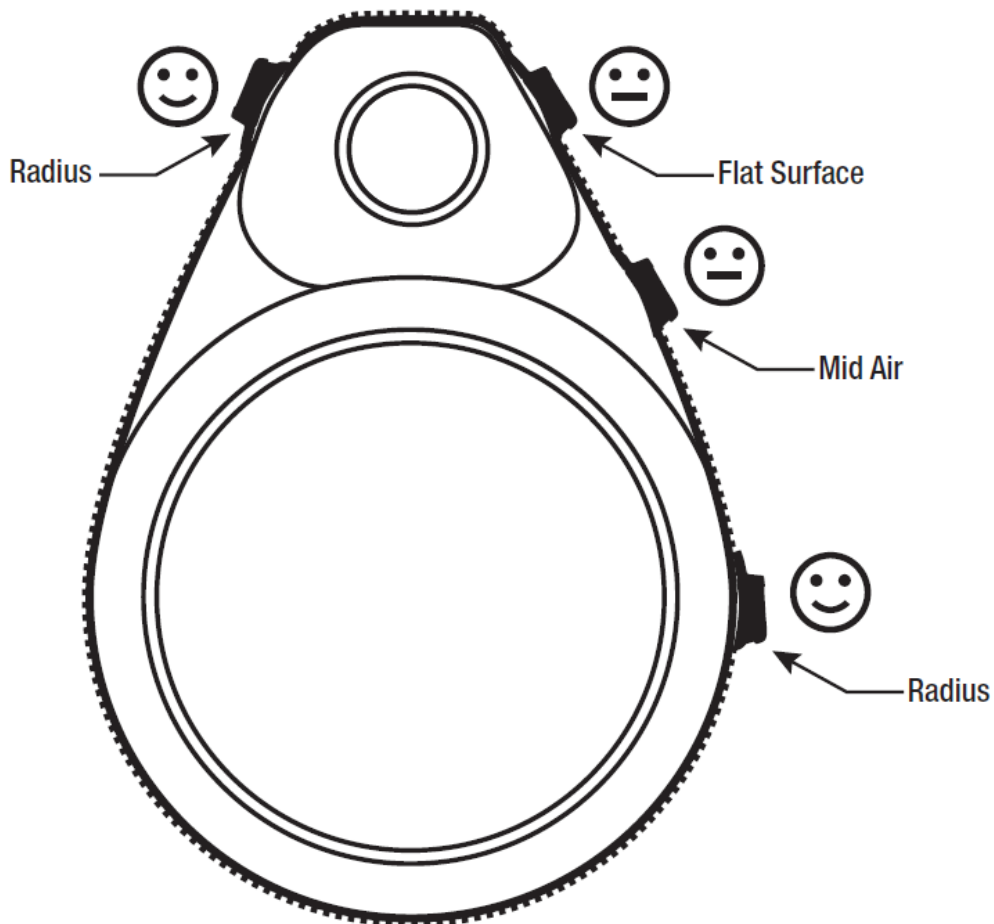


HCL Smart Band Design Guidelines Sheet

Piggyback Buckle Positions

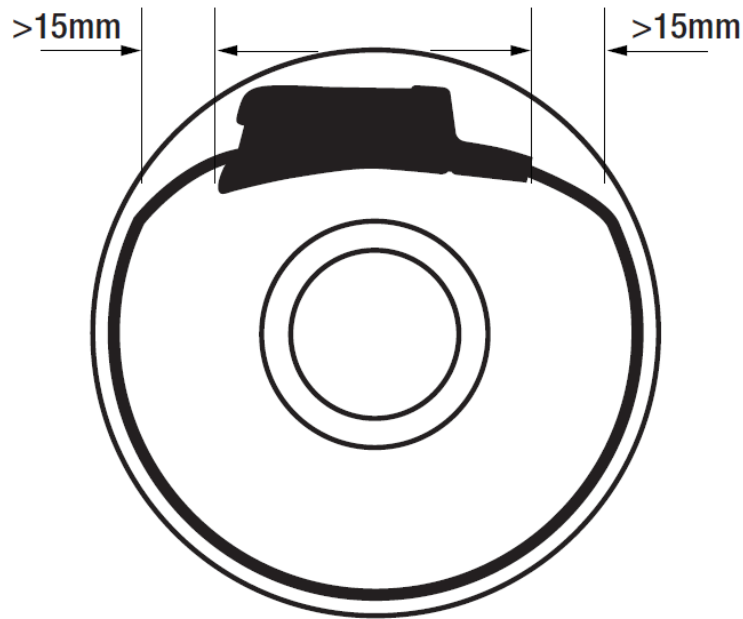
1. Ideally, the Smart® Band Hybrid, Compact or Smart® Tie buckle should be positioned on a radius; please see 3.2.1 for recommendations. If the buckle must be positioned on a diameter smaller than is recommended, then the banding product may require installation at a reduced tension and the system strength should be expected to be lower than the published values.
2. If it is not possible for the buckle to be positioned on a suitable radius, then the buckle should be positioned on a flat surface. If positioning the buckle on a flat surface, avoid sharp corners near to the buckle (see below); it may also be necessary to reduce the installation tension, and the system strength should be expected to be lower than the published values.
3. Where possible, avoid suspending the buckle in mid-air. If this is unavoidable, then the banding product may require installation at a reduced tension and the system strength should be expected to be lower than the published values.



