



SNAPLOC®

Connecting and fastening system isolated against vibration and noise

BÖLLHOFF

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SNAPLOC® Decoupling plug-in connection

The system

At the beginning, we had the task of developing a connection consisting of a maximum of two elements. The function was to isolate against vibration and noise, and to achieve a considerable reduction in assembly time and thus save costs in production.

In this respect, the fastening of engine covers was among the first projects. As the development progressed the SNAPLOC® brand gained in importance.



SNAPLOC® is a two-part system – ball stud and coupling – for fast installation. The coupling is inserted into the bottom of the respective cover in a specially designed mounting and held in a closed-form. The ball stud can be screwed into various mating components, manifolds, brackets and motor blocks.

Simply push-fit to connect and pull apart to detach. SNAPLOC® provides optimal fastening.

The function

SNAPLOC® is based on the simple principle of a snap connection. A ball socket is formed within the coupling, in which the ball stud can snap into as a counter-piece.

The special features of SNAPLOC®: the connection compensates tolerances and isolates vibration and noise.



Detached connector



Attached connector

Here you can see a cross section of the coupling.

SNAPLOC® – The variants of the system

Ball studs

SNAPLOC® ball studs are available in six basic designs. They may be distinguished in the form of their fastening.

- Ball studs with external thread
- Ball studs with internal thread
- Ball studs with UNITEC® K' in K' (plastic in plastic) thread
- Ball studs in clip form
- Ball studs adhesive version
- Ball studs for injection moulding

Four product variations are currently available which are defined by the characteristic feature of the ball head diameter (available are ball head diameters 7, 8, 10 and 15 mm).

The following parameters are variable – shaft length, thread diameter and thread length, material, colour, material of the blank and various drives, whereby two drives may also be realised per ball stud.

The various ball studs may be combined, in all ways, with the various coupling designs within one product size.

Ball studs in metal/plastic combination

SNAPLOC® ball studs with external thread

The ball studs with metallic external threads are available with varied thread forms. This covers for example metrical threads, American/British threads, self-tapping threads etc., in compliance with the corresponding norms or also special variants.

For the corresponding dimensions please refer to Pages 12 – 17.



SNAPLOC® ball studs with internal thread

The ball studs with metallic internal threads are available with varied thread forms. Some examples are metrical threads, American/British threads, etc. in compliance with the corresponding norms or also special variants.

The corresponding dimensions may also be seen on Pages 18 – 19.



Solid plastic ball studs

SNAPLOC® ball studs with UNITEC® K' in K' thread (plastic in plastic)/direct screw connection

Ball studs with self-tapping or self-grooving plastic threads can be inserted in plastic parts.

A mounting thread is grooved in a locating hole by the UNITEC® K' in K' thread of the ball stud developed and patented by Böllhoff. The formed thread is self-locking and can, at the same time, be used as a repeat screw connection.

Thus screw clamping and repeat screw connection are realised without an additional screw locking device.

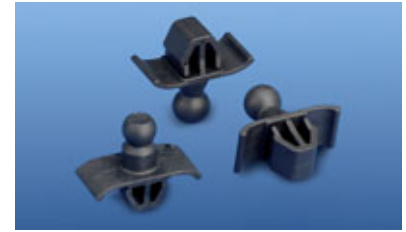


The corresponding dimensions may also be seen on Pages 20 – 21.

SNAPLOC® – The variants of the system

SNAPLOC® ball studs in clip form

Due to the special geometry of the parts, these ball studs may be fastened by simply being clipped in an opening. A fastening solution which is highly suitable for applications in which a thread or bolt cannot be inserted into the part. For the corresponding opening geometries and plate thicknesses please refer to the technical information on Page 22 – 23.



SNAPLOC® ball studs adhesive version

The adhesive version is suitable where neither screwing nor the application of bore holes to the mating components is possible.

SNAPLOC® ball studs for injection moulding

The injection moulded version is suitable for applications where the ball stud can be installed directly at the component.

Coupling

SNAPLOC® couplings are available in three basic designs. They vary in the type of fastening.

- Couplings for mounting dome
- Couplings for plate fastenings
- Couplings for adhesive version

Four product variants are currently available which are defined through the characteristic feature of the ball head diameter of the ball stud. Available are ball head diameters 7, 8, 10 and 15 mm.

The following parameters are variable – external diameter, collared/collarless, collar depth, material, colour and other special designs.

The various couplings may be combined, in all ways, with the various ball stud designs within one product size.

SNAPLOC® couplings for mounting dome

The couplings for mounting domes are designed so that they can be inserted automatically or manually into the corresponding locating holes, without requiring any additional tools. Thus assembly is possible within a short time.

For the corresponding dimensions please refer to Pages 24 – 31.

Example: view of assembled condition

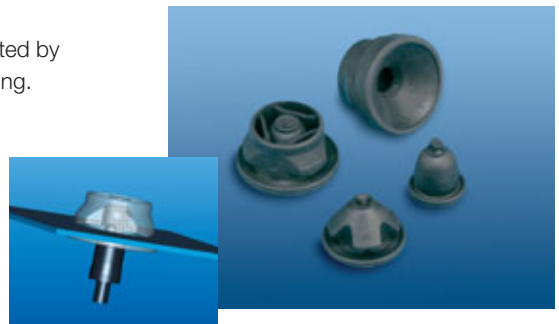


SNAPLOC® couplings for plate fastenings

Due to the parts geometry, these couplings may be mounted by simply being pushed into a specified bore or square opening.

The corresponding bore diameters or opening geometries and plate thicknesses may be seen on Pages 32 – 35.

Example: view of assembled condition



SNAPLOC® couplings adhesive version

The adhesive version is suitable where neither mounting domes nor the application of bore holes to the mating components is possible.

SNAPLOC® – The variants of the system

Production and material selection of the ball studs

The ball studs are available in various thermoplastic materials. The following materials are used depending on design, technical and functional requirements from the ball studs:

Ball studs with metallic external thread or metallic internal thread

Depending on the long-term heat resistance, chemical-resistance, requirements from the strength and/or stiffness glass fibre-reinforced polyamides are used.

Depending on the strength requirement, there are various metallic materials available, for both external as well as internal threads. In the case of ball studs with metallic external threads the metal studs are encapsulated by injection moulding.

Various procedures are suitable for producing the ball studs with metallic internal thread. One process is over-moulding the internal thread insert. In the other process the plastic ball studs are moulded and subsequently fitted with a metallic insert. This may be carried out through mechanical insertion or embedding.

The surface requirements for the metallic materials are customized to meet customer requirements. Principally, all known types of surfaces can be applied on the metal blanks.

Please contact us.

Ball studs made of solid plastic with UNITEC® K' in K' thread

Various ball stud materials can be used depending on the part materials. Furthermore, the suitable solid plastic ball studs are selected for the corresponding material depending on the requirements concerning functionality, defined long-term heat resistance, required strengths and mechanical properties (torques, extraction force).

Please make use of our consulting service.

Ball studs made of solid plastic in clip form

High stiffness, mechanical strength, very high impact strength or notched impact strength and sufficient heat resistance are necessary for the functionality of the ball studs in clip form. Corresponding materials will be selected for this ball stud type depending on the requirements.

SNAPLOC® – The variants of the system

Couplings – manufacturing and material choice

Depending on the requirements regarding thermal and mechanical properties as well as fluid resistance, cross-linked elastomers/rubber or thermoplastic elastomers are used in injection moulding.

TPE-V's

- Good mechanical properties from -40° C to 120°C
- Good fluid resistance
- High fatigue strength

TPC's

- Good resistance to chemicals
- Outstanding oil and diesel oil resistance
- Good elasticity at low temperatures
- Good damping properties at low temperatures

Couplings made of cross-linked elastomers/rubber are subdivided into three categories. Currently, couplings made of ECO (lead-free), VMQ and EPDM are in use.

