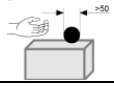
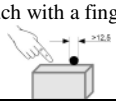
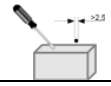
CUSTOMER INFORMATION KDI00013 Stand: 16.05.09

"Degrees of protection acc. to DIN 40 050 / IEC 529 / VDE 0470 / EN 60529"

The degree of protection provided by an enclosure is indicated by the IP code in the following way: The first characteristic numeral indicates the protection against ingress of solid foreign objects. The second characteristic numeral indicates the protection against ingress of water. The protection classifications given for the enclosures refer to unmachined standard enclosures as supplied. As the tests to show protection classifications take no account of ageing, the maintenance of the protection classification throughout the lifetime of the equipment is not guaranteed.

DEGREES OF PROTECTION AGAINST SOLID OBJECTS				
FIRST CHARACTERISTIC NUMERAL	PROTECTION EXTENT			
	PROTECTION AGAINST	DESCRIPTION	DEFINITION	
			PERSONS	EQUIPMENT
0	no protection	-	-	-
1	large solid foreign objects / touch with the back of the hand 	Protected against a back of someone's hand touching dangerous parts. Protected against solid foreign objects of 50 mm in diameter and greater.	The probe, sphere of 50 mm in diameter, must have sufficient distance from dangerous parts.	The object probe, sphere of 50 mm in diameter, shall not fully penetrate.
2	medium sized solid foreign objects / touch with a finger 	Protected against a finger touching dangerous parts. Protected against solid foreign objects of 12.5 mm in diameter and greater.	The test finger, jointed, 12 mm in diameter and 80 mm long, must have sufficient distance from dangerous parts.	The object probe, sphere of 12.5 mm in diameter, shall not fully penetrate.
3	small solid foreign objects / touch with a tool 	Protected against a tool touching dangerous parts. Protected against solid foreign objects of 2.5 mm in diameter and greater.	A probe, sphere of 2.5 mm in diameter, shall not penetrate.	The object probe, sphere of 2.5 mm in diameter, shall not penetrate at all.
4	grainy solid objects / touch with a wire	Protected against a wire touching dangerous parts. Protected against solid foreign objects of 1.0 mm in diameter and greater.	A probe, sphere of 1.0 mm in diameter, shall not penetrate.	The object probe, sphere of 1.0 mm in diameter, shall not penetrate at all.
5	dust protected / touch with a wire	Complete protection against touching live or moved parts inside of the enclosure. Dust protected.	A probe, sphere of 1.0 mm in diameter, shall not penetrate.	Ingress of dust is not totally prevented.[1]
6	dust tight / touch with a wire	Complete protection against touching live or moved parts inside of the enclosure. Dust tight.	A probe, sphere of 1.0 mm in diameter, shall not penetrate.	No ingress of dust at a enclosure negative pressure of 20 mbar.

An enclosure may only be denoted for a protection degree with the first characteristic numeral (protection against solid objects) if it fulfils all lower protection degrees.

[1] Dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety.

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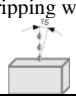
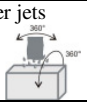
CUSTOMER INFORMATION Stand: 16.05.09

DEGREES OF PROTECTION AGAINST WATER		
SECOND CHARACTERISTIC NUMERAL	PROTECTION EXTENT	
	PROTECTION AGAINST	DEFINITION
0	no protection	-
1	vertically falling dripping water	Dripping water (vertically falling drops) shall have no harmful effect. Test time 10 minutes.
2	slant falling dripping water 	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position. Test time 10 minutes.
3	spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect. Test time 10 minutes.
4	splashing water	Water splashing against the enclosure from any direction shall have no harmful effect. Test time 10 minutes. 10 litres per minute.
5	water jet	Water projected by a nozzle against enclosure from any direction shall have no harmful effects. Test time at least 3 minutes. 12.5 liters per minute.
6	powerful water jets 	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects. Test time at least 3 minutes. 100 liters per minute.
7	immersion up to 1 m	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion). Max. 1 hour.
8	immersion beyond 1 m	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. NOTE: Normally, this will mean that the equipment is hermetically sealed. However, with certain types of equipment, it can mean that water can enter but only in such a manner that produces no harmful effects.
9K	high pressure and steam jet cleansing	Highly pressurised water which is directed at the enclosure from any direction must not have any damaging effect.

Example: **IP 54**

First characteristic numeral **5** = dust protected and protected against touching with a wire
Second characteristic numeral **4** = protected against splashing water

An enclosure may only be denoted for a protection degree until numeral 6 with the second characteristic numeral (protection against water) if it fulfils all lower protection degrees. An enclosure of numeral 7, 8 (protection against immersion) or 9K (protection against high pressure cleansing) does not need to fulfil the requirements of numerals 5 or 6. Only if an enclosure has a second denomination, it will fulfill the requirements of the protection against water jets and immersion/high pressure cleansing.

You should still have to ask – call us!

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