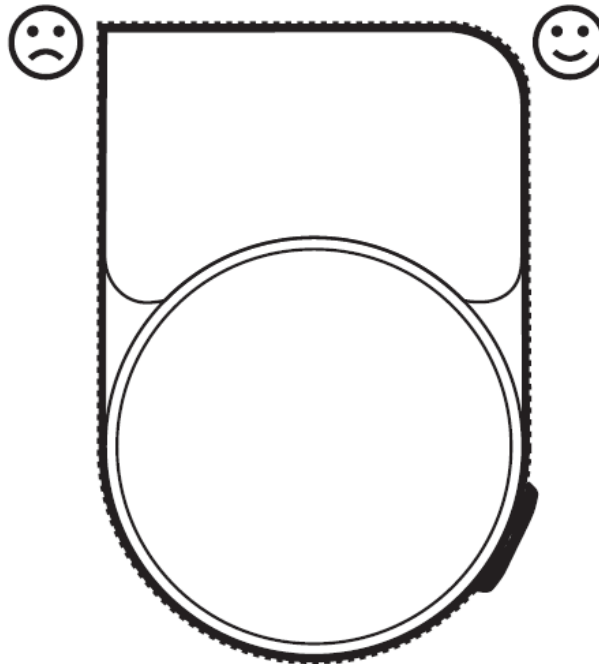
HCL Smart Band Design Guidelines Sheet

Cable Protection Buckle Position

- Where possible, avoid having a sharp band radius near to the end of the buckle. If this is necessary, e.g. on a smaller diameter application, then the recess length for the buckle (dimension 'D' on the opposite page) should be increased in order to move the sharp band radius away from the buckle. If this is unavoidable, then the banding product may require installation at a reduced tension and the system strength should be expected to be lower than the published values.

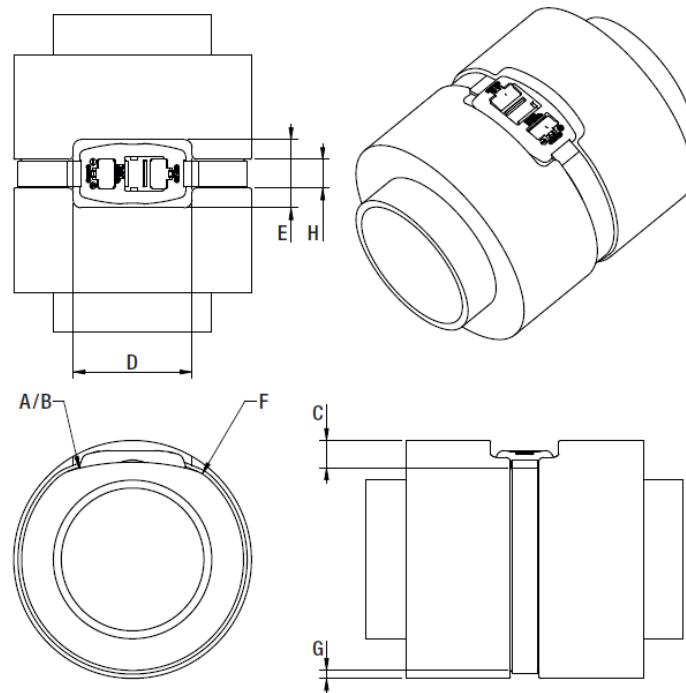


DO NOT ALLOW BAND TO PASS OVER 90 DEGREE CORNERS



HCL Smart Band Design Guidelines Sheet

The following design guidelines for applications utilising Smart® Tie or Smart® Band will ensure maximum performance of the banding product. The underside of the buckles are curved, so it is recommended that the radius on the application is designed to match the radius on the buckle whenever possible. For environments prone to abrasion or impact, it is recommended that the Smart® Band is recessed into the application, in order to give the product greater protection. Certain applications, particularly smaller diameters, may require a special area to be created for the buckle, as shown below to correctly match the underside radius.



