

A M E R I C A N   S T A N D A R D

# Graphical Symbols for Pipe Fittings, Valves, and Piping

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**ASA Z32.2.3-1949**

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## FOREWORD

This standard has been developed by the ASA Sectional Committee on Standardization of Graphical Symbols and Abbreviations for Use on Drawings, Z32. The work of this committee is under the joint sponsorship of the American Institute of Electrical Engineers and the American Society of Mechanical Engineers.

The standard is the second of a group of standards which represent a revision and expansion of an existing standard, American Standard Graphical Symbols for Use on Drawings in Mechanical Engineering, Z32.2-1941.

In preparing the list of pipe fittings, valves, and piping symbols for use on drawings, over one hundred companies and their representatives were consulted. Great care was exercised to avoid conflicts with the symbols being assembled by committees in allied fields.

The 73 symbols shown are a minimum requirement. Many other piping symbols exist; for instance, such as those used in petroleum piping.

Following approval of the sectional committee and the sponsor organizations, this proposal was approved by the American Standards Association on April 8, 1949, and designated as Z32.2.3-1949.

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#### AMERICAN NATIONAL STANDARD

This standard is one of more than 4000 approved as either a USA Standard or as an American Standard. It became an American National Standard in October 1969 when the Institute changed its name to American National Standards Institute, Inc.

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**American Standard**

# **GRAPHICAL SYMBOLS FOR PIPE FITTINGS, VALVES, AND PIPING**

## **Scope**

This standard has been developed for use on drawings. Architects, engineers, and contractors, by the use of these symbols on their plans, will have a standard method of indication for pipe fittings, valves, piping and allied items. Confusion in the interpretations of requirements can thus be avoided.

## **Basic Principles**

Clarity and simplicity were considered paramount in the assembling of these symbols. Whenever possible, simplification in the drafting was primarily considered and identification letters were used only when there was a question of an error because of similarity of form. Only those symbols, about which there was nationwide consensus, were included. There are still many symbols that are used in a particular section but are not nationally recognized.

AMERICAN STANDARD					
	FLANGED	SCREWED	BELL & SPIGOT	WELDED	SOLDERED
1 BUSHING					
2 CAP					
3 CROSS					
3.1 REDUCING					
3.2 STRAIGHT SIZE					
4 CROSSOVER					
5 ELBOW					
5.1 45-DEGREE					
5.2 90-DEGREE					
5.3 TURNED DOWN					
5.4 TURNED UP					
5.5 BASE					
5.6 DOUBLE BRANCH					

GRAPHICAL SYMBOLS FOR PIPE FITTINGS & VALVES					
	FLANGED	SCREWED	BELL & SPIGOT	WELDED	SOLDERED
5.7 LONG RADIUS					
5.8 REDUCING					
5.9 SIDE OUTLET (OUTLET DOWN)					
5.10 SIDE OUTLET (OUTLET UP)					
5.11 STREET					
6 JOINT					
6.1 CONNECTING PIPE					
6.2 EXPANSION					
7 LATERAL					
8 ORIFICE FLANGE					
9 REDUCING FLANGE					

AMERICAN STANDARD					
	FLANGED	SCREWED	BELL & SPIGOT	WELDED	SOLDERED
<b>10 PLUGS</b>					
10.1 BULL PLUG					
10.2 PIPE PLUG					
<b>11 REDUCER</b>					
11.1 CONCENTRIC					
11.2 ECCENTRIC					
<b>12 SLEEVE</b>					
<b>13 TEE</b>					
13.1 (STRAIGHT SIZE)					
13.2 (OUTLET UP)					
13.3 (OUTLET DOWN)					
13.4 DOUBLE SWEEP)					
13.5 REDUCING					
13.6 SINGLE SWEEP)					

**GRAPHICAL SYMBOLS FOR PIPE FITTINGS & VALVES**






























	FLANGED	SCREWED	BELL & SPIGOT	WELDED	SOLDERED
13.7 SIDE OUTLET (OUTLET DOWN)					
13.8 SIDE OUTLET (OUTLET UP)					
14 UNION					
15 ANGLE VALVE					
15.1 CHECK					
15.2 GATE (ELEVATION)					
15.3 GATE (PLAN)					
15.4 GLOBE (ELEVATION)					
15.5 GLOBE (PLAN)					
15.6 HOSE ANGLE	SAME AS	SYMBOL	23.1		
16 AUTOMATIC VALVE					
16.1 BY-PASS					

AMERICAN STANDARD					
	FLANGED	SCREWED	BELL & SPIGOT	WELDED	SOLDERED
16.2 GOVERNOR-OPERATED					
16.3 REDUCING					
17 CHECK VALVE					
17.1 ANGLE CHECK	SAME AS	SYMBOL	15.1		
17.2 (STRAIGHT WAY)					
18 COCK					
19 DIAPHRAGM VALVE					
20 FLOAT VALVE					
21 GATE VALVE					
*21.1					
21.2 ANGLE GATE	SAME AS	SYMBOLS	15.2 & 15.3		
21.3 HOSE GATE	SAME AS	SYMBOL	23.2		

\*ALSO USED FOR GENERAL STOP VALVE SYMBOL WHEN AMPLIFIED BY SPECIFICATION



## GRAPHICAL SYMBOLS FOR PIPE FITTINGS & VALVES

	FLANGED	SCREWED	BELL & SPIGOT	WELDED	SOLDERED
21.4 MOTOR-OPERATED					
22 GLOBE VALVE					
22.1					
22.2 ANGLE GLOBE	SAME AS	SYMBOLS	15.4 & 15.5		
22.3 HOSE GLOBE	SAME AS	SYMBOL	23.3		
22.4 MOTOR-OPERATED					
23 HOSE VALVE					
23.1 ANGLE					
23.2 GATE					
23.3 GLOBE					
24 LOCKSHIELD VALVE					
25 QUICK OPENING VALVE					
26 SAFETY VALVE					
27 STOP VALVE	SAME AS	SYMBOL	21.1		

## AMERICAN STANDARD

### AIR CONDITIONING

28 BRINE RETURN	— — — BR — — —
29 BRINE SUPPLY	————— B —————
30 CIRCULATING CHILLED OR HOT-WATER FLOW	————— CH —————
31 CIRCULATING CHILLED OR HOT-WATER RETURN	— — — CHR — — —
32 CONDENSER WATER FLOW	————— C —————
33 CONDENSER WATER RETURN	— — — CR — — —
34 DRAIN	————— D —————
35 HUMIDIFICATION LINE	— . . . . H . . . . —
36 MAKE-UP WATER	— . . . . — . . . . —
37 REFRIGERANT DISCHARGE	————— RD —————
38 REFRIGERANT LIQUID	————— RL —————
39 REFRIGERANT SUCTION	— — — RS — — —

### HEATING

40 AIR-RELIEF LINE	— — — — —
41 BOILER BLOW OFF	— — — — —
42 COMPRESSED AIR	————— A —————
43 CONDENSATE OR VACUUM PUMP DISCHARGE	— o — — o — — o —
44 FEEDWATER PUMP DISCHARGE	— oo — — oo — — oo —
45 FUEL-OIL FLOW	————— FOF —————
46 FUEL-OIL RETURN	— — — FOR — — —
47 FUEL-OIL TANK VENT	— — — FOV — — —
48 HIGH-PRESSURE RETURN	— // — — // — — // —
49 HIGH-PRESSURE STEAM	— // — — // — — // —
50 HOT-WATER HEATING RETURN	— — — — —
51 HOT-WATER HEATING SUPPLY	—————



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