

CONNECT

VOLUME I

Standardization



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INTRODUCTION

Every five years, standards are checked for their compliance with state-of-the-art technical requirements. Also from a legal point of view, this is an important measure. Lack of knowledge of or non-compliance with valid standards and cross-reference included often result in complaints or even damage claims.

In past years, numerous DIN standards were replaced by internationally applicable DIN EN ISO standards. Knowing which standards are still in effect and which ones were replaced is an imperative for export-oriented companies. In case of repair, the customer or mechanic must be able to procure fasteners that comply technical requirements. In warranty cases, the manufacturer must prove compliance with all rules applicable at start of operation.

In practice, numerous users continue to use products complying with withdrawn standards that have been replaced by successor standards or even products complying with no longer valid standards that have not been replaced. For the distribution of fasteners this means increased efforts in storage and disposition of items. In addition, some fasteners are produced by only a small number of manufacturers and in low volumes according to applicable standards due to low demand. This situation can have a negative impact on procurement prices.

Products compliant with withdrawn standards should only be used to meet the demand for spare parts. In some cases, in which standards have been withdrawn and not replaced, e.g. because proper function was not guaranteed or standards were revised due to safety reasons, it is absolutely necessary to comply with the state of the art.

This brochure shall be a tool for changing from withdrawn DIN standards to valid EN and/or ISO standards. It includes information on changes in the product standards relevant for usage.

1. Product names and product changes

Many DIN standards were the basis for ISO standards. Adding minor adjustments, existing DIN standards were often changed into applicable ISO standards.

If an ISO standard is adopted as a national standard without any changes, the national standard will have the same name as the respective ISO standard, only the abbreviations DIN EN will be added. Thus, an ISO nut will be named ISO 4032-M12-8 worldwide. Accordingly, the German version of the standard will be named DIN EN ISO 4032-M12-8.

Changes in name in the ERP system, drawings and parts lists often require a high amount of work. However, these adjustments are inevitable if a company wants to remain successful. In case of damage claims, the costs of non-compliance with the state of the art (product safety act) can easily be many times higher than the money supposedly saved.

2. Standardization

In the past, standardization work within Germany was carried out at a national level by Deutsches Institut für Normung e.V. (DIN). In addition, at a regional level there are also the European standards (EN Standards), and at an international level the ISO standards, issued by the International Organization for Standardization.

3. DIN

National standards (DIN) will be/have been replaced by international/European standards in most cases. DIN standards will continue to exist only for products for which there are no ISO or EN standards.

4. ISO

According to task and objective of the ISO founded in 1946, international standards (ISO) are intended to facilitate the worldwide standardization of technical regulations, and therefore simplify the exchange of goods and break down trade barriers.

5. EN

European standards (EN) have the purpose of harmonizing technical regulations and laws in the Common European Market (EU/EEC) realized since 1 January 1995. Basically, existing ISO standards are to be adopted as far as possible unchanged as EN standards. The difference between ISO and EN standards lies in the fact that EN standards must be adopted and introduced immediately and unchanged as national standards after being passed by the European Commission—and the corresponding national standards are to be withdrawn at the same time.

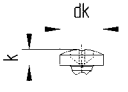
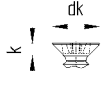
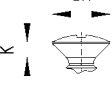
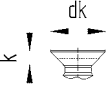
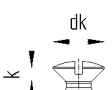

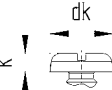
6. Metric slotted or cross-recessed head small screws and bolts

When introducing ISO standards for small screws and bolts, head profile and head diameter of screws and bolts were partially changed. For the majority of applications, these changes should not constitute any problem. Only when there is very little mounting space, a closer look must be taken at the changes. Table 1 includes general changes and successor ISO standards. Table 2 includes head dimensions of DIN standards and the respective successor ISO standards.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Slotted cheese head screw	84	yes	1207	-	X	-	<ul style="list-style-type: none"> • Threads <M1.8 canceled • Head height and diameter partially changed • Thread lengths changed • Slot dimensions changed • Nominal lengths partially canceled • Strength 8.8 canceled
Slotted pan head screw	85	yes	1580	X	-	-	<ul style="list-style-type: none"> • M1.2, M2, M2.5 threads added • Head height and diameter partially changed • 8.8 strength canceled
Slotted countersunk head screw	963	yes	2009	-	X	-	<ul style="list-style-type: none"> • Head height and diameter partially changed • Thread lengths changed • Strength 8.8 canceled • Threads <M1.6 and >M10 canceled
Slotted raised countersunk head screw	964	yes	2010	-	X	-	<ul style="list-style-type: none"> • Head height and diameter partially changed • Thread lengths changed • Strength 8.8 canceled • Threads <M1.6 canceled
Cross-recessed countersunk head screw	965	yes	7046 Part 1	-	X	-	<ul style="list-style-type: none"> • Head height and diameter partially changed • Thread lengths changed • Penetration depth of recessed heads changed
Cross-recessed countersunk head screw	965	yes	7046 Part 2	-	X	-	<ul style="list-style-type: none"> • Head height and diameter partially changed • Nominal diameter M 1.6 canceled • Strength classes 5.8 and A4-70 canceled • Thread lengths changed • Penetration depth of recessed heads changed
Cross-recessed raised countersunk head screw	966	yes	7047	-	X	-	<ul style="list-style-type: none"> • Head height and diameter partially changed • Thread lengths changed • Strengths 5.8 and 8.8 canceled • Penetration depth of recessed heads changed
Flat head screw (Pan head screw) with cross-recessed head	7985	yes	7045	X	-	-	<ul style="list-style-type: none"> • Head height and diameter partially changed • Thread lengths changed • Penetration depth of recessed heads changed

Table 1: Small screws and bolts

7. DIN/ISO comparison of dimensions

Thread		M1.6	M2	M2.5	M3	M3.5	M4	M5	M6	M8	M10	
$d_{k \max}$	ISO 7045	3.2	4	5	5.6	7	8	9.5	12	16	20	
	DIN 7985	3.2	4	5	6	7	8	10	12	16	20	
k_{\max}	ISO 7045	1.3	1.6	2.1	2.4	2.6	3.1	3.7	4.6	6	7.5	
	DIN 7985	1.3	1.6	2	2.4	2.7	3.1	3.8	4.6	6	7.5	
$d_{k \max}$	ISO 7046, Part 1 + 2*	3	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8	18.3	
	DIN 965	3	3.8	4.7	5.6	6.5	7.5	9.2	11	14.5	18	
k_{\max}	ISO 7046, Part 1 + 2*	1	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5	
	DIN 965	0.96	1.2	1.5	1.65	1.93	2.2	2.5	3	4	5	
$d_{k \max}$	ISO 7047	3	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8	18.3	
	DIN 966	3	3.8	4.7	5.6	6.5	7.5	9.2	11	14.5	18	
k_{\max}	ISO 7047	1	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5	
	DIN 966	0.96	1.2	1.5	1.65	1.93	2.2	2.5	3	4	5	
$d_{k \max}$	ISO 2009	3	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8	18.3	
	DIN 963	3	3.8	4.7	5.6	6.5	7.5	9.2	11	14.5	18	
k_{\max}	ISO 2009	1	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5	
	DIN 963	0.96	1.2	1.5	1.65	1.93	2.2	2.5	3	4	5	
$d_{k \max}$	ISO 2010	3	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8	18.3	
	DIN 964	3	3.8	4.7	5.6	6.5	7.5	9.2	11	14.5	18	
k_{\max}	ISO 2010	1	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5	
	DIN 964	0.96	1.2	1.5	1.65	1.93	2.2	2.5	3	4	5	
$d_{k \max}$	ISO 1207	3.0	3.8	4.5	5.5	6.0	7.0	8.5	10	13	16	
	DIN 84	3.0	3.8	4.5	5.5	6.0	7.0	8.5	10	13	16	
k_{\max}	ISO 1207	1.1	1.4	1.8	2.0	2.4	2.6	3.3	3.9	5.0	6.0	
	DIN 84	1.0	1.3	1.6	2.0	2.4	2.6	3.3	3.9	5.0	6.0	
$d_{k \max}$	ISO 1580	3.2	4	5	5.6	7	8	9.5	12	16	20	
	DIN 85	-	-	-	6	7	8	10	12	16	20	
k_{\max}	ISO 1580	1	1.3	1.5	1.8	2.1	2.4	3	3.6	4.8	6	
	DIN 85	-	-	-	1.8	2.1	2.4	3	3.6	4.8	6	
w_{\min}	ISO 1580	0.3	0.4	0.5	0.7	0.8	1	1.2	1.4	1.9	2.4	
	DIN 85	-	-	-	0.7	0.9	1	1.3	1.4	2.1	2.7	

