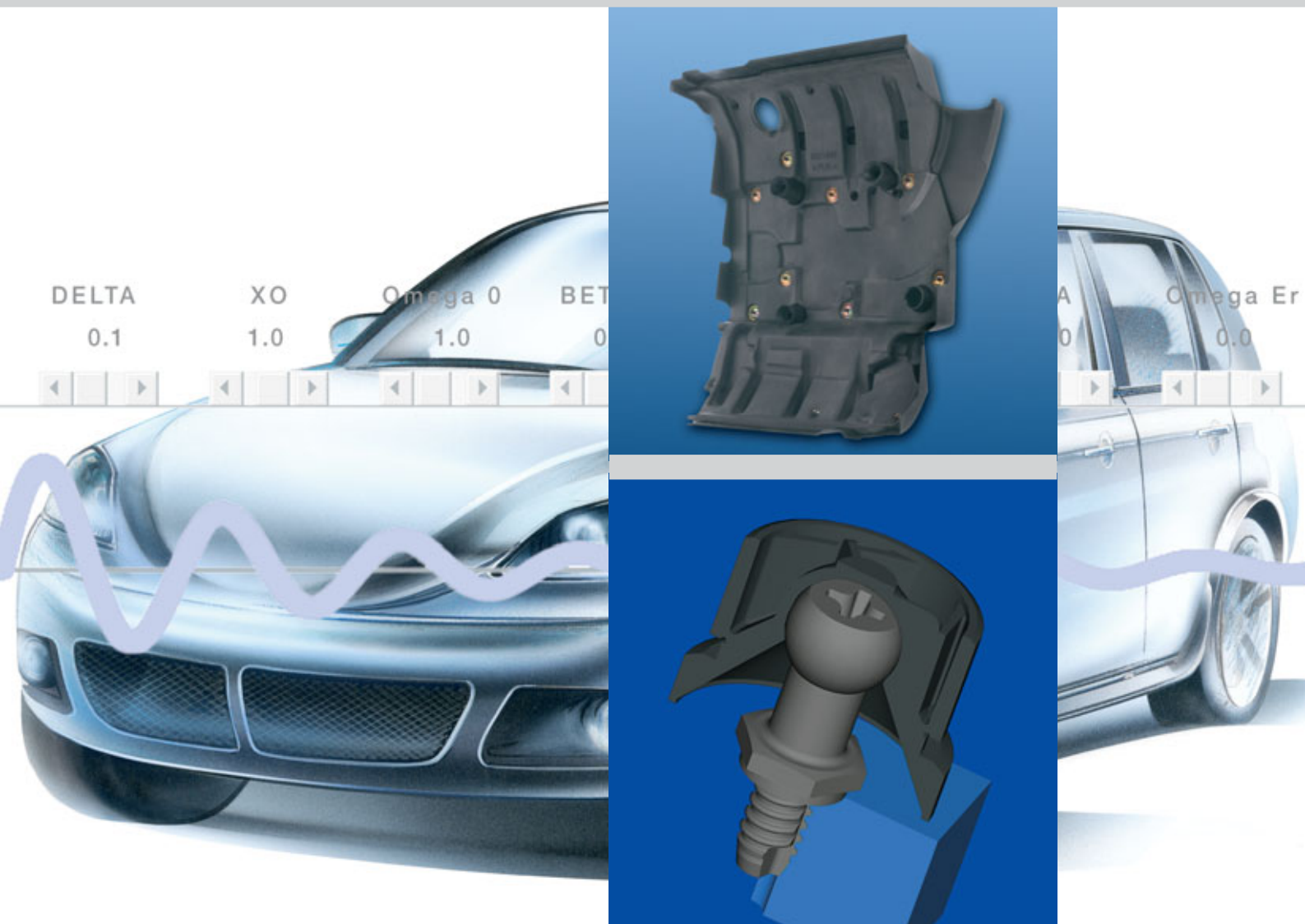


Decoupling plug-in connection

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; function is to isolate against vibration and noise, in order 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.

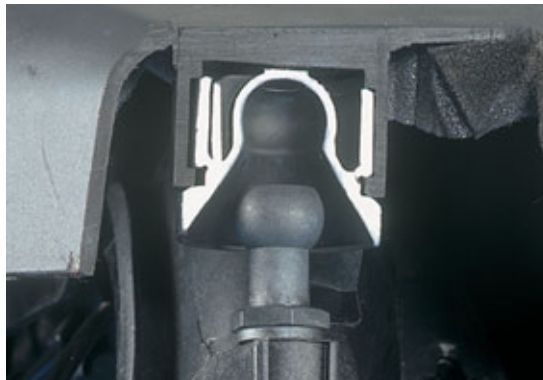


SNAPLOC® is a two-part system – ball stud and coupling – for fast installation. The coupling is inserted into the bottom of the respective cover in specially designed mountings and held in a closed-form. The ball stud can e.g. be screwed into various mating components, manifolds, brackets and motor blocks.

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 in as a counter-piece. The special features of SNAPLOC®: the connection isolates vibration and noise and compensates tolerances.



Detached connector



Closed 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 four 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 K' in K' (plastic in plastic) thread
- Ball studs in clip form

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 variant.

Ball studs in metal/plastic combination

■ SNAPLOC®-ball studs with external thread

The ball studs with metallic external thread are available most of the varied thread forms. This covers for example metrical threads, American /British threads, self-tapping thread etc., in compliance with the corresponding norms or also special variants. For the corresponding dimensions please refer to Pages 16-21.



Ball studs in metal/plastic combination

■ SNAPLOC®-ball studs with internal thread

The ball studs with metallic internal thread are available most of the 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 22-23.



SNAPLOC® - The variants of the system

Solid plastic ball studs

■ SNAPLOC®-ball studs with 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 to be tolerated through the 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 here without any additional screw locking device.

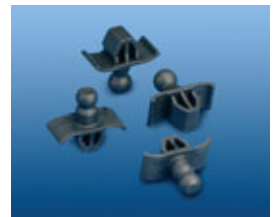
The corresponding dimensions may also be seen on Pages 22-23.



