

AutoCAD and Its Applications **Advanced**

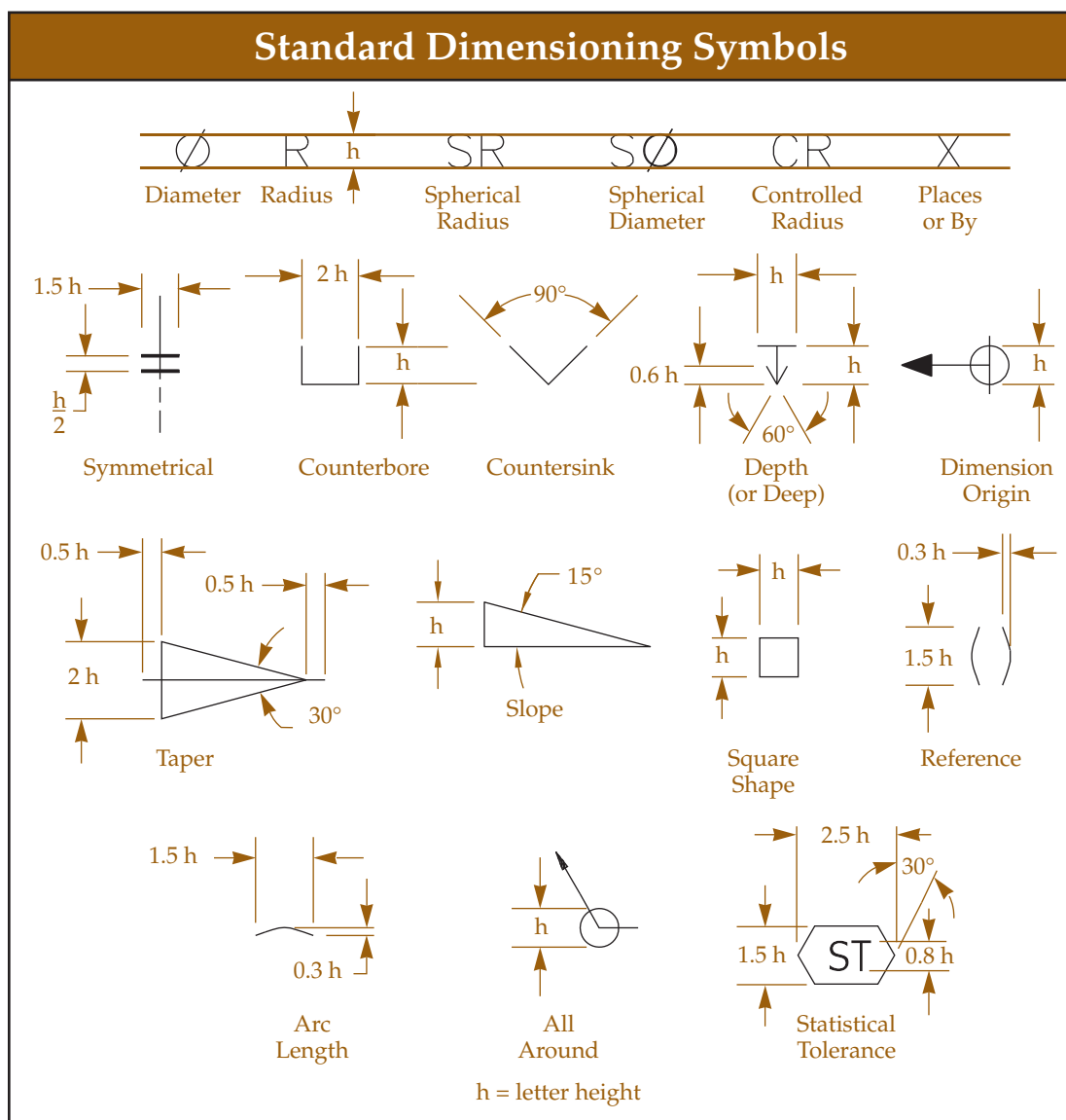
Reference Material

Drafting Symbols

Symbols provide a “common language” for drafters all over the world. However, symbols can be meaningful only if they are created according to the relevant standards or conventions. This document describes and illustrates common dimensioning, GD&T, architectural, piping, and electrical symbols.

