



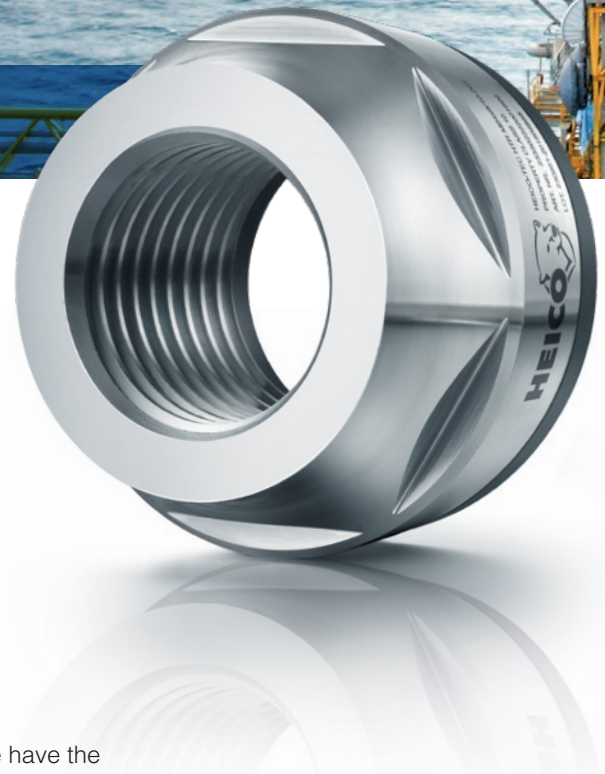
Elastic
Durable
Secure

HEICO-TEC® REACTION NUT

HEICO-TEC® REACTION NUT

ELASTIC · DURABLE · SECURE

HEICO-TEC® Reaction Nuts are the ideal complement to the HEICO-TEC® Tension Nut for use with through-bolted connections. If you already enjoy the advantages of HEICO-TEC® Tension Nuts for active pre-tensioning, you need an equivalent reactive nut on the opposite end. Due to their special shape, HEICO-TEC® Reaction Nuts can flex elastically. And the more elastic a bolted joint is, the more durable and secure it is against untightening and loosening.

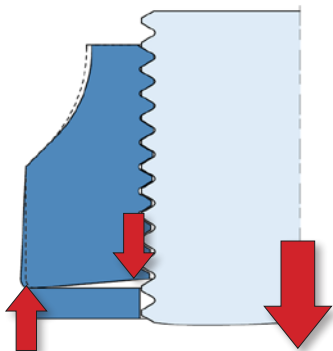


COMPATIBLE WITH ISO 898-2

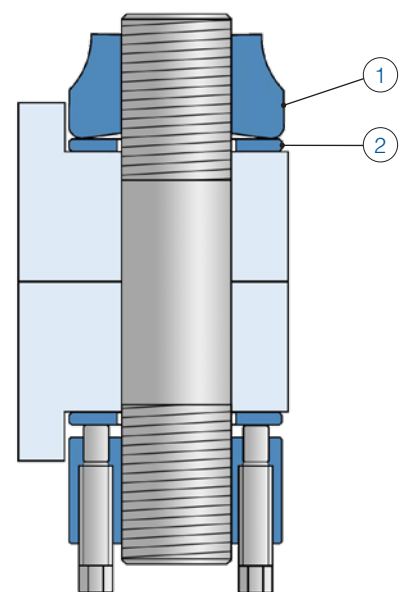
HEICO-TEC® Reaction Nuts meet all requirements of ISO 898-2. They therefore have the same strength as conventional hex nuts and can replace them 1:1. However, they must not be used for active pre-tensioning, rather only on the opposite reactive end.

CONSTRUCTION AND FUNCTION

1. The nut body ① is screwed onto the bolt like a conventional nut with the main thread, but is not tightened. Tensioning is performed from the opposite end, e.g. with a HEICO-TEC® Tension Nut.
2. Since the nut body only rests on the outer diameter, a hardened washer ② protects the clamped parts from the contact pressure.



The contact surface of the HEICO-TEC® Reaction Nut is concave and can therefore flex elastically in the direction of the bolt axis. This increases the elasticity of the bolted joint. A short bolted joint is susceptible to fatigue failure and self-loosening. With the HEICO-TEC® Reaction Nut the joint performs like a bolted joint which is 2-3 thread diameters longer and thus more durable and safer. This is accomplished solely by replacing the hex nut with a HEICO-TEC® Reaction Nut!





