

ASME PASE-2024
(Revision of ASME PASE-2019)

Safety Standard for Portable Automotive Service Equipment

AN AMERICAN NATIONAL STANDARD



**The American Society of
Mechanical Engineers**

ASME PASE-2024
(Revision of ASME PASE-2019)

Safety Standard for Portable Automotive Service Equipment

AN AMERICAN NATIONAL STANDARD



**The American Society of
Mechanical Engineers**

Two Park Avenue • New York, NY • 10016 USA

Date of Issuance: December 30, 2024

The next edition of this Standard is scheduled for publication in 2029. This Standard will become effective 1 year after the Date of Issuance.

This code or standard was developed under procedures accredited as meeting the criteria for American National Standards. The standards committee that approved the code or standard was balanced to ensure that individuals from competent and concerned interests had an opportunity to participate. The proposed code or standard was made available for public review and comment, which provided an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

ASME does not “approve,” “certify,” “rate,” or “endorse” any item, construction, proprietary device, or activity. ASME does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this document, and does not undertake to insure anyone utilizing a standard against liability for infringement of any applicable letters patent, nor does ASME assume any such liability. Users of a code or standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

Participation by federal agency representatives or persons affiliated with industry is not to be interpreted as government or industry endorsement of this code or standard.

ASME accepts responsibility for only those interpretations of this document issued in accordance with the established ASME procedures and policies, which precludes the issuance of interpretations by individuals.

The endnotes and preamble in this document (if any) are part of this American National Standard.



ASME Collective Membership Mark

All rights reserved. “ASME” and the above ASME symbol are registered trademarks of The American Society of Mechanical Engineers. No part of this document may be copied, modified, distributed, published, displayed, or otherwise reproduced in any form or by any means, electronic, digital, or mechanical, now known or hereafter invented, without the express written permission of ASME. No works derived from this document or any content therein may be created without the express written permission of ASME. Using this document or any content therein to train, create or improve any artificial intelligence and/or machine learning platform, system, application, model, or algorithm is strictly prohibited.

The American Society of Mechanical Engineers
Two Park Avenue, New York, NY 10016-5990

Copyright © 2024 by
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

CONTENTS

Foreword	vi
Committee Roster	iii
Correspondence With the PASE Committee	ix
Preface	x
Summary of Changes	xi
Part 1	
Introduction	1
1-1 Scope	1
1-2 Application	1
1-3 Purpose	1
1-4 References	1
Part 2	
General Requirements	3
2-1 Scope and Definitions	3
2-2 Design	4
2-3 Design Qualification Testing	5
2-4 Product Marking and Identification	5
2-5 Product Instructions and Safety Messages	5
2-6 Quality Assurance	6
2-7 Operation, Maintenance, and Inspection	6
2-8 Related Standards	6
2-9 Effective Date	6
Part 3	
Attachments, Adapters, and Accessories	7
3-1 Scope and Configuration	7
3-2 Design	7
3-3 Safety Markings and Messages	7
3-4 Design Qualification Testing	7
Part 4	
Automotive Hydraulic Jacks	9
4-1 Scope, Configuration, and Illustrations	9
4-2 Design	9
4-3 Safety Markings and Messages	16
4-4 Design Qualification Testing	16
Part 5	
Automotive Mechanical Jacks	18
5-1 Scope, Configuration, and Illustrations	18
5-2 Design	18
5-3 Safety Markings and Messages	18
5-4 Design Qualification Testing	20
Part 6	
Automotive Stands	21
6-1 Scope, Configuration, and Illustrations	21
6-2 Design	21

6-3	Safety Markings and Messages	28
6-4	Design Qualification Testing	29
Part 7	Automotive Ramps	30
7-1	Scope, Configuration, and Illustrations	30
7-2	Design	30
7-3	Safety Markings and Messages	30
7-4	Design Qualification Testing	32
Part 8	Mobile Vehicle Lifts and Jacks	34
8-1	Scope, Configuration, and Illustrations	34
8-2	Design	34
8-3	Safety Markings and Messages	38
8-4	Design Qualification Testing	39
Part 9	Vehicle Transport Lifts	40
9-1	Scope, Configuration, and Illustration	40
9-2	Design	40
9-3	Safety Markings and Messages	40
9-4	Design Qualification Testing	41
Part 10	Vehicle-Moving Dollies	43
10-1	Scope, Configuration, and Illustrations	43
10-2	Design	43
10-3	Safety Markings and Messages	43
10-4	Design Qualification Testing	43
Part 11	Component Dollies and Jacks	45
11-1	Scope, Configuration, and Illustrations	45
11-2	Design	47
11-3	Safety Markings and Messages	47
11-4	Design Qualification Testing	47
Part 12	Shop Cranes	49
12-1	Scope, Configuration, and Illustrations	49
12-2	Design	49
12-3	Safety Markings and Messages	49
12-4	Design Qualification Testing	49
Part 13	Engine Stands	52
13-1	Scope, Configuration, and Illustrations	52
13-2	Design	52
13-3	Safety Markings and Messages	52
13-4	Design Qualification Testing	53
Part 14	Shop Presses	55
14-1	Scope, Configuration, and Illustrations	55
14-2	Design	55
14-3	Safety Markings and Messages	57
14-4	Design Qualification Testing	57
Part 15	Oil-Filter Crushers	58
15-1	Scope, Configuration, and Illustrations	58
15-2	Design	58

