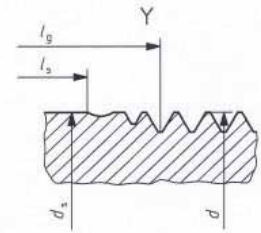
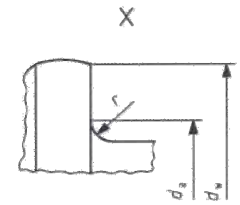


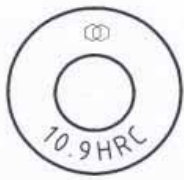
Specifications, mechanical properties and standards for bolts

General requirements	EN 14399-1
Thread tolerance	6g
Thread standards	ISO261,ISO9652
Mechanical properties: property class	10.9
Mechanical properties: standard	EN ISO 898-1
Dimensions and tolerances	EN 14399-10
Product marking	EN 14399-10

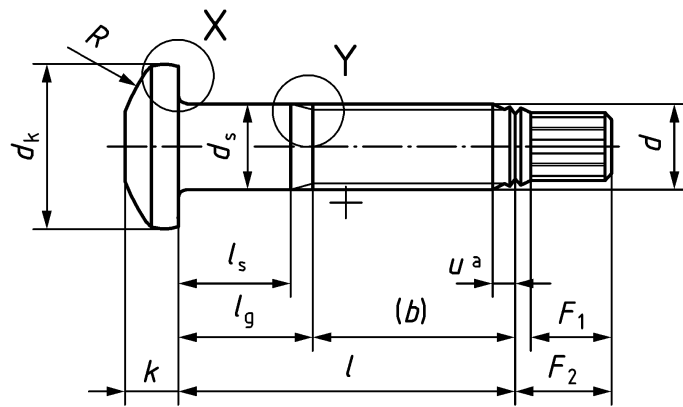
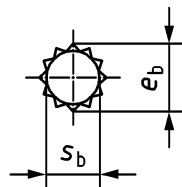


Nominal Ø	Stress area mm ²	Proof load min kN	Ultimate load kN	Hardness Rockwell	
				min	max
M12	84.3	70	87.7	32	39
M16	157	130	163		
M20	245	203	255		
M22	303	252	315		
M24	353	293	367		
M27	459	381	477		
M30	561	466	583		
M36	817	678	850		

Dimensions of bolts^a



Bolt head marking



All dimensions in millimetres

Thread d		M12	M16	M20	M22	M24	M27	M30	M36
p^b		1.75	2	2.5	2.5	3	3	3.5	4
b (ref)	c	30	38	46	50	54	60	66	78
	d	-	44	52	56	60	66	72	84
	e	-	-	65	69	73	79	85	97
d_a	max	15.2	19.2	24.4	26.4	28.4	32.4	35.4	42.4
d_s	max	12.7	16.7	20.84	22.84	24.84	27.84	30.84	37.00
	min	11.3	15.3	19.16	21.16	23.16	26.16	29.16	35.00
d_k	min	21	27	34	38.5	43	48	52	66
d_w	min	20	26	33	37	41	46	50	61
k	nom	8	10	13	14	15	17	19	23
	max	8.8	10.8	13.9	14.9	15.9	17.9	20.0	24.0
	min	7.2	9.2	12.1	13.1	14.1	16.1	18.0	22.0
r	min	1.2	1.2	1.5	1.5	1.5	2.0	2.0	2.0
R	nom	18	20	22	23	25	27	30	36
F_1	min	11	13	15	15.5	16	19	21	25
F_2	max	16	18	20	21	21.5	24	26	31
U^a	Incomplete thread $u \leq 2p$								

a – the dimensions apply before coating

b – p is the pitch of thread

c – for lengths $l_{nom} \leq 125mm$

d – for lengths $125mm < l_{nom} \leq 200mm$

e – for lengths $l_{nom} > 200mm$

Note – $l_{g,max} = l_{nom} - b$, $l_{s,min} = l_{g,max} - 5p$

Note – when $l_{s,min}$ as calculated by the formula in f is less than $0.5d$ then its value shall be $0.5d$ and $l_{g,max} = l_{s,min} + 3p$