Solid plastic ball studs

■ 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 stay bolt cannot be inserted into the part. For the corresponding opening geometries and plate thicknesses please refer to the technical information on Page 26.



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 variant.

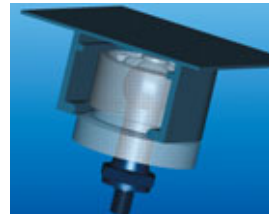
SNAPLOC® - The variants of the system

■ SNAPLOC® couplings for mounting dome

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

For the corresponding dimensions please refer to Pages 28-33.

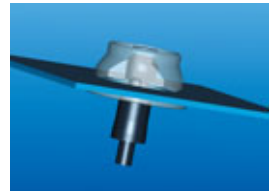
Example: view of assembled condition



■ SNAPLOC® couplings for plate fastenings

Owing to the parts geometry these couplings may be mounted by simply being pushed in a stipulated tolerated bore or square opening. The corresponding bore diameters or opening geometries and plate thicknesses may be seen on Pages 34-35.

Example: view of assembled condition

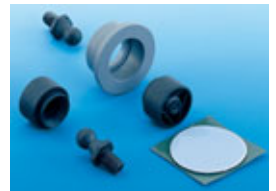


■ SNAPLOC® adhesive version

This type of mounting is suitable if neither mounting dome nor bores are possible in the parts.

Additionally, a corresponding bushing is used which serves as a contact surface for the parts to be adhered. This design is still in the prototype stage, concepts and offers will be drawn up upon request.

Example: view of assembled condition



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 both for external as well as internal threads. In the case of ball studs with metallic external thread the metal blanks are encapsulated by injection moulding.

Various procedures are suitable for producing the ball studs with metallic internal thread. On the one hand, the one-stage injection moulding process for the blanks and on the other hand the two-stage production. For this purpose, the plastic ball studs are moulded and subsequently fitted with a metallic blank. This may be carried out through mechanical insertion or thermal embedding.

The surface requirements for the metallic materials are as a rule purely customized features. Principally, all known types of surfaces can be fitted on the metal blanks.

■ Ball studs made of solid plastic with 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 pairs depending on the requirements concerning functionality, defined long-term heat resistance, required strengths and mechanical properties (torques, extraction force).

■ 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 requirement.

SNAPLOC® - The variants of the system

Production and material selection of the couplings

Depending on the requirements from the thermal and mechanical properties and the media-resistance elastomers or thermoplastic elastomers will be used in the injection moulding process.

Material properties

A distinction is currently made between two material groups with the **thermoplastic elastomers** used. TPE-Vs and TPE-Es are used in the applications.

TPE-Vs:

- low permanent set
- good mechanical properties from -40° C to 120° C
- good media resistance
- high fatigue consistency

TPE-Es:

- long-term heat resistance up to 150° C
- good chemical-resistance
- excellent oil and diesel oil-resistance
- good elasticity at high minus temperatures

Couplings made of **elastomers** are currently divided into two groups. Couplings made of ECO (lead-free) and of EPDM are being used at present.

ECO:

- very good permanent set
- good chemical-resistance towards mineral oils and greases

EPDM:

- very good permanent set
- good chemical-resistance
- good resistance towards mineral oils and greases
- long-term heat resistance up to 150° C

Further materials upon request.

SNAPLOC® Decoupling plug-in connection

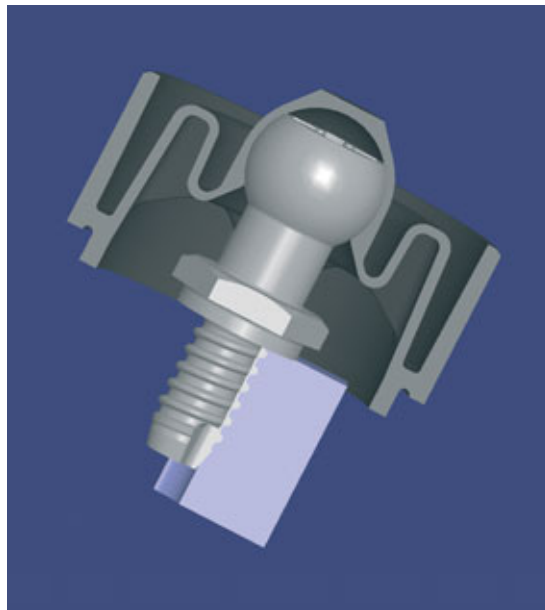
The product further development in the SNAPLOC® family – the HT-3D coupling

Why further development?

An important step in the development of products is the orientation to the requirements of the market. Special requirements from the plug-in connection with regard to the long-term heat resistance of 150° C and diesel oil resistance led to the further development SNAPLOC® HT-3D. A thermoplastic co-polyester elastomer is used with this new HT-3D coupling that meets the special requirements.

Additional improved properties have been realised based on this development:

- long-term heat resistance up to 150° C
- diesel oil resistance
- three-dimensional compensating movement
- additional improved tight fit of the plug-in connection
- constant damping behaviour in a temperature range from -40° C to 150° C



SNAPLOC® Decoupling plug-in connection

The benefits for the customer

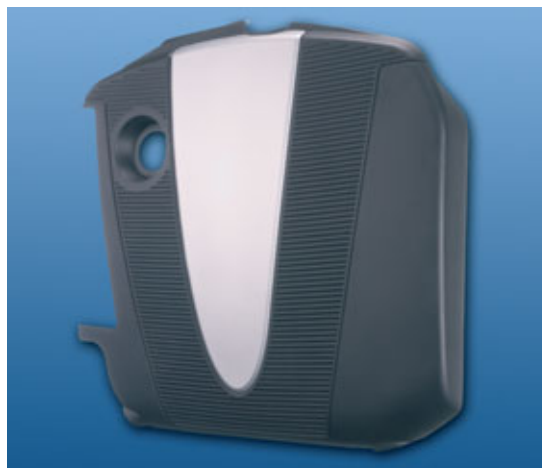
- Reduction in the number of articles through two-part element



