

ASME B107.60-2004

Pry Bars

AN AMERICAN NATIONAL STANDARD



**The American Society of
Mechanical Engineers**

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CONTENTS

Foreword	iv
Committee Roster	v
Correspondence With the B107 Committee	vi
1 Scope	1
2 Classifications	1
3 References	1
4 Definitions	1
5 Requirements	2
6 Tests	2
7 Safety Requirements and Limitations of Use	4
Figures	
1 Type I: Close Quarter	1
2 Type II: Die Setter	1
3 Type III: Handled	1
4 Type IV: Pinch	1
5 Type V: Rolling Head	1
6 Prying Test	2
7 Point End Test	3
8 Handle Impact Test	4
Tables	
1 Prying End Test Specifications	3
2 Point End Test Specifications	3
3 Handle Tensile Force Test Loads	3
4 Handle Impact Test Specifications	3

FOREWORD

The American National Standards Committee B107, Socket Wrenches and Drives, under sponsorship of The American Society of Mechanical Engineers, was reorganized as an ASME Standards Committee and its title was changed to Hand Tools and Accessories. In 1996, the Committee scope was expanded to include safety considerations.

The purposes of this Standard are to define essential performance and safety requirements specifically applicable to pry bars, to specify test methods to evaluate performance relating to the defined requirements, and to indicate limitations of safe use.

The format of this Standard is in accordance with *The ASME Codes and Standards Writing Guide 2000*. Requests for interpretations of the technical requirements, and suggestions for the improvement of this Standard, should be addressed to The American Society of Mechanical Engineers, Secretary, B107 Standards Committee, Three Park Avenue, New York, NY 10016-5990.

The requirements of this Standard become effective at the time of publication.

This new edition was approved as an American National Standard on October 5, 2004.

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Hand Tools and Accessories

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The request for interpretation should be clear and unambiguous. It is further recommended that the inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry.
Edition:	Cite the applicable edition of the Standard for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in this format may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

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PRY BARS

1 SCOPE

This Standard provides performance and safety requirements for pry bars that are intended for separating, prying, ripping, lifting, scraping, and aligning applications. There are numerous varieties of pry bar designs and intended uses. Pry bars are not designed to be struck. This Standard covers specific types of pry bars and their intended safe uses.

This Standard is intended to serve as a guide in selecting, testing, and using the hand tools covered herein. It is not the purpose of this Standard to specify the details of manufacturing.

This Standard is also meant to serve as a guide in developing manuals and posters and for training personnel to work safely.

This Standard may be used as a guide by state authorities or other regulatory bodies in the formulation of laws or regulations. It is also intended for voluntary use by establishments that use or manufacture the tools covered.

The methods employed to ensure compliance with this Standard shall be determined by the proper regulatory or administrative authority.

2 CLASSIFICATIONS

Type I: Close Quarter (Fig. 1)

Type II: Die Setter (Fig. 2)

Type III: Handled (Fig. 3)

Type IV: Pinch (Fig. 4)

Type V: Rolling Head (Fig. 5)

3 REFERENCES

The following publications are referenced in this Standard.

ANSI Z87.1, Practice for Occupational and Educational Eye and Face Protection

ANSI Z535.4, Product Safety Signs and Labels

Publisher: American National Standards Institute (ANSI), 25 West 43rd Street, New York, NY 10036

ASTM E18, Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

Publisher: American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428

Guide to Hand Tools - Selection, Safety Tips, Proper Use and Care

Publisher: Hand Tools Institute (HTI), 25 North Broadway, Tarrytown, NY 10591-3201

4 DEFINITIONS

body: straight portion of bar (excluding the handle grip when provided) used for gripping during prying operations.

chisel end: portion of bar having a tapered shape gradually reducing to and including the prying edge.

equivalent: the word "equivalent" in this Standard shall be interpreted to mean alternative designs or features that will provide an equal degree of safety and performance.