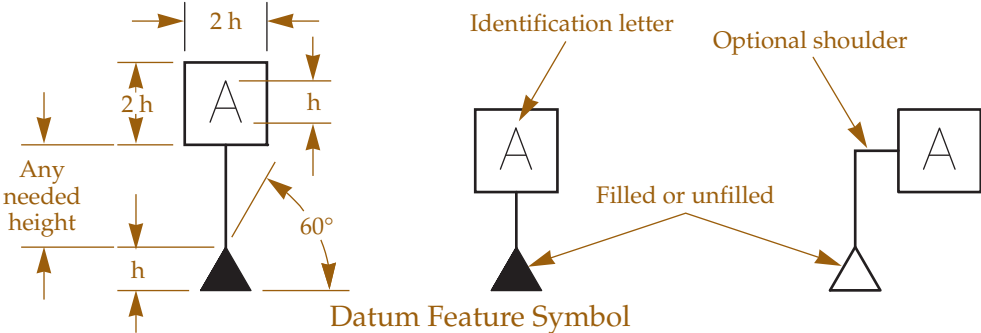
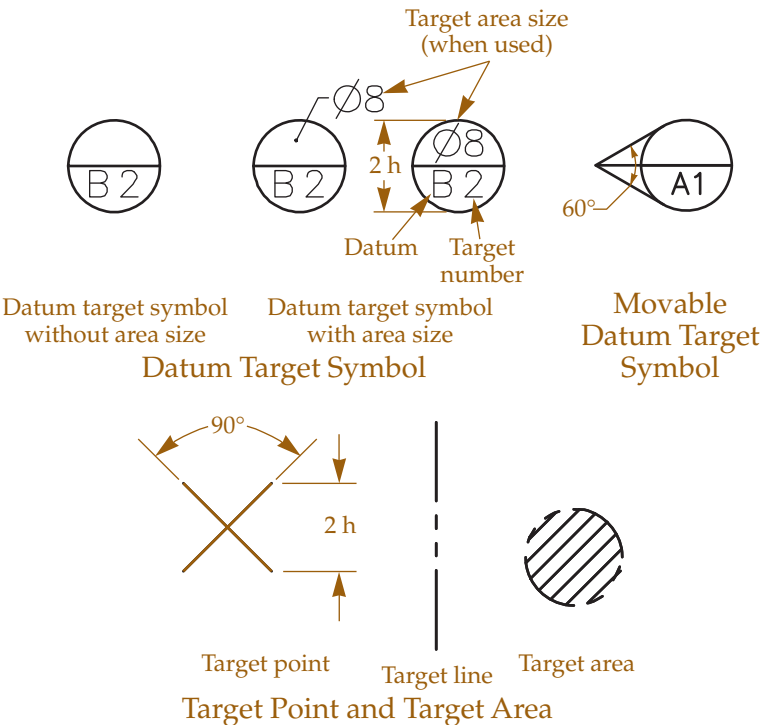
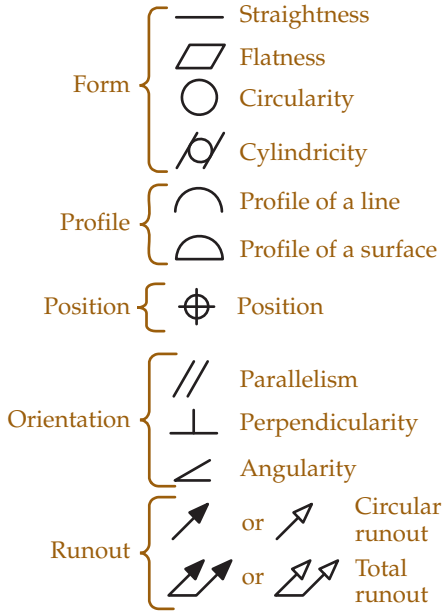
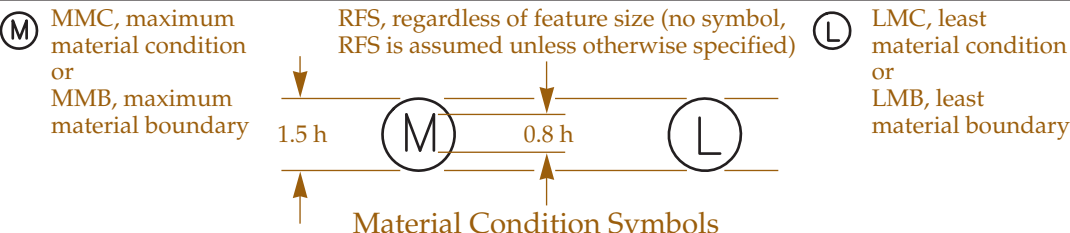
Standard Dimensioning Symbols

The size of dimensioning symbols varies with text size, but it should be consistent with the height of the text. In the following illustration, h = text height.

