

Airworthiness Directive 2002-24-07 Summary

Subject:	Prevent in-flight failure of the oil scavenge pumps		
Manufacturer:	Aerostar	Category:	Airframe
Effective Date:	01/17/2003	Recurring:	Yes
Supersedes:	N/A	Superseded By:	N/A

For complete information on this AD, please see:

AD 2002-24-07 (FAA Copy)

AD 2002-24-07 (From CFR)

AD 2002-24-07 Preamble

Model Applicability:

This AD affects Models PA-60-601 (Aerostar 601), PA-60-601P (Aerostar 601P), PA-60-602P (Aerostar 602P), and PA-60-700P (Aerostar 700P) airplanes, all serial numbers, that are certificated in any category.

Applicable Manufacturers Service Information:

Aerostar Mandatory Service Bulletin SB600-131A, January 10, 1998

Summary:

This amendment adopts a new airworthiness directive (AD) that applies to certain Aerostar Aircraft Corporation (Aerostar) Models PA-60-601 (Aerostar 601), PA-60-601P (Aerostar 601P), PA-60-602P (Aerostar 602P), and PA-60-700P (Aerostar 700P). This AD requires you to replace Roto-Master and Rajay scavenge pumps with improved design Aerostar scavenge pumps. This AD is the result of failures of the existing Roto-Master and Rajay scavenge pumps found during regular maintenance inspections. The actions specified by this AD are intended to prevent in-flight failure of the oil scavenge pumps, which could result in loss of engine oil and possible loss of engine power.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 99–CE–86–AD; Amendment 39–12972; AD 2002–24–07]

RIN 2120–AA64

Airworthiness Directives; Aerostar Aircraft Corporation Models PA–60–601 (Aerostar 601), PA–60–601P (Aerostar 601P), PA–60–602P (Aerostar 602P), and PA–60–700P (Aerostar 700P) Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD) that applies to certain Aerostar Aircraft Corporation (Aerostar) Models PA–60–601 (Aerostar 601), PA–60–601P (Aerostar 601P), PA–60–602P (Aerostar 602P), and PA–60–700P (Aerostar 700P). This AD requires you to replace Roto-Master and Rajay scavenge pumps with improved design Aerostar scavenge pumps. This AD is the result of failures of the existing Roto-Master and Rajay

scavenge pumps found during regular maintenance inspections. The actions specified by this AD are intended to prevent in-flight failure of the oil scavenge pumps, which could result in loss of engine oil and possible loss of engine power.

DATES: This AD becomes effective on January 17, 2003.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of January 17, 2003.

ADDRESSES: You may get the service information referenced in this AD from Aerostar Aircraft Corporation, 10555 Airport Drive, Coeur d'Alene Airport, Hayden Lake, Idaho 83835–8742; telephone: (208) 762–0338; facsimile: (208) 762–8349. You may view this information at the Federal Aviation Administration (FAA), Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 99–CE–86–AD, 901 Locust, Room 506, Kansas City, Missouri 64106; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Richard Simonson, Aerospace Engineer, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055; telephone: (425) 687–4247; facsimile: (425) 687–4248.

SUPPLEMENTARY INFORMATION:

Discussion

What Events Have Caused This AD?

The FAA has received several reports of excessive internal pump wear found during normal maintenance inspections on Aerostar Models PA–60–601 (Aerostar 601), PA–60–601P (Aerostar 601P), PA–60–602P (Aerostar 602P), and PA–60–700P (Aerostar 700P) airplanes. Analysis of these incidents reveals that inadequate retention of the existing left-hand (LH) oil scavenge pump rotor allows the rotor to machine its way through the LH end plate.

Also, through the buildup of the right-hand (RH) scavenge pump/hydraulic pump stack, axial migration of the RH pump rotor causes damage to the washers and seals. This then causes hydraulic and engine oil to be mixed along with metal shavings being released into the engine oil system.

For these reasons, the FAA determined that both the LH and RH scavenge pumps should be replaced.

