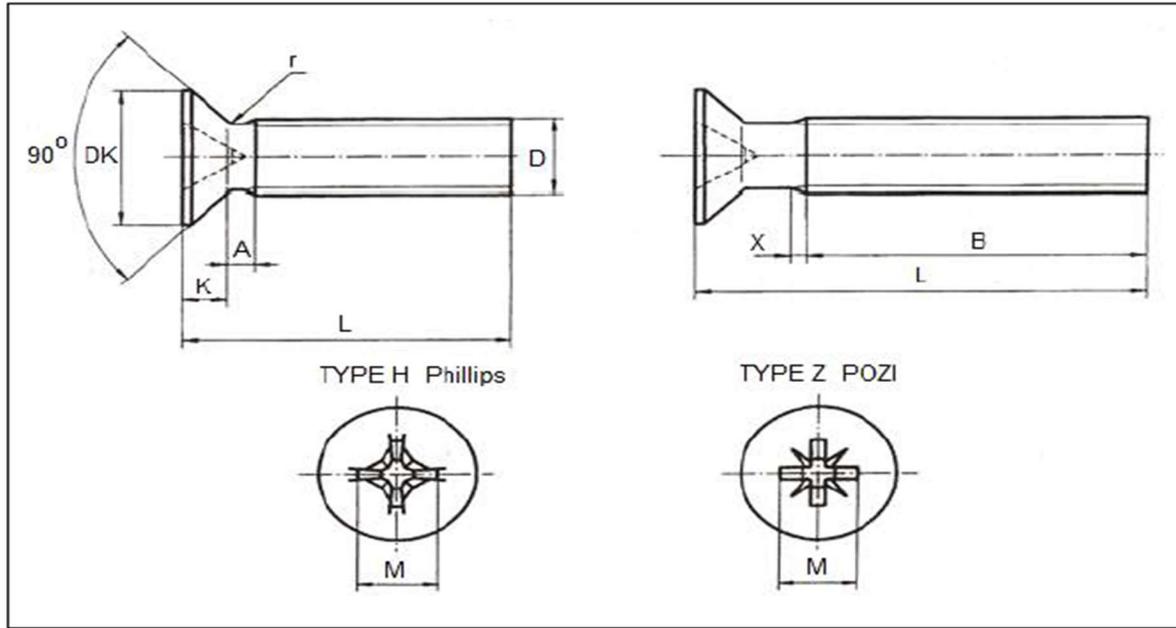


Normative ref DIN 965 ISO 7046 Specifications

Metric DIN 965 Cross Recessed (Phillips) Flat Countersunk Machine Screws



Dimensions of Metric DIN 965 Cross Recessed (Phillips) Flat Countersunk Machine Screws

Thread d		M1.6	M2	M2.5	M3	(M3.5)	M4	M5	M6	M8	M10	
P		0.35	0.4	0.45	0.5	0.8	0.7	0.8	1	1.25	1.5	
A	max.	0.7	0.8	0.9	1	1.2	1.4	1.6	2	2.5	3	
B	min.	15	16	18	19	20	22	25	28	34	40	
DK	nominal max.	3	3.8	4.7	5.6	6.5	7.5	9.2	11	14.5	18	
	min.	2.75	3.5	4.4	5.3	6.14	7.14	8.84	10.57	14.07	17.57	
K	max.	0.96	1.2	1.5	1.65	1.93	2.2	2.5	3	4	5	
r	max.	0.4	0.5	0.7	0.8	0.95	1	1.3	1.6	2	2.5	
X	max.	0.9	1	1.1	1.25	1.5	1.75	2	2.5	3.2	3.8	
Cross recess	no.		0	1	1	1	2	2	2	3	4	
	type H	M	approx.	1.7	2.35	2.7	2.9	3.9	4.4	4.6	6.6	8.7
		penetration depth	min.	0.66	0.95	1.25	1.5	1.4	1.9	2.1	2.8	3.9
			max.	0.91	1.25	1.55	1.8	1.9	2.4	2.6	3.3	4.4
	type Z	M	approx.	1.8	2.2	2.5	2.8	3.7	4	4.4	6.1	8.5
		penetration depth	min.	0.89	0.92	1.22	1.48	1.34	1.6	2.05	2.46	3.86
max.			1.14	1.17	1.47	1.73	1.8	2.06	2.51	2.92	4.32	

