



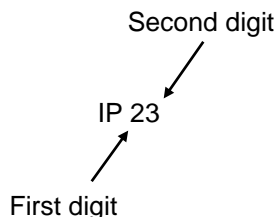
## Protection categories for motors

The labeling of the protection categories following EN 60034 part 5 respectively DIN/VDE 0530 part 5 and NEMA MG1 part 5 is always marked with the two letters "IP" (IP=international protection) und a double-digit number.

The first digit of the number indicates the protection against contact respectively the degree of protection against the penetration of foreign substances. The second digit contains a statement about the degree of water protection.

Degree of protection against contact and penetration of foreign substances			Degree of protection against penetration of water		
First digit	Brief description	Definition	Second digit	Brief description	Definition
0	Unprotected machine	No special protection.	0	Unprotected machine	No special protection.
1	Machine protected against solid foreign substances > 50 mm	Incidentally or accidentally touching of energized parts and approaching of such parts, as well as touching of moving parts inside the box with a large part of the body, e.g. your hand, but no protection against entry on purpose to these parts.  Penetration of solid foreign substances with a diameter > 50 mm.	1	Machine protected against drip water	Vertically falling drip water should not have any harmful impact.
2	Machine protected against solid foreign substances > 12 mm	Touching of energized parts and approaching of such parts, as well as touching of moving parts inside the box with fingers or similar objects not longer than 80 mm.  Penetration of solid foreign substances with a diameter > 12 mm.	2	Machine protected against drip water slanted up to 15 grade	Vertically falling drip water should not have any harmful impact when the machine is tipped up to an angle of 15 grade versus its normal position.
3	Machine protected against solid foreign substances > 2,5 mm	Touching of energized parts and approaching of such parts, as well as touching of moving parts inside the box with tools or wires with a thickness > 2,5 mm.  Penetration of solid foreign substances with a diameter > 2,5 mm.	3	Machine protected against spray water	Spray water, which is falling at a random angle of up to 60 grade should not have any harmful impact.
4	Machine protected against solid foreign substances > 1 mm	Touching of energized parts and approaching of such parts, as well as touching of moving parts inside the box with wires or strips with a diameter > 1 mm.  Penetration of solid foreign substances with a diameter > 1 mm.	4	Machine protected against splash water	Water splashing in all directions towards the machine should not have any harmful impact.
5	Machine protected against dust	Touching of energized parts and approaching of such parts, as well as touching of moving parts inside the box.  The penetration of dust cannot be avoided completely, but the quantity of penetrated dust will not impair the satisfactory operation of the machine.	5	Machine protected against jet water	A water jet from a nozzle which is directed towards the machine from all directions should not have any harmful impact.
6	Dust-proof machine	Penetration of dust is completely impossible.	6	Machine protected against water caused by rough seas	Rough seas or water of a strong jet should not penetrate in harmful quantities into the box.
			7	Machine protected when immersed	Water should not penetrate in harmful quantities when the machine is immersed in water under stipulated pressure- and time conditions.
			8	Machine protected when submersed	The machine is capable of permanent submersion in water at conditions defined by the producer.

**Example:**



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