

General Fastener Standards - BS Order

Note: The following table is provided for guidance only as there are often dimensional variations between standards.

BRITISH STANDARD	DIN STANDARD	ISO STANDARD	TYPE OF FASTENER
BS EN ISO4026	DIN913	ISO4026	Hex Socket Setscrew Flat point
BS EN ISO4027	DIN914	ISO4027	Hex Socket Setscrew Cone point
BS EN ISO4028	DIN915	ISO4028	Hex Socket Setscrew Dog point
BS EN ISO4029	DIN916	ISO4029	Hex Socket Setscrew Plain Cup point
BS3692	DIN931	ISO4014	Hexagon head bolt - part threaded
BS3692	DIN933	ISO4017	Hexagon head setscrew – fully threaded
BS3692	DIN934	ISO4032	Hexagon Full Nut
BS3692	DIN439/936	ISO4035	Hexagon Lock Nut
BS4168	DIN912	ISO4762	Hex Socket Cap
BS4168	N/A	ISO7380	Hex Socket Button
BS4168	DIN7991	ISO10642	Hex Socket Countersunk
BS4174 AB	DIN7981CZ	ISO7049CZ	Self tapping pan recess pointed
BS4174 AB	DIN7982CZ	ISO7050CZ	Self tapping csk recess pointed
BS4174 AB	DIN7983CZ	ISO7051CZ	Self tapping raised csk recess pointed
BS4174 AB	N/A	N/A	Self tapping Flange recess pointed
BS4174 B	DIN7981FZ	ISO7049FZ	Self tapping pan recess blunt
BS4174 B	DIN7982FZ	ISO7050FZ	Self tapping csk recess blunt
BS4174 B	N/A	N/A	Self tapping Flange recess blunt
BS4174 B	DIN7971F	ISO1481F	Self tapping pan slotted blunt

BS4174 B	DIN7972F	ISO1482F	Self tapping csk slotted blunt
BS4174AB	DIN7971C	ISO1481C	Self tapping pan slotted pointed
BS4174AB	DIN7972C	ISO1482C	Self tapping csk slotted pointed
BS4174AB	DIN7983C	ISO1483C	Self tapping raised csk slotted pointed
BS4183	DIN7985	ISO7045	Pan recess machine screw
BS4183	DIN85	ISO1580	Pan slotted machine screw
BS4183	DIN965	ISO7046	Countersunk recess machine screw
BS4183	DIN963	ISO2009	Countersunk slotted machine screw
BS4183	DIN84	ISO1207	Cheese Slotted machine screw
BS4183	DIN966	ISO7047	Raised Csk Recess machine screw
BS4183	DIN964	ISO2010	Raised Csk Slotted machine screw
BS4464A	DIN7980	N/A	Square sect. single coil spring washer
BS4464B	DIN127	N/A	Rectangular sect. single coil spring washer
N/A	DIN7981CH	ISO7049CH	Self tapping pan Phillips pointed
N/A	DIN7982CH	ISO7050CH	Self tapping csk Phillips pointed
N/A	DIN7983CH	ISO7051CH	Self tapping raised csk Phillips pointed
N/A	DIN7981FH	ISO7049FH	Self tapping pan phillips blunt
N/A	DIN6923	ISO4161	Hexagon Flange Nut
N/A	DIN928	N/A	Square Weld Nut
N/A	DIN929	N/A	Hexagon Weld Nut
N/A	DIN6797J	N/A	Toothed lock washer – internal
N/A	DIN6797A	N/A	Toothed lock washer – external

Standards Cross Reference

Note: The following table is provided for guidance only as there are often dimensional variations between standards.

TYPE OF FASTENER	BRITISH STANDARD	DIN STANDARD	ISO STANDARD
Self tapping pan recess pointed	BS 4174 AB	DIN7981CZ	ISO7049CZ
Self tapping pan Phillips pointed	N/A	DIN7981CH	ISO7049CH
Self tapping csk recess pointed	BS 4174 AB	DIN7982CZ	ISO7050CZ
Self tapping csk Phillips pointed	N/A	DIN7982CH	ISO7050CH
Self tapping raised csk recess pointed	BS4174 AB	DIN7983CZ	ISO7051CZ
Self tapping raised csk Phillips pointed	N/A	DIN7983CH	ISO7051CH
Self tapping Flange recess pointed	BS4174 AB	N/A	N/A
Self tapping pan slotted pointed	BS4174AB	DIN7971C	ISO1481C
Self tapping csk slotted pointed	BS4174AB	DIN7972C	ISO1482C
Self tapping raised csk slotted pointed	BS4174AB	DIN7983C	ISO1483C
Self tapping pan recess blunt	BS4174 B	DIN7981FZ	ISO7049FZ
Self tapping pan phillips blunt	N/A	DIN7981FH	ISO7049FH
Self tapping csk recess blunt	BS4174 B	DIN7982FZ	ISO7050FZ
Self tapping Flange recess blunt	BS4174 B	N/A	N/A
Self tapping pan slotted blunt	BS4174 B	DIN7971F	ISO1481F
Self tapping csk slotted blunt	BS4174 B	DIN7972F	ISO1482F
Hexagon head bolt - part threaded	BS3692	DIN931	ISO4014
Hexagon head setscrew – fully threaded	BS3692	DIN933	ISO4017

