



National Fluid Power Association

**ANSI/(NFPA)T3.5.29 R1-2007**

Second edition  
16 February 2007

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**Fluid power systems and components —  
Electrically-controlled industrial valves —  
Interface dimensions for electrical connectors**

(Revision and redesignation of ANSI/B93.55M-1981)

**A NATIONAL INDUSTRY STANDARD FOR FLUID POWER**

**Approved by Committee ASC B93,  
accredited by the American National Standards Institute (ANSI)**



**Descriptors:** dimensions, electrical connector, valve, fluid power, requirements, specification, hydraulic, pneumatic

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Developed and published by

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Any part of this standard may be quoted. Credit lines should read: Extracted from the national industry standard, *Fluid power systems and components – Electrically-controlled industrial valves – Interface dimensions for electrical connectors*, ANSI/(NFPA)T3.5.29 R1-2007.

## Foreword

This Foreword is not part of American National Standard *Fluid power systems and components – Electrically controlled industrial valves – Interface dimensions for electrical connectors*, ANSI/(NFPA)T3.5.29 R1-2007 (revision and redesignation of ANSI/B93.55M-1981).

On 18 August 1993, the NFPA/T3.5 Hydraulic valve section met and discussed whether the ANSI standard should be reaffirmed or revised. Several of the references were outdated and it was recommended that the standard be revised to update these references. Larry Coleman (Continental Hydraulics) agreed to serve as Project Chair. On 16 September 1993, the NFPA Technical Board approved the Title, Scope and Purpose (TSP).

On 17 November 1993, project group members reviewed draft no. 1. The TSP was revised and approved at the 20 January 1994 Technical Board meeting.

Project Chair Coleman updated the document and draft no. 2 was reviewed at the 25 May 1994 meeting. At this meeting, it was agreed to send the document out for general review.

On 6 July 1994, the general review ballot was circulated.

On 30 September 1998, at the NFPA/T3.5 and U.S. TAG to ISO/TC 131/SC 5/WG 2 joint Hydraulic valve meeting, members approved NFPA/T3.5.29 R1 for second general review. Comments were reviewed at the February 1999 meeting of this project group. The document was sent out for second general review on 23 December 1998.

On 10 February 1999, at the NFPA/T3.5 and U.S. TAG to ISO/TC 131/SC 5/WG 2 joint Hydraulic valve meeting, members approved a motion to send NFPA/T3.5.29 R1 to the Technical Board for recommendation for final ballot once resolution of comments from the second general review had been completed.

On 18 November 1999, NFPA Technical Board members tabled NFPA/T3.5 members' recommendation of approval to final ballot, due to unavailability of feedback from project group members on the unresolved negative ballot. Project group members were asked to review draft no. 3 and forward comments to Headquarters.

On 9 February 2000, Mr. Coleman updated members on the status of the commentator letters. Festo maintained its disapproval ballot. Festo preferred an exclusive standard for pneumatic valves, but this is not within the scope of this standard. Mr. Coleman agreed to attend the NFPA Technical Board meeting in April 2000 to ask for approval to final ballot NFPA/T3.5.29 R1, despite the unresolved negative ballot.

On 11 January 2001, the final ballot was circulated.

On 7 February 2001, project group members reviewed the ballot tally (nine approvals with three comments, one disapproval and 10 not voting) and made changes to the document. Members approved a recommendation for second final ballot.

On 23 August 2001, the second final ballot was circulated.

On 19 September 2001, project group members reviewed the ballot tally (seven approvals with three comments, zero disapprovals and three not voting) and made changes to the document. Members approved a recommendation for third final ballot.

On 7 September 2002, the third final ballot was circulated.

On 18 September 2002, project group members reviewed comments received from the third final ballot and made changes to the document. Members approved a recommendation to publish NFPA/T3.5.29 R1.

At its 3 April 2003 meeting, the Technical Board approved the document for publication.

