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DoP - DICHIARAZIONE DI PRESTAZIONE

GL Locatelli_0970-CPR0014/CE/0818 **(1)**

1. Codice di identificazione unico del prodotto-tipo:

Profili di ancoraggio : GP50/30 + vite V50/300

2. Uso/i previsto/i:

Codice Prodotto	Uso previsto
Profili di ancoraggio	Componente strutturale in acciaio per fissare e/o sostenere nel calcestruzzo gli elementi strutturali (che contribuiscono alla stabilità delle opere) o elementi molto pesanti

3. Produttore/Stabilimento:

GL Locatelli S.r.l.
Via Dante 66, 22078 TURATE (CO) ITALY

4. Sistema/i AVCP: 1

5. Documento per la Valutazione Europea: EAD330008-03-0601 - Anchor Channels

6. Valutazione Tecnica Europea: ETA 17/0869 (Edizione 19/04/2023)

7. Organismo di Valutazione Tecnica: ITC-CNR

Istituto per le Tecnologie della Costruzione
Consiglio Nazionale delle Ricerche

8. Ente notificato: NB 0970-ITC-CNR

9. Certificato: 0970-CPR-0014/CE/0818

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DoP - DICHIARAZIONE DI PRESTAZIONE

GL Locatelli_0970-CPR0014/CE/0818 **(1)**

10. Prestazione dichiarata:

Dimensione		EAD33008-02-0601 Anchor channels
Sezione trasversale profilo	50x28,5x3 mm	
Altezza efficace h_{ef}	81,50 mm	
Vite	M10-M12-M14-M16-M20	
Materiale		
Profilo	S420MC (EN10025) AISI 304/304L (EN10088) AISI 316/316L (EN10088)	
Ancorante	CB10FF (EN10263) AISI 304/304L (EN10088) AISI 316/316L (EN10088)	
Vite	4.6 - 8.8 (EN ISO 898) 50 - 70 (EN ISO 3506-1)	

Stabilità e resistenza meccanica (BWR1)

	Caratteristiche essenziali	Prestazione	Specifica tecnica armonizzata
Resistenza caratteristica sotto carico di tensione statico e quasi statico			
1	Resistenza alla rottura dell'acciaio - ancorante	Vedi Annex C1/1; Tabella C1	EAD33008-03-0601 Anchor channels
2	Resistenza alla rottura dell'acciaio - connessione tra ancorante e profilo		
3	Resistenza alla rottura dell'acciaio - labbra del canale e successiva estrazione della vite dal profilo		
4	Resistenza alla rottura dell'acciaio - vite	Vedi Annex C1/2; Tabella C2	
5	Resistenza alla rottura dell'acciaio per superamento della resistenza a flessione del profilo	Vedi Annex C1/3; Tabella C3	
6	Coppia di serraggio richiesta	Vedi Annex B3; Tabella B3	
7	Resistenza alla rottura per sfilamento dell'ancorante	Vedi Annex C1/3; Tabella C4	
8	Resistenza alla rottura del cono di calcestruzzo		
9	Distanze minime dal bordo, spaziatura e spessore minimo dell'elemento di calcestruzzo per evitare fenomeni di splitting durante l'installazione.	Vedi Annex B2; Tabella B1	

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	Caratteristiche essenziali	Prestazione	Specifica tecnica armonizzata
Resistenza caratteristica sotto carico di tensione statico e quasi statico			
10	Distanze dal bordo e spaziature caratteristiche per evitare fenomeni di splitting del calcestruzzo sotto carico	Vedi Annex C1/3; Tabella C4	EAD33008-03-0601 Anchor channels
11	Resistenza alla rottura per blowout - area portante della testa del chiodo	Vedi Annex A5; Tabella A6	
Resistenza caratteristica sotto carico di taglio statico e quasi statico			
12	Resistenza alla rottura dell'acciaio della vite sotto carico di taglio senza braccio di leva	Vedi Annex C2/1; Tabella C5	EAD33008-03-0601 Anchor channels
13	Resistenza alla rottura dell'acciaio per flessione della vite sotto carico di taglio con braccio di leva		
14	Resistenza alla rottura dell'acciaio dei labbri del profilo, del collegamento tra ancoraggio e profilo o dell'ancorante (carico di taglio in direzione trasversale)	Vedi Annex C2/2; Tabella C6	
15	Resistenza alla rottura dell'acciaio del collegamento tra le labbra del canale e il bullone del canale (carico di taglio nell'asse longitudinale del canale)	NPA	
16	Fattore di installazione	NPA	
17	Resistenza alla rottura dell'acciaio dell'ancorante	Vedi Annex C2/3; Tabella C7	
18	Resistenza alla rottura dell'acciaio del collegamento tra profilo e ancorante		
19	Resistenza alla rottura per pry-out del calcestruzzo	Vedi Annex C2/4; Tabella C8	
20	Resistenza alla rottura del bordo del calcestruzzo		
Resistenza caratteristica sotto carico di taglio statico e quasi statico combinato			
21	Resistenza alla rottura dell'acciaio del profilo d'ancoraggio	Vedi Annex C2/4; Tabella C9	EAD33008-03-0601 Anchor channels

