Evidence-Based Journal Recommendation Report

Failure Mechanism of 8Cr4Mo4V Steel Rolling Bearings Under Heavy Load Conditions

Generated 2026-10-28 | Report language: English | Evidence window: 2021-10-28 to 2026-10-28

Decision summary

This manuscript is best positioned at the intersection of rolling-bearing tribology, high-temperature lubrication, rolling-contact fatigue and bearing-steel failure analysis. Three DOAJ-listed journals passed the identity and evidence checks used for this report. Three recommendations are provided rather than adding weakly related journals to reach five.

The order uses a fixed internal rule that gives the greatest weight to verified recent related publications, then to object/method fit and journal scope. Numerical scores are omitted. The recommendation is not an acceptance probability.

1 Manuscript profile

Field	Extracted evidence
Research object	Single-row angular-contact ball bearings made from doubly vacuum-melted 8Cr4Mo4V steel
Material	8Cr4Mo4V bearing steel; tempered martensite and carbides; silicon-bronze cage
Methods and tools	Grouped fatigue tests; optical stereo microscopy; SEM; metallography; microhardness; Hertz contact-stress calculation; EHL film-thickness calculation
Operating conditions	120 °C oil supply; 2.8 GPa contact stress; 9,000 r/min; axial loading; jet lubrication
Failure mode	Surface-initiated fatigue spalling associated with poor lubrication and near-surface maximum shear stress
Key terms	rolling bearing; high-temperature bearing steel; contact stress; lubrication state; fatigue failure
Language	English

Note: the document heading ends after “Heavy”; “Load Conditions” is inferred from the uploaded filename and should be confirmed before submission.

2 Recommended journals

1. Metals - Strong match

Publisher: MDPI AG | Publisher country: CH | pISSN not listed; eISSN 2075-4701 | Language: EN | DOAJ APC flag: reported

Why it fits: The strongest material-specific evidence match. A 2025 DOAJ-listed article studies residual stress in an 8Cr4Mo4V steel bearing ring and connects carbide-interface stress concentration with microcrack initiation and contact-fatigue life. Your manuscript examines the subsequent bearing fatigue failure under high-load, high-temperature lubrication conditions.

Verified recent related publication records:

Year	Publication	DOI
2025	An Investigation of Heat Treatment Residual Stress of Type I, II, III for 8Cr4Mo4V Steel Bearing Ring Using FEA-CPFEM-GPA Method	10.3390/met15050548 https://doi.org/10.3390/met15050548
2024	Investigation of the Flow Stress Model for Cr4Mo4V Bearing Steel under Ultrasonic Vibration Conditions	10.3390/met14020143 https://doi.org/10.3390/met14020143
2022	Influence of a Thermo-Mechanical Treatment on the Fatigue Lifetime and Crack Initiation Behavior of a Quenched and Tempered Steel	10.3390/met12020204 https://doi.org/10.3390/met12020204

Deterministic checks: DOAJ identity and ISSN match verified; related records are within the rolling five-year window and have Crossref DOI metadata. Emphasize the distinct contribution: full-bearing fatigue tests, lubrication deterioration and surface-initiated spalling. Verify the best journal section and current APC.

2. Tribology Online - Strong match

Publisher: Japanese Society of Tribologists | Publisher country: JP | pISSN 1881-218X; eISSN 1881-2198 | Language: EN | DOAJ APC flag: not reported

Why it fits: The closest specialist scope match for rolling-contact lubrication, bearing contact behavior, wear and failure mechanisms. Recent records cover needle-roller bearing creep, oil-film behavior in high-speed ball bearings and lubricant-related brittle flaking.