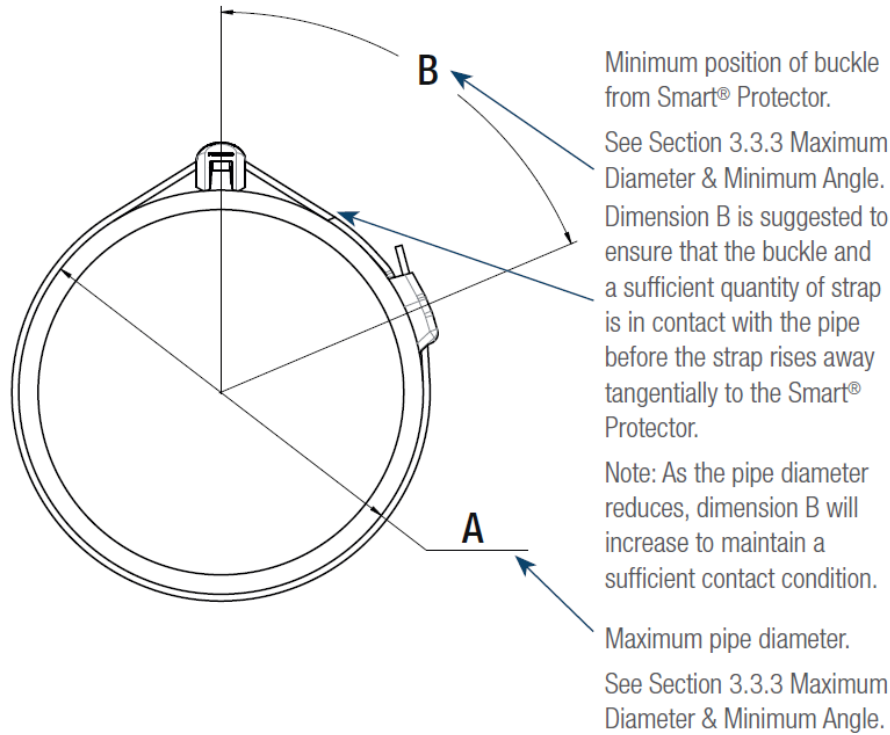
Product	Size	Recommended Buckle Radius (A)	Minimum Buckle Radius (B)	Minimum Recess Depth (C)	Minimum Recess Length (D)	Minimum Recess Width (E)
		mm (inch)	mm (inch)	mm (inch)	mm (inch)	mm (inch)
Smart® Tie	20mm (¾")	100 (3.94)	30 (1.18)	13 (0.51)	80 (3.15)	39 (1.54)
	32mm (1¼")	100 (3.94)	30 (1.18)	20 (0.78)	100 (3.94)	55 (2.17)
Smart® Band Standard	7mm (¼")	300 (11.81)	50 (1.97)	21 (0.83)	86 (3.39)	19 (0.75)
	10mm (⅜")	300 (11.81)	38 (1.48)	23 (0.91)	88 (3.46)	27 (1.06)
	19mm (¾")	100 (3.94)	38 (1.48)	30 (1.18)	75 (2.95)	34 (1.34)
Smart® Band Hybrid	19mm (¾")	200 (7.87)	100 (3.94)	14 (0.55)	110 (4.33)	57 (2.24)
	32mm (1¼")	300 (11.81)	200 (7.87)	18 (0.71)	145 (5.71)	81 (3.19)
Smart® Band Compact	19mm (¾")	100 (3.94)	50 (1.97)	18 (0.71)	60 (2.36)	40 (0.157)
	32mm (1¼")	300 (11.81)	100 (3.94)	24 (0.94)	80 (3.15)	55 (2.16)

3.2.2] Band Recess Dimensions

Product	Size	Minimum Band Radius (F)	Minimum Recess Depth (G)	Minimum Recess Width (H)
		mm (inch)	mm (inch)	mm (inch)
Smart® Tie	20mm (¾")	10 (0.39)	5 (0.20)	22 (0.87)
	32mm (1¼")		6 (0.24)	36 (1.42)
Smart® Band	7mm (¼")		4 (0.16)	9 (0.35)
	10mm (⅜")		5 (0.20)	12 (0.47)
	19mm (¾")		5 (0.20)	22 (0.87)
	32mm (1¼")		6 (0.24)	36 (1.42)

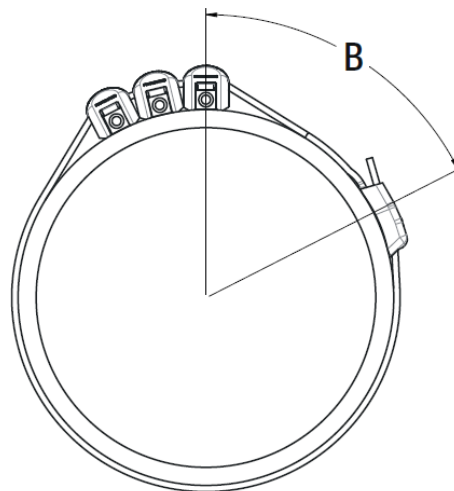
HCL Smart Band Design Guidelines Sheet

When specifying Smart® Protector in conjunction with Smart® Band or Smart® Tie, consideration must be given to the position of the buckle in relation to the Smart® Protector. Refer to the illustrations below and Section 3.3.3 Maximum Diameter and Minimum Angle to ensure correct positioning. This will enable the optimum system performance to be achieved.



Multiple Smart® Protectors can be used on an application. If utilizing the same style of protector, it is advisable to butt the protectors together to prevent movement in application. If using dissimilar protectors, positioning should ensure that the protectors and the protected cables are adequately secured.

Position additional protectors anti-clockwise from the first unit to ensure sufficient quantity of strap is in contact with the pipe before the strap rises away tangentially to the Smart® Protector.





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