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DoP - DICHIARAZIONE DI PRESTAZIONE

GL Locatelli_0970-CPR0014/CE/0818

Resistenza caratteristica sotto carico a trazione a fatica			
22	Resistenza a fatica - rottura dell'acciaio dell'intero sistema (funzione continua o trilineare)	NPD	EAD33008-03-0601 Anchor channels
23	Resistenza limite a fatica - rottura dell'acciaio dell'intero sistema		
24	Resistenza a fatica - rottura del calcestruzzo (funzione esponenziale)		
25	Resistenza limite a fatica - rottura del calcestruzzo		
26	Spostamenti		

Sicurezza in caso di incendio (BWR2)

	Caratteristiche essenziali	Prestazione	Specifica tecnica armonizzata
27	Reazione al fuoco	Gli ancoraggi soddisfano i requisiti della Classe A1	EAD33008-02-0601 Anchor channels
28	Resistenza al fuoco	ETA 17/0869 Annex C5/1 e C5/2	

Aspetti di durabilità legati ai requisiti fondamentali delle opere

	Caratteristiche essenziali	Prestazione	Specifica tecnica armonizzata
29	Durabilità	Nessuna prestazione valutata	EAD33008-03-0601 Anchor channels

La prestazione del prodotto sopra indicato è conforme all'insieme delle prestazioni dichiarate.
La presente dichiarazione di responsabilità viene emessa, in conformità al regolamento (UE) n. 305/2011, sotto la sola responsabilità del fabbricante sopra indicato

Turate, 19 Aprile 2023

Presidente
(Silvia Locatelli)

Responsabile S.G.Q.
(Ing.Michelangelo Ficile)

ETA CE

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DoP - DECLARATION OF PERFORMANCE

GL Locatelli_0970-CPR0014/CE/0818 **(1)**

1. Unique identification code of the :

Anchor channels : GP50/30 + screw V50/300

2. Intended use:

Product	Intended use
Anchor channels	Steel structural component for fixing and/or supporting to concrete, structural elements (which contributes to the stability of the works) or heavy units.

3. Manufacturer /Factory :

GL Locatelli S.r.l.
Via Dante 66, 22078 TURATE (CO) ITALY

4. AVCP system: 1

5. European Assessment Document: EAD330008-03-0601 - Anchor Channels

6. European Technical Assessment: ETA 17/0869 (Edizione 19/04/2023)

7. Body certified: ITC-CNR -

Istituto per le Tecnologie della Costruzione
Consiglio Nazionale delle Ricerche

8. Notified body: NB 0970-ITC-CNR

9. Certificate: 0970-CPR-0014/CE/0818

10. Declared performance:

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DoP - DECLARATION OF PERFORMANCE

GL Locatelli_0970-CPR0014/CE/0818 **(1)**

Mechanical resistance and stability (BWR1)

Dimentions	
Anchor channel cross section	50x28,5x3 mm
Effective embedment depth h_{ef}	81,50 mm
Screw	M10-M12-M14-M16-M20
Materials	
Anchor channel	S420MC (EN10025) AISI 304/304L (EN10088) AISI 316/316L (EN10088)
Anchor	CB10FF (EN10263) AISI 304/304L (EN10088) AISI 316/316L (EN10088)
Screw	4.6 - 8.8 (EN ISO 898) 50 - 70 (EN ISO 3506-1)

Mechanical resistance and stability (BWR1)

	Essential characteristic	**Performance**	**Harmonised technical specification**
Characteristic resistance under static and quasi-static tension loading			
1	Resistance to steel failure of anchor	See Annex C1/1; Table C1	EAD33008-03-0601 Anchor channels
2	Resistance to steel failure of the connection between anchors and channel		
3	Resistance to steel failure of channel lips and subsequently pull-out of channel bolt		
4	Resistance to steel failure of channel bolt	See Annex C1/2; Table C2	
5	Resistance to steel failure by exceeding the bending stregth of the channel	See Annex C1/3; Table C3	
6	Maximum installation torque moment to avoid damage during installation	See Annex B3; Table B3	
7	Resistance to pull-out failure of the anchor	See Annex C1/3; Table C4	
8	Resistance to concrete cone failure		
9	Minimum edge distances, spacing and member thickness to avoid concrete splitting during installation	See Annex B2; Table B1	

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Mechanical resistance and stability (BWR1)

