

ASME Y14.40.3-2002

(Identical to ISO 14617-3: 2002)

GRAPHICAL SYMBOLS FOR DIAGRAMS, PART 3: CONNECTIONS AND RELATED DEVICES

An American National Standard



**The American Society of
Mechanical Engineers**

ADOPTION NOTICE

ASME Y14.40.3, Graphical Symbols for Diagrams, Part 3: Connections and Related Devices, was adopted on 19 December 2002 for use by the Department of Defense, DoD. Proposed changes by DoD activities must be submitted to the DoD Adopting Activity: Commander, U.S. Army TACOM-ARDEC, ATTN: AMSTA-AR-QAW-E, Picatinny Arsenal, NJ 07806-5000. Copies of this document may be purchased from The American Society of Mechanical Engineers (ASME), 22 Law Drive, PO Box 2900, Fairfield, NJ 07007-2900; <http://www.asme.org>.

Custodians:

Army — AR
Navy — SA
Air Force — 16
DLA — DH

Adopting Activity:

Army — AR

(Project DRPR-0371)

Review Activities:

Army — AT, AV, CE, CR, EA, MI, SM, TE
Navy — AS, CH, EC, MC, OS, SH, TD, YD
Air Force — 11, 13, 19, 68, 70, 71, 84, 99
DLA — CC, GS, IS
NSA — NS

AMSC N/A

AREA DRPR

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.



The American Society of
Mechanical Engineers

A N A M E R I C A N N A T I O N A L S T A N D A R D

GRAPHICAL SYMBOLS FOR DIAGRAMS, PART 3: CONNECTIONS AND RELATED DEVICES

ASME Y14.40.3-2002
(Identical to ISO 14617-3: 2002)

Date of Issuance: May 30, 2003

The next edition of this Standard is scheduled for publication in 2007. There will be no addenda or written interpretations of the requirements of this Standard issued to this edition.

ASME is the registered trademark of The American Society of Mechanical Engineers.

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 assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment that provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

ASME does not "approve," "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 assumes 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 representative(s) or person(s) 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.

No part of this document may be reproduced in any form,
in an electronic retrieval system or otherwise,
without the prior written permission of the publisher.

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

Copyright © 2003 by
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
All rights reserved
Printed in U.S.A.

CONTENTS

Foreword	iv
Standards Committee Roster	v
1 Scope	1
2 References	1
3 Terms and Definitions	1
4 Connections	3
5 Connection Joints and Pipeline Ends	6
6 Connection Joints, Junctions, and Related Devices of Specified Design	8
7 Fittings	9
8 Ports^{ISO}, Quick-Release Couplings, and Connectors	9
9 Additional Simplifications	10

FOREWORD

This Standard is the adoption as an American National Standard of ISO 14617-3:2002. The ASME Standards Committee Y14, Engineering Drawing Practices and Related Documentation, is responsible for this Standard and supervises the U.S. participation in the ISO Technical Committee 10 activity responsible for the development and maintenance of its counterpart ISO 14617-3 through the U.S. Technical Advisory Group for ISO/TC 10.

This Standard is *identical* to ISO 14617-3:2002 as that term is defined in ISO/IEC Guide 21:1999 and the first in a series of standards providing graphical symbols for diagrams in a variety of technical disciplines. The titles in this series include:

- Part 1: General Information and Indexes
- Part 2: Symbols Having General Application
- Part 3: Connections and Related Devices
- Part 4: Actuators and Related Devices
- Part 5: Measurement and Control Devices
- Part 6: Measurement and Control Functions
- Part 7: Basic Mechanical Components
- Part 8: Valves and Dampers
- Part 9: Pumps, Compressors and Fans
- Part 10: Fluid Power Converters
- Part 11: Devices for Heat Transfer and Heat Engines
- Part 12: Devices for Separating, Purification and Mixing
- Part 15: Installation Diagrams and Network Maps

Other parts are under preparation.