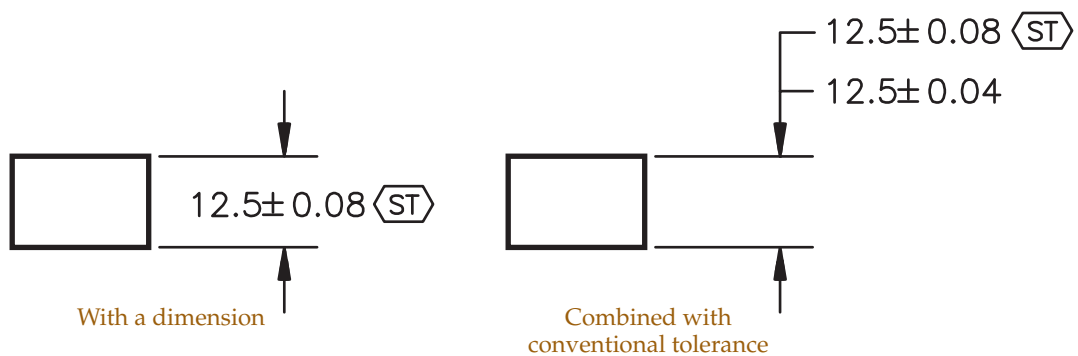
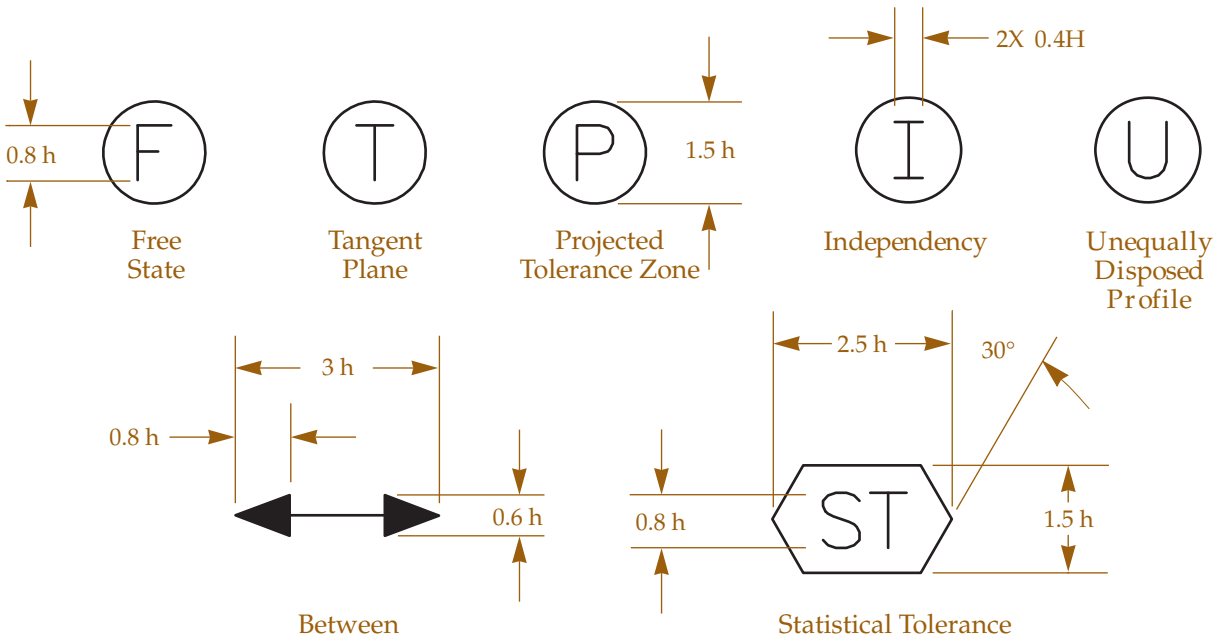