All measurements are in mm



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Metric DIN 965 is a cross recessed (Phillips) flat countersunk machine screws. Metric machine screws are designed for metal to metal applications requiring a pre-drilled hole and a mating metric nut or the screw to thread into. These screws are usually fully threaded with machine threads and blunt point. The recommended pre-drilled hole sizes vary depending on the diameter of the screw to be used but should be slightly larger in diameter than the major (maximum) thread diameter. These screws are available in zinc plated steel as well as stainless steel A2 and A4. Metric Flat countersunk heads have a flat top surface and a cone-shaped bearing surface with a head angle of approximately 90°. They are used for applications where the head must be flush with the mating surface of the substrate. Mechanica offers over 100+ unique fastener products from stock in inch and metric standard in a variety of materials and finishes. The following sizes metric DIN 965 cross recessed (Phillips) flat countersunk machine screws are available for immediate shipping from stock: Diameters ranging from M1.6 to M10 up to 38mm long in zinc plated steel and stainless steel A2 and A4. View parts by clicking on the following link: [DIN 965 cross recessed \(Phillips\) flat countersunk machine screws](#).

Weight of Metric DIN 965 Cross Recessed (Phillips) Flat Countersunk Machine Screws

Thread d			M1.6	M2	M2.5	M3	(M3.5)	M4	M5	M6	M8	M10
L			Weight kg/1000pcs									
nominal	min.	max.										
3	2.8	3.2	0.058	0.101	0.175							
4	3.75	4.25	0.069	0.119	0.206	0.291	0.434					
5	4.75	5.25	0.081	0.137	0.236	0.335	0.494	0.676				
6	5.75	6.25	0.093	0.152	0.266	0.379	0.554	0.754	1.21			
8	7.7	8.3	0.116	0.193	0.326	0.467	0.673	0.9	1.45	2.19		
10	9.7	10.3	0.139	0.231	0.386	0.555	0.792	1.06	1.7	2.54	5.03	
12	11.65	12.35	0.162	0.268	0.446	0.643	0.911	1.22	1.95	2.89	5.67	9.59
-14	13.65	14.35	0.185	0.306	0.507	0.731	1.03	1.37	2.19	3.25	6.3	10.6
16	15.65	16.35	0.208	0.343	0.567	0.82	1.15	1.53	2.44	3.61	6.94	11.6
-18	17.65	18.35		0.381	0.627	0.908	1.27	1.68	2.69	3.95	7.57	12.6
20	19.6	20.4		0.417	0.687	0.996	1.39	1.84	2.94	4.31	8.21	13.6
-22	21.6	22.4			0.747	1.08	1.51	1.99	3.18	4.66	8.84	14.6
25	24.6	25.4			0.838	1.22	1.69	2.22	3.55	5.19	9.79	16.1
-28	27.6	28.4				1.35	1.87	2.46	3.93	5.72	10.7	17.6
30	29.6	30.4				1.44	1.99	2.61	4.16	6.08	11.7	18.6
35	34.5	35.5					2.29	2.99	4.76	6.96	13	21.1
40	39.5	40.5						3.36	5.39	7.84	14.6	23.6
45	44.5	45.5							6.02	8.73	16.2	26.1
50	49.5	50.5							6.65	9.61	17.8	28.6
55	54	56									19.4	31.1
60	59	61										33.7

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DIN (Deutsches Institut für Normung - German Institute for Standardization) standards are issued for a variety of components including industrial fasteners as metric DIN 965 cross recessed (Phillips) flat countersunk machine screws. The DIN standards remain common in Germany, Europe and globally even though the transition to ISO standards is taking place. DIN standards continue to be used for parts which do not have ISO equivalents or for which there is no need for standardization. The ISO equivalent of a metric DIN 965 cross recessed (Phillips) flat countersunk machine screws is ISO 7046.

1) Mechanical properties of stainless steel for metric DIN 965 cross recessed (Phillips) flat countersunk machine screws

Stainless steels can be divided into three groups of steel - austenitic, ferritic and martensitic. Austenitic steel is by far the most common type (>90% of commercial fasteners). The steel groups and strength classes are designated by a four-digit sequence of letters and numbers (eg A2-70) as shown in the following table. DIN EN ISO 3506 governs screws and nuts made from stainless steel.