	Essential characteristic	Performance	Harmonised technical specification
Characteristic resistance under static and quasi-static tension loading			
10	Characteristic edge distances and spacing to avoid splitting of concrete under load	See Annex C1/3; Table C4	EAD33008-03-0601 Anchor channels
11	Resistance to blowout failure - bearing area of anchor head	See Annex A5; Table A6	
Characteristic resistance under static and quasi-static shear loading			
12	Resistance to steel failure of channel bolt under shear loading without lever arm	See Annex C2/1; Table C5	EAD33008-03-0601 Anchor channels
13	Resistance to steel failure by bending of the channel bolt under shear load with lever arm		
14	Resistance to steel failure of channel lips, steel failure of connection between anchor and channel or steel failure of anchor (shear load in transverse direction)	See Annex C2/2; Table C6	
15	Resistance to steel failure of connection between channel lips and channel bolt (shear load in longitudinal channel axis)	See Annex C2/3; Table C7	
16	Factor for sensitivity to installation		
17	Resistance to steel failure of the anchor		
18	Resistance to steel failure of connection between anchor and channel		
19	Resistance to concrete pry-out failure	See Annex C2/4; Table C8	
20	Resistance to concrete edge failure		
Characteristic resistance under combined static and quasi-static shear loadin			
21	Resistance to steel failure of the anchor channel	See Annex C2/4; Table C9	EAD33008-03-0601 Anchor channels
Characteristic resistance under fatigue tension loading			
22	Fatigue resistance to steel failure of the whole system (continuous or tri-linear function)	NPD	
23	Fatigue limit resistance to steel failure of the whole system		
24	Fatigue resistance to concrete related failure (exponential function)		
25	Fatigue limit resistance to concrete related failure		
26	Displacements		

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Safety in case of fire (BWR2)

	Essential characteristic	Performance	Harmonised technical specification
27	Reaction to fire	Class A1	EAD33008-03-0601 Anchor channels
28	Resistance to fire	ETA 17/0869 Annex C5	

Aspects of durability linked with the basic works requirements

	Essential characteristic	Performance	Harmonised technical specification
29	Durability	No Performance Assessed	EAD33008-03-0601 Anchor channels

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued.

Turate, April 19, 2023

Presidente
(Silvia Locatelli)

Responsabile S.G.Q.
(Ing. Michelangelo Ficile)

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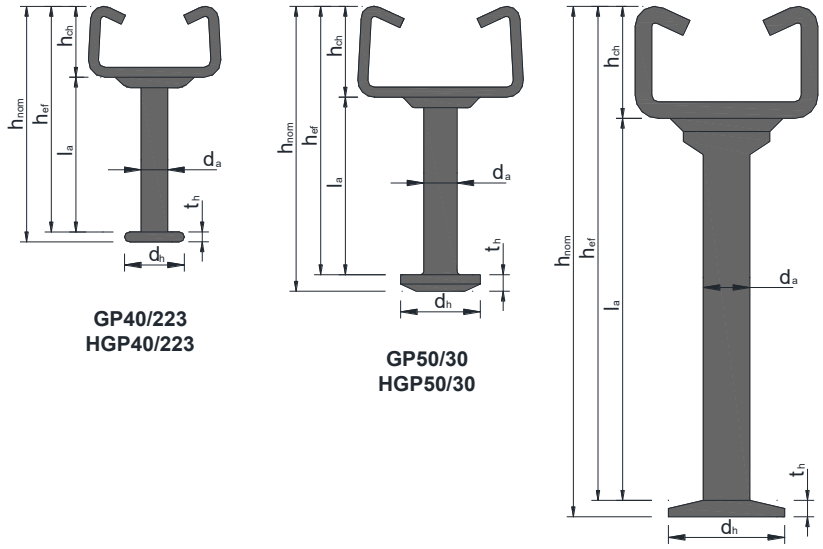


Table A5: Anchor dimensions

Anchor channel	h_{nom}	h_{ef}
	[mm]	
GP40/223 HGP40/223	72	69.0
GP50/30 HGP50/30	87	81,5
GP54/33 HGP54/33	154	150,0

Table A6: Round anchor dimensions

Round anchor	d_a	d_h	min l_a	t_h	A_h
	[mm]				[mm^2]
GP40/223 HGP40/223	8	18	47	3,0	204,2
GP50/30 HGP50/30	10	24	53	5,5	373,8
GP54/33 HGP54/33	14	35	116	4,0	808,2

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)

Product Description – Anchor Dimensions

Annex A5
of ETA N° 17/0869

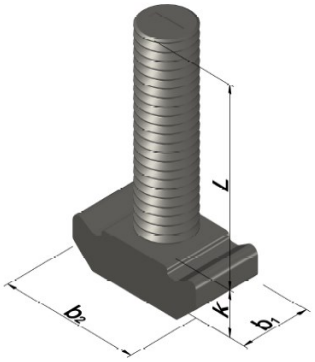


Table A7: Dimensions for channel bolt

Anchor channel	Channel bolt	b_1	b_2	k	Ø
		[mm]			
GP40/223	**V40/22**	16,5	32,1	11	10
					12
					14
					16
GP50/30	**V50/300**	20,5	41,5	15	10
					12
					14
					16
					20
GP54/33	**V50/300**	20,5	41,5	15	10
					12
					14
					16
					20