Geometric Dimensioning and Tolerancing Symbols

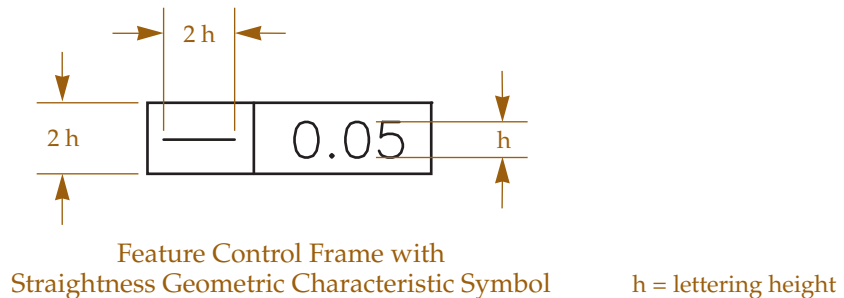
You can either create your own library of GD&T symbols, or use one of AutoCAD's GD&T fonts to insert the symbols as text. The following tables show how to construct the symbols.

GD&T Symbol Creation		
 <p>Identification letter</p> <p>Optional shoulder</p> <p>Filled or unfilled</p> <p>Datum Feature Symbol</p>		
 <p>Target area size (when used)</p> <p>Datum target symbol without area size</p> <p>Datum target symbol with area size</p> <p>Datum Target Symbol</p> <p>Movable Datum Target Symbol</p> <p>Target point</p> <p>Target line</p> <p>Target area</p> <p>Target Point and Target Area</p>		 <p>Form</p> <ul style="list-style-type: none">StraightnessFlatnessCircularityCylindricity <p>Profile</p> <ul style="list-style-type: none">Profile of a lineProfile of a surface <p>Position</p> <ul style="list-style-type: none">Position <p>Orientation</p> <ul style="list-style-type: none">ParallelismPerpendicularityAngularity <p>Runout</p> <ul style="list-style-type: none">Circular runoutTotal runout <p>Geometric Characteristic Symbols</p>
 <p>MMC, maximum material condition or MMB, maximum material boundary</p> <p>RFS, regardless of feature size (no symbol, RFS is assumed unless otherwise specified)</p> <p>LMC, least material condition or LMB, least material boundary</p> <p>Material Condition Symbols</p>		

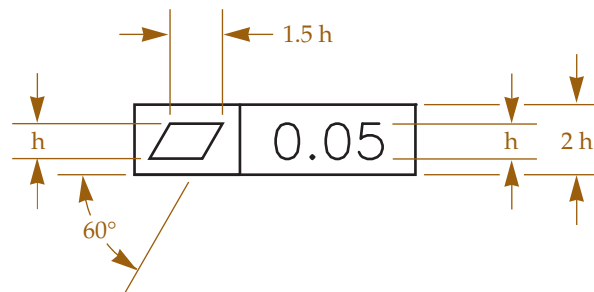
GD&T Symbol Creation



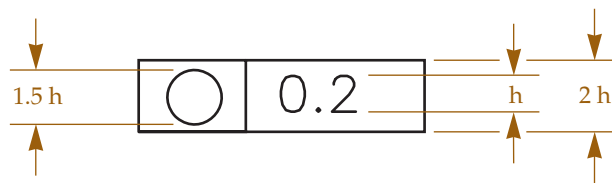
In the feature control frame
Statistical Tolerancing Methods



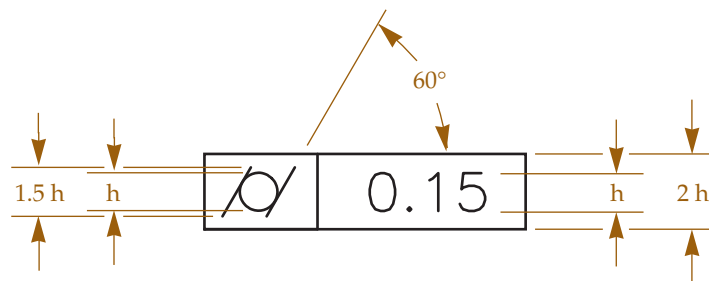
GD&T Symbol Creation



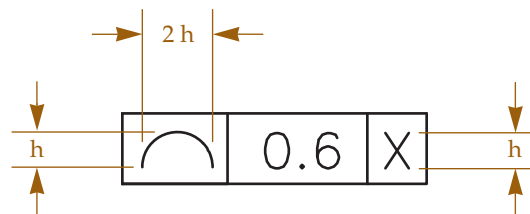
Feature Control Frame with Flatness
Geometric Characteristic Symbol



