



# HSV EXPANSION ANCHOR

**Technical Datasheet**



Update: Dec-17





# HSV Expansion anchor

Economical expansion anchor for uncracked concrete

Anchor version	Benefits
 <p>HSV (F) (M8-M16)</p>	<ul style="list-style-type: none"> <li>- Torque-controlled mechanical expansion allows immediate load application</li> <li>- Setting mark</li> <li>- Cold-formed to prevent breaking during installation</li> <li>- Raised impact section prevents thread damage during installation</li> <li>- Drill bit size is same as anchor size for easy installation.</li> </ul>
 <p>HSV-BW (M8-M16)</p>	

## Base material



Concrete  
(non-cracked)

## Basic loading data (for a single anchor)

All data in this section applies to:

- Correct setting (See setting instruction)
- No edge distance and spacing influence
- Concrete as specified in the table
- Steel failure
- Minimum base material thickness
- Concrete C 20/25,  $f_{ck,cube} = 25 \text{ N/mm}^2$

### Effective anchorage depth for static <sup>a)</sup>

Anchor size	M8		M10		M12		M16	
Eff. anchorage depth range $h_{ef}$ [mm]	30	40	40	50	50	65	65	80

a) HSV-F only for sizes M10, M12 and M16

### Mean ultimate resistance

Anchor size	M8		M10		M12		M16		
Tension $N_{Ru,m}$ [kN]	HSV / HSV-BW	11,0	15,9	15,9	18,6	19,2	26,6	35,1	48,0
	HSV-F	-	-	13,2	18,6	19,2	26,6	35,1	48,0
Shear $V_{Ru,m}$ [kN]	HSV / HSV-BW	8,9	8,9	15,1	15,1	23,7	23,7	44,5	44,5
	HSV-F	-	-	15,1	15,1	23,7	23,7	44,5	44,5

### Characteristic resistance

Anchor size			M8		M10		M12		M16	
Tension $N_{Rk}$	HSV / HSV-BW	[kN]	8,3	12,0	12,0	14,0	14,5	20,0	26,5	36,1
	HSV-F		-	-	10,0	14,0	14,5	20,0	26,5	36,1
Shear $V_{Rk}$	HSV / HSV-BW	[kN]	8,3	8,5	12,8	14,4	17,9	22,6	42,4	42,4
	HSV-F		-	-	12,8	14,4	17,9	22,6	42,4	42,4

### Design resistance

Anchor size			M8		M10		M12		M16	
Tension $N_{Rd}$	HSV / HSV-BW	[kN]	4,6	6,7	8,0	9,3	9,7	13,3	14,7	20,1
	HSV-F		-	-	6,7	9,3	9,7	13,3	14,7	20,1
Shear $V_{Rd}$	HSV / HSV-BW	[kN]	5,5	6,8	8,5	11,5	11,9	18,1	33,9	33,9
	HSV-F		-	-	8,5	11,5	11,9	18,1	33,9	33,9

### Recommended loads <sup>a)</sup>

Anchor size			M8		M10		M12		M16	
Tension $N_{Rec}$	HSV / HSV-BW	[kN]	3,3	4,8	5,7	6,7	6,9	9,5	10,5	14,3
	HSV-F		-	-	4,8	6,7	6,9	9,5	10,5	14,3
Shear $V_{Rec}$	HSV / HSV-BW	[kN]	4,0	4,9	6,1	8,2	8,5	12,9	24,2	24,2
	HSV-F		-	-	6,1	8,2	8,5	12,9	24,2	24,2

a) With overall partial safety factor for action  $\gamma = 1,4$ . The partial safety factors for action depend on the type of loading and shall be taken from national regulations.

