# SERVICE BULLETIN

NON-MODIFICATION SERVICE BULLETIN — NO. 3 BEARING — REDUCED MASTER MAGNETIC CHIP DETECTOR INSPECTION INTERVAL FOR SUSPECT POPULATION (LOT B)

MODEL APPLICATION

V2522-A5, V2524-A5, V2527-A5, V2527E-A5, V2527M-A5, V2530-A5, V2533-A5

BULLETIN ISSUE SEQUENCE

V2500 Series 72-0672

ATA NUMBER

72-32-24



Compliance Category

3

P&W Distribution Code

V2500

## Summary

The purpose of this Service Bulletin is to introduce a 125 hour reduced inspection interval for the Master Magnetic Chip Detector (MMCD) for No. 3 bearings contained in Lot B of the suspect population.

## Planning Information

### Effectivity Data

#### Engine Models Applicable

1. V2522-A5, V2524-A5, V2527M-A5, V2527-A5, V2527E-A5, V2530-A5, V2533-A5 Engine with serial numbers:

   V10368, V10399, V10520, V10617, V10743, V10846, V11095, V11183, V11287, V11379, V11380, V11412, V11710, V11740, V11796, V11818, V12180, V12455, V12693, V12750, V15020, V16581, V16582, V16584, V16585, V16586, V16587, V16588, V16589, V16592, V16593, V16594, V16595, V16597, V16598, V16600, V16606, V16608, V16609, V16610, V16611, V16612, V16613, V16614, V16615, V16616, V16617, V16619, V16620, V16621, V16623, V16624, V16625, V16626, V16627, V16628, V16645, V16650, V16651, V16656, V16657, V16658, V16659, V16660, V16661, V16662, V16663, V16664, V16665, V16666, V16667, V16668, V16669, V16670, V16671, V16672, V16674, V16675, V16676, V16677, V16678, V16683, V16684, V16685, V16686, V16687, V16688, V16697, V16698, V16699, V16712, V16713, V16715, V16716, V16717, V16718, V16719, V16720, V16721, V16731, V16735, V16739, V16740, V16741, V16742, V16744, V16745, V16746, V16750, V16752, V16753, V16754, V16755, V16756, V16757, V16759, V16767, V16791, V16792, V16793, V16795, V16799, V16800, V16801, V16807, V16808, V16809, V16810, V16822, V16823, V16829, V16848, V16850, V16854, V16858, V16864, V16866, V16867, V16868, V16869, V16870, V16871, V16872, V16873, V16875, V16876, V16881, V16882, V16883, V16885, V16886, V16890, V16891, V16895, V16896, V16897, V16898, V16899, V16900, V16901, V16902, V16903, V16905, V16910, V17081, V17082, V17090, V17092, V17108, V17110, V17401, V17402, V17407, V17409, V17411, V17412, V17419, V17422, V17423, V17424, V17427, V17430, V17432, V17435, V17437, V17440, V17441, V17442, V17443, V17444, V17445, V17446, V17447, V17448, V17449, V17450, V17451, V17452, V17453, V17454, V17456, V17457, V17458, V17459, V17460, V17461, V17464, V17465, V17470, V17472, V17473, V17474, V17475, V17476, V17477, V17478, V17479, V17480, V17481, V17482, V17483, V17484, V17486, V17487, V17498, V17501, V17502, V17508, V17509, V17510, V17511, V17512, V17514, V17590, V17593, V17601, V17618, V17622, V17623, V17624, V17625, V17627, V17628, V17629, V17630, V17771

2. Appendix 1 — Listing of known engine installations of suspect Lot B No. 3 bearings.

### Concurrent Requirements

There are no concurrent requirements.

### Reason

1. Condition: IAE has observed characteristic lives for bearings produced from two ball Lots (A and B) that are statistically lower than the general population.

2. Background: Since January 2015, there have been four confirmed low time No. 3 bearing events containing No. 3 bearings produced from ball Lot A and two confirmed

low time events from Lot B. There are separate Non-Modification Service Bulletin (NMSB's) for each No. 3 Bearing suspect ball Lot. Lot B subject of this NMSB, and reference 3, Service Bulletin No. V2500-ENG-72-0671 for Lot A).

