Version 01.2020
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ARNOLD®
BlueFastening Systems

ARNOLD-TV
presents

The TriPress® quick fastening system

TriPress®

Reduces assembly time by up to 75 %

- no assembly errors
- independent of pre-stress forces
- uses more economical operativ materials and tools
- no need to insert metal parts into injection moulds
- shorter cycle times
- no lost fastener elements

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Innovative Fastening and Engineering Solutions

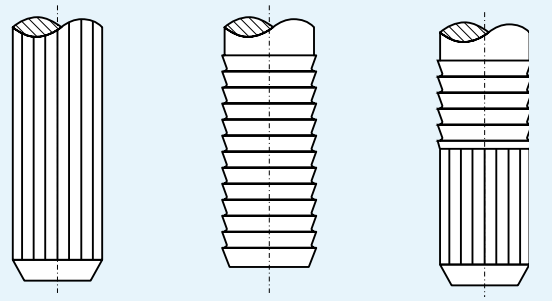
TriPress® is a triangular quick fastening system that can be clinched into plastic, light metals and steel. You can join two components quickly and economically by pressing in the TriPress® fastener.

Technology in application

The TriPress® is available in the following designs:

- triangular shank and axially parallel knurls provide high torsional strength
- circumferential locking flutes on triangular shaft generate high pull-out resistance
- combinations of flutes and knurls create positive-fit fastenings and achieve high torsional torques and pull-out forces

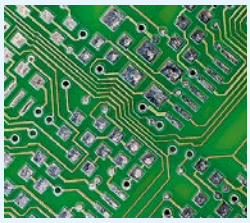
The fastener can be clinched into pre-prepared holes or injected as inserts into plastic housings.

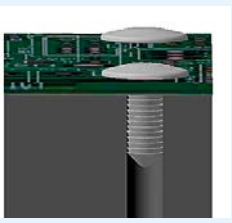


RAA axially parallel knurls | Circumferential locking flutes | Flutes / knurl combination

When expertise turns into profit

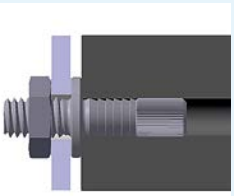
Electronics applications





The benefits: Linear clinching with no rotary movement minimises stress on the PCB. The flat head allows for compact construction.

Plastic-to-metal fasteners



The benefits: Circumferential locking flutes on triangular shaft generate high pull-out resistance.

Aluminium and metal applications

The benefits: TriPress® fasteners create positive-fit fastenings and achieve high torsional torques and pull-out forces.

The advantages of TriPress® over screw fastenings:

- 75 % less fitting time
- no assembly errors
- independent of pre-stress forces
- force-controlled clinching
- uses more economical operating materials and tools

The advantages of TriPress® over injection moulded screws (In plastics):

- no need to insert metal parts into injection moulds
- shorter cycle times
- no lost fastener elements

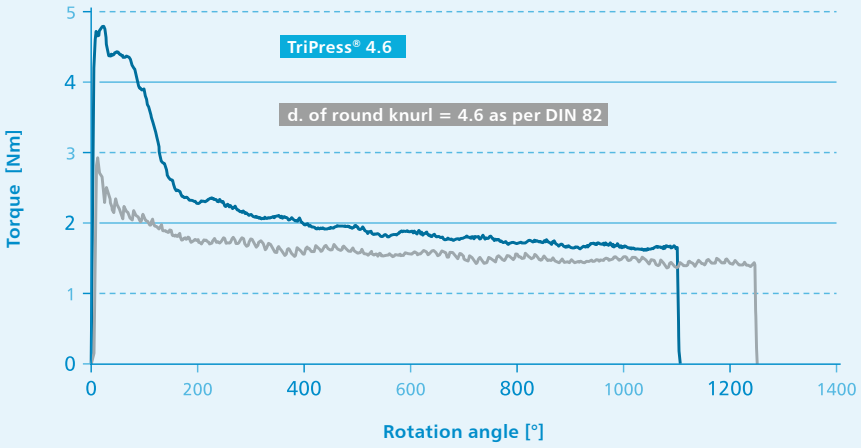
Your technical advantage

The advantages of the triangular shape:

- approximately 35 % greater torsional torques compared with round-knurled bolts
- greater vibration resistance
- highly reliable when fitting nuts with TriPress® centre collar version (MB) and TriPress® connecting fastener