ADVANTAGES OF THE REACTION NUT



SPACE SAVING

In contrast to similar products, HEICO-TEC® Reaction Nuts have the same dimensions as the active HEICO-TEC® Tension Nut for the nut body and the washer. This means they do not require any additional space.



REUSABLE

HEICO-TEC® Reaction Nuts are entirely reusable. The bolted joint will not be damaged during tightening and loosening.



COMPATIBLE

HEICO-TEC® Reaction Nuts meet all requirements of ISO 898-2. They can replace any conventional nut with the same strength class as long as they are only reactively loaded and are not used for active tensioning.



ELASTIC

In contrast to other spring based fasteners such as disc springs or spring washers, which are simply flattened and then ineffective, HEICO-TEC® Reaction Nuts remain elastic up to the maximum bolt force according to ISO 898-1.



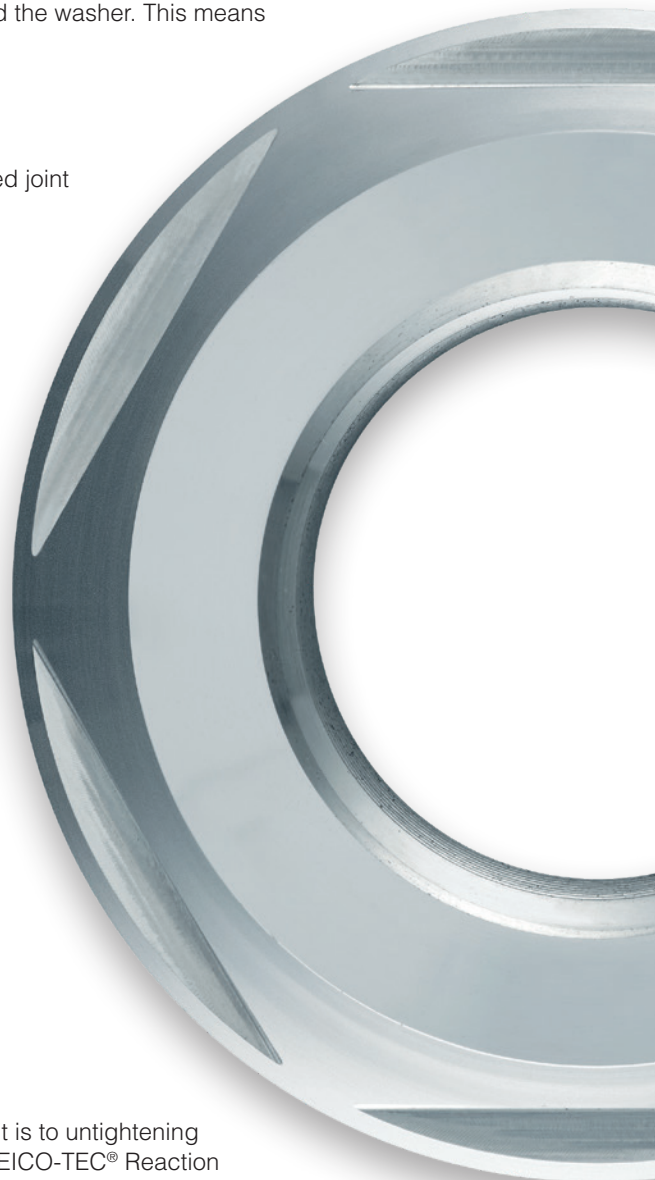
DURABLE

The more elastic a bolt is in relation to the clamped parts, the less stress it will be subjected to. Due to their flexing, HEICO-TEC® Reaction Nuts reduce the load on the bolt and thus increase the durability of the bolted joint.



SECURE

Also the more elastic a bolted joint is, the less susceptible it is to untightening and self-loosening. The additional elasticity stored in the HEICO-TEC® Reaction Nuts counteracts preload losses due to settling or creeping. This ensures that the bolted joint remains securely tightened.