Hexagon Full Nut	BS3692	DIN934	ISO4032
Hexagon Lock Nut	BS3692	DIN439/936	ISO4035
Hexagon Flange Nut	N/A	DIN6923	ISO4161
Square Weld Nut	N/A	DIN928	N/A
Hexagon Weld Nut	N/A	DIN929	N/A
Hex Socket Cap	BS4168	DIN912	ISO4762
Hex Socket Button	BS4168	N/A	ISO7380
Hex Socket Countersunk	BS4168	DIN7991	ISO10642
Hex Socket Setscrew Plain Cup point	BS EN ISO4029	DIN916	ISO4029
Hex Socket Setscrew Flat point	BS EN ISO4026	DIN913	ISO4026
Hex Socket Setscrew Dog point	BS EN ISO4028	DIN915	ISO4028
Hex Socket Setscrew Cone point	BS EN ISO4027	DIN914	ISO4027
Pan recess machine screw	BS4183	DIN7985	ISO7045
Pan slotted machine screw	BS4183	DIN85	ISO1580
Countersunk recess machine screw	BS4183	DIN965	ISO7046
Countersunk slotted machine screw	BS4183	DIN963	ISO2009

Cheese Slotted machine screw	BS4183	DIN84	ISO1207
Raised Csk Recess machine screw	BS4183	DIN966	ISO7047
Raised Csk Slotted machine screw	BS4183	DIN964	ISO2010
Toothed lock washer – internal	N/A	DIN6797J	N/A
Toothed lock washer – external	N/A	DIN6797A	N/A
Square sect. single coil spring washer	BS4464A	DIN7980	N/A
Rectangular sect. single coil spring washer	BS4464B	DIN127	N/A

Plating and Finishes

Finish	Color	Anti-Corrosion Properties	Used With	Characteristics And Uses
Black Oxide	Black	Good-Interior Only	Most metals	Decorative finish. Used on interior applications.
Black Zinc	Black	Excellent	All metals	Rich and lustrous. With or without lacquer.
Cadmium	Bright Silver-gray Dull or burnished	Very Good	Most metals	Non-porous metallic plating. Rich appearance, good resistance to corrosion, low cost, good electrical conductivity. Bright silver-gray or dull gray electroplated finish.
Chromium (Chrome)	Bright Blue-white	Excellent	All metals	Used wherever a beautiful finish is desired. Bright blue-white appearance. Electroplated.
Dichromate Dip	Rainbow	Excellent	All metals	A yellow, brown, green or iridescent colored catalytic process gently increases rust resistance. Add to Zinc plating.
E-Coat	Black	Excellent-168 Hour Salt Spray	All metals	Added protection containing corrosion inhibitors. Excellent for exterior applications.

Iridite	Green, Blue, Olive Drab, Red, Bronze, Black	Excellent	All metals	A coloring dip which also adds rust resistance. Usually used with Zinc or Cadmium.
JS-500	Chrome-like luster	Excellent-500 Hour Salt Spray	All metals	Outstanding corrosion resistant finish that provides excellent protection without adversely affecting dimensions.
Nickel	Silver	Very good	All metals	A hard stable, dull white or bright burnished finish. Used on automotive and hardware.
Parkerized	Black	Excellent	Ferrous metals	Added protection when oiled with a non-drying petroleum based corrosion inhibitors. Good lubricity.
Phosphating	Dull, gray, black, or blue	Excellent	Ferrous metals	A chemical process of rust-proofing steel.
Passivating	-	Excellent	Stainless steels	For stainless steels. A nitric acid dip to remove foreign matter and brighten finish.
Zinc Electrogalvanized	Gray	Very good	All metals	A commonly used finish with good rust resistance, at a low cost.

DIN / ISO / EN Crossover Chart

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
All-metal prevailing torque type hexagon nuts	980	7042	27042		7042	1998-02	Prevailing torque type (all-metal hexagon nuts), style 2 - Property classes 5, 8, 10 and 12	Height of nut changed; width across flat according to ISO 272 included
All-metal prevailing torque type hexagon nuts	980	10513	30513		10513	1998-02	Prevailing torque type all-metal hexagon nuts, style 2, with metric fine pitch thread -	Height of nut changed; width across flat according to ISO 272 included

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
							Property classes 8, 10 and 12	
Clevis pins with head	1434		22341		2341	1992-10	Clevis pins with head	Only one head dimension. Some other nominal lengths defined
Clevis pins with head	1435		22341		2341	1992-10	Clevis pins with head	Only one head dimension. Some other nominal lengths defined
Clevis pins with head	1436		22341		2341	1992-10	Clevis pins with head	Only one head dimension. Some other nominal lengths defined
Clevis pins with head	1444		22341		2341	1992-10	Clevis pins with head	Some other nominal lengths defined
Clevis pins without head	1433		22340		2340	1992-10	Clevis pins without head	Some other nominal lengths defined
Clevis pins without head	1443		22340		2340	1992-10	Clevis pins without head	
Countersunk (flat) head tapping screws with cross recess	7982			7050	7050	1990-08	Cross recessed countersunk (flat) head tapping screws (common head style)	Head dimensions and countersunk angles changed
Cross recessed countersunk (flat) head screws (Countersunk heads according to ISO)	965	7046-1		7046	7046-1	1994-10	Countersunk flat head screws (common head style) with type H or type Z cross recess - Property class 4.8	Nominal size changed; head dimension changed; thread length changed; strength 8.8 included (see Part 2); penetration depth of cross slots changed
Cross recessed countersunk	966	7047		7047	7047	1994-10	Countersunk raised head screws	Nominal size changed; head dimension changed; thread length