Table A8: Channel bolt steel strength grade

	Carbon Steel		Stainless Steel	
Grade	**4.6**	**8.8**	**50**	**70**
f_{uk} [MPa]	400	800	500	700
f_{yk} [MPa]	240	640	210	450
Finishing coat	Zinc plated - HDG		-	

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex A6** **of ETA N° 17/0869**
Product Description – Channel Bolt Dimensions and Steel Grade	

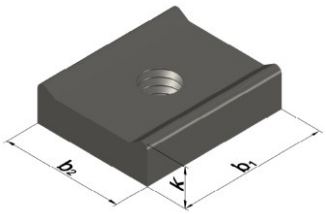


Table A9: Dimensions for HGP Channel Nut

Anchor channel	Channel Nut	b_1	b_2	k	Ø
		[mm]			
HGP40/223	**ADHZ40**	50	32,1	13,0	12-14-16
HGP50/30	**ADHZ50**	50	40,5	13,9	16
HGP54/33	**ADHZ54**	50	42,5	19,9	16

Table A10: HGP Channel Nut strength grade

	Carbon Steel	Stainless Steel		
Grade	**S275JR**	**A2**	**A4**	**AISI430**
f_{uk} [MPa]	410	540	540	430
f_{yk} [MPa]	275	230	240	250
Finishing coat	Electroplated - HDG	-		

Table A11: HGP Threaded Rod steel strength grade

	Carbon Steel		Stainless Steel
Grade	**4.6**	**8.8**	**70**
f_{uk} [MPa]	400	800	700
f_{yk} [MPa]	240	640	450
Finishing coat	Zinc plated - HDG		**-**

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex A7** **of ETA N° 17/0869**
Product Description – Channel Nuts Dimensions and Steel Grade	

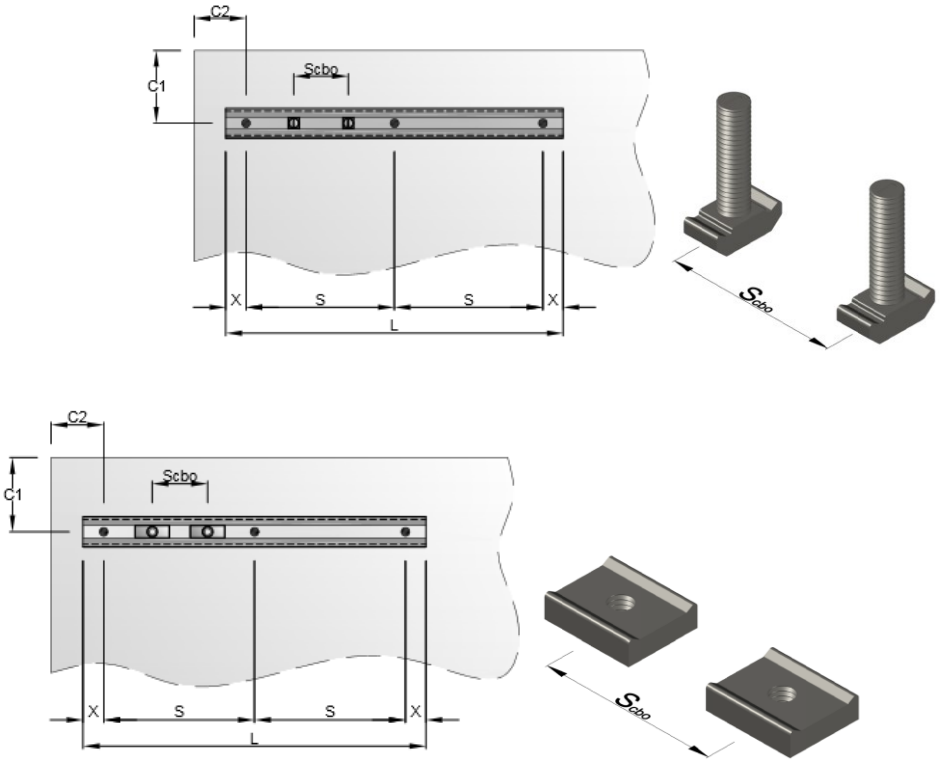
Table B1: Installation parameters for anchor channels

Anchor channel			GP40/223 HGP40/223	GP50/30 HGP50/30	GP54/33 HGP54/33
Minimum spacing	s_{min}	[mm]	95	90	120
Maximum spacing	s_{max}		250		
End spacing	x		27,5	30	40
Minimum channel length	l_{min}		150		200
Minimum edge distance	c_{min}		50	75	100
Minimum thickness of concrete member	h_{min}		102	117	183
Minimum effective embedment depth	$h_{ef,min}$		69	81,5	150

