

# Symbols used in Patent Drawings

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There are millions of different types of symbols; every profession has its own. Symbols in drawings are used to communicate and detail the characteristics of a specific field. They represent materials and equipment and include abbreviations understood by people familiar with that line of work. In drawings they save space because a symbol can convey a large amount of information.

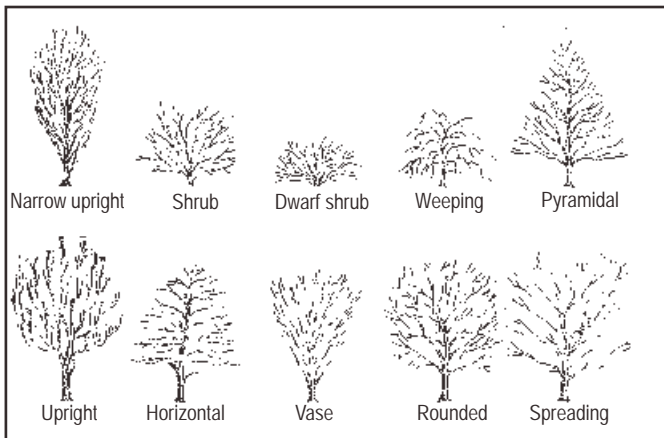
Some fields with their own specific symbols are mechanical, electrical, architectural, medical, construction, piping, plumbing, fiber optics, cartography and heat & ventilation.

Symbols used in patent drawings pull from the fields that the drawings relate to. There may be the same symbols to describe similar items or they may have different symbols to illustrate a particular item. The premise for patent drawings is to use symbols that are recognized and acceptable in the field the drawings relate to.

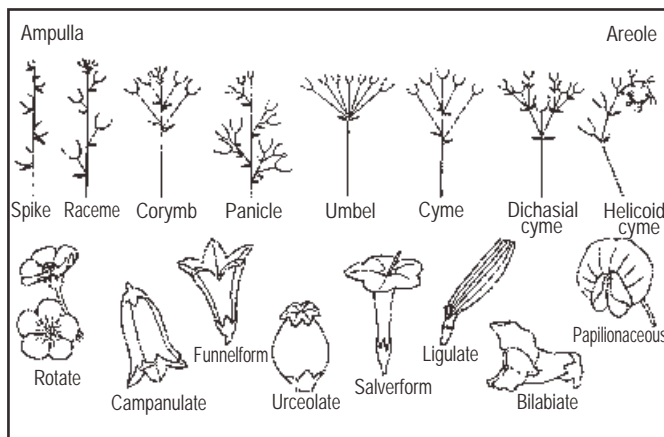
The United States Patent and Trademark Office (USPTO) states "Graphical drawing symbols may be used for conventional elements when appropriate. The elements for which such symbols and labeled representations are used must be adequately identified in the specification. Known devices should be illustrated by symbols which have a universally recognized conventional meaning and are generally accepted in the art. Other symbols which are not universally recognized may be used, subject to approval by the Office, if they are not likely to be confused with existing conventional symbols, and if they are readily identifiable"<sup>1</sup>

Besides graphic symbols in patent drawings, the Greek alphabet is used to indicate angles, wavelengths, and mathematical formulas.