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
(oval) head screws (Countersunk heads according to ISO)							(common head style) with type H or type Z cross recess - Product grade A	changed; strength 8.8 omitted; penetration depth of cross slots changed
Cross recessed countersunk head drilling screws with tapping screw thread	7504	15482			15482	2000-02	Cross recessed countersunk head drilling screws with tapping screw thread	Standard divided into five single standards (EN ISO 10666, 15480, 15481, 15482, 15483); thread ST 3.9 omitted; hexagon head with collar and slot (Form L) omitted
Cross recessed pan head drilling screws with tapping screw thread	7504	15481			15481	2000-02	Cross recessed pan head drilling screws with tapping screw thread	Standard divided into five single standards (EN ISO 10666, 15480, 15481, 15482, 15483); thread ST 3.9 omitted; hexagon head with collar and slot (Form L) omitted
Cross recessed pan head tapping screws	7981			7049	7049	1990-08	Cross recessed pan head tapping screws	Marginal change of head dimensions. Caution with automatic feed and connection systems
Cross recessed raised countersunk head drilling screws with tapping screw thread	7504	15483			15483	2000-02	Cross recessed raised countersunk head drilling screws with tapping screw thread	Standard divided into five single standards (EN ISO 10666, 15480, 15481, 15482, 15483); thread ST 3.9 omitted; hexagon head with collar and slot (Form L) omitted
Drilling screws with tapping screw thread - Mechanical and functional properties	7504	10666			10666	2000-02	Drilling screws with tapping screw thread - Mechanical and functional properties	Standard divided into five single standards (EN ISO 10666, 15480, 15481, 15482, 15483); thread ST 3.9 omitted; hexagon head with collar and slot (Form L) omitted

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
Grooved pins - Full-length parallel grooved, with chamfer	1473	8740	28740		8740	1998-03	Grooved pins - Full-length parallel grooved, with chamfer	Nominal lengths redefined. Shear rate increased.
Grooved pins - Fulllength parallel grooved, with pilot	1470	8739	28739		8739	1998-03	Grooved pins - Full-length parallel grooved, with pilot	Nominal lengths redefined. Shear rate increased.
Grooved pins - Fulllength taper grooved	1471	8744	28744		8744	1998-03	Grooved pins - Full-length taper grooved	Nominal lengths redefined. Shear rate increased.
Grooved pins - Half-length reverse-taper grooved	1474	8741	28741		8741	1998-03	Grooved pins - Half-length reverse-taper grooved	Nominal lengths redefined. Shear rate increased.
Grooved pins - Half-length taper grooved	1472	8745	28745		8745	1998-03	Grooved pins - Half-length taper grooved	Nominal lengths redefined. Shear rate increased.
Grooved pins - One-third-length centre grooved	1475	8742	28742		8742	1998-03	Grooved pins - One-third-length centre grooved	Nominal lengths redefined. Shear rate increased.
Grooved pins with countersunk head	1477	8747	28747		8747	1998-03	Grooved pins with countersunk head	Chamfer redefined
Grooved pins with round head	1476	8746	28746		8746	1998-03	Grooved pins with round head	Chamfer redefined
Hexagon Bolts without Hexagon Nut - with Hexagon Nut, Type g	601	4016	24016	4016	4016	2001-03	Hexagon head bolts - Product grade C	Nominal size extended; width across flats according to DIN ISO 272 included
Hexagon bolts, Metric	960	8765	28765	8765	8765	2001-03	Hexagon thin nuts	Nominal size extended; width across flats

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
fine thread, Types m and mg							(chamfered) with metric fine pitch thread - Product grades A and B	according to DIN ISO 272 included
Hexagon flange bolts	6921		1665		8102	1998-11	Hexagon bolts with flange, heavy series	Dimensions partially changed; width across flats according to ISO 272; strength 12.9 omitted
Hexagon head bolts with shank; M 1,6 to M 39 screw threads, Product grades A and B	931-1	4014	24014	4014	4014	2001-03	Hexagon head bolts - Product grades A and B	Nominal size extended; width across flats according to DIN ISO 272 included
Hexagon head screws - Product grades A and B	933	4017	24017	4017	4017	2001-03	Hexagon head screws - Product grades A and B	Nominal size extended; width across flats according to DIN ISO 272 included
Hexagon nuts with flange	6923		1661		4161	1998-02	Hexagon nuts with flange	Fine thread omitted to be included in a separate standard later); width across flat M10 changed
Hexagon nuts; Metric Thread, Type g	555	4034	24034	4034	4034	2001-03	Hexagon nuts - Product grade C	Width across flats according to DIN ISO 272 included; nominal diameter reduced
Hexagon nuts; Metric screw threads; Product grades A and B	934	4032	24032	4032	4032	2001-03	Hexagon nuts, style 1 - Product grades A and B	Nominal diameter changed, height of the nut changed partially; nuts with fine thread specified in DIN EN ISO 8673; width across flats according to DIN ISO 272 included

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
Hexagon nuts; Metric screw threads; Product grades A and B	934	8673	28673		8673	2001-03	Hexagon nuts, style 1, with metric fine pitch thread - Product grades A and B	Nominal diameter changed, height of the nut changed partially; nuts with regular type screw thread specified in DIN EN ISO 4032; width across flats according to DIN ISO 272 included
Hexagon screws, Thread Approximately to Head, Metric Thread, Type g	558	4018	24018	4018	4018	2001-03	Hexagon head screws - Product grade C	Nominal size extended; width across flats according to DIN ISO 272 included
Hexagon socket countersunk head screws	7991	10642			10462	2004-06	Hexagon socket countersunk head screws	
Hexagon socket head cap screws	912	4762			4762	2004-06	Hexagon socket head cap screws	Nominal size range changed; fine thread deleted (ISO 21269)
Hexagon socket set screws with cone point	914	4027			4027	2004-05	Hexagon socket set screws with cone point	Nominal sizes M1.4, M1.8, M14, M18 and M22 omitted
Hexagon socket set screws with cup point	916	4029			4029	2004-05	Hexagon socket set screws with cup point	
Hexagon socket set screws with dog point	915	4028			4028	2004-05	Hexagon socket set screws with dog point	Nominal sizes M1.4, M1.8, M14, M18 and M22 omitted
Hexagon socket set screws with flat point	913	4026			4026	2004-05	Hexagon socket set screws with flat point	Nominal sizes M1.4, M1.8, M14, M18 and M22 omitted

