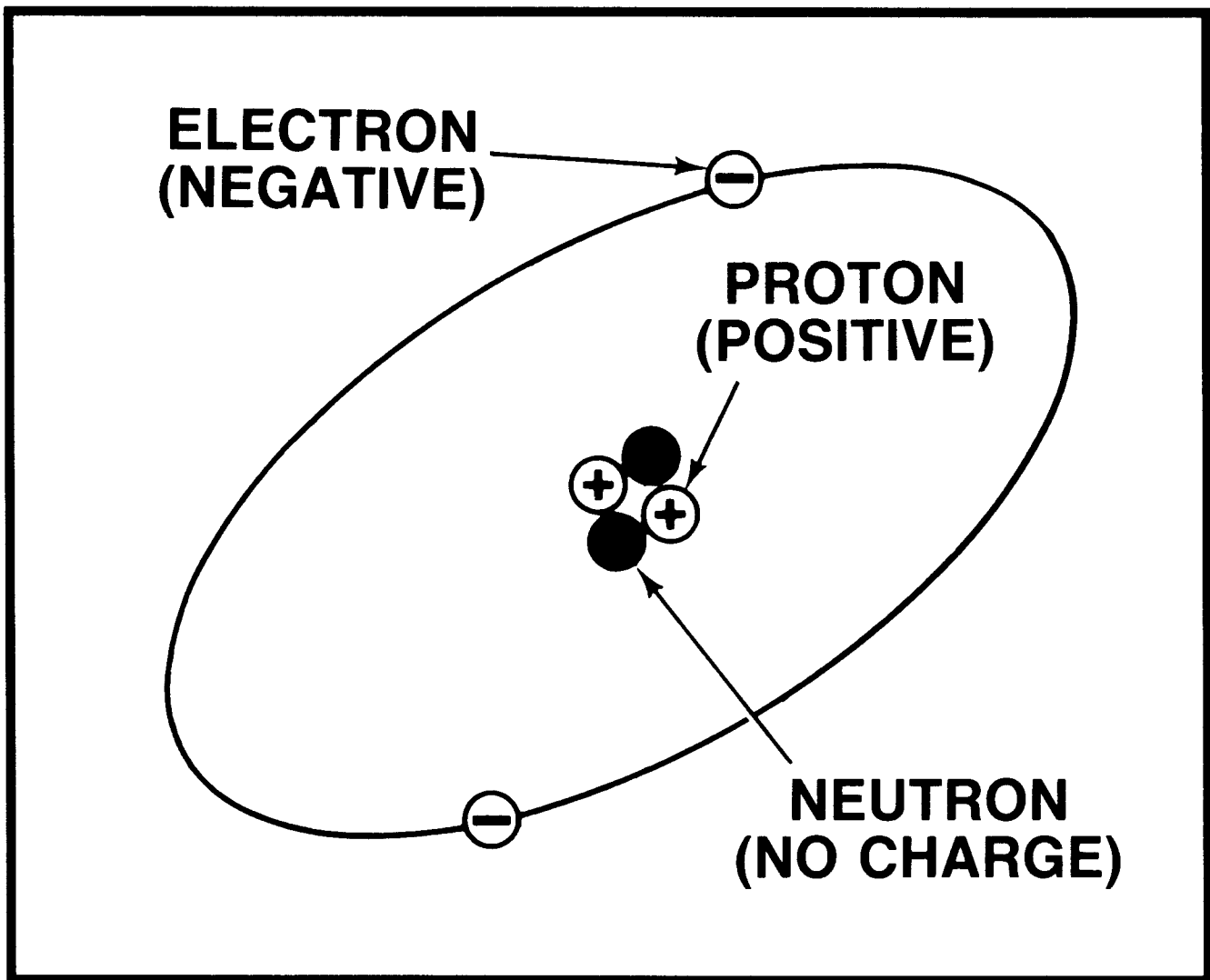


Overhead Transparencies - B & W Masters

ELECTRICAL FUNDAMENTALS

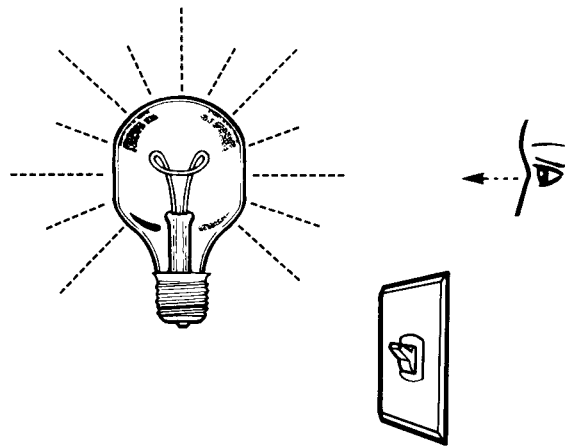


WWW.AUTOSHOP101.COM
Automotive Electronics Training and Resource Site

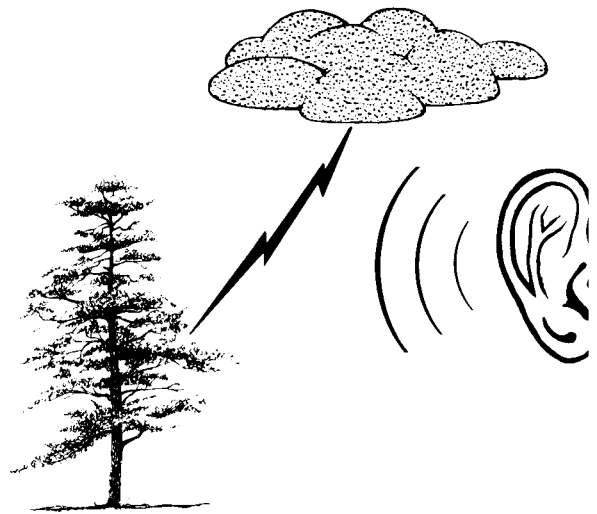
ELECTRICAL FUNDAMENTALS

EFFECTS OF ELECTRICITY

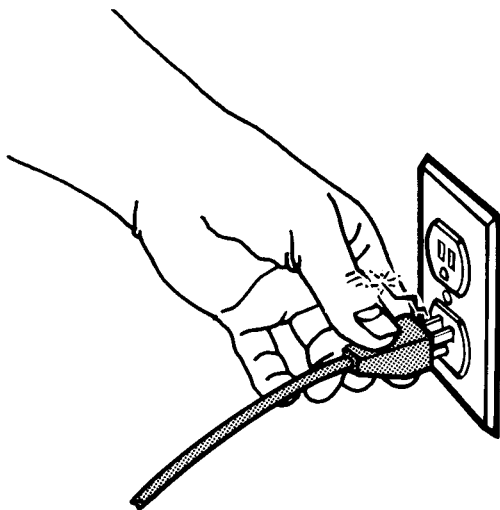
SIGHT



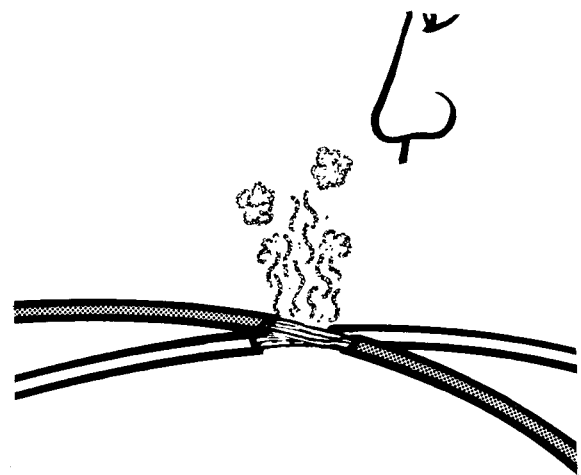
SOUND



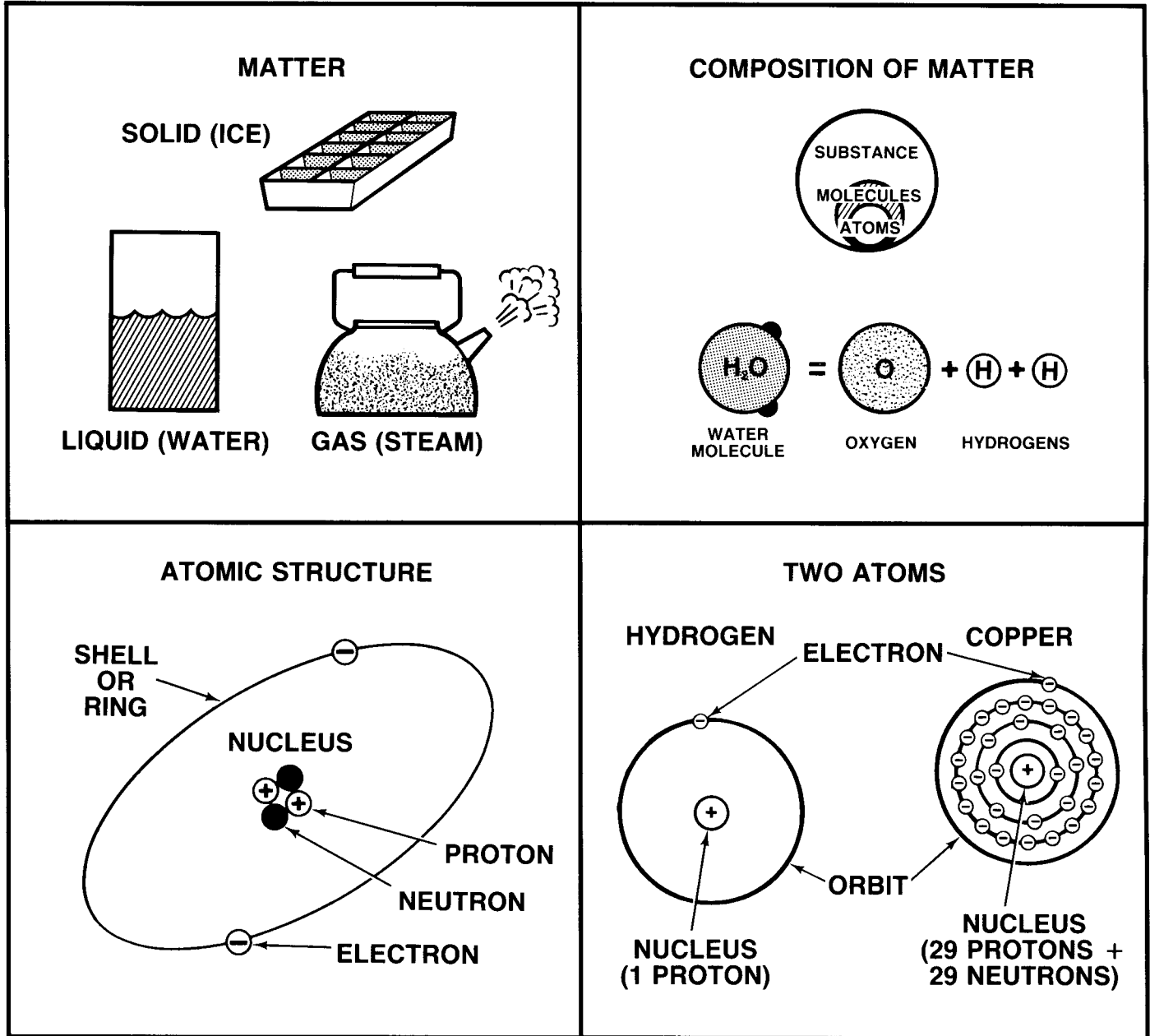
FEEL



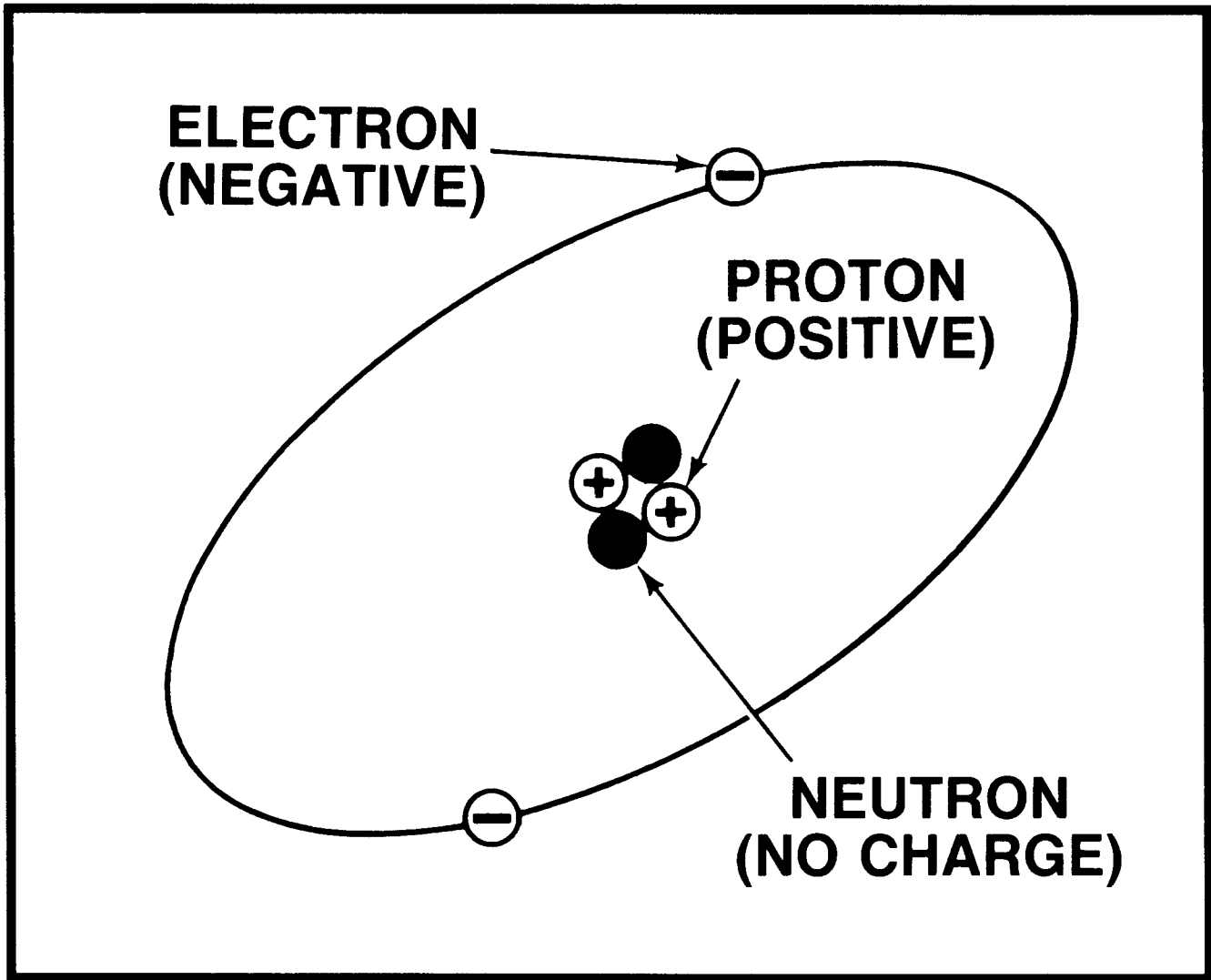
SMELL