Torque comparison

PA plates: hole diameter 4.3 mm, press-in depth 7mm

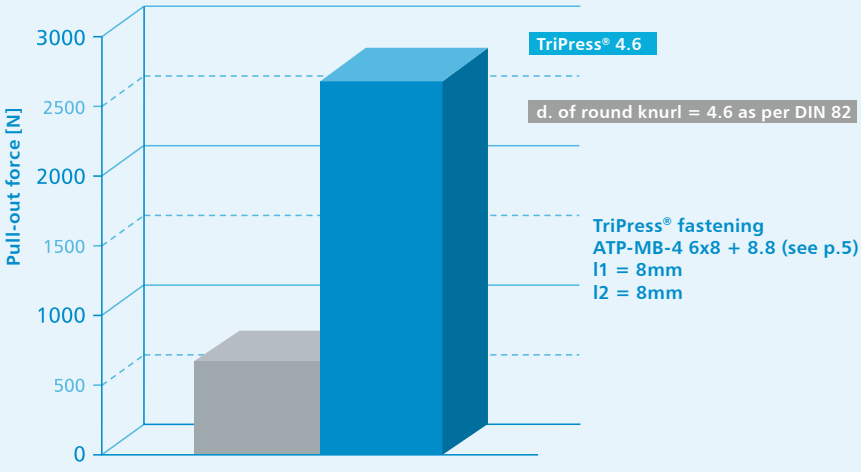


Benefits of the circumferential locking flutes

- improves pull-out forces
- very secure against unscrewing by itself

Comparison of pull-out forces

PA plates: hole diameter 4.3 mm, press-in depth 16mm



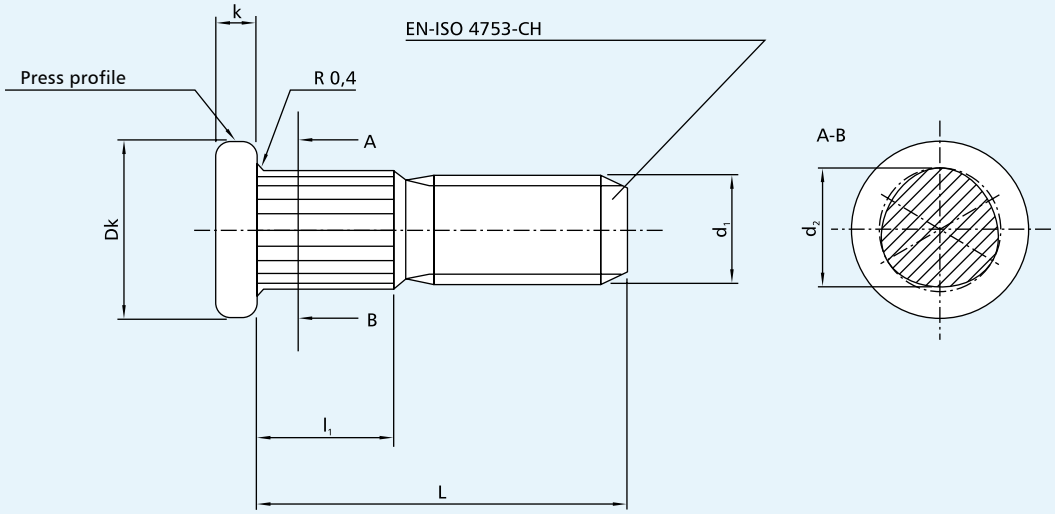
TriPress® is a product manufactured by ARNOLD UMFORMTECHNIK GmbH & Co. KG

Technical descriptions and fitting recommendations

TriPress® connecting fastener

The TriPress®connecting fastener is pressed into the component as far as the head setting. Once the clinch operation is done, the threaded section of the TriPress® fastener is now jutting out of the component. The part that needs to be fastened on is placed over it, and then fastened with a nut.

- high torques due to triangular shape and longitudinal knurl
- high press-out strength due to press fit in the component



