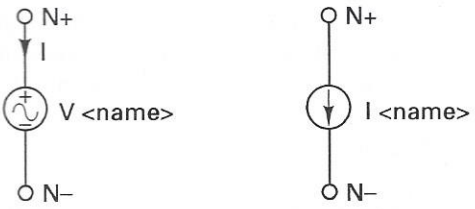

(a) Voltage source (b) Current source

Figure 4-5 Voltage and current sources.

4-3.1 Independent Voltage Source

The symbol of an independent voltage source is V and the general form is

```
V⟨name⟩    N+      N–
+          [dc ⟨value⟩]
+          [ac ⟨(magnitude) value⟩ ⟨(phase) value⟩]
+          [(transient specifications)]
```

Note. The first column with a + (plus) signifies continuation of the PSpice statement. After the + sign, the statement can continue in any column.

The (transient specifications) must be one of the following sources:

PULSE (⟨parameters⟩)	For a pulse waveform
PWL (⟨parameters⟩)	For a piecewise linear waveform
SIN (⟨parameters⟩)	For a sinusoidal waveform
EXP (⟨parameters⟩)	For an exponential waveform
SFFM (⟨parameters⟩)	For a frequency-modulated waveform

N+ is the positive node and N− is the negative node, as shown in Fig. 4-5(a). Positive current flows from node N+, through the voltage source, to the negative node N−. The voltage source need not be grounded. For the dc, ac, and transient values, the default value is zero. None or all of dc, ac, and transient values may be specified. The ⟨(phase) value⟩ is in degrees.

The source is set to the dc value in dc analysis. It is set to ac value in ac analysis. If the ⟨(phase) value⟩ in ac analysis is omitted, the default is 0. The time-dependent source (e.g., PULSE, EXP, SIN, etc.) is assigned for transient analysis. A voltage source may be used as an *ammeter* in PSpice by inserting a zero-valued voltage source into the circuit for the purpose of measuring current. Since a zero-valued source behaves as a short circuit, there will be no effect on circuit operation.

Typical Statements

```
V1       15   0   6V                          ; By default, dc specification of 6 V
V2       15   0   DC    6V                    ; Dc specification of 6 V
VAC      5    6   AC    1V                    ; Ac specification of 1 V with 0° delay
VACP     5    6   AC    1V    45DEG           ; Ac specification of 1 V with 45° delay
VPULSE   10   0   PULSE (0  1  2NS  2NS  2NS  50NS  100NS) ; Transient pulse
VIN      25   22  DC  2  AC  1  30  SIN (0  2V  10KHZ)
```