Suggestions for the improvement of this Standard are welcome. They should be sent to The American Society of Mechanical Engineers, Attention: Secretary, Y14 Standards Committee, Three Park Avenue, New York, NY 10016-5990.

This Standard was approved as an American National Standard on December 19, 2002.

ASME STANDARDS COMMITTEE Y14

Engineering Drawing and Related Documentation Practices

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

OFFICERS

F. Bakos, *Chair*
K. E. Wiegandt, *Vice Chair*
C. J. Gomez, *Secretary*

COMMITTEE PERSONNEL

A. R. Anderson, Dimensional Control Systems, Inc.
J. B. Baker, Consultant
F. Bakos, Consultant
J. V. Burleigh, The Boeing Co.
R. A. Chadderdon, Southwest Consultants
M. E. Curtis, Jr., Rexnord Corp.
D. E. Day, Monroe Community College
B. Dinardo, U.S. Department of the Army, ARDEC
C. W. Ferguson, WM Education Services
L. W. Foster, L. W. Foster Associates, Inc.
C. J. Gomez, The American Society of Mechanical Engineers
B. A. Harding, Purdue University
K. S. King, Naval Surface Warfare Center, Dahlgren Division
A. Krulikowski, General Motors Powertrain
H. S. Lachut, Alstom Power Inc.
P. J. McCuiston, Ohio University
E. Niemiec, MTD Products, Inc.
K. E. Wiegandt, Sandia National Laboratory
B. A. Wilson, The Boeing Co.
P. Wreede, Consultant

SUBCOMMITTEE 40 — GRAPHIC SYMBOLS

B. A. Harding, *Chair*, Purdue University
K. Boehme, National Fluid Power Association
V. Charles, U.S. Department of the Army, ARDEC
M. D. Hartlick, Boeing Commercial Airplanes
H. S. Lachut, Alstom Power Inc.
F. L. Shell, Jr., Consultant
B. S. Wood, Consultant

GRAPHICAL SYMBOLS FOR DIAGRAMS, PART 3: CONNECTIONS AND RELATED DEVICES

1 SCOPE

This Standard specifies graphical symbols for functional connections, mechanical links, pipelines, and related devices such as connection joints, ISO ports, terminals, quick-release couplings, and connectors, in diagrams.

For the fundamental rules of creation and application of graphical symbols in diagrams, see ASME Y14.40.0.

For an overview of the ASME Y14.40 series, information on the creation and use of registration numbers for identifying graphical symbols used in diagrams, rules for the presentation and application of these symbols, and examples of their use and application, see ASME Y14.40.1.

2 REFERENCES

The following references contain provisions which, through reference in this text, constitute provisions of this Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the references indicated below. For undated references, the latest edition applies.

ASME Y14.40.0, Basic Rules for the Design of Graphical Symbols for Use in the Technical Documentation of Products

ASME Y14.40.1, Graphical Symbols for Diagrams, Part 1: General Information and Indexes

Publisher: The American Society of Mechanical Engineers (ASME International), Three Park Avenue, New York NY 10016-5990; Order Department: 22 Law Drive, P.O. Box 2900, Fairfield, NJ 07007-2900

ISO 2553, Welded, brazed and soldered joints — Symbolic representation on drawings¹

ISO 4063, Welding and allied processes — Nomenclature of processes and reference numbers¹

Publisher: International Organization for Standardization (ISO), 1 rue de Varembe, Case Postale 56, CH-1211, Genève 20, Switzerland/Suisse

¹ Copies may also be obtained from American National Standards Institute, 25 West 43rd Street, New York, NY 10036.

3 TERMS AND DEFINITIONS

For the purposes of this Standard, the following terms and definitions apply:

NOTE: In those cases where the same term has substantially different meanings in ISO and IEC, this is indicated beside the term by [ISO] or [IEC] and elsewhere in this Standard by a superscript, for example, "port^{ISO}."