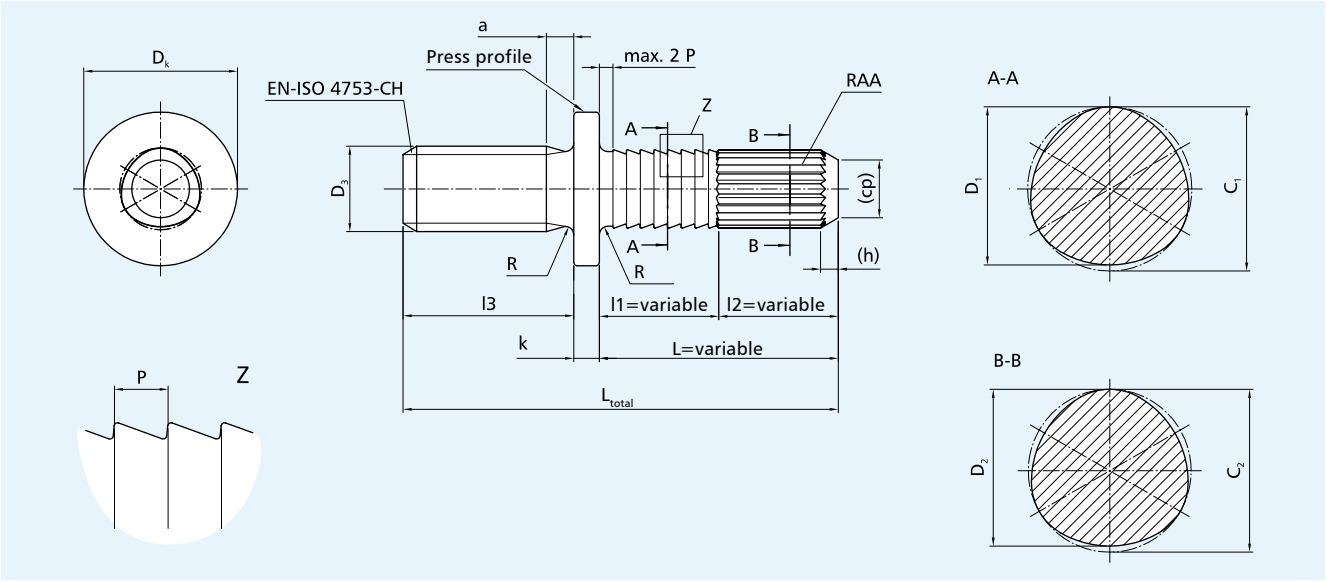
TriPress® nom.Ø d_1	M3	M3,5	M4	M5	M6	M8
d_2 ±0.05	3.23	3.50	4.60	5.43	6.43	8.49
k ±0.15	0.7	0.8	1.0	1.5	1.8	2.5
D_k	$6_{-0.36}$	$7_{-0.36}$	$8_{-0.36}$	$9_{-0.36}$	$12_{-0.43}$	$16_{-0.43}$
l_1	Dimensions can be determined variably					
RAA division	0.5	0.5	0.6	0.6	0.6	1.0
L	Dimensions can be determined variably					
	Recommendation for core hole diameter[1)]					
	M3	M3.5	M4	M5	M6	M8
Core hole Ø*	3.15	3.55	4.20	5.20	6.35	8.30

* hole tolerance -0.1 mm. All dimensions in mm. Other dimensions on request.

[1)] The dimensions stated here are merely guidelines, based principally on theoretical calculations. It is therefore important that you carry out laboratory trials using production parts in order to determine the precise parameters (clinching and press-out forces, core hole diameters, torsion moments etc.)

Centre collar version TriPress® MB

TriPress® with centre collar combined with metric thread. Flutes and knurls are pressed into the plastic as far as the centre collar. The connecting element can be fastened to the component with a nut.