- Significant reduction in production costs through drastic reduction of the assembly time



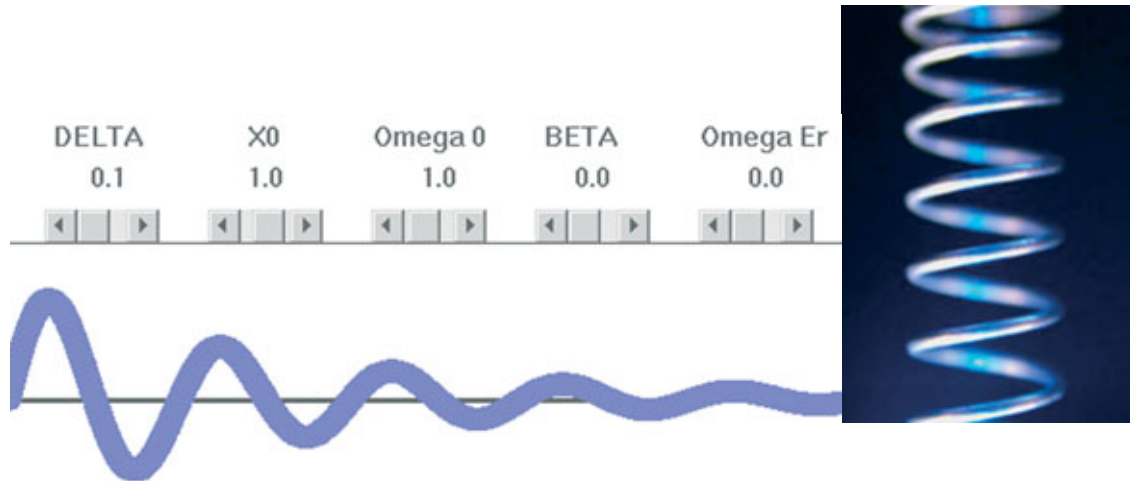
- Individual design through integration of the SNAPLOC® components in the part



SNAPLOC® Decoupling plug-in connection

The benefits for the customer

- Parts are isolated against vibration and noise through high vibration damping properties



Vibration damping characteristics

- Individual construction through the large number of different variants



SNAPLOC® Decoupling plug-in connection

Main areas of application in the automotive industry

Drive units

- Motor part components
- Design cover
- NVH cover

Interior

- Instrument panel – cockpit
- Covers, panel components
- Seats – seat components
- Covers-panels



SNAPLOC® Decoupling plug-in connection

Main areas of application in the automotive industry

Body

- Bumper panel

Exterior

- Exterior lighting front and Rear light



SNAPLOC® description of application



Bumper panelling BMW M3

Function:

The SNAPLOC® coupling snaps laterally into the opening at the mounting plate. The prepared mounting plate is fitted to the foam bumper panelling using two screws. The body has the corresponding ball stud. The bumper panelling can be fastened by simple plug-fitting.

Advantages:

- Functional
- Fast and simple
- High quality design
- Cost saving
- Reduction of vibration

BMW quote:

"A distinctive shape:
The design of the BMW M3...
...The strikt curve of the bonnet – the powerdome – hints at the awesome power that lies beneath. The new front apron with integrated fog lamps and enlarged air intakes give the BMW M3 its unmistakable face."



© BMW AG



© BMW AG

SNAPLOC® description of application



Tail light fastening Audi A4:

Function:

Two ball studs are fitted at the tail light rear. The body has the corresponding coupling elements. Joining is by simple plug fitting, and disconnecting simply by pulling. The third fastening point is a screw connection.

Advantages:

- Functional
- Fast and simple
- High quality design
- Cost saving

Audi quote:

"The A4 design: Functionality with a powerful finish...
...The imposing rear with clear separation of boot and bumper with rear light unit rounds off the dynamic appearance and overall impression of high quality."



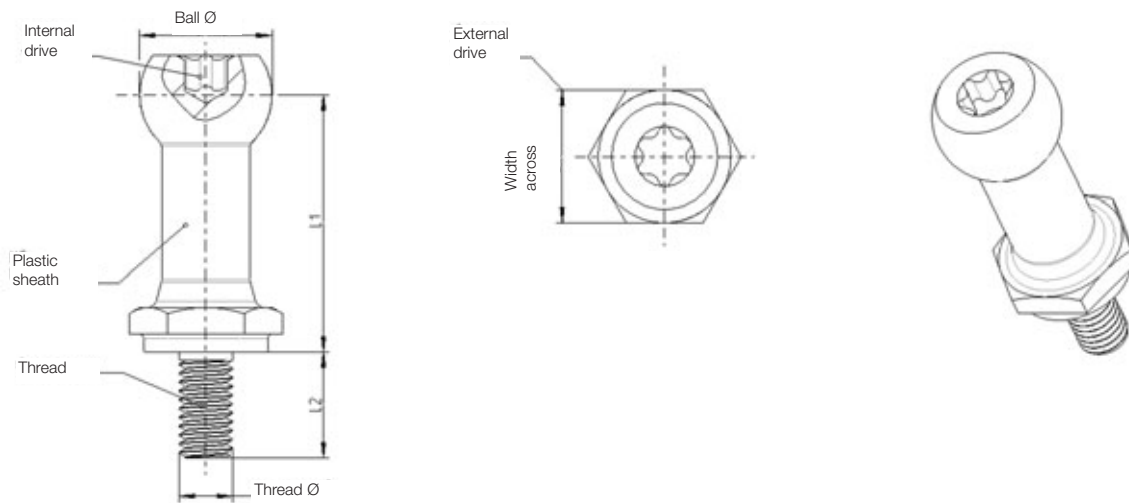
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SNAPLOC® Technical information

