

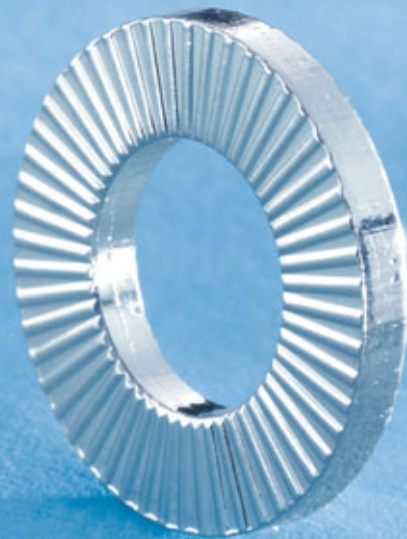


RIPP LOCK® screw lock

Efficient and secure

BÖLLHOFF

RIPP LOCK® lock washers

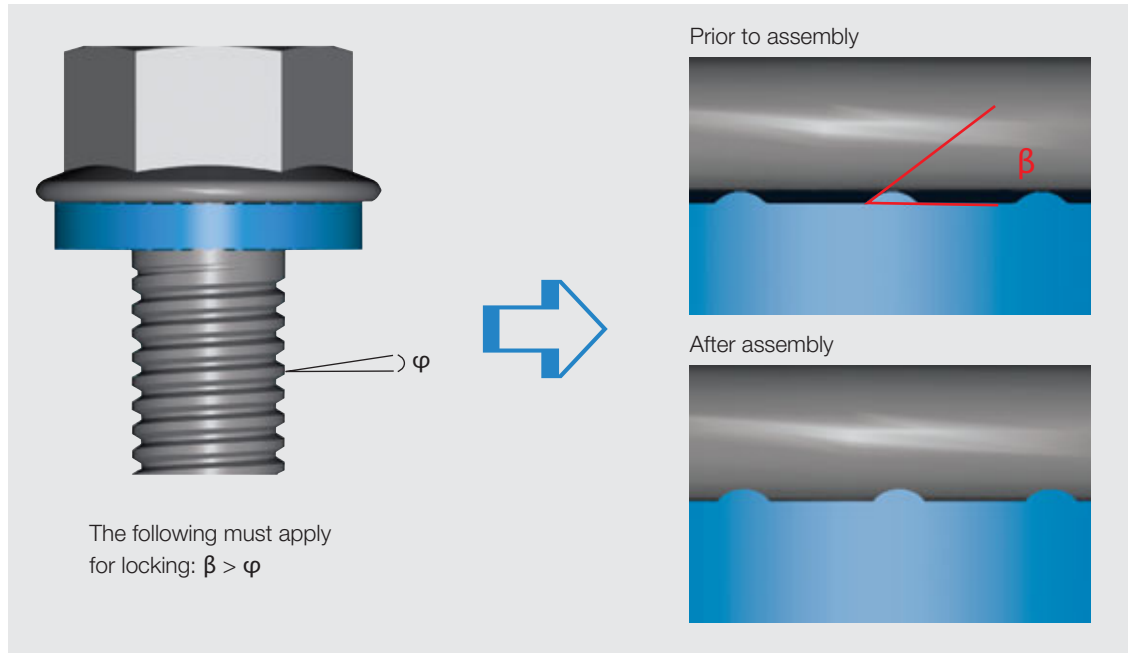


RIPP LOCK® lock washers

RIPP LOCK® lock washers

The system

RIPP LOCK® lock washers have radial ribs on both sides. The pitch angle of the ribs is larger than the thread pitch.



When the screw or nut is assembled, the radial ribs of RIPP LOCK® lock washers form-closely emboss in the counter-surface and in the underside of the screw head. Therefore, there can only be relative movement in the separation gap between screw head and washer. RIPP LOCK® is a reliable screw lock – even under extreme vibration or dynamic stress. Due to their high hardness, the washers can be used with screws of all property classes up to 12.9.