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
Hexagon thin nuts with M 1,6 to M 10 threads	439-1	4036	24036	4036	4036	2001-02	Hexagon thin nuts (unchamfered) - Product grade B	Correlation of dimensions with DIN 439-1, except for the width across flat of the nut M10
Hexagon thin nuts with M 1,6 to M 52 and M 8x1 to M 52x3 threads	439-2	4035	24035		4035	2001-03	Hexagon thin nuts (unchamfered) - Product grades A and B	In tables 1 and 2 abbreviations changed and some specifications (thread dimensions) changed
Hexagon thin nuts with M 1,6 to M 52 and M 8x1 to M 52x3 threads	439-2	4035	24035	4035	4035	2001-03	Hexagon thin nuts (unchamfered) - Product grades A and B	Standard divided by regular type screw threads and fine threads; width across flats according to ISO 272 changed; nominal size range changed; fine thread see ISO 8675
Hexagon thin nuts with M 1,6 to M 52 and M 8x1 to M 52x3 threads	439-2	8675	28675		8675	2001-03	Hexagon thin nuts (unchamfered) with metric fine pitch thread - Product grades A and B	Standard divided by regular type screw threads and fine threads; width across flats according to ISO 272 changed; nominal size range changed; regular type screw thread see ISO 4035
Hexagon washers head drilling screws with tapping screw thread	7504	15480			15480	2000-02	Hexagon washers head drilling screws with tapping screw thread	Standard divided into five single standards (EN ISO 10666, 15480, 15481, 15482, 15483); thread ST 3,9 omitted; hexagon head with collar and slot (Form L) omitted
High-strength hexagon head bolts with large widths across flats for structural steel bolting	6914		14399-4		7412	2006-06	High-strength structural bolting assemblies for preloading - Part 4: System HV - Hexagon bolt	

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							and nut assemblies	
High-strength hexagon nuts with large widths across flats for structural steel bolting	6915		14399-4			2006-06	High-strength structural bolting assemblies for preloading - Part 4: System HV - Hexagon bolt and nut assemblies	
M 8x1 to M 100x4 hexagon head bolts with fine pitch thread	961	8676	28676	8676	8676	2001-03	Hexagon head screws with metric fine pitch thread - Product grades A and B	Nominal size extended; width across flats according to DIN ISO 272 included
Mushroom head square neck bolts	603				8677	1981-10		
Parallel pins of unhardened steel and austenitic stainless steel	7	2338	22338		2338	1998-02	Parallel pins of unhardened steel and austenitic stainless steel	Nominal length redefined (with round end) form A+C deleted
Parallel pins with internal thread	7979	8735	28735		8735	1998-03	Parallel pins with internal thread, of hardened and martensitic stainless steel	Dimensions partially changed
Parallel pins with internal thread, of unhardened and austenitic stainless steel	7979	8733	28733		8733	1998-03	Parallel pins with internal thread, of unhardened and austenitic stainless steel	Dimensions partially changed
Parallel pins,	6325	8734	28734		8734	1998-03	Parallel pins of	Some other nominal

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
Hardened; Tolerance Zone m6							hardened and martensitic stainless steel (Dowel pins)	lengths defined
Plain washers - Extra large series, product grade C	440	7094			7094	2000-12	Plain washers - Extra large series, product grade C	Nominal sizes changed, nominal size 24 size "a" redefined to the maximum, square-end hole Form R omitted; (standard DIN 440 still valid)
Plain washers for clevis pins; product grade A	1440		28738		8738	1992-10	Plain washers for clevis pins; product grade A	Nominal sizes changed
Prevailing torque type - All-metal hexagon nuts with flange	6927		1664		7044	1998-02	Prevailing torque type - All-metal hexagon nuts with flange	Width across flat M10 changed
Prevailing torque type all-metal hexagon nuts	6925	7042	27042		7042	1998-02	Prevailing torque type (all-metal hexagon nuts), style 2 - Property classes 5, 8, 10 and 12	Height of nut changed; width across flat according to ISO 272 included
Prevailing torque type all-metal hexagon nuts	6925	10513	30513		10513	1998-02	Prevailing torque type all-metal hexagon nuts, style 2, with metric fine pitch thread - Property classes 8, 10 and 12	Height of nut changed; width across flat according to ISO 272 included
Prevailing torque type hexagon nuts with flange (with non-	6926		1666		12125	1998-02	Prevailing torque type hexagon nuts with flange (with non-	Width across flat M10 changed

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metallic insert), with metric fine pitch thread							metallic insert), with metric fine pitch thread	
Prevailing torque type hexagon nuts with non-metallic insert	982	7040	27040		7040	1998-02	Prevailing torque type hexagon nuts (with non-metallic insert), style 1 - Property classes 5, 8 and 10	Height of nut changed; width across flat according to ISO 272 included
Prevailing torque type hexagon nuts with non-metallic insert	982	10512	30512		10512	1998-02	Prevailing torque type hexagon nuts (with non-metallic insert), style 1, with metric fine pitch thread - Property classes 6, 8 and 10	Height of nut changed; width across flat according to ISO 272 included
Prevailing torque type hexagon nuts with non-metallic insert	6924	7040	27040		7040	1998-02	Prevailing torque type hexagon nuts (with non-metallic insert), style 1 - Property classes 5, 8 and 10	Height of nut changed; width across flat according to ISO 272 included
Prevailing torque type hexagon nuts with non-metallic insert	6924	10512	30512		10512	1998-02	Prevailing torque type hexagon nuts (with non-metallic insert), style 1, with metric fine pitch thread - Property classes 6, 8	Height of nut changed; width across flat according to ISO 272 included