## Materials

### Mechanical properties <sup>a)</sup>

Anchor size			M8	M10	M12	M16
Nominal tensile strength	$f_{uk}$	[N/mm <sup>2</sup> ]	580	660	660	660
Yield strength	$f_{yk}$	[N/mm <sup>2</sup> ]	464	528	528	528
Stressed cross-section, thread	$A_s$	[mm <sup>2</sup> ]	36,6	58,0	84,3	157
Stressed cross-section, neck	$A_{s, neck}$	[mm <sup>2</sup> ]	26,9	39,6	63,6	105,7
Moment of resistance	W	[mm <sup>3</sup> ]	31,2	62,3	109,2	277,5
Char. bending resistance for rod or bolt with 5.8 steel grade	$M^0_{Rk,s}$	[Nm]	19,5	41,1	72,1	166,5

a) HSV-F only for sizes M10, M12 and M16.

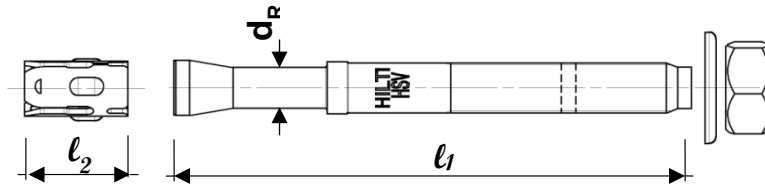
### Material quality

Part		Material
Bolt	HSV	Carbon steel, galvanized to min. 5 $\mu$ m
	HSV - BW	Carbon steel, galvanized to min. 5 $\mu$ m with DIN 9021 washer and DIN 127b spring washer
	HSV-F	For M10 to M16 hot dipped galvanized to min. 42 $\mu$ m with DIN 9021 washer and DIN 127b spring washer

### Anchor dimension <sup>a)</sup>

Anchor size		M8	M10	M12	M16
Shaft diameter at the cone	$d_R$ [mm]	5,85	7,1	9,0	11,6
Maximum length of the anchor	$l_1$ [mm]	75	100	150	140
Length of expansion sleeve	$l_2$ [mm]	15	17,6	20,6	24

a) HSV-F only for sizes M10, M12 and M16.