3.1

connection: general term for functional connection, mechanical link, pipeline, electric conductor, etc.

3.2

functional connection: connection between functions.

NOTE: A functional connection is used to represent the interrelations between functions represented, for example, by symbols according to ASME Y14.40.6.

3.3

electric connection: conductor or circuit for joining terminals or other conductors.

3.4

connection [ISO]: threaded port, flange, or similar means for connecting a pipeline to a component, cf. *port* (3.13) and *terminal*.

3.5

internal connection: connection in the form of one or more pipelines or conductors that is an integral part of a component.

NOTE: An internal connection need not be located inside a component.

3.6

line [ISO]: abbreviation of the term "pipeline."

3.7

line [IEC]: multi-pole or multi-phase electric connection.

EXAMPLE: Power line, telecommunication line, transmission line.

3.8

cable: insulated conductor or several insulated conductors with a common covering.

3.9

pipe unit: pipeline or, more often, several pipelines in a common covering pipe with insulation.

3.10

information bus: bus with conductors conveying information.

3.11

unidirectional: having the property to move, transmit, etc. in one direction only.

3.12

bidirectional: having the property to move, transmit, etc. in two alternative, opposite directions.

3.13

port [ISO]: terminus of a fluid passage in a component to which can be connected pipelines for the transmission of fluid to or from the component, cf. *connection* (3.4) and *terminal*.

3.14

connector: component which terminates conductors, flexible pipes, or hoses in order to provide connection and

disconnection to a mating component, cf. *connector pair* (3.16).

3.15

quick-release coupling: connection (3.4) which may be joined or separated without the use of tools.

3.16

connector pair: combination of mating connectors.

3.17

bundle: group of conductors or pipelines that mainly follow the same path.


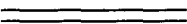







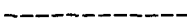
NOTE: The bundle may be a real (product) bundle or a line on a diagram representing a number of conductors or pipelines (single-line representation) even if these do not form a real bundle.

3.18

single-line representation: representation where two or more connections or components are represented by a single symbol.

4 CONNECTIONS**4.1 Symbols of a Basic Nature**

NOTE: For the application of the symbols, see R401 (4.2.1) and R402 (4.2.2).

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
4.1.1	401		Functional connection.
4.1.2	402	Form 1 	Mechanical link, shaft.
4.1.3	403	Form 2 	Mechanical link, shaft, wire.
4.1.4	404		Electrically insulating mechanical link, shaft, wire. See R403 (4.2.3).
4.1.5	405		Pipeline, duct.
4.1.6	406		Group of pipelines, ducts in single-line representation.
4.1.7	411		Non-guided electromagnetic beam.
4.1.8	412		Planned pipeline, duct.
4.1.9	413		Group of planned pipelines, ducts in single-line representation.
4.1.10	422		Pilot (control), drain, purge, or bleed line in fluid power systems.

4.2 Application Rules for the Symbols in Para. 4.1

Reference Number	Registration Number	Application Rule
4.2.1	R401	Symbols for connections may cross each other. For an example, see X401 (4.5.1).
4.2.2	R402	When confusion between symbols 401 (4.1.1) and 405 (4.1.5) or 406 (4.1.6) is likely, symbols giving supplementary information according to clause 4.3 shall be used. For an example, see X401 (4.5.1).
4.2.3	R403	In simplified representation, the symbol may also represent any type of linkage system between an actuator and the affected item, for example, a combination of mechanical links and hydraulic pipelines. For an example, see X405 (4.5.5).