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
40350703609B	7	11,9	metric	M6	9	—	—	—	10
40350703901B	7	11,9	metric	M6	9	—	—	—	10
40350703902B	7	11,9	metric	M6	6	—	—	—	10
40390150602	7	11,9	metric	M6	10	—	—	—	10
40300803609	8	9,9	metric	M6	9	—	—	—	10
40300803901	8	9,9	metric	M6	8	—	—	—	10
40300803902	8	9,9	AMTEC®-thread (BLH-Art: B52004)	Ø6	13,7	—	—	—	10
40310803406B	8	18	metric	M4	6	25	—	—	—
40390010601	8	30,8	metric	M6	16	—	—	—	13
40390070604	8	9,9	metric	M6	9	—	—	—	10
40390110603	8	30,8	metric	M6	8	—	—	—	17
40390110604	8	40,2	metric	M6	8	—	—	—	17
40390120601	8	7,9	metric	M6	8	25	—	—	—
04790940601	10	16	metric	M6	12	30	—	—	13



Material					Comment
Solid plastic	Plastic sheath	Thread material	Thread property class	Thread surface	
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	
—	PPA - GF black	Steel	4.8	r672 nach VW TL 244 / Zn/Ni - coating black Cr (VI)-free passivated	
—	PPA - GF black	Steel	4.8	r672 nach VW TL 244 / Zn/Ni - coating black Cr(VI)-free passivated	
PPA - GF black	—	PPA - GF black	—	—	*
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	
—	PPA - GF black	Steel	4.8	GME 00252-B7XV	
—	PPA - GF black	Steel	AMTEC®-Screw (B52004)	VW TL 245 Surface T 602	
—	PPA - GF black	Steel	4.8	Zn 5 GLCC	
—	PPA - GF black	Steel	8.8	Zn 5 GLCC	
—	PPA - GF black	Steel	4.8	r672 nach VW TL 244 / Zn/Ni - coating black Cr(VI)-free passivated	
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	*
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	*
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	*
—	PPA - GF black	Steel	4.8	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
40311003612	10	16	metric	M6	12	—	—	—	13
40311003900	10	16	metric	M6	12	—	—	—	13
40311003902	10	16	metric	M6	8	—	—	—	13
40311003905	10	16	metric	M6	12	—	—	—	13
40390010602	10	51	metric	M6	8	—	—	—	13
40390020601	10	30,1	metric	M6	15	—	—	—	15
40390020602	10	28	metric	M6	16	—	—	—	10
40390070602	10	19,4	metric	M6	8	—	—	—	13
40390070603	10	9,5	metric (plastic)	M6	10	30	—	—	—
40390070605	10	19,4	metric	M6	8	—	—	—	13
40390090601	10	35,1	metric	M6	15	—	—	—	15
40390160601	10	21,5	metric	M6	12	—	—	—	10
40390170601	10	43,5	metric	M6	12	—	—	—	12
40390170602	10	43,5	metric	M6	8	—	—	—	12
40321503608	15	18	metric	M6	8	40	—	—	15
40321503904	15	18	DIN EN ISO 1478	ST 6.3	30	40	—	—	15
40331503608	15	21	metric	M6	8	40	—	—	15
40331503612	15	21	metric	M6	12	40	—	—	15
40331503812	15	21	metric	M8	12	40	—	—	15
40331503901	15	21	metric	M6	8	40	—	—	15
40331503903	15	21	metric	M6	12	40	—	—	15
40341503612	15	29	metric	M6	12	40	—	—	15
40351503608	15	12	metric	M6	8	40	—	—	15

Material					
Solid plastic	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	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	Zn/Ni alloy black chromated	*
—	PPA - GF black	Steel	4.8	Zn 5 GLCC	
—	PPA - GF black	Steel	8.8	GME 00255-A light grey	
—	PPA - GF black	Steel	4.8	r640 acc. VW TL 244	
PPA - GF black	—	PPA - GF black	—	—	
—	PPA - GF black	Steel	4.8	r643 acc. VW TL 244	
—	PPA - GF black	Steel	4.8	GME 00255-A light grey	
—	PPA - GF black	Steel	4.8	JS 500, TTF 1:3 Ford WX 100	
—	PPA - GF black	Steel	4.8	GME 00255-A silver	
—	PPA - GF black	Steel	4.8	GME 00252-B7XV	
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	
—	PPA - GF black	Steel	acc. ISO 2702	Zn 5 G LCC (bright galvanized, yellow chromated)	
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	*
—	PPA - GF black	Steel	8.8	Zn/Ni alloy black chromated	
—	PPA - GF black	Steel	4.8	JS 500, TTF 1:3	
—	PPA - GF black	Steel	4.8	Zn/Ni alloy black chromated	
—	PPA - GF black	Steel	4.8	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
40390030601	15	21	metric	M6	12	—	—	—	15
40390030602	15	61	metric	M6	12	—	—	—	15
40390030603	15	21	metric	M6	12	—	—	—	15
40390030604	15	61	metric	M6	12	—	—	—	15
40390030605	15	21	metric	M6	12	—	—	—	15
40390030606	15	23,5	metric	M6	12	—	—	—	15
40390050602	15	18	metric	M6	12	40	—	—	—
40390190601	15	61	metric	M6	13,7	—	—	—	15

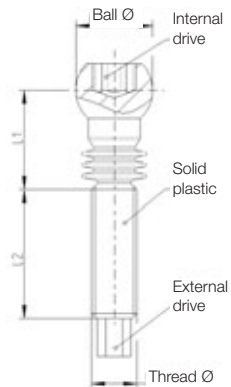
Solid plastic ball studs with external thread and shank seal



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
40390040602	10	13,1	metric (plastic)	M6	16,9	30	—	25	—
40390070601	10	12	metric (plastic)	M6	21	25	—	25	—

* Please contact our specialist department.