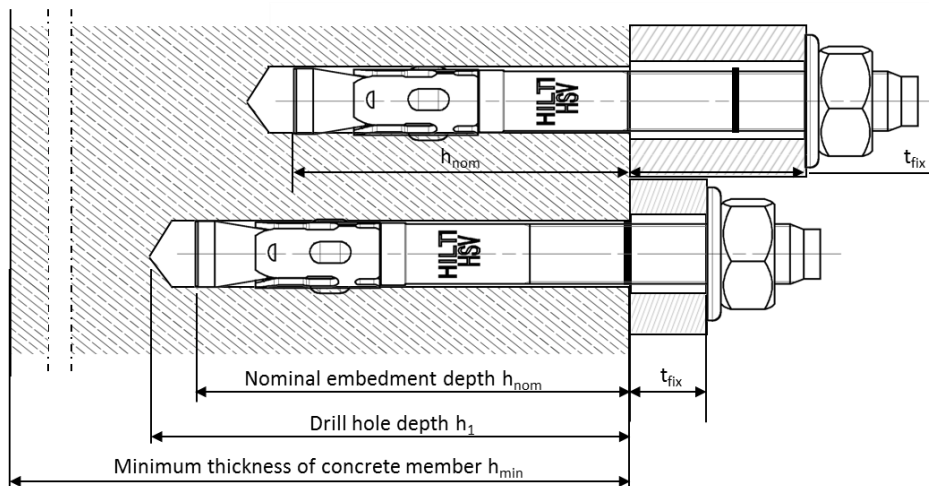
### Setting information

#### Setting details <sup>a)</sup>

Anchor size		M8		M10		M12		M16	
Effective anchorage depth	$h_{ef}$ [mm]	30	40	40	50	50	65	65	80
Nominal embedment depth	$h_{nom}$ [mm]	39	49	51	61	62	77	81	96
Nominal diameter of drill bit	$d_0$ [mm]	8		10		12		16	
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	8,45		10,45		12,5		16,5	
Depth of drill hole	$h_1 \geq$ [mm]	45	55	60	70	70	85	90	105
Min. thickness of fixture <sup>b)</sup>	$t_{fix,min}$ [mm]	5	0	5	0	5	0	5	0
Max. thickness of fixture <sup>b)</sup>	HSV(-BW) $t_{fix,max}$ [mm]	20	10	35	25	70	55	35	20
	HSV-F	-	-	55	45	60	45	35	20
Diameter of clearance hole in the fixture	$d_f \leq$ [mm]	9		12		14		18	
Torque moment	$T_{inst}$ [Nm]	15		30		50		100	
Width across nut flats	SW [mm]	13		17		19		24	

a) HSV-F only for sizes M10, M12 and M16.

b) The values are only valid for HSV with standard washer. For HSV-BW with DIN 9021 washer and DIN 127b spring washer the thickness of the fixture has to be reduced.



#### Installation equipment <sup>a)</sup>

Anchor size	M8	M10	M12	M16
Rotary hammer	TE 1 – TE 30			
Other tools	Blow out pump, hammer, torque wrench			

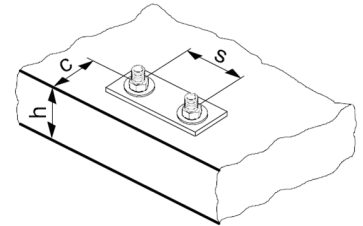
a) HSV-F only for sizes M10, M12 and M16.

**Setting parameters <sup>a)</sup>**

Anchor size				M8		M10		M12		M16	
Effective anchorage depth	HSV (-BW)	$h_{ef}$	[mm]	30	40	40	50	50	65	65	80
	HSV-F			-	-	40	50	50	65	65	80
Minimum base material thickness	HSV (-BW)	$h_{min} \geq$	[mm]	100	100	100	120	140	140	130	170
	HSV-F			-	-	120	120	140	140	170	170
Minimum spacing	HSV (-BW)	$s_{min} \geq$	[mm]	60	60	70	70	80	80	120	100
	HSV-F			-	-	105	105	120	120	190	190
Minimum edge distance	HSV (-BW)	$c_{min} \geq$	[mm]	60	60	70	70	90	90	120	100
	HSV-F			-	-	105	105	140	140	140	140
Critical spacing for splitting failure <sup>b)</sup>	HSV (-BW)	$s_{cr,sp}$	[mm]	180	240	240	300	300	390	390	480
	HSV-F			-	-	240	300	300	390	390	480
Critical edge distance for splitting failure <sup>b)</sup>	HSV (-BW)	$c_{cr,sp}$	[mm]	90	120	120	150	150	195	195	240
	HSV-F			-	-	120	150	150	195	195	240
Critical spacing for concrete cone failure <sup>b)</sup>	HSV (-BW)	$s_{cr,N}$	[mm]	90	120	120	150	150	195	195	240
	HSV-F			-	-	120	150	150	195	195	240
Critical edge distance for concrete cone failure <sup>b)</sup>	HSV (-BW)	$c_{cr,N}$	[mm]	45	60	60	75	75	97,5	97,5	120
	HSV-F			-	-	60	75	75	97,5	97,5	120

a) HSV-F only for sizes M10, M12 and M16.

b) In a case of smaller edge distance and spacing than  $c_{cr,sp}$ ,  $s_{cr,sp}$ , and  $s_{cr,N}$  the load values shall be reduced according ETAG 001, Annex C.



**Setting instruction**

\*For detailed information on installation see instruction for use given with the package of the product.

**Setting instruction for HSV (-BW)**

- 1. Drilling**
- 2. Cleaning**
- 3. Inserting the anchor**
- 4. Checking**
- 5. Checking**
- 6. Applying setting tool**