ECO:

- Very good compression set
- Good resistance to mineral oils and greases

EPDM:

- Very good compression set
- Good resistance to chemicals
- Good resistance to mineral oils and greases
- High temperature resistance up to 130 °C

VMQ:

- Outstanding ozone resistance
- Excellent compression behaviour
- High temperature resistance up to 200 °C

Comparison of TPE class properties

Properties	Cross-linked elastomers/rubber			Thermoplastic elastomers	
	EPDM	ECO	VMQ	TPE-V	TPC
hardness (shore A/D)	30A – 90A	40A – 90A	30A – 80A	35A – 50D	33D – 72D
temperature resistance °C	-50 to 130	-40 to 130	-80 to 200	-40 to 120	-50 to 130
abrasion	+/0	0	-	-	+
compression set (at room temperature)	++	0	++	+	0
elasticity	+	0	+	++	+
oil resistance	-	++	0	-	++
acid resistance	++	++	-	++	0
alkali resistance	++	+	-	++	0
ozone and weathering resistance	++	++	++	++	+

- ++ very good
- + good
- 0 average
- poor

SNAPLOC® Decoupling plug-in connection

The benefits for the customer

- Decoupling of vibration and noise
- Compensating tolerances



- Cost-effective:
 - Low number of pieces
 - Easy installation and dismantling



- Design advantage:
Integration of components into the part
- Construction advantage:
Diversity of variants caused to various fastening possibilities



SNAPLOC® Decoupling plug-in connection

Possible and implemented main fields of application in general industry

Plant engineering

- e.g. extraction channel at calender plant

Store construction

- e.g. bar lighting

Consumer electronics

- e.g. decoration strip fastening for television sets
- e.g. speaker fastening

Medical engineering

- e.g. dialysis machines

Mechanical engineering

- e.g. diesel particulate filter cover

Crane engineering

- e.g. cabin coverings

Fork lift trucks

- e.g. electronic assembly

Filter technique

- e.g. fastening filter frame



SNAPLOC® Decoupling plug-in connection

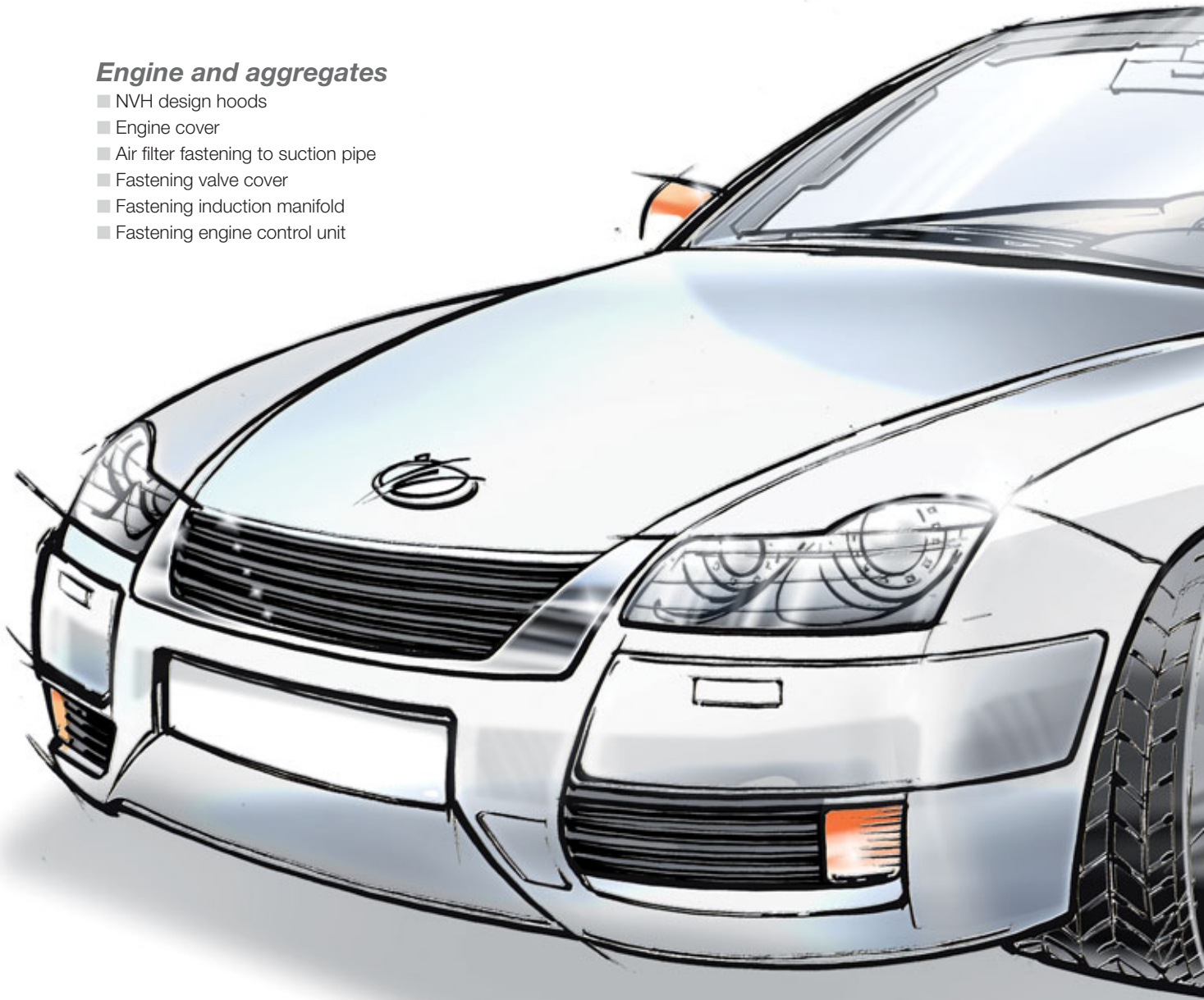
Possible and implemented main fields of application in automotive industry

Engine and aggregates

- NVH design hoods
- Engine cover
- Air filter fastening to suction pipe
- Fastening valve cover
- Fastening induction manifold
- Fastening engine control unit