What Is the Potential Impact if FAA Took No Action?

This condition, if not corrected, could result in an in-flight failure of the oil scavenge pumps with consequent loss of engine oil and possible loss of engine power.

Has FAA Taken Any Action to This Point?

We issued a proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that would apply to certain Aerostar Models PA-60-601 (Aerostar 601), PA-60-601P (Aerostar 601P), PA-60-602P (Aerostar 602P), and PA-60-700P (Aerostar 700P) airplanes. This proposal was published in the **Federal Register** as a notice of proposed rulemaking (NPRM) on October 24, 2001 (66 FR 53741). The NPRM proposed to require you to replace the Roto-Master or Rajay scavenge pumps with Aerostar scavenge pumps.

Was the Public Invited To Comment?

The FAA encouraged interested persons to participate in the making of this amendment. The following presents the comments received on the proposal and FAA's response to each comment:

Comment Issue No. 1: The Airworthiness Concerns Process Was Not Utilized for This Project*What Is the Commenter's Concern?*

One commenter states that FAA did not use the Small Airplane Directorate Airworthiness Concerns Process for this subject. This process is the way the Small Airplane Directorate and industry work together to identify potential airworthiness concerns and share technical information prior to FAA's decision on how to proceed. We infer that the commenter wants the NPRM withdrawn because this process was not utilized.

What Is FAA's Response to the Concern?

The FAA concurs that the formal Small Airplane Directorate Airworthiness Concerns Process was not utilized. This subject originated before the formal implementation of this process. The FAA used all resources and made all reasonable efforts to obtain the necessary technical information and to coordinate this subject. Although we did not implement the formal process, we did utilize the basic concept.

While it is the Small Airplane Directorate's policy to use the Airworthiness Concerns Process, there is no regulation that mandates its use. If, at any time, we choose not to use this process, we still have the regulatory

authority to issue an airworthiness directive.

No changes have been made to the final rule AD action as a result of this comment.

Comment Issue No. 2: No Supporting Data Exists; Provide Details of Failures*What Is the Commenter's Concern?*

Several commenters state that FAA does not have sufficient data to justify the unsafe condition described in the NPRM. The commenters believe that we have not adequately documented the problem and request more details on the failures.

What Is FAA's Response to the Concern?

The FAA does not concur that the unsafe condition is not justified. As stated in the NPRM, "the FAA has received several reports of excessive internal pump wear found during normal maintenance inspections on Aerostar Models 601, 601P, 602P, and 700P airplanes. Analysis of these incidents reveals that inadequate retention of the existing oil scavenge pump rotor allows the rotor to machine its way through the end plate."

The following is additional information on these incidents:

- In January 1996, one of the affected airplanes experienced complete engine oil loss and an in-flight engine shutdown. Inspection of the engine revealed that the shaft of the LH oil scavenge pump had machined its way through the LH pump's end plate. The scavenge pump was replaced with a new unit, and a short time later an inspection of the new unit revealed that the shaft had once again started to bore through the LH end plate. The RH scavenge pump was then inspected and showed significant wear at the retaining ring and washer.
- Another affected airplane experienced two separate instances of complete engine oil loss and in-flight shutdown caused by the LH scavenge pump machining through the LH end plate. Inspections revealed numerous occurrences of broken retaining rings and washers and some reports of shafts boring through the LH end plates.

The FAA has determined that the information presented above justifies the AD action of replacing the scavenge pumps with pumps of improved design that are less susceptible to these failures.

We are not changing the final rule AD action as a result of this comment.

Comment Issue No. 3: No Service Reports From RAJAY, the Original Equipment Manufacturer (OEM)*What Is the Commenter's Concern?*

Several commenters point out that the OEM, RAJAY, has submitted no reports of the scavenge pumps boring through the LH end plates. The commenters state that if RAJAY does not have service data, then there is obviously not a safety issue. The commenters suggest that FAA withdraw the NPRM.

What Is FAA's Response to the Concern?