Material					Comment
Solid plastic	Plastic sheath	Thread material	Thread property class	Thread surface	
—	PPA - GF black	Steel	4.8	JS 500, TTF 1:3 Ford WX 100	
—	PA 66 - GF black	Steel	4.8	JS 500, TTF 1:3 Ford WX 100	
—	PPA - GF black	Steel	8.8	JS 500, TTF 1:3 Ford WX 100	
—	PA 66 - GF black	Steel	8.8	JS 500, TTF 1:3 Ford WX 100	
—	PPA - GF black	Steel	4.8	GME 00255- A light grey	
—	PPA - GF black	Steel	8.8	JS 500, TTF 1:3 Ford WX 100	
—	PPA - GF black	Steel	4.8	r672 nach VW TL 244 Zn/Ni - coating black Cr(VI)-free passivated	
—	PA 66 - GF black	Steel	AMTEC®-Screw (B52004)	VW TL 245 surface T 602	



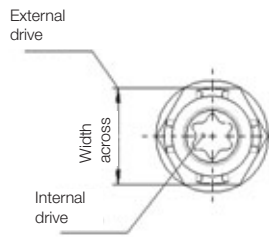
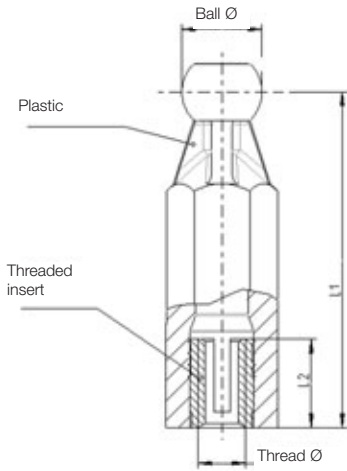
Material					Comment
Solid plastic	Plastic sheath	Thread material	Thread property class	Thread surface	
PA 66/6 - GF	—	PA 66/6 - GF	—	—	
PA 66/6 - GF	—	PA 66/6 - GF	—	—	

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
40290080601	8	29	metric	M6	12,7	—	—	—	11
40290010602	10	42	metric	M6	11	—	—	—	12
40290080602	10	42	metric	M6	11	—	—	—	13
40290160601	10	113	metric	M6	11	—	—	—	13
40290160602	10	54	metric	M6	11	—	—	—	13
40290160604	10	78	metric	M6	11	—	—	—	15
40290160605	10	113	metric	M6	11	—	—	—	15
40290160606	10	62,6	metric	M6	11	—	—	—	15
40290010601	15	97	metric	M6	11	40	—	—	—
40290070601	15	12	metric	M6	8	—	—	—	15
40290130601	15	55	metric	M6	11	—	—	—	15
40290130602	15	68	metric	M6	11	—	—	—	15
40290160603	15	75	metric	M6	11	—	—	—	16

* Please contact our specialist department.



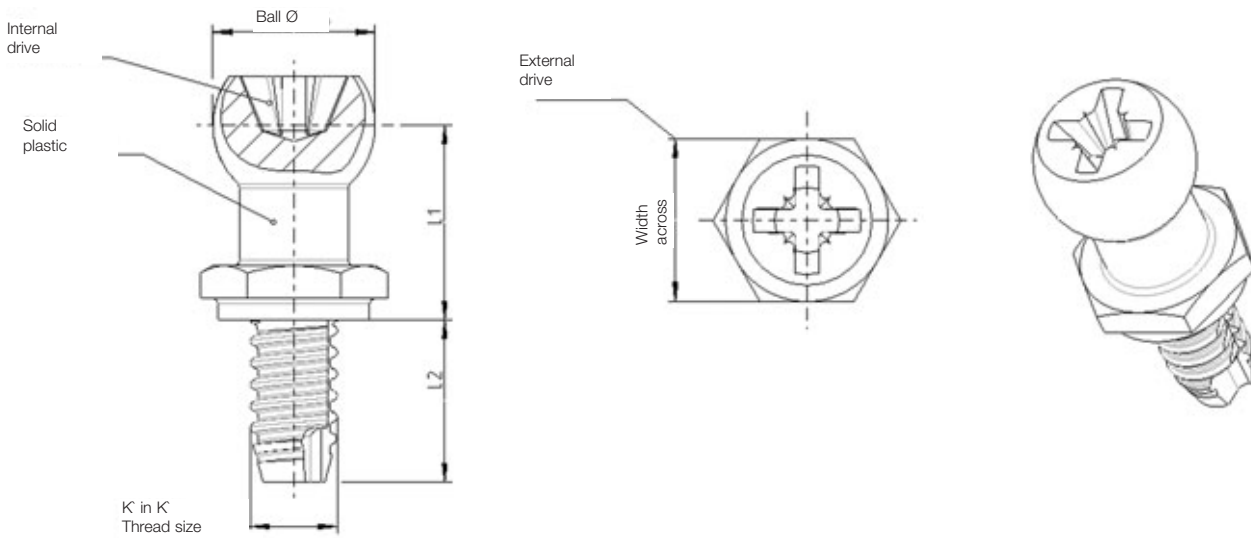
Material					
Solid plastic	Plastic sheath	Thread material	Thread property class	Thread surface	Comment
—	PA 66 - GF black	AMTEC® Sonicert SCREWLOCK M6 (0937 106 0127) MS	—	—	*
—	PA 66 - GF black	AMTEC® SPREDSERT M6 (0831 106 0011) MS	—	—	
—	PA 66 - GF black	AMTEC® SPREDSERT M6 (0831 106 0011) MS	—	—	*
—	PPA - GF black	AMTEC® SPREDSERT M6 (0831 106 0011) MS	—	—	
—	PA 66 - GF black	AMTEC® SPREDSERT M6 (0831 106 0011) MS	—	—	
—	PPA - GF black	AMTEC® SPREDSERT M6 (0831 106 0011) MS	—	—	*
—	PPA - GF natural	AMTEC® SPREDSERT M6 (0831 106 0011) MS	—	—	*
—	PPA - GF black	AMTEC® SPREDSERT M6 (0831 106 0011) MS	—	—	*
—	PA 66 - GF black	AMTEC® SPREDSERT M6 (0831 106 0011) MS	—	—	
PPA - GF black	—	PPA - GF black	—	—	
—	PA 66 - GF black	AMTEC® SPREDSERT M6 (0831 906 0001) MS	—	—	*
—	PA 66 - GF black	AMTEC® SPREDSERT M6 (0831 906 0001) MS	—	—	*
—	PA 66 - GF black	AMTEC® SPREDSERT M6 (0831 106 0011) MS	—	—	*

