

# FIBOX quality creates customer advantage

Fibox has developed a sophisticated quality system to assure our customers of the reliability and consistency of our products and our service. All aspects of our operations, from design and development through to production and product delivery, are documented to ensure superior performance. Performance you can rely on.

Fibox is an ISO 9001 certified manufacturer and was awarded its certificate by Bureau Veritas Quality International in 1992. This approval covers specifications defined by ISO 9001:2000.



## The FIBOX QUALITY system

The Fibox quality system applies not only to product quality and safety, but availability of product, accuracy of shipments, technical support and customer service. The continued success of this program is assured by regular internal and independent external audits.

# NEMA/UL classification of protection

The National Electrical Manufacturers Association (NEMA) is a US Manufacturers Organization which actively promotes standardized product specifications for electrical apparatus.












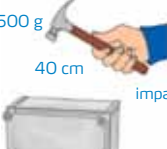








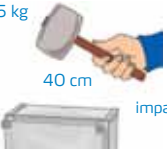


NEMA performance criteria and test methods are used by Underwriters Laboratories as guidelines for investigation and listing of electrical enclosures.

NEMA	
Approximate IP equivalents in parentheses	
1	Indoor use primarily to provide a degree of protection against contact with the enclosed equipment and against a limited amount of falling dirt. (IP30)
2	Indoor use to provide a degree of protection against limited amounts of falling water and dirt. (IP31)
3	Outdoor use to provide a degree of protection against wind blown dust, rain, and sleet; undamaged by the formation of ice on the enclosure. (IP64)
3R	Outdoor use to provide a degree of protection against falling rain and sleet; undamaged by the formation of ice on the enclosure. (IP32)
3S	Outdoor use to provide a degree of protection against windblown dust, rain and sleet; external mechanisms remain operable while ice laden.
4	Indoor or outdoor use to provide a degree of protection against splashing water, windblown dust and rain, hose directed water; undamaged by the formation of ice on the enclosure. (IP66)
4X	Indoor or outdoor use to provide a degree of protection against splashing water, windblown dust and rain, hose directed water; undamaged by the formation of ice on the enclosure, resists corrosion. (IP66)
6	Indoor or outdoor use to provide a degree of protection against the entry of water during temporary submersion at a limited depth; undamaged by the formation of ice on the enclosure.
6P	Indoor and outdoor use to provide a degree of protection against the entry of water during prolonged submersion at a limited depth.
11	Indoor use to provide by oil immersion a degree of protection of the enclosed equipment against the corrosive effects of corrosive liquids and gases.
12, 12K	Indoor use to provide a degree of protection against dust, falling dirt and dripping non-corrosive liquids. (IP65)
13	Indoor use to provide a degree of protection against dust and spraying of water, oil and non-corrosive coolants. (IP65)

# The IP and IK classifications

The ingress protection class of enclosures is expressed in the form of IP classification, a two digit coding which is shown below. We have tested our enclosures according to EN 60529. The standard requires the second digit to be tested separately from class 6 upwards for each level of class, thus the double marking IP 66 / IP 67 indicates that the actual tests have been made for both levels.

The new European standard for empty enclosures, EN 62208 includes the IK impact test. This test is described in EN 50102, and as Fibox enclosures are tested to EN 62208, the data for impact resistance is available.

FIRST DIGIT Protection against solid objects		SECOND DIGIT Protection against liquids		IK CODE Protection against mechanical impacts	
IP	TEST	IP	TEST	IK	TEST
0	 no protection	0	 no protection	00	 no protection
1	 protected against solid objects over 50 mm (hands)	1	 protected against vertically falling drops of water	01-05	 impact < 1 joule
2	 protected against solid objects over 12 mm (fingers)	2	 protected against direct sprays of water up to 15° from the vertical	06	 500 g 20 cm impact 1 joule
3	 protected against solid objects over 2,5 mm (tools+ small wires)	3	 protected against sprays to 60° from the vertical	07	 500 g 40 cm impact 2 joule
4	 protected against solid objects over 1 mm (tools+ small wires)	4	 protected against water sprayed from all directions - limited ingress permitted	08	 1,7 kg 29,5 cm impact 5 joule
5	 protected against dust - limited ingress permitted (no harmful deposit)	5	 protected against low pressure jets of water from all directions - limited ingress permitted	09	 5 kg 20 cm impact 10 joule
6	 totally protected against dust	6	 protected against strong jets of water e.g. for use on shipdecks - limited ingress permitted	10	 5 kg 40 cm impact 20 joule
		7	 15 cm protected against the effects of immersion between 15 cm and 1 m		
		8	 1 m protected against long periods of immersion under pressure		