HEICO-TEC® THE BETTER CHOICE

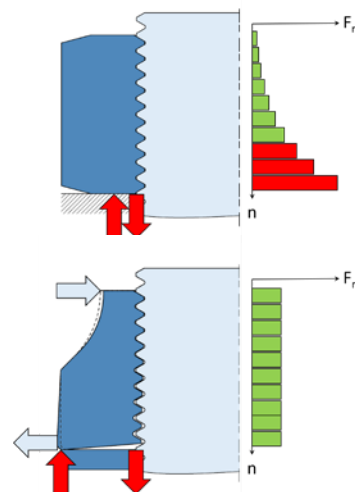
The **HEICO-TEC®** Reaction Nut offers decisive advantages over other products:

HEX NUTS

Conventional hex nuts are very rigid and have little elasticity.

Problem:

In the thread the preload acts in tension, while an equally high compressive force is generated on the contact surface of the hex nut. As a result, the preload force is very strongly deflected in the first load-bearing threads and leads to an uneven load distribution. This is why bolts often break here.



ADVANTAGE OF THE HEICO-TEC® REACTION NUT

The concave contact surface of the HEICO-TEC® Reaction Nut creates an almost even load distribution in the thread.

The service life of the bolts is significantly increased!

SPRING WASHERS

Each bolted joint (blue) loses preload force ΔF by settling or creeping Δf . Often an attempt is made to increase the elasticity of the bolted joint with a conventional spring washer in order to extend the service life on one hand and to counteract loosening and self-loosening on the other.

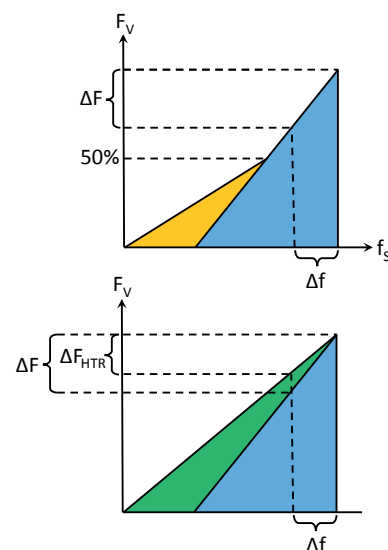
Problem:

Spring washers are already flattened under 50% of the preload force (orange). This renders them ineffective.

ADVANTAGE OF THE HEICO-TEC® REACTION NUT

The HEICO-TEC® Reaction Nut (green) remains elastic up to the full preload.

Preload losses ΔF_{HTR} are effectively reduced!





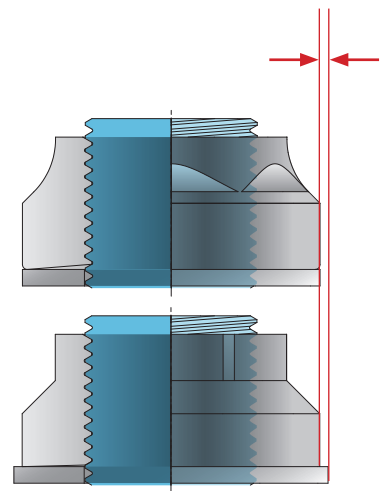
HEICO-TEC® THE BETTER CHOICE

REACTION NUTS OF OTHER MANUFACTURERS

Other manufacturers also offer reaction nuts.

Problem:

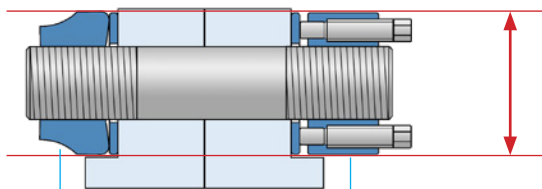
They usually have a larger outside diameter and a larger washer than the active tension nut on the opposite side. Therefore they need more space.



ADVANTAGE OF THE HEICO-TEC® REACTION NUT

The HEICO-TEC® Tension Nut and Reaction Nut have the same dimensions. Thus, their position is interchangeable.

No additional space is required!



Tension nuts and reaction nuts have the same dimensions

HEICO-TEC®
Reaction Nut

HEICO-TEC®
Tension Nut

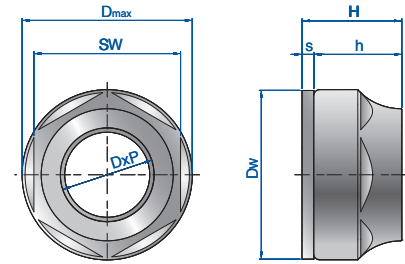
HEICO-TEC® TENSION NUTS

With HEICO-TEC® Tension Nuts large bolted joints can be easily pre-tensioned by hand. A torque wrench is sufficient to install the tension nut quickly, easily and reliably. Due to its compatibility with ISO 898-2, the HEICO-TEC® Tension Nut can replace any hex nut of the same strength class.