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
40150703610B	7	11,7	K' in K'	6	10	—	—	—	10
40190070601	7	11,7	K' in K'	6	10	—	—	—	10
40190120601	7	11,7	K' in K'	6	10	—	—	—	10
04190090601	8	9,9	K' in K'	6	12	—	—	—	8
04190120601	8	7,9	K' in K'	6	12	—	—	—	8
40100813612	8	9,9	K' in K'	6	12	—	—	—	8
40190148501	8,5	10	K' in K'	8,5	7	—	—	—	10
40190040601	10	16	K' in K'	6	14	—	—	—	13
04190050801	15	21	K' in K'	8	15	—	Form Z Size 4	—	15
04190050804	15	21	K' in K'	8	15	—	Form Z Size 4	—	15
04190080801	15	14,5	K' in K'	8	15	—	Form Z Size 4	—	15
40190050802	15	18	K' in K'	8	15	—	Form Z Size 4	—	15

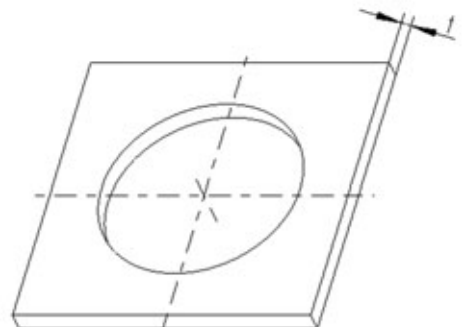
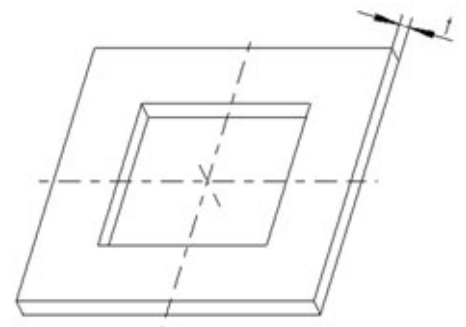
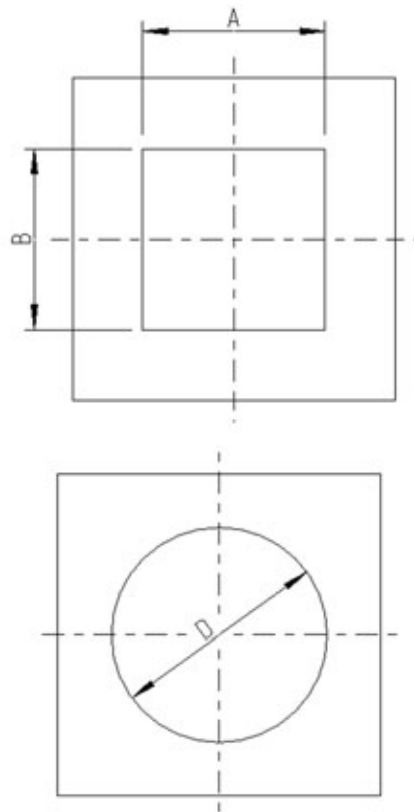
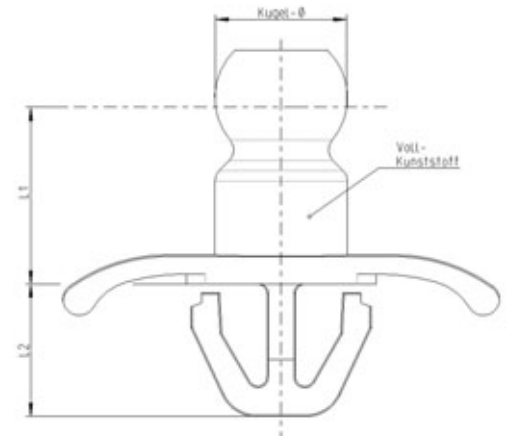
* Please contact our specialist department.



Material						
Solid plastic	Plastic sheath	Thread material	Thread property class	Thread surface	Recommended M_A [Nm]	Comment
PPA - GF black	—	PPA - GF black	—	—	Depending on base material	*
PPA - GF black	—	PPA - GF black	—	—	Depending on base material	
PPA - GF black	—	PPA - GF black	—	—	Depending on base material	
PEI - GF natural	—	PEI - GF natural	—	—	Depending on base material	*
PPA - GF black	—	PPA - GF black	—	—	Depending on base material	
PEI - GF black	—	PEI - GF black	—	—	Depending on base material	
PPA - GF black	—	PPA - GF black	—	—	Depending on base material	
PPA - GF black	—	PPA - GF black	—	—	Depending on base material	*
PPA - GF black	—	PPA - GF black	—	—	Depending on base material	*
PEI - GF black	—	PEI - GF black	—	—	Depending on base material	*
PPA - GF black	—	PPA - GF black	—	—	Depending on base material	
PPA - GF black	—	PPA - GF black	—	—	Depending on base material	*

SNAPLOC® Technical information

Solid plastic - ball studs in clip form



Part no.	Dimension ball studs [mm]			Dimension base material			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]		
40000723084	7	8,3	7,55	8 x 10		1	PA 6 - GF	*
40090181301	7	11	12		Ø10	2,3	PA 6 - GF	*
40010823084	8	11	8,1	8 x 10		2,5	PA 6 - GF	*

* Please contact our specialist department.

