

TECHNICAL SPECIFICATION

Cobra Lock® HDD Pipe Solutions (Joint Restraint) CIOD DR18 Class 235

SCOPE

This specification covers the requirements for the PVC (polyvinyl chloride) Cobra Lock® System, a restrained joint pressure pipe/coupling system. The pipe is Cast Iron Outside Diameter (CIOD) in nominal sizes of 4" – 12". This system is certified to the Canadian Standards Association (CSA) standard B137.3, Underwriters Laboratories of Canada (ULC) and Factory Mutual (FM) and meets the performance requirements of the American Water Works Association (AWWA) standard C900.

MATERIALS

The pipe and couplings are manufactured from virgin PVC compound meeting the cell classification requirements of 12454 as defined by the American Society of Testing and Materials (ASTM) Standard D1784: *Standard Specification for Rigid PVC Compounds and CPVC Compounds*. The compounds have a hydrostatic design basis rating of 4000 psi for water at 73.4 Deg F. The compound is certified to NSF Standard 61-G.

MARKING

Pipe markings are as specified by CSA, FM and ULC.

PIPE

The Cobra Lock® System (DR18) has a pressure rating of 235 psi according to CSA B137.3.

JOINTS

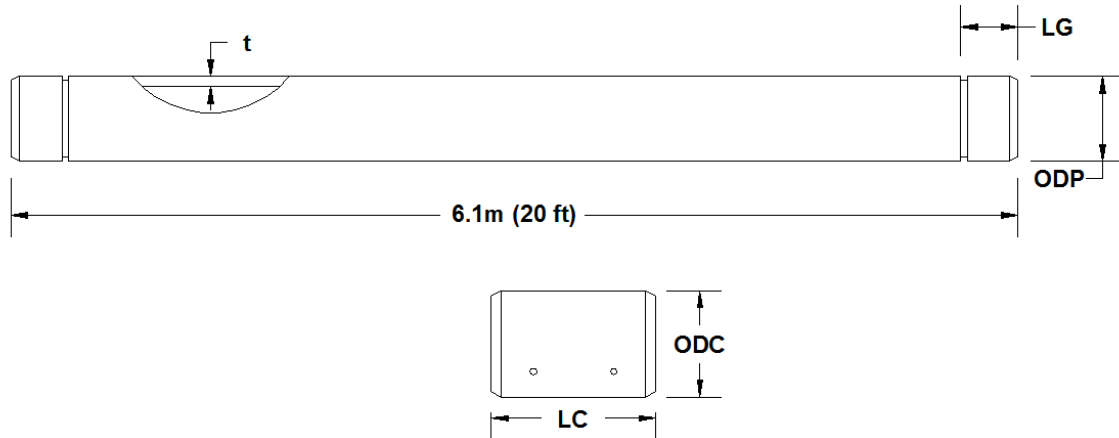
The Cobra Lock® System utilizes a neoprene O-Ring, installed in the coupling ID, for joint sealing. The joints are restrained using a spline-lock system, which incorporates a nylon spline to lock the pipe and couplings together, such that they cannot be pulled apart or over-inserted during pushing. Testing and certification of The Cobra Lock® System includes CSA B137.3 Clause 7.5: *Tensile Testing for Self-Restrained Joints*.

TEST REQUIREMENTS

Quality testing is as per Royal's Quality Assurance program and in accordance with CSA, FM and ULC.

DIMENSIONS

Nominal Size mm (")	Avg. Pipe OD (ODP) mm (")	Avg. Wall Thickness (t) mm (")	Insertion Length (LG) mm (")	Coupling Length (LC) mm (")	Coupling OD (ODC) mm (")
100 (4)	122 (4.801)	7 (0.282)	76 (3.0)	210 (8.25)	151 (5.964)
150 (6)	175 (6.899)	10 (0.406)	76 (3.0)	210 (8.25)	213 (8.366)
200 (8)	230 (9.052)	14 (0.532)	80 (3.163)	267 (10.50)	278 (10.947)
250 (10)	282 (11.100)	17 (0.653)	89 (3.5)	283 (11.125)	339 (13.361)
300 (12)	335 (13.200)	20 (0.778)	89 (3.5)	305 (12.00)	402 (15.836)



MAXIMUM PULLING FORCE

Nominal Size mm (")	Maximum Pulling Force kN (lbs)	
	Tightest Bending	Straight (No Bending)
100 (4")	29.8 (6,700)	36.4 (8,200)
150 (6")	40.0 (9,000)	56.9 (12,800)
200 (8")	80.0 (18,000)	112.0 (25,200)
250 (10")	113.9 (25,600)	156.6 (35,200)
300 (12")	117.4 (26,400)	182.8 (41,100)

MINIMUM INSTALLATION CURVATURE

Nominal Size mm (")	Minimum Radius of Curvature m (')	Maximum Offset per 6 metre (20') Length mm (")	Maximum Angular Deflection per 6 metre (20') Length
100 (4)	30.5 (100)	584 (23)	11.5°
150 (6)	45.7 (150)	406 (16)	7.6°
200 (8)	61.0 (200)	305 (12)	5.7°
250 (10)	76.2 (250)	229 (9)	4.6°
300 (12)	91.4 (300)	203 (8)	3.8°