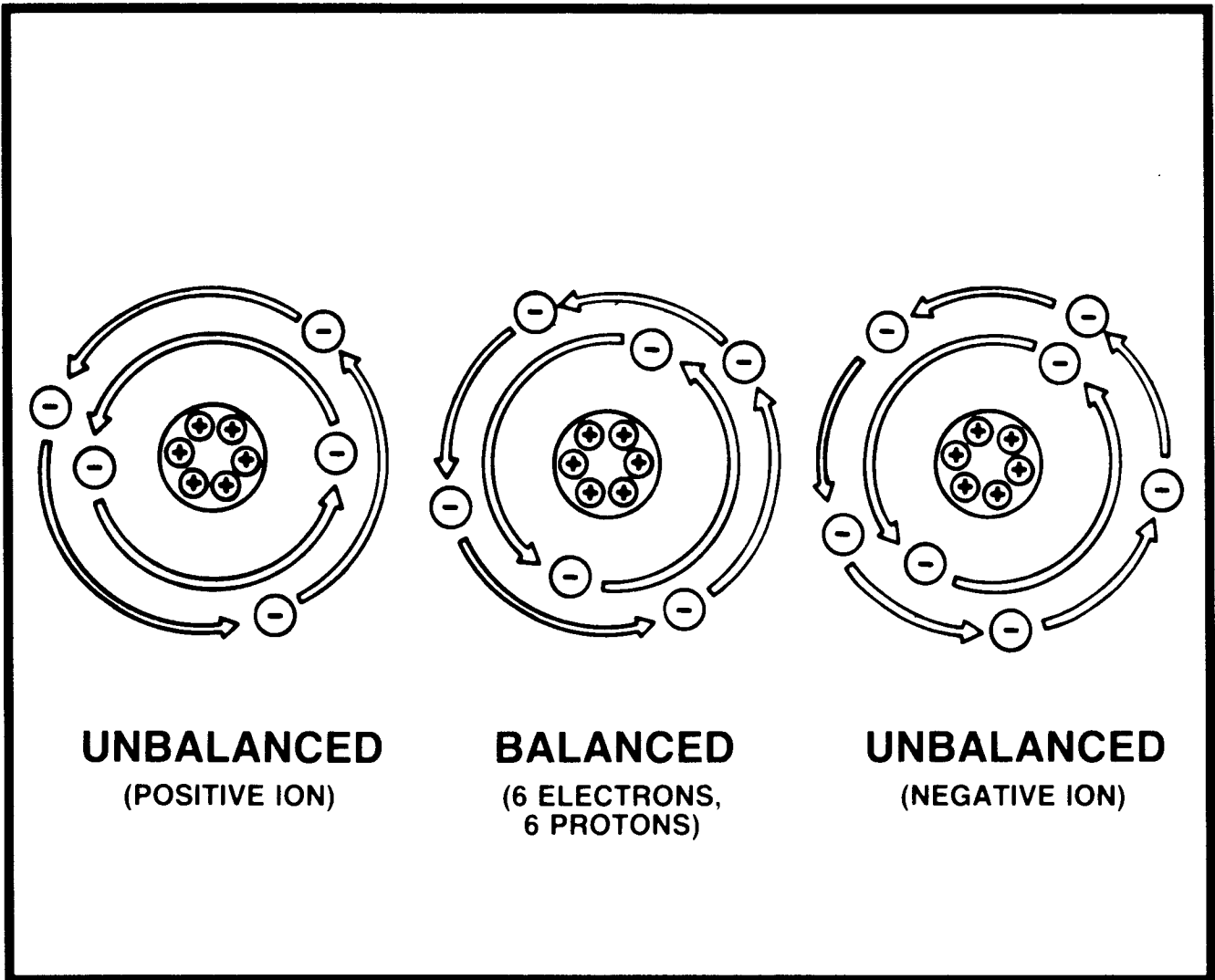
ATOMIC STRUCTURE



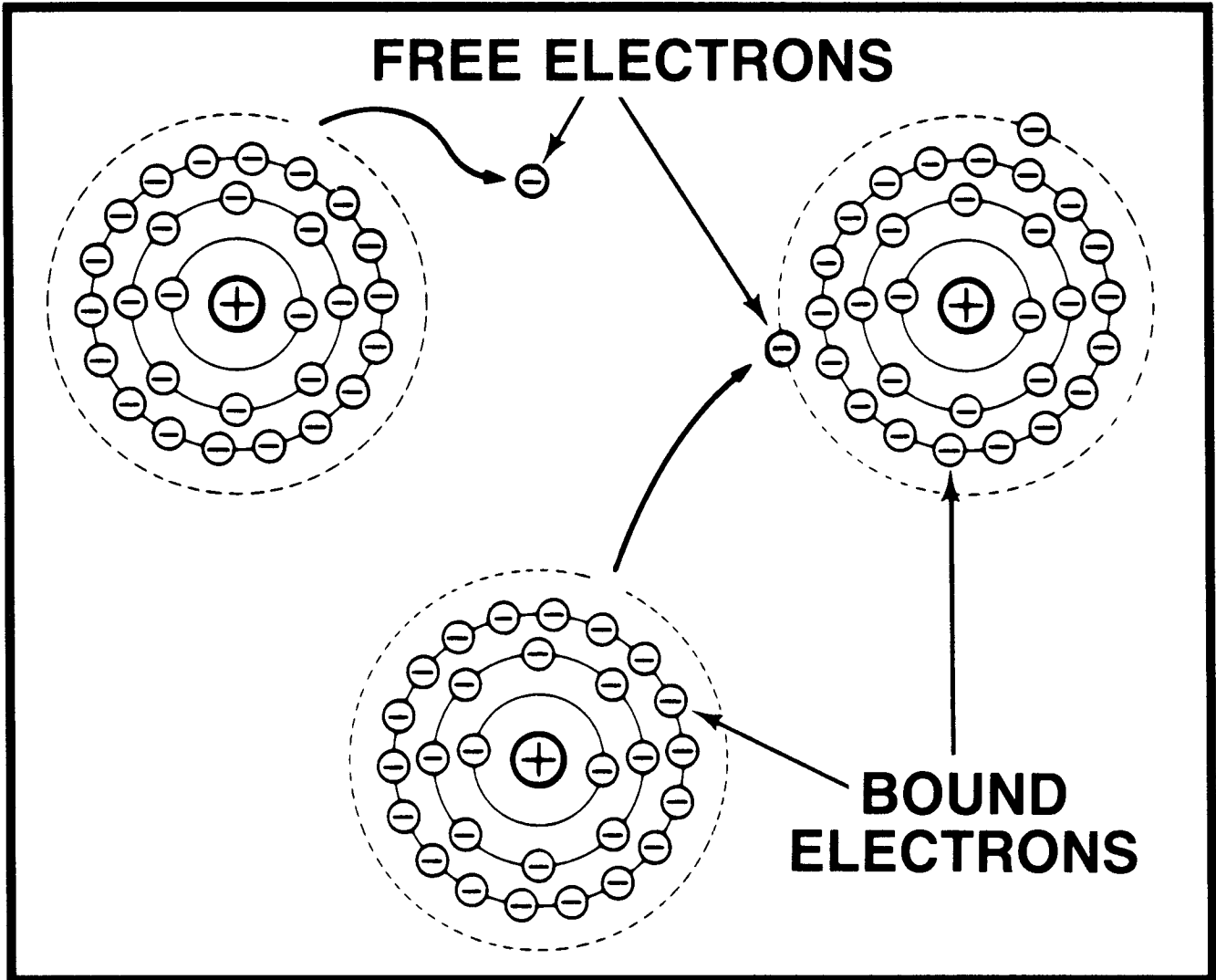
ATOMS AND ELECTRICAL CHARGES



POSITIVE AND NEGATIVE IONS

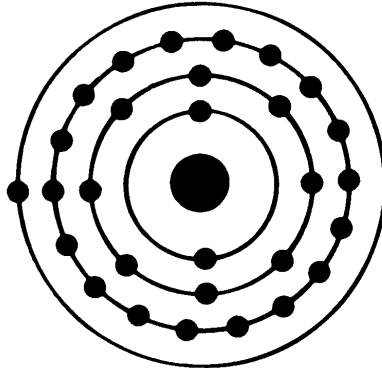


ELECTRON FLOW



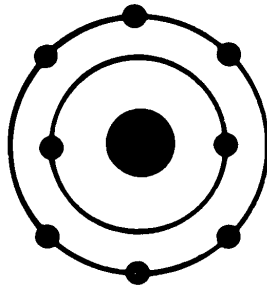
CONDUCTORS, INSULATORS, & SEMICONDUCTORS

CONDUCTORS



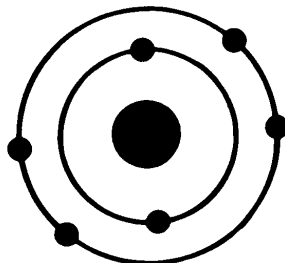
1-3 ELECTRONS
IN OUTER RING

INSULATORS



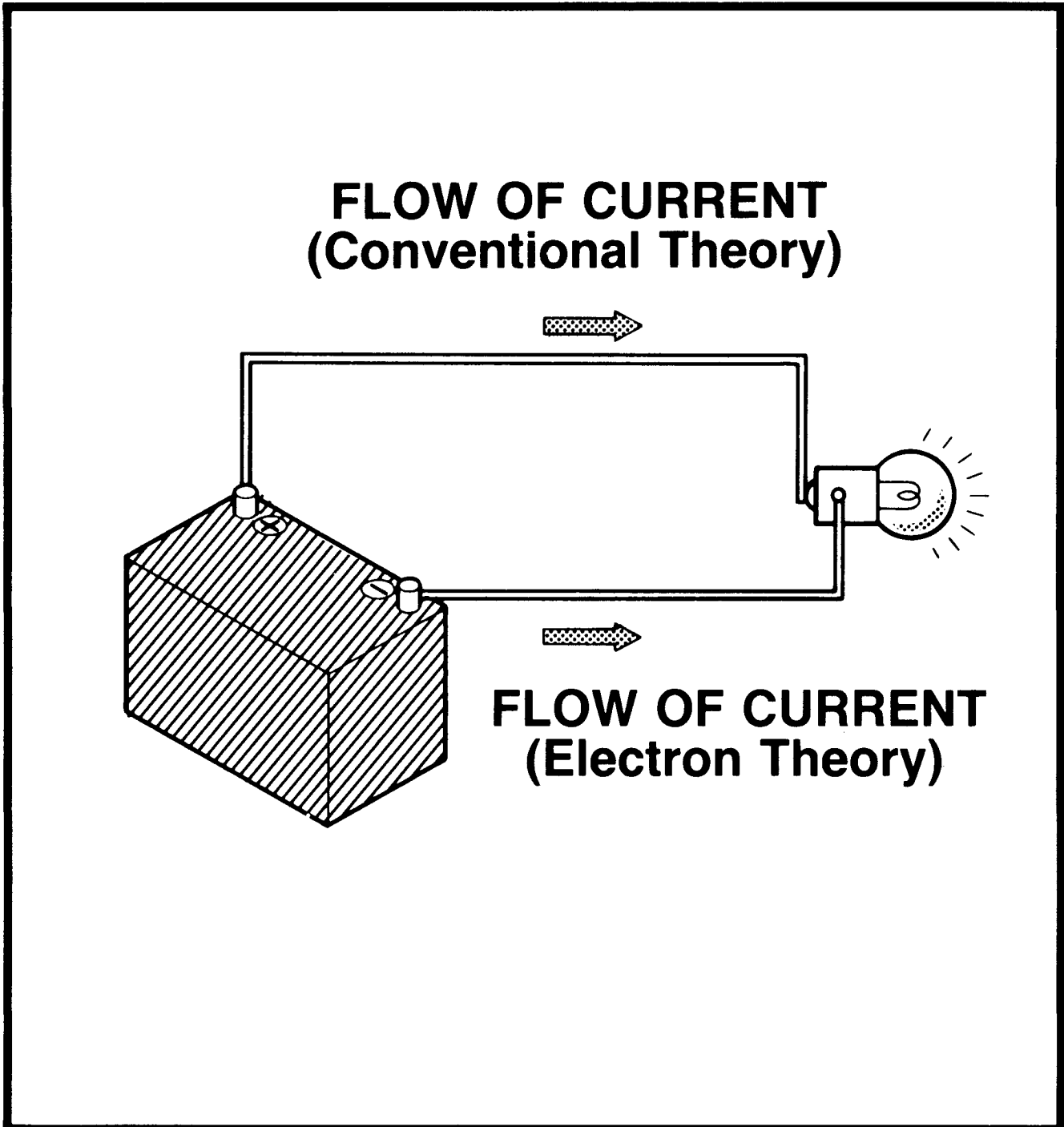
5-8 ELECTRONS
IN OUTER RING

SEMICONDUCTORS



4 ELECTRONS