* The dimensions of ISO 7046 Part 1 and Part 2 are identical, however, in Part 2 the nominal diameter of 1.6 was canceled.

Table 2: Dimensions of small screws and bolts

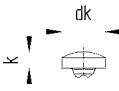
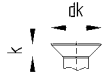
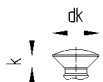
8. Metric hexagon or hexalobular socket small screws and bolts

German product standards such as DIN 6912 or DIN 7984 continue to apply. So far, successor ISO standards for these standards do not exist. However, DIN 7991 was replaced by ISO 10642. Please note that for these countersunk screws, the countersink is designed according to DIN 74 type F. Furthermore, screws with hexalobular socket (TX) were launched in past years. A DIN standard for these screws did not exist. Head design corresponds to the cross-recessed drive screw heads, which are identical in shape.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon socket head cap screws with centre, with low head	6912	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies Minimum breaking forces for stainless steel added Non-ferrous metals canceled
Hexagon socket head cap screws with low head	7984	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies Minimum breaking forces for stainless steel added Non-ferrous metals canceled
Hexagon socket button head screw	-	-	7380 Part 1	-	-	-	<ul style="list-style-type: none"> No previous DIN standard
Hexagon socket button head screws with collar	-	-	7380 Part 2	-	-	-	<ul style="list-style-type: none"> No previous DIN standard
Hexagon socket countersunk head screw	7991	yes	10642	-	X	-	<ul style="list-style-type: none"> Head height and diameter partially changed (see table 4) Nominal diameters M18, M22, M24 canceled Stainless steels canceled Strength classes 10.9 and 12.9 added
Hexalobular socket cheese head screws	-	-	14580	-	-	-	<ul style="list-style-type: none"> No previous DIN standard
Hexalobular socket countersunk head screw	-	-	14581	-	--	-	<ul style="list-style-type: none"> No previous DIN standard Head dimensions correspond with ISO 7046 (see table 4)
Hexalobular socket pan head screws	-	-	14583	-	-	-	<ul style="list-style-type: none"> No previous DIN standard Head dimensions correspond to ISO 7045 (see table 4)
Hexalobular socket raised countersunk head screws	-	-	14584	-	-	-	<ul style="list-style-type: none"> No previous DIN standard Head dimensions correspond with ISO 7045 (see table 4)

Table 3: Hexagon and hexalobular socket small screws and bolts

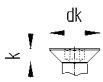
9. Comparison of dimensions of hexalobular socket small screws and bolts

Thread		M1.6	M2	M2.5	M3	M3.5	M4	M5	M6	M8	M10	
$d_{k\ max}$	ISO 7045	3.2	4	5	5.6	7	8	9.5	12	16	20	
	ISO 14583	-	4	5	5.6	7	8	9.5	12	16	20	
	ISO 14580	-	3.8	4.5	5.5	6	7	8.5	10	13	16	
$k_{\ max}$	ISO 7045	1.3	1.6	2.1	2.4	2.6	3.1	3.7	4.6	6	7.5	
	DIN 14583	-	1.6	2.1	2.4	2.6	3.1	3.7	4.6	6	7.5	
	ISO 14580	-	1.55	1.85	2.4	2.6	3.1	3.65	4.4	5.8	6.9	
$d_{k\ max}$	ISO 7046, Part 1 + 2*	3	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8	18.3	
	ISO 14581	-	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8	18.3	
$k_{\ max}$	ISO 7046, Part 1 + 2*	1	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5	
	DIN 14581	-	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5	
$d_{k\ max}$	ISO 7047	3	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8	18.3	
	ISO 14584	-	3.8	4.7	5.5	7.3	8.4	9.3	11.3	15.8	18.3	
$k_{\ max}$	ISO 7047	1	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5	
	ISO 14584	-	1.2	1.5	1.65	2.35	2.7	2.7	3.3	4.65	5	

* The dimensions of ISO 7046 Part 1 and Part 2 are identical, however, in Part 2 the nominal diameter of 1.6 was canceled.

Table 4: Comparison of dimensions of hexalobular socket small screws and bolts

10. DIN/ISO comparison of dimensions of hexagon socket countersunk head screws

Thread		M1.6	M2	M2.5	M3	M3.5	M4	M5	M6	M8		
$d_{k\ max}$	ISO 10642	-	-	-	6.72	-	8.96	11.2	13.44	17.92		
	DIN 7991	-	-	-	6	-	8	10	12	16		
$k_{\ max}$	ISO 10642	-	-	-	1.86	-	2.48	3.1	3.72	4.96		
	DIN 7991	-	-	-	1.7	-	2.3	2.8	3.3	4.4		
Thread		M10	M12	M14	M16	M18	M20	M22	M24			
$d_{k\ max}$	ISO 10642	22.4	26.88	30.8	33.6	-	40.32	-	-			
	DIN 7991	20	24	27	30	33	36	36	39			
$k_{\ max}$	ISO 10642	6.2	7.44	8.4	8.8	-	10.16	-	-			
	DIN 7991	5.5	6.5	7	7.5	8	8.5	13.1	14			

Important: Countersinks for these screw heads must be designed according to DIN 74 type F.

Table 5: Comparison of dimensions of hexagon socket countersunk head screws

11. Metric hexagon head screws and bolts

For the majority of these screws, DIN standards were withdrawn many years ago. Successor ISO standards to a large extent correspond with the withdrawn DIN standards. Therefore, general restrictions in usage do not exist. However, please consider that other dimensions of fastening tools must be used for M10, M12, M14 and M22 screw dimensions. Dimensions of widths across flats are included in table 7.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Full-thread hexagon screw, product class C	558	yes	4018	X	-	-	<ul style="list-style-type: none"> Nominal dimensions added Widths across flats changed for M10, M12, M14 and M22 Strength class 4.8 added
Hexagon head bolt with shank, product class C	601	yes	4016	X	-	-	<ul style="list-style-type: none"> Nominal dimensions added Widths across flats changed for M10, M12, M14 and M22 Strength class 4.8 added
Hexagon bolt with shank	931	yes	4014	X	-	-	<ul style="list-style-type: none"> Nominal dimensions added Widths across flats changed for M10, M12, M14 and M22
Full-thread hexagon bolt	933	yes	4017	X	-	-	<ul style="list-style-type: none"> Nominal dimensions added Widths across flats changed for M10, M12, M14 and M22
Hexagon bolt with shank Fine pitch thread	960	yes	8765	X	-	-	<ul style="list-style-type: none"> Nominal dimensions added Widths across flats changed for M10, M12, M14 and M22
Full-thread hexagon bolt Fine pitch thread	961	yes	8676	X	-	-	<ul style="list-style-type: none"> Nominal dimensions added Widths across flats changed for M10, M12, M14 and M22
Hexagon bolt with flange	6921	yes	EN 1665	-	X	-	<ul style="list-style-type: none"> Head height partly changed Flange diameter is changed Widths across flats changed for M10, M12, M14 and M22 Strength 12.9 canceled Fine pitch threads canceled
Bolts for steel constructions Hexagon head	7990	no	-	-	-	-	<ul style="list-style-type: none"> Only available as a set with hexagon nut compliant with ISO 4032