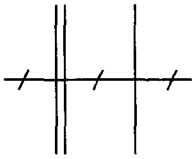



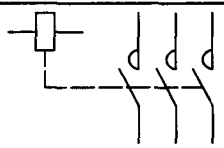
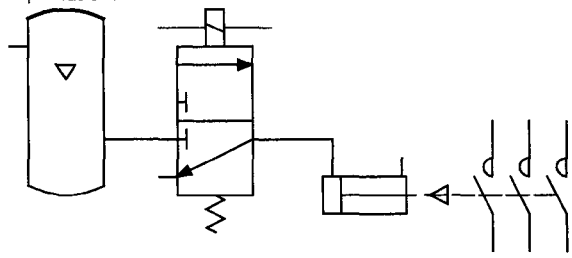
4.3 Symbols Giving Supplementary Information

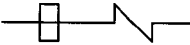
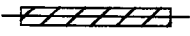
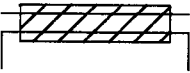
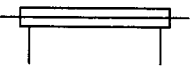
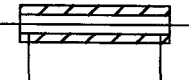


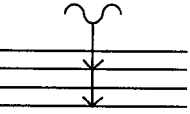
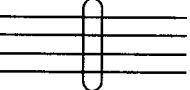
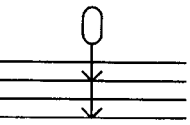
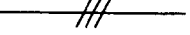
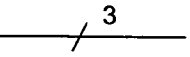
Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
4.3.1	431	--/-----/-----/---	Pure functional type.
4.3.2	432	--X-----X-----X---	Capillary type.
4.3.3	433	--^-----^-----^---	Pneumatic type.
4.3.4	434	--L-----L-----L---	Hydraulic type.
4.3.5	435	--E-----E-----E---	Electric type.
4.3.6	442	----->-----	Unidirectional information bus type.
4.3.7	443	-----<-----	Bidirectional information bus type.
4.3.8	444	Form 1 -----~-----	Flexible type. For form 1, see R412 (4.4.1).
4.3.9	452	Form 2 -----●-----●-----	
4.3.10	445	-----○-----	Circular shape.
4.3.11	446	-----□-----	Rectangular shape.
4.3.12	447	-----E-----	Ridged shape.
4.3.13	448	-----/-----	Twisted pipeline or duct.
4.3.14	449	-----○-----	Cable, pipe unit. See R412 (4.4.1).
4.3.15	450	-----/-----	Twisting of pipelines. See R412 (4.4.1).
4.3.16	451	INT INT -----	Internal connection. See R413 (4.4.2).

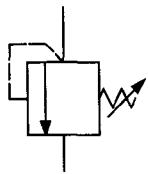
4.4 Application Rules for the Symbols in Para. 4.3

Reference Number	Registration Number	Application Rule
4.4.1	R412	The symbol may instead be located beside the line or lines, provided with a leader line terminated by an arrowhead. For examples, see X411 (4.5.11) to X413 (4.5.13), X421 (4.5.14), and X422 (4.5.15).
4.4.2	R413	<p>The symbol shall be used when it is necessary to indicate that a certain connection is internal, i.e. an integral part of the component or device represented. The symbol shall be placed at both ends of the internal connection or, with a short connecting line, between the two ends.</p> <p>If the internal connection is also connected to a terminal or port^{ISO}, the symbol may be omitted, provided that the terminal or port^{ISO} is represented by symbol 561 (8.1.1) or indicated by a terminal designation.</p> <p>In diagrams for fluid power systems, an internal connection may instead be indicated by bending at least one of the ends of the connecting line by 45° to 60°. For an example, see X435 (4.5.18).</p>

4.5 Application Examples


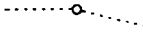

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
4.5.1	X401		<p>Crossing of symbols for connections.</p> <p>A functional connection, a mechanical link and a pipeline is shown.</p>
		401, 402, 405, 431	
4.5.2	X402		Flexible mechanical link.
		402, 444	
4.5.3	X403		
		403, 444	
4.5.4	X404		Flexible, electrically insulating mechanical link, shaft.
		404, 444	
4.5.5	X405		<p>Electropneumatically operated contactor, simplified representation.</p> <p>Explanation:</p> 
		404, IEC, IEC	

