of peak current protection >limit .....	31
251 L3D UWSA2: Supervision switching frequency .....	32
253 L1A UWSA2: Overvoltage level 1 exceeded .....	33
256 L3D UWSA2: Limit 5 overcurrent phase U1 .....	34
257 L3D UWSA2: Limit 5 overcurrent phase V1 .....	34
258 L3D UWSA2: Limit 5 overcurrent phase W1 .....	34
259 L3D UWSA2: Limit 5 overvoltage DC bus .....	35
261 L3D UWSA2: Checkback INVA2 L1U faulty .....	36
262 L3D UWSA2: Checkback INVA2 L1L faulty .....	36
263 L3D UWSA2: Checkback INVA2 L2U faulty .....	36
264 L3D UWSA2: Checkback INVA2 L2L faulty .....	36
265 L3D UWSA2: Checkback INVA2 L3U faulty .....	36
266 L3D UWSA2: Checkback INVA2 L3L faulty .....	36
267 L3D UWSA2: Checkback chopper C faulty .....	36
270 L3C UWSB2: Supervision bus clock .....	37
271 L3C UWSB2: Supervision module clock .....	38
272 L3C UWSB2: Incorrect FPGA version identifier .....	39
273 L3C UWSB2: Incorrect FPGA project identifier .....	40
274 L3C UWSB2: GW Comparator faulty during start-up test .....	41
275 L1A UWSB2: ADC Faulty .....	42
276 L3C UWSB2: Configuration failure .....	43
277 L1A UWSB2: Hardware failure counter / processor .....	44
278 L3A UWSB2: Peak current protection active .....	45
279 L3D UWSB2: Peak current protection pulse start .....	46
280 L3D UWSB2: Number of peak current protection >limit .....	47
281 L3D UWSB2: Supervision switching frequency .....	48
283 L1A UWSB2: Overvoltage level 1 exceeded .....	49
286 L3D UWSB2: Limit 5 overcurrent phase V1 .....	50
287 L3D UWSB2: Limit 5 overcurrent phase U1 .....	50
288 L3D UWSB2: Limit 5 overcurrent phase W1 .....	50
289 L3D UWSB2: Limit 5 overvoltage DC bus .....	51
291 L3D UWSB2: Checkback INVB2 L1U Faulty .....	52
292 L3D UWSB2: Checkback INVB2 L1L Faulty .....	52
293 L3D UWSB2: Checkback INVB2 L2U Faulty .....	52
294 L3D UWSB2: Checkback INVB2 L2L Faulty .....	52
295 L3D UWSB2: Checkback INVB2 L3U Faulty .....	52