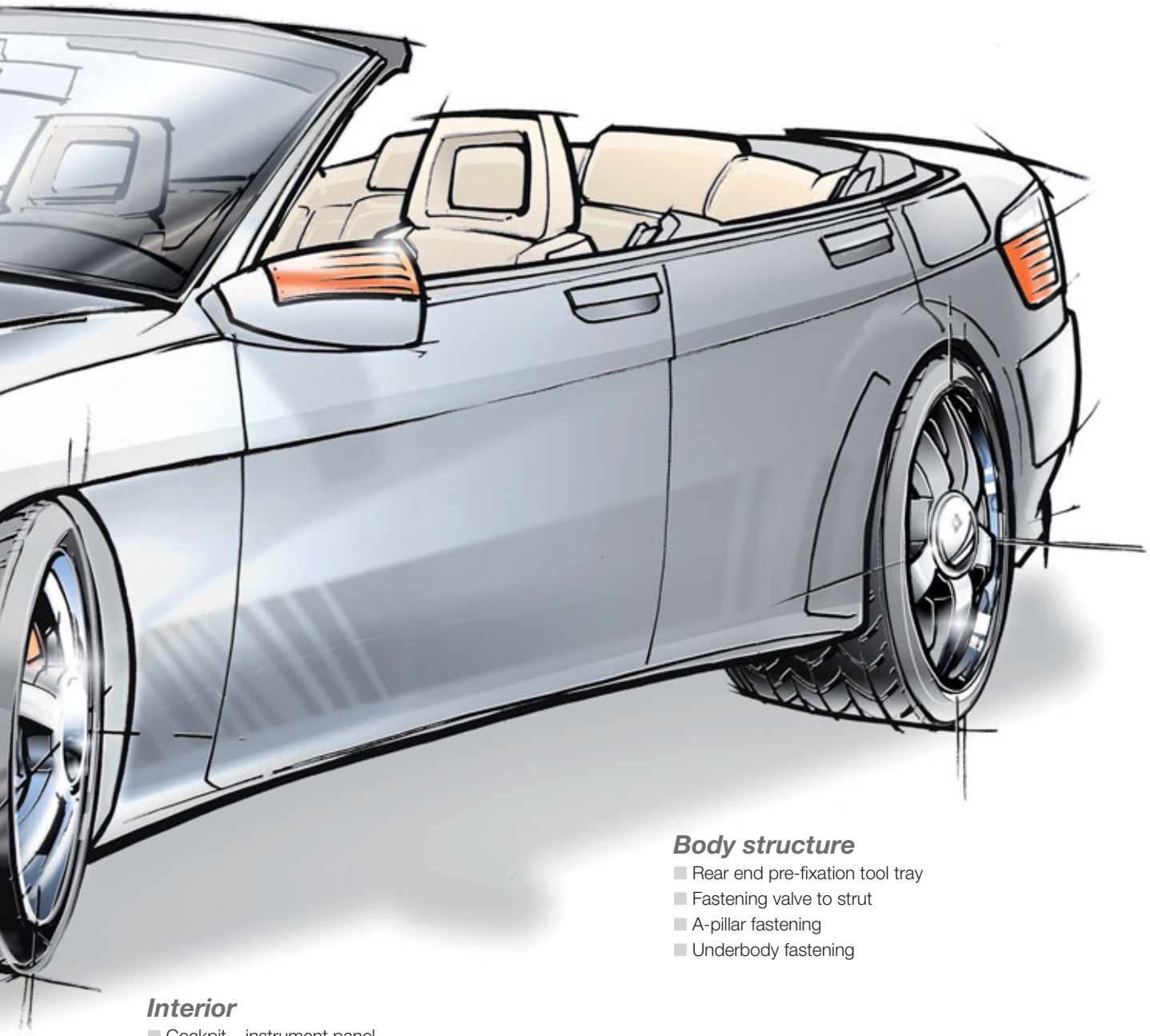
Electrical/electronic equipment

- Fastening cooler



Body (exterior)

- Trim panel bumper
- Fastening rear light



Body structure

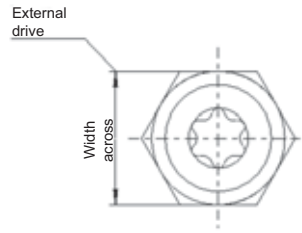
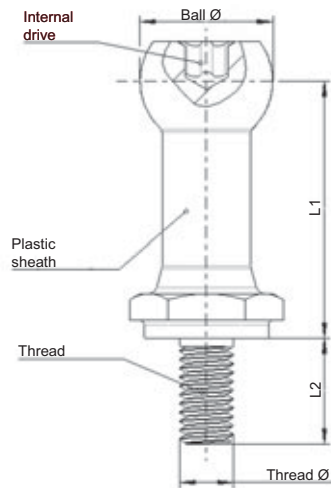
- Rear end pre-fixation tool tray
- Fastening valve to strut
- A-pillar fastening
- Underbody fastening

Interior

- Cockpit – instrument panel
- Seats – locker
- Cover/acoustics
- Rear shelf
- Fastening shelf to roof liner

SNAPLOC® Technical information
Metal/plastic combination ball studs with external thread

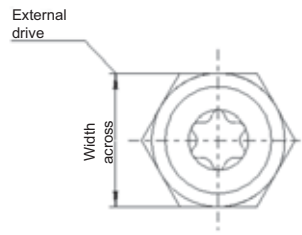
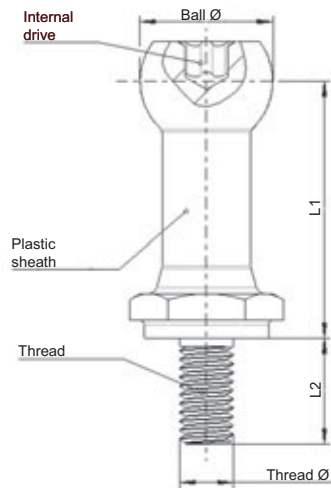

Part no.	Dimensions plastic [mm]		Thread dimensions [mm]			Internal drive		External drive	
	Ball Ø	Depth (to ball center) L1	Type of thread	Thread Ø	Thread-length L2	Internal Hex socket round ISO 10664	Cross-recess	Hex socket round similar ISO 10664	Width across
4030 007 0006	7	11.9	metric	M6	9	–	–	–	10
4030 007 0008	7	11.9	metric	M6	6	–	–	–	10
4039 016 0601	7	21.5	metric	M6	12	–	–	–	10
4039 015 0602	7	11.9	metric (plastic)	M6	7	–	–	–	10
4030 080 3901	8	9.9	metric	M6	8	–	–	–	10
4030 080 3902	8	9.9	AMTEC® thread (BLH-Art: B52004)	Ø6	13.7	–	–	–	10
4030 080 0001	8	18	metric	M4	6	25	–	–	–
4032 082 1905	8	18	metric	M4	12	25	–	–	–
4039 007 0604	8	9.9	metric	M6	9	–	–	–	10
4039 012 0601	8	21	metric	M6	8	25	–	–	–
4030 010 0002	10	16	metric	M6	12	–	–	–	13
4031 100 3900	10	16	metric	M6	12	–	–	–	13
4031 100 3902	10	16	metric	M6	8	–	–	–	13
4031 100 3904	10	16	metric	M6	9	–	–	–	13
4031 100 3905	10	16	metric	M6	12	–	–	–	13
4031 100 3906	10	16	metric	M6	12	–	–	–	13
4031 100 3907	10	16	metric	M6	12	30	–	–	13
4031 100 3908	10	16	metric	M6	12	–	–	–	13
4031 100 3910	10	16	metric	M6	12	–	–	–	13
4039 001 0601	10	28	metric	M6	16	–	–	–	10
4039 001 0602	10	51	metric	M6	8	–	–	–	13



		Material				Thread surface	Comment
Solid plastic	Solid metal	Plastic sheath	Thread material	Thread property class			
-	-	PPA – GF black	Steel	4.8	r672 VW TL 244 / Zn/Ni alloy black chromated		
-	-	PPA – GF black	Steel	4.8	r672 VW TL 244 / Zn/Ni alloy black chromated		
-	-	PPA – GF black	Steel	4.8	JS 500, TTF 1:3 (Ford wx 100, S. 437)		
PPA – GF black	-	-	-	-	-		
-	-	PPA – GF black	Steel	4.8	GME 00252-B7XV		
-	-	PPA – GF black	Steel	10.9	VW TL 245 Of. T 602	heat stabilized	
-	-	PPA – GF black	Steel	4.8	Zn/Ni coating Cr(VI)-free passivated		
-	-	PA66 GF ähnlich RAL7010 grey	Steel stainless				
-	-	PPA – GF black	Steel	4.8	r672 VW TL 244/ GS 90010 ZNNID SW		
-	-	PPA – GF black	Steel	4.8	Zn/Ni coating Cr(VI)-free transparent passivated sealed		
-	-	PPA – GF black	Steel	4.8	Zn/Ni coating Cr(VI)-free passivated black r672 VW TL 244		
-	-	PPA – GF black	Steel	4.8	GME 00255-A light grey		
-	-	PPA – GF black	Steel	4.8	GME 00252-B7XV		
-	-	PPA – GF black	Steel	8.8	GME 00252-B7XV		
-	-	PPA – GF black	Steel	8.8	GME 00252-B7XV		
-	-	PPA – GF black	Steel	4.8	c687 VW TL 194		
-	-	PPA – GF black	Steel	4.8	Zn/Ni coating Cr(VI)-free passivated black		
-	-	PPA – GF black	Steel	4.8	C697 VW TL 194		
-	-	PPA – GF black	Steel	8.8	Zn/Ni coating Cr(VI)-free passivated		
-	-	PPA – GF black	Steel	8.8	ZN5 GLCC		
-	-	PPA – GF black	Steel	8.8	Zn/Ni alloy black chromated		