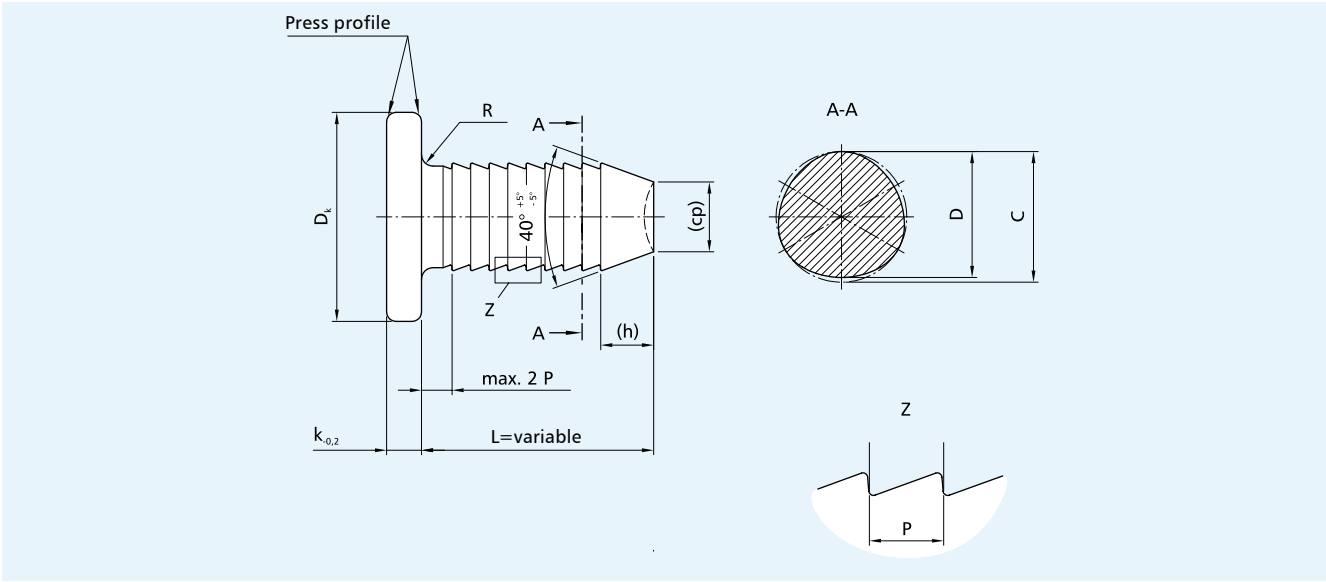
TriPress® nom. Ø d	2.8	3.3	3.7	4.6	5.4	7.4
P	0.80	0.80	0.80	0.80	0.80	1.30
D_1 ±0.05	2.86	3.29	3.71	4.63	5.46	7.41
C_1 ±0.05	2.96	3.41	3.85	4.79	5.66	7.66
D_2 ±0.05	2.80	3.23	3.68	4.60	5.43	7.39
C_2 ±0.05	2.90	3.35	3.82	4.76	5.63	7.64
D_3	M3	M3.5	M4	M5	M6	M8
k ±0.15	0.7	0.8	1.0	1.5	1.8	2.5
D_k	$6_{-0.36}$	$7_{-0.36}$	$8_{-0.36}$	$9_{-0.36}$	$12_{-0.43}$	$16_{-0.43}$
(cp)	2.3	2.6	3.0	3.7	4.5	6.0
l3 min.	4.0	4.0	5.0	6.0	7.0	10.0
RAA division	0.5	0.5	0.6	0.6	0.6	1.0
R approx.	0.30	0.35	0.40	0.50	0.60	0.80
max. a	1.0	1.2	1.4	1.6	2.0	2.5
(h)	0.7	1.0	1.0	1.3	1.3	2.0

All dimensions are in mm. Other dimensions supplied on request.

Length L_{total}	above to 6 – 10	above to 10 – 18	above to 18 – 30	above to 30 – 50	above to 50 – 80
Tolerance	±0.29	±0.35	±0.42	±0.50	±0.95

Head variant TriPress® K

- Positioning the clamping part through-hole over the component core hole
- Press the TriPress® into the core hole via the through-hole
- The TriPress® head arrives at the support on the clamping part and fixes it in place

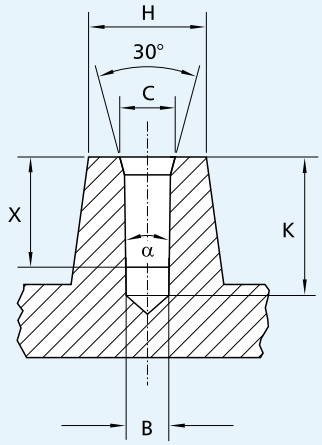


TriPress® nom. Ø d	2.3	2.8	3.3	3.7	4.6	5.4	7.4
P	0.5	0.5	0.5	0.6	0.8	0.8	1.0
D ±0.05	2.31	2.77	3.20	3.64	4.63	5.46	7.32
C ±0.05	2.40	2.87	3.32	3.78	4.79	5.66	7.57
$k_{-0.2}$	0.6	0.7	0.8	1.0	1.5	1.8	2.5
D_k	$4.5_{-0.36}$	$6_{-0.36}$	$7_{-0.36}$	$8_{-0.36}$	$9_{-0.36}$	$12_{-0.43}$	$16_{-0.43}$
R approx.	0.25	0.30	0.35	0.40	0.50	0.60	0.80
(cp)	1.3	1.8	2.1	2.4	3.0	3.6	4.8
(h)	1.5	1.4	1.6	1.8	2.3	2.7	3.6

All dimensions are in mm. Other dimensions supplied on request.