Fig. 1 Type I: Close Quarter



Fig. 2 Type II: Die Setter



Fig. 3 Type III: Handled

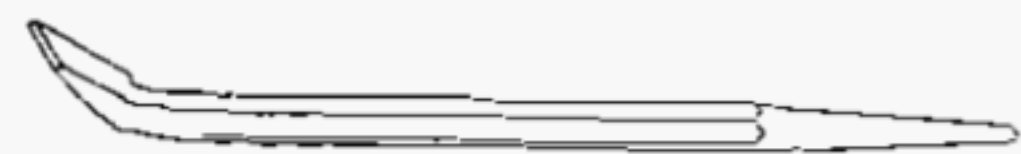


Fig. 4 Type IV: Pinch



Fig. 5 Type V: Rolling Head

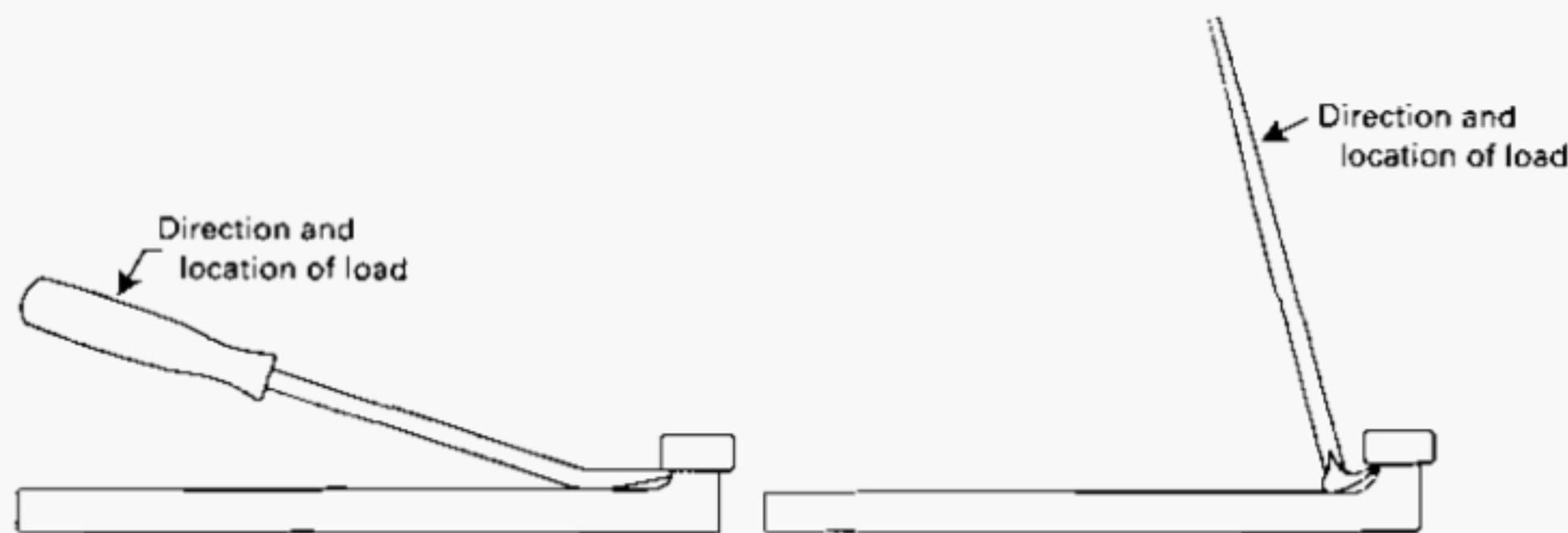


Fig. 6 Prying Test

handle: additional material that is securely attached to the body and is to be gripped during use.

point end: portion of bar having a tapered, round, cross-sectional area that is intended for aligning applications.

prying edge: edge formed by the tapering of the chisel end or claw end.

prying end: portion of bar having a chisel end or a claw end.

safety message: information imprinted on or affixed to the bar that is intended to promote safety.

shall and *should*: mandatory requirements of this Standard are characterized by the word "shall." If a provision is of an advisory nature, it is indicated by the word "should" or is stated as a recommendation.

5 REQUIREMENTS

Pry bars shall pass the tests specified in para. 6 as applicable.

5.1 Design

5.1.1 Type I: Close Quarter. Pry bars shall have a sharply bent chisel end providing leverage in limited space applications and a pointed end for alignment applications.

5.1.2 Type II: Die Setter. Pry bars shall have a bent half loop chisel end for separating or prying applications and a straight chisel end for scraping or prying.

5.1.3 Type III: Handled. Pry bars shall have a slightly bent chisel end for separating, scraping, or prying applications and a handle grip.

5.1.4 Type IV: Pinch. Pry bars shall have a slightly bent chisel end for separating, scraping, or prying applications and a pointed end for alignment applications.

