

Minimum Bend Radius

Effects of temperature and installation methods

Minimum Bend Radius (MBR)

Recommended Minimum Bend Radius (MBR)			
Type of usage	Definition	MBR for 'Standard cable'	MBR for Habiatron Q
Static (installation)	Flexed into position - no further movement (e.g. clipped into a metal tray)	5 x overall cable diameter	7.5 x overall cable diameter
Flexing	General motion (e.g. unsupported cable movement)	10 x overall cable diameter	10 x overall cable diameter
Dynamic use	High frequency use (e.g. drag-chain)	20 x overall cable diameter	Not suitable for dynamic use

As a cable is flexed, stresses are induced on the inside and outside arc of the conductor (particularly if a solid conductor is used) and on the plastic insulation/sheath where the materials are being stretched or compressed.

The static minimum bend radius is an advisory value intended to prevent lasting damage being inflicted on the cable through over-bending. In this way, it is a conservative figure and can often be exceeded at the customer's discretion, but no guarantees can be given for such use.

In addition to the static bend radius, materials will work-harden as they are continuously flexed back and forth. Even if the bend does not reach the minimum suggested value, the process of occasional or continuous movement can also mean early failure for the cable.

To maintain the best possible operational life of the cable, Habia quotes a flexing radius that is double that of the figure recommended for static use if the cable is to see regular movement.

Finally, cables that will see true dynamic use, where they are intended to be in constant motion (for example a drag-chain or robotics application) are advised to have a minimum bend radius that is double again. It should be noted that some materials are too brittle for use in dynamic applications.