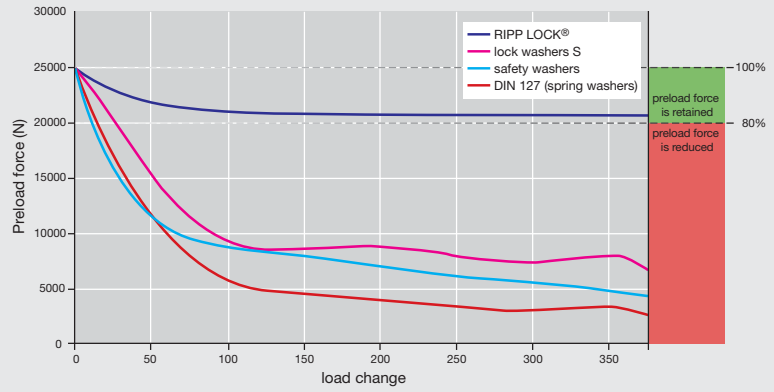
RIPP LOCK® lock washers

Benefits

Excellent locking against self-unscrewing – even under high dynamic stress

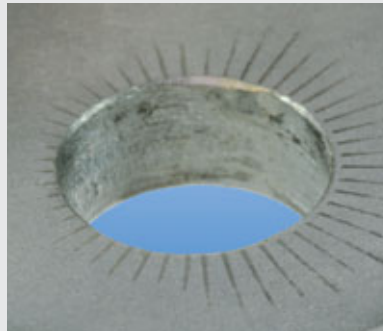
Junkers vibration test according to DIN 65151