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							and 10	
Prevailing torque type hexagon thin nuts with non-metallic insert	985	10511			10511	1998-02	Prevailing torque type hexagon, thin nuts (with non-metallic insert)	Height of nut changed; width across flat according to ISO 272 included
Product grade A washers with a hardness from 300 HV, designed for use with hexagon head bolts and nuts	125-2	7089			7089	2000-11	Plain washers - Normal series, Product grade A	Without chamfer, up to nominal diameter 64
Product grade A washers with a hardness from 300 HV, designed for use with hexagon head bolts and nuts	125-2	7090			7090	1990-03	Plain washers, chamfered - Normal series, Product grade A	Without chamfer, up to nominal diameter 64
Product grade A washers with a hardness up to 250 HV, designed for use with cheese head screws	433-1	7092			7092	2000-11	Plain washers - Small series, Product grade A	Pyramid diamond hardness 140 HV cancelled; rating changed
Product grade A washers with a hardness up to 250 HV, designed for use with hexagon head bolts and nuts	125-1	7089			7089	2000-11	Plain washers - Normal series, Product grade A	Without chamfer, up to nominal diameter 64

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Product grade A washers with a hardness up to 250 HV, designed for use with hexagon head bolts and nuts	125-1	7090			7090	1990-03	Plain washers, chamfered - Normal series, Product grade A	Without chamfer, up to nominal diameter 64
Product grade A washers with a hardness up to 300 HV, designed for use with cheese head screws	433-2	7092			7092	2000-11	Plain washers - Small series, Product grade A	Nominal sizes changed
Product grade C washers, designed for use with hexagon head bolts and nuts	126	7091			7091	2000-11	Plain washers - Normal series, Product grade C	Nominal sizes changed
Raised countersunk (oval) head; tapping screws with cross recess	7983			7051	7051	1990-08	Cross recessed raised countersunk (oval) head tapping screws	Head dimensions and countersunk angles changed
Recessed raised cheese (fillister) head screws	7985	7045			7045	1994-10	Pan head screws with type H or type Z cross recess - product grade A	Nominal size changed; head dimension changed; thread length changed; penetration depth of cross slots changed
Slotted cheese head screws - Product grade A	84	1207			1207	1994-10	Slotted cheese head screws - Product grade A	Modifications of dimensions < 2,5; dimension of slots changed; partly nominal lengths deleted; strength 8.8 deleted

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Slotted countersunk (flat) head screws (Countersunk heads according to ISO)	963	2009		2009	2009	1994-10	Slotted countersunk flat head screws (common head style) - Product grade A	Nominal size changed; head dimension changed; thread length changed; strength 8.8 cancelled
Slotted headless screws with shank	427	2342			2342	2004-05	Slotted headless screws with shank	
Slotted pan head screws - Product grade A	85	1580			1580	1994-10	Slotted pan head screws - Product grade A	Thread included; dimensions of head and slot changed; strength 8.8 deleted
Slotted raised countersunk (oval) head screws (Countersunk heads according to ISO)	964	2010		2010	2010	1994-10	Slotted raised countersunk head screws (common head style) - Product grade A	Nominal size changed; head dimension changed; thread length changed; strength 8.8 cancelled
Slotted set screws with cone point	553		27434		7434	1992-10	Slotted set screws with cone point	No modifications of dimensions
Slotted set screws with cup point	7976			1479	1479	1990-08	Hexagon head tapping screws	No modifications of dimensions
Slotted set screws with flat point	551		24766		4766	1992-10	Slotted set screws with flat point	No modifications of dimensions
Slotted set screws with long dog point	94	1234			1234	1998-02	Split pins	No modifications of dimensions
Slotted set screws with long dog point	417		27435		7435	1992-10	Slotted set screws with long dog point	No modifications of dimensions

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
Spring-type straight pins - Coiled, heavy duty	7344	8748	28748	8748	8748	2007-06	Spring-type straight pins - Coiled, heavy duty	Range of nominal diameters and lengths extended. Shear range changed.
Spring-type straight pins - Coiled, standard duty	7343	8750	28750	8750	8750	2007-06	Spring-type straight pins - Coiled, standard duty	Range of nominal diameters and lengths extended. Shear range changed.
Spring-type straight pins - Slotted, heavy duty	1481	8752	28752		8752	1998-03	Spring-type straight pins - Slotted, heavy duty	Specification "non-jamming" included; chamfer redefined; partial change of dimensions
Spring-type straight pins, slotted, light duty	7346	13337			3337	2009-10	Spring-type straight pins - Slotted, light duty	Specification "non-jamming" included; chamfer redefined; partial change of dimensions
Thread rolling screws for ISO metric thread - Part 1: Technical specifications for case hardened and tempered screws	7500-1	7085				2009-06	Thread rolling screws for ISO-metric thread	Normative revision, values for case-hardening depth and hole size revised, torque values reduced
Unhardened taper pins	1		22339		2339	1992-10	Unhardened taper pins	Nominal length redefined (with round end)
Unhardened taper pins with external thread	7977		28737		8737	1992-10	Unhardened taper pins with external thread	Technical delivery conditions partially changed
Unhardened taper pins with internal thread	7978		28736		8736	1992-10	Unhardened taper pins with internal thread	Dimensions partially changed