IN OUTER RING

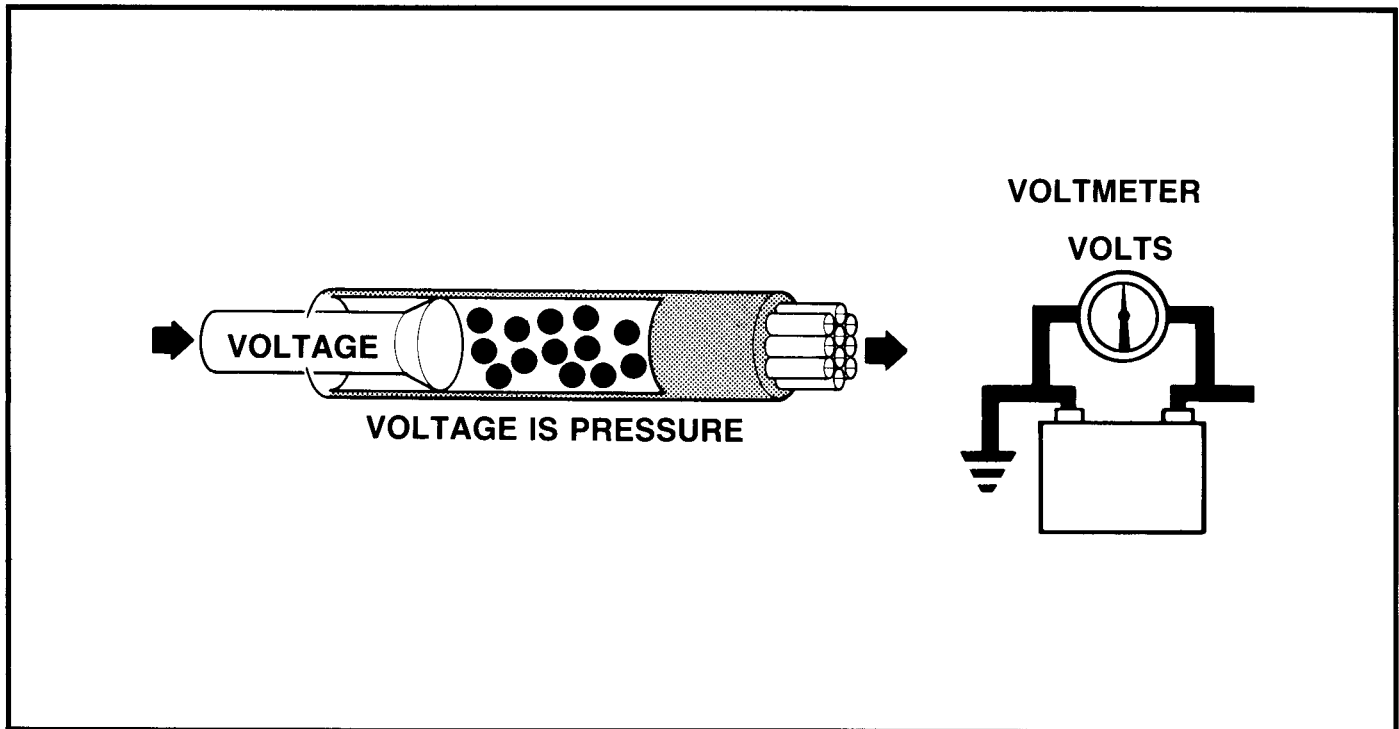
CURRENT FLOW THEORIES



ELECTRICAL FUNDAMENTALS

VOLTAGE - ELECTROMOTIVE FORCE

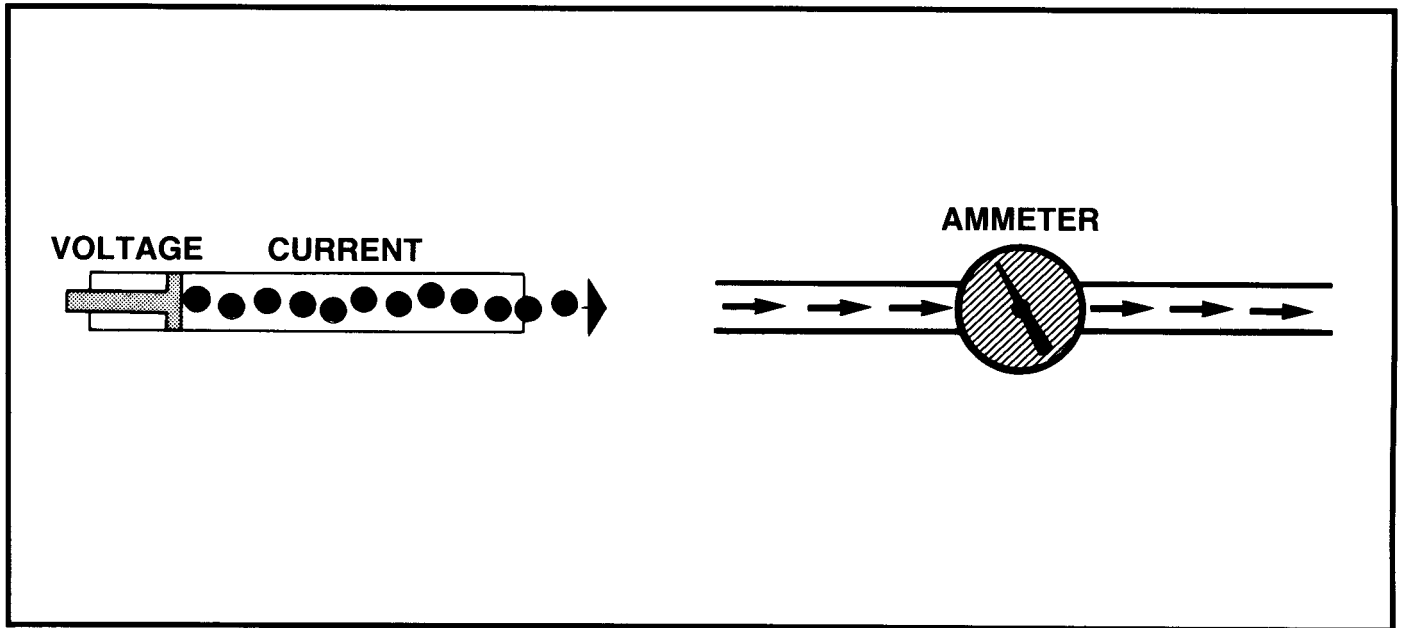
Voltage	Basic Unit	Units for Very Small Amounts		Units for Very Large Amounts	
		μV	mV	kV	MV
Symbol	V	μV	mV	kV	MV
Pronounced As	Volt	Micro-volt	Milli-volt	Kilo-volt	Mega-volt
Multiplier	1	0.000001	0.001	1,000	1,000,000



ELECTRICAL FUNDAMENTALS

CURRENT - AMPERAGE

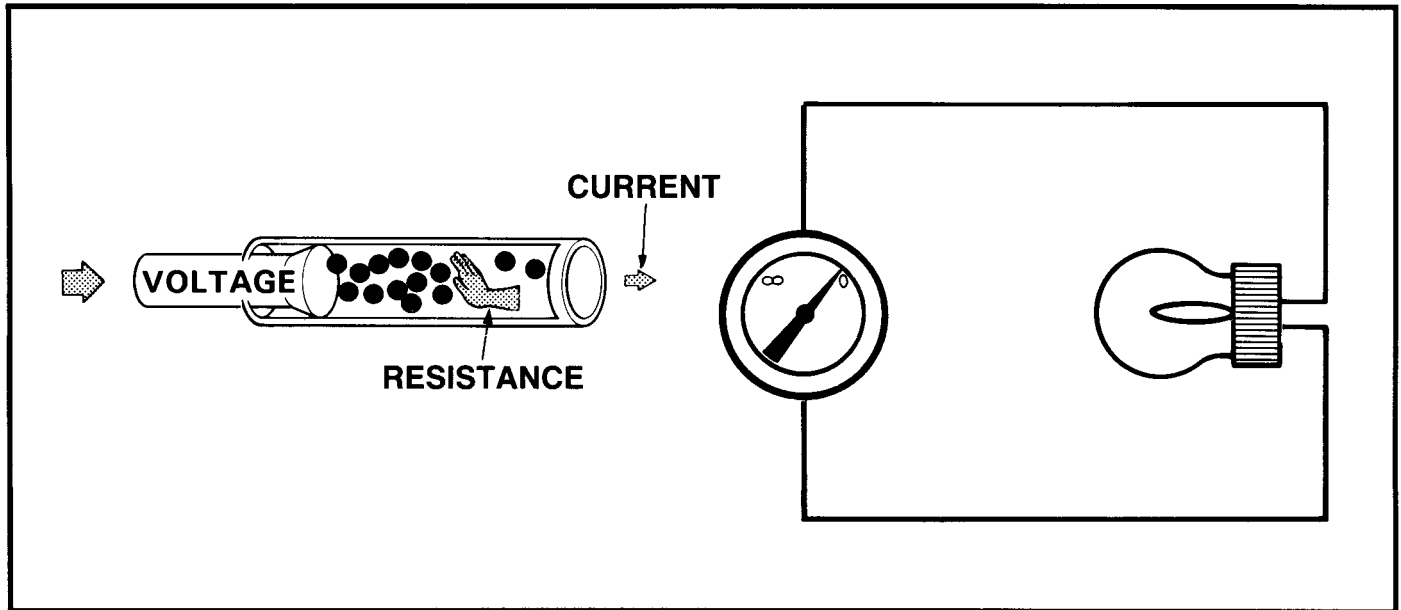