5.1.5 Type V: Rolling Head. Pry bars shall have a formed rounded chisel end that acts as a fulcrum to provide leverage and a pointed end for alignment applications.

5.2 Materials

The materials used in the manufacture of pry bars shall be such as to produce pry bars conforming to the requirements specified herein.

5.3 Mechanical Properties

Pry bars shall have a maximum hardness of 50 HRC or equivalent.

5.4 Surface Conditions

Pry bars shall be free of nonfunctional sharp edges, points, and surface roughness that could inflict personal injury to the user or adversely affect performance.

6 TESTS

Many tests required herein are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests. Tests shall be conducted at a temperature between 40°F and 90°F.

Separate (new) samples shall be used for each test. Failure to meet the requirements of the applicable tests indicates that the pry bars do not comply with this Standard.

6.1 Hardness

Hardness determination shall be made in accordance with ASTM E18.

6.2 Prying Tests

6.2.1 Prying End Test. The load shall be applied near the middle of the handle or grip area of the pry bar (see Fig. 6). Apply a slow, steady load to the pry bar to meet the torque specified in Table 1. If the blade or tip fails, takes a permanent set, or if the handle loosens from the pry bar, the pry bar has failed this test.

6.2.2 Point End Test. The load shall be applied near the middle of the handle or grip area of the pry bar (see Fig. 7). Apply a slow, steady load to the pry bar to meet the minimum bend angle specified in Table 2. The pry

Table 1 Prying End Test Specifications

Pry Bar Type	Nominal Overall Length, in.	Minimum Torque, lbf-in.
Type I: Close Quarter	9	280
	16	700
	18	800
	22	1,500
Type II: Die Setter	...	2,600
Type III: Pry Bar With Handle	8	500
	12	1,200
	18	1,400
	24	1,600
	36	2,900
Type IV: Pinch	13.5	460
	15	650
	16	1,800
	30	2,800
	36	5,100
Type V: Rolling Head (rolling head end)	6	500
	12	1,200
	16	1,400
	20	1,600

Table 2 Point End Test Specifications

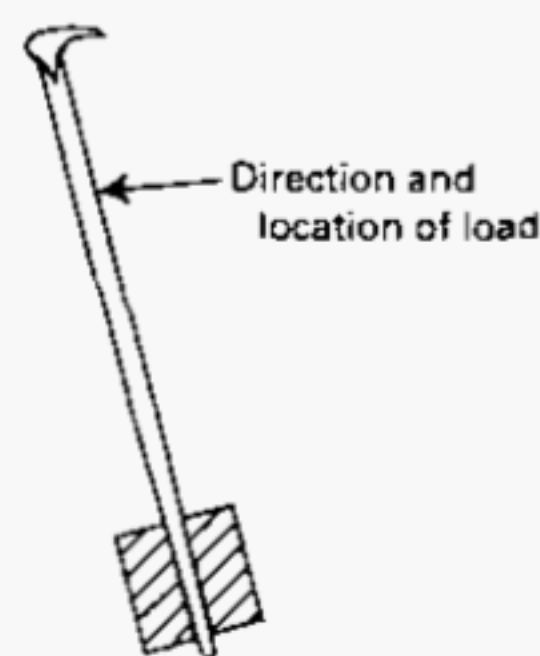
Pry Bar Type	Nominal Length, in.	Minimum Bend Angle, deg
Type I: Close Quarter	...	30
Type II: Die Setter	...	30
Type IV: Pinch	13.5	30
	15	30
	17	30
	26	30
	30	30
	36	30
Type V: Rolling Head Insertion to midpoint of taper ± 0.13	Less than or equal to 6	20
	All others	30

Table 3 Handle Tensile Force Test Loads

Nominal Across Flats of Shank, in.	Minimum Load, lb
Up to $\frac{1}{4}$	150
Above $\frac{1}{4}$ up to $\frac{3}{8}$	210
Above $\frac{3}{8}$ up to $\frac{7}{16}$	275
Above $\frac{7}{16}$	475

Table 4 Handle Impact Test Specifications

Nominal Blade Width, in.	Drop Weight, lb, ± 2 oz	Drop Height, in., ± 0.5	Maximum Blade Penetration Into Handle, in.
Up to $\frac{1}{4}$	15	10.0	0.7
Above $\frac{1}{4}$ up to $\frac{3}{8}$	15	20.0	0.7
Above $\frac{3}{8}$ up to $\frac{7}{16}$	15	25.0	0.7
Above $\frac{7}{16}$	15	35.0	0.7

**Fig. 7 Point End Test**

bar shall not fracture before the minimum bend angle is achieved.