Screw M 10 (8.8)
galvanically zinc coated

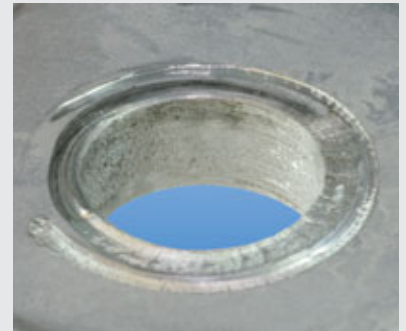


Gentle to contact surface – even to coated or powder coated surfaces

Aluminium



RIPP LOCK®



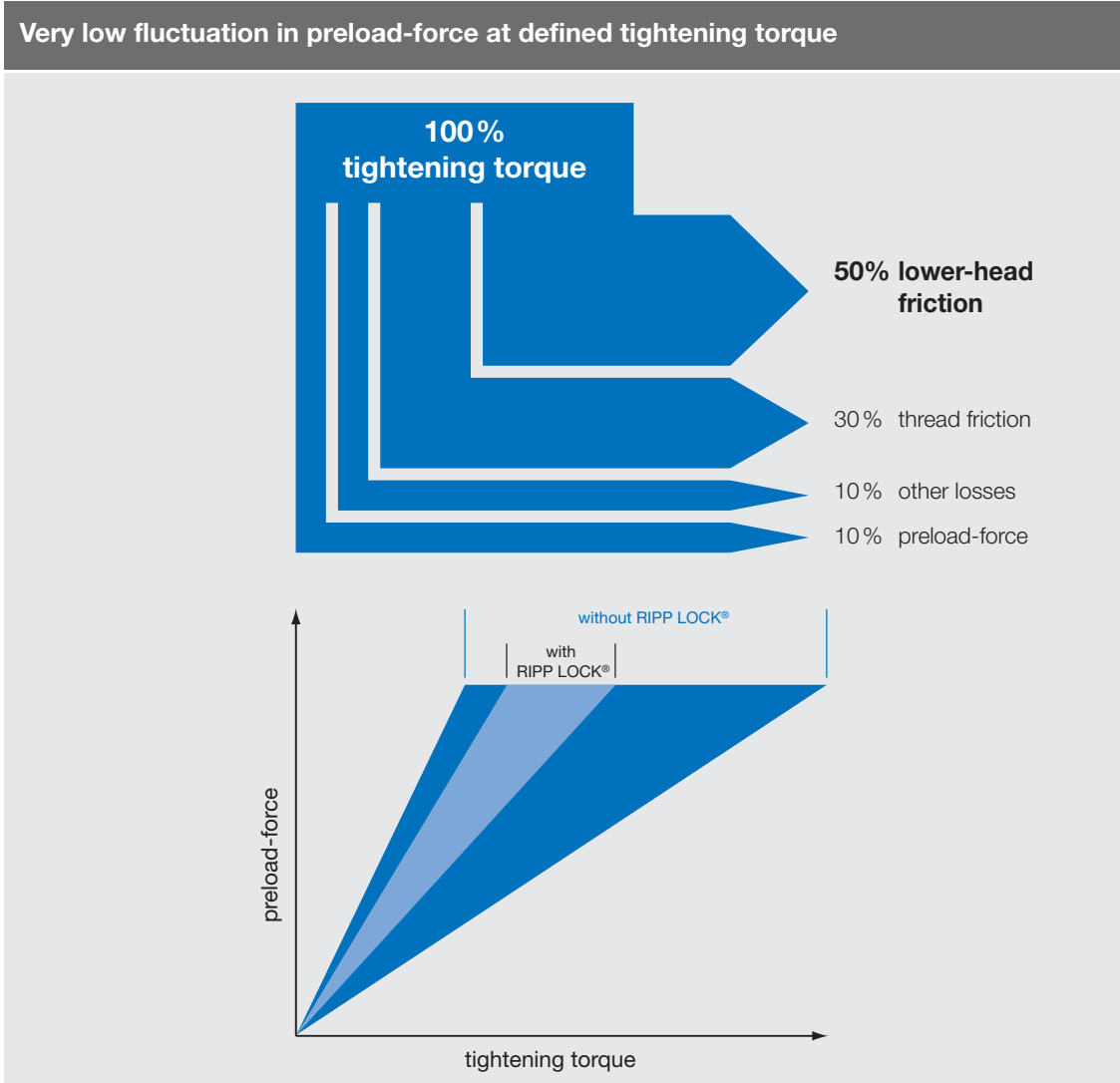
DIN 127

Perfectly suitable also for slotted-hole applications



RIPP LOCK® lock washers

Benefits



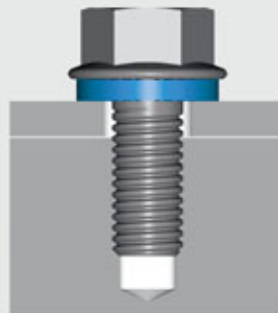
RIPP LOCK® lock washers



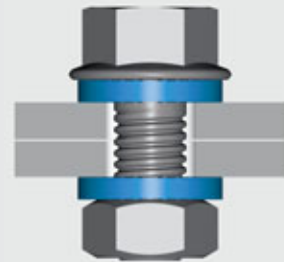
Further benefits

- Easy assembly and removal – multiple reuse
- Economic benefits due to reduction and standardisation of assortment
 - Small space requirements
 - Not affected by contact with lubricants or greases
 - Perfectly suitable for low-strength metals (aluminium, copper, aluminium and magnesium casting alloys, etc.)
 - Suitable for all property classes up to 12.9