SNAPLOC® Technical information
Metal/plastic combination ball studs with external thread


Part no.	Dimensions plastic [mm]		Thread dimensions [mm]			Internal drive		External drive	
	Ball Ø	Depth (to ball center) L1	Type of thread	Thread Ø	Thread-length L2	Internal Hex socket round ISO 10664	Cross-recess	Hex socket round similar ISO 10664	Width across
4039 002 0601	10	30.1	metric	M6	15	–	–	–	15
4039 002 0602	10	28	metric	M6	16	–	–	–	10
4039 007 0603	10	9.5	metric (plastic)	M6	10	30	–	–	–
4039 007 0605	10	19.4	metric	M6	8	–	–	–	13
4039 009 0602	10	16	AMTEC® thread (BLH B52004)	6	13.7	–	–	–	16
4039 009 0601	10	35.1	metric	M6	15	–	–	–	15
4039 017 0601	10	43.5	metric	M6	12	–	–	–	12
4039 017 0602	10	43.5	metric	M6	8	–	–	–	12
4039 017 0603	10	43.5	metric	M6	12	–	–	–	12
4039 002 0602	10	28	metric	M6	16	–	–	–	10
4039 006 0601	10	28	metric	M6	12	–	–	–	13
4030 015 0003	15	18	metric	M6	8	40	–	–	15
4032 150 3904	15	18	DIN EN ISO 1478	ST 6.3	30	40	–	–	15
4030 015 0004	15	21	metric	M6	8	40	–	–	15
4030 015 0005	15	21	metric	M6	12	40	–	–	15
4033 150 3815	15	21	metric	M8	15	40	–	–	15
4033 150 3903	15	21	metric	M6	12	40	–	–	15
4033 150 3904	15	21	AMTEC® thread (BLH B52004)	6	13.7	40	–	–	15
4034 150 3901	15	29	metric	M6	12	40	–	–	15
4034 150 3902	15	29	metric	M6	12	40	–	–	15
4030 015 0007	15	12	metric	M6	8	40	–	–	15



Material

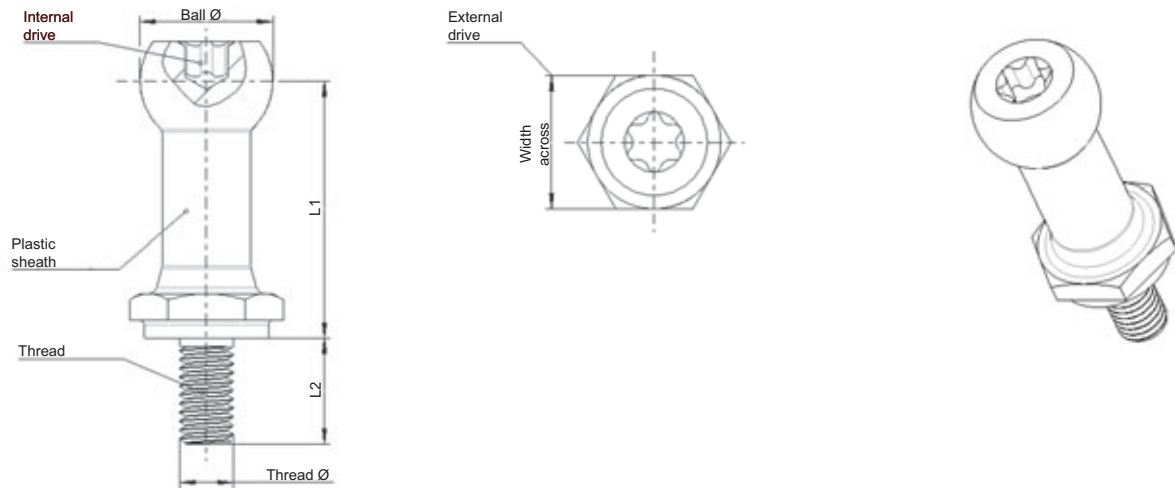
Solid plastic	Solid metal	Plastic sheath	Thread material	Thread property class	Thread surface	Comment
-	-	PPA – GF black	Steel	4.8	GME 00255-A light grey	external thread with recess
-	-	PPA – GF black	Steel	8.8	GMW 3359 / GME 00255-A light grey	
PPA – GF black	-	-	-	-	-	clamping area
-	-	PPA – GF black	Steel	4.8	r643 VW TL 244	
-	-	PPA – GF black	19 Mn B4	10.9	Zn/Ni coating Cr(VI)-free passivated transparent	
-	-	PPA – GF black	Steel	4.8	GMW 3359 / GME 00255-A light grey	external thread with recess
-	-	PPA – GF black	Steel	4.8	GME 00255-A grey	
-	-	PPA – GF black	Steel	4.8	GME 00252-B7XV	
-	-	PPA – GF black	Steel	8.8	GME 00252-B7XV	
-	Steel	-	-	8.8	GMW 3359/GME 00255-A-silver	
-	-	PPA – GF black	Steel	8.8	GME-00252B7XV	
-	-	PPA – GF black	Steel	4.8	Zn/Ni coating Cr(VI)-free passivated black	
-	-	PPA – GF black	Steel	acc. ISO 2702	Zn 5 G LCC (bright galvanized, yellow chromated)	
-	-	PPA – GF black	Steel	4.8	Zn/Ni coating Cr(VI)-free passivated black	
-	-	PPA – GF black	Steel	4.8	Zn/Ni coating Cr(VI)-free passivated black	
-	-	PPA – GF black	Steel	4.8	Zn/Ni alloy yellow chromated	
-	-	PPA – GF black	Steel	4.8	JS 500, TTF 1:3 (Ford wx 100, S.437)	
-	-	PPA – GF black	Steel	10.9	Zn/Ni alloy Cr(VI)-free passivated transparent	
-	-	PPA – GF black	Steel	4.8	Zn/Ni alloy black chromated	
-	-	PPA – GF black	Steel	4.8	JS500, TTF 1:3 Ford WX 100, S.437	
-	-	PPA – GF black	Steel	4.8	Zn/Ni alloy Cr(VI)-free passivated black	

SNAPLOC® Technical information
Metal/plastic combination ball studs with external thread

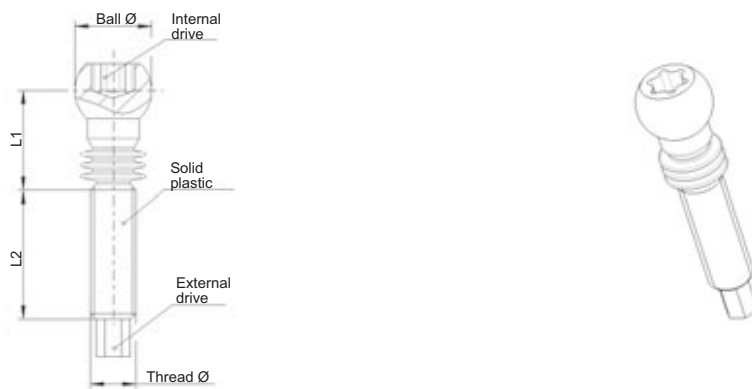

Part no.	Dimensions plastic [mm]		Thread dimensions [mm]			Internal drive		External drive	
	Ball Ø	Depth (to ball center) L1	Type of thread	Thread Ø	Thread-length L2	Internal Hex socket round ISO 10664	Cross-recess	Hex socket round similar ISO 10664	Width across
40361503812	15	21	metric	M8	12	40	–	–	15
4039 003 0603	15	21	metric	M6	12	–	–	–	15
4039 003 0604	15	61	metric	M6	12	–	–	–	15
4039 003 0605	15	21	metric	M6	12	–	–	–	15
4039 003 0606	15	23.5	metric	M6	12	–	–	–	15
4039 019 0601	15	61	AMTEC® thread (BLH B52004)	6	13.7	–	–	–	15

