

## Enclosure Designations—IP Codes

The below information is reproduced from the extensive reference section of the website <http://home.mchsi.com/~gweidner/site>.

NEMA MG 1, the industry standard for motors and generators, contains two methods for rating motor enclosures ( housings) with regard to their environment: Traditional (ODP, TEFC, etc.), and the IEC "IP" (Ingress Protection) system. IP designations, referred to as "IP Codes," indicate degrees of two types of protection provided by any enclosure: (1) Protection of persons against contact with live or moving parts; (2) Protection of the motor against ingress of foreign objects or water.

IP Codes contain two characteristic numerals in this format: IP##. The first characteristic numeral indicates the degree of protection with respect to persons and foreign objects, and the second characteristic numeral indicates protection with respect to water. The two charts summarizing designations indicated by the IP numerals are highly condensed. Complete details are found in IEC standard 60529, "Degree of Protection Provided by Enclosures (IP Code)," and in NEMA standard MG 1, "Motors and Generators."

### Degrees of Protection Indicated by the First Characteristic Numeral

First numeral	Description
0	No special protection.
1	Protection against ingress of objects larger than 50 mm (1.97").
2	Protection against ingress of objects larger than 12 mm (0.47") to depth of 80 mm (3.15").
3	Protection against ingress of objects larger than 2.5 mm (0.10").
4	Protection against ingress of objects larger than 1 mm (0.04").
5	"Dust-protected." Ingress of dust not totally prevented but dust does not enter in sufficient quantity to interfere with satisfactory operation.
6	"Dust-tight." No ingress of dust.

### Degrees of Protection Indicated by the Second Characteristic Numeral

Second numeral	Description
0	No special protection.
1	Dripping water (vertically falling).
2	Dripping water, from angles up to 15 degrees off vertical.
3	Water spray, from angles up to 60 degrees off vertical. (10L/min at 80-100 kPa)
4	Water splashing from any direction.
5	Water spray from a nozzle. (12.5 L/min at 30 kPa)
6	Water from heavy seas or powerful spray. (100 L/min at 100 kPa)
7	Immersion for up to 30 minutes.
8	Continuous immersion.