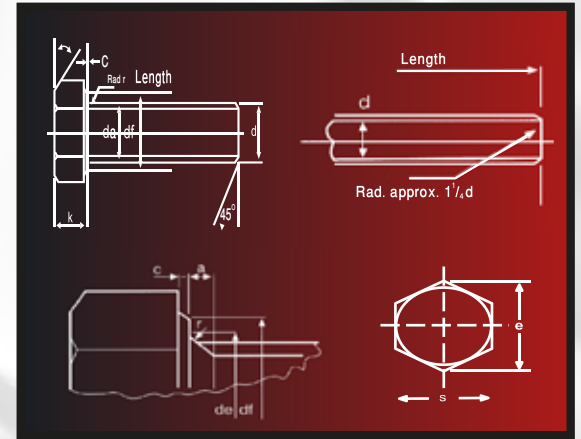


# Pre - Load Bolt Assemblies HR BS EN 14399-3

## Hexagon Bolt

## Drwaing

BS EN 14399-3		HR Bolt Dimension Classes 8.8 & 10.9													
Nominal Size and Thread Diameter d	Pitch of Thread p	Diameter of Unthreaded Shank d <sub>a</sub>		Width Across Flats s		Width Across Corners e		Diameter of Washer Face d <sub>f</sub>		Depth of Washer Face c		Radius Under Head r	Transition Diameter d <sub>e</sub>	Thickness of Head k	
		max	min	max	min	min	min	max	min	min	max			max	min
M12	1.75	12.70	11.30	22.00	21.16	23.91	20.10	0.8	0.4	1.2	15.20	7.95	7.05		
M16	2.00	16.70	15.30	27.00	26.16	29.56	24.90	0.8	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	24.40	13.40	11.60		
M22	2.50	22.84	21.16	36.00	35.00	39.55	33.50	0.8	0.4	1.5	26.40	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	28.40	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	32.40	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	35.40	19.75	17.65		
M36	4.00	37.00	35.00	60.00	58.80	66.40	55.90	0.8	0.4	2.0	42.40	23.55	21.45		



Product Characteristic		Standard
Material		Steel
General Requirements		EN 14399-1
Thread	Tolerance	6g <sup>a</sup>
	International Standard	ISO 261, ISO 965-2
Mechanical Properties	Property Class	8.8 or 10.9
	European Standard	EN ISO 898-1
Impact strength	Value	K V.min = 27 J at - 20 °C
	Test Piece <sup>b</sup>	ISO 148
	Test	EN 10045-1
Tolerances	Product Grade	C except: dimensions c and r. Tolerance for lengths ≥ 160 mm ± 4.0mm
	International Standard	EN ISO 4759-1
Surface Finish	Normal	As processed <sup>c</sup>
	Hot Dip Galvanized	EN ISO 10684 <sup>d</sup>
	Others	To be agreed <sup>c</sup>
Surface Discontinuities		Limits for surface discontinuities as specified in EN 26157-1
Acceptability		For acceptance procedure, see EN ISO 3269

a. The tolerance class specified supplies before H.D.G bolt are intended for assembly with oversize tapped nuts.  
b. The location of the Charpy V-Notch test pieces in the bolt shall be as specified in EN ISO 898-1  
c. "As processed" means the normal finish resulting from manufacture with a light coating of oil.  
d. Attention is drawn to the need to consider the risk of hydrogen embrittlement in the case of bolts of property class 10.9 when selection an appropriate surface treatment process (eg. Cleaning and coating).  
e. other coating may be negotiated between the purchaser and the manufacturer provided they do not impair the mechanical properties or the functional characteristics. Coating of cadmium or cadmium alloys are not permitted.

Bolt / Nut / Washer Assembly Systems HR		
General Requirement	BS EN 14399-1	
Materials & Manufacture	BS EN 14399-3	
Marking	HR	
Property Classes	8.8/8	10.9/10
Washer (s)	EN 14399-5 Or EN 14399-6	
Marking	H	
Suitable Test for Preloading	EN 14399-2	