Project group members who developed this standard:

**Larry Coleman**  
Project Group Chair  
Continental Hydraulics

**Thomas M. Weinkauf**  
Section Chair  
Daman Products Company Inc.

**Richard McAfee\*\***  
Section Chair  
Eaton Corporation

**Wayland Tenkku**  
Past Section Chair  
Sun Hydraulics Corp.

**Wayne Hays\*\***  
Technical Auditor  
Bimba Mfg.

**Barry Verdegan**  
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Technical Coordinator  
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**Shirley C. Seal\***  
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**Martin F. McAllister**  
Lexair, Inc.

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Eaton Corporation

**Donald C. Reinicker**  
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**Ron Rueter**  
Hydraforce, Inc.

**John F. Walrad**  
Consultant

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jmv

On 28 June 2004, ANSI/(NFPA)T3.5.29 R1-200x was submitted to ANSI Committee B93 for ballot. Balloting closed on 12 August 2004, and resulted in one negative vote, which was resolved satisfactorily and changed to approval.

ANSI/(NFPA)T3.5.29 R1-2007 was approved by ANSI's Board of Standards Review on 16 February 2007.

The membership roster of Standards Committee B93 at the time of ballot:

**Jack C. McPherson**  
Chairman

**General Motors**  
R. Joe Nunley

**To be determined**  
Vice Chairman

**Material Handling Institute**  
Jack C. McPherson

**Karen Boehme**  
Secretary and Staff Liaison

**Milwaukee School of Engineering**  
Thomas S. Wanke

**American Society of Agricultural  
Engineers**  
Scott Cedarquist

**Motion Industries**  
Larry Kuziak

**Compressed Air & Gas Institute**  
John Addington

**National Fluid Power Association**  
John F. Berninger

**Eaton Corporation**  
Jerry Carlin

**Individual Members**  
John Montague  
Albert Roberts  
Paul Schacht  
John F. Walrad  
James C. White  
Wayne K. Wilcox

**Fluid Power Society**  
Clayton W. Fryer

**Fluid Sealing Association**  
Robert Ecker

## **Introduction**

In fluid power systems, power is transmitted and controlled through a fluid (liquid or gas) under pressure within an enclosed circuit. Valves control the flow direction, pressure or flow rate.

When valves are solenoid-operated, some designs use an electrical connector to connect the valve to the electrical control system. Users of solenoid-operated valves benefit when valves from various manufacturers have a common electrical connector interface and, therefore, can be interchanged when service or replacement is required.

# Fluid power systems and components – Electrically-controlled industrial valves – Interface dimensions for electrical connectors

## 1 Scope

**1.1** This standard includes interface dimensions and configurations for electrical plug-type connectors (not intended for current interruption) used with a single or double electrically-controlled fluid power control valve used in industrial (in-plant) applications.

**1.2** This standard is intended to:

- a) simplify variety and facilitate installation and servicing; and
- b) promote interchangeability and greater use of electrically-controlled fluid power controls.

**1.3** This standard applies to the dimensional criteria, pin usage and installation requirements of products manufactured in conformance with this standard. It does not fully define their functional characteristics.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this NFPA document. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this NFPA document are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referenced applies. NFPA maintains registers of currently valid NFPA and ANSI/(NFPA) Standards. Standards development organization contact information and links can be found on the NFPA website ([www.nfpa.com](http://www.nfpa.com)).

CSA C22.2 No. 42 (*latest edition*), *General Use Receptacle Attachment Plugs and Similar Wiring Devices*.

IEEE/ASTM SI 10 (*latest edition*), *Standard for Use of the International System of Units (SI): The Modern Metric System*.

IEC 60529 (*latest edition*), *Degrees of protection provided by enclosures (IP Code)*.

ISO 1000 (*latest edition*), *SI units and recommendations for the use of their multiples and of certain other units*.

ISO 5598 (*latest edition*), *Fluid power systems and components – Vocabulary*.

NEMA FB11 (*latest edition*), *Plugs, Receptacles, and Connectors of the Pin and Sleeve Type for Hazardous Locations*.

NEMA 250 (*latest edition*), *Enclosures for Electrical Equipment (1000 Volts Maximum)*.

SAE J2051 (*latest edition*), *Qualifications for four-way subbase mounted air valves for automotive manufacturing applications*.

UL–498 (*latest edition*), *Standard for Safety Attachment Plugs and Receptacles*.