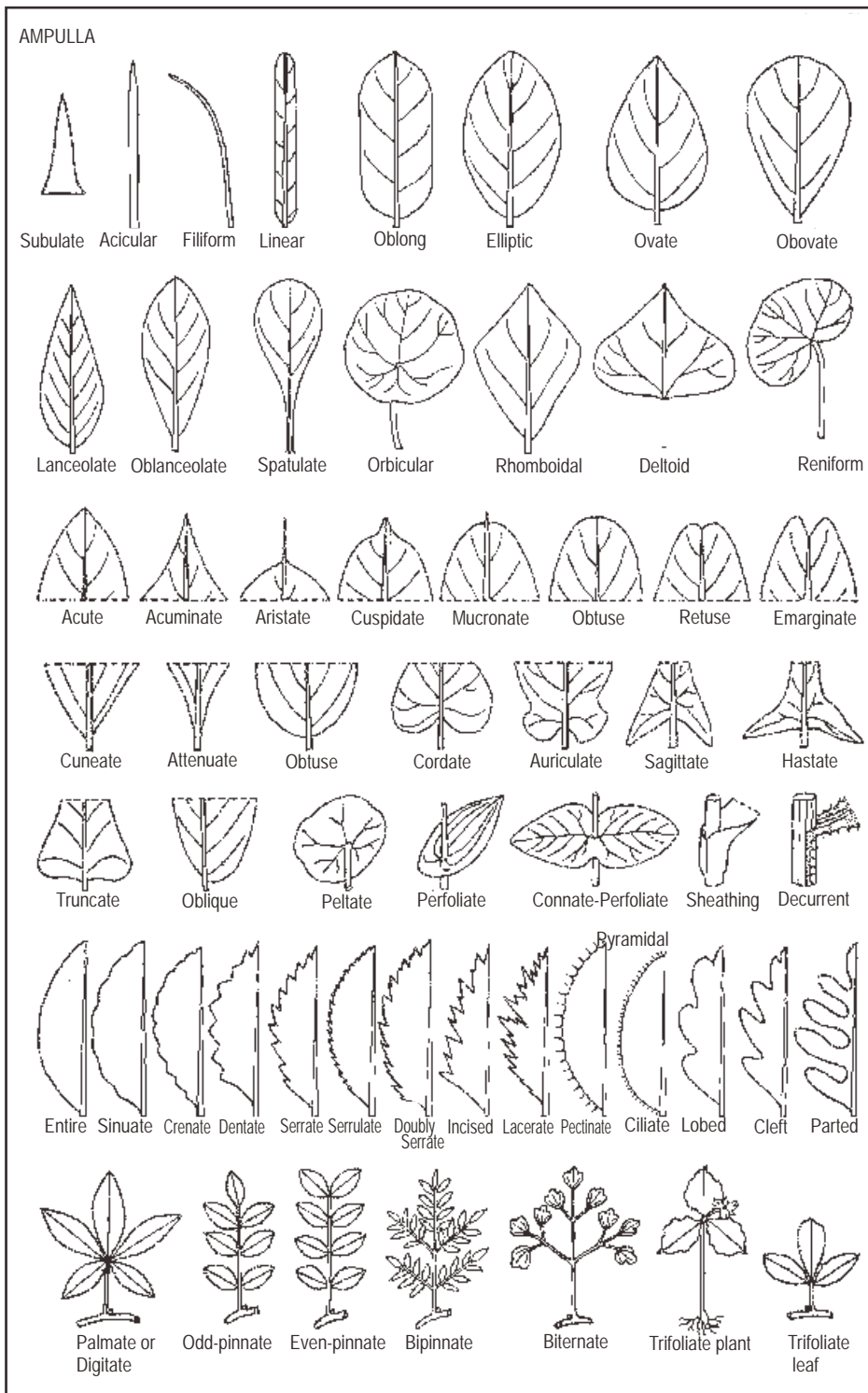
The following symbols and legends for patent drawings are displayed in "Guide for the Preparation of Patent Drawings" available from the USPTO website at [www.uspto.gov](http://www.uspto.gov)