Solid plastic ball studs with external thread and shank seal


Part no.	Dimensions plastic [mm]		Thread dimensions [mm]			Internal drive		External drive	
	Ball-Ø	Depth (to ball center) L1	Type of thread	Thread-Ø	Thread-length L2	Internal Hex socket round ISO 10664	Cross-recess	Hex socket round similar ISO 10664	Width across
4039 004 0602	10	13.1	metric (plastic)	M6	16.9	30	–	25	–
4039 007 0601	10	12	metric (plastic)	M6	21	25	–	25	–



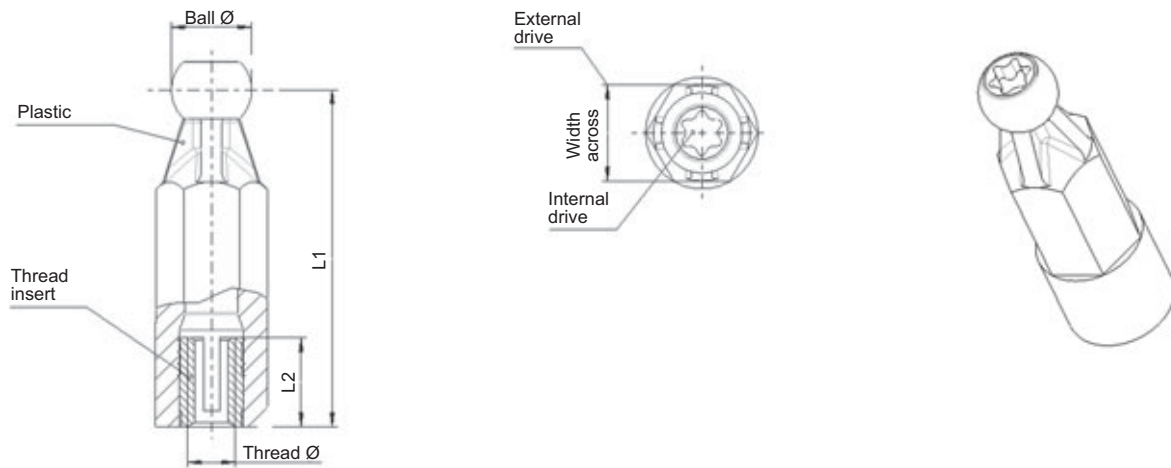
		Material				
Solid plastic	Solid metal	Plastic sheath	Thread material	Thread property class	Thread surface	Comment
-	-	PPA – GF black	Steel	4.8	Zn/Ni alloy black chromated	
-	-	PPA – GF black	Steel	8.8	JS 500, TTF 1:3 (Ford wx 100, S. 437)	
-	-	PA 66 – GF black	Steel	8.8	JS 500, TTF 1:3 (Ford wx 100, S. 437)	
-	-	PPA – GF black	Steel	4.8	GMW 3359 / GME 00255-A light grey	external thread with recess, solid ball
-	-	PPA – GF black	Steel	8.8	JS 500, TTF 1:3 (Ford wx 100, S. 437)	solid ball
-	-	PA 66 – GF black	Steel	10.9	VW TL 245 surface T 602	



		Material				
Solid plastic	Plastic sheath	Thread material	Thread property class	Thread surface	Comment	
PA 66/6-GF black	-	-	-	-		
PA 66/6-GF black	-	-	-	-		

SNAPLOC® Technical information
Metal/plastic combination ball studs with internal thread

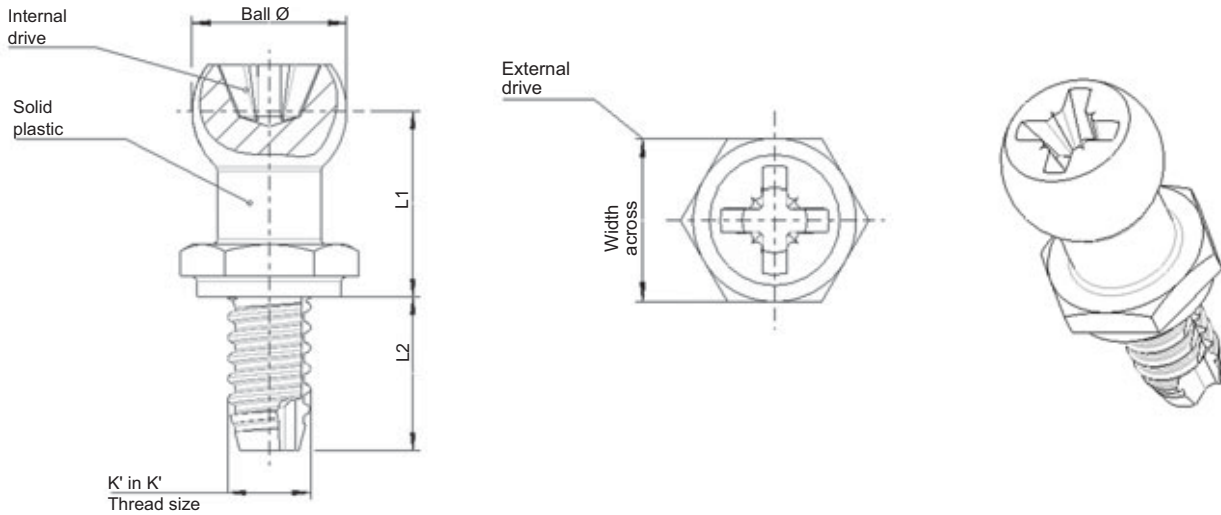

Part no.	Dimensions plastic [mm]		Thread dimensions [mm]			Internal drive		External drive	
	Ball Ø	Depth (to ball centre) L1	Type of thread	Thread Ø	Thread length L2	Internal Hex socket round ISO 10664	Cross recess	Hex socket round similar ISO 10664	Width across
4029 005 0601	8	18	metric	M6	10	–	–	–	13
4029 016 0604	10	78	metric	M6	11	–	–	–	15
4029 016 0605	10	113	metric	M6	11	–	–	–	15
4029 001 0602	10	42	metric	M6	11	–	–	–	12
0489 029 0601	15	55	metric	M6	12.7	–	–	–	15
0489 029 0602	15	68	metric	M6	12.7	–	–	–	15
4029 001 0601	15	97	metric	M6	11	40	–	–	–
4029 007 0601	15	12	metric	M6	8	–	–	–	15



		Material			
Solid plastic	Plastic sheath	Thread material	Thread property class	Thread surface	Comment
PA6 GF	-		-	-	
-	PPA – GF black	AMTEC® SPREDSERT M6 (0831 106 0011)	-	-	
-	PPA – GF black	AMTEC® SPREDSERT M6 (0831 106 0011)	-	-	
-	PA 66 – GF black	AMTEC® SPREDSERT M6 (0831 106 0011)	-	-	
-	PA 66 – GF black	AMTEC® SONICSERT SCREWLOCK M6 (0937 106 0127)	-	-	SONICSERT® with integrated screw clamping
-	PA 66 – GF natural	AMTEC® SONICSERT SCREWLOCK M6 (0937 106 0127)	-	-	SONICSERT® with integrated screw clamping
-	PA 66 – GF black	AMTEC® SPREDSERT M6 (0831 106 0011)	-	-	
PPA GF black	-	-	-	-	

SNAPLOC® Technical information
**Solid plastic ball studs
with K' in K' (plastic in plastic) thread**