Table 6: Hexagon head screws and bolts

12. Widths across flats of DIN and ISO hexagon head screws and bolts

	Hexagon screws and bolts with metric thread		Hexagon screws and bolts with metric thread and flange	
	Widths across flats in mm For hexagon screws (Normal range according to ISO 272)		Widths across flats in mm For hexagon screws	
Nominal diameter	DIN 558 DIN 601 DIN 931 DIN 933 DIN 960 DIN 961	ISO 4018 ISO 4016 ISO 4014 ISO 4017 ISO 8765 ISO 8676	DIN 6921	EN 1665
M 1.6	3.2	3.2	-	-
M 2	4	4	-	-
M 2.5	5	5	-	-
M 3	5.5	5.5	-	-
M4	7	7	-	-
M 5	8	8	8	8
M 6	10	10	10	10
M 8	13	13	13	13
M 10	17	16	15	16
M 12	19	18	16	18
M 14	22	21	18	21
M 16	24	24	21	24
M 18	27	27	-	-
M 20	30	30	20	30
M 22	32	34	-	-
M 24	36	36	-	-
M 30	46	46	-	-
M 36	55	55	-	-
M 42	65	65	-	-
M 48	75	75	-	-
M 56	85	85	-	-

Table 7: Widths across flats of hexagon head screws and bolts

13. Metric cap screws and bolts

DIN 912 was replaced by ISO 4762. The successor ISO standard does not include several nominal diameters used in DIN standards. An additional standard was also issued for screws with metric fine pitch thread. In geometric terms, ISO 4762 corresponds with DIN 912, usage restrictions are not to be expected. In addition, a cap head screw with hexalobular socket (TX) was standardized. Compared to a hexagon socket drive a hexalobular socket drive provides better power transmission and less wear of the socket.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon socket head cap screws	912	yes	4762	X	-	-	<ul style="list-style-type: none"> Nominal dimensions changed Fine pitch threads transferred to ISO 12474
Hexagon socket head cap screws with metric fine pitch thread	912	yes	12474	X	-	-	<ul style="list-style-type: none"> Nominal dimensions changed Standard thread defined in ISO 4762
Hexalobular socket head cap screws	-	-	14579	-	-	-	<ul style="list-style-type: none"> No previous DIN standard Head design corresponds identical to ISO 4762

Table 8: Cap screws and bolts

14. Tapping screws

When changing from DIN standards to ISO standards for tapping screws, head heights and diameters were partially changed. For countersunk screws, the head angle changed from so far 80° to now 90°. When manufacturing countersinks, definitions of ISO 15065 must be considered.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Cross-recessed pan head tapping screws with collar	968	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies
Tapping screw and washer assemblies with plain washers	6901	yes	10510	-	x	-	<ul style="list-style-type: none"> Thread end type R added Different head shapes available <ol style="list-style-type: none"> ISO 1479 (Code S1) ISO 7049 (Code S2) ISO 1481 (Code S3) Different washer shapes available <ol style="list-style-type: none"> Normal (Code N) Large (Code L)
Hexagon washer head tapping screws	6928	yes	7053	-	x	-	<ul style="list-style-type: none"> Diameters ST2.2 and ST3.9 added
Slotted pan head tapping screws	7971	yes	1481	-	x	-	<ul style="list-style-type: none"> Head height and diameter partially changed
Slotted countersunk (flat) head tapping screws	7972	yes	1482	-	x	-	<ul style="list-style-type: none"> Head height and diameter partially changed Countersink angle 90° according to ISO (80° according to DIN)
Slotted raised countersunk (oval) head tapping screws	7973	yes	1483	-	-	-	<ul style="list-style-type: none"> Head height and diameter partially changed Countersink angle 90° according to ISO (80° according to DIN)
Hexagon head tapping screws	7976	yes	1479	-	X	-	<ul style="list-style-type: none"> Head height partially changed (see table 10)

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Cross-recessed pan head tapping screws	7981	yes	7049	-	X	-	• Head height and diameter partially changed (see table 10)
Cross-recessed countersunk (flat) head tapping screws	7982	yes	7050	-	X	-	• Head height and diameter partially changed (see table 10) • Countersink angle 90° according to ISO (80° according to DIN)
Cross-recessed raised countersunk (oval) head tapping screws	7983	yes	7051	-	X	-	• Head height and diameter partially changed (see table 10) • Countersink angle 90° according to ISO (80° according to DIN)
Hexalobular socket pan head tapping screws	-	-	14585	-	-	-	• No previous DIN standard • Head dimensions identical to ISO 7049
Hexalobular socket countersunk head tapping screws	-	-	14586	-	-	-	• No previous DIN standard • Head dimensions identical to ISO 7050
Hexalobular socket raised countersunk (oval) head tapping screws	-	-	14587	-	-	-	• No previous DIN standard • Head dimensions identical to ISO 7051
Hexalobular socket raised head self-tapping screws with collar	34819	no	-	-	-	-	• DIN applies

Table 9: Tapping screws

15. DIN/ISO comparison of dimensions of tapping screws


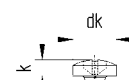





Thread	ST 2.2	ST 2.9	ST 3.5	ST 3.9	ST 4.2	ST 4.8	ST 5.5	ST 6.3	ST 8	ST 9.5		
k_{max}	ISO 1479	1.6	2.3	2.6	-	3	3.8	4.1	4.7	6	7.5	
	DIN 7976	1.42	1.62	2.42	2.42	2.92	3.12	4.15	4.95	5.95	-	
d_{kmax}	ISO 7049 ISO 14585	4	5.6	7	-	8	9.5	11	12	16	20	
	DIN 7981	4.2	5.6	6.9	7.5	8.2	9.5	10.8	12.5	-	-	
k_{max}	ISO 7049 ISO 14585	1.6	2.4	2.6	-	3.1	3.7	4	4.6	6	7.5	
	DIN 7981	1.8	2.2	2.6	2.8	3.05	3.55	3.95	4.55	-	-	
d_{kmax}	ISO 7050 ISO 14586	3.8	5.5	7.3	-	8.4	9.3	10.3	11.3	15.8	18.3	
	DIN 7982	4.3	5.5	6.8	7.5	8.1	9.5	10.8	12.4	-	-	
k_{max}	ISO 7050 ISO 14586	1.1	1.7	2.35	-	2.6	2.8	3	3.15	4.65	5.25	
	DIN 7982	1.3	1.7	2.1	2.3	2.5	3	3.4	3.8	-	-	
d_{kmax}	ISO 7051 ISO 14587	3.8	5.5	7.3	-	8.4	9.3	10.3	11.3	15.8	18.3	
	DIN 7983	4.3	5.5	6.8	7.5	8.1	9.5	10.8	12.4	-	-	
k_{max}	ISO 7051 ISO 14587	1.1	1.7	2.35	-	2.6	2.8	3	3.15	4.65	5.25	
	DIN 7983	1.3	1.7	2.1	2.3	2.5	3	3.4	3.8	-	-	