Growth Types



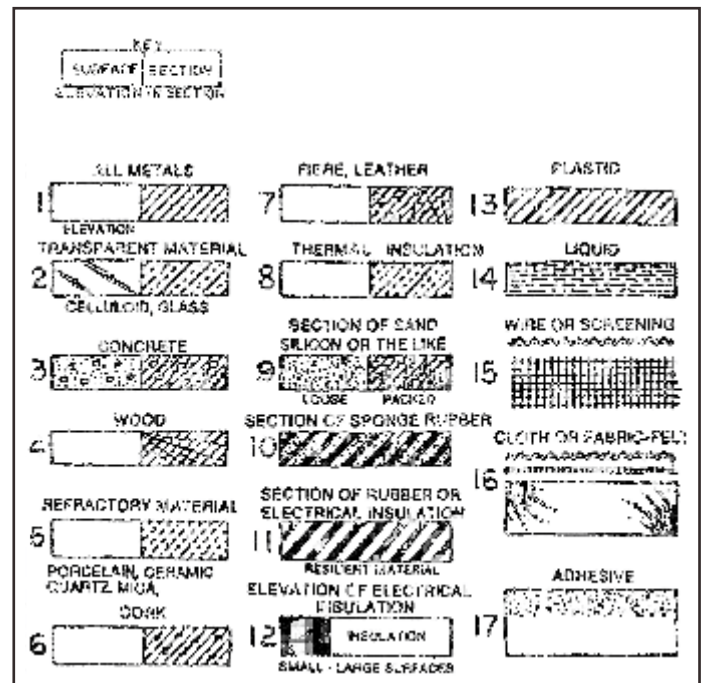
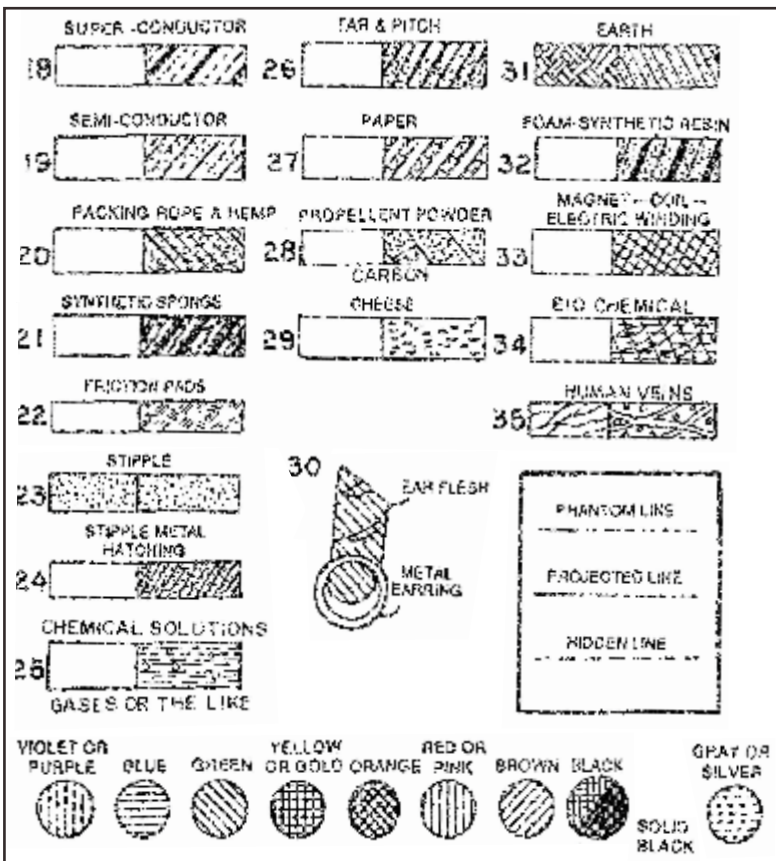
Terms of Inflorescences and Corollas



The following symbols should be used for botanical reference:

The symbols and legends for patent drawings on this page are displayed in "Guide for the Preparation of Patent Drawings"-USPTO