Current	Basic Unit	Units for Very Small Amounts		Units for Very Large Amounts	
Symbol	A	μA	mA	kA	MA
Pronounced As	Ampere (Amp)	Micro-ampere	Milli-ampere	Kilo-ampere	Mega-ampere
Multiplier	1	0.000001	0.001	1,000	1,000,000



ELECTRICAL FUNDAMENTALS

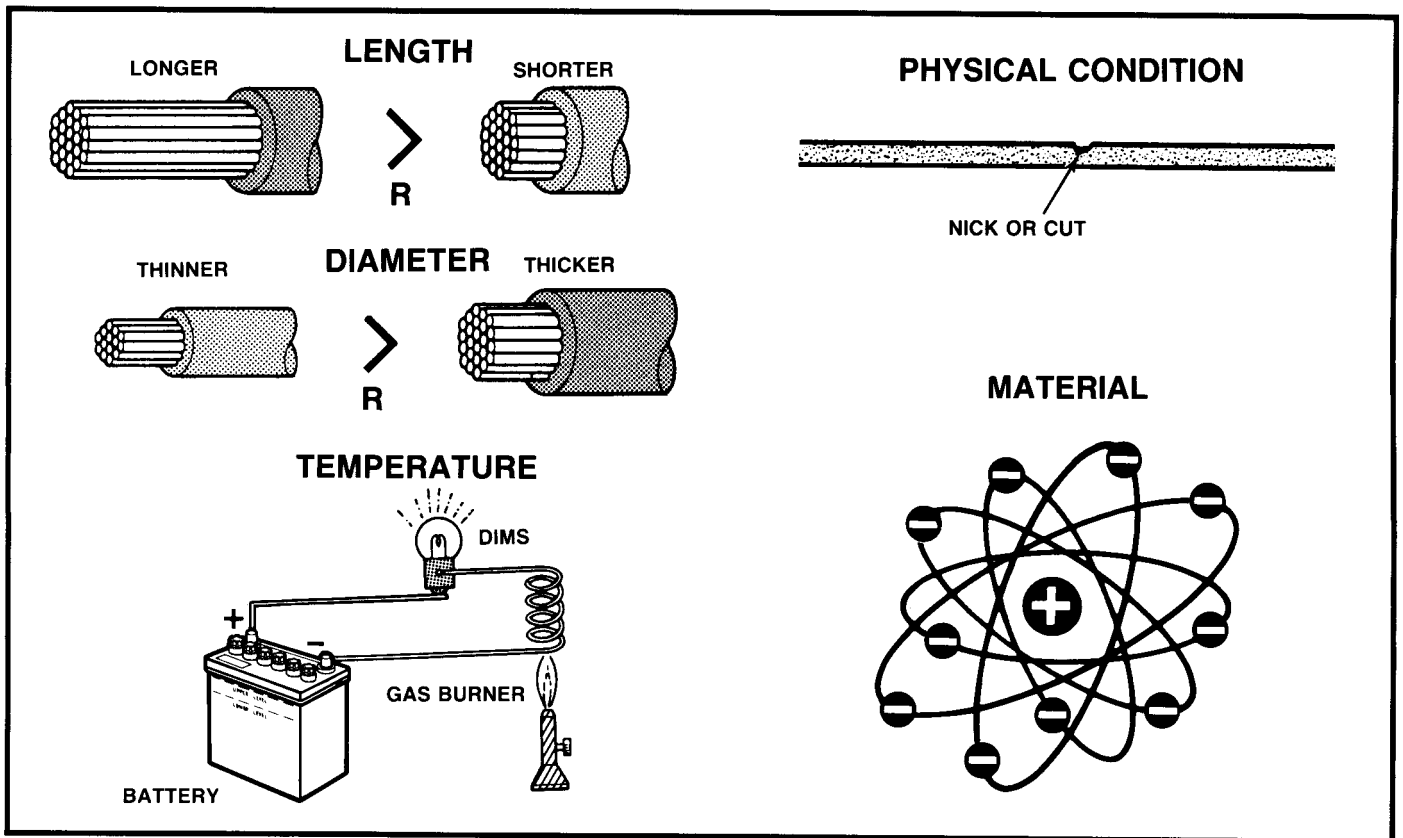
RESISTANCE

Resistance	Basic Unit	Units for Very Small Amounts		Units for Very Large Amounts	
Symbol	Ω	$\mu\Omega$	$m\Omega$	$k\Omega$	$M\Omega$
Pronounced As	Ohm	Micro-ohm	Milli-ohm	Kilo-ohm	Mega-ohm
Multiplier	1	0.000001	0.001	1,000	1,000,000