Table 10: Dimensions of tapping screws

16. Drilling screws

No significant changes resulted from changing from DIN 7504 to ISO standards. Head designs included in the last issue of DIN 7504 already corresponded with the ISO standards. Now, there is an individual product standard for each head design. Thus the code letters used in the DIN standard to differentiate between head type are no longer necessary. When manufacturing countersinks, definitions of ISO 15065 must be considered.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon washer head drilling screws with tapping screw thread	7504-K	yes	15480	x	-	-	<ul style="list-style-type: none"> ISO standard replace DIN 7504 head type K (head type according to DIN 6928) Head height and diameter partially changed
Cross recessed pan head drilling screws with tapping screw thread	7504-M	yes	15481	x	-	-	<ul style="list-style-type: none"> ISO standard replace DIN 7504 head type M (head type according to ISO 7049) Head height and diameter partially changed
Cross recessed countersunk head drilling screws with tapping screw thread	7504-O	yes	15482	x	-	-	<ul style="list-style-type: none"> ISO standard replace DIN 7504 head type O (head type according to ISO 7050) Head height and diameter partially changed
Cross recessed raised countersunk head drilling screws with tapping screw thread	7504-R	yes	15483	x	-	-	<ul style="list-style-type: none"> ISO standard replace DIN 7504 head type R (head type according to ISO 7051) Head height and diameter partially changed

Table 11: Drilling screws

17. Metric slotted set screws

DIN standards for slotted set screws have been replaced by ISO or EN standards. Application-relevant changes were made only to a minor extent.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Slotted set screws with long dog point	417	yes	EN 27435	X	-	-	<ul style="list-style-type: none"> No application-relevant changes
Slotted headless screws with shank	427	yes	2342	X	-	-	<ul style="list-style-type: none"> Nominal dimensions <M1.4 canceled Nominal dimensions over M10 canceled Strength classes 45 for steel added Strength classes for stainless steels introduced
Slotted set screw with cup point	438	yes	EN 27436	X	-	-	<ul style="list-style-type: none"> No application-relevant changes
Slotted set screws with flat point	551	yes	4766	X	-	-	<ul style="list-style-type: none"> Nominal dimensions M1, M1.4 canceled
Slotted set screw with cone point	553	yes	7434	X	-	-	<ul style="list-style-type: none"> Nominal dimensions M1, M1.4 canceled

Table 12: Slotted set screws

18. Metric hexagon and hexalobular socket set screws

DIN standards for set screws with hexagon socket were replaced by successor ISO standards. Application-related changes were made only to a minor extent.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon socket set screw Flat point	913	yes	4026	X	-	-	<ul style="list-style-type: none"> Nominal dimensions M1.4, M1,8, M14, M18, M22 canceled Strength classes for stainless steels introduced
Hexagon socket set screws with cone point	914	yes	4027	X	-	-	<ul style="list-style-type: none"> Nominal dimensions M1.4, M1,8, M14, M18, M22 canceled Strength classes for stainless steels introduced
Hexagon socket set screw with dog point	915	yes	4028	X	-	-	<ul style="list-style-type: none"> Nominal dimensions M1.4, M1,8, M14, M18, M22 canceled Strength classes for stainless steels introduced
Hexagon socket set screw with cup point	916	yes	4029	X	-	-	<ul style="list-style-type: none"> Nominal dimensions M1.4, M1,8, M14, M18, M22 canceled Strength classes for stainless steels introduced
Grub screw with thrust point	6332	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies
Hexalobular socket set screws	34827	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies

Table 13: Set screws with hexagon and hexalobular sockets

19. Metric studs

DIN standards for stud screws and bolts fully apply. Successor ISO standards have not been prepared yet.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Studs - Metal end \approx 2 d	835	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies
Studs - Metal end \approx 1 d	938	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies
Studs - Metal end \approx 1.25 d	939	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies
Studs - Metal end \approx 2.5 d	940	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies

Table 14: Studs

20. Plugs

DIN standards for sealing plugs fully apply. Successor ISO standards have not been prepared yet.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Internal drive pipe plugs - Conical thread	906	no	-	-	-	-	• DIN applies
Internal drive screw plugs with collar - Cylindrical thread	908	no	-	-	-	-	• DIN applies
Hexagon head pipe plugs - Conical thread	909	no	-	-	-	-	• DIN applies
Hexagon head screw plugs with collar - Cylindrical thread	910	no	-	-	-	-	• DIN applies
Hexagon head screw plugs - Light type - Cylindrical thread	7604	no	-	-	-	-	• DIN applies

Table 15: Plugs

21. Other screws and bolts

DIN standards for the following products fully apply. Successor ISO standards have not been prepared yet.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Fasteners - Wing screws - Rounded wings	316	no	-	-	-	-	• DIN applies
Eye bolt	444	no	-	-	-	-	• DIN applies
Lifting eye bolt	580	no	-	-	-	-	• DIN applies
Cup head square neck bolt	603	no	-	-	-	-	• DIN applies
Flat countersunk head nib bolt	604	no	-	-	-	-	• DIN applies
Flat countersunk head square neck bolt with long square	605	no	-	-	-	-	• DIN applies
Cup head nib bolt	607	no	-	-	-	-	• DIN applies
Flat countersunk head square neck bolt with short square	608	no	-	-	-	-	• DIN applies
Thread rolling screw	7500	no	-	-	-	-	• DIN applies

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Thread cutting screws - Hexagon screws and slotted head screws	7513	no	-	-	-	-	• DIN applies
Thread cutting screws - Cross recessed head screws	7516	no	-	-	-	-	• DIN applies

Table 16: Other screws and bolts

22. Wood screws

DIN standards for wood screws fully apply. Successor ISO standards have not been prepared yet.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Slotted countersunk (oval) head wood screws	95	no	-	-	-	-	• DIN applies
Slotted round head wood screws	96	no	-	-	-	-	• DIN applies
Slotted countersunk (flat) head wood screws	97	no	-	-	-	-	• DIN applies
Hexagon head wood screws	571	no	-	-	-	-	• DIN applies

Table 17: Wood screws

23. Hexagon nuts (type 1)

When changing from DIN to ISO standards, the nut height was partially increased and widths across flats were changed for the M10, M12, M14 and M22 dimensions. Test loads were also increased and must comply with ISO 898-2 standard threads and ISO 898-6 for fine pitch threads. Nuts according to DIN 934 must only resist the low test loads of DIN 267-4. Nuts not bearing loads according to ISO 898 Part 2 and/or Part 6 can be recognized by the vertical lines at each side of the code number of the strength class on the nut, e.g. I8I.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon regular nut	934	yes	4032	-	-	X	<ul style="list-style-type: none"> • Nominal diameter changed • Nut height partially changed • Widths across flats changed for M10, M12, M14, M22 • For regular threads only

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon nut with metric fine pitch thread	934	yes	8673	-	-	X	<ul style="list-style-type: none"> Nominal diameter changed Nut height partially changed Widths across flats changed for M10, M12, M14, M22 For fine pitch threads only
Hexagon nut, type 2	-	-	4033	-	-	-	<ul style="list-style-type: none"> No previous DIN standard Suitable for strength classes 8, 10, 12
Hexagon regular nuts - Product grade C	555	-	4034	-	-	X	<ul style="list-style-type: none"> Suitable for strength class 5

Table 18: Hexagon nutst

24. Thin hexagon nuts

DIN standards for flat profile nuts were withdrawn in favor of the successor ISO standards. DIN 439 Part 2 to a large extent corresponded to ISO 4035, except for widths across flats. Thus, exchangeability is given.