Verified recent related publication records:

Year	Publication	DOI
2026	Effects of Lubricant Viscosity on Creep in Thrust Washers of Needle Roller Bearings	10.2474/trol.21.36 https://doi.org/10.2474/trol.21.36
2025	Creep Phenomenon in Thrust Washers of Needle Roller Bearings	10.2474/trol.20.78 https://doi.org/10.2474/trol.20.78
2024	Measurement of Oil-Film Thickness and Observation of Oil Distribution in High-Speed Deep-Groove Ball Bearings	10.2474/trol.19.149 https://doi.org/10.2474/trol.19.149

Deterministic checks: DOAJ identity and ISSN match verified; related records are within the rolling five-year window and have Crossref DOI metadata. Confirm that the journal accepts a full experimental failure-mechanism article and check its current author instructions.

3. Lubricants - Good match

Publisher: MDPI AG | Publisher country: CH | pISSN not listed; eISSN 2075-4442 | Language: EN | DOAJ APC flag: reported

Why it fits: A strong fit for the lubrication and bearing-performance part of the manuscript, especially the low-lambda/EHL interpretation, lubricant temperature and rolling-bearing degradation. It is broader and less focused on failure microscopy than the first two options.

Verified recent related publication records:

Year	Publication	DOI
2025	Research on the Performance Degradation Rules of Rolling Bearings Under Discrete Constant Conditions	10.3390/lubricants13120520 https://doi.org/10.3390/lubricants13120520
2022	Research on the Bearing Sliding Loss Based on Time-Varying Contact Angle between Ball and Raceway	10.3390/lubricants10080185 https://doi.org/10.3390/lubricants10080185
2022	Development of a Cryogenic Tester with Air Bearing to Test Sliding-Rolling Contact Friction	10.3390/lubricants10060119 https://doi.org/10.3390/lubricants10060119

Deterministic checks: DOAJ identity and ISSN match verified; related records are within the rolling five-year window and have Crossref DOI metadata. Check the current article type, APC amount and whether the paper should be framed primarily as lubrication, bearing degradation or failure analysis.

3 Why only three recommendations

Other journals appeared in broad scholarly searches, but were not included unless journal identity, DOAJ status, ISSN and recent related-publication evidence could be checked together. A broad mechanical or materials scope alone was not enough to promote a journal without a close bearing or lubrication record.

4 Evidence and limitations

Crossref supplied DOI, title, publication year, journal and ISSN metadata. DOAJ supplied directory identity, publisher, language, open-access status, scope and APC reporting. Europe PMC is not a primary source for this engineering manuscript. A failure or absence in one database does not prove that no related paper exists.

The three journals require final verification of current article type, author instructions, APC or fee details, and section fit before submission. Similarity evidence means related published records; it does not show that a manuscript was accepted or that the present manuscript will be accepted.

Appendix A Sources

Metals

DOAJ journal record
https://doaj.org/toc/2075-4701

DOAJ aims and scope
http://www.mdpi.com/journal/metals/about

Official journal page
http://www.mdpi.com/journal/metals

Crossref ISSN works query
https://api.crossref.org/journals/2075-4701/works?filter=from-pub-date:2021-10-28,until-pub-date:2026-10-28&type=journal-article

Tribology Online

DOAJ journal record
https://doaj.org/toc/1881-2198

DOAJ aims and scope
https://www.tribology.jp/trol/aims-and-scope.html

Official journal page
https://www.tribology.jp/trol/

Crossref ISSN works query
https://api.crossref.org/journals/1881-2198/works?filter=from-pub-date:2021-10-28,until-pub-date:2026-10-28&type=journal-article

Lubricants

DOAJ journal record
https://doaj.org/toc/2075-4442

DOAJ aims and scope
http://www.mdpi.com/journal/lubricants/about

Official journal page
http://www.mdpi.com/journal/lubricants

Crossref ISSN works query
https://api.crossref.org/journals/2075-4442/works?filter=from-pub-date:2021-10-28,until-pub-date:2026-10-28&type=journal-article

Appendix B Related Publication Evidence

The records below are the auditable evidence behind the recommendations. Each record was retrieved from Crossref, checked against the recommended journal name and ISSN, and dated within the report window (2021-10-28 to 2026-10-28). These are related publication records, not submission-success samples and not evidence of acceptance probability.