3. Objective: This NMSB introduces a 125 hour reduced inspection interval for the Master MCD for engines that have a suspect Lot B bearing installed. This inspection interval will reduce the risk of subsequent distress that could lead to an In-Flight Shut Down (IFSD).The MMCD inspection procedure is applicable to the suspect Lot B bearings and associated engines listed in Appendix 1.

4. Substantiation: Actions contained within this Service Bulletin have been substantiated through engineering analysis.

5. Effects of Bulletin on:

   Removal/Installation: Not affected.

   Disassembly/Assembly: Not affected.

   Cleaning: Not affected.

   Inspection/Check: Not affected.

   Repair: Not affected.

   Testing: Not affected.

6. Supplemental Information:

   None.

Description

This NMSB introduces a 125 hour reduced inspection interval for the MMCD (Position 1). The MMCD should be inspected at an interval not to exceed 125 flight hours or until the suspect No. 3 bearing is replaced. After replacement of the bearing, the 125 hour reduced inspection interval is no longer required.

Compliance

Category 3

Accomplish this NMSB within 125 flight hours from release of this NMSB. IAE recommends this decreased inspection interval for the affected population in Appendix 1 until the bearing listed in the Appendix has been replaced during a shop visit.

Approval Data

The compliance statement and the procedures described in this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine model listed.

The aircraft Type Certificate holder has been informed of this inspection.

Manpower

1. In Service

   A. To inspect the MMCD (Position 1) and further inspection if required.

   To gain access ..... 0.3 hours

   To inspect ..... 0.2 hours

To close up ..... 0.3 hours

Total ..... 0.8 hours

2. At Overhaul

..... Not Applicable.

Weight and Balance

1. Weight Change

   None.

2. Moment Arm

   No Effect.

3. Datum

   Engine Front Mount Centerline (Power Plant Station (PPS) 100).

Electrical Load Data

This Service Bulletin has no effect on the aircraft electrical load.

Software Accomplishment Summary

Not Applicable.

References

NOTE: In 2014 IAE converted the V2500 Technical Publications to a new system. As a result of the conversion, some manuals were consolidated. All manuals received new P&W part numbers. To facilitate the use of this Service Bulletin, a Technical Publications conversion table is provided in the Appendix.

1. ATA Locator — 72-32-24.
2. V2500 Aircraft Maintenance Manual.
3. V2500 Service Bulletin V2500-ENG-72-0671 (Non-Modification Service Bulletin — No. 3 Bearing — Reduced Master Magnetic Chip Detector Inspection Interval For Suspect Population (Lot A).

Other Publications Affected

NOTE: In 2014 IAE converted the V2500 Technical Publications to a new system. As a result of the conversion, some manuals were consolidated. All manuals received new P&W part numbers. To facilitate the use of this Service Bulletin, a Technical Publications conversion table is provided in the Appendix.

1. None.

Interchangeability of Parts

Not Applicable.

Information in the Appendix

Alternate Accomplishment Instructions (No)

Progression Charts (No)

Added Data (Yes)

Revision to Table of Limits (No)

Inspection Procedures (No)

Material Information

Material — Price and Availability

Not Applicable.

Industry Support Program

Not Applicable.

Tooling — Price and Availability

Special tools are not required to accomplish this Service Bulletin.

Reidentified Parts

Not Applicable.

Other Material Information Data

Not Applicable.

Accomplishment Instructions

CAUTION: IN ORDER TO REDUCE THE POTENTIAL FOR MULTIPLE ENGINE IN-FLIGHT SHUT DOWNS, POWER LOSS, OR OTHER ANOMALIES DUE TO MAINTENANCE ERROR, IAE RECOMMENDS THAT OPERATORS AVOID PERFORMING MAINTENANCE ON MULTIPLE ENGINES INSTALLED ON THE SAME AIRCRAFT AT THE SAME TIME. IF IT IS NOT POSSIBLE TO AVOID MAINTENANCE ON MORE THAN ONE ENGINE AT THE SAME TIME, IAE RECOMMENDS THAT ADDITIONAL CONTROLS BE APPLIED IN ORDER TO ENSURE THAT MAINTENANCE TASKS HAVE BEEN COMPLETED AS DEFINED. MAINTENANCE GUIDELINES SHOULD BE REVISED WHERE POSSIBLE, TO PROMOTE THIS RECOMMENDATION.