Title DIN Standard	DIN	DIN EN ISO	DIN EN	DIN ISO	Comparable ISO Standard	Date of current standard / modified	Title of replacement standard	Comment
Washers for high tensile bolting in steel structures	6916		14399-6		7416	2006-06	High-strength structural bolting assemblies for preloading - Part 6: Plain chamfered washers	
Washers; outside diameter ~ 3 x bolt diameter	9021	7093-1			7093-1	2000-11	Plain washers - Large series - Part 1: Product grade A	Dimensions partially changed
Washers; outside diameter approx. 3 x bolt diameter	9021	7093-2			7093-2	2000-11	Plain washers - Large series - Part 2: Product grade C	Dimensions partially changed

HARDNESS CONVERSION TABLE

Approximate Equivalents of Rockwell B Hardness Numbers for Soft Metals

VICKERS DPH	ROCKWELL									BRINELL BHN	
HV/10	B	E	F	G	H	K	15-T	30-T	45-T	500kg	3000kg
254	100			83			93	82	72	201	240
248	99			81			93	82	71	195	234
243	98			79			93	81	70	189	228
238	97			78			92	81	69	184	222

234	97		77		92	80	69	181	218
230	96		76		92	80	68	179	214
226	96		75		92	80	68	177	210
222	95		74		92	79	67	175	208
217	95		73		92	79	67	171	205
213	94		73		91	79	66	169	203
208	93		71		91	78	66	167	200
204	92		70	100	91	78	65	163	195
200	92		69	100	91	77	64	162	193
196	91		68	100	90	77	64	160	190
192	90		66	99	90	76	63	157	185
188	89		64	98	90	76	62	154	180
184	88		63	97	90	75	61	151	176
180	87		61	97	89	75	60	148	172
176	86		59	96	89	74	59	145	169
172	85		58	95	89	74	58	142	165
168	84		56	94	88	73	57	140	162
164	83		54	93	88	72	56	137	159
160	82		53	92	88	72	55	135	156
156	81		51	91	87	71	54	133	153
152	80		49	91	87	70	53	130	150
148	79		48	90	87	70	52	128	147
144	78		46	89	86	69	51	126	144
141	77		44	88	86	68	50	124	141

139	76			43		87	86	68	49	122	139
137	75		100	41		86	85	67	49	120	137
135	74		99	39		85	85	66	48	118	135
132	73		99	38		85	85	66	47	116	132
130	72		98	36		84	84	65	46	114	130
127	71	100	98	35		83	84	64	45	112	127
125	70	100	97	33		82	84	64	44	110	125
123	69	99	96	31		81	83	63	43	109	123
120	68	98	96	30		80	83	62	42	107	121
118	67	98	95	28		79	83	62	41	106	119
116	66	97	95	27		78	82	61	40	104	117
115	65	96	94	25		78	82	60	39	102	116
114	64	96	94	24		77	82	60	38	101	114
113	63	95	93	22		76	81	59	37	99	112
112	62	95	92	21		75	81	58	36	98	110
111	61	94	92	19		74	81	57	35	96	108
110	60	93	91	18		73	81	57	34	95	107
108	59	93	91	16		72	80	56	32	94	106
107	58	92	90	15		71	80	55	31	92	104
106	57	91	90	13		71	80	55	30	91	102
105	56	91	89	12		70	79	54	29	90	101
104	55	90	88	10		69	79	53	28	89	99
103	54	90	88	9		68	79	53	27	87	
102	53	89	87	7		67	78	52	26	86	

101	52	88	87	6		66	78	51	25	85
100	51	88	86	4		65	78	51	24	84
100	50	87	86	3		65	77	50	23	83
99	49	87	85			64	77	49	22	82
98	48	86	85			63	77	49	21	81
97	47	85	84			62	76	48	20	80
96	46	85	83			61	76	47	19	79
95	45	84	83			60	76	46	18	79
95	44	84	82			59	75	46	17	78
94	43	83	82			58	75	45	16	77
93	42	82	81			58	75	44	15	76
92	41	82	81			57	74	44	14	75
91	40	81	80			56	74	43	13	74
90	39	80	79			55	74	42	11	74
90	38	80	79			54	73	42	10	73
89	37	79	78			53	73	41	9	72
88	36	79	78		100	52	73	40	8	71
88	35	78	77		100	52	72	40	7	71
87	34	77	77		99	51	72	39	6	70
87	33	77	76		99	50	72	38	5	69
86	32	76	75		99	49	71	38	4	68
86	31	76	75		98	48	71	37	3	68
85	30	75	74		98	47	71	36	2	67
85	29	74	74		98	46	70	36	1	66

84	28	74	73	97	45	70	35	66
84	27	73	73	97	45	70	34	65
83	26	73	72	97	44	69	33	65
83	25	72	71	96	42	69	33	64
82	24	71	71	96	42	69	32	64
82	23	71	70	96	41	68	31	63
81	22	70	70	95	40	68	31	63
81	21	70	69	95	39	68	30	62
80	20	69	69	95	38	68	29	62
80	19	68	68	94	38	67	29	61
79	18	68	67	94	37	67	28	61
79	17	67	67	93	36	67	27	60
78	16	67	66	93	35	66	26	60
78	15	66	66	93	34	66	26	59
77	14	65	65	92	33	66	25	59
77	13	65	65	92	32	65	24	58
76	12	64	64	92	32	65	24	58
76	11	64	64	91	31	65	23	57
75	10	63	63	91	30	64	22	57
75	9	62	62	91	29	64	22	56
74	8	62	62	90	28	64	21	56
74	7	61	61	90	27	63	20	56
73	6	61	61	90	26	63	20	55