Metals | verified ISSN: 2075-4701 | Crossref journal identity: Metals

(1) An Investigation of Heat Treatment Residual Stress of Type I, II, III for 8Cr4Mo4V Steel Bearing Ring Using FEA-CPFEM-GPA Method

Publication year: 2025 | DOI: 10.3390/met15050548

Crossref DOI record
https://doi.org/10.3390/met15050548

Source type: public Crossref scholarly metadata; journal/ISSN consistency check passed. Relevance to this manuscript: The strongest material-specific evidence match. A 2025 DOAJ-listed article studies residual stress in an 8Cr4Mo4V steel bearing ring and connects carbide-interface stress concentration with microcrack initiation and contact-fatigue life. Your manuscript examines the subsequent bearing fatigue failure under high-load, high-temperature lubrication conditions. Evidence qualification: related publication record, not a submission-success sample.

(2) Investigation of the Flow Stress Model for Cr4Mo4V Bearing Steel under Ultrasonic Vibration Conditions

Publication year: 2024 | DOI: 10.3390/met14020143

Crossref DOI record
https://doi.org/10.3390/met14020143

Source type: public Crossref scholarly metadata; journal/ISSN consistency check passed. Relevance to this manuscript: The strongest material-specific evidence match. A 2025 DOAJ-listed article studies residual stress in an 8Cr4Mo4V steel bearing ring and connects carbide-interface stress concentration with microcrack initiation and contact-fatigue life. Your manuscript examines the subsequent bearing fatigue failure under high-load, high-temperature lubrication conditions. Evidence qualification: related publication record, not a submission-success sample.

(3) Influence of a Thermo-Mechanical Treatment on the Fatigue Lifetime and Crack Initiation Behavior of a Quenched and Tempered Steel

Publication year: 2022 | DOI: 10.3390/met12020204

Crossref DOI record
https://doi.org/10.3390/met12020204

Source type: public Crossref scholarly metadata; journal/ISSN consistency check passed. Relevance to this manuscript: The strongest material-specific evidence match. A 2025 DOAJ-listed article studies residual stress in an 8Cr4Mo4V steel bearing ring and connects carbide-interface stress concentration with microcrack initiation and contact-fatigue life. Your manuscript examines the subsequent bearing fatigue failure under high-load, high-temperature lubrication conditions. Evidence qualification: related publication record, not a submission-success sample.

Journal-level evidence interpretation: the three records support topical proximity in bearing, tribology, lubrication, fatigue and/or materials-failure dimensions. They do not establish that the journal will accept this manuscript.

Tribology Online | verified ISSN: 1881-2198 | Crossref journal identity: Tribology Online

(1) Effects of Lubricant Viscosity on Creep in Thrust Washers of Needle Roller Bearings

Publication year: 2026 | DOI: 10.2474/trol.21.36

Crossref DOI record
https://doi.org/10.2474/trol.21.36

Source type: public Crossref scholarly metadata; journal/ISSN consistency check passed. Relevance to this manuscript: The closest specialist scope match for rolling-contact lubrication, bearing contact behavior, wear and failure mechanisms. Recent records cover needle-roller bearing creep, oil-film behavior in high-speed ball bearings and lubricant-related brittle flaking. Evidence qualification: related publication record, not a submission-success sample.

(2) Creep Phenomenon in Thrust Washers of Needle Roller Bearings

Publication year: 2025 | DOI: 10.2474/trol.20.78

Crossref DOI record
https://doi.org/10.2474/trol.20.78

Source type: public Crossref scholarly metadata; journal/ISSN consistency check passed. Relevance to this manuscript: The closest specialist scope match for rolling-contact lubrication, bearing contact behavior, wear and failure mechanisms. Recent records cover needle-roller bearing creep, oil-film behavior in high-speed ball bearings and lubricant-related brittle flaking. Evidence qualification: related publication record, not a submission-success sample.