- Particularly suitable for sensitive surfaces such as zinc coated, chromium-plated, coated or powder coated surfaces
- Immediate effect – no curing
- Same temperature range as used screws
- Longevity – no ageing, no embrittling or weathering
- Almost no mechanical abrasion – no chip formation
- Retrofitting into almost every construction
- Effective in adjustable fastenings of components (e. g. prestressing of belt drive)
- Very small relaxation
- CAD data available on request
- The RIPP LOCK® defines friction values of most diverse materials and surfaces

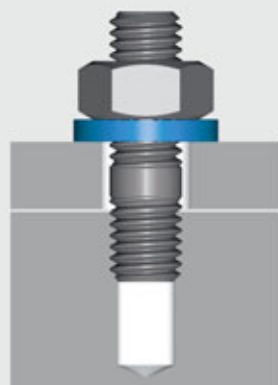
Possible applications



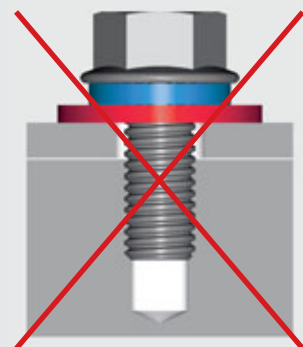
RIPP LOCK® screw fastening in tapped holes



Through screw joints with two RIPP LOCK® washers



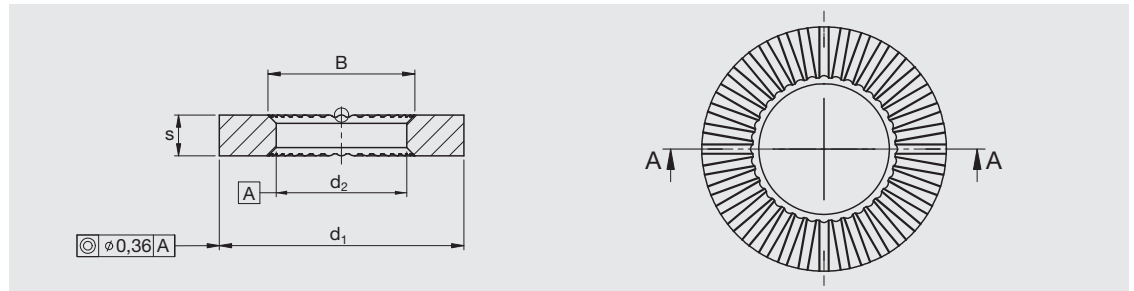
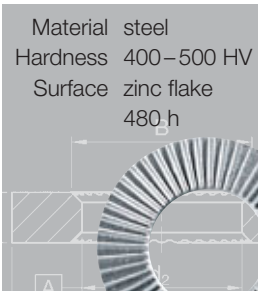
With RIPP LOCK®, adhesion of studs is not required anymore