DIN 936 was withdrawn without replacement since there is only little demand. Nuts according to this standard do not have specified thread test loads. It is recommended to check usability of nuts according to ISO 4035.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon thin nuts unchamfered	439 part	yes	4036	-	X	-	<ul style="list-style-type: none"> Width across flat for M10 changed Recommendation: Use of nuts compliant with ISO 4035
Hexagon thin nuts chamfered	439 Part 2	yes	4035	X	-	-	<ul style="list-style-type: none"> Strength classes for stainless steels changed from 50 to 025 and from 70 to 035 Widths across flats changed for M10, M12, M14, M22 Nominal diameter M 1.8 canceled For regular threads only
Hexagon thin nuts chamfered	439	yes	8675	X	-	-	<ul style="list-style-type: none"> Strength classes for stainless steels changed from 50 to 025 and from 70 to 035 Widths across flats changed for M10, M12, M14, M22 Nominal diameter M 1.8 canceled For fine pitch threads only
Flat hexagon nut with fine pitch thread	936	yes	-	-	X	-	<ul style="list-style-type: none"> withdrawn without replacement Recommendation: Use of nuts compliant with ISO 4035 because they are largely identical in terms of geometry

Table 19: Thin hexagon nuts

25. DIN/ISO comparison of dimensions of hexagon nuts

Standard	DIN 934		ISO 4032		DIN 439		ISO 4035	
	Height (mm) m _{max.}	SW (mm)	Height (mm) m _{max.}	SW (mm)	Height (mm) m _{max.}	SW (mm)	Height (mm) m _{max.}	SW (mm)
M 1	0.8	2.5	-	-	-	-	-	-
M 1.2	1	3	-	-	-	-	-	-
M 1.4	1.2	3	-	-	-	-	-	-
M 1.6	1.3	3.2	1.3	3.2	1	3.2	1	3.2
M 2	1.6	4	1.6	4	1.2	4	1.2	4
M 2.5	2	5	2	5	1.6	5	1.6	5
M 3	2.4	5.5	2.4	5.5	1.8	5.5	1.8	5.5
M 3.5	2.8	6	2.8	6	2	6	2	6
M 4	3.2	7	3.2	7	2.2	7	2.2	7
M 5	4	8	4.7	8	2.7	8	2.7	8
M 6	5	10	5.2	10	3.2	10	3.2	10
M 8	6.5	13	6.8	13	4	13	4	13
M 10	8	17	8.4	16	5	17	5	16
M 12	10	19	10.8	18	6	19	6	18
M 14	11	22	12.8	21	7	22	7	21
M 16	13	24	14.8	24	8	24	8	24
M 18	15	27	15.8	27	9	27	9	27
M 20	16	30	18	30	10	30	10	30
M 22	18	32	19.4	34	11	32	11	34
M 24	19	36	21.5	36	12	36	12	36
M 27	22	41	23.8	41	13.5	41	13.5	41
M 30	24	46	25.6	46	15	46	15	46
M 33	26	50	28.7	50	16.5	50	16.5	50
M 36	29	55	31	55	18	55	18	55
M 39	31	60	33.4	60	19.5	60	19.5	60
M 42	34	65	34	65	21	65	21	65
M 45	36	70	36	70	22.5	70	22.5	70
M 48	38	75	38	75	24	75	24	75
M 52	42	80	42	80	26	80	26	80
M 56	45	85	45	85	-	-	28	85
M 60	48	90	48	90	-	-	30	90
M 64	51	95	51	95	-	-	32	95

Table 20: DIN/ISO comparison of dimensions of nuts, Part I

Nuts according to ISO 4032, ISO 4033, ISO 4034 and ISO 8673 and other nuts bearing full loads according to ISO 898 Part 2 or Part 6 (code strength classes without vertical lines on the part e.g. "8") must not be replaced by nuts according to DIN standards only bearing smaller loads according to DIN 267 Part 4 (e.g. I8I), e.g. DIN 934.

Standard	DIN 934		ISO 4033		ISO 4034		ISO 4036	
	Height (mm) m _{max.}	SW (mm)	Height (mm) m _{max.}	SW (mm)	Height (mm) m _{max.}	SW (mm)	Height (mm) m _{max.}	SW (mm)
M 1	0.8	2.5	-	-	-	-	-	-
M 1.2	1	3	-	-	-	-	-	-
M 1.4	1.2	3	-	-	-	-	-	-
M 1.6	1.3	3.2	-	-	-	-	1	3.2
M 2	1.6	4	-	-	-	-	1.2	4
M 2.5	2	5	-	-	-	-	1.6	5
M 3	2.4	5.5	-	-	-	-	1.8	5.5
M 3.5	2.8	6	-	-	-	-	2	6
M 4	3.2	7	-	-	-	-	2.2	7
M 5	4	8	5.1	8	5.6	8	2.7	8
M 6	5	10	5.7	10	6.4	10	3.2	10
M 8	6.5	13	7.5	13	7.9	13	4	13
M 10	8	17	9.3	16	9.5	16	5	16
M 12	10	19	12	18	12.2	18	-	-
M 14	11	22	14.1	21	13.9	21	-	-
M 16	13	24	16.4	24	15.9	24	-	-
M 18	15	27	-	-	16.9	27	-	-
M 20	16	30	20.3	30	19	30	-	-
M 22	18	32	-	-	20.2	34	-	-
M 24	19	36	23.9	36	22.3	36	-	-
M 27	22	41	-	-	24.7	41	-	-
M 30	24	46	28.6	46	26.4	46	-	-
M 33	26	50	-	-	29.5	50	-	-
M 36	29	55	34.7	55	31.9	55	-	-
M 39	31	60	-	-	34.3	60	-	-
M 42	34	65	-	-	34.9	65	-	-
M 45	36	70	-	-	36.9	70	-	-
M 48	38	75	-	-	38.9	75	-	-
M 52	42	80	-	-	42.9	80	-	-
M 56	45	85	-	-	45.9	85	-	-
M 60	48	90	-	-	48.9	90	-	-
M 64	51	95	-	-	52.4	95	-	-

Table 21: DIN/ISO comparison of dimensions of nuts, Part II

Nuts according to ISO 4032, ISO 4033, ISO 4034 and ISO 8673 and other nuts bearing full loads according to ISO 898 Part 2 or Part 6 (code strength classes without vertical lines on the part e.g. "8") must not be replaced by nuts compliant with DIN standards only bearing smaller loads compliant with DIN 267 Part 4 (e.g. I8I), e.g. DIN 934.

26. Metric hexagon flange nuts

DIN standards for hexagon flange nuts were almost entirely withdrawn and replaced by successor EN standards. Heights of nuts and partially widths across flats were changed.