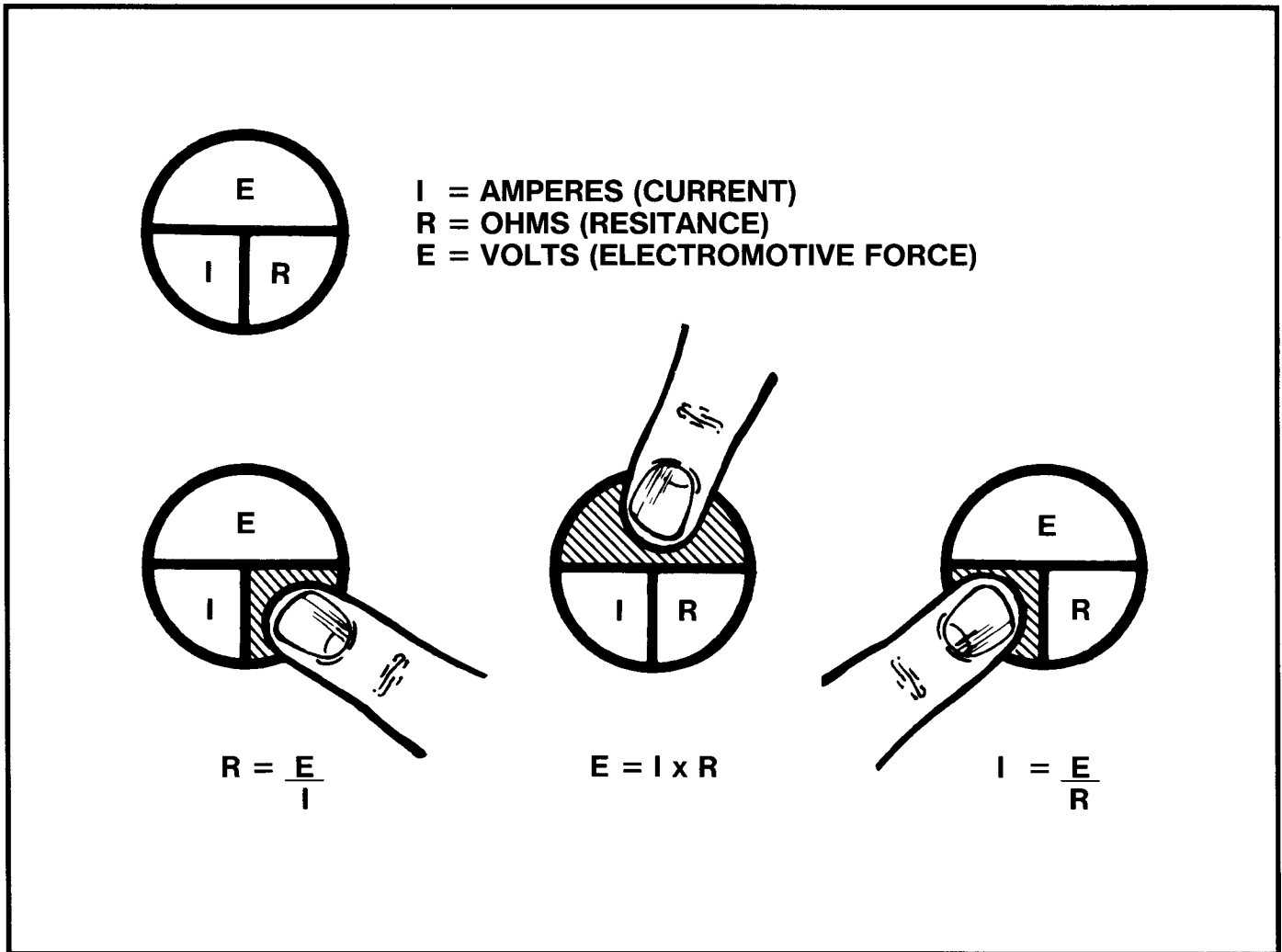
ELECTRICAL FUNDAMENTALS

FACTORS AFFECTING RESISTANCE

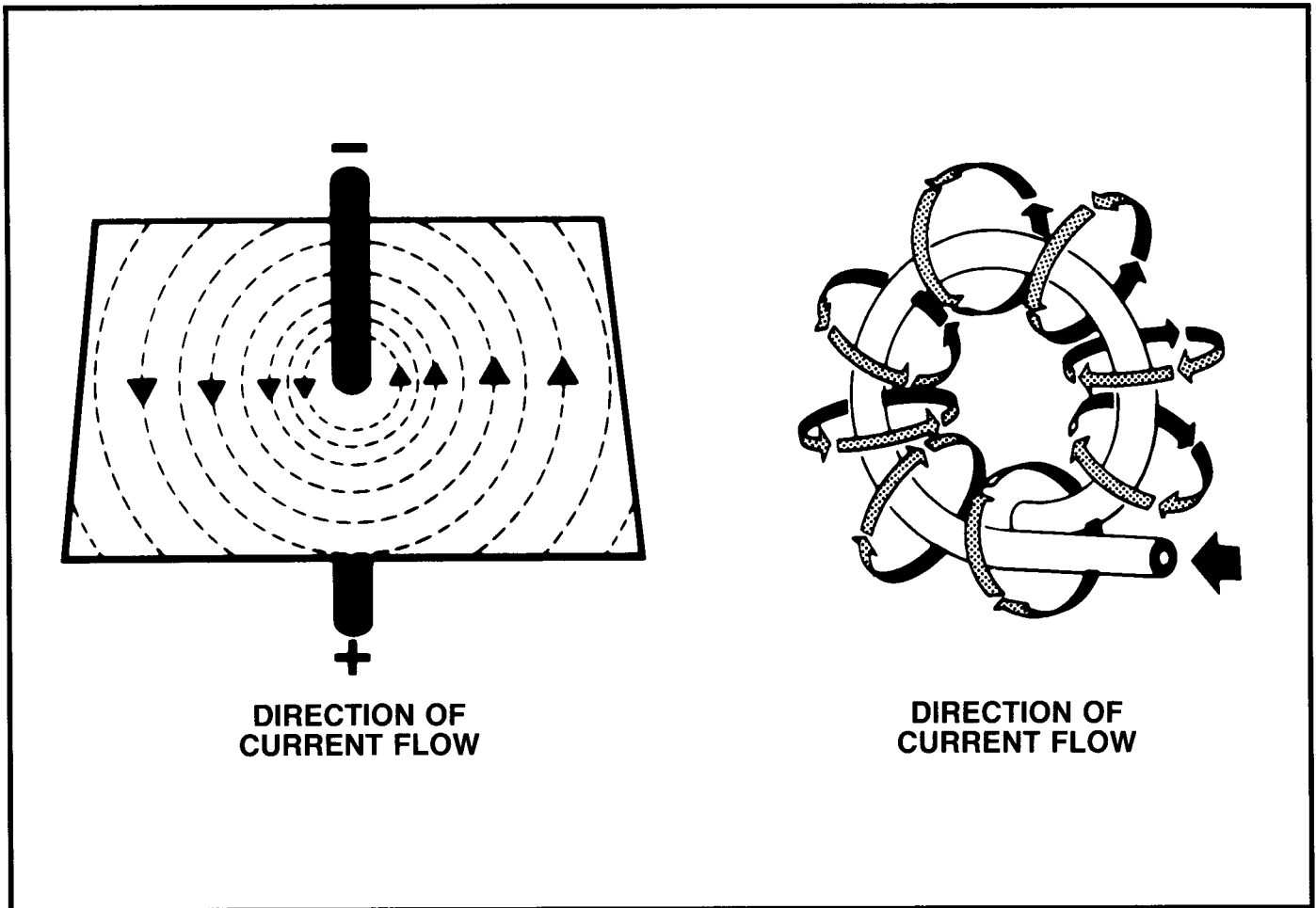


ELECTRICAL FUNDAMENTALS

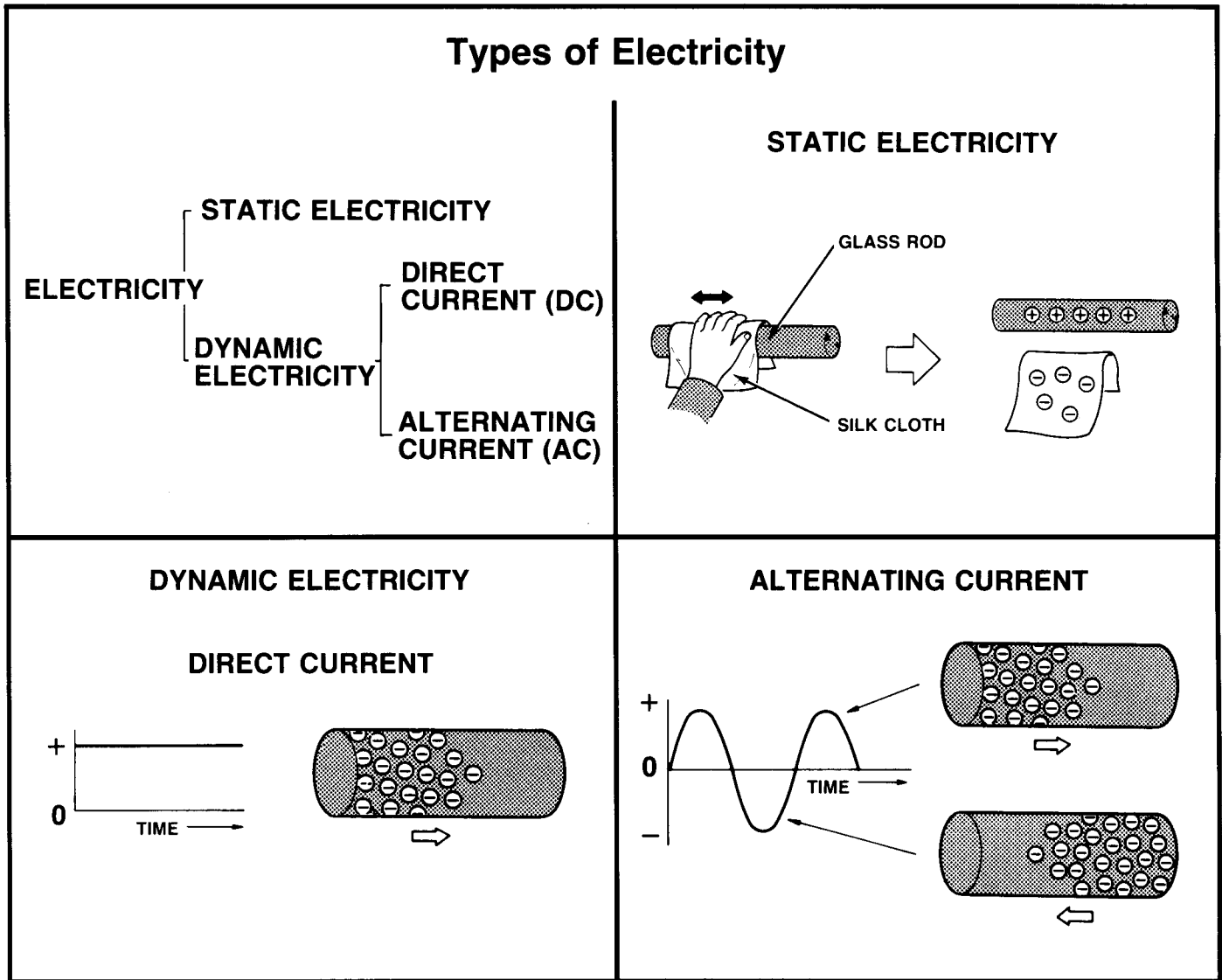
OHM'S LAW



ACTIONS OF CURRENT

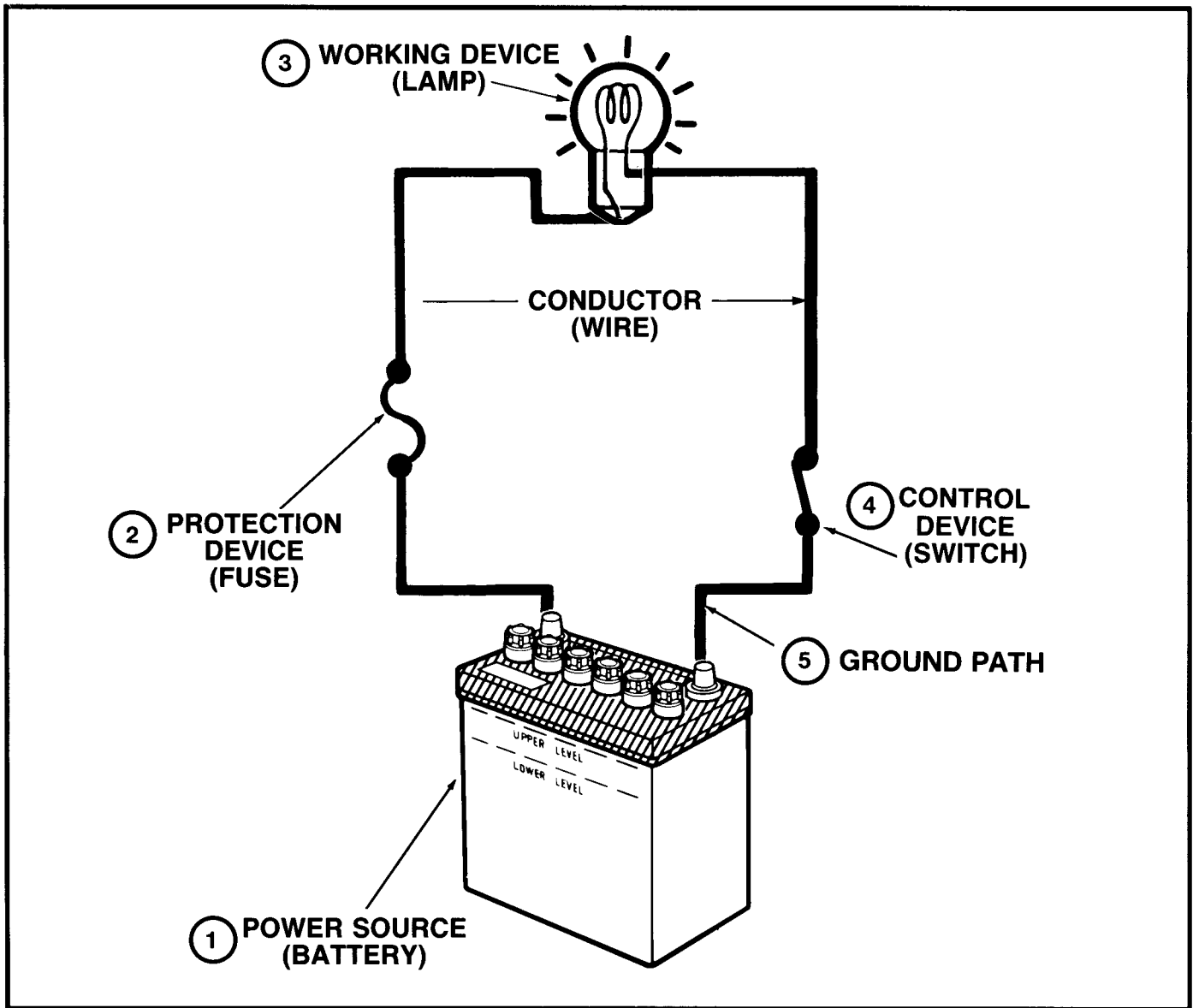


ELECTRICAL FUNDAMENTALS

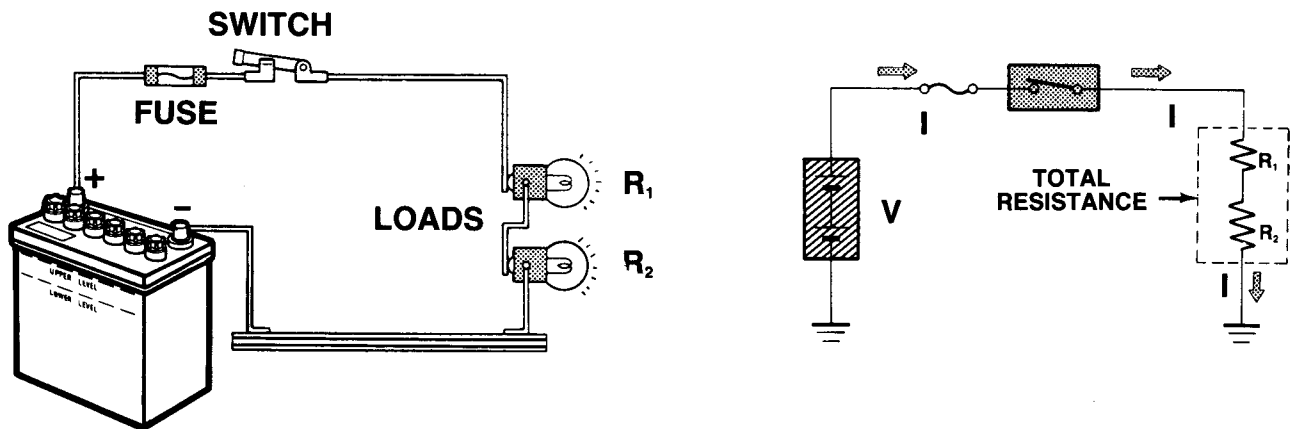


ELECTRICAL FUNDAMENTALS

ELECTRICAL CIRCUITS



SERIES CIRCUITS

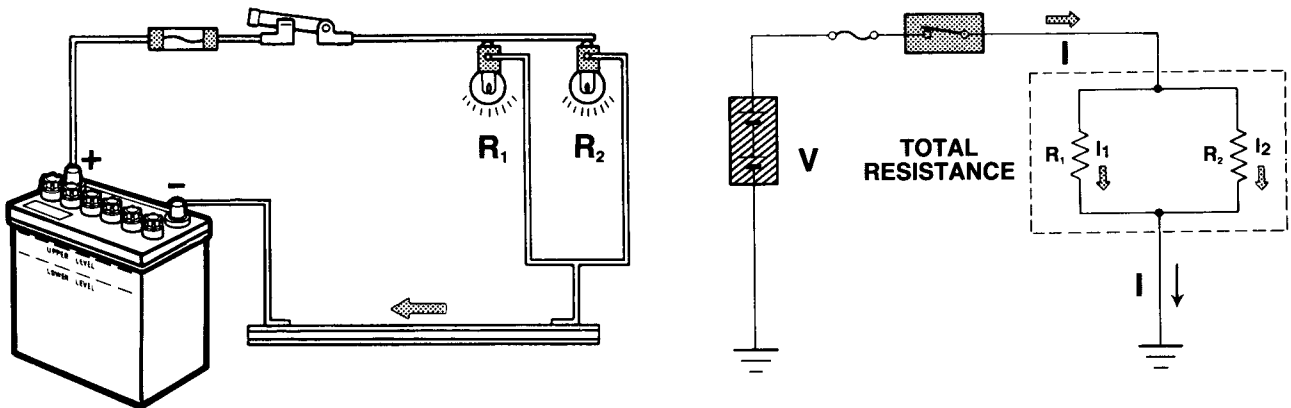


KEY FEATURES

- Current through each load resistance is the same.