RIPP LOCK® shall not be used on loose plain washers

RIPP LOCK® lock washers

Technical information



Size (nominal dimension)	Diameter of hole d_2 min.	Outside diameter d_1 max.	Thickness s nominal dimension	B max.	Order No
4	4.3	9	2.0	5.0	53065STZL4
5	5.3	10	2.0	6.0	53065STZL5
6	6.4	12	2.0	8.0	53065STZL6
8	8.4	16	2.5	10.0	53065STZL8
10	10.5	20	2.5	12.1	53065STZL10
12	12.5	24	3.0	14.1	53065STZL12
14	14.5	28	3.0	16.1	53065STZL14
16	16.5	30	4.0	18.1	53065STZL16
20	20.5	37	4.0	22.1	53065STZL20
24	24.5	44	5.0	26.1	53065STZL24

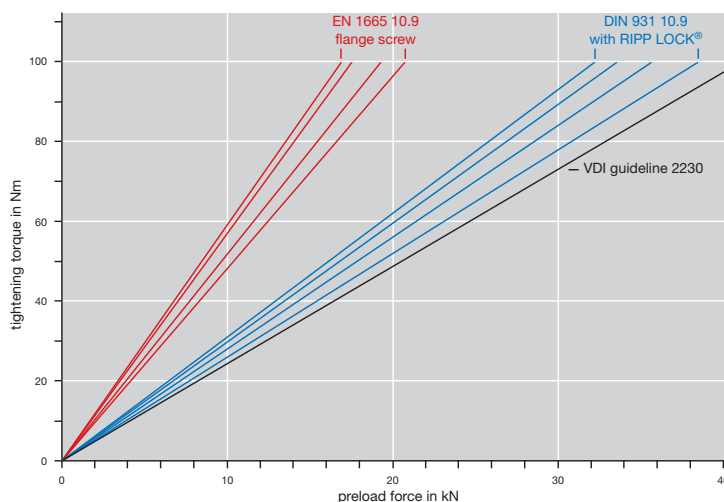
i All RIPP LOCK® lock washers comply with ELV, RoHS and WEEE directives and are thus chrome(VI)-free.

Tightening torques

To minimise creep and relaxation, screws with a large head support are used in many applications. However, particularly for light metals, friction values often are so high that the desired preload-forces are not achieved (see red lines in diagram). With the use of RIPP LOCK® lock washers which only allow a relative movement between screw head and washer, defined friction values and thus defined clamping forces are always achieved – even for most diverse materials and surfaces (see blue lines in diagram).

Tightening torques determined in accordance with VDI guideline 2230 (Association of German Engineers – VDI) can thus be applied to almost all other applications.

Tested on aluminium



RIPP LOCK® lock screws and nuts



RIPP LOCK® lock screws and nuts

RIPP LOCK® lock screws and nuts

Special advantages

- Reliable fastening connections, no additional elements required
- Increased contact area makes washers and spring washers unnecessary
- Rounded locking ribs enable corrosion protection to be largely maintained at the fastening points, since the fastening does not damage the surface
- Reduced setting values for the screws because of cold working of the clamped materials
- Good tightening characteristics, excellent reusability

Design instructions

RIPP LOCK® self-locking screws and nuts are available as:

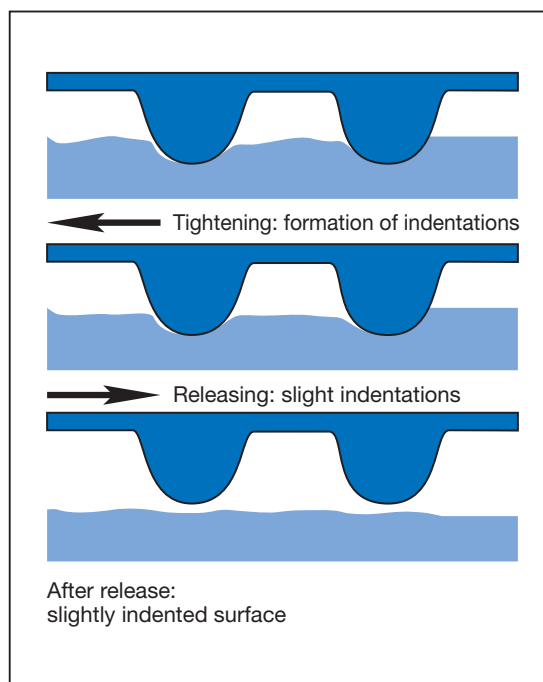
- Hexagon socket self-locking screws, property class 100
- Hexagon head self-locking screws, property class 100
- Hexagon head self-locking nuts, property class 10

Property classes

- Self-locking screws 100 = 1,040 N/mm²
- Self-locking nuts 10: for screws up to property class 10.9 and screw class 100
- Property classes 12.9 and 12 available on request

Because the ribs do not dig into the surface in the release direction, the fastening is gentle to sensitive surfaces. The damage to the surface around the contact area is minimal.