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
4.5.6	X406		Twisted rectangular pipeline.
		405, 446, 448	
4.5.7	X322		Pipeline or duct with thermal insulation.
		325, 405	
4.5.8	X408		Pipeline with thermal insulation, heated or cooled by a separate circuit.
		325, 405	
4.5.9	X409		Jacketed (sleeved) pipeline.
		301, 405	
4.5.10	X410		Jacketed (sleeved) pipeline with thermal insulation.
		301, 325, 405	
4.5.11	X411		Flexible pipeline, hose.
		405, 444	Two methods are shown.
4.5.12	X412		
		405, 444	
4.5.13	X413		Four pipelines, two of flexible type.
		405, 444	
4.5.14	X421		Four pipelines forming a unit.
		405, 449	
4.5.15	X422		Four pipelines, two forming a unit.
		405, 449	
4.5.16	X431		Three pipelines in single-line representation.
		343, 406	Two methods are shown.
4.5.17	X432		
		344, 406	

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
4.5.18	X435	 <p>201, 242, 422, 2002, 2161, 2171</p>	Internal pilot (control) connection in a pressure relief valve.

5 CONNECTION JOINTS AND PIPELINE ENDS

5.1 Symbols of a Basic Nature

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
5.1.1	501	 <p>200%</p>	Joint of connections (functional connections, mechanical links, pipelines, ducts, etc.). See R501 (5.2.1).
5.1.2	2005		Joint of two mechanical parts permitting motion of the parts in two or more dimensions, for example, a cardan joint.
5.1.3	503		Closed end of pipeline or duct.

5.2 Application Rules for the Symbols in Para. 5.1

Reference Number	Registration Number	Application Rule
5.2.1	R501	<p>The diameter of the dot should be five times the width of the widest line, except when symbol 402 (4.1.2) is used.</p> <p>The symbol may be omitted in a T-joint. For examples, see X502 (5.5.2), X505 (5.5.5), and X508 (5.5.8).</p>

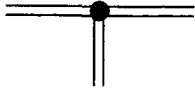
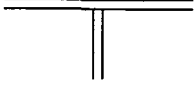


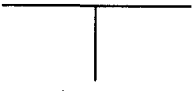



5.3 Symbol Giving Supplementary Information


None.

5.4 Application Rule for the Symbol in Para. 5.3

None.

5.5 Application Examples


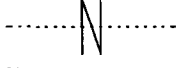
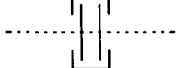

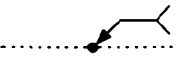
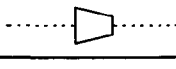
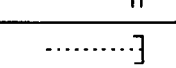

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
5.5.1	X501	 402, 501	T-joint of mechanical links. Two methods are shown.
5.5.2	X502	 402	
5.5.3	X503	 402, 501	Joint of multiple mechanical links.
5.5.4	X504	 401, 403/405, 501	T-joint of functional connections, mechanical links, or pipelines. Two methods are shown.
5.5.5	X505	 401, 403/405	
5.5.6	X506	 401, 403/405, 501	Joint of multiple functional connections, mechanical links, or pipelines.
5.5.7	X507	 404, 501	T-joint of electrically insulating mechanical links. Two methods are shown.
5.5.8	X508	 404	

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
5.5.9	X509	 404, 501	Joint of multiple electrically insulating mechanical links.

6 CONNECTION JOINTS, JUNCTIONS, AND RELATED DEVICES OF SPECIFIED DESIGN

6.1 Symbols of a Basic Nature

NOTE: For the application, see R521 (6.2.1).

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
6.1.1	511	 200%	Flange coupling, flange pair.
6.1.2	512	 200%	Flexible coupling.
6.1.3	513	 200%	Clamped flange coupling.
6.1.4	514	 200%	Screwed joint.
6.1.5	515		Welded, brazed, or soldered joint. For further details, see ISO 2553 and ISO 4063.
6.1.6	516		Change of pipe dimension, pipe reducer.
6.1.7	517		Blind flange pair.
6.1.8	518		End cap.

