

Pre-Load Bolt Assemblies BS EN 14399 - 4

HV Assemblies



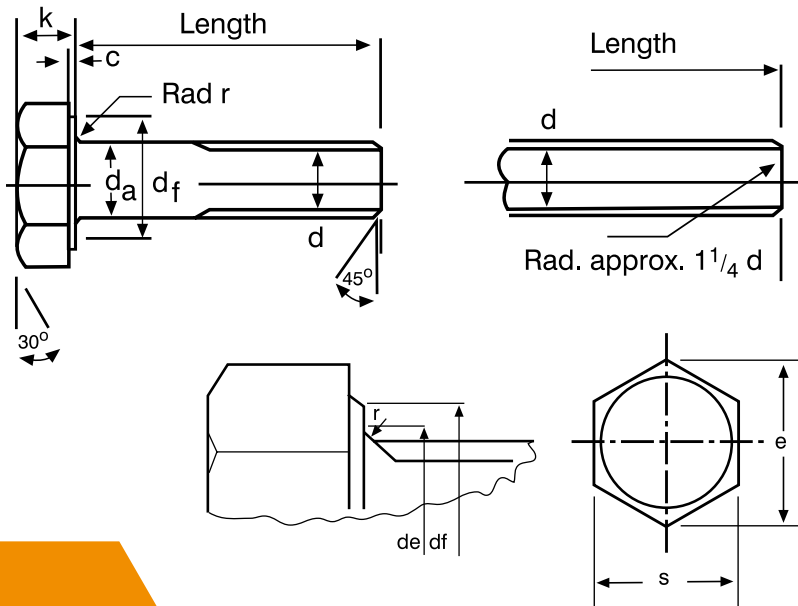
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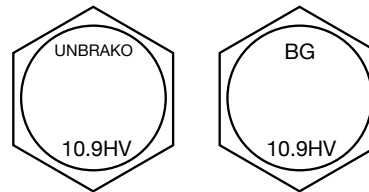
HV Assemblies

BS EN 14399-4 HV Bolt Dimensions. Classes 10.9

Nominal Size and Thread Diameter d	Pitch of Thread p (coarse pitch series)	Diameter of Unthreaded Shank d_a		Width Across Flats s		Width Across Corners e	Diameter of Washer Face d_f	Depth of Washer Face c		Radius Under Head r	Transition Diameter d_e	Thickness of Head k	
		max.	min.	max.	min.			min.	max.			min.	max.
M12	1.75	12.70	11.30	22.00	21.16	23.91	20.10	0.6	0.4	1.2	15.20	8.45	7.55
M16	2.00	16.70	15.30	27.00	26.16	29.56	24.90	0.6	0.4	1.2	19.20	10.75	9.25
M20	2.50	20.84	19.16	32.00	31.00	35.03	29.50	0.8	0.4	1.5	24.00	13.90	12.10
M22	2.50	22.84	21.16	36.00	35.00	39.55	33.30	0.8	0.4	1.5	26.00	14.90	13.10
M24	3.00	24.84	23.16	41.00	40.00	45.20	38.00	0.8	0.4	1.5	28.00	15.90	14.10
M27	3.00	27.84	26.16	46.00	45.00	50.85	42.80	0.8	0.4	2.0	32.00	17.90	16.10
M30	3.50	30.84	29.16	50.00	49.00	55.37	46.60	0.8	0.4	2.0	35.00	20.05	17.95
M36	4.00	37.00	35.00	60.00	58.80	66.44	55.90	0.8	0.4	2.0	41.00	24.05	21.95



BS EN 14399-4 HV Head Marking



Important Note

It is a requirement of BS EN 14399 that the bolt, nut and washer assembly is supplied by one manufacturer who is responsible for the function of the assembly. All the components are identified with the manufacturer's mark. The coating of the assembly is under the control of the manufacturer.