We do not concur. Aerostar, as the type certificate (TC) holder, has the regulatory responsibility to submit failures, malfunctions, and defects under 14 CFR 21.3. Aerostar obtains these parts from RAJAY and Roto-Master. However, RAJAY and Roto-Master are the parts suppliers and do not have the regulatory responsibility that Aerostar has. Because of these regulatory responsibilities, we have determined that the reports that Aerostar has submitted under 14 CFR 21.3 are valid and are not undermined by the absence of service information from RAJAY or Roto-Master.

We are not changing the final rule AD action as a result of this comment.

Comment Issue No. 4: Why Are the Pumps Unsafe When Installed on Aerostar Airplanes and Not Unsafe When Installed on Other Type Design Airplanes*What Is the Commenter's Concern?*

Several commenters state that these scavenge pumps are installed on numerous other type design airplanes. The commenters question why the scavenge pumps are only unsafe on the affected Aerostar airplanes and not on other type design airplanes. We infer that the commenters either want the NPRM withdrawn or expanded to include other type design airplanes.

What Is FAA's Response to the Concern?

The FAA does not concur that we should either withdraw the NPRM or include other type design airplanes. We have extensively searched our databases and only have reports on the scavenge pumps that are installed in the Aerostar Models PA-60-601 (Aerostar 601), PA-60-601P (Aerostar 601P), PA-60-602P (Aerostar 602P), and PA-60-700P (Aerostar 700P) airplanes. We have determined that the condition is based on the design configuration of the pump installation in the Aerostar airplanes.

Currently, there is nothing restraining these scavenge pumps in the Aerostar airplane configuration. Engine vibration and other variables within the

installation allow the shafts of the LH oil scavenge pumps to bore through the LH end plates.

We will continue to monitor the continuing airworthiness of these scavenge pumps as installed on other type design airplanes, and we will take appropriate regulatory action, as necessary.

We are not changing the final rule AD action as a result of this comment.

Comment Issue No. 5: This Is a Maintenance Issue and Is Not Justified as an AD

What Is the Commenter's Concern?

Several commenters state that properly maintained scavenge pumps do not have the failure problems that FAA defines. These commenters question why FAA is issuing this AD to punish those who have adequately maintained their airplanes. They further state that this is an incorrect use of an AD and request that FAA withdraw or give them an exemption from the AD.

What Is FAA's Response to the Concern?

We do not concur. The service history shows that the unsafe condition is a design problem and not a maintenance issue. As discussed earlier, the condition is based on the design configuration of the pump installation in the Aerostar airplanes. Currently, there is nothing restraining these scavenge pumps in the Aerostar airplane configuration. Engine vibration and other variables within the installation allow the shafts of the LH oil scavenge pumps to bore through the LH end plates. Based on the service history received on this subject, we have determined that this AD is justified.

We are not changing the final rule AD action as a result of this comment.

Comment Issue No. 6: The Improved Design Pumps Are More Unsafe Than the Existing Pumps

What Is the Commenter's Concern?

Several commenters question whether the unsafe condition will be addressed through the installation of the improved design scavenge pumps. The commenters state that these improved design pumps are more unsafe than the scavenge pumps currently installed. No evidence or details were submitted to substantiate these claims. We infer that the commenters want the NPRM withdrawn.

What Is FAA's Response to the Concern?

We do not concur that the improved design scavenge pumps are more unsafe than the ones currently installed. We have received no reports of the unsafe condition occurring on these improved design scavenge pumps.

We are not changing the final rule AD action as a result of this comment.

Comment Issue No. 7: Allow the Option of Repetitive Inspections or Mandatory Pump Replacement

What Is the Commenter's Concern?

Several commenters believe that FAA should provide the option to repetitively inspect the scavenge pumps for wear and only require mandatory replacement if wear is found. A few of these commenters suggest a repetitive inspection interval of 50 hours time-in-service (TIS).

What Is FAA's Response to the Concern?