Please note that nuts compliant with EN standards must not be replaced by nuts compliant with withdrawn DIN standards.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon nut with flange	6923	yes	EN 1661	X	-	-	<ul style="list-style-type: none"> Fine pitch threads canceled Width across flat for M10 changed from 15 mm to 16 mm
Prevailing torque type hexagon nuts with flange (with non-metallic insert)	6926	yes	EN 1663	-	X	-	<ul style="list-style-type: none"> Nuts with fine pitch thread added to DIN EN 1666 Nut height h min changed Width across flat for M10 changed from 15 mm to 16 mm Strength class 12 canceled
Prevailing torque type hexagon nuts with flange (with non-metallic insert)	6926	yes	EN 1666	-	X	-	<ul style="list-style-type: none"> Nuts with regular thread added to DIN EN 1663 Nut height h min changed Width across flat for M10 changed from 15 mm to 16 mm Strength class 12 canceled Strength class 6 added
Prevailing torque type all-metal hexagon nuts with flange	6927	yes	EN 1664	-	X	-	<ul style="list-style-type: none"> Nuts with fine pitch thread added to DIN EN 1667 Nut height h min changed Width across flat for M10 changed from 15 mm to 16 mm
Prevailing torque type all-metal hexagon nuts with flange	6927	yes	EN 1667	-	X	-	<ul style="list-style-type: none"> Nuts with regular thread added to DIN EN 1664 Nut height h min changed Width across flat for M10 changed from 15 mm to 16 mm
Hexagon collar nuts with a height of 1.5 d	6331	no	-	-	-	-	<ul style="list-style-type: none"> DIN applies

Table 22: Hexagon flange nuts

27. Metric prevailing torque type hexagon nuts

DIN standards for prevailing torque type hexagon nuts (lock nuts) were entirely withdrawn and replaced by successor ISO standards. Many changes were made when introducing the respective ISO standards. Please note that also strength classes were changed in the successor standard of the still often used DIN 985–ISO 10511—since the standard includes nuts bearing smaller loads.

Please note in particular that nuts compliant with ISO standards must not be replaced by nuts compliant with withdrawn DIN standards.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Prevailing torque type all-metal hexagon nut	980 6925	yes	7042	-	X	-	<ul style="list-style-type: none"> • Threads M3, M4, M7, M18, M22, M27, M33 and M39 canceled • Nut height changed • Width across flats changed for M10, M12 and M14 to 16, 18 and 21 mm • Fine pitch threads added to ISO 10513 • Suitable for strength classes 5, 8, 10, 12
Prevailing torque type all-metal hexagon high nuts with metric fine pitch thread	980	yes	10513	-	X	-	<ul style="list-style-type: none"> • Threads M18×2, M18×2, M20×2, M22×2, M22×1.5, M27×2, M33×2 and M39×3 canceled • Nut height changed • Width across flat changed for M10, M12 and M14 to 16, 18 and 21 mm • Regular threads added to ISO 7042 • Suitable for strength classes 8, 10, 12
Prevailing torque type high profile hexagon nut (with non-metallic insert)	982 6924	yes	7040	-	X	-	<ul style="list-style-type: none"> • Threads M7, M18, M22 canceled • Threads M3, M4, M30 and M36 added • Nut height changed • Width across flat changed for M10, M12 and M14 to 16, 18 and 21 mm • Fine pitch threads added to ISO 10512 • Strength class 12 added • Suitable for strength classes 5, 8, 10
Prevailing torque type hexagon regular nuts (with non-metallic insert) with metric fine pitch thread	982	yes	10512	-	X	-	<ul style="list-style-type: none"> • Threads M18×2, M18×2, M20×2, M22×2, M22×1.5, M27×2, M33×2 and M39×3 canceled • Nut height changed • Width across flat changed for threads M10, M12 and M14 to 16, 18 and 21 mm • Regular threads added to ISO 7040 • Suitable for strength classes 6, 8, 10 • Strength classes 5 and 12 canceled
Prevailing torque type hexagon thin nuts (with non-metallic insert)	985	yes	10511	-	X	-	<ul style="list-style-type: none"> • Threads M7, M18, M22, M27, M33, M33 and U M36 canceled • Fine pitch thread canceled • Nut height changed • Width across flat changed for M10, M12 and M14 to 16, 18 and 21 mm • Strength classes changed

Table 23: Prevailing torque type hexagon nuts

28. Metric weld nuts

So far, only DIN 977, hexagon weld nuts with flange, has been withdrawn. No significant changes resulted from changing this DIN standard to ISO 21670.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Square weld nuts	928	no	-	-	-	-	• DIN applies
Hexagon weld nuts	929	no	-	-	-	-	• DIN applies
Hexagon weld nuts with flange	977	yes	21670	-	-	-	• No application-relevant changes

Table 24: Weld nuts

29. Metric cap nuts

DIN standards for cap nuts continue to apply and have not been replaced by successor ISO standards yet. Only DIN 986, prevailing torque cap nuts, has been withdrawn without replacement.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon cap nut, low type	917	no	-	-	-	-	• DIN applies • Width across flat of M10, M12, M14, M22 changed to ISO flat across width
Hexagon cap nuts, high type	1587	no	-	-	-	-	• DIN applies • Width across flat of M10, M12, M14, M22 changed to ISO flat across width
Hexagon cap nut with clamping piece (non-metallic insert)	986	yes	-	-	-	-	• DIN standard withdrawn without replacement

Table 25: Cap nuts

30. Metric hexagon slotted and castle nuts

DIN standards for hexagon slotted and castle nuts continue to apply and have not been replaced by successor ISO standards yet. Only DIN 937, thin castle nuts (old version), was withdrawn in favor of similar castle nuts compliant with DIN 979.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Hexagon slotted and castle nut	935	no	-	-	-	-	• DIN applies
Thin hexagon slotted and castle nuts, old version	937	yes	-	-	-	-	• DIN standard withdrawn without replacement
Hexagon slotted and castle nut, low profile	979	no	-	-	-	-	• DIN applies

Table 26: Hexagon slotted and castle nuts

31. Other nuts

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Wing nuts, rounded wings	315	no	-	-	-	-	• DIN applies
Knurled nut, high type	466	no	-	-	-	-	• DIN applies
Knurled nuts, low type	467	no	-	-	-	-	• DIN applies
Ring nut	582	no	-	-	-	-	• DIN applies
Forged turnbuckles, (open type)	1480	no	-	-	-	-	• DIN applies
Slotted round nut for hook spanner; ISO metric fine thread	1804	no	-	-	-	-	• DIN applies
Hexagon nuts, 1.5 d collar height	6330	no	-	-	-	-	• DIN applies
Lock nuts Sheet metal (PAL)	7967	yes	-	-	-	-	• withdrawn without replacement

Table 27: Other nuts

32. Washers

Some frequently used DIN standards, such as DIN 125, were withdrawn and replaced by ISO 7089 and ISO 7090. The very frequently used strength class 140 HV is no longer included in the successor standards. For high-strength screws starting at strength class 8.8 it is at any rate required to use at least strength class 200 HV. In practice, this is often neglected.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Plain washers - up to 250 HV Product grade A	125 Part 1	yes	7089 7090	X	-	-	<ul style="list-style-type: none"> • ISO 7089 = washers without chamfer • Limited to strength classes 200 HV and 300 HV • Dimensions partially changed
Plain washers - up to 300 HV Product grade A	125 Part 2	yes	7089 7090	X	-	-	
Plain washers - Small series - Product grade A	433	yes	7092	X	-	-	<ul style="list-style-type: none"> • Limited to strength classes 200 HV and 300 HV • Nominal dimensions 1; 1.3; 1.5 canceled
Square taper washers for U-sections	434	no	-	-	-	-	<ul style="list-style-type: none"> • DIN applies
Square washers for use in timber constructions	436	no	-	-	-	-	<ul style="list-style-type: none"> • DIN applies
Washers - With square hole, especially for timber constructions	440	no	-	-	-	-	<ul style="list-style-type: none"> • DIN applies
Shim rings and supporting rings	988	no	-	-	-	-	<ul style="list-style-type: none"> • DIN applies
Washers for clamping devices	6340	no	-	-	-	-	<ul style="list-style-type: none"> • DIN applies
Plain washers for bolts with heavy clamping sleeves	7349	no	-	-	-	-	<ul style="list-style-type: none"> • DIN applies
Washers for steel structures - Part 2: Product grade A	7989-2	no	-	-	-	-	<ul style="list-style-type: none"> • DIN applies
Plain washers - Large series - Part 1: Product grade A	9021	yes	7093 part 1	X	-	-	<ul style="list-style-type: none"> • Limited to strength classes 200 HV and 300 HV • Dimensions partially changed • ISO 7093 Part 1 = Product grade A • ISO 7093 Part 2 = Product grade C