Master MCD Inspection Procedure

1. Remove and examine the Master MCD (Position 1) for metallic debris as specified in Reference 2, Aircraft Maintenance Manual (AMM), TASK 79-00-00-200-014-A. See Figure 1.
2. Was metallic debris found?
   A. If metallic debris was not found, return engine to service on an inspection interval not to exceed 125 hours.
   B. If findings were detected during the MMCD inspection, determine what type of metallic debris was found using the AMM definitions and figures as specified in Reference 2, AMM, TASK 79-00-00-200-011-A.
      (1) Was the metallic debris identified as chips?
         (a) If yes, proceed to Step 3.
      (2) Was the metallic debris identified as flakes?
         (a) If yes, proceed to Step 4.
      (3) Was the metallic debris identified as fines?
         (a) If yes, proceed to Step 5.
3. Type of debris from MMCD inspection determined to be chips:
   A. No chips are allowed. If chips are identified, the findings should be documented and the engine should be removed from service before the next flight.
4. Type of debris from MMCD inspection determined to be flakes:
   A. Was a quantity of flakes found to be more than four?
      (1) If yes, document the findings and remove the engine before the next flight.
      (2) If no, collect the flakes and save for later analysis. Proceed to the following step.
   B. Quantity of flakes found to be four or less:
      (1) Remove the 1, 2, 3 MCD (Position 2) and inspect for debris. Proceed to the following step.
         (a) Was any debris found during examination of the 1, 2, 3 MCD?
            1 If yes, document the findings and remove the engine before the next flight.

2 If no, proceed to next step.

(2) Remove all remaining MCD's and inspect to the AMM as specified in Reference 2, AMM, TASK 79-00-00-200-011-A.

(a) Were there any findings on the remaining MCD's that required engine removal per the AMM as specified in Reference 2 AMM, TASK 79-00-00-200-011-A?

1 If yes, document the findings and remove the engine before the next flight.

2 If no, proceed to Step 4.C.

C. Examine the scavenge oil filter and housing for debris contamination as specified in Reference 2, AMM, TASK 79-00-00-200-012-A. See Figure 2.

(1) Was any debris found during examination of the scavenge oil filter and housing?

(a) If yes, determine what type of debris was found using AMM definitions and figures as specified in Reference 2, AMM, TASK 79-00-00-200-011-A. Proceed to Step 4.C.(2) for chips and/or flake findings and Step 4.C.(3) for metallic fines findings.

(b) If no, return the engine to service on an inspection interval not more than 125 hours.

(2) Chips or flakes found during examination of the scavenge oil filter and housing:

(a) Document the findings and remove the engine before the next flight.

(3) Metallic fines found during examination of the scavenge oil filter and housing:

(a) Collect the debris, measure the amount of findings, then analyze the composition of the debris on the plugs and filters. While waiting on debris analysis to be completed, clean MCDs, filter, and filter housing, re-install, then return the engine to service for up to 25 flight hours. Proceed to the following step in addition to putting the engine on a 25 flight hour interval.

(4) Debris analysis completed from the previous step:

(a) Debris analysis confirmed M50 material:

1 Document the findings and remove the engine before the next flight.

(b) Debris analysis confirmed fines as bronze or aluminum:

1 Return the engine to service on an inspection interval not to exceed 125 hours.

(c) Debris analysis confirmed fines as light alloy or silver:

1 Measure the amount of light alloy/silver fines and proceed to the following step.

a Do the light alloy/silver fines fill an area larger than 0.25 sq in (161.3 sq mm)

(1) If yes, document the findings and remove the engine before the next flight.

(2) If no, return the engine to service on an inspection interval not to exceed 125 hours.