73	5	60	60		89	26	63	19		55	
72	4	59	60		89	25	62	18		55	
72	3	59	59		88	24	62	17		54	
71	2	58	58		88	23	62	17		54	
71	1	58	58		88	22	61	16		53	
70	0	57	57		87	21	61	15		53	
HV/10	B	E	F	G	H	K	15-T	30-T	45-	500kg	3000kg
VICKERS DPH	ROCKWELL									BRINELL BHN	

Chemical Resistance Table For Screws in A2 and A4

Classification of corrosion resistance:

- 0 = resistant (but see L)
- 1 = slight attack, usable in certain areas
- 2 = hardly any resistance at all, practically unusable
- 3 = no resistance
- L = danger of pitting even in resistant class

Corrosive Agent	Concentration	Temp °C	Material	
			A2	A4

Effluent water (with traces of sulphuric acid)	-	up to 40°	0	0
Acetone CH_3COCH_3	all concentrations	20°	0	0
Acetyl chloride CH_3COCl	-	boiling	1	0
Aluminium Al	molten 750°		3	3
Aluminium Chloride L $\text{Al Cl}_3, 6\text{H}_2\text{O}$	5%	50°	2	1
Formic Acid $\text{H}\cdot\text{COOH}$	10% 15% 100%	20° 20° 20°	0 0 0	0 0 0
Ammonia NH_3	-	-	0	0
Ammonium chloride (sal ammoniac) L NH_4OH	10% 25% 50% cold and hot saturated	boiling boiling boiling 20° boiling	0 1 2 0 2	0 1 1 0 1
Ammonium hydroxide NH_4OH	all	20° boiling	0	0
Ammonium perchlorate L NH_4ClO_4	10%	20° boiling	0 0	0 0
Aniline $\text{C}_6\text{H}_7\text{NH}_2$		20°	0	0
Malic acid $(\text{COOH})_2\text{CH}_2\text{CH OH}$	up to 50%	20°	0	0
Cider	-	20°	0	0
Ethyl alcohol (ethanol) $\text{C}_2\text{H}_5\text{OH}$	all concentrations	20°	0	0
Ethyl ether $(\text{C}_2\text{H}_5)_2\cdot\text{O}$	-	boiling	0	0
Atmosphere	-	-	0	0
Petrol	all concentrations	20°	0	0

Benzoic acid $\text{C}_6\text{H}_5\text{COOH}$	all concentrations	20°	0	0
Beer	-	20°	0	0
Blood	-	-	0	0
Spirits	-	20°	0	0
Bromine Br L	-	20° boiling	3 3	3 3
Buttermilk	-	20°	0	0
Butyric acid $\text{C}_3\text{H}_7\text{COOH}$	100%	20°	0	0
Chlorine Cl Gas in dry state Gas in moist state L	- - -	20° 20° 100°	0 3 3	0 3 3
Chloride of lime L Ca (IO)_2 , CaO , $2 \text{H}_2\text{O}$ Bleaching solution	dry moist 2.5g Cl/l	20° 20° 20°	0 1 1	0 1 0
Chloroform CHCl_3	water free	20°	0	0
Chlorine water L =cold water saturated with water	-	20°	1	1
Hydrogen chloride gas L HCl	- - - -	20° 50° 100° 400°	1 1 2 3	1 1 1 3
Chromic oxide CrO_3	10% pure 50% pure	20° 20°	0 1	0 1
Ferrogalllic ink L	-	20°	0	0
Iron phosphate solution, bonder process	-	98°	0	0
Mineral oil	-	20°	0	0
Vinegar = spirit vinegar	-	20°	0	0
Acetic acid	10%	20°	0	0

CH ₃ COOH	50%	20°	0	0
Glacial acetic acid boiling	100%	20° boiling	0 1	0 1
Acetic acid + hydrogen peroxide CH ₃ COOH + H ₂ O ₂	10 u. 50%	20° 50° 90°	0 0 0	0 0 0
Dyer's bath alkaline or neutral organically acid slightly sulphuric acid or organically acid + sulphuric acid (H ₂ SO ₄ below 1%)	- - -	20° boiling boiling 20° boiling	0 0 0 0 1	0 0 0 0 0
Oleic acid C ₁₇ H ₃₃ COOH	30 bar technical	150°	0	0
Oleic acid + traces H ₂ SO ₄	-	hot	2	1
Meat	-	-	0	0
Hydrofluoric acid = hydrogen fluoride H ₂ F ₂	40%	20°	3	3
Fruit juices and fruit acids	-	20°	0	0
Vegetables	-	boiling	0	0
Tannic acid = tannin	5%	20°	0	0
Glycerin C ₃ H ₅ (OH) ₃	conc.	20° boiling	0 0	0 0
Pit water	acid	20°	0	0
Urine L	-	20°	0	0
Iodine I L	dry moist	20° 20°	0 1	0 0
Coffee	-	20° boiling	0 0	0 0
Potassium aluminium sulphate = alum KAL(SO ₄) ₂ , 12H ₂ O)	10%	20°	0	0
Potassium chloride L K Cl	hot saturated	20° boiling	0 0	0 0