The diagram shows the principle of operation of these self-locking screws and nuts.



For self-locking screws with hexagon socket heads, the head heights and hexagon sizes are identical to those for DIN 912 screws. To achieve a greater contact area the head diameter is slightly increased. This results in a reduced surface pressure.

RIPP LOCK® lock screws and nuts

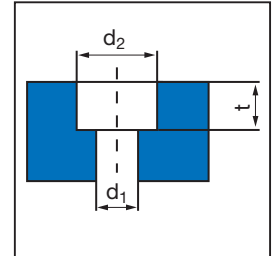
Counterbore dimensions

The counterbore dimensions for fitting these screws are set out in DIN 74, part 2.

Threads	M 5	M 6	M 8	M 10	M 12	M 16
d ₁ Through hole average size (m) ¹⁾	5.5	6.6	9.0	11.0	13.5	17.5
d ₂ Counterbore diameter ²⁾	12.5	14.5	19.0	21.5	24.5	33.0
t Counterbore depth ²⁾	5.7	6.8	9.0	11.0	13.0	16.0

¹⁾ Through hole average size to DIN ISO 273

²⁾ to DIN 74, part 2

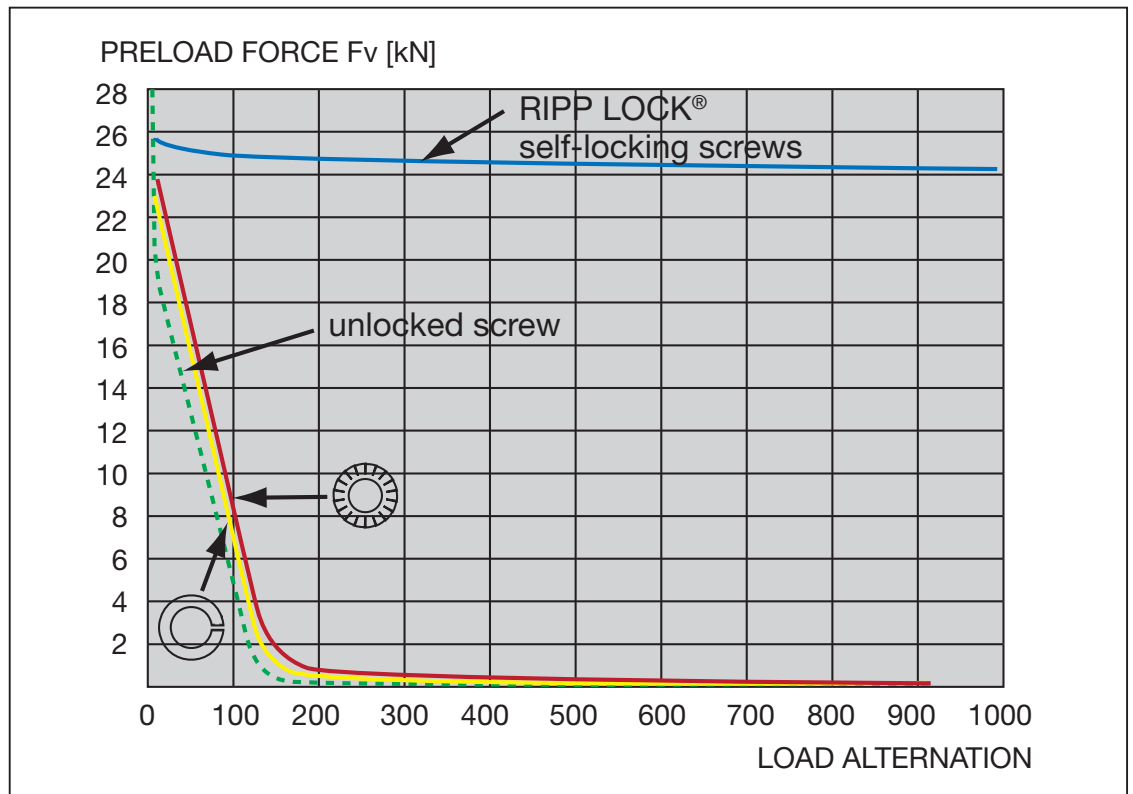


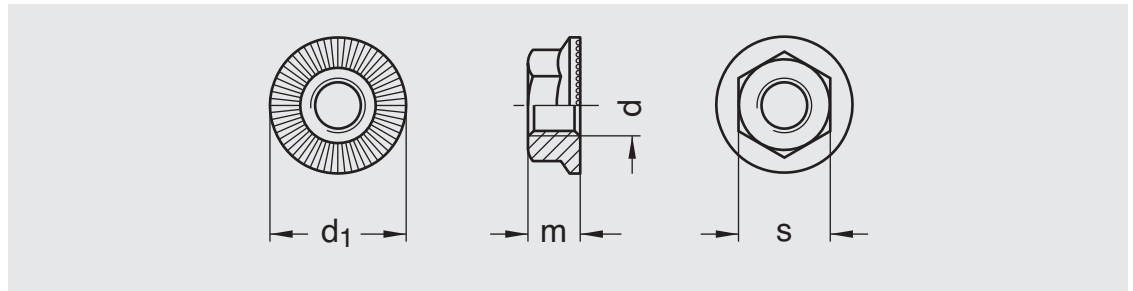
The diagram below shows the fastening behaviour of screws in a shake test.

The dashed line shows the behaviour of an unlocked screw, the continuous lines the behaviour of screws with spring washers to DIN 127 and serrated lock washers to DIN 6798.

The black line indicates the behaviour of a screw with locking teeth or locking ribs.

(see also page 4 – Junkers vibration test)



RIPP LOCK® lock screws and nuts
Technical information

RIPP LOCK® locknuts, strength class 10

Size	d ₁	s	m	Order No
M 5	11.20	8	4.3	W1931005
M 6	14.25	10	5.5	W1931006
M 8	18.20	13	7.0	W1931008
M 10	21.00	15	8.5	W19310010
M 12	24.00	17	10.0	W19310012
M 16	31.00	22	14.0	W19310016

RIPP LOCK® locknuts, strength class 10, zinc plated

Size	d ₁	s	m	Order No
M 5	11.20	8	4.3	W193100VZ5
M 6	14.25	10	5.5	W193100VZ6
M 8	18.20	13	7.0	W193100VZ8
M 10	21.00	15	8.5	W193100VZ10
M 12	24.00	17	10.0	W193100VZ12
M 16	31.00	22	14.0	W193100VZ16

RIPP LOCK® locknuts, strength class 10, zinc plated, yellow passivated

Size	d ₁	s	m	Order No
M 6	14.25	10	5.5	W193100VG6
M 8	18.20	13	7.0	W193100VG8
M 10	21.00	15	8.5	W193100VG10
M 12	24.00	17	10.0	W193100VG12
M 16	31.00	22	14.0	W193100VG16

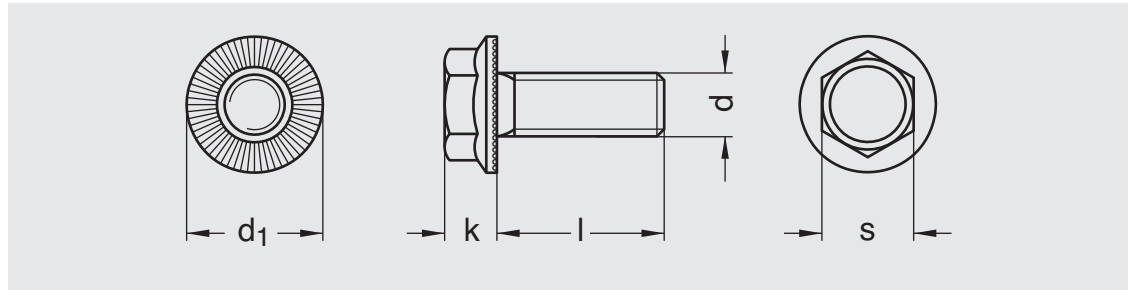


All RIPP LOCK® locknuts (except yellow passivated) comply with ELV, RoHs and WEEE directives and are thus chrom(VI)-free.
Further surfaces and dimensions on request.