296 L3D UWSB2: Checkback INVB2 L3L Faulty .....	52
297 L3D UWSB2: Checkback chopper D Faulty .....	52
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300 L3C UWSST: Supervision bus clock .....	4
301 L3C UWSST: Supervision module clock .....	5
302 L3C UWSST: Incorrect FPGA version identifier .....	6
303 L3C UWSST: Incorrect FPGA project identifieR .....	7
304 L3C UWSST: GW Comparator faulty during start-up test .....	8
305 L1A UWSST: ADC Faulty .....	9
306 L3C UWSST: Configuration failure .....	10
307 L1A UWSST: Hardware failure counter / processor .....	11
308 L3A UWSST: Peak current protection active .....	12
310 L3D UWSST: Number of peak current protection >limit .....	13
311 L3D UWSST: Supervision switching frequency .....	14
314 L3C UWSST: Crowbar is fired without command .....	15
316 L3D UWSST: Limit 5 overcurrent phase U .....	16
317 L3D UWSST: Limit 5 overcurrent phase V .....	16
318 L3D UWSST: Limit 5 overcurrent phase W .....	16
319 L3D UWSST: Limit 5 overvoltage DC bus .....	17
321 L3D UWSST: Checkback INVST L1U Faulty .....	18
322 L3D UWSST: Checkback INVST L1L Faulty .....	18
323 L3D UWSST: Checkback INVST L2U Faulty .....	18
324 L3D UWSST: Checkback INVST L2L Faulty .....	18
325 L3D UWSST: Checkback INVST L3U Faulty .....	18
326 L3D UWSST: Checkback INVST L3L Faulty .....	18
327 L3C UWSST: Checkback crowbar faulty .....	19
330 L1A BUS: CAN Communication failure .....	20
331 L1A BUS: Serial link communication failure .....	21
332 L1A BUS: Truck is over loaded .....	22
333 L1B TR: Transient traco is triggered .....	23
334 L1B TR: Transient traco is full .....	24
340 L1A ETM: ADC Failure for ETM1 .....	25
341 L1A ETM: ADC Failure for ETM2 .....	26
342 L1A ETM: ADC Failure for ETM3 .....	27
343 L1A ETM: ADC Failure for ETM4 .....	28
344 L1A MEFA: ADC Failure .....	29
345 L3C HL: Gate unit power supply A defective .....	30
346 L3C HL: Gate unit power supply B defective .....	31
351 L1A DRZ: LIMP Mode A active .....	32
352 L1A DRZ: Limp mode B active .....	33
353 L1A DRZ: Low battery voltage .....	34
354 L1B BUS: Engine floor input increasing minimum engine speed .....	35
355 L1B DM: Data store switch pressed .....	36
356 L1B DM: Diagnosis memory configuration failure .....	37
357 L1B DM: Diagnosis memory occupation > 75% .....	38

358 L1B DM: Diagnosis memory full .....	39
359 L1B DM: Test event .....	40
360 L2A EXT: Main blower air flow supervision .....	41
361 L2A EXT: Minimum engine speed supervision .....	42
362 L1A EXT: Main blower pressure switch malfunction.....	43
363 L1A EXT: Shift lever supervision .....	44
364 L2A EXT: Engine derate protection active.....	45
365 L1A EXT: Truck external plug monitoring .....	46
366 L1A EXT: Grid dry mode active .....	47
367 L3A EXT: DC Power off mod request (rest switch on).....	48
368 L1A EXT: Steering encoder defective.....	49
369 L1A EXT: Doppler sensor defective.....	50
370 L1A EXT: Auto lube control defective .....	51
372 L1A EXT: Service brake pressed at high speed .....	52
373 L1A EXT: Service brake on above speed limit .....	53
374 L1A EXT: Anti-roll control malfunction .....	54
375 L3B BEF: CB301 Circuit breaker defective .....	55
376 L3B BEF: K303/K304 Contactor defective .....	56
382 L3B BEF: K103 Feedback defective .....	57
383 L3B BEF: K105 Feedback defective .....	58
384 L1A BEF: K107 Feedback defective .....	59
385 L1A BEF: K109 Feedback defective .....	60
386 L1A BEF: K111 Feedback defective .....	61
387 L1A BEF: Limp mode selector defective .....	62
388 L2B BEF: CB113 Tripped .....	63
390 L3D IUW: Output current supervision INV A .....	64
391 L3D IUW: Output current supervision INV B .....	65
392 L3B IUW: Precharge supervision 1 .....	66
393 L3B IUW: Precharge supervision 2 .....	67
394 L3A IUW: DC Link undervoltage .....	68
395 L2B IUW: Trolley line undervoltage.....	69
397 L3B IUW: Field regulator current setpoint supervision .....	70
398 L2B IUW: Field regulator output current supervision.....	71
399 L3B IUW: Alternator overcurrent protection .....	72