5. Type of debris from MMCD inspection determined to be fines:

   A. Do the fines found during the MMCD inspection cover more than 50% of MMCD circumference? (Use Figure 79(IAE)-00-00-991-15200-A, Sheet 1. Refer to Reference 2, AMM, TASK 79-00-00-200-011-A).

      (1) If yes, proceed to Step 5.B.

      (2) If no, collect the debris and save for later analysis, then remove and examine all MCD's per the AMM and proceed to the following step as specified in Reference 2, AMM, TASK 79-00-00-200-011-A.

         (a) Does inspection of the remaining MCD's require engine removal per the AMM as specified in Reference 2 AMM, TASK 79-00-00-200-011-A?

            1 If yes, document the findings and remove the engine within five engine cycles.

            2 If no, clean MCD's and return the engine to service on an inspection interval not to exceed 125 hours.

   B. The fines on the MMCD cover more than 50% of MMCD circumference:

      (1) Collect the debris and save for later analysis. Then remove the 1, 2, 3 MCD (Position 2) and inspect for debris.

         (a) Was any debris found during inspection of the 1, 2, 3 MCD?

            1 If yes, document the findings and remove the engine before the next flight.

            2 If no, proceed to the following step.

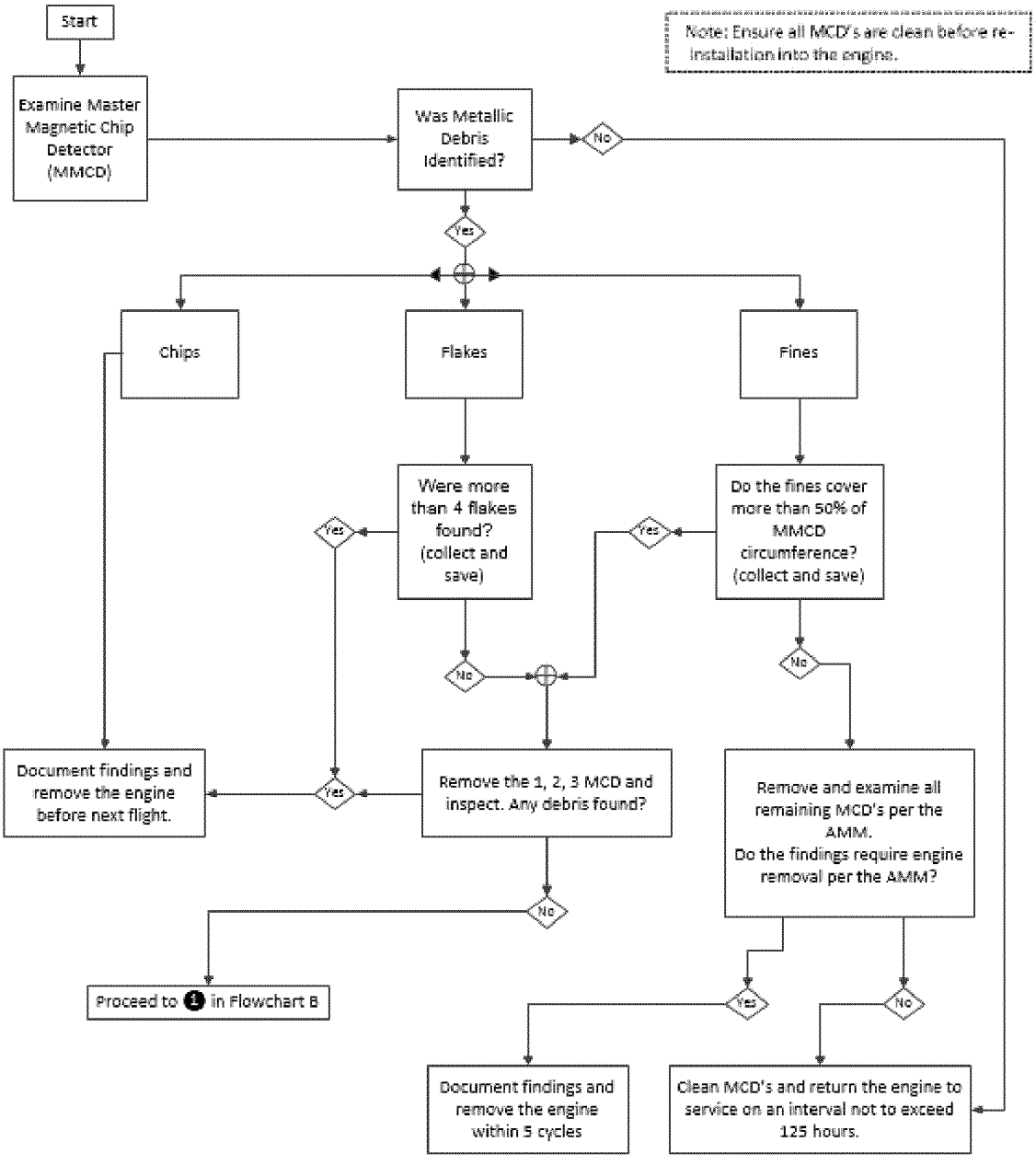
6. Remove and examine all remaining MCD's and inspect to the AMM as specified in Reference 2, AMM, Task 79-00-00-200-011-A.