Further information on the HEICO-TEC® Tension Nut can be found at www.heico-tec.com



PRODUCT OVERVIEW



STRENGTH CLASS 8

type	nut body			washer		reaction nut		preload	
HTR-DxP/8	thread DxP	outer-Ø D _{max} mm	height h mm	Ø D _w mm	thickness s mm	total height H mm	socket size SW mm	nominal* F _{Vnom} kN	maximum** F _{Vmax} kN
HTR-M24x3/8	M24x3	44	20	43	4	24	36	195	225
HTR-M27x3/8	M27x3	50	24	49	4	28	41	245	285
HTR-M30x3,5/8	M30x3,5	56	28	55	5	33	46	300	360
HTR-M33x3,5/8	M33x3,5	59	28	58	5	33	50	365	445
HTR-M36x4/8	M36x4	69	35	68	5	40	55	440	525
HTR-M39x4/8	M39x4	72	35	71	5	40	60	525	625
HTR-M42x4,5/8	M42x4,5	75	35	74	5	40	60	600	720
HTR-M45x4,5/8	M45x4,5	84	42	83	6	48	65	685	840
HTR-M48x5/8	M48x5	87	42	86	6	48	70	805	945
HTR-M52x5/8	M52x5	91	42	90	6	48	75	930	1125
HTR-M56x5,5/8	M56x5,5	102	52	101	8	60	85	1095	1300
HTR-M60x5,5/8	M60x5,5	106	52	105	8	60	90	1260	1500
HTR-M64x6/8	M64x6	110	52	109	8	60	95	1435	1665
HTR-M68x6/8	M68x6	120	64	119	8	72	100	1645	1930
HTR-M72x6/8	M72x6	124	64	123	8	72	105	1855	2145
HTR-M76x6/8	M76x6	128	64	127	8	72	110	2090	2490
HTR-M80x6/8	M80x6	132	76	131	8	84	110	2340	2780
HTR-M85x6/8	M85x6	137	76	136	8	84	115	2655	3170
HTR-M90x6/8	M90x6	149	88	148	10	98	125	3005	3580
HTR-M95x6/8	M95x6	154	88	153	10	98	130	3350	4020
HTR-M100x6/8	M100x6	159	88	158	10	98	135	3740	4480
HTR-M105x6/8	M105x6	170	100	169	10	110	145	4165	4965
HTR-M110x6/8	M110x6	175	100	174	10	110	150	4570	5400
HTR-M115x6/8	M115x6	186	112	185	10	122	165	5020	6015
HTR-M120x6/8	M120x6	195	112	194	10	122	170	5525	6490

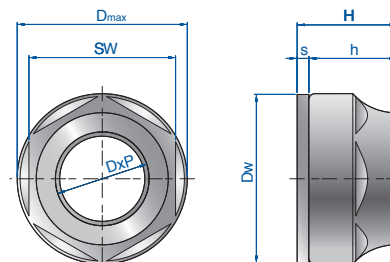
* approx. 2/3 of the ultimate tensile load of the bolt from strength class 8.8

** approx. elasticity limit of a bolt from strength class 8.8

The strength classes of the HEICO-TEC® Reaction Nuts comply with ISO 898-2. Other strength classes, bolt sizes, thread types and thread pitches are available on request.