Potassium ferricyanide = red prussiate of potash $K_3(Fe[CN]_6)$	-	0	0	0
Potassium ferrocyanide = yellow prussiate or potash $K_4[Fe(CN)_6]$, 3 H ₂ O	-	20° boiling	0 0	0 0
Potassium hydroxide = caustic potash solution	20%	20°	0	0
Caustic potash KOH	50%	20°	0	0
Potassium permanganate K Mn O ₄	all concentrations	20° boiling	0 0	0 0
Calcium chloride L CaCl ₂ , 6H ₂ O	cold saturated	20°	0	0
Calcium hydroxide Ca(OH) ₂ = milk of lime	-	20°	0	0
Cheese	-	20%	0	0
Carbon dioxide = carbonic acid CO ₂	dry moist	hot hot	0 0	0 0
Carbon tetrachloride C CL ₄	water free	20°	0	0
Aqua regia L H CL + HNO ₃	-	20°	3	3
Cupric sulphate CuSO ₄ , 5H ₂ O = copper vitriol + 3% H ₂ SO ₄	all concs.	20° boiling 20° boiling	0 0 0 0	0 0 0 0
Glue (including acid)	-	boiling	0	0
Linseed oil + 3% H ₂ SO ₄	-	20° 200°	0 0	0 0
Magnesium sulphate MgSO ₄ , 7H ₂ O = Epsom salts	concentrated	20°	0	0
Methyl alcohol CH ₃ OH	all concentrations	20°	0	0
Milk	fresh sour	up to 70° c up to 70° C	0 0	0 0
Lactic acid	1.5%	20°	0	0

CH ₃ CHOH COOH	80%	20°	0	0
Mixed acids (nitrating acids)	50% H ₂ SO ₄ + 50% HNO ₃	50 °	0	0
	75% H ₂ SO ₄ + 25% HNO ₃	50 °	1	0
	20% H ₂ SO ₄ + 15% HNO ₃	50 °	0	0
	70% H ₂ SO ₄ + 10% HNO ₃	50°	0	0
	30% H ₂ SO ₄ + 5% HNO ₃	50 °	0	0
Monochloracetic acid L CH ₂ Cl COO H	50%	20°	1	1
Sodium chloride L NaCl = cooking salt	cold saturated	20°	0	0
	hot	100°	1	0
	saturated	100°	1	1
Sodium chloride L Na Cl O ₂ Sodium hydroxide = caustic soda solution = caustic soda NaOH	5%	20°	2	2
		boiling	3	2
	25%	20°	0	0
	50%	boiling	2	2
Sodium hypochlorite L NaClO =bleaching solution	5%	20°	1	1
		boiling	1	1
Sodium carbonate Na ₂ CO ₃ , 10 H ₂ O	10% cold saturated	boiling	0	0
Sodium sulphate Na ₂ SO ₄ , 10 H ₂ O	cold saturated	20°	0	0
Novacaine	-	20°	0	0
Fruit pulp containing SO ₂	-	-	0	0
Oil (lubricating oil)	-	20°	0	0
Oil (vegetable)	-	20°	0	0
P ₃ washing agent	-	95°	0	0

Persil	-	20° and boiling	0	0
Petroleum	-	20°	0	0
Phosphoric acid H_3PO_4 chemically pure	1%	20 °	0	0
	10%	20 °	0	0
	45%	20 °	0	0
	60%	20 °	0	0
Photographic developer (Agfa-glyzin developer)	-	20 °	0	0
Photographic fixing bath L	-	20 °	0	0
Pickling brine L	-	20 °	0	0
Nitric acid HNO_3	7%	20 °	0	0
	10%	20 °	0	0
	25%	20 °	0	0
	37%	20 °	0	0
	50%	20 °	0	0
Hydrochloric acid L HCl	0.5%	20 ° boiling	1 3	1 3
Sauerkraut brine L	-	-	2	1
Lard	-	20 °	0	0
Soft Soap	-	20 °	0	0
Sulphur, dry	fused	130°	0	0
Carbon disulphide C S_2	-	20°	0	0
Sulphuric acid H_2SO_4 fuming (11% free SO_3) fuming	1%	20° boiling	1 1	0 1
	2.5%	20° boiling	1 2	0 2
	5%	20° boiling	1 3	0 2
	7.5%	20 ° boiling	1 2	0 2
	10%	20 °	2	1
	20%	20 °	1	1
	80%	20 °	1	1
		70°	3	2
	98%	20°	0	0
	=concentrated	70°	2	2
	-			
		20°	0	0

(60% free SO ₃)	-	100° 20° 80°	1 0 0	0 0 0
Hydrogen sulphide dry H ₂ S	<4	20°	0	0
Sulphurous acid H ₂ S O ₂	saturated 4 bar 5-8 bar 10-20 bar	20° 135° 160° 180-200°	0 1 2 2	0 0 1 1
Schweinfurt green 3 Cu (As O ₂) ₃ , Cu (CH ₃ COO) ₂	-	20°	0	0
Sea Water L	-	20°	0	0
Soap	-	20°	0	0
Mustard L	-	20°	0	0
Spinning bath	up to 10% H ₂ SO ₄	70°	2	1
Tar (pure)	-	20° and hot	0	0
Turpentine	-	20° and hot	0	0
Vaseline	-	20° and hot	0	0
Water Tap water Pit water = acidic water	-	20° 20°	0 0	0 0
Water vapour Water vapour with SO ₂ Water vapour with CO ₂	- - -	400° - -	0 1 0	0 0 0
Wine (white and red)	-	20° and hot	0 0	0 0
Tartaric acid COOH (CHOH) ₂ COOH	10% 50%	20° 20°	0 0	0 0
Lemon juice Citric acid HO C(CH ₂ COOH) ₂ ,	- 1% 10% 25%	20° 20° 20° 20°	0 0 0 0	0 0 0 0

COOH, H ₂)	50%	20°	0	0
Sugar solution	-	20° boiling	0 0	0 0