Part no.	Dimensions plastic [mm]		Thread dimensions [mm]			Internal drive		External drive	
	Ball Ø	Depth (to ball centre) L1	Type of thread	Thread Ø	Thread length L2	Internal Hex socket round ISO 10664	Cross recess	Hex socket round similar ISO 10664	Width across
4015 070 3610	7	11.7	K' in K' round high thread	size 6	10	–	–	–	10
4010 070 0001	7	11.7	K' in K' round high thread	size 6	10	–	–	–	10
4010 070 0002	7	11.7	K' in K' regular thread	size 6	10	–	–	–	10
4019 012 0601	7	11.7	K' in K' regular thread	size 6	10	–	–	–	10
4010 007 0003	7	11.7	K' in K' regular thread	size 6	10	–	–	–	13
4019 027 0601	8	16	K' in K' regular thread	size 6	10	–	–	–	13
0419 009 0601	8	9.9	K' in K' regular thread	size 6	12	–	–	–	8
0419 012 0601	8	7.9	K' in K' regular thread	size 6	12	–	–	–	8
4010 081 3612	8	9.9	K' in K' regular thread	size 6	12	–	–	–	8
4019 014 8501	8.5	10	K' in K' round high thread	size 8.5	7	–	–	–	10
4019 004 0601	10	16	K' in K' round high thread	size 6	14	–	–	–	13
4012 150 3815	15	18	K' in K' regular thread	size 8	15	–	Form Z size 4	–	15
4013 150 3815	15	21	K' in K' regular thread	size 8	15	40	–	–	15
0419 005 0803	15	21	K' in K' regular thread	size 8	15	–	–	–	15
0419 008 0801	15	14.5	K' in K' regular thread	size 8	15	–	Form Z size 4	–	15
4019 005 0803	15	18	K' in K' regular thread	size 8	15	–	Form Z size 4	–	15



		Material			
Solid plastic	Plastic sheath	Thread material	Thread property class	Thread surface	Comment
PPA – GF 50 black	–	–	–	–	collar height 3.5 mm
PPA – GF 50 black	–	–	–	–	collar height 2.5 mm
PEI – GF 30 natural	–	–	–	–	collar height 3.5 mm
PPA – GF 50 black	–	–	–	–	collar height 3.5 mm
PEI – GF 30 black	–	–	–	–	
PEI – GF 30 black	–	–	–	–	head type: hemisphere
PEI – GF 30 natural	–	–	–	–	
PPA – GF 50 black	–	–	–	–	
PEI – GF 30 black	–	–	–	–	
PPA – GF 50 black	–	–	–	–	
PPA – GF 50 black	–	–	–	–	
PPA – GF 50 black	–	–	–	–	
PPA – GF 50 black	–	–	–	–	
PPA – GF50 black	–	–	–	–	
PPA – GF 45 black	–	–	–	–	head type: ball solid
PPA – GF 45 black	–	–	–	–	
PPA – GF 50 natural	–	–	–	–	

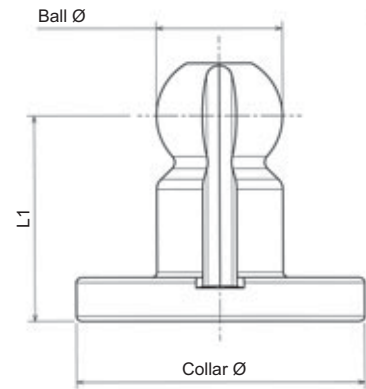
SNAPLOC® *Technical information*

Solid plastic-ball studs in clip form

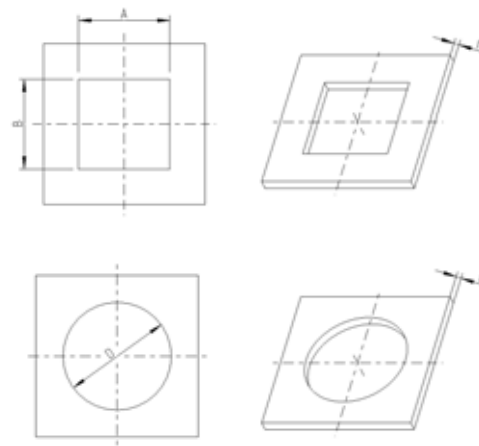
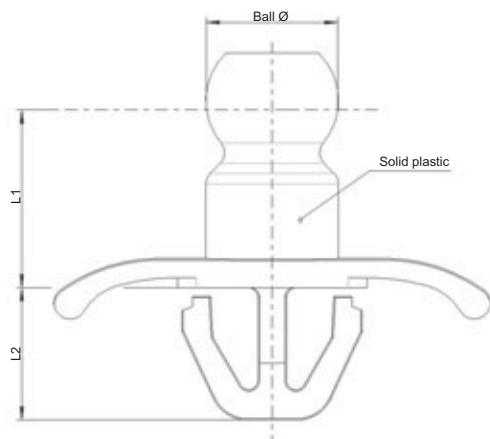


Part no.	Dimension ball studs [mm]			Dimension base material [mm]			Material	Comment
	Ball Ø	Depth (to ball centre) L1	Length clips bottom L2	Mounting hole [mm] A x B [mm x mm]	Mounting hole [mm] D	Plate thickness t [mm]		
4000 072 3084	7	9.85	7.55	8x10		1	PA 6 – GF black	
4009 018 1301	7	11	12		Ø 10	2.3	PA 6 – GF black	
4001 082 3084	8	9	8.1	8x10		2.5	PA 6 – GF black	

Solid plastic-ball studs adhesive version



Part no.	Dimensions ball stud [mm]		Collar Ø	Material	Comment
	Ball Ø	Depth (to ball center) L1			
4099 026 0701	7	11.7	16	PA 66 GF30 black	



Solid plastic-ball studs for injection moulding



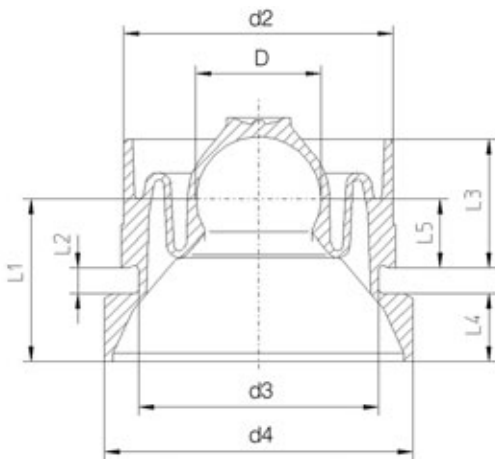
Part no.	Dimension ball studs [mm]		Dimension base material [mm]			Material	Comment
	Ball Ø	Depth (to ball centre) L1	Mounting hole [mm] A x B [mm x mm]	Mounting hole [mm] D	Plate thickness t [mm]		
0499 085 0003	7	7	-	-	-	PA 66 GF black	**
4029 010 0001	7	9	-	-	-	PPA GF black	**

SNAPLOC® Technical information
Couplings with collar for mounting dome


Part no.	Coupling			Dimensions [mm]					
	Design	Type	Standard/ Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2
4040 100 2324	collared	–	Standard	10	24	22	32	16	3
4040 100 3024	collared	–	Standard	10	24	22	32	16	3
4040 101 3024	collared	–	Standard	10	24	22	32	16	3
4040 100 4324	collared	–	Standard	10	24	22	32	16	3
4040 150 3032	collared	–	Standard	15	32	28	36	19	3
4040 152 0032	collared	–	Standard	15	32	28	36	19	3
4040 153 3032	collared	–	Standard	15	32	28	36	19	3

**Coupling with collar for mounting dome
High temperature applications**

Part no.	Coupling			Dimensions [mm]					
	Design	Type	Standard/ Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2
4040 010 0001	collared	–	Standard	10	24	22	32	16	3
4049 028 1101	collared	–	Special	11.5	24	22	32	16	3