Table 28: Washers

33. Lock washers, spring washers and toothed lock washers

From all DIN standards on setting locks, only DIN 6796 continues to apply. All other DIN standards for these elements were withdrawn some time ago. Tests did not prove effectiveness of these products at strength classes of 8.8 and beyond. DIN 6796 may be used as setting lock in combination with screws up to and including strength class 10.9.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Lock washers, crimped	127	yes	-	-	-	-	• Withdrawn and not replaced because not guaranteed to function with high-strength screws.
Lock washers, crimped	128	yes	-	-	-	-	• Withdrawn and not replaced because not guaranteed to function with high-strength screws.
Lock washers, crimped	137	yes	-	-	-	-	• Withdrawn and not replaced because not guaranteed to function with high-strength screws.
Toothed lock washers	6797	yes	-	-	-	-	• Withdrawn and not replaced because not guaranteed to function with high-strength screws.
Serrated lock washers	6798	yes	-	-	-	-	• Withdrawn and not replaced because not guaranteed to function with high-strength screws.
Conical spring washers for bolted connections	6796	no	-	-	-	-	• DIN applies
Spring lock washer for cylinder head screws	7980	yes	-	-	-	-	• Withdrawn and not replaced because not guaranteed to function with high-strength screws.

Table 29: Lock washers, spring washers and toothed lock washers

34. Parallel and taper pins

All DIN standards for parallel and taper pins were withdrawn and replaced by EN and ISO standards. Successor standards include other dimension definitions compared to the withdrawn DIN standards. However, a substitution of DIN parts is mostly possible without larger design modifications. For taper pins compliant with DIN 1 for instance and parallel pins compliant with DIN 7 nominal lengths are defined without crowns. For successor standards EN 22339 and ISO 2338 nominal lengths are defined for the entire length of the pins, i.e. including crowns and/or chamfers.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Unhardened taper pins	1	yes	EN 22339	-	X	-	• Changes in length definition • Crown heights changed • Hardness range for steel defined
Parallel pins of unhardened steel	7	yes	2338	-	X	-	• Changes in length definition • Crown heights changed • Hardness range for steel defined
Parallel pins of hardened steel	6325	yes	8734	-	X	-	• Nominal lengths partially changed • Differentiation based on pin ends canceled • Rustproof material included
Taper pins with external thread, unhardened	7977	yes	EN 28737	-	X	-	• Half-dog points ends partially reduced • Nominal diameter M 14 canceled • Hardness range for steel defined
Tapered pin with female thread, unhardened	7978	yes	8736	-	X	-	• Hardness range for steel defined • Nominal lengths partially changed • Thread depth partially changed • Nominal diameter M 14 canceled

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Parallel pins with internal thread, hardened	7979	yes	8735	-	X	-	<ul style="list-style-type: none"> Nominal lengths partially changed Thread depth partially changed Rustproof material included
Cylindrical pin with female thread, unhardened	7979	yes	8733	-	X	-	<ul style="list-style-type: none"> Nominal lengths partially changed Thread depth partially changed Rustproof material included

Table 30: Parallel and taper pins 25

35. Spring-type straight pins

DIN standards for spring-type straight pins were withdrawn and replaced by successor ISO standards. In this context, possible use in connection with screw connections included in some DIN standards was canceled. A substitution of spring-type straight pins compliant with DIN standards by ISO standards is possible in most cases.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Spring-type straight pins - Slotted, heavy duty	1481	yes	8752	X	-	-	<ul style="list-style-type: none"> Non-interlocking design included Use for screw connections canceled Single-shear forces canceled
Spring-type straight pins - Coiled, standard duty	7343	yes	8750	X	-	-	<ul style="list-style-type: none"> Stainless steel added
Spring-type straight pins - Coiled, heavy duty	7344	yes	8748	X	-	-	<ul style="list-style-type: none"> Stainless steel added
Spring-type straight pins - Slotted, light duty	7346	yes	13337	-	X	-	<ul style="list-style-type: none"> Non-interlocking design included Single-shear forces canceled Nominal diameters 7, 11 and 23 canceled Spring-type straight pins with nominal diameter 4.5 dimension d1 changed Spring-type straight pins with nominal diameter 13 and 18 dimension s changed Section "Use with screw connections" canceled

Table 31: Spring-type straight pins

36. Clevis pins

DIN standards for clevis pins were withdrawn and replaced by EN standards. Due to only minor changes compared with successor EN standards exchangeability is possible.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Clevis pin with small head	1434	yes	-	-	-	-	• Standard withdrawn without replacement
Clevis pin without head	1443	yes	EN 22340	X	-	-	• Nominal lengths partially changed • Hardness range for steel defined
Clevis pin with head	1444	yes	EN 22341	X	-	-	• Nominal lengths partially changed • Hardness range for steel defined

Table 32: Clevis pins

37. Other fasteners

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Split pins	94	yes	1234	X	-	-	• Stainless steel added
Ball knobs	319	no	-	-	-	-	• DIN applies
Retaining rings for shafts	471	no	-	-	-	-	• DIN applies
Retaining rings for bores	472	no	-	-	-	-	• DIN applies
Adjusting rings	705	no	-	-	-	-	• DIN applies
Stud bolts, metric thread	976	no	-	-	-	-	• DIN applies
Belleville washers	2093	no	-	-	-	-	• DIN applies
Snap hook half-round wire	5299	no	-	-	-	-	• DIN applies
Star grips	6336	no	-	-	-	-	• DIN applies
Parallel key, high profile	6885	no	-	-	-	-	• DIN applies
Thimbles, steel	6899	no	-	-	-	-	• DIN applies
Sealing rings	7603	no	-	-	-	-	• DIN applies
Lubricating nipples; cone type	71412	no	-	-	-	-	• DIN applies
Fork joints	71751	no	-	-	-	-	• DIN applies
Ball joints with or without circlips	71802	no	-	-	-	-	• DIN applies
Shackle, standard type	82101	no	-	-	-	-	• DIN applies

Table 33: Other fasteners

38. Blind rivets

The former DIN 7337 standard for blind rivets was withdrawn and replaced by several product standards. Depending on the shape of the set head and the material combination of blind rivet sleeve/blind rivet mandrel, there is a respective specific product standard.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Closed end blind rivets with break pull mandrel and protruding head Material: AlA/St	-	-	15973	-	-	-	• No previous DIN standard
Closed end blind rivets with break pull mandrel and countersunk head Material: AlA/St	-	-	15974	-	-	-	• No previous DIN standard
Closed end blind rivets with break pull mandrel and protruding head Material: AlA/AlA	-	-	15975	-	-	-	• No previous DIN standard
Closed end blind rivets with break pull mandrel and protruding head Material: ST/ST	-	-	15976	-	-	-	• No previous DIN standard
Open-end blind rivets with break pull mandrel and pan head Material: AlA/St	7337 type A	yes	15977	x	-	-	• Head shapes and material combinations transferred to individual standards
Open-end blind rivets with break pull mandrel and countersunk head Material: AlA/St	7337 type B	yes	15978	x	-	-	• Head shapes and material combinations transferred to individual standards
Open-end blind rivets with break pull mandrel and protruding head Material: ST/ST	7337 type A	yes	15979	x	-	-	• Head shapes and material combinations transferred to individual standards
Open-end blind rivets with break pull mandrel and countersunk head Material: ST/ST	GPN 7337 type B	yes	15980	x	-	-	• Head shapes and material combinations transferred to individual standards
Open-end blind rivets with break pull mandrel and protruding head Material: AlA/AlA	7337 type A	yes	15981	x	-	-	• Head shapes and material combinations transferred to individual standards
Open-end blind rivets with break pull mandrel and countersunk head Material: AlA/AlA	7337 type B	yes	15982	x	-	-	• Head shapes and material combinations transferred to individual standards
Open-end blind rivets with break pull mandrel and protruding head Material: A2/A2	7337 type A	yes	15983	x	-	-	• Head shapes and material combinations transferred to individual standards
Open-end blind rivets with break pull mandrel and countersunk head Material: A2/A2	GPN 7337 type B	yes	15984	x	-	-	• Head shapes and material combinations transferred to individual standards