   A. Were there any findings on the remaining MCD's that required engine removal per the AMM?

      (1) If yes, document the findings and remove the engine before the next flight.

      (2) If no, proceed to Step 4.C.

Flow Chart A
V2500-A5 MMCD

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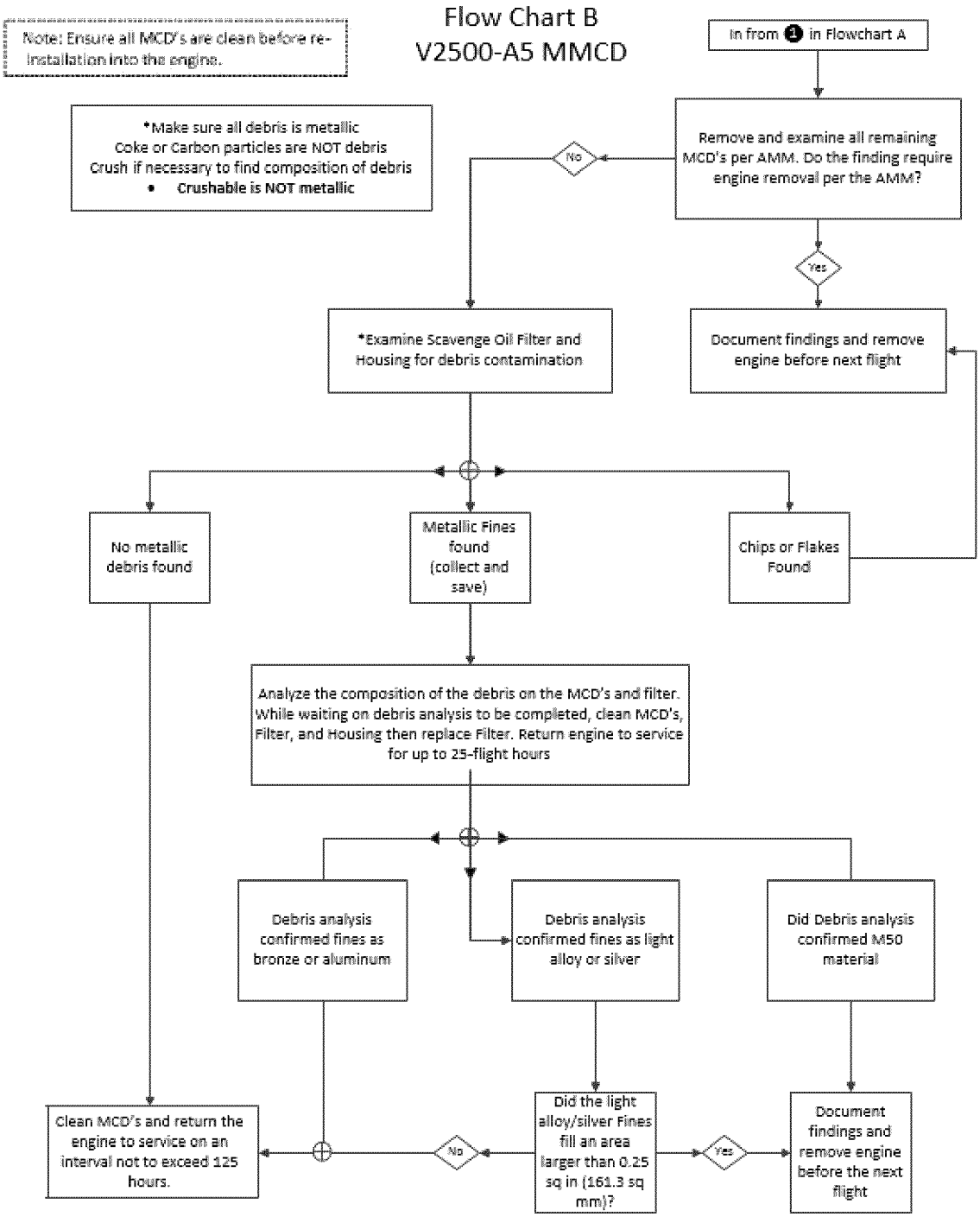
FLOW CHART A
FIGURE 1