RIPP LOCK® lock screws and nuts

Technical information

RIPP LOCK® lock screws, strength class 100



Size	s	k	d ₁
M 5	8	4.3	11.2
M 6	10	5.5	14.2
M 8	13	7.0	18.2
M 10	15	8.5	21.0
M 12	17	10.0	24.0
M 16	22	14.0	31.0

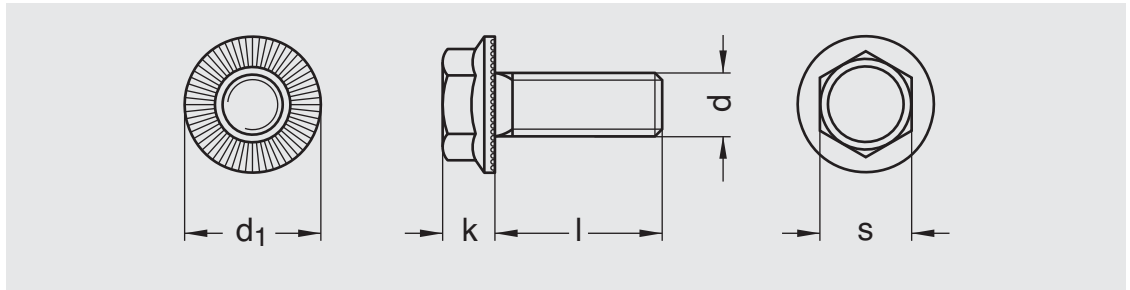
Size	l	Order No	Size	l	Order No
M 5	10	W158100510	M 10	22	W1581001022
M 5	12	W158100512	M 10	25	W1581001025
M 5	14	W158100514	M 10	30	W1581001030
M 5	16	W158100516	M 10	35	W1581001035
M 6	10	W158100610	M 10	40	W1581001040
M 6	12	W158100612	M 12	20	W1581001220
M 6	14	W158100614	M 12	25	W1581001225
M 6	16	W158100616	M 12	30	W1581001230
M 6	18	W158100618	M 12	35	W1581001235
M 6	20	W158100620	M 12	40	W1581001240
M 6	25	W158100625	M 12	45	W1581001245
M 6	30	W158100630	M 12	50	W1581001250
M 8	12	W158100812	M 12	55	W1581001255
M 8	14	W158100814	M 16	25	W1581001625
M 8	16	W158100816	M 16	30	W1581001630
M 8	18	W158100818	M 16	35	W1581001635
M 8	20	W158100820	M 16	40	W1581001640
M 8	25	W158100825	M 16	45	W1581001645
M 8	30	W158100830	M 16	50	W1581001650
M 8	35	W158100835	M 16	55	W1581001655
M 8	40	W158100840	M 16	60	W1581001660
M 10	16	W1581001016	M 16	70	W1581001670
M 10	18	W1581001018	M 16	80	W1581001680
M 10	20	W1581001020	M 16	85	W1581001685

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RIPP LOCK® lock screws and nuts

Technical information

RIPP LOCK® lock screws, strength class 100, zinc plated



Size	s	k	d ₁
M 5	8	4.3	11.2
M 6	10	5.5	14.2
M 8	13	7.0	18.2
M 10	15	8.5	21.0
M 12	17	10.0	24.0
M 16	22	14.0	31.0

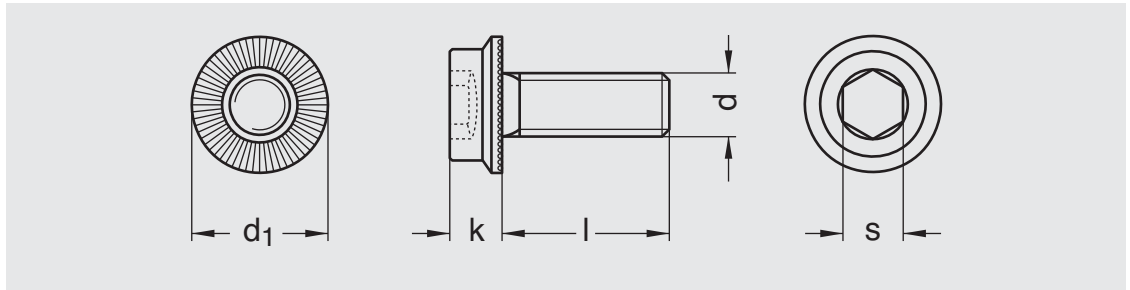
Size	l	Order No	Size	l	Order No
M 5	10	W158100VZ510	M 10	30	W158100VZ1030
M 5	12	W158100VZ512	M 10	35	W158100VZ1035
M 5	16	W158100VZ516	M 12	20	W158100VZ1220
M 6	10	W158100VZ610	M 12	25	W158100VZ1225
M 6	12	W158100VZ612	M 12	30	W158100VZ1230
M 6	14	W158100VZ614	M 12	35	W158100VZ1235
M 6	16	W158100VZ616	M 12	40	W158100VZ1240
M 6	20	W158100VZ620	M 12	45	W158100VZ1245
M 6	25	W158100VZ625	M 12	50	W158100VZ1250
M 8	12	W158100VZ812	M 16	25	W158100VZ1625
M 8	14	W158100VZ814	M 16	30	W158100VZ1630
M 8	16	W158100VZ816	M 16	35	W158100VZ1635
M 8	20	W158100VZ820	M 16	40	W158100VZ1640
M 8	25	W158100VZ825	M 16	45	W158100VZ1645
M 8	35	W158100VZ835	M 16	50	W158100VZ1650
M 8	40	W158100VZ840	M 16	55	W158100VZ1655
M 10	16	W158100VZ1016	M 16	60	W158100VZ1660
M 10	20	W158100VZ1020	M 16	70	W158100VZ1670
M 10	25	W158100VZ1025			