Since the USPTO has a limited amount of approved symbols displayed in their "Guide for the Preparation of Patent Drawings" they supply the following information as a source for symbols: "The American National Standards Institute (ANSI) is a private non-profit organization whose numerous publications include some that pertain to graphical symbols. Such publications, for examples, Graphic Symbols for Fluid Power Diagrams, IEEE Standard Graphic Symbols for Logic Functions, Graphic Symbols for Electrical and Electronics Diagrams, are considered to be generally acceptable in patent drawings. ANSI headquarters are at 1819 L Street, NW, Suite 600, Washington, DC 20036, with offices at 25 West 43rd Street, New York, NY 10036. The organization's Internet address is [www.ansi.org](http://www.ansi.org). Although ANSI documents and other published sources may be used as guides during the selection of graphic symbols for patent drawings, the Office will not "approve" any published collection of symbols as a group because their use and clarity must be decided on a case-by-case basis."<sup>2</sup> ANSI has a very large graphical symbol database; however access to their database is not free. Subscriptions are available for 12 month terms and can cost several hundred dollars. You can also purchase single packages for as little as \$29.00.



Notes:

1. Porous sintered metal: Powdered metal fuses together-use stipple metal hatching
2. Dielectric: is non conducting material, e.g., plastic, rubber, etc.
3. Abscissa: Horizontal line.-
4. Ordinate: Vertical line. |

Fortunately, many symbols are available on the internet.

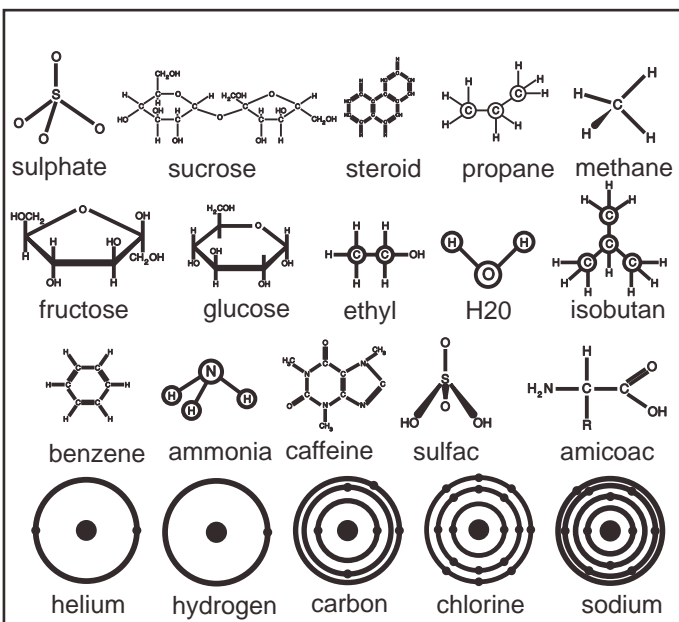
If you type "heat exchanger symbol" in a search bar, you get thousands of related symbols.

A search of "drafting symbols" yields numerous lists of architectural, electrical, machining, mechanical, welding and engineering symbols.

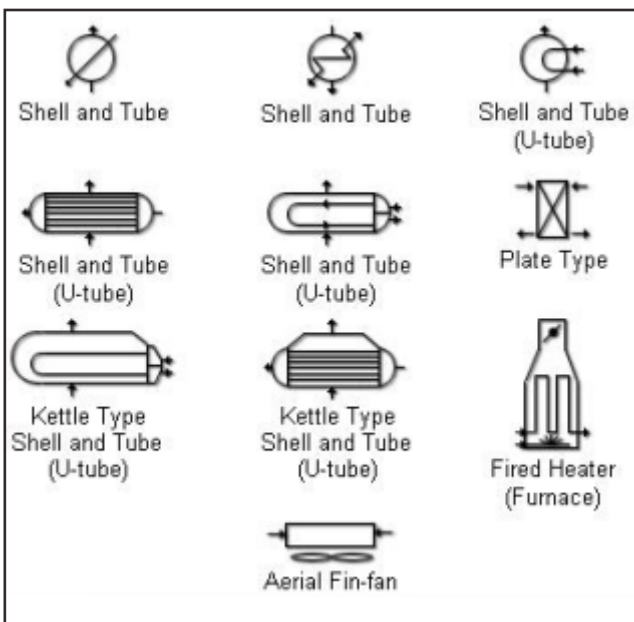
Computer-aided design (CAD) packages have their own library of symbols from which related symbols can be selected and plotted on a drawing. Each software package (architectural, plumbing, mechanical, and electrical) contains symbols for various materials and pieces of equipment.