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FLOW CHART B
FIGURE 2

Appendix

Added Data

Internal Reference Information

| Revision No. | Reference Document | Origination |
|---|---|---|
| Original | EA16VC101 | DM/IEL |

Number values shown in parentheses adjacent to U.S. values are International System of units (SI) equivalents.

Appendix A

Table 1 — Lot B — Bearing, PN 2A4170

| ESN | Serial Number | ESN | Serial Number | ESN | Serial Number |
|---|---|---|---|---|---|
| V10368 | PCWKAK1865 | V16664 | PCWKAK1161 | V16755 | PCWKAK1421 |
| V10520 | PCWKAK5499 | V16665 | PCWKAK1162 | V16756 | PCWKAK1422 |
| V10743 | PCWKAK5888 | V16666 | PCWKAK1163 | V16757 | PCWKAK1423 |
| V10846 | PCWKAK1428 | V16667 | PCWKAK1166 | V16759 | PCWKAK1425 |
| V11095 | PCWKAK5889 | V16668 | PCWKAK1167 | V16767 | PCWKAK1406 |
| V11379 | PCWKAK1819 | V16669 | PCWKAK1168 | V16791 | PCWKAK1764 |
| V11412 | PCWKAK0091 | V16670 | PCWKAK1169 | V16792 | PCWKAK1771 |
| V11818 | PCWKAK5506 | V16671 | PCWKAK1170 | V16793 | PCWKAK1756 |
| V12180 | PCWKAK1105 | V16672 | PCWKAK1171 | V16795 | PCWKAK1765 |
| V12693 | PCWKAK5531 | V16674 | PCWKAK1180 | V16799 | PCWKAK1773 |
| V12750 | PCWKAK5505 | V16675 | PCWKAK1165 | V16807 | PCWKAK1767 |
| V15020 | PCWKAK1106 | V16676 | PCWKAK1181 | V16808 | PCWKAK1768 |
| V16600 | PCWKAK1117 | V16677 | PCWKAK1182 | V16809 | PCWKAK1769 |
| V16606 | PCWKAK0100 | V16678 | PCWKAK1183 | V16810 | PCWKAK1770 |
| V16608 | PCWKAK0093 | V16683 | PCWKAK1164 | V16822 | PCWKAK1766 |
| V16609 | PCWKAK0096 | V16684 | PCWKAK1172 | V16823 | PCWKAK1772 |
| V16610 | PCWKAK0098 | V16685 | PCWKAK1173 | V16829 | PCWKAK1818 |
| V16611 | PCWKAK1116 | V16686 | PCWKAK1174 | V16848 | PCWKAK1424 |
| V16612 | PCWKAK0099 | V16687 | PCWKAK1175 | V16850 | PCWKAK1830 |
| V16613 | PCWKAK0092 | V16688 | PCWKAK1178 | V16854 | PCWKAK1832 |
| V16614 | PCWKAK1118 | V16697 | PCWKAK1176 | V16858 | PCWKAK1828 |
| V16615 | PCWKAK1113 | V16698 | PCWKAK1177 | V16864 | PCWKAK1829 |