Product Characteristic		Standard
Material		Steel
General requirements		EN 14399-1
Thread	Tolerance	6g ^a
	International Standards	ISO 261, ISO 965-2
Mechanical Properties	Property Class	10.9
	European Standard	EN ISO 898-1
Impact Strength	Value	$K V_{min} = 27 \text{ J at } -20 \text{ }^\circ\text{C}$
	Test Piece ^b	ISO 148
	Test	EN 10045-1
Tolerances	Product Grade	C except: dimensions c and r . $+IT 17$ Tolerance for lengths $\geq 155 \text{ mm}$: $-1/2 IT 17$
	International Standard	EN ISO 4759-1
Surface Finish ^c	Normal	as processed ^d
	Hot Dip Galvanized	EN ISO 10684
Surface Discontinuities		Limits for surface discontinuities as specified in EN 26157-1.
Acceptability		For acceptance procedure, see EN ISO 3269.
<p>a The tolerance class specified applies before hot dip galvanizing. Hot dip galvanized bolts are intended for assembly with oversize tapped nuts.</p> <p>b The location of the Charpy V-notch test pieces in the bolt shall be as specified in EN ISO 898-1.</p> <p>c Attention is drawn to the need to consider the risk of hydrogen embrittlement in the case of bolts of property class 10.9, when selecting an appropriate surface treatment process (e.g. cleaning and coating), see the relevant coating standards.</p> <p>d "As processed" means the normal finish resulting from manufacture with a light coating of oil.</p> <p>e Other coatings may be negotiated between the purchaser and the manufacturer provided they do not impair the mechanical properties or the functional characteristics. Coatings of cadmium or cadmium alloys are not permitted.</p>		

Bolt/Nut/Washer Assembly System HV

General Requirements	BS EN 14399-1
Materials & Manufacture	BS EN 14399-4
Marking	HV
Property Classes	10.9/10
Washer(s)	EN 14399-5 or EN 14399-6
Marking	H
Suitable Test for Preloading	EN 14399-2

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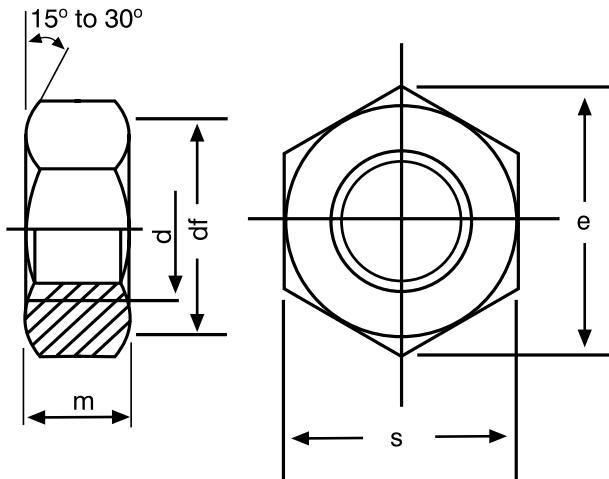
HV Assemblies

BS EN 14399-4 HV Nut Dimensions, Classes 10

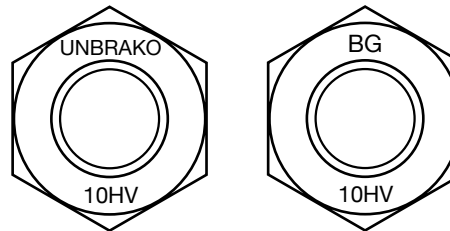
Nominal Size and Thread Diameter d	Pitch of Thread p (Coarse pitch series)	Width Across Flats s		Width Across Corners e	Diameter of Washer Face d_f	Thickness of Nut m	
		max.	min.	min.	min.	max.	min.
M12	1.75	22.00	21.16	23.91	20.10	10.00	9.64
M16	2.00	27.00	26.16	29.56	24.90	13.00	12.30
M20	2.50	32.00	31.00	35.03	29.50	16.00	14.90
M22	2.50	36.00	35.00	39.55	33.30	18.00	16.90
M24	3.00	41.00	40.00	45.20	38.00	20.00	18.70
M27	3.00	46.00	45.00	50.85	42.80	22.00	20.70
M30	3.50	50.00	49.00	55.37	46.60	24.00	22.70
M36	4.00	60.00	58.80	66.44	55.90	29.00	27.70