Feature Control Frame with Circularity
Geometric Characteristic Symbol



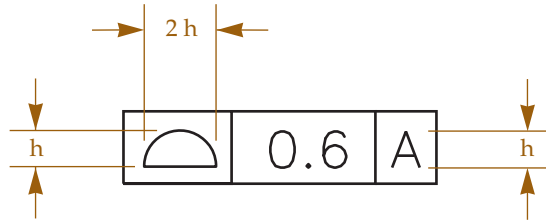
Feature Control Frame with Cylindricity
Geometric Characteristic Symbol



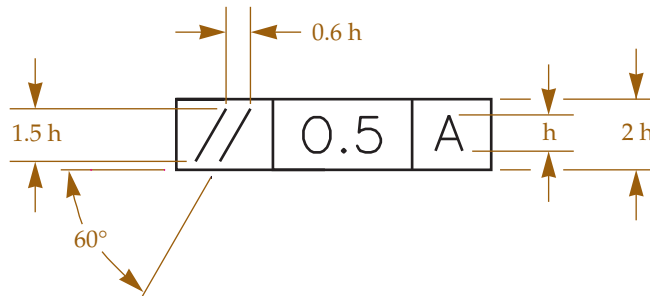
Feature Control Frame with Profile
of a Line Geometric Characteristic
Symbol and a Datum Reference

h = lettering height

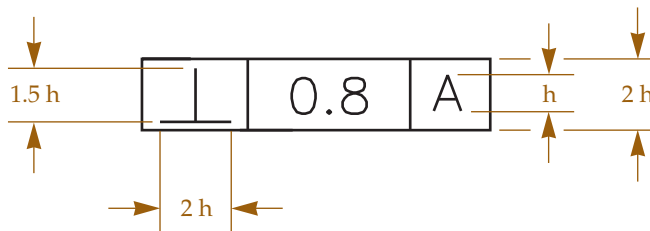
GD&T Symbol Creation



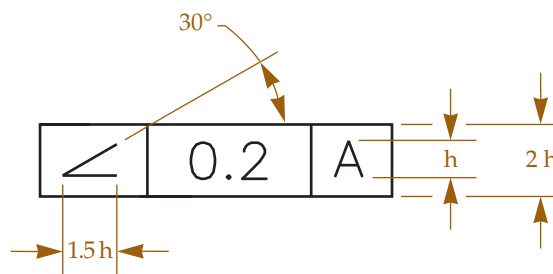
Feature Control Frame with Profile of a Surface Geometric Characteristic Symbol and a Datum Reference



Feature Control Frame with Parallelism Geometric Characteristic Symbol and a Datum Reference



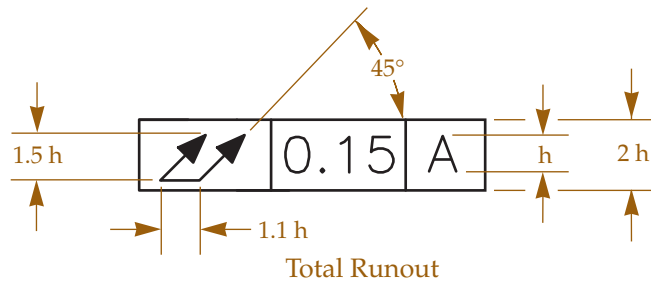
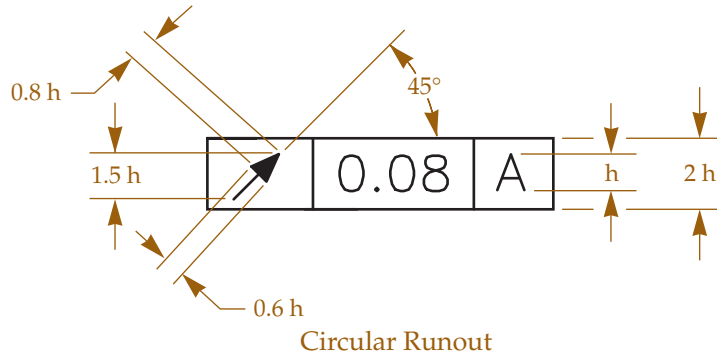
Feature Control Frame with Perpendicularity Geometric Characteristic Symbol and a Datum Reference