## Drive system fault code table, part 6

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400 L2C IUW: Alternator overload warning.....	3
401 L2B IUW: Alternator overload protection.....	4
402 L3C IUW: Alternator AC current sensor faulty.....	5
403 L2A IUW: DC Link voltage out of range in propel.....	6
404 L3A IUW: DC Link voltage out of range retard.....	7
405 L3A IUW: DC Link voltage out of range for ST operation.....	8
406 L3B IUW: DC Link controller supervision .....	9
407 L2C IUW: Motor torque square T supervision .....	10
408 L2C IUW: Motor current square T supervision .....	11
409 L1A IUW: DC Link discharge time exceeded limit.....	12

410 L2B IUW: Ground fault at positive DC link detected .....	13
411 L2B IUW: Ground fault at negative DC link detected .....	14
412 L2B IUW: Ground fault at AC side detected .....	15
413 L2B IUW: Ground fault .....	16
414 L3C IUW: Chopper A current supervision .....	17
415 L3C IUW: Chopper B current supervision .....	18
416 L3C IUW: Chopper C current supervision .....	19
417 L3C IUW: Chopper D current supervision .....	20
418 L3D IUW: Output current supervision INV ST .....	21
419 L2A IUW: Vehicle overspeed supervision .....	22
419 L2A IUW: Vehicle overspeed supervision .....	22
420 L1A IUW: DC Link voltage sensor A faulty .....	23
421 L1A IUW: DC Link voltage sensor B faulty .....	24
422 L3C IUW: ST Inverter failure .....	25
423 L3B IUW: DC Grid fan circuit failure .....	26
424 L2B IUW: Cooling water pressure out of range .....	27
425 L2B IUW: Cooling water level out of range .....	28
426 L1A IUW: Water pump motor overtemperature .....	29
427 L1A IUW: Retard limit supervision .....	30
428 L1A DRZ: Front wheel A speed sensor supervision .....	31
429 L1A DRZ: Front wheel B speed sensor supervision .....	32
430 L3D DRZ: Motor A speed sensor supervision .....	33
431 L3D DRZ: Motor B speed sensor supervision .....	34
432 L3C DRZ: Alternator speed sensor supervision .....	35
433 L2A DRZ: Motor A maximum speed exceeded .....	36
434 L2A DRZ: Motor B maximum speed exceeded .....	37
435 L1A DRZ: Alternator maximum speed exceeded .....	38
436 L3A DRZ: Motor A/B rotation inconsistency .....	39
437 L3A DRZ: Motor A torque supervision .....	40
438 L3A DRZ: Motor B torque supervision .....	41
439 L3C SIV: Start-up sequence can't pass due to GUPS failure .....	42
440 L3C SIV: Start-up sequence can't pass due to K103/K105 failure .....	43
441 L3C SIV: Start-up sequence can't pass due to IGBT failure .....	44
442 L3C SIV: Start-up sequence can't pass due to CB301 OR K303 failure .....	45
443 L3C SIV: Start-up sequence can't pass due to crowbar failure .....	46
447 L1A SIV: Direct trolley engage sequence supervision .....	47
448 L1A SIV: Direct trolley disengage sequence supervision .....	48

## Drive system fault code table, part 7

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450 L1A TMP: SIBAS® Temperature < low limit .....	4
451 L1A TMP: SIBAS® Temperature > warning limit .....	5
452 L3B TMP: SIBAS® Temperature > shutdown limit .....	6
453 L3A TMP: IGBT Module A101 temperature < low limit .....	7
454 L2C TMP: IGBT Module A101 temperature > APRS limit .....	8
455 L3A TMP: IGBT Module A101 temperature > shutdown limit .....	9
456 L3A TMP: IGBT Module A102 temperature < low limit .....	10

457 L2C TMP: IGBT Module A102 temperature > APRS limit .....	11
458 L3A TMP: IGBT Module A102 temperature > shutdown limit .....	12
459 L3A TMP: IGBT ModulE A201 temperature < low limit .....	13
460 L2C TMP: IGBT Module A201 temperature > APRS limit .....	14
461 L3A TMP: IGBT Module A201 temperature > shutdown limit .....	15
462 L3A TMP: IGBT Module A202 temperature < low limit .....	16
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