15-3	Safety Markings and Messages	58
15-4	Design Qualification Testing	58
Part 16	Strut Spring Compressors	61
16-1	Scope, Configuration, and Illustrations	61
16-2	Design	61
16-3	Product Marking	61
16-4	Safety Markings and Messages	61
16-5	Design Qualification Testing	64
Part 17	Oil and Antifreeze Handlers	65
17-1	Scope, Configuration, and Illustrations	65
17-2	Design	65
17-3	Safety Markings and Messages	65
17-4	Design Qualification Testing	66
Part 18	Portable Hydraulic Power Kits	67
18-1	Scope, Configuration, and Illustrations	67
18-2	Design	67
18-3	Safety Markings and Messages	69
18-4	Design Qualification Testing	69
Part 19	Engine Support Tools	71
19-1	Scope, Configuration, and Illustration	71
19-2	Design	71
19-3	Safety Markings and Messages	71
19-4	Design Qualification Testing	72
Figures		
4-1.3-1	Typical Single-Stage Hydraulic Jack	10
4-1.3-2	Typical Multiple-Stage Hydraulic Jack	11
4-1.3-3	Typical Pneumatic/Hydraulic Jack	11
4-1.3-4	Typical Wheeled Pneumatic/Hydraulic Jack	12
4-1.3-5	Typical Hydraulic Service Jacks	13
4-1.3-6	Typical Pneumatic/Hydraulic Service Jacks	14
4-1.3-7	Typical Forklift Jack	15
4-2.1.2-1	Lift Arm Parallel	15
4-2.1.2-2	Saddle Periphery Limits	16
4-4.3.2-1	Saddle Periphery Test	17
5-1.3-1	Typical Mechanical Screw Jacks	19
5-1.3-2	Typical Mechanical Ratchet Jacks	19
5-1.3-3	Typical Hinged Jack	20
6-1.3-	Typical Vehicle Support Stands	22
6-1.3-2	Typical High-Reach Fixed Stand, Sawhorse Type	23
6-1.3-3	Typical High-Reach Fixed Stand, Tripod Type	24
6-1.3-4	Typical High-Reach Supplementary Stand	25
6-1.3-5	Typical Auxiliary Stands	26
6-2.1-1	Horizontal Dimensions and Vertical Heights for Stability	27
6-4.1.1-1	Application of Load for Off-Center Load Test	29

6-4.1.2-1	Application of Load for Centered Load Test	29
7-1.3-1	Typical Automotive Ramps	31
7-4.1.1-1	Typical Test Area for Off-Center Load Test	32
7-4.1.2-1	Typical Test Area for Proof Load Test	33
8-1.3-1	End Lifts	35
8-1.3-2	Wheel Lift	36
8-1.3-3	Bridge Jack	37
9-1.3-1	Typical Vehicle Transport Lift	41
10-1.3-1	Typical Vehicle-Moving Dollies	44
11-1.3-1	Typical Floor-Style Component Dolly and Jack	45
11-1.3-2	Typical High-Rise Component Dolly and Jacks	46
12-1.3-1	Typical Shop Cranes	50
13-1.3-1	Typical Single-Post Engine Stands	53
13-1.3-2	Typical Twin-Post Engine Stand	53
14-1.3-1	Shop Press, Air or Hydraulic	56
14-1.3-2	Shop Press, Manual Hydraulic	56
14-1.3-3	Shop Press, Manual Hydraulic Bench	56
15-1.3-1	Typical Oil-Filter Crushers	59
16-1.3-1	Typical Portable Strut Spring Compressors	62
16-1.3-2	Typical Stand-Type Strut Spring Compressors	63
17-1.3-1	Oil and Antifreeze Handlers, Pneumatic	66
18-1.3-1	Typical Portable Hydraulic Power Kit	68
18-1.3-2	Standard Kit Fit-Up	68
18-1.3-3	Standard Kit Set for Applying Force	69
19-1.3-1	Typical Engine Support Tool	72
Table		
11-2.1.4	Example of Tilt Angle Table	47

