

**DECLARATION OF PERFORMANCE No. DoP-HRC400-23.07**

Unique identification code of the product-type:	HRC400 Series rebar couplers (HRC410/420 standard coupler, HRC410/490 positional couplers)		
Intended uses of the construction product:	mechanical splice for connecting reinforcing steel bars in reinforced concrete structures under static or quasi-static, fatigue and low cycle loading.		
Manufacturer:	HRC Europe, Lierstranda 107, N-3414 Lierstranda, Norway		
System of AVCP:	system 1+		
European Assessment Document	EAD 160129-00-0301		
European Technical Assessment:	ETA-22/0573		
Technical Assessment Body:	SINTEF (NB 1071)		
Notified body:	Kontrollrådet (NB 1111)		
Declared performance			
	Essential characteristics	Performance	Harmonized technical specification
	Mechanical resistance to static or quasi static loading	ETA-22/0573, Annex C (see also Annex to DoP-HRC400-23.07)	EAD 160129-00-0301
	Slip under loading		
	Slip after loading		
	Fatigue strength (S-N-curve with specific defined k1 and k2)		
	Resistance to low cycle loading (seismic action)		
	Reaction to fire	Class A1	
The performance of the product identified above is in conformity with the declared performance. This declaration is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer.			
Signed for and on behalf of the manufacturer by:			
Lisette Berg, Managing Director (Sign.) Lier, 03.07.2023			



Annex to DoP-HRC400-23.07:

HRC400 Series Rebar Couplers (B500B and B500C) – essential characteristics acc. ETA-22/0573, Annex C

Copouler type	Nominal Rebar diameter Ø [mm]	Resistance to static or quasi static loading		Slip		Fatigue strength ⁵⁾ (S-N-curve with specific defined k ₁ and k ₂)			Resistance to low cycle loading (seismic action)			Failure mode ⁸⁾
		Failure of rebar f _{u,min,bar,outside} ¹⁾ [MPa]	Failure of coupler f _{u,min,coupler} ²⁾ [MPa]	under loading S ₁ ³⁾ [mm]	after loading S ₂ ⁴⁾ [mm]	Δσ _{Rsk} [MPa]	k ₁	k ₂	u ₂₀ ⁶⁾ [mm]	Ultimate tensile load, F _{u,min} ⁷⁾		
										B500B [kN]	B500C [kN]	
Standard Coupler HRC 410/420	12	B500B: 540 B500C: 575	> 850	< 0,06	< 0,10	49 (N = 10 ⁷) 69 (N = 2 · 10 ⁶)	4,6	8,3	0,2	61,1	65,0	Ductile rupture of the rebar outside splice
	16		> 850							108,6	115,6	
	20		> 850							169,6	180,6	
	25		> 850							265,1	282,3	
	32		> 740							434,3	462,4	
	40		> 850							678,6	722,6	
Positional Coupler HRC 410/490	25	B500B: 540 B500C: 575	> 670	< 0,10	< 0,10	49 (N = 10 ⁷) 69 (N = 2 · 10 ⁶)	4,6	8,3	0,2	265,1	282,3	Ductile rupture of the rebar outside splice
	32									434,3	462,4	
	40									678,6	722,6	

1) f_{u,min,bar,outside} according to EN 1992-1-1, Annex C.1:

For B500B: f_{u,min,bar,outside} = k_{B500B} · f_{yk} = 1,08 · 500 MPa = 540 MPa

For B500C: f_{u,min,bar,outside} = k_{B500C} · f_{yk} = 1,15 · 500 MPa = 575 MPa

Failure loads are determined by the strength of the parent rebar, not the HRC400 mechanical coupler.

The full specified elongation A_{gt} of the rebar can be developed, according to EN 1992-1-1, Annex C.1.

2) f_{u,min,coupler} = minimum rebar stress equivalent to failure of the coupler. Values from test results with larger rebar than the coupler are intended for ("oversized rebar"). The full actual elongation A_{gt,act} of the intended rebar size will be developed.

3) Slip across the mechanical splice under loading at 0,6 · f_{yk} = 0,6 · 500 MPa = 300 MPa

4) Slip across the mechanical splice after unloading from 0,6 · f_{yk} to a load level of 0,02 · f_{yk} = 0,02 · 500 MPa = 10 MPa

5) Fatigue strength Δσ_{Rsk} for S-N-curve with specific defined stress exponents k₁ and k₂

6) u₂₀ = Residual max deformation

7) F_{u,min} = A_{s,nom,bar,outside} · f_{u,min,bar,outside} = π/4 · Ø² · f_{u,min,bar,outside}

8) The actual failure loads are determined by the strength of the parent rebar, not the HRC400 couplers. Splices of rebar with lower/higher actual tensile strength will therefore achieve lower/higher actual capacities than given in the table. The failure mode remains unchanged: ductile rupture of the parent rebar.