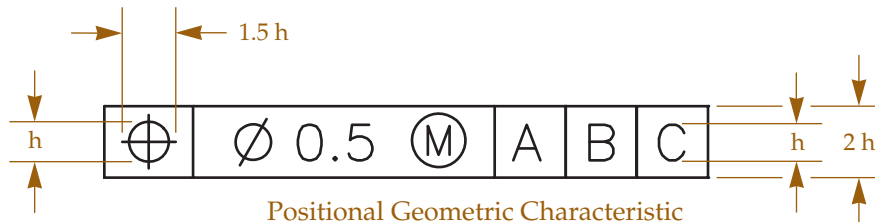
Feature Control Frame with Angularity Geometric Characteristic Symbol and a Datum Reference

h = lettering height

GD&T Symbol Creation



























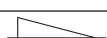

Runout symbols may be drawn open or filled



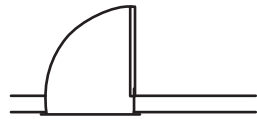
Positional Geometric Characteristic
Symbol and Tolerance in a Feature Control
Frame with Three Datum References

h = lettering height

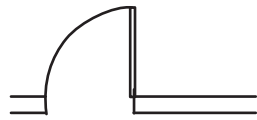
To create GD&T symbols as text, create a style using the gdt.shx font. Then use the lowercase alphabet to type the symbols. The following table shows the symbol produced by each lowercase letter.

Lowercase Letter	Symbol Produced
a	
b	
c	
d	
e	
f	
g	
h	
i	
j	
k	
l	
m	
n	
o	
p	
q	
r	
s	
t	
u	
v	
w	
x	
y	
z	

Common Architectural Symbols



Exterior Door



Interior Door



Pocket Door



Bifold Door



Bypass Door



Window



Lighting Outlet



Recessed Lighting Outlet



Wall Lighting Outlet



Fluorescent Light Fixture



Single Receptacle Outlet



Duplex Convenience Outlet



Triplex Receptacle Outlet



Special Outlet



Floor Single Receptacle Outlet



Floor Duplex Receptacle Outlet



Single Pole Switch



3-Way Switch



Toilet



Wall Hung Toilet



Urinal



Oval Vanity Sink



Rectangular Vanity Sink



Single Kitchen Sink



Double Kitchen Sink



220V Outlet



Weatherproof Outlet



Thermostat



Doorbell



Fan Hanger Receptacle



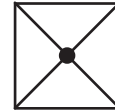
Clock Hanger Receptacle



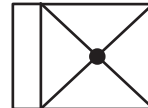
TV Outlet



Water Heater



Shower



Shower w/ Seat



Tub



Washer/Dryer



Range



Refrigerator



Fan

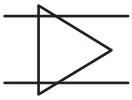

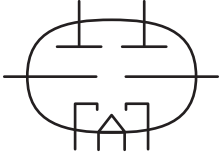



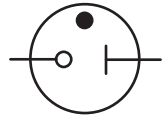



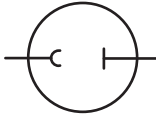



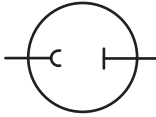


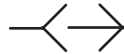





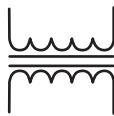






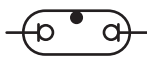





Conduit

Single Line Piping Symbols

	Screwed			Buttwelded		
Name	Left Side	Front	Right Side	Left Side	Front	Right Side
90° Elbow						
45° Elbow						
Tee						
45° Lateral						
Cross						
Cap						
Concentric Reducer						
Eccentric Reducer						
Union						
Coupling						

Common Symbols for Electrical Diagrams

			
Amplifier	Capacitor, Polarized	Twin Triode Using Elongated Envelope	Receiver, Earphone
			
Antenna, General	Circuit Breaker	Voltage Regulator, also, Glow Lamp	Resistor, General
			
Antenna, Dipole	Ground	Phototube	Resistor, Adjustable
			
Antenna, Loop	Chassis Ground	Inductor, Winding, Reactor, General	Resistor, Variable
			
Antenna, Counterpoise	Connectors, Jack and Plug	Magnetic Core Inductor	Transformer, General
			
Battery, Long Line Positive	Engaged Connectors	Adjustable Inductor	Transformer, Magnetic Core
			
Multicell Battery	Triode with Directly Heated Cathode and Envelope Connection to Base Terminal	Ballast Lamp	Shielded Transformer, Magnetic Core
			
Capacitor, General	Pentode Using Elongated Envelope	Fluorescent, 2-Terminal Lamp	Auto-Transformer, Adjustable
			
Capacitor, Variable		Incandescent Lamp	