Product Characteristic		Standard
Material		Steel
General Requirements		EN 14399-1
Thread	Tolerance	6H or 6AZ
	International Standards	ISO 261, ISO 965-2, ISO 965-5
Mechanical Properties	Property Class	10
	European Standard	EN 20898-2
Tolerances	Product Grade	B
	International Standard	EN ISO 4759-1
Surface Finish ^c	Normal	as processed ^a
	Hot Dip Galvanized	EN ISO 10684
	Others	to be agreed ^b
Surface discontinuities		Limits for surface discontinuities as specified in EN 493.
Acceptability		For acceptance procedure, see EN ISO 3269.

a "As processed" means the normal finish resulting from manufacture with alight coating of oil.
b Other coatings may be negotiated between the purchaser and the manufacturer provided they do not impair the mechanical properties or the functional characteristics. **Coatings of cadmium or cadmium alloys are not permitted.**



BS EN 14399 Nut Marking



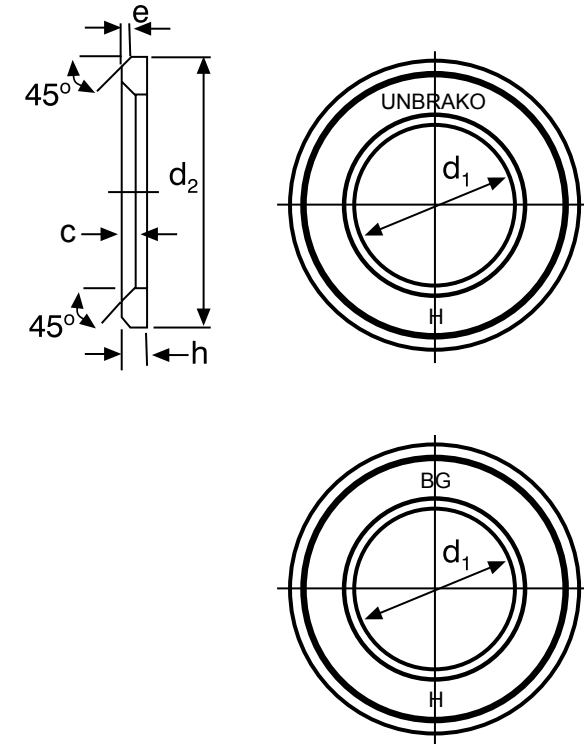
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HV Assemblies

BS EN 14399 Chamfered Washer Dimensions

Nominal size of bolt or screw	BS EN 14399 Parts 5 & 6									
	Inside Diameter d1		Outside Diameter d2		Thickness h		External Chamfer e		Internal Chamfer c	
	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.
M12	13.27	13.00	24.00	23.48	3.3	2.7	1.00	0.50	1.9	1.6
M16	17.27	17.00	30.00	29.48	4.3	3.7	1.50	0.75	1.9	1.6
M20	21.33	21.00	37.00	36.38	4.3	3.7	1.50	0.75	2.5	2.0
M22	23.33	23.00	39.00	38.38	4.3	3.7	1.50	0.75	2.5	2.0
M24	25.33	25.00	44.00	43.38	4.3	3.7	1.50	0.75	2.5	2.0
M27	28.52	28.00	50.00	49.00	5.6	4.4	2.00	1.00	3.0	2.5
M30	31.62	31.00	56.00	54.80	5.6	4.4	2.00	1.00	3.0	2.5
M36	37.62	37.00	66.00	64.80	6.6	5.4	2.50	1.25	3.0	2.5



Characteristic	Standard	
General Requirements	BS EN 14399-1	
Finish / Coatings	Self Colour / Black	BS EN 14399-5 & 6
	Hot Dip Galvanized	BS 7371-6 or BS EN ISO 10684
Mechanical Properties	BS EN 14399-5 & 6	
Dimensions & Tolerances	BS EN 14399-5 & 6	
Product Marking	BS EN 14399-5 & 6	

BS EN 14399 Mechanical properties of chamfered washer

Nominal Size	Vickers Hardness (HV)	
	min	max
M16 to M36 inclusive	300	370