Length L_{total}	above to 3 – 6	above to 6 – 10	above to 10 – 18	above to 18 – 30	above to 30 – 50	above to 50 – 80
Tolerance	±0.24	±0.29	±0.35	±0.42	±0.50	±0.95

Fitting recommendations for ductile plastics



Core hole recommendation for cast holes.
Max. draft angle a = 1 °

Core hole diameter recommendations for plastics[1)]

Applicable to centre collar variant (TriPress® MB) and the head variant (TriPress® K)

TriPress® nom. Ø d	Ø C [mm]	PA	PA6	PP	ABS	PC-ABS	PC	PE	PPO	PMMA
		Core-hole Ø B in mm								
2.3	2.40	2.10	2.10	2.10	2.10	2.20	2.20	2.10	2.20	2.20
2.8	2.90	2.50	2.50	2.50	2.50	2.60	2.60	2.50	2.60	2.60
3.3	3.40	3.00	3.00	3.00	3.00	3.10	3.00	3.00	3.00	3.00
3.7	3.80	3.45	3.50	3.45	3.50	3.50	3.50	3.45	3.50	3.50
4.6	4.80	4.30	4.35	4.20	4.30	4.30	4.40	4.30	4.30	4.40
5.4	5.60	5.00	5.10	5.00	5.10	5.10	5.10	5.00	5.10	5.10
7.4	7.60	7.10	7.20	7.10	7.10	7.10	7.10	7.00	7.10	7.10

Core hole depth K_{min} = max press-in depth X + 1 mm

Recommendation for determining the design TriPress®

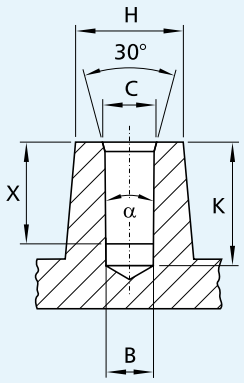
For high tensile stress and low torsion stress:
TriPress® with locking flutes only, in hardened and tempered version (strength class 10.9)
Recommended press-in depth X: 2-4 x Nominal Ø d

For low tensile stress and high torsion stress:
TriPress® with axially parallel knurls only, hardened and tempered (strength class 10.9).
Recommended press-in depth X: 1.5 - 2.5 x Nominal Ø d

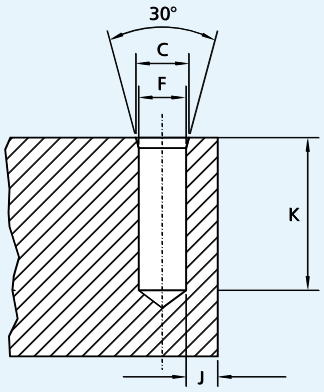
For medium tensile stress and medium torsion stress:
TriPress® with circumferential locking flutes and axially parallel knurls in hardened and tempered version (strength class 10.)
Recommended press-in depth X: 2.0 - 3.5 x nominal Ø d

[1)] The above dimensions are merely guidelines, based principally on theoretical calculations. It is therefore important that you carry out the relevant laboratory trials using production parts in order to determine the precise parameters (clinching and press-out forces), core hole diameters, torsion moments etc.)

Fitting recommendations for ductile light metals



Core hole recommendation for cast holes. Max. draft angle a = 1 °



Tolerance range H11 for bore diameter F

Core hole diameter recommendations for light metal alloys [1)]

Applicable to centre collar variant (TriPress® MB) and the head variant (TriPress® K)

TriPress® nom. Ø d	Ø C [mm]	Cast core hole Ø B [mm] at depth X	Drilled core hole Ø F [mm]	Minimum tube Ø H [mm]	Minimum distance From edge J [mm]
2.8	2.90	2.63	2.65	5.60	1.40
3.3	3.40	3.06	3.10	6.60	1.60
3.7	3.80	3.48	3.50	7.40	1.80
4.6	4.80	4.40	4.40	9.20	2.30
5.4	5.60	5.26	5.30	10.80	2.70
7.4	7.60	7.18	7.20	14.80	3.70

Core hole depth K_{min} = max press-in depthX + 1 mm

Recommendation for determining the TriPress® design

For high tensile stress and low torsion stress:
TriPress® with locking flutes only, in hardened and tempered version (strength class 10.9) or EH grade.
Recommended press-in depth X:
1.5-2.54 x Nominal Ø d

[1)] The above dimensions are merely guidelines, based principally on theoretical calculations. It is therefore important that you carry out the relevant laboratory trials using production parts in order to determine the precise parameters (clinching and press-out forces), core hole diameters, torsion moments etc.)

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