- Total resistance in the circuit is the sum of load resistances.
- Total voltage drop equals the source voltage.

ELECTRICAL FUNDAMENTALS

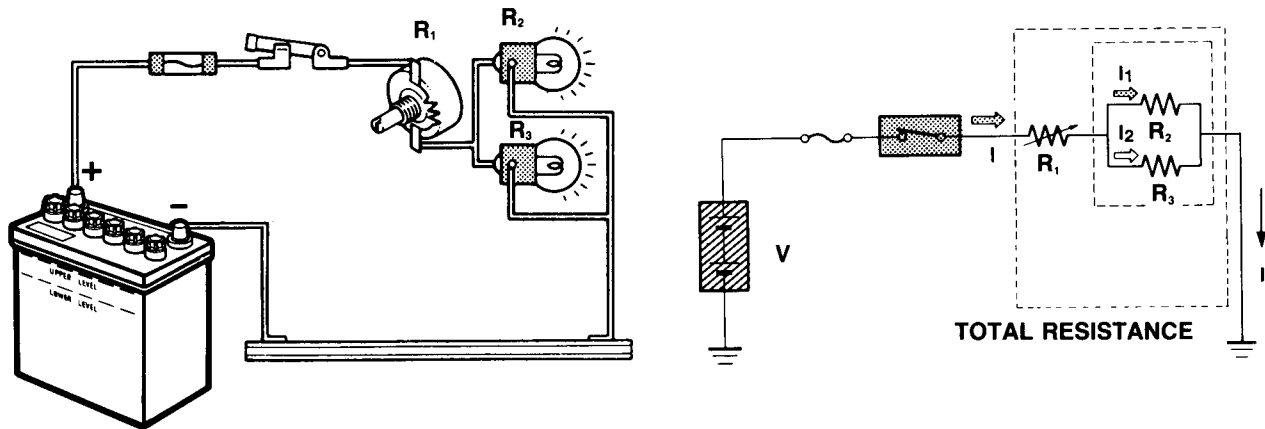
PARALLEL CIRCUITS



KEY FEATURES

- Voltage across each load resistance is the same.
- Current flow through each load will be different if the load resistances are different.
- Equivalent resistance of the circuit is less than the lowest load resistance.
- Total current in the circuit equals the sum of the branch currents.