FOREWORD

This ASME Standard, Safety Standard for Portable Automotive Service Equipment, has been developed under the procedures for ASME Codes and Standards development committees. This Standard had its beginning in June 1977 when the Jack Institute addressed the B30 Committee on Cableways, Cranes, Derricks, Hoists, Hooks, Jacks, and Slings. The Jack Institute requested the B30 Committee either to develop a standard for automotive jacks or to include this equipment as part of the revision of ASME B30.1, Jacks. The B30 Committee declined this request.

As a result, the Jack Institute petitioned the American National Standards Institute (ANSI) in July 1979 for the formation of a committee to promulgate safety and performance standards for portable automotive lifting devices, requesting the designation of ASME as sponsor of the project.

In September 1979, ASME's Policy Board, Codes and Standards, approved sponsorship of the committee to operate under the procedures developed by ASME and accredited by ANSI. A nominating committee was appointed to recommend a proposed membership to the ASME Safety Codes and Standards Committee for approval. The membership was approved at the beginning of May 1980.

The inaugural meeting of the ASME Committee on Portable Automotive Lifting Devices (PALD), was held in July 1980. The Committee determined that the format of this standard would be such that separate volumes, each complete as to design, marking, identification, testing, operation, inspection, and maintenance, would cover the different types of equipment included in the PALD scope. In the 1993 edition, the various volumes were combined into one standard with common requirements in one place and the information specific to a particular type of equipment set out in succeeding Parts. This allowed for greater consistency in requirements and eliminated redundancy.

In April 2007, the ASME Committee on PALD recognized the need to develop a standard for PALD-related equipment not covered under the ASME PALD standard. As a result, an ASME PALD subcommittee was appointed by members currently serving on the ASME PALD Committee to propose a new standard for these products. This subcommittee then drafted a basic scope and outline of this new standard and petitioned the ASME Council of Codes and Standards for permission to proceed with the development of this standard to cover equipment described in the charter of the ASME PALD Committee. The standard was approved by ANSI on February 3, 2010, as the Safety Standard for Automotive Service and Maintenance Products (ASP).

In July 2011, the PALD Committee approved changing the name and charter of the PALD Committee to the Portable Automotive Service Equipment (PASE) Committee to encompass both the ASME PALD and ASME ASP published standards. As a result of this change, the Committee decided to combine the two standards into this new Safety Standard for Portable Automotive Service Equipment. This Standard presents a coordinated set of rules that may serve as a guide to manufacturers, to government and other regulatory bodies, to municipal authorities, and to commercial users responsible for the inspection, maintenance, and instruction in the use of the equipment falling within its scope.

Safety codes and standards are developed to enhance public health and safety. Revisions result from Committee consideration of factors such as technological advances, new data, and changing environmental and industry needs. Revisions do not imply that previous editions were inadequate.

ASME PASE-2019 was approved by ANSI on March 25, 2019. ASME PASE-2024 was approved by ANSI on September 16, 2024.

ASME PASE COMMITTEE PORTABLE AUTOMOTIVE SERVICE EQUIPMENT

(The following is the roster of the committee at the time of approval of this Standard.)

STANDARDS COMMITTEE OFFICERS

F. G. Heath, *Chair*
S. J. Rucker, *Vice Chair*
N. Gomez, *Secretary*

STANDARDS COMMITTEE PERSONNEL

D. A. Alexander, Retired
J. Dames, Torin Jacks, Inc.
R. Fox, VIS, LLC
N. Gomez, The American Society of Mechanical Engineers
F. G. Heath, Heath and Associates
R. Hulden, Autosport Manufacturing, Inc.
J. T. Moore, Moore's Tire and Service Express
S. J. Rucker, Gray Manufacturing Co., Inc.
B. Sampson, Shinn Fu Company of America, Inc.

D. Soos, Automotive Lift Institute, Inc.
J. Xu, TÜV SÜD
R. Herzog, *Alternate*, Gray Manufacturing, Inc.
M. Rinaldi, *Alternate*, VIS, LLC
A. F. Decker, *Contributing Member*, Absolute Equipment, Ltd./
Durapac USA
J. Heath, *Contributing Member*, Tire Industry Association
B. Polgrean, *Contributing Member*, Harbor Freight
A. Scorgie, *Contributing Member*, Harbor Freight

CORRESPONDENCE WITH THE PASE COMMITTEE

(24)

General. ASME codes and standards are developed and maintained by committees with the intent to represent the consensus of concerned interests. Users of ASME codes and standards may correspond with the committees to propose revisions or cases, report errata, or request interpretations. Correspondence for this Standard should be sent to the staff secretary noted on the committee's web page, accessible at <https://go.asme.org/PASEcommittee>.