PRODUCT OVERVIEW



STRENGTH CLASS 10

type	nut body				washer		reaction nut		preload		
HTR-DxP/10	thread D	pitch P		outer-Ø D _{max} mm	height h mm	Ø D _w mm	thickness s mm	total height H mm	socket size SW mm	nominal* F _{Vnom} kN	maximum** F _{Vmax} KN
HTM-M20x.../10	M20	2,5	2 1,5	40	20	39	4	24	32	180	220
HTM-M22x.../10	M22	2,5	2 1,5	42	20	41	4	24	34	235	265
HTM-M24x.../10	M24	3	2 1,5	46	24	45	4	28	36	260	320
HTM-M27x.../10	M27	3	2 1,5	50	24	49	4	28	41	350	410
HTM-M30x.../10	M30	3,5	2 1,5	56	28	55	5	33	46	425	505
HTM-M33x.../10	M33	3,5	2 1,5	66	33	65	5	38	50	515	625
HTM-M36x.../10	M36	4	3 1,5	69	35	68	5	40	55	620	740
HTM-M39x.../10	M39	4	3 1,5	72	35	71	5	40	60	725	880
HTM-M42x.../10	M42	4,5	3 1,5	81	40	80	6	46	65	845	1010
HTM-M45x.../10	M45	4,5	3 1,5	84	42	83	6	48	70	975	1180
HTM-M48x.../10	M48	5	3 1,5	88	42	87	6	48	75	1110	1330
HTM-M52x.../10	M52	5	3 2	98	50	97	8	58	80	1320	1585
HTM-M56x.../10	M56	5,5	4 2	102	52	101	8	60	85	1520	1830
HTM-M60x.../10	M60	5,5	4 2	110	52	109	8	60	90	1780	2130
HTM-M64x.../10	M64	6	4 2	116	60	115	8	68	95	2020	2420
HTM-M68x.../10	M68	6	4 2	120	64	119	8	72	100	2300	2750
HTM-M72x.../10	M72	6	4 2	134	64	133	10	74	110	2585	3120
HTM-M76x.../10	M76	6	4 2	138	72	137	10	82	115	2935	3510
HTM-M80x.../10	M80	6	4 2	147	72	146	10	82	120	3270	3910
HTM-M85x.../10	M85	6	4 2	150	84	149	10	94	125	3715	4460
HTM-M90x.../10	M90	6	4 2	160	84	159	10	94	130	4200	5040
HTM-M95x.../10	M95	6	4 2	173	94	172	12	106	145	4700	5560
HTM-M100x.../10	M100	6	4 2	182	94	181	12	106	150	5245	6110

The final type number is generated by substituting the "...“ by the respective thread pitch

* approx. 3/4 of the ultimate tensile load of the bolt from strength class 10.9

** approx. elasticity limit of a bolt from strength class 10.9

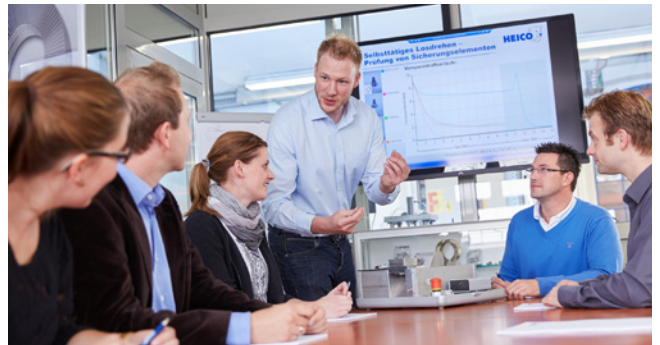


EXCELLENT **HEICO** QUALITY

FAST IMPLEMENTATION OF YOUR CONCEPT

When you work with HEICO, everything is provided from one source: bolted joint product development, testing in our own laboratory, engineering, bolted joint expertise, and IATF 16949 production quality.

Our versatile approach ensures flexible processes, making fast reaction and delivery times possible. HEICO's employees provide our customers with sophisticated solutions, whether for standard projects or specific concepts.



OUR EFFICIENT AND HIGH QUALITY MANUFACTURING FOR YOUR BENEFIT

HEICO customers benefit from an attractive service package. We are able to transfer cost advantages to our customers thanks to our extremely high real net output ratio.

Optimized processes also create the economic conditions for making standard products available from stock. Even the manufacture of HEICO-TEC® pressure bolts and pressure pins on high-performance multi-stage presses in cold or warm forming processes is possible.



A STRONG GROUP BEHIND A STRONG PRODUCT

The HEICO group, based in the town of Ense in Westphalia, Germany, is a family-owned business with a long tradition. The company has been working passionately in the field of fastening technology since 1900. HEICO operates internationally with multiple company sites strategically located throughout the world. The group offers the highest degree of technical support and individual testing options.



HEICO Befestigungstechnik GmbH

Oesterweg 21
D-59469 Ense-Höingen

Tel.: +49 (0) 29 38/ 805 -0
Fax: +49 (0) 29 38/ 805 -198

kontakt@heico-tec.de
www.heico-tec.de