SNAPLOC® Technical information

Solid plastic - ball studs for injection moulding



Part no.	Dimension ball studs [mm]			Dimension base material			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]		
04990850003	7	7	—	—	—	—	PA 66 - GF black	**

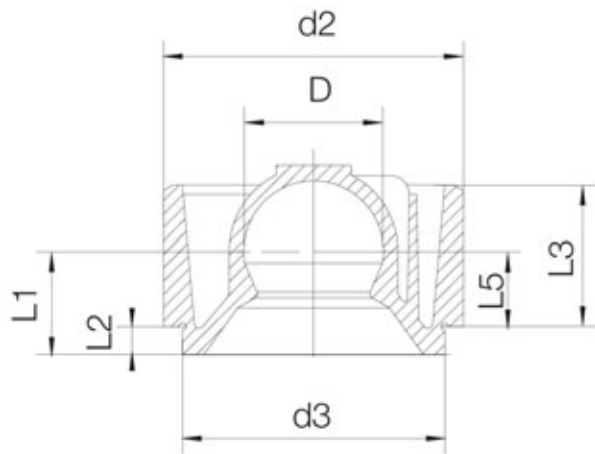
** Connection geometries are to be coordinated.

Coupling without 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	Depth (to ball centre) L1	Mounted hole depth L2	Mounted depth L3
40410800018	collarless	—	Standard	8	18	14	—	7,9	3	10
40410803018	collarless	—	Standard	8	18	14	—	7,9	3	10
40410807901	collarless	—	Standard	8	18	14	—	7,9	3	10
40410813018	collarless	—	Standard	8	18	14	—	7,9	3	10
40410870018	collarless	—	Standard	8	18	14	—	7,9	3	10
40490060801	collarless	—	Special	8	18	16	—	7,9	3	10
40490060802	collarless	—	Special	8	18	16	—	7,9	3	10
40411083024	collarless	—	Standard	10	24	22	—	9	3	12
40411003024	collarless	—	Standard	10	24	22	—	7,9	3	12
40411013024	collarless	—	Standard	10	24	22	—	9	3	12
40411593001	collarless	—	Standard	15	42	36	—	19	3	18
04990170138	collarless	—	Standard	15	42	36	—	19	3	18
04990800001	collarless	—	Standard	15	32	28	—	11	3	15
40411523032	collarless	—	Standard	15	32	28	—	11	3	15
40411540032	collarless	—	Standard	15	32	28	—	11	3	15

* Please contact our specialist department.



Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
		Side insertion	Keyhole	Bore	TPE-V	TPE-E	Elastomer	Shore hardness**	
—	4,9	X	—	—	EPDM-X+PP natural			73 A	
—	4,9	X	—	—	EPDM-X+PP black			73 A	
—	4,9	X	—	—		PEEST blue		38 D	
—	4,9	X	—	—	EPDM-X+PP black			80 A	
—	4,9	X	—	—		PEEST natural		38 D	
—	4,9	X	—	—	EPDM-X+PP grey			73 A	
—	4,9	X	—	—	EPDM-X+PP grey			64 A	
—	6	X	—	—			EPDM Peroxid black	70 A	
—	6	X	—	—	EPDM-X+PP black			73 A	
—	6	X	—	—	EPDM-X+PP black			80 A	
—	16	X	—	—			ECO	60 A	
—	16	X	—	—	EPDM-X+PP black			73 A	
—	8	X	—	—	EPDM-X+PP black			73 A	
—	8	X	—	—	EPDM-X+PP black			55 A	
—	8	X	—	—	EPDM-X+PP natural			64 A	

** TPE-V: ASTM D2240; TPE-E: ISO 868

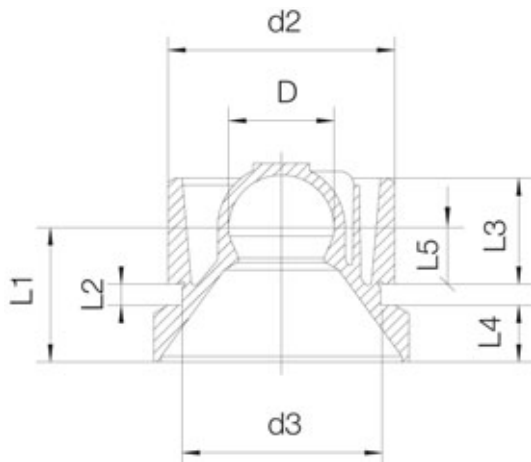
SNAPLOC® Technical information

Coupling with 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	Depth (to ball centre) L1	Mounted hole depth L2	Mounted depth L3
40401083024AA	collared	—	Standard	10	24	22	32	16	3	12
40401003024	collared	—	Standard	10	24	22	32	16	3	12
40401013024	collared	—	Standard	10	24	22	32	16	3	12
40401520032	collared	—	Standard	15	32	28	36	19	3	15
40401533032	collared	—	Standard	15	32	28	36	19	3	15
40401503032	collared	—	Standard	15	32	28	36	19	3	15

* Please contact our specialist department.



Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
		Side insertion	Keyhole	Bore	TPE-V	TPE-E	Elastomer	Shore hardness**	
7	6	X	X	—			EPDM Peroxide black	70 A	
7	6	X	X	—	EPDM-X+PP black			73 A	
7	6	X	X	—	EPDM-X+PP black			80 A	
8	8	X	X	—	EPDM-X+PP natural			55 A	
8	8	X	X	—	EPDM-X+PP black			87 A	
8	8	X	X	—	EPDM-X+PP black			73 A	