Table B2: Minimum spacing for channel bolt

Channel bolt			M8	M10	M12	M14	M16	M20
Minimum spacing between channel bolts	$s_{cbo,min}$	[mm]	40	50	60	70	80	100

$s_{cbo,min}$= center to center spacing between channel bolts ($s_{cbo,min}$=5d)

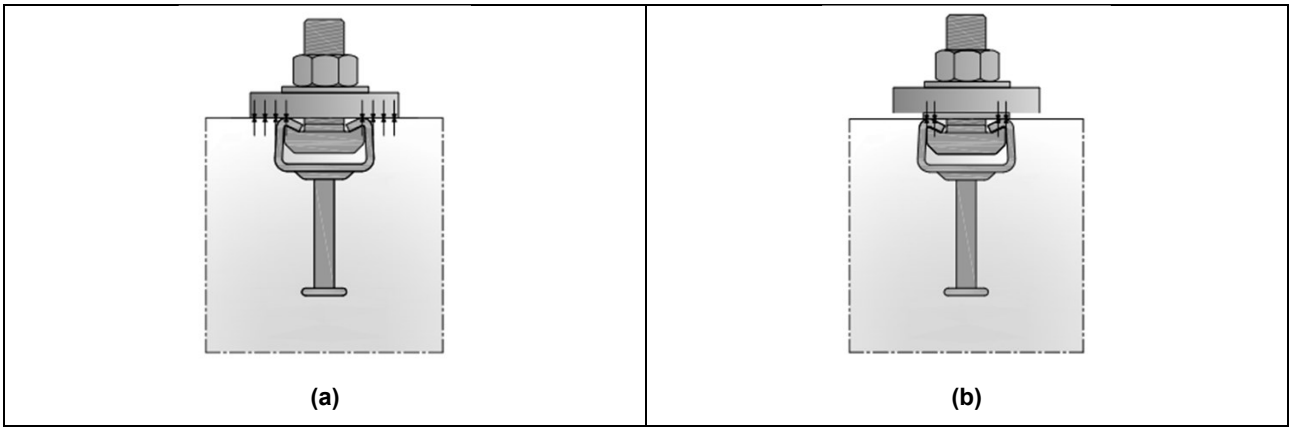


GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex B2** of ETA N° 17/0869
Intended Use – Installation parameters for anchor channel and channel bolts	

Table B3: Required installation torque T_{inst}

Channel Bolt		T_{inst} [Nm]					
		General			Steel to steel contact		
		GP40/223 HGP40/223	GP50/30 HGP50/30	GP54/33 HGP54/33	GP40/223 HGP40/223	GP50/30 HGP50/30	GP54/33 HGP54/33
M10	4.6, 8.8	15	15	15	15	15	15
	50,70	- (1)	- (1)	- (1)	- (1)	- (1)	- (1)
M12	4.6, 8.8	25	25	25	25	25	25
	50,70	25	25	25	25	25	25
M14	4.6, 8.8	35	35	35	35	35	35
	50,70	- (1)	- (1)	- (1)	- (1)	- (1)	- (1)
M16	4.6, 8.8	35	60	60	45	60	60
	50,70	45	60	60	45	60	60
M20	4.6, 8.8	- (1)	60	100	- (1)	75	120
	50, 70	- (1)	60	100	- (1)	75	120

(1) product not available



(a) **(b)**

a) General: The fixture is in contact with the channel profile and the concrete surface

b) Steel-steel contact: The fixture is fastened to the anchor channel by suitable steel part (e.g. washer). Fixture is in contact with the channel profile only.

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex B3 of ETA N° 17/0869**
Intended Use – Installation parameters for channel bolts	

Table C1: Characteristic resistance under static and quasi-static tension loading – steel failure

Anchor channel			Steel	GP40/223 HGP40/223	GP50/30 HGP50/30	GP54/33	HGP54/33
Steel failure - Anchor							
Characteristic resistance	$N_{Rk,s,a}$	[kN]	carbon	24,1	37,7	80	80
			stainless	27,2	42,4	83,1	83,1
Partial safety factor	γ_{Ms} 1)	[-]		1,4	1,4	1,8	1,8
Steel failure - Connection channel/anchor							
Characteristic resistance	$N_{Rk,s,c}$	[kN]	carbon	20,4	31,1	57,7	76,8
			stainless	20,4	31,1	57,7	76,8
Partial safety factor	$\gamma_{Ms,ca}$ 1)	[-]		1,8			
Steel failure - Channel lips							
Axial spacing	$s_{l,N}$	[mm]		81,6	100	110	110
Characteristic resistance	$N^0_{Rk,s,l}$	[kN]	carbon	20,4	31,1	57,7	76,8
			stainless	20,4	31,1	57,7	76,8
Partial safety factor	$\gamma_{Ms,l}$ 1)	[-]		1,8			