The following pages contain symbols that we have compiled from various sources. We find these useful for patent drawings relating to electrical and mechanical fields.

Chemical symbols - CorelDRAW 8 Clip Art



Heat Exchanger symbols - internet



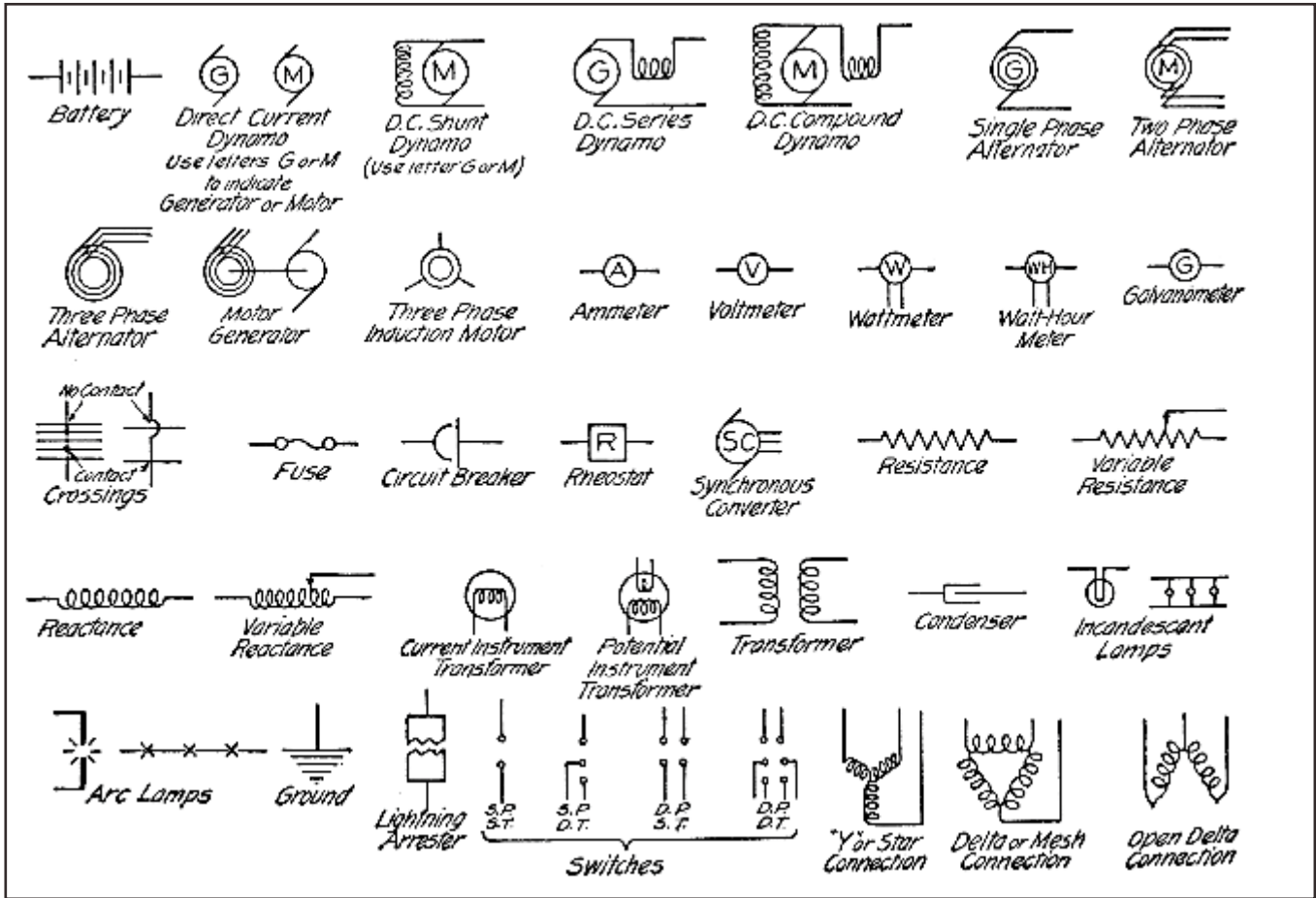
Piping & Plumbing Symbols, Table 46, Engineering Drawing and Geometry, Randolph P. Hoelscher & Clifford H. Springer