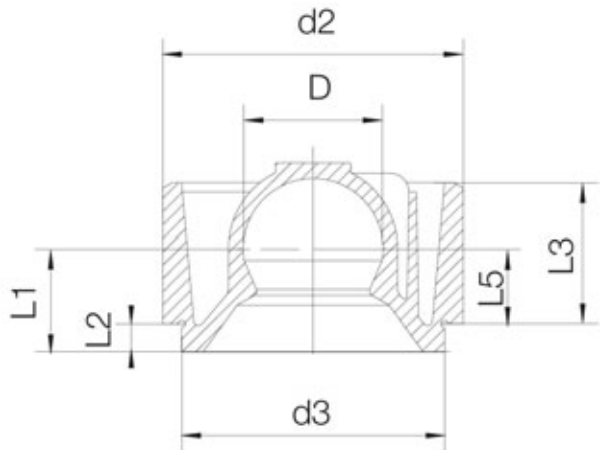


Mounted depth L3	Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
			Side insertion	Keyhole	Bore	TPE-V	TPC	cross-linked Elastomer / rubber	Shore hardness	
12	7	6	X	X	-	EPDM-X+PP black			55 A	
12	7	6	X	X	-	EPDM-X+PP black			73 A	
12	7	6	X	X	-	EPDM-X+PP black			80 A	
12	7	6	X	X	-	EPDM-X+PP black			64 A	
15	8	8	X	X	-	EPDM-X+PP black			73 A	
15	8	8	X	X	-	EPDM-X+PP natural			55 A	
15	8	8	X	X	-	EPDM-X+PP black			87 A	

Mounted depth L3	Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
			Side insertion	Keyhole	Bore	TPE-V	TPC	Cross-linked elastomer / rubber	Shore hardness	
12	7	6	X	X	-			EPDM peroxid cross-linked black	70 A	
15	7	6	X	-	-			EPDM peroxid cross-linked black	70 A	

SNAPLOC® Technical information
Coupling without collar for mounting dome

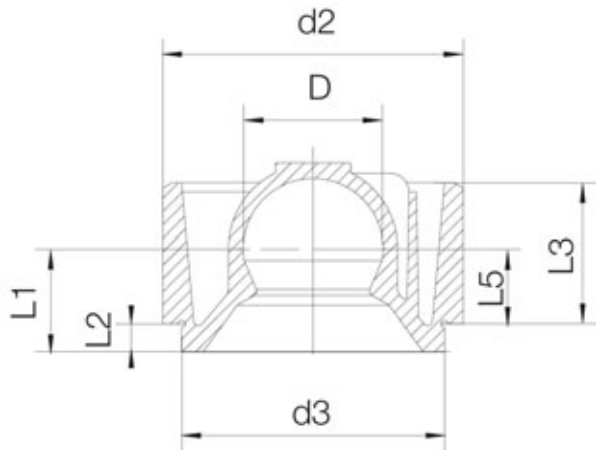

Part no.	Coupling			Dimension [mm]					
	Design	Type	Standard/ Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2
4049 006 0802	collarless	–	Special	8	18	16	–	7.9	3
4049 006 0801	collarless	–	Special	8	18	16	–	7.9	3
0499 017 0138	collarless	–	Standard	15	42	36	–	19	3
0499 080 0001	collarless	–	Special	15	32	28	–	11	3
4041 152 3032	collarless	–	Standard	15	32	28	–	11	3
4041 154 0032	collarless	–	Standard	15	32	28	–	11	3



Mounted depth L3	Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
			Side insertion	Keyhole	Bore	TPE-V	TPC	Cross-linked elastomer / rubber	Shore hardness	
10	-	4.9	X	-	-	EPDM-X+PP grey			64 A	
10	-	4.9	X	-	-	EPDM-X+PP grey			73 A	
18	-	16	X	-	-	EPDM-X+PP black			73 A	
15	-	8	X	-	-	EPDM-X+PP black			73 A	
15	-	8	X	-	-	EPDM-X+PP black			55 A	
15	-	8	X	-	-	EPDM-X+PP natural			64 A	

SNAPLOC® Technical information
**Couplings without collar for mounting dome
High temperature applications**


Part no.	Coupling			Dimensions [mm]					
	Design	Type	Standard/ Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2
4041 080 7118	collarless	–	Standard	8	18	14	–	7.9	3
4041 080 7318	collarless	–	Standard	8	18	14	–	7.9	3
4041 080 7901	collarless	–	Standard	8	18	14	–	7.9	3
4041 108 3024	collarless	–	Standard	10	24	22	–	9	3



Mounted depth L3	Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
			Side insertion	Keyhole	Bore	TPE-V	TPC	Cross-linked elastomer / rubber	Shore hardness	
10	-	4.9	X	-	-		X grey		38 D	
10	-	4.9	X	-	-		X black		38 D	
10	-	4.9	X	-	-		X blue		38 D	
12	-	6	X	-	-			EPDM peroxid cross-linked black	70 A	

SNAPLOC® *Technical information*

SNAPLOC® HT-3D couplings with collar for mounting dome (High temperature applications)

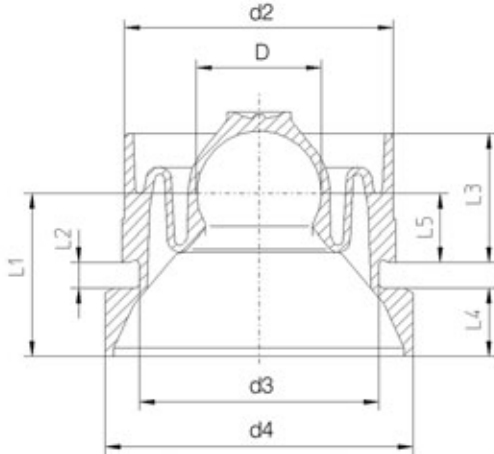


Part no.	Coupling			Dimensions [mm]					
	Design	Type	Standard/Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2
4240 100 3024	collared	HT 3D	Standard	9.7	24	22	32	16	3

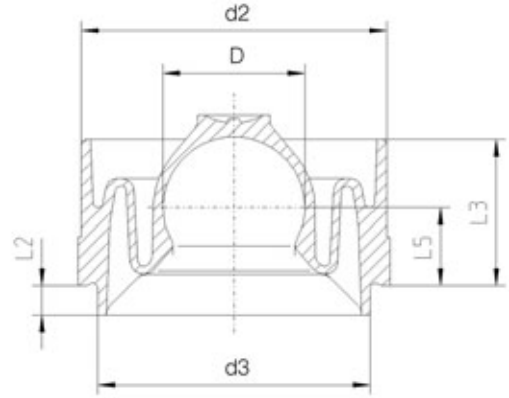
SNAPLOC® HT-3D couplings without collar for mounting dome (High temperature applications)

Part no.	Coupling			Dimensions [mm]					
	Design	Type	Standard/Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2
4241 080 3018	collarless	HT 3D	Standard	7.7	18	14	–	7.9	3
4241 081 0318	collarless	HT 3D	Standard	7.7	18	14	–	7.9	3
4241 150 3042	collarless	HT 3D	Standard	14.6	42	36	–	19	3
4241 150 3032	collarless	HT 3D	Standard	14.6	32	28	–	11	3
4241 151 0342	collarless	HT 3D	Standard	14.6	42	36	–	19	3

collared



collarless



Mounted depth L3	Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
			Side insertion	Keyhole	Bore	TPE-V	TPC	Cross-linked elastomer / rubber	Shore hardness	
12	7	6	X	X	-		X black		33 D	on request