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex C1/1** **of ETA N° 17/0869**
Performances – Characteristic resistance under static and quasi-static tension loading	

Table C2: Characteristic resistance under static and quasi-static tension loading – steel failure – channel bolts

Channel bolt					M10	M12	M14	M16	M20
Steel failure									
Characteristic resistance	$N_{Rk,s}$	[kN]	V40/22	4,6	23,2	33,7	46,0	62,8	-[1]
				8,8	46,4	67,4	92,0	125,6	-[1]
				50/70	23,2	33,7	46,0	62,8	-[1]
			V50/300	4,6	23,2	33,7	46,0	62,8	98,0
				8,8	46,4	67,4	92,0	125,6	196,0
				50,70	23,2	33,7	46,0	62,8	98,0
			H-bolt+ ADHZ40	4,6	-[1]	33,7	46,0	56,7	-[1]
				8,8	-[1]	56,7	56,7	56,7	-[1]
				Stainless A2/A4 (f_{uk}=540 MPa)	-[1]	33,7	46,0	56,7	-[1]
			H-bolt+ ADHZ50	4,6	-[1]	-[1]	-[1]	56,7	-[1]
				8,8	-[1]	-[1]	-[1]	56,7	-[1]
				Stainless A2/A4 (f_{uk}=540 MPa)	-[1]	-[1]	-[1]	56,7	-[1]
			H-bolt+ ADHZ54	4.6	-[1]	-[1]	-[1]	62,8	-[1]
				8.8	-[1]	-[1]	-[1]	103,6	-[1]
				Stainless A2/A4 (f_{uk}=540 MPa)	-[1]	-[1]	-[1]	62,8	-[1]
Partial safety factor	γ_{Ms}[2]	[-]		4.6	2,0				
				8.8	1,5				
				50	2,86				
				70	1,87				
				Stainless A2	2,81				
				Stainless A4	2,7				

[1] product not available

[2] In absence of other national regulations

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex C1/2** **of ETA N° 17/0869**
Performances – Characteristic resistance under static and quasi-static tension loading	

Table C3: Characteristic resistance under static and quasi-static tension loading - Characteristic flexure resistance of channel

Anchor channel			Steel	GP40/223 HGP40/223	GP50/30 HGP50/30	GP54/33 HGP54/33
Steel failure – Failure by flexure of channel						
Characteristic flexural resistance of channel	$M_{Rk,s,flex}$	[Nm]	carbon	1270	2299	3256
			stainless	1270	2299	3256
Partial safety factor	$\gamma_{Ms,flex}$ 1)	[-]		1,15		

1) In absence of other national regulations

Table C4: Characteristic resistance under static and quasi-static tension loading – concrete failure

Anchor channel				GP40/223 HGP40/223	GP50/30 HGP50/30	GP54/33 HGP54/33
Concrete pull-out failure						
Characteristic resistance in cracked concrete C12/15		$N_{Rk,p}$	[kN]	18,4	33,6	72,7
Characteristic resistance in uncracked concrete C12/15		$N_{Rk,p}$	[kN]	25,7	47,1	101,8
Amplification factor of $N_{Rk,p}$	C16/20	Ψ_c	[-]	1,33		
	C20/25			1,67		
	C25/30			2,08		
	C30/37			2,50		
	C35/45			2,92		
	C40/50			3,33		
	C45/55			3,75		
	≥C50/60			4,17		
Partial safety factor		$\gamma_{Mp} = \gamma_{Mc}$		1,5		
Concrete cone failure $N_{Rk,c}$						
α_{ch}				0,866	0,888	0,973
Product factor k_1	Cracked concrete	$k_{cr,N}$		7,7	7,9	8,7
	Uncracked concrete	$k_{ucr,N}$		11,0	11,3	12,4
Partial safety factor			γ_{Mc}	1,5		
Concrete splitting failure						
Characteristic edge distance		$c_{cr,sp}$	[mm]	207	245	450
Characteristic spacing		$s_{cr,sp}$	[mm]	414	490	900
Partial safety factor			γ_{Msp}	1,5		

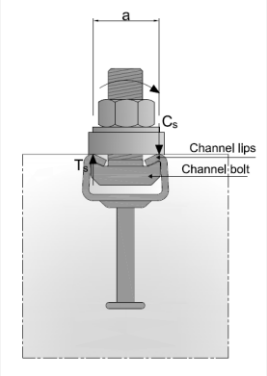
GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex C1/3** **of ETA N° 17/0869**
Performances – Characteristic resistance under static and quasi-static tension loading	

Table C5: Characteristic resistance under static and quasi static shear loading in transverse direction – steel failure – channel bolt