COLD WATER		GAS		SOIL, WASTE OR LEADER (ABOVE GRADE)	
COMPRESSED AIR		HOT WATER		VENT	
FIRE LINE		HOT WATER RETURN			
<b>HEATING</b>					
AIR-RELIEF LINE		FUEL-OIL FLOW		HIGH PRESSURE STEAM	
CONDENSATE		FUEL-OIL VENT		HOT WATER SUPPLY	
<b>AIR CONDITIONING</b>					
BRINE SUPPLY		CIRCULATING WATER FLOW		REFRIGERANT LIQUID	
COMPRESSOR ROTARY		EVAPORATOR SINGLE EFFECT		HEATER FLUE GAS REHEATER	
CONDENSER SURFACE		EXTRACTOR		HEATER LIVE STEAM SUPER-	
ENGINE STEAM		FAN-BLOWER M-MOTOR		PUMPS CENTRIFUGAL & ROTARY	
ENGINE G-GAS		HEATER AIR		RECIPROCATING	
				STEAM GENERATOR	
				TANK OPEN	
				TANK PRESSURE	
				TURBINE CONDENSING	
				TURBINE (STEAM OR COMPRESSOR)	

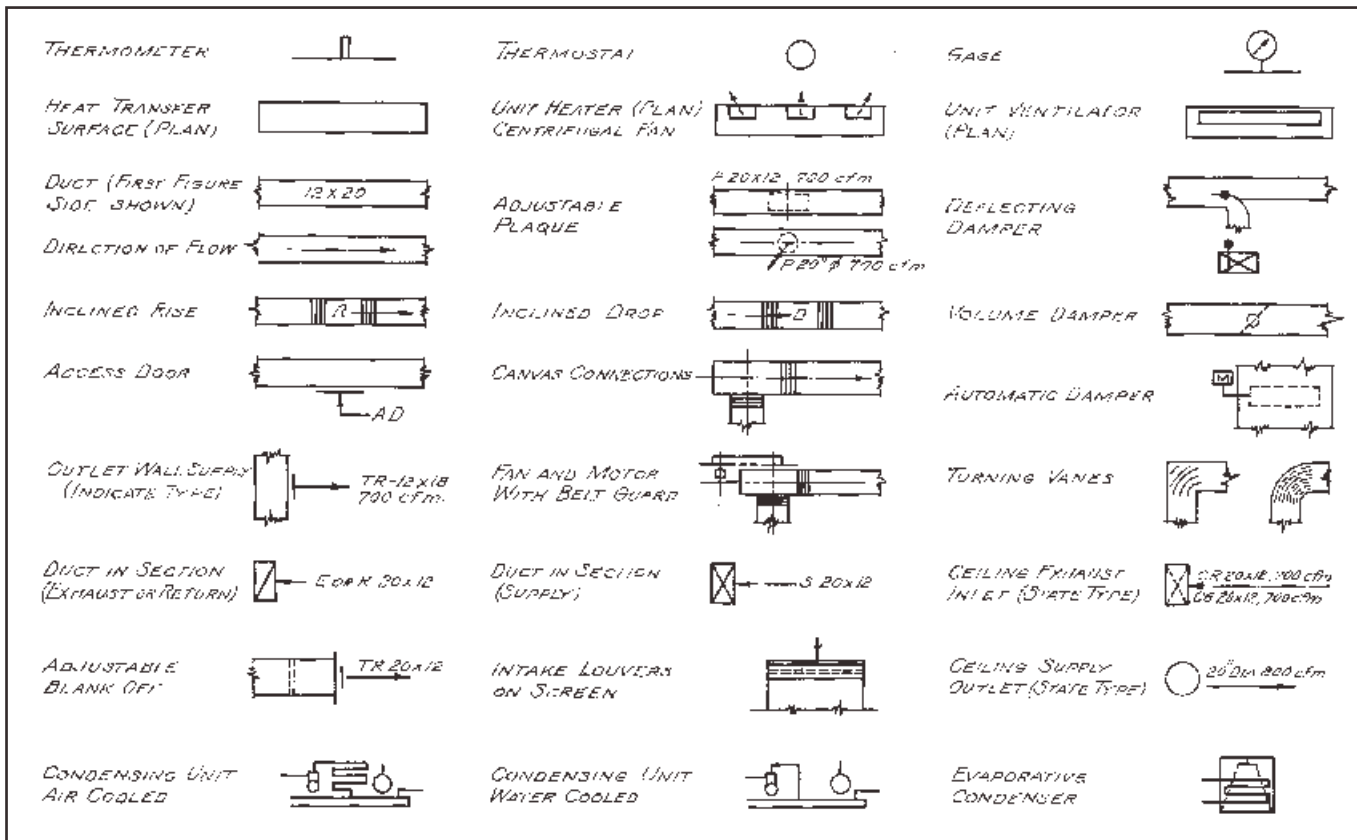
Plumbing Symbols, Table 47, Engineering Drawing and Geometry, Randolph P. Hoelscher & Clifford H. Springer