| ESN | Serial Number | ESN | Serial Number | ESN | Serial Number |
|---|---|---|---|---|---|
| V16616 | PCWKAK1107 | V16699 | PCWKAK1179 | V16866 | PCWKAK1869 |
| V16617 | PCWKAK0088 | V16712 | PCWKAK1405 | V16867 | PCWKAK1870 |
| V16619 | PCWKAK1108 | V16713 | PCWKAK1407 | V16868 | PCWKAK1878 |
| V16620 | PCWKAK1114 | V16715 | PCWKAK1410 | V16869 | PCWKAK1868 |
| V16621 | PCWKAK0094 | V16716 | PCWKAK1411 | V16870 | PCWKAK1877 |
| V16623 | PCWKAK0095 | V16717 | PCWKAK1412 | V16871 | PCWKAK1873 |
| V16624 | PCWKAK0087 | V16718 | PCWKAK1414 | V16872 | PCWKAK1875 |
| V16625 | PCWKAK0097 | V16719 | PCWKAK1415 | V16873 | PCWKAK1831 |
| V16626 | PCWKAK1110 | V16720 | PCWKAK1419 | V16875 | PCWKAK1879 |
| V16627 | PCWKAK1112 | V16721 | PCWKAK1426 | V16876 | PCWKAK1867 |
| V16628 | PCWKAK1115 | V16731 | PCWKAK1416 | V16881 | PCWKAK1866 |
| V16645 | PCWKAK1111 | V16735 | PCWKAK1109 | V16882 | PCWKAK1874 |
| V16650 | PCWKAK0089 | V16750 | PCWKAK1413 | V16883 | PCWKAK1871 |
| V16651 | PCWKAK0090 | V16752 | PCWKAK1417 | V16885 | PCWKAK1872 |
| V16662 | PCWKAK1159 | V16753 | PCWKAK1418 | V16886 | PCWKAK1876 |
| V16663 | PCWKAK1160 | V16754 | PCWKAK1420 | V16910 | PCWKAK1409 |

Table 2 — Lot B — Bearing, PN 2A4170

| ESN | Serial Number | ESN | Serial Number | ESN | Serial Number |
|---|---|---|---|---|---|
| V17401 | PCWKAK5472 | V17451 | PCWKAK5485 | V17486 | PCWKAK5511 |
| V17402 | PCWKAK5473 | V17452 | PCWKAK5500 | V17487 | PCWKAK5516 |
| V17407 | PCWKAK5474 | V17453 | PCWKAK5504 | V17498 | PCWKAK5520 |
| V17409 | PCWKAK5470 | V17454 | PCWKAK5502 | V17501 | PCWKAK5532 |
| V17411 | PCWKAK5483 | V17456 | PCWKAK5507 | V17502 | PCWKAK5890 |
| V17412 | PCWKAK5478 | V17457 | PCWKAK5498 | V17508 | PCWKAK5461 |
| V17419 | PCWKAK5484 | V17458 | PCWKAK5497 | V17509 | PCWKAK5464 |
| V17422 | PCWKAK5475 | V17459 | PCWKAK5508 | V17510 | PCWKAK5514 |
| V17423 | PCWKAK5476 | V17460 | PCWKAK5468 | V17511 | PCWKAK5513 |
| V17424 | PCWKAK5477 | V17461 | PCWKAK5467 | V17512 | PCWKAK5522 |
| V17427 | PCWKAK5503 | V17464 | PCWKAK5493 | V17514 | PCWKAK5525 |
| V17430 | PCWKAK5471 | V17465 | PCWKAK5509 | V17590 | PCWKAK6190 |
| V17432 | PCWKAK5460 | V17470 | PCWKAK5462 | V17593 | PCWKAK5937 |
| V17435 | PCWKAK5469 | V17472 | PCWKAK5465 | V17601 | PCWKAK5930 |