(3) Measurement of Oil-Film Thickness and Observation of Oil Distribution in High-Speed Deep-Groove Ball Bearings

Publication year: 2024 | DOI: 10.2474/trol.19.149

Crossref DOI record
https://doi.org/10.2474/trol.19.149

Source type: public Crossref scholarly metadata; journal/ISSN consistency check passed. Relevance to this manuscript: The closest specialist scope match for rolling-contact lubrication, bearing contact behavior, wear and failure mechanisms. Recent records cover needle-roller bearing creep, oil-film behavior in high-speed ball bearings and lubricant-related brittle flaking. Evidence qualification: related publication record, not a submission-success sample.

Journal-level evidence interpretation: the three records support topical proximity in bearing, tribology, lubrication, fatigue and/or materials-failure dimensions. They do not establish that the journal will accept this manuscript.

Lubricants | verified ISSN: 2075-4442 | Crossref journal identity: Lubricants

(1) Research on the Performance Degradation Rules of Rolling Bearings Under Discrete Constant Conditions

Publication year: 2025 | DOI: 10.3390/lubricants13120520

Crossref DOI record
https://doi.org/10.3390/lubricants13120520

Source type: public Crossref scholarly metadata; journal/ISSN consistency check passed. Relevance to this manuscript: A strong fit for the lubrication and bearing-performance part of the manuscript, especially the low-lambda/EHL interpretation, lubricant temperature and rolling-bearing degradation. It is broader and less focused on failure microscopy than the first two options. Evidence qualification: related publication record, not a submission-success sample.

(2) Research on the Bearing Sliding Loss Based on Time-Varying Contact Angle between Ball and Raceway

Publication year: 2022 | DOI: 10.3390/lubricants10080185

Crossref DOI record
https://doi.org/10.3390/lubricants10080185

Source type: public Crossref scholarly metadata; journal/ISSN consistency check passed. Relevance to this manuscript: A strong fit for the lubrication and bearing-performance part of the manuscript, especially the low-lambda/EHL interpretation, lubricant temperature and rolling-bearing degradation. It is broader and less focused on failure microscopy than the first two options. Evidence qualification: related publication record, not a submission-success sample.

(3) Development of a Cryogenic Tester with Air Bearing to Test Sliding-Rolling Contact Friction

Publication year: 2022 | DOI: 10.3390/lubricants10060119

Crossref DOI record
https://doi.org/10.3390/lubricants10060119

Source type: public Crossref scholarly metadata; journal/ISSN consistency check passed. Relevance to this manuscript: A strong fit for the lubrication and bearing-performance part of the manuscript, especially the low-lambda/EHL interpretation, lubricant temperature and rolling-bearing degradation. It is broader and less focused on failure microscopy than the first two options. Evidence qualification: related publication record, not a submission-success sample.

Journal-level evidence interpretation: the three records support topical proximity in bearing, tribology, lubrication, fatigue and/or materials-failure dimensions. They do not establish that the journal will accept this manuscript.

Appendix C Other KoiPaper Services

If you need additional manuscript support, you can sign in at www.koipaper.com. The services below are separate from this journal recommendation report and do not include journal submission or an acceptance guarantee.

C.1 Submission Preparation Pack

Price: $29.90 / package | Delivery: within 2 hours after manuscript upload to the registered email.

Open Submission Preparation Pack
https://www.koipaper.com/en/submission-pack/

Includes: cover letter draft; highlights and plain-language summary; keywords and declarations checklist; target-journal submission checklist; and author-confirmation flags. The target-journal workflow labels each item as Required, Recommended, Optional, Not applicable, or Not found. This service does not submit the manuscript to a journal.

C.2 Manuscript Structure Diagnosis

Price: $39.90 / paper | Delivery: within 48 hours after payment confirmation and receipt of the manuscript.

Open Manuscript Structure Diagnosis
https://www.koipaper.com/en/structure-diagnosis/

Covers the research question and contribution, methods and reporting gaps, results and narrative, declarations and consistency, and actionable revision priorities. It provides diagnosis and priorities; it does not promise rewriting or journal acceptance.

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