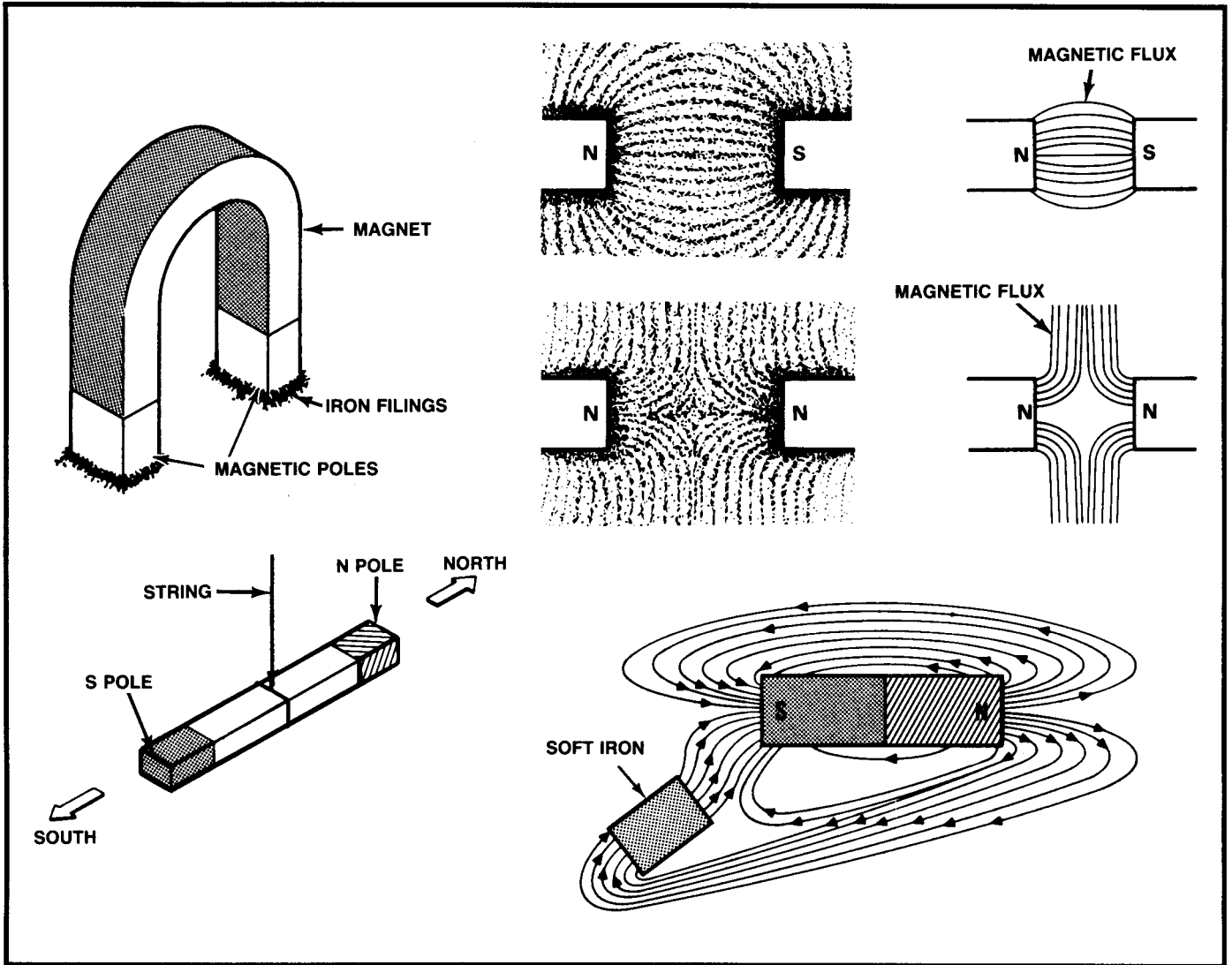
SERIES-PARALLEL CIRCUITS



KEY FEATURES

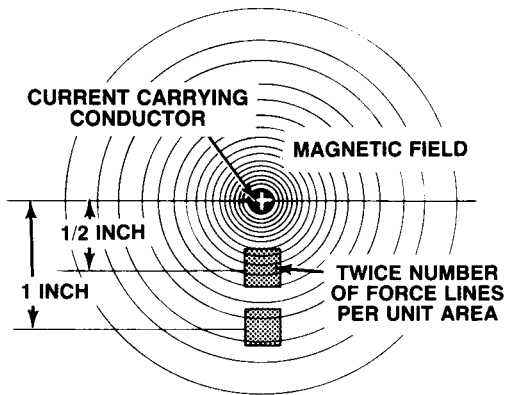
- Current in the series portion of the circuit equals the sum of branch currents.
- Circuit resistance is the sum of the parallel equivalent resistance and any series resistances.
- Voltage applied to the parallel branches is the source voltage minus any voltage drop across loads wired in series.