Revisions and Errata. The committee processes revisions to this Standard on a continuous basis to incorporate changes that appear necessary or desirable as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published in the next edition of the Standard.

In addition, the committee may post errata on the committee web page. Errata become effective on the date posted. Users can register on the committee web page to receive email notifications of posted errata.

This Standard is always open for comment, and the committee welcomes proposals for revisions. Such proposals should be as specific as possible, citing the paragraph number, the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent background information and supporting documentation.

Cases. The committee does not issue cases for this Standard.

Interpretations. Upon request, the committee will issue an interpretation of any requirement of this Standard. An interpretation can be issued only in response to a request submitted through the online Inquiry Submittal Form at <https://go.asme.org/InterpretationRequest>. Upon submitting the form, the inquirer will receive an automatic email confirming receipt.

ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Standard requirements. If, based on the information submitted, it is the opinion of the committee that the inquirer should seek assistance, the request will be returned with the recommendation that such assistance be obtained. Inquirers can track the status of their requests at <https://go.asme.org/interpretations>.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons affected by an interpretation may appeal to the cognizant ASME committee or subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Interpretations are published in the ASME Interpretations Database at <https://go.asme.org/Interpretations> as they are issued.

Committee Meetings. The PASE Standards Committee regularly holds meetings that are open to the public. Persons wishing to attend any meeting should contact the secretary of the committee. Information on future committee meetings can be found on the committee web page at <https://go.asme.org/PASEcommittee>.

PREFACE

GENERAL

This Standard is one of many safety standards on various subjects that have been formulated under the general auspices of The American Society of Mechanical Engineers (ASME). One purpose of the Standard is to serve as a guide to governmental authorities having jurisdiction over subjects within the scope of the Standard. It is expected, however, that the Standard will find a major application in industry, serving as a guide to manufacturers, suppliers, purchasers, and operators of the equipment. If adopted for governmental use, the references to other national standards in this Standard may be changed to refer to the corresponding regulations of the governmental authorities.

The use of portable automotive service equipment (PASE) is subject to certain hazards that cannot be precluded by mechanical means, but only by the exercise of intelligence, care, and common sense. It is therefore essential to have personnel involved in the use and operation of equipment who are careful, competent, trained, and qualified in the safe operation of the equipment and its proper use when servicing motor vehicles and their components. Examples of hazards are dropping, tipping, or slipping of motor vehicles or their components caused primarily by improperly securing loads; overloading; off-centered loads; use on other than hard, level surfaces; and using equipment for a purpose for which it was not designed.

The PASE Committee fully realizes the importance of proper size, strength, and stability as safety factors in the design of this equipment. This equipment is used on various motor vehicles and their components under variable working conditions. These conditions have been considered to provide safety and flexibility in its use. The requirements given in this Standard must be interpreted accordingly and judgment should be used in determining their application.

MANDATORY AND ADVISORY RULES

Mandatory rules of this Standard are characterized by use of the word *shall*. If a provision is of an advisory nature, it is indicated by use of the word *should* and is a recommendation to be considered, the advisability of which depends on the facts in each situation.

SI (METRIC) CONVERSIONS

This Standard contains SI (metric) units as well as U.S. Customary units. The values stated in U.S. Customary units are to be regarded as the standard. The SI units in the text have been directly (soft) converted from the U.S. Customary units.

ASME PASE-2024 SUMMARY OF CHANGES

Following approval by the ASME PASE Standards Committee and ASME, and after public review, ASME PASE-2024 was approved by the American National Standards Institute on September 16, 2024.

ASME PASE-2024 includes the following changes identified by a margin note, **(24)**.