Channel bolt						**M10**	**M12**	**M14**	**M16**	**M20**
Steel failure										
Characteristic resistance	$V_{Rk,s}$	[kN]	V40/22, V50/300	carbon	4.6	13,92	20,22	27,60	37,68	58,8
					8.8	23,20	33,70	46,00	62,70	97,90
				stainless steel	50	23,56	33,93	46,18	60,32	94,25
					70	32,99	47,50	64,65	84,45	131,95
			H-bolt	carbon	4.6	-[1]	20,22	27,60	37,68	-[1]
					8.8	-[1]	33,70	46,00	62,70	-[1]
				stainless steel	70	-[1]	47,50	64,65	84,45	-[1]
Characteristic flexure resistance	$M^0_{Rk,s}$[2]	[Nm]	V40/22, V50/300	carbon	4.6	29,9	52,4	83,5	133,2	259,6
					8.8	59,8	104,8	167,0	266,4	519,3
				stainless steel	50	37,4	65,5	104,3	166,5	324,5
					70	52,3	91,7	146,1	233,1	454,4
			H-bolt	carbon	4.6	-[1]	52,4	83,5	133,2	-[1]
					8.8	-[1]	104,8	167,0	266,4	-[1]
				stainless steel	70	-[1]	91,7	146,1	233,1	-[1]
Partial safety factor	γ_{Ms}[2]	[-]		carbon	4.6	1,67				
					8.8	1,25				
				stainless steel	50	2,38				
					70	1,56				

[1] product not available

[2] In absence of other national regulations



[2] The characteristic flexure resistance according to Table C5 shall be limited in design to:

$M^0_{Rk,s} \leq 0,5\ N^0_{Rk,s,l} \cdot a$ ($N^0_{Rk,s,l}$ according to Table C1)

$M^0_{Rk,s} \leq 0,5\ N_{Rk,s} \cdot a$ ($N_{Rk,s}$ according to Table C2)

with *a* reported in Table C6.

T_s tension force acting on the channel lips

C_s compression force acting on the channel lips

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex C2/1** **of ETA N° 17/0869**
Performances – Characteristic resistance under static and quasi-static shear loading	

Table C6: Characteristic resistance under static and quasi static shear loading in transverse direction –steel failure anchor channel

Anchor channel			Steel	GP 40/223	HGP 40/223	GP 50/30	HGP 50/30	GP 54/33	HGP 54/33
Steel failure - Anchor									
Characteristic resistance	$V_{Rk,s,a,y}$	[kN]	carbon	20,4	41,3	31,1	71,6	57,7	76,8
			stainless	20,4	41,3	31,1	71,6	57,7	76,8
Partial safety factor	$\gamma_{Ms,a}$ [1)]	[-]	carbon/ stainless	1,14				1,46	
Steel failure - Connection channel/anchor									
Characteristic resistance	$V_{Rk,s,c,y}$	[kN]	carbon	20,4	41,3	31,1	71,6	57,7	76,8
			stainless	20,4	41,3	31,1	71,6	57,7	76,8
Partial safety factor	$\gamma_{Ms,ca}$ [1)]	[-]	carbon/ stainless	1,8					
Steel failure - Channel lips									
Axial spacing	$s_{l,V}$	[mm]		81,6		100		110	
Characteristic resistance	$V^0_{Rk,s,l,y}$	[kN]	carbon	20,4	41,3	31,1	71,6	57,7	76,8
			stainless	20,4	41,3	31,1	71,6	57,7	76,8
Partial safety factor	$\gamma_{Ms,l}$ [1)]	[-]	carbon/ stainless	1,8					

[1)] In absence of other national regulations

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex C2/2** **of ETA N° 17/0869**
Performances – Characteristic resistance under static and quasi-static shear loading	

Table C7: Characteristic resistance under static and quasi static shear loading in longitudinal channel axis – steel failure

Anchor channel			Steel		GP 40/223	HGP 40/223	GP 50/30	HGP 50/30	GP 54/33	HGP 54/33
Steel failure - channel lips/channel bolt										
Characteristic resistance	$V_{Rk,s,l,x}$	[kN]	carbon		-[1)]	-[1)]	-[1)]	-[1)]	-[1)]	-[1)]
			stainless	A2	-[1)]	-[1)]	-[1)]	-[1)]	-[1)]	-[1)]
				A4	-[1)]	-[1)]	-[1)]	-[1)]	-[1)]	-[1)]
Installation factor	γ_{inst}	[-]	carbon/ stainless		-[1)]					
Steel failure - anchor										
Characteristic resistance	$V_{Rk,s,a,x}$	[kN]	carbon		12,1		18,8		36,9	
			stainless	A2	16,3		25,4		-[2)]	
				A4	16,3		25,4		49,9	
Steel failure - Connection channel/anchor										
Characteristic resistance	$V_{Rk,s,c,x}$	[kN]	carbon		10,2		15,6		28,9	38,4
			stainless	A2	12,2		18,7		-[2)]	
				A4	12,2		18,7		34,6	46,1