| ESN | Serial Number | ESN | Serial Number | ESN | Serial Number |
|---|---|---|---|---|---|
| V17437 | PCWKAK5490 | V17473 | PCWKAK5528 | V17618 | PCWKAK6195 |
| V17440 | PCWKAK5496 | V17474 | PCWKAK5521 | V17622 | PCWKAK6187 |
| V17441 | PCWKAK5491 | V17475 | PCWKAK5530 | V17623 | PCWKAK6189 |
| V17442 | PCWKAK5495 | V17476 | PCWKAK5529 | V17624 | PCWKAK6188 |
| V17443 | PCWKAK5492 | V17477 | PCWKAK5512 | V17625 | PCWKAK5936 |
| V17444 | PCWKAK5488 | V17478 | PCWKAK5518 | V17627 | PCWKAK6193 |
| V17445 | PCWKAK5494 | V17479 | PCWKAK5515 | V17628 | PCWKAK6192 |
| V17446 | PCWKAK5489 | V17480 | PCWKAK5527 | V17629 | PCWKAK6191 |
| V17447 | PCWKAK5486 | V17481 | PCWKAK5524 | V17630 | PCWKAK6194 |
| V17448 | PCWKAK5487 | V17482 | PCWKAK5510 | V17771 | PCWKAK5463 |
| V17449 | PCWKAK5501 | V17483 | PCWKAK5519 | | |
| V17450 | PCWKAK5466 | V17484 | PCWKAK5517 | | |

Table 3 — Lot B — Bearing, PN 2A3851

| ESN | Serial Number | ESN | Serial Number | ESN | Serial Number |
|---|---|---|---|---|---|
| V10399 | PCWKAK0145 | V16594 | PCWKAJ9612 | V16890 | PCWKAK0157 |
| V10617 | PCWKAK0143 | V16595 | PCWKAJ9613 | V16891 | PCWKAK0142 |
| V11183 | PCWKAK0148 | V16597 | PCWKAJ9609 | V16895 | PCWKAK0153 |
| V11287 | PCWKAK0147 | V16598 | PCWKAJ9611 | V16896 | PCWKAK0155 |
| V11380 | PCWKAK0149 | V16656 | PCWKAJ9608 | V16897 | PCWKAK0156 |
| V11710 | PCWKAK0162 | V16657 | PCWKAJ9607 | V16898 | PCWKAK0160 |
| V11740 | PCWKAK0146 | V16658 | PCWKAJ9617 | V16899 | PCWKAK0158 |
| V11796 | PCWKAK0163 | V16659 | PCWKAJ9616 | V16900 | PCWKAK0151 |
| V12455 | PCWKAK0144 | V16660 | PCWKAJ9615 | V16901 | PCWKAK0150 |
| V16581 | PCWKAK0104 | V16661 | PCWKAJ9618 | V16902 | PCWKAK0159 |
| V16582 | PCWKAK0106 | V16739 | PCWKAJ9605 | V16903 | PCWKAK0152 |
| V16584 | PCWKAK0103 | V16740 | PCWKAJ9599 | V16905 | PCWKAK0161 |
| V16585 | PCWKAJ9620 | V16741 | PCWKAJ9606 | V17081 | PCWKAK2632 |
| V16586 | PCWKAK0101 | V16742 | PCWKAJ9600 | V17082 | PCWKAK2633 |
| V16587 | PCWKAK0105 | V16744 | PCWKAJ9598 | V17090 | PCWKAK2630 |
| V16588 | PCWKAK0102 | V16745 | PCWKAJ9601 | V17092 | PCWKAK2629 |
| V16589 | PCWKAJ9619 | V16746 | PCWKAJ9602 | V17108 | PCWKAK2628 |

| ESN | Serial Number | ESN | Serial Number | ESN | Serial Number |
|---|---|---|---|---|---|
| V16592 | PCWKAJ9614 | V16800 | PCWKAJ9603 | V17110 | PCWKAK2631 |
| V16593 | PCWKAJ9610 | V16801 | PCWKAJ9604 | | |