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Open-end blind rivets with break pull mandrel and protruding head Material: Cu/St; Cu/Br; Cu/SSt	7337 type A	yes	16582	x	-	-	• Head shapes and material combinations transferred to individual standards
Open-end blind rivets with break pull mandrel and countersunk head Material: Cu/St; Cu/Br; Cu/SSt	GPN 7337 type B	yes	16583	x	-	-	• Head shapes and material combinations transferred to individual standards
Open-end blind rivets with break pull mandrel and protruding head Material: NiCu/St, NiCu/SSt	7337 type A	yes	16584	x	-	-	• Head shapes and material combinations transferred to individual standards
Closed end blind rivets with break pull mandrel and protruding head Material: A2/SSt	-	-	16585	x	-	-	• No previous DIN standard

Table 34: Blind rivets

39. Other rivets

The former DIN 7337 standard for blind rivets was withdrawn and replaced by several product standards. Depending on the shape of the set head and the material combination of blind rivet sleeve/blind rivet mandrel there is a respective specific product standard.

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Steel round head rivets - Nominal diameters from 10 mm to 36 mm Material: St, CuZn, Al, X3CrNiCu18-9-4	124	no	-	-	-	-	• DIN applies
Countersunk head rivets - Nominal diameters 10 mm to 36 mm Material: St, CuZn, Al, X3CrNiCu18-9-4	302	no	-	-	-	-	• DIN applies
Round head rivets - Nominal diameters 1 mm to 8 mm Material: St, CuZn, Al, X3CrNiCu18-9-4	660	no	-	-	-	-	• DIN applies
Countersunk head rivets - Nominal diameters 1 mm to 8 mm Material: St, CuZn, Al, X3CrNiCu18-9-4	661	no	-	-	-	-	• DIN applies
Mushroom head rivets - Nominal diameters 1.6 mm to 6 mm Material: St, CuZn, Al, X3CrNiCu18-9-4	662	no	-	-	-	-	• DIN applies

Name	DIN	DIN standard withdrawn	ISO	Exchangeable			Comments/changes
				yes	to a limited extent	no	
Flat round head rivets - Nominal diameters 1.4 mm to 6 mm Material: St, CuZn, Al, X3CrNiCu18-9-4	674	no	-	-	-	-	• DIN applies
Flat countersunk head rivets - Nominal diameters 3 mm to 5 mm Material: St, CuZn, Al, X3CrNiCu18-9-4	675	no	-	-	-	-	• DIN applies

Table 35: Other rivets

40. Technical delivery conditions and basic standards

Title	DIN	DIN standard withdrawn	ISO
Fasteners, surface discontinuities, nuts	267 Part 20	yes	6157 Part 2
Fasteners, surface discontinuities, nuts	267 Part 21	yes	10484 10485
Mechanical fasteners, bolts, screws and studs and nuts, dimensioning	EN 20225	yes	225
Mechanical fasteners clearance holes for bolts and screws	EN 20273	yes	273
Mechanical properties of fasteners, bolts and screws	267 Part 3	yes	898 Part 1
Mechanical properties of fasteners, nuts with defined test strengths	267 Part 4	yes	898 Part 2
Mechanical properties of fasteners, nuts with defined test strengths	267 Part 4	yes	898 Part 6
Fasteners; surface discontinuities; bolts, screws and studs subject to general requirements	267 Part 19	yes	DIN 26157, Part 1
Fasteners - Surface discontinuities - Part 2: Nuts	267 Part 19	yes	6157 Part 2
Fasteners; surface discontinuities; bolts, screws and studs subject to special requirements and strength class 12.9	267 Part 19	yes	EN 26157 Part 3
Countersunk flat head screws - Part 2: Penetration depth of cross recesses	DIN ISO 7721	yes	DIN 27721, Part 2
Parts with thread - Electroplated coatings	267 Part 9	yes	4042
General requirements for bolts, screws, studs and nuts	267 Part 1	yes	8992
Mechanical fasteners - Acceptance inspection	267 Part 5	yes	3269
Mechanical properties of fasteners made of stainless steels, Part 1: Bolts, screws and studs	267 Part 11	yes	3506 Part 1
Mechanical properties of fasteners made of stainless steels, Part 2: Nuts	267 Part 11	yes	3506 Part 2
Mechanical properties of fasteners made of stainless steels, Part 3: Set screws and similar fasteners not under tensile stress	267 Part 11	yes	3506 Part 3
Mechanical properties of fasteners made of stainless steels, Part 4: Tapping screws	267 Part 11	yes	3506 Part 4
Heat-treated steel tapping screws - Mechanical properties	267 Part 12	yes	2702
Mechanical properties of fastener, nonferrous metal bolts, screws, studs and nuts (ISO 8839: 1986)	267 Part 18	yes	EN 28839
Tolerances for fasteners - Part 1: Bolts, screws, studs and nuts	267 Part 2	yes	4759 Part 1
Tolerances for fasteners - Part 3: Washers for bolts, screws and nuts	522	yes	4759 Part 3
Mechanical fasteners - Ends of parts with external ISO metric thread	78	yes	4753

Table 36: Technical delivery conditions and basic standards

41. Overview of DIN/ISO standards

DIN	ISO	DIN	ISO	DIN	ISO
1	EN22339	931	4014	6914	EN14399-4
7	EN22338	933	4017	6915	EN14399-4
84	1207	934	4032	6916	EN14399-6
85	1580	934	8673	6921	EN1665
94	1234	960	8765	6923	EN1661
125	7089	961	8676	6924	7040
125	7090	963	2009	6925	7042
126	7091	964	2010	6926	EN1661
417	EN27435	965	7046	6927	EN1664
427	2342	966	7047	7343	8750
433	7092	971-1	8673	7343	8751
438	7436	971-2	8674	7344	8748
439	4035	977	21670	7346	13337
439	4036	980	7042	7971	1481
440	7094	980	10513	7972	1482
551	4766	982	7040	7973	1483
553	7434	982	10512	7976	1479
555	4034	985	10511	7977	EN28737
558	4018	1440	8738	7978	8736
601	4016	1444	EN22341	7979	8733
660	1051	1471	8744	7979	8735
661	1051	1472	8745	7981	7049
911	2936	1473	8740	7982	7050
912	4762	1474	8741	7983	7051
913	4026	1475	8742	7985	7045
914	4027	1476	8746	7991	10642
915	4028	1477	8747	9021	7093
916	4029	1481	8752	11024	7072
		6325	8734		

Table 37: Overview of DIN/ISO standards

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VOLUME I

Standardization

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