1) No performance assessed

2) product not available

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex C2/3 of ETA N° 17/0869**
Performances – Characteristic resistance under static and quasi-static shear loading	

Table C8: Characteristic resistance under static and quasi static shear loading – concrete failure

Anchor Channel		GP40/223 HGP40/223	GP50/30 HGP50/30	GP54/33 HGP54/33
Pry out failure				
Product factor	k_8	2,0		
Partial safety factor	γ_{Mc} 1)	1,5		
Concrete edge failure				
Product factor k_{12}	$k_{cr,v}$	7,5		
	$k_{ucr,v}$	10,5		
Partial safety factor		1,5		

1) In absence of other national regulations

Table C9: Characteristic resistance under combined tension and shear load

Anchor channel			GP40/223 HGP40/223	GP50/30 HGP50/30	GP54/33 HGP54/33
Steel failure – Flexure of channel lips and of channel					
Product factor	k_{13}	[-]	1,0		
Steel failure – Anchor and Connection anchor/channel					
Product factor	k_{14}	[-]	1,0		

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex C2/4** **of ETA N° 17/0869**
Performances – Characteristic resistance under static and quasi-static shear loading	

Table C17: Characteristic resistance under fire exposure – concrete failure

Anchor channel				**GP40/223 HGP40/223**	**GP50/30 HGP50/30**	**GP54/33 HGP54/33**
Concrete cone failure						
Characteristic resistance under fire exposure in concrete C20/25 to C50/60	$N^0_{Rk,c,fi}$	[kN]	R90	6,8	10,6	53,6
			R120	5,5	8,5	42,9

Table C18: Characteristic resistance under fire exposure – pull-out failure

Anchor channel				**GP40/223 HGP40/223**	**GP50/30 HGP50/30**	**GP54/33 HGP54/33**
Pull-out failure						
Characteristic resistance under fire exposure in concrete C20/25 to C50/60	$N_{Rk,p,fi}$	[kN]	R90	7,6	14,0	30,3
			R120	6,1	11,2	24,2

Table C19: Characteristic shear resistance under fire exposure – concrete pry-out failure

Profile			**GP40/223 HGP40/223**	**GP50/30 HGP50/30**	**GP54/33 HGP54/33**
Concrete pry-out failure					
$V_{Rk,cp,fi}$	[kN]	R90	13,6	21,2	107,2
		R120	10,9	16,9	85,8

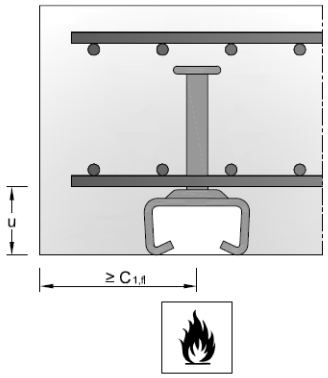
Table C20: Characteristic shear resistance under fire exposure – concrete edge failure

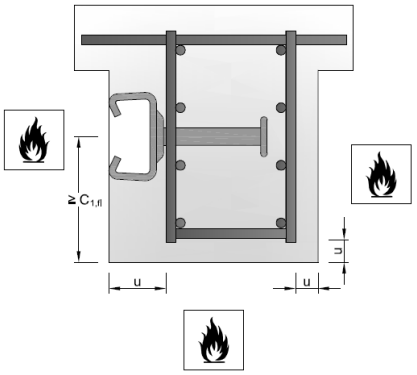
Profile			**GP40/223 HGP40/223**	**GP50/30 HGP50/30**	**GP54/33 HGP54/33**
Concrete edge failure					
$V^0_{Rk,c,fi}$	[kN]	R90	0,9	1,6	2,3
		R120	0,7	1,3	1,9

GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)	**Annex C5/1 of ETA N° 17/0869**
Performances – Resistance to fire	

Table C21: Characteristic values for tension and shear loads under fire exposure

Anchor channel			**GP40/223 HGP40/223**	**GP50/30 HGP50/30**	**GP54/33 HGP54/33**
Channel bolts ≥ [mm]			M16	M16	M16
Steel failure: Anchor, Connection channel/anchor, Local flexure of channel lips					
Characteristic resistance	R90		NPA		
	R120				
Concrete cone failure					
Characteristic edge distance	$c_{cr,N,fi}$	[mm]	138	163	300
	$c_{min,fi}$		300	300	300
Characteristic spacing	$s_{cr,N,fi}$	[mm]	276	326	600
	$s_{min,fi}$		95	90	120





GL LOCATELLI anchor channels (GP) with channel bolts (V) and smart anchor channels (HGP)

Performances – Resistance to fire

Annex C5/2
of ETA N° 17/0869