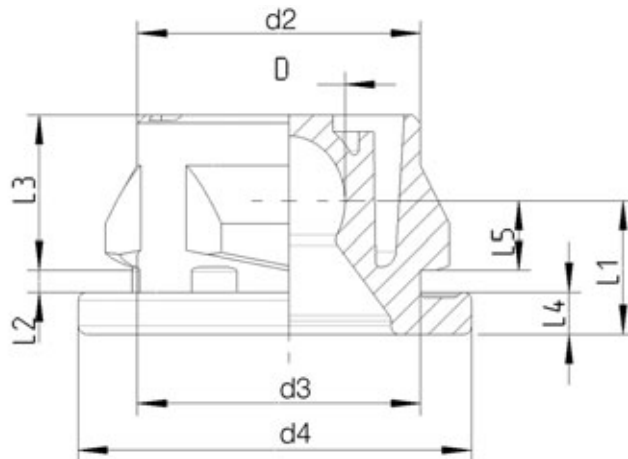
Mounted depth L3	Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
			Side insertion	Keyhole	Bore	TPE-V	TPC	Cross-linked elastomer / rubber	Shore hardness	
10	-	4.9	X	-	-		X black		33 D	on request
10	-	4.9	X	-	-		X black		42 D	on request
18	-	16	X	-	-		X black		33 D	on request
15	-	8	X	-	-		X black		33 D	on request
18	-	16	X	-	-		X black		40 D	on request

SNAPLOC® Technical information
Couplings for plate fastening


Part no.	Coupling			Dimensions [mm]					
	Design	Type	Standard/ Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2
4060 050 2308	collared	Sheet plate	Standard	5	9	8	12	7	2
4069 012 0701	collared	Sheet plate	Special	7	11.5	10	14	8.7	2
4049 012 0701	collared	Sheet plate	Special	7	11.5	10	14	8.7	2
4070 070 4312	collared	Sheet plate	Standard	7	12	12	20	7	0.8 - 2
4050 080 3018	collared	Sheet plate	Standard	8	18	18.6	25	7.9	2
4050 082 3018	collared	Sheet plate	Standard	8	18	18.6	25	7.9	2
4050 084 3018	collared	Sheet plate	Standard	8	18	18.6	25	7.9	2

**Couplings for plate fastening
High temperature applications**

Part no.	Coupling			Dimensions [mm]					
	Design	Type	Standard/ Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2
4051 081 3318	collared	Sheet plate	Standard	8	17.6	18	24	9.2	2.5
4059 006 0801	collared	Sheet plate	Special	8	15.4	15.4	23	8.5	3
4059 006 0802	collared	Sheet plate	Special	8	15.4	15.4	23	11	3

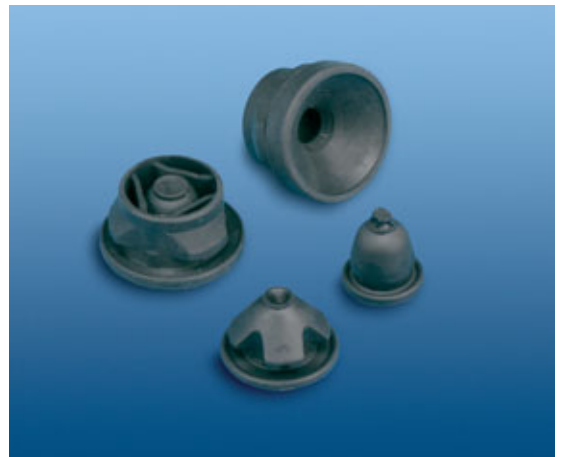


Mounted depth L3	Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
			Side insertion	Keyhole	Bore	TPE-V	TPC	Cross-linked elastomer / rubber	Shore hardness	
6.6	1.5	3	-	-	X	EPDM-X+PP black			55 A	
9	2.5	4.2	-	-	X	EPDM-X+PP natural			55 A	
9	2.5	4.2	-	-	X	EPDM-X+PP black			73 A	
10.2	2.2	4.5	-	-	X	EPDM-X+PP black			64 A	
9.2	2.5	4.1	-	-	X	EPDM-X+PP black			73 A	
9.2	2.5	4.1	-	-	X	EPDM-X+PP black			55 A	
9.2	2.5	4.1	-	-	X	EPDM-X+PP black			64 A	

Mounted depth L3	Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
			Side insertion	Keyhole	Bore	TPE-V	TPC	Cross-linked elastomer / rubber	Shore hardness	
8.5	3.5	3.2	-	-	X			VMQ grey	70 A	
6.7	3.5	2	-	-	x			VMQ grey	70 A	
6.7	3.5	2	-	-	x			VMQ grey	70 A	

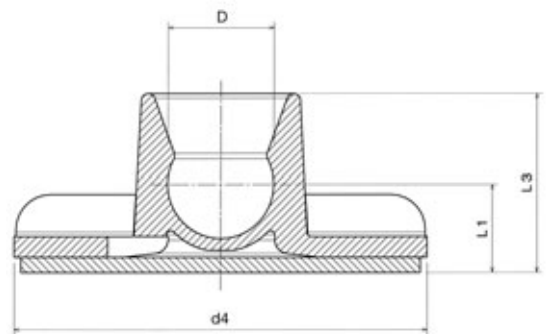
SNAPLOC® *Technical information*

Couplings SNAPLOC® HT-3D
plate fastening
High temperature applications

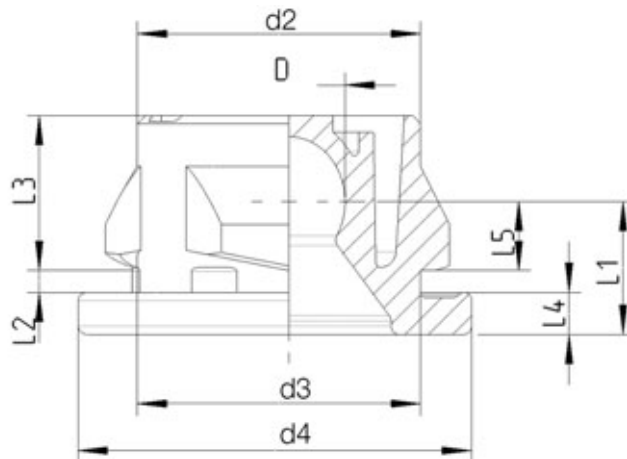


Part no.	Coupling			Dimensions [mm]					
	Design	Type	Standard/ Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2
4252 070 7314	collared	Sheet plate	Special	7	12	12	25	8	0.7–1.2
4269 023 0701	collared	Sheet plate	Special	7	10	9.8	16	8	1–2
4251 070 7314	collared	Sheet plate	Standard	7	13	14	20	7	0.6–0.9
4250 071 0314	collared	Sheet plate	Standard	7	13	13	20	7	2–2.5
4250 081 0318	collared	Sheet plate	Standard	8	17.6	17.6	25	7.9	2–2.5
4250 080 7318	collared	Sheet plate	Standard	8	17.6	17.6	25	7.9	2–2.5

Couplings adhesive fastening



Part no.	Dimensions [mm]								
	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø d4	Depth (to ball centre) L1	Mounted hole depth L2	Mounted depth L3	Collar depth L4	Depth (from reference surface) L5
4080 081 0030	7.7	–	–	30	6.3	–	12.75	–	–
4080 081 0330	7.7	–	–	30	6.3	–	12.75	–	–



Mounted depth L3	Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
			Side insertion	Keyhole	Bore	TPE-V	TPC	Cross-linked elastomer / rubber	Shore hardness	
10	4.5	4.5	-	-	x		x black		33 D	installed condition watertight
10	2	5.2	-	-	x		x black		38 D	
10.2	2.5	4.5	-		x		x black		33 D	on request
9.5	2.2	3.75	-	-	x		x black		40 D	
8.5	2.2	3.4	-	-	x		x black		40 D	
8.5	2.2	3.4	-	-	x		x black		33 D	

Material information				Comment
TPE-V	TPC	Cross-linked elastomer / rubber	Shore hardness	
	natural		40 D	
	black		42 D	

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