i All RIPP LOCK® locking screws comply with ELV, RoHs and WEEE directives and are thus chrom(VI)-free. Further surfaces and dimensions on request.

RIPP LOCK® lock screws and nuts

Technical information

RIPP LOCK® lock screws with hexagon socket, strength class 100



Size	s	d ₁ max.	k max.
M 5	4	11.0	5
M 6	5	13.5	6
M 8	6	17.0	8
M 10	8	19.5	10
M 12	10	22.5	12

Size	l	Order No	Size	l	Order No
M 5	10	W251100510	M 8	40	W251100840
M 5	12	W251100512	M 10	16	W2511001016
M 5	16	W251100516	M 10	20	W2511001020
M 5	20	W251100520	M 10	25	W2511001025
M 6	10	W251100610	M 10	30	W2511001030
M 6	12	W251100612	M 10	35	W2511001035
M 6	16	W251100616	M 10	40	W2511001040
M 6	20	W251100620	M 12	20	W2511001220
M 6	25	W251100625	M 12	25	W2511001225
M 6	30	W251100630	M 12	30	W2511001230
M 8	12	W251100812	M 12	35	W2511001235
M 8	16	W251100816	M 12	40	W2511001240
M 8	20	W251100820	M 12	45	W2511001245
M 8	25	W251100825	M 12	50	W2511001250
M 8	30	W251100830			

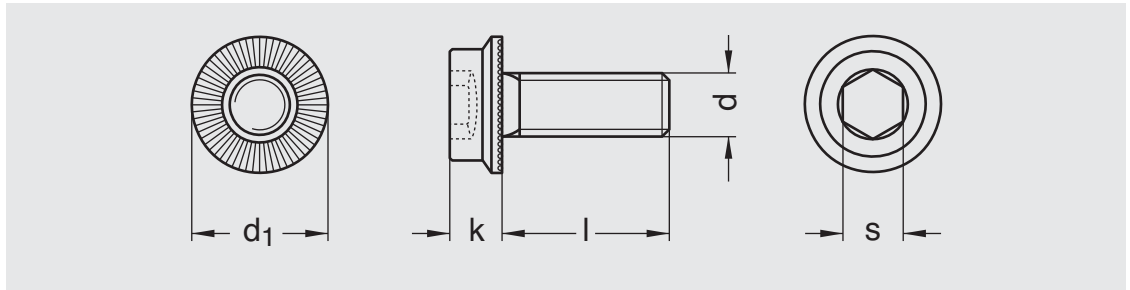


All RIPP LOCK® locking screws comply with ELV, RoHs and WEEE directives and are thus chrom(VI)-free.
Further surfaces and dimensions on request.

RIPP LOCK® lock screws and nuts

Technical information

RIPP LOCK® lock screws with hexagon socket, strength class 100, zinc plated



Size	s	d ₁ max.	k max.
M 5	4	11.0	5
M 6	5	13.5	6
M 8	6	17.0	8
M 10	8	19.5	10
M 12	10	22.5	12

Size	l	Order No	Size	l	Order No
M 5	10	W251100VZ510	M 8	30	W251100VZ830
M 5	12	W251100VZ512	M 8	40	W251100VZ840
M 5	16	W251100VZ516	M 10	20	W251100VZ1020
M 5	20	W251100VZ520	M 10	25	W251100VZ1025
M 6	12	W251100VZ612	M 10	30	W251100VZ1030
M 6	16	W251100VZ616	M 10	35	W251100VZ1035
M 6	20	W251100VZ620	M 10	40	W251100VZ1040
M 6	25	W251100VZ625	M 12	30	W251100VZ1230
M 6	30	W251100VZ630	M 12	35	W251100VZ1235
M 8	16	W251100VZ816	M 12	40	W251100VZ1240
M 8	20	W251100VZ820	M 12	45	W251100VZ1245
M 8	25	W251100VZ825	M 12	50	W251100VZ1250



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Further surfaces and dimensions on request.

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