The FAA does not concur. The only way to properly inspect the scavenge pump for wear is to remove the pump and disassemble it. Repetitively removing, disassembling, reassembling, and reinstalling the scavenge pumps presents a greater chance of damage to the scavenge pumps than replacing them. Also, the labor of repetitively removing and reinstalling (8 workhours at \$60 an hour = \$480 per installation) would eventually exceed the one-time replacement cost.

We are not changing the final rule AD action as a result of this comment.

Comment Issue No. 8: Only Require Replacement of the LH Pump; RH Pump Replacement Is Not Necessary

What Is the Commenter's Concern?

One commenter states that the RH scavenge pump should not be replaced because it does not have an end plate, and it is the middle member of a "stack" that includes the airplane hydraulic pump. This commenter requests that FAA revise the proposed AD to reflect replacement of only the LH scavenge pump.

What Is FAA's Response to the Concern?

The FAA concurs that the RH scavenge pump does not have an end plate and that it is the middle member of a "stack" that includes the airplane hydraulic pump. However, through the buildup of the scavenge pump/hydraulic pump stack, axial migration

of the pump rotor would cause damage to the washers and seals. This could cause the hydraulic oil and engine oil to be mixed along with metal shavings being released into the engine oil system. For these reasons, FAA has determined that both the LH and RH scavenge pumps should be replaced as proposed in the NPRM.

We are not changing the final rule AD action as a result of this comment.

FAA's Determination

What Is FAA's Final Determination on This Issue?

After careful review of all available information related to the subject presented above, we have determined that air safety and the public interest require the adoption of the rule as proposed except for minor editorial corrections. We have determined that these minor corrections:

- Provide the intent that was proposed in the NPRM for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

What Are the Differences Between the Service Bulletin and This AD?

Aerostar specifies (in the service information) replacing the scavenge pumps within the next 50 hours TIS or at the next annual inspection, whichever occurs first. We require that you replace the scavenge pumps within the next 50 hours TIS after the effective date of this AD. We cannot enforce a compliance time of "at the next annual inspection." We believe that 50 hours TIS will give the owners/operators of the affected airplanes enough time to have the actions required by this AD done without compromising the safety of the airplanes. This will allow the owners/operators to work this replacement into regularly scheduled maintenance.

Cost Impact

How Many Airplanes Does This AD Impact?

We estimate that this AD affects 650 airplanes in the U.S. registry.

What Is the Cost Impact of This AD on Owners/Operators of the Affected Airplanes?

We estimate the following costs to accomplish the modification:

Labor cost	Parts cost	Total cost per airplane	Total cost on U.S. operators
8 workhours for both the left and right engine scavenge pumps × \$60 per hour = \$480.	\$4,750	\$5,230	\$5,230 × 650 = \$3,399, 500

Flexibility Determination and Analysis

What Are the Requirements of the Regulatory Flexibility Act?

The Regulatory Flexibility Act of 1980 was enacted by Congress to assure that small entities are not unnecessarily or disproportionately burdened by government regulations. This Act establishes “as principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation.” To achieve this principle, the Act requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The Act covers a wide range of small entities, including small businesses, not-for-profit organizations, and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities. If the determination is that the rule will, the Agency must prepare a regulatory flexibility analysis as described in the RFA.

However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

What Is FAA’s Determination?

The FAA has determined that this AD could have a significant economic impact on a substantial number of small entities. However, we have determined that we should continue with this action in order to address the unsafe condition and ensure aviation safety.

You may obtain a copy of the complete Regulatory Flexibility Analysis (entitled “Initial Regulatory Flexibility Analysis”) that was prepared for this AD from the Docket file at the location listed under the **ADDRESSES** section of this document.

Regulatory Impact

Does This AD Impact Various Entities?

The regulations adopted herein will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

Does This AD Involve a Significant Rule or Regulatory Action?