<i>Page</i>	<i>Location</i>	<i>Change</i>
ix	Correspondence With the PASE Committee	Added
x	Preface	Revised
1	1-4	Updated
3	2-1.2	Definition of <i>load-loss control</i> added
4	2-2.1	Revised
5	2-4.2	Last sentence revised
9	4-2.1.2	Second and third sentences revised
16	4-4.1	Subparagraph (b) revised
18	5-1.2	Subparagraph (a) revised
20	5-4.1	Revised
21	6-2.3	Third and fourth sentences added
28	6-3.1	Subparagraphs (a)(8), (a)(9), and (b)(8) added and subsequent subparagraphs redesignated
29	6-4.1.1	First sentence added
34	8-1.1	Revised
34	8-1.2	Revised
34	8-2	Revised in its entirety
38	8-3.1.1	(1) Subparagraph (c) revised (2) Subparagraph (e) added and subsequent subparagraphs redesignated
38	8-3.1.2	Subparagraphs (c), (d), (g), and (h) revised
38	8-3.1.3	Revised
38	8-3.2.1	Subparagraph (b) added and subsequent subparagraph redesignated
39	8-3.2.2	Revised
39	8-3.2.3	Subparagraph (b) added and subsequent subparagraph redesignated
39	8-4.1	Revised in its entirety
39	8-4.2	Revised in its entirety
47	11-2.1.3	Revised
47	11-2.1.4	Added
47	Table 11-2.1.4	Added

<i>Page</i>	<i>Location</i>	<i>Change</i>
47	11-3.1	Subparagraph (f) added and subsequent subparagraph redesignated
47	11-3.2	Subparagraph (a) revised
48	11-4.1.6	Revised
46	Figure 11-1.3-2	Title of illustration (b) revised
66	17-4.1.2	Cross-reference in first sentence revised
67	18-1.2	Revised
72	Figure 19-1.3-1	Terms “Boom” and “Support arm” revised to “Transverse beam” and “Secondary beam,” respectively

Part 1

Introduction

1-1 SCOPE

The scope of this Standard is the standardization of safety and performance requirements for portable automotive service equipment (PASE) including, but not limited to, the following:

- (a) attachments, adapters, and accessories
- (b) automotive hydraulic jacks
- (c) automotive mechanical jacks
- (d) automotive stands
- (e) automotive ramps
- (f) mobile vehicle lifts and jacks
- (g) vehicle transport lifts
- (h) vehicle-moving dollies
- (i) component dollies and jacks
- (j) shop cranes
- (k) engine stands
- (l) shop presses
- (m) oil-filter crushers
- (n) strut spring compressors
- (o) oil and antifreeze handlers
- (p) portable hydraulic power kits
- (q) engine support tools

This Standard includes requirements for safety, health, design, production, construction, maintenance, performance, or operation of electrical, mechanical, hydraulic, or pneumatically powered equipment, and qualification of personnel. Safety and construction requirements for electrical equipment are included in UL 201 and UL 2089. As deemed necessary by the ASME PASE Committee, additional equipment classified as PASE-related can be added as the need arises, to ensure the safe operation of the equipment by the end user.

1-2 APPLICATION

This Standard applies to design, construction, marking, operation, maintenance, and owner or operator inspection of the portable automotive service equipment listed in [section 1-1](#) used during service, maintenance, and storage of components, vehicles, or both. Operation and maintenance instructions in this Standard are intended for general application. The equipment manufacturer or supplier shall be consulted for specific operating and maintenance instructions. This Standard does not apply to similar lifting devices designed and manufactured for other commercial or industrial uses, such as those

within the scope of ASME B30.1, ANSI/ALI ALCTV, ANSI/ALI ALIS, and ANSI/ALI ALOIM.

1-3 PURPOSE

This Standard is designed to

- (a) guard against and mitigate injury, and otherwise provide for the protection of life, limb, and property by prescribing safety requirements
- (b) provide direction to purchasers, owners, employers, supervisors, and others concerned with, or responsible for, its application
- (c) guide governmental and other regulatory bodies in the development, promulgation, and enforcement of appropriate safety directives

1-4 REFERENCES

(24)

The following is a list of standards and specifications referenced in this Standard:

- ANSI/ALI ALCTV. Standard for Automotive Lifts — Safety Requirements for Construction, Testing, and Validation. Automotive Lift Institute.
- ANSI/ALI ALIS. Standard for Automotive Lifts — Safety Requirements for Installation and Service. Automotive Lift Institute.
- ANSI/ALI ALOIM. Standard for Automotive Lifts — Safety Requirements for Operation, Inspection, and Maintenance. Automotive Lift Institute.
- ANSI/ISEA Z87.1. Occupational and Educational Personal Eye and Face Protection Devices. International Safety Equipment Association.
- ANSI Z535.1. Safety Colors. National Electrical Manufacturers Association.
- ANSI Z535.3. Criteria for Safety Symbols. National Electrical Manufacturers Association.
- ANSI Z535.4. Product Safety Signs and Labels. National Electrical Manufacturers Association.
- ANSI Z535.6. Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials. National Electrical Manufacturers Association.
- ASME B30.1. Jacks, Industrial Rollers, Air Casters, and Hydraulic Gantries. The American Society of Mechanical Engineers.