6.3 Handle Solvent Resistance Test

Assembled pry bar handles shall be fully immersed in the test fluids specified (new samples shall be used for each test fluid) for 15 min to 20 min at room temperature, removed, and let stand for 24 hr to 48 hr. Test fluids are SAE J1703 brake fluid, gasoline, ethylene glycol, and ethyl alcohol. There shall be no significant swelling nor surface attack of the material being tested.

6.4 Handle Tensile Force (Pull Apart) Test

Assembled pry bar handles shall not break, loosen, or separate from the pry bar when subjected to the force specified in Table 3.

6.5 Handle Impact Test

See Table 4 and Fig. 8.

6.5.1 The test plate shall have a hardness of 45 HRC to 50 HRC.

6.5.2 The test plate shall rest on a solid foundation.

6.5.3 The striking weight shall fall freely through a seamless tube having an inner dimension slightly larger than the weight.

6.5.4 The striking face of the weight shall have a minimum hardness of 54 HRC.

6.5.5 Impact each sample 20 times.

6.5.6 Assembled pry bar handles shall not break, crack, nor significantly distort. "Significantly distort" (for the purpose of this test) means an increase of at least 5% in the handle diameter, either as a uniform or irregular bulge.

7 SAFETY REQUIREMENTS AND LIMITATIONS OF USE

Instructors and employers shall stress proper use and safety in the use of this special purpose tool and shall emphasize the necessity to wear and ensure the use of safety goggles. The publication *Guide to Hand Tools - Selection, Safety Tips, Proper Use and Care* provides guidelines for the safe use of hand tools.

7.1

Pry bars are special purpose tools designed and intended only for the specific use of separating, prying, ripping, lifting, scraping, and aligning applications.

7.2

To avoid possible eye or other bodily injury, pry bars shall be used only for the purpose specified in para. 7.1.

7.3

A pry bar is not intended to be struck.

7.4

To avoid possible eye injury from flying objects, safety goggles or equivalent eye protection conforming to ANSI Z87.1 shall be worn by the user and all persons in the immediate area where any pry bar is being used.

7.5

A pipe extension or other form of "cheater" to increase the leverage of any pry bar shall never be used.

7.6

The pry bar shall be inspected prior to each use and its use shall be discontinued at the first sign of bending, cracking, or chipping.

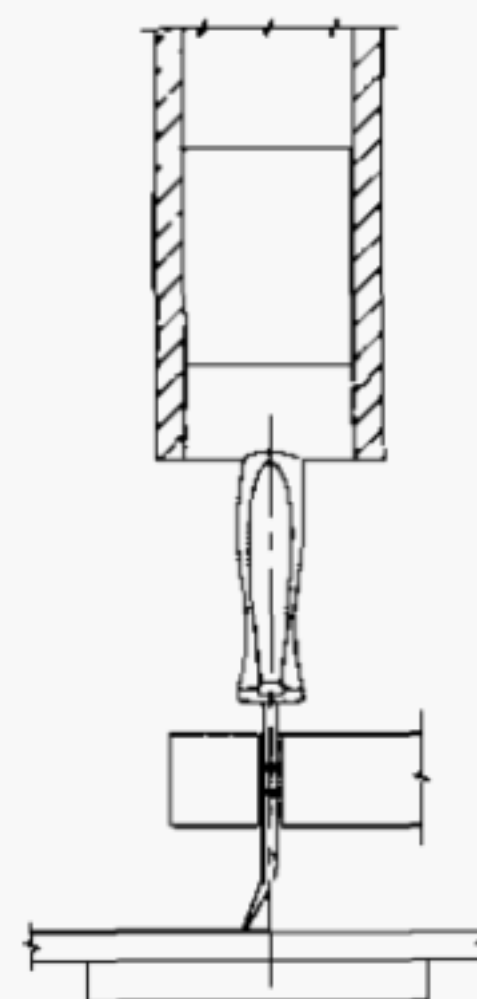


Fig. 8 Handle Impact Test

7.7

No part of the pry bar shall be ground, welded, treated by reheating, or otherwise altered from the original condition as furnished by the manufacturer.