For the reasons discussed above, I certify that this action (1) is not a “significant regulatory action” under Executive Order 12866; (2) is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) could have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A copy of the final evaluation prepared for this action is contained in the Rules Docket. A copy

of it may be obtained by contacting the Rules Docket at the location provided under the caption **ADDRESSES**.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. FAA amends § 39.13 by adding a new AD to read as follows:

2002–24–07 Aerostar Aircraft Corporation: Amendment 39–12972; Docket No. 99–CE–86–AD.

(a) *What airplanes are affected by this AD?* This AD affects Models PA–60–601 (Aerostar 601), PA–60–601P (Aerostar 601P), PA–60–602P (Aerostar 602P), and PA–60–700P (Aerostar 700P) airplanes, all serial numbers, that are certificated in any category.

(b) *Who must comply with this AD?* Anyone who wishes to operate any of the airplanes identified in paragraph (a) of this AD must comply with this AD.

(c) *What problem does this AD address?* The actions specified by this AD are intended to prevent in-flight failure of the oil scavenge pumps, which could result in loss of engine oil and possible loss of engine power.

(d) *What actions must I accomplish to address this problem?* To address this problem, you must accomplish the following:

Actions	Compliance	Procedures
(1) Replace any scavenge pump specified in paragraphs (d)(1)(i) and (d)(1)(ii) of this AD with an Aerostar scavenge pump, part number 300110–001 or 300110–002 or FAA-approved equivalent part number. (i) Any Roto-Master scavenge pump, part number 101633–01 or 101633–02 or FAA-approved equivalent part number; and (ii) Any Rajay scavenge pump, part number RJ1025–1 or RJ1025–2 or FAA-approved equivalent part number.	Within the next 50 hours time-in-service after January 17, 2003 (the effective date of this AD), unless already accomplished.	Do this replacement following the INSTRUCTIONS paragraph of Aerostar Mandatory Service Bulletin SB600–131A, January 10, 1998, and the Aerostar Maintenance Manual.

Actions	Compliance	Procedures
(2) Do not install, on an affected airplane, any Roto-Master or Rajay scavenge pump specified in paragraphs (d)(1)(i) and (d)(1)(ii) of this AD.	As of January 17, 2003 (the effective date of this AD).	Not applicable.

(e) *Can I comply with this AD in any other way?* You may use an alternative method of compliance or adjust the compliance time if:

(1) Your alternative method of compliance provides an equivalent level of safety; and

(2) The Manager, Seattle Aircraft Certification Office (ACO), approves your alternative. Submit your request through an FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Manager, Seattle ACO.

Note: This AD applies to each airplane identified in paragraph (a) of this AD, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (e) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if you have not eliminated the unsafe condition, specific actions you propose to address it.

(f) *Where can I get information about any already-approved alternative methods of compliance?* Contact Richard Simonson, Aerospace Engineer, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW, Renton, Washington 98055-4065; telephone: (425) 227-2597; facsimile: (425) 227-1181.

(g) *What if I need to fly the airplane to another location to comply with this AD?* The FAA can issue a special flight permit under sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate your airplane to a location where you can accomplish the requirements of this AD.

(h) *Are any service bulletins incorporated into this AD by reference?* Actions required by this AD must be done in accordance with Aerostar Aircraft Corporation Mandatory Service Bulletin SB600-131A, January 10, 1998. The Director of the Federal Register approved this incorporation by reference under 5 U.S.C. 552(a) and 1 CFR part 51. You can get copies from Aerostar Aircraft Corporation, 10555 Airport Drive, Coeur d'Alene Airport, Hayden Lake, Idaho 83835-8742. You can look at copies at the FAA, Central Region, Office of the Regional Counsel, 901 Locust, Room 506, Kansas City, Missouri, or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

(i) *When does this amendment become effective?* This amendment becomes effective on January 17, 2003.

Issued in Kansas City, Missouri, on November 25, 2002.

Michael Gallagher,

Manager, Small Airplane Directorate, Aircraft Certification Service.

[FR Doc. 02-30495 Filed 12-3-02; 8:45 am]

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