MAGNETISM

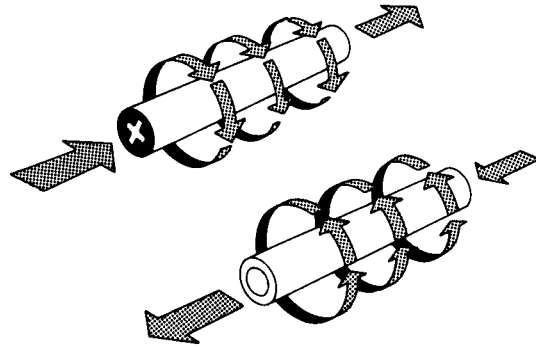


ELECTROMAGNETISM

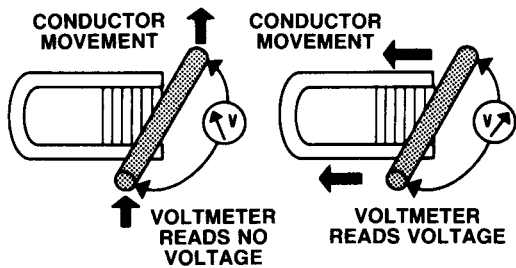
MAGNETIC LINES OF FORCE AROUND A CURRENT-CARRYING CONDUCTOR



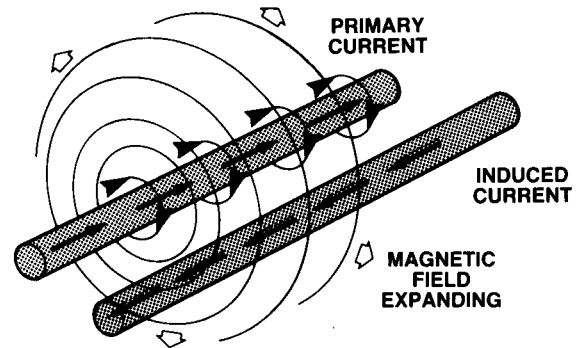
DIRECTION OF CURRENT AND MAGNETIC FLUX



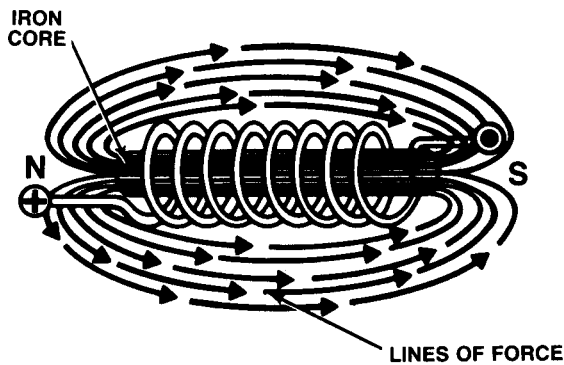
ELECTROMAGNETIC INDUCTION



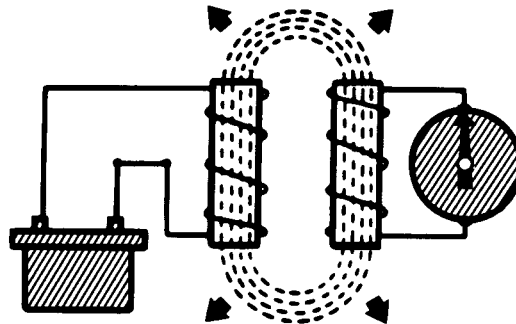
SELF-INDUCTION



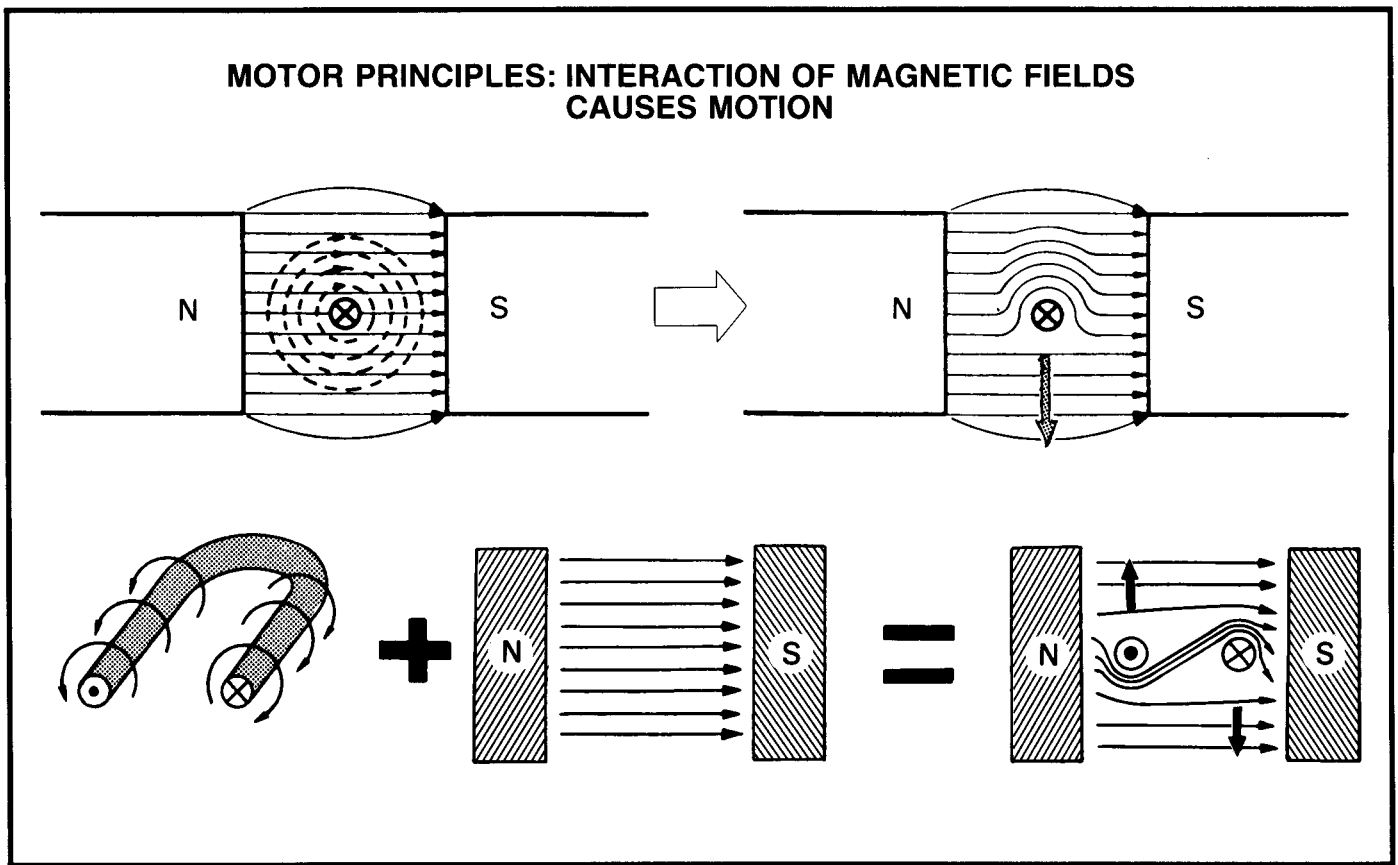
ELECTROMAGNET



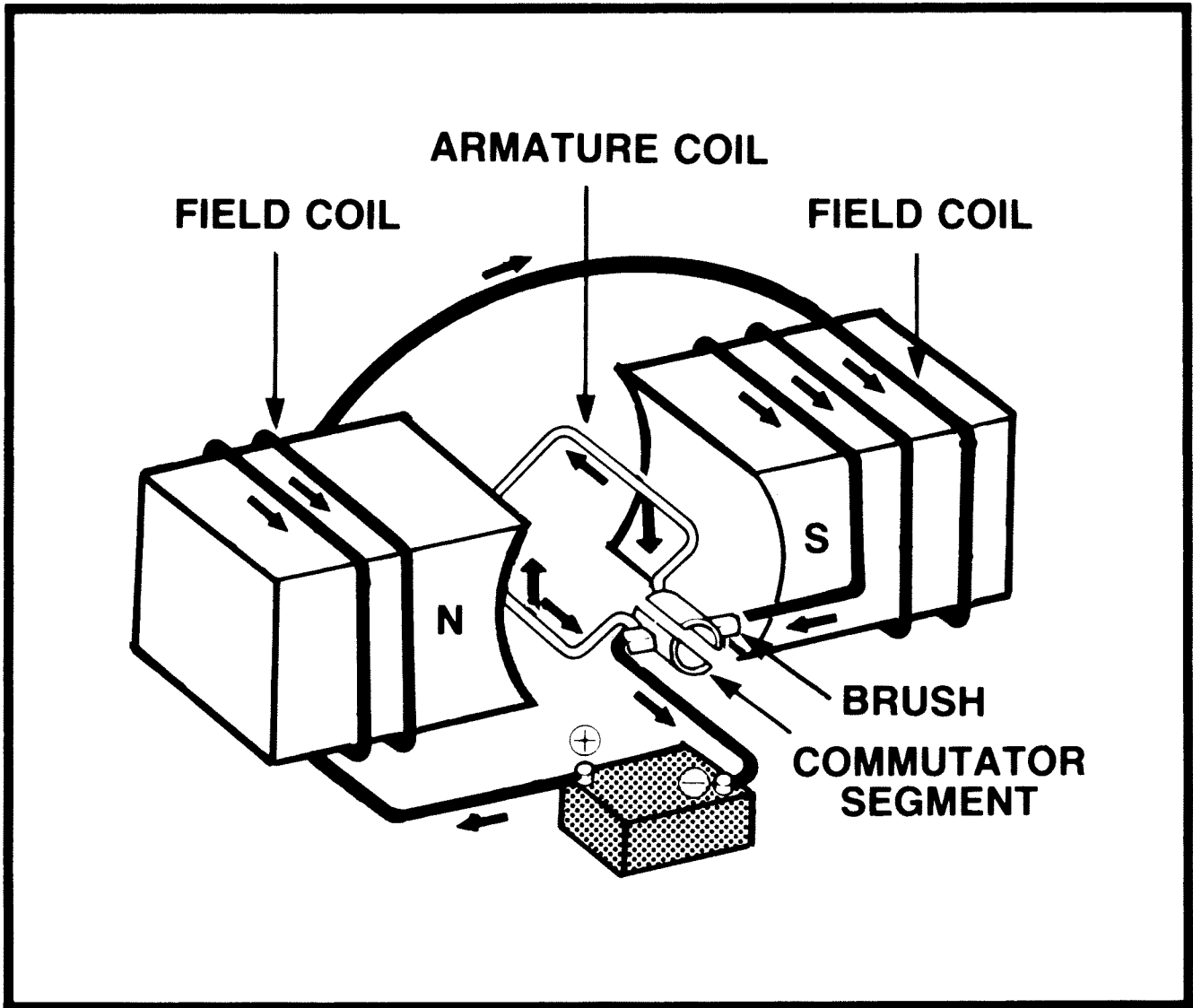
MUTUAL INDUCTION



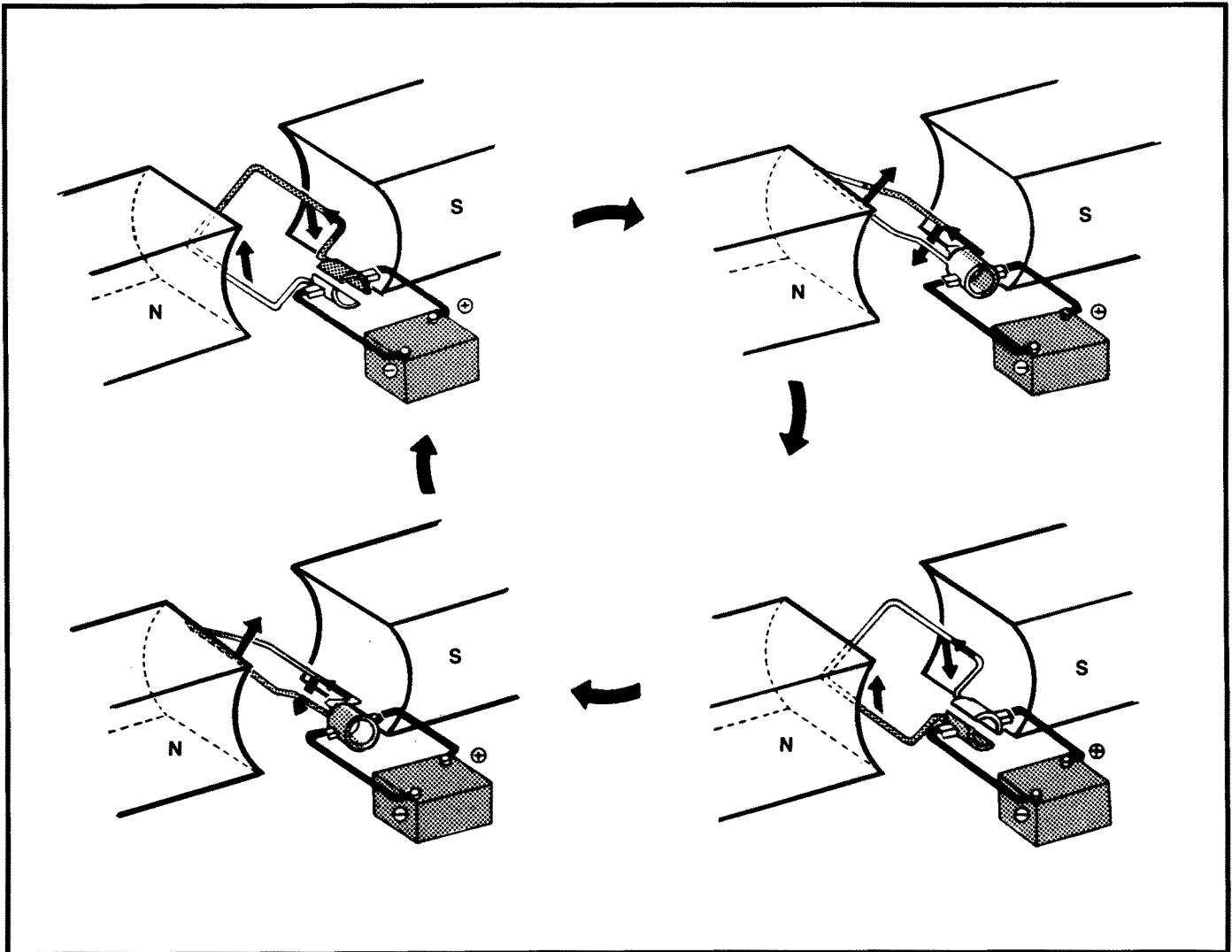
ELECTRICAL FUNDAMENTALS



SIMPLE MOTOR

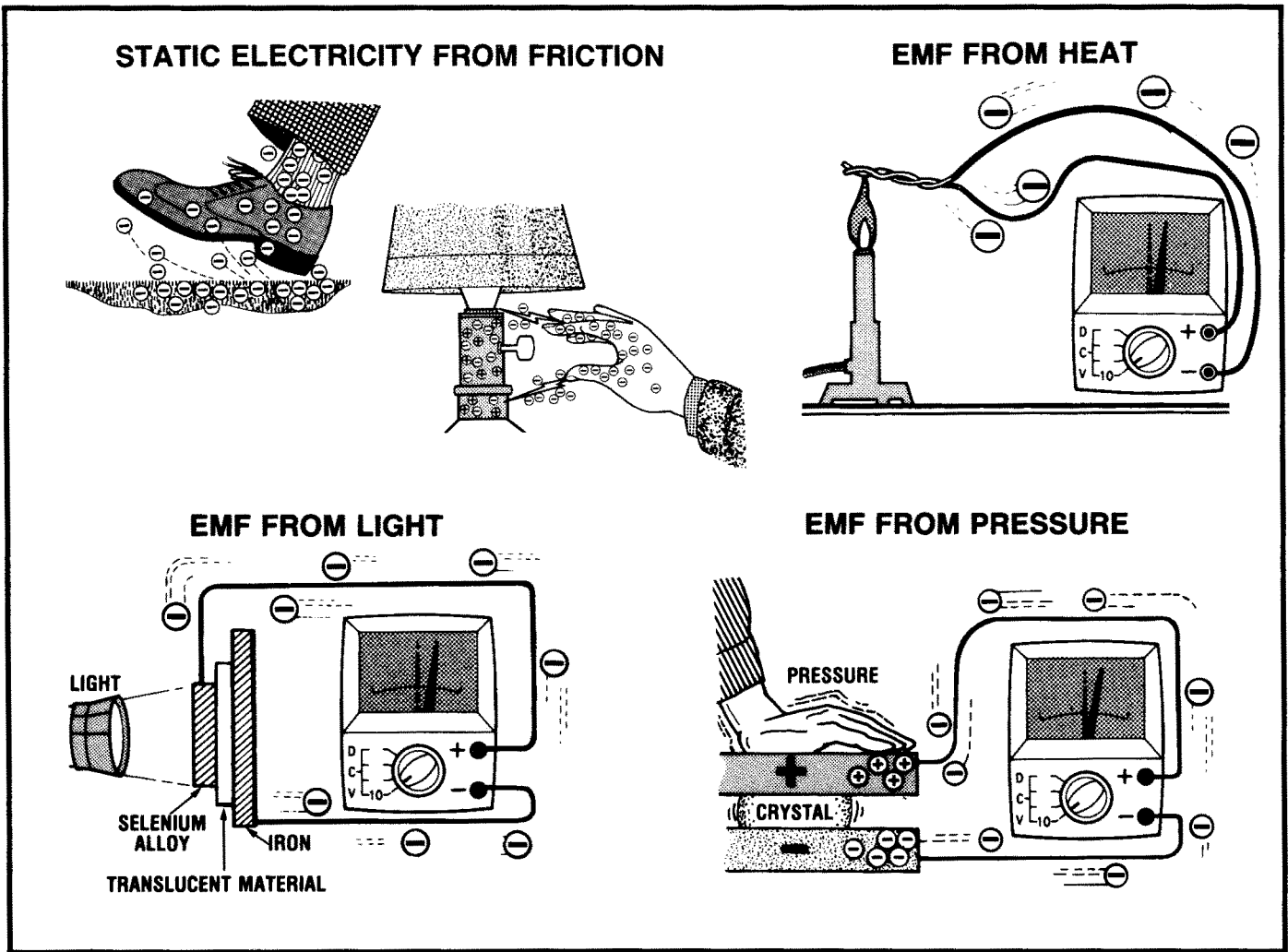


MOTOR OPERATION



ELECTRICAL FUNDAMENTALS

SOURCES OF VOLTAGE (EMF)



ADDITIONAL SOURCES OF VOLTAGE (EMF)