6.2 Application Rule for the Symbols in Para. 6.1

Reference Number	Registration Number	Application Rule
6.2.1	R521	The symbols shall be used only when it is necessary to indicate the design.

6.3 Symbol Giving Supplementary Information

None.

6.4 Application Rule for the Symbol in Para. 6.3



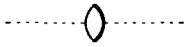
None.

6.5 Application Example

None.

7 FITTINGS

7.1 Symbols of a Basic Nature

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
7.1.1	531		Expansion loop.
7.1.2	532		Expansion sleeve.
7.1.3	533		Expansion bellows.

7.2 Application Rule for the Symbols in Para. 7.1

None.

7.3 Symbol Giving Supplementary Information

None.

7.4 Application Rule for the Symbol in Para. 7.3








None.



7.5 Application Example

None.

8 PORTS^{ISO}, QUICK-RELEASE COUPLINGS, AND CONNECTORS

8.1 Symbols of a Basic Nature

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
8.1.1	561	 200%	Port ^{ISO} . See R561 (8.2.1).
8.1.2	563	 200%	Quick-release coupling element of male type.
8.1.3	564	 200%	Quick-release coupling element of female type.
8.1.4	565	 200%	Quick-release coupling element which fits into another coupling element of the same type.
8.1.5	566	 200%	Quick-release coupling element of male type with automatic closing when decoupled.
8.1.6	567	 200%	Quick-release coupling element of female type with automatic closing when decoupled.
8.1.7	568	 200%	Quick-release coupling element which fits into another coupling element of the same type, with automatic closing when decoupled.

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
8.1.8	576		Fixed portion of a connector pair; socket.
8.1.9	577		Movable portion of a connector pair; plug.

8.2 Application Rule for the Symbols in Para. 8.1

Reference Number	Registration Number	Application Rule
8.2.1	R561	If no confusion is likely, the symbol may be omitted.

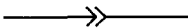
8.3 Symbol Giving Supplementary Information

None.


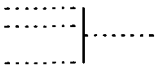
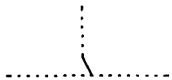
8.4 Application Rule for the Symbol in Para. 8.3

None.

8.5 Application Example

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
8.5.1	X563		Quick-release coupling.
		405, 563, 564	

9 ADDITIONAL SIMPLIFICATIONS**9.1 Symbols of a Basic Nature**

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
9.1.1	601		Connection with n parallel identical branches. See R601 (9.2.1).
9.1.2	602		Transition between multi-line and single-line representation. See R602 (9.2.2).
9.1.3	603		Exit from, or entrance into, a bundle. See R603 (9.2.3).

9.2 Application Rules for the Symbols in Para. 9.1

Reference Number	Registration Number	Application Rule
9.2.1	R601	The letter n shall be replaced with the actual number of branches. For an example, see X601 (9.5.1).

Reference Number	Registration Number	Application Rule
9.2.2	R602	<p>The sequence of the individual connecting lines should be the same in both ends, if practical. For an example, see X603 (9.5.3). If the sequence is the same but the order is not obvious or reversed, one of the outer connecting lines shall be identified at each end, for example, with a correlation indication, symbol 263 (2-7.3.3). For an example, see X604 (9.5.4).</p> <p>If the sequence at each end is different, each connecting line shall be identified. For an example, see X605 (9.5.5).</p>
9.2.3	R603	<p>The symbol may represent a physical bundle or a diagram bundle used for simplification of the diagram. The oblique part of the connecting line shall indicate the direction in which the other end or ends can be found. For examples, see X606 (9.5.6) to X608 (9.5.8).</p>