BATH (RECESSED)	BATH (ROLL RIM)	CLEANOUT	DISHWASHER	DRAIN	DRAIN (WITH VALVE)
DRINKING FOUNTAIN WALL TYPE	DRINKING FOUNTAIN PEDESTAL TYPE	DRINKING FOUNTAIN TROUGH TYPE	GAS OUTLET	GAS RANGE	GREASE SEPARATOR
HOSE BIB	HOSE RACK	HOT WATER	LAUNDRY TRAY	LAVATORY (CORNER)	LAVATORY (DENTAL)
LAVATORY (MANICURE)	LAVATORY (PEDESTAL)	LAVATORY (WALL)	METER	OIL SEPARATOR	ROOF SUMP
PLAN ELEV SHOWER (HEAD)	SHOWER (STALL)	SINK & DISHWASHER	SINK & LAUNDRY TRAY	SINK (KITCHEN)	SINK (KITCHEN) (WITH DRAINBOARDS)
SINK (SERVICE)	SINK (SERVICE) (FLOOR TYPE)	SINK (WASH) (FREE STANDING)	SINK (WASH) (WALL TYPE)	URINAL (STALL)	URINAL (TROUGH)
URINAL (WALL)	VACUUM OUTLET	WATER CLOSET (LOW TANK)	WATER CLOSET (NO TANK)	WASH FOUNTAIN (HALF CIRCULAR)	WATER HEATER