7.8

Each pry bar shall be stamped, labeled, or otherwise marked on its body by the manufacturer with the following safety standard measure or equivalent.



**WARNING
WEAR SAFETY GOGGLES
USER AND BYSTANDER**

Pictorials are an acceptable equivalent. This safety message shall be located in a position that will not interfere with the quality or performance of the tool.

The principles given in ANSI Z535.4 shall be used as a guide for alternate, equivalent methods of labeling.

AMERICAN NATIONAL STANDARDS FOR HAND TOOLS

Socket Wrenches, Hand (Inch Series)	B107.1-2002
Socket Wrenches, Extensions, Adaptors, and Universal Joints, Power Drive (Impact) (Inch Series)	B107.2-2002
Driving and Spindle Ends for Portable Hand, Impact, Air, and Electric Tools (Percussion Tools Excluded)	B107.4M-1995
Socket Wrenches, Hand (Metric Series)	B107.5M-2002
Adjustable Wrenches	B107.8-2003
Handles and Attachments for Hand Socket Wrenches — Inch and Metric Series	B107.10M-1996
Pliers: Diagonal Cutting and End Cutting	B107.11-2002
Nut Drivers (Spin Type, Screwdriver Grip) (Inch Series)	B107.12-1997
Pliers: Long Nose, Long Reach	B107.13-2003
Hand Torque Tools	B107.14M-1994
Flat Tip Screwdrivers	B107.15-2002
Shears (Metal Cutting, Hand)	B107.16M-1998 (R2004)
Gages, Wrench Openings, Reference	B107.17M-1997
Pliers: Wire Twister	B107.18-2003
Pliers, Retaining Ring	B107.19-2004
Pliers (Lineman's, Iron Worker's, Gas, Glass, Fence, and Battery)	B107.20M-1998
Wrench, Crowfoot Attachments	B107.21-1998
Electronic Cutters	B107.22M-1998
Pliers, Multiple Position, Adjustable	B107.23M-1997
Locking Pliers	B107.24-2002
Pliers: Performance Test Methods	B107.25-2002
Pliers: Multiple Position, Electrical Connector	B107.27-2003
Electronic Torque Instruments	B107.28M-1997
Electronic Tester, Hand Torque Tools	B107.29M-1998
Cross Tip Screwdrivers	B107.30-2002
Screwdrivers, Cross Tip Gaging	B107.31M-1997
Socket Wrenches, Impact (Metric Series)	B107.33M-2002
Socket Wrenches for Spark Plugs	B107.34-2003
Nut Drivers (Spin Type, Screwdriver Grip) (Metric Series)	B107.35M-1997
Pliers: Locking, Clamp, and Tubing Pinch-Off	B107.36-2002
Pliers: Wire Cutters/Strippers	B107.37-2003
Electronic Pliers	B107.38M-1998
Nail Hammers — Safety Requirements	B107.41-2004
Hatchets: Safety Requirements	B107.42M-1997 (R2004)
Wood-Splitting Wedges	B107.43-2002
Glaziers' Chisels and Wood Chisels	B107.44-2002
Ripping Chisels and Flooring/Electricians' Chisels	B107.45-2002
Stud, Screw, and Pipe Extractors: Safety Requirements	B107.46-2004
Metal Chisels: Safety Requirements	B107.47M-1998
Metal Punches and Drift Pins: Safety Requirements	B107.48M-1998
Nail Sets: Safety Requirements	B107.49M-1998
Brick Chisels and Brick Sets: Safety Requirements	B107.50M-1998
Star Drills: Safety Requirements	B107.51-2001
Nail-Puller Bars: Safety Requirements	B107.52M-1998
Ball Peen Hammers: Safety Requirements	B107.53-2004
Heavy Striking Tools: Safety Requirements	B107.54-2001
Axes: Safety Requirements	B107.55M-2002
Body Repair Hammers and Dolly Blocks: Safety Requirements	B107.56-1999
Bricklayers' Hammers and Prospecting Picks: Safety Requirements	B107.57-2001
Riveting, Scaling, and Tinner's Setting Hammers: Safety Requirements	B107.58M-1998
Slugging and Striking Wrenches	B107.59-2002
Pry Bars	B107.60-2004
Wrenches	B107.100-2002

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