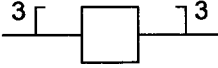
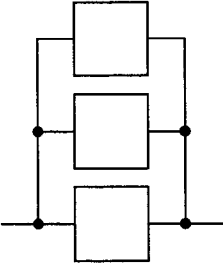
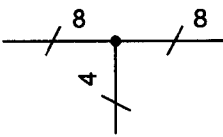
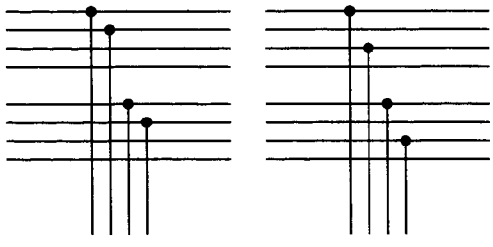
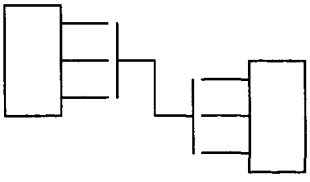
9.3 Symbol Giving Supplementary Information

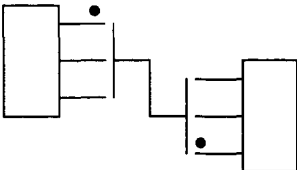
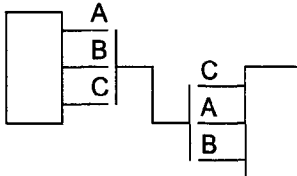
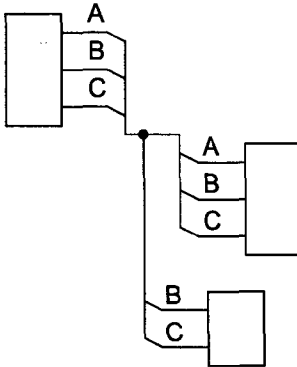
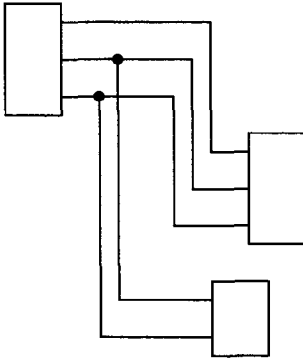
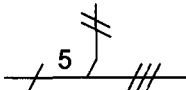
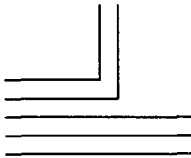
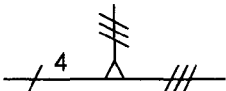
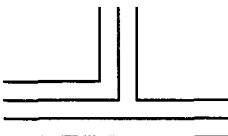
None.

9.4 Application Rule for the Symbol in Para. 9.3

None.

9.5 Application Examples

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
9.5.1	X601		<p>Three parallel identical branches.</p> <p>Explanation:</p> 
		101, 405, 601	
9.5.2	X602		<p>Eight connections, four of them branching.</p> <p>Explanation, two possibilities are shown:</p> 
		344, 405, 501	
9.5.3	X603		<p>Three connections with the same sequence between two components.</p>
		101, 405, 406, 602	

Reference Number	Registration Number	Symbol Form/Shape	Symbol Description
9.5.4	X604		Three connections with reversed sequence between two components.
		101, 263, 405, 406, 602	
9.5.5	X605		Three connections with changed sequence between two components.
		101, 405, 406, 602	
9.5.6	X606		Connections between three components. Explanation:
		101, 405, 406, 501, 603	
9.5.7	X607		Branching of a bundle: 5, 2, and 3 connections. Explanation:
		342, 343, 344, 406, 603	
9.5.8	X608		Branching of a bundle: 4, 3, and 3 connections. Explanation:
		343, 344, 406, 603	