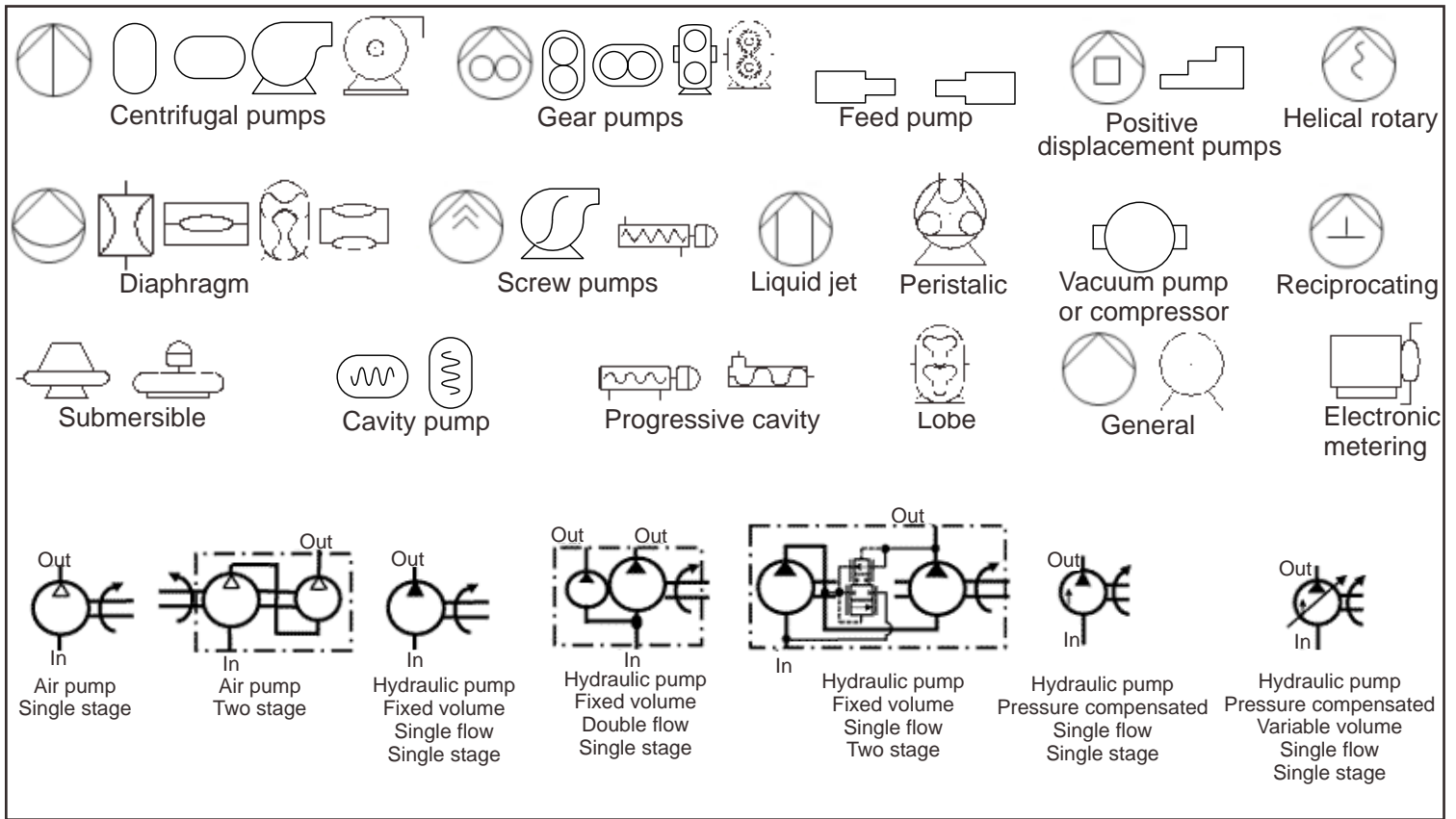




Heating, Ventilating and Air Conditioning Symbols, Table 45, Engineering Drawing and Geometry,  
 Randolph P. Hoelscher & Clifford H. Springer



Variations of pump symbols - internet



ENDNOTES

1). MANUAL OF PATENT EXAMINING PROCEDURE Chapter 600 Parts, Form, and Content of Application V. DRAWING STANDARDS 37 CFR 1.84. Standards for drawings. 608.02 (n) Symbols

2). MANUAL OF PATENT EXAMINING PROCEDURE Chapter 600 Parts, Form, and Content of Application IX. Drawing Symbols, 37 CFR 1.84 (n)

Internet sources for symbols: Piping and instrumentation diagram - www.pipingguide.net, Hydraulics & pneumatics chapter 4 ISO symbols & Glossary AutoCAD P&ID pump symbols