Steel group	Steel grade	Strength class	Screws, Nuts and Bolts			
			Tensile strength N/mm ²	Tensile strength PSI	Dia range	Nut Load N/mm ²
Austenitic	A2 and A4	50	500	70.000	<=M39	500
		70	700	100.000	<=M20	700
		80	800	118.000	<=M20	800

The tensile stress is calculated with reference to the tensile stress area (see DIN EN ISO 3506-1979). Nuts to be paired with same grade of stainless-steel screws.

Steel group	Property Strength class	Made From	Characteristics
Austenitic	50	A1, A2	Soft; cold worked, turned and soft pressed fasteners
	70	A2, A4	Cold worked, normal strength formed fasteners
	80	A2, A4	Extreme cold worked, high strength, special applications

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2) Chemical composition of stainless -steel metric DIN 965 cross recessed (Phillips) flat countersunk machine screws

Grade	USA Grade	Material designation	Material no.	C %	Si ≤ %	Mn ≤ %	Cr %	Mo %	Ni %
A 2	304	X 5Cr Ni 1810	1.4301	≤ 0.07	1.0	2.0	17.5 to 19.5	-	8.0 to 10.5
		X 2 Cr Ni 1811	1.4306	≤ 0.03	1.0	2.0	18.0 to 20.0	-	10 to 12.0
		X 8 Cr Ni 19/10	1.4303	≤ 0.07	1.0	2.0	17.0 to 19.0	-	11.0 to 13.0
A 4	316	X 5 Cr Ni Mo 1712	1.4401	≤ 0.07	1.0	2.0	16.5 to 18.5	2.0 to 2.5	10.0 to 13.0
		X 2 Cr Ni Mo 1712	1.4404	≤ 0.03	1.0	2.0	16.5 to 18.5	2.0 to 2.5	10 to 13

3) Chemical composition of steel metric DIN 965 cross recessed (Phillips) flat countersunk machine screws

PROPERTY CLASS	MATERIAL AND TREATMENT	CHEMICAL COMPOSITION LIMITS %				TEMPERING TEMP °C MIN.
		C		P	S	
		min.	max.	max.	max.	
4.6. 4.8. 5.8. 6.8	Low or medium carbon steel	-	0.55	0.05	0.06	-
8.8	Medium carbon steel quenched. tempered	0.25	0.55	0.04	0.05	425
9.8	Medium carbon steel quenched. tempered	0.25	0.55	0.04	0.05	425
10.9	Medium carbon steel additives e.g. boron. Mn. Cr or Alloy steel - quenched. tempered	0.20	0.55	0.04	0.05	425
12.9	Alloy steel - quenched. tempered	0.20	0.50	0.035	0.035	380



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4) Mechanical properties of steel for metric DIN 965 cross recessed (Phillips) flat countersunk machine screws

MECHANICAL PROPERTY		PROPERTY CLASS									
		4.8	5.6	5.8	6.8	8.8		9.8	10.9	12.9	
						Up to M 16	Over M 16				
Tensile Strength (Rm. N/mm ²)	nom.	400	500		600	800		900	1000	1200	
	min.	420	500	520	600	800	830	900	1040	1220	
Vickers Hardness	min.	130	155	160	190	250	255	290	320	385	
	max.	250				320	336	360	380	435	
Brinell Hardness	min.	124	147	152	181	319	242	266	295	353	
	max.	238				385	319	342	363	412	
Rockwell Hardness	min. HR	71	79	82	89	-					
	HRC	-	-	-	-	20	23	28	32	39	
	HR	95				99	-				
	max. HRC	-	-	-	-	32	34	37	39	44	
Yield Stress ReL. N/mm ²	nom.	320	300	400	480	-					
	min.	340	300	420	480	-					
Stress at permanent set limit N/mm ²	nom.	-				640		720	900	1080	
	min.	-				640	660	720	940	1100	

Disclaimer

Dimensional data and technical information for metric DIN 965 cross recessed (Phillips) flat countersunk machine screws was obtained from publicly available sources and not acquired through standards agencies. It has been completed and compiled for reference purposes only; where discrepancies are found they are subject to change

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