RELATED DOCUMENTS

Engineering Drawing and Related Documentation Practices	
Decimal Inch Drawing Sheet Size and Format	Y14.1-1995(R2002)
Metric Drawing Sheet Size and Format	Y14.1M-1995(R2002)
Line Conventions and Lettering	Y14.2M-1992(R1998)
Multiview and Sectional View Drawings	Y14.3M-1994(R1999)
Pictorial Drawings	Y14.4M-1989(R1999)
Dimensioning and Tolerancing	Y14.5M-1994(R1999)
Mathematical Definition of Dimensioning and Tolerancing Principles	Y14.5.1M-1994(R1999)
Certification of Geometric Dimensioning and Tolerancing Professionals	Y14.5.2-2000
Screw Thread Representation	Y14.6-2001
Gears and Splines	
Spur, Helical, Double Helical and Racks	Y14.7.1-1971(R1998)
Bevel and Hypoid Gears	Y14.7.2-1978(R1999)
Castings and Forgings	Y14.8M-1996(R2002)
Mechanical Spring Representation	Y14.13M-1981(R1998)
Optical Parts	Y14.18M-1986(R1998)
Types and Applications of Engineering Drawings	Y14.24-1999
Chassis Frames — Passenger Car and Light Truck — Ground Vehicle Practices	Y14.32.1M-1994(R1999)
Associated Lists	Y14.34M-1996(R2002)
Revision of Engineering Drawings and Associated Documents	Y14.35M-1997
Surface Texture Symbols	Y14.36M-1996(R2002)
Abbreviations and Acronyms	Y14.38-1999
Basic Rules for the Design of Graphical Symbols for Use in the Technical Documentation of Products	Y14.40.0-2002
Graphical Symbols for Diagrams, Part 3: Connections and Related Devices	Y14.40.3-2002
Digital Approval Systems	Y14.42-2002
Engineering Drawing Practices	Y14.100-2000
Graphic Symbols for:	
Plumbing Fixtures for Diagrams Used in Architecture and Building Construction	Y32.4-1977(R1999)
Railroad Maps and Profiles	Y32.7-1972(R1999)
Mechanical and Acoustical Elements as Used in Schematic Diagrams	Y32.18-1972(R1998)

The ASME Publications Catalog shows a complete list of all the Standards published by the Society. For a complimentary catalog, or the latest information about our publications, call 1-800-THE-ASME (1-800-843-2763).

ASME Services

ASME is committed to developing and delivering technical information. At ASME's Information Central, we make every effort to answer your questions and expedite your orders. Our representatives are ready to assist you in the following areas:

ASME Press
Codes & Standards
Credit Card Orders
IMEchE Publications
Meetings &
Conferences
Member Dues Status

Member Services &
Benefits
Other ASME Programs
Payment Inquiries
Professional Development
Short Courses
Publications

Public Information
Self-Study Courses
Shipping Information
Subscriptions/Journals/
Magazines
Symposia Volumes
Technical Papers

How can you reach us? It's easier than ever!

There are four options for making inquiries* or placing orders. Simply mail, phone, fax, or E-mail us and an Information Central representative will handle your request.

Mail
ASME
22 Law Drive,
Box 2900
Fairfield, New Jersey
07007-2900

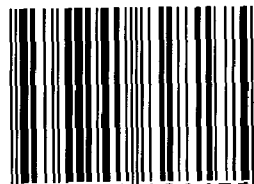
Call Toll Free
US & Canada: 800-THE-
ASME
(800-843-2763)
Mexico: 95-800-THE-ASME
(95-800-843-2763)
Universal: 973-882-1167

Fax—24 hours
973-882-1717
973-882-5155

E-Mail—24 hours
infocentral@asme.org

* Information Central staff are not permitted to answer inquiries about the technical content of this code or standard. Information as to whether or not technical inquiries are issued to this code or standard is shown on the copyright page. All technical inquiries must be submitted in writing to the staff secretary. Additional procedures for inquiries may be listed within.

ISBN 0-7918-2817-4



9 780791 828175



N17702