** TPE-V: ASTM D2240; TPE-E: ISO 868

SNAPLOC® Technical information

HT-3D couplings for mounting dome

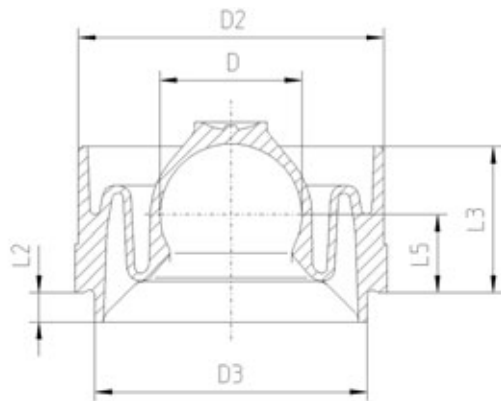


Part no.	Coupling			Dimension [mm]						
	Design	Type	Standard / Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø	Depth (to ball centre) L1	Mounted hole depth L2	Mounted depth L3
42410803018	collarless	HT 3D	Standard	8	18	14	—	7,9	3	10
42411503042	collarless	HT 3D	Standard	15	42	36	—	19	3	18
42411503032	collarless	HT 3D	Standard	15	32	28	—	11	3	15

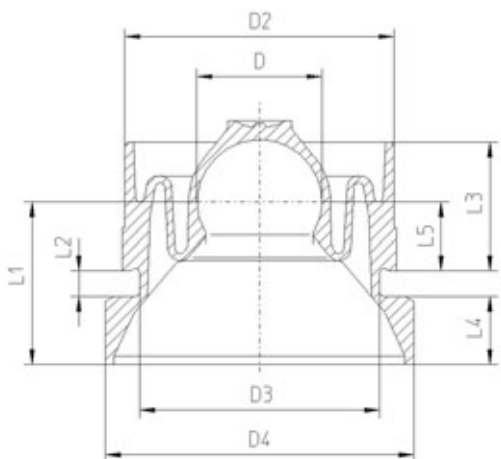
HT-3D couplings for mounting dome

Part no.	Kupplung			Dimension [mm]						
	Design	Type	Standard / Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø	Depth (to ball centre) L1	Mounted hole depth L2	Mounted depth L3
42401003024	collared	HT 3D	Standard	10	24	22	32	16	3	12

* Please contact our specialist department.



Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
		Side insertion	Keyhole	Bore	TPE-V	TPE-E	Elastomer	Shore hardness**	
—	4,9	X	—	—	—	PEEST black	—	38 D	*
—	16	X	—	—	—	PEEST black	—	38 D	*
—	8	X	—	—	—	PEEST black	—	38 D	*

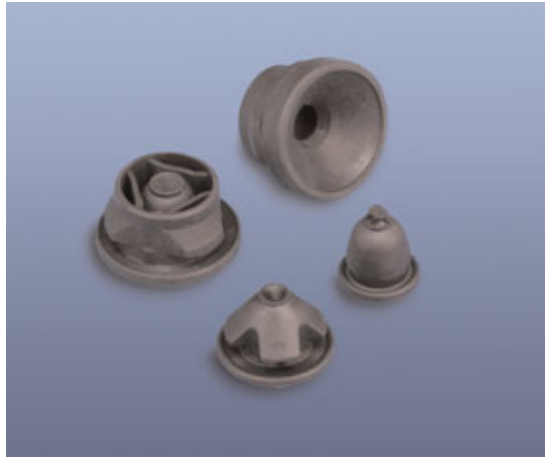


Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
		Side insertion	Keyhole	Bore	TPE-V	TPE-E	Elastomer	Shore hardness**	
7	6	X	X	—	—	PEEST black	—	38 D	*

** TPE-V: ASTM D 2240; TPE-E: ISO 868

SNAPLOC® Technical information

Couplings for plate fastening

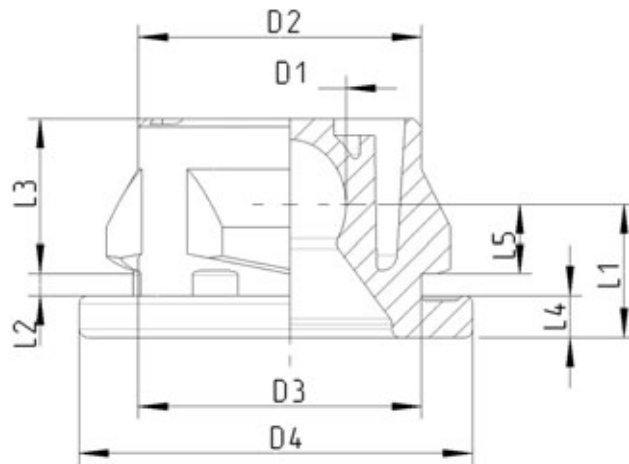


Part no.	Coupling			Dimension [mm]						
	Design	Type	Standard / Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø	Depth (to ball centre) L1	Mounted hole depth L2	Mounted depth L3
04990850001	collared	Sheet plate	Special	7	11	10	14	7	0,8	8,7
04990850006	collared	Sheet plate	Special	7	11	10	14	7	0,8	8,6
40490120701	collared	Sheet plate	Special	7	11,5	10	14	8,7	2	9
40600703010	collared	Sheet plate	Standard	7	11	10	14	8,2	2	9
40700701312	collared	Sheet plate	Standard	7	17	12	20	7	0,8 - 2	~10,2
40700703012	collared	Sheet plate	Standard	7	17	12	20	7	0,8 - 2	~10,2
40500803018	collared	Sheet plate	Standard	8	22	18,6	25	7,9	2	9,2
40500843018	collared	Sheet plate	Standard	8	22	18,6	25	7,9	2	9,2
40590110801	collared	Sheet plate	Special	8	22	18	25	10,9	2	9,2

SNAPLOC® HT-3D coupling plate fastening

Part no.	Coupling			Dimension [mm]						
	Design	Type	Standard / Special	Ball Ø D	Outer Ø d2	Mounting hole Ø d3	Collar Ø	Depth (to ball centre) L1	Mounted hole depth L2	Mounted depth L3
42500807018	collared	Sheet plate	Standard	8	17,6	18	25	7,9	2 - 2,5	~8,5

* Please contact our specialist department.



Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
		Side insertion	Keyhole	Bore	TPE-V	TPE-E	Elastomer	Shore hardness**	
2	4,2	—	—	X	EPDM-X+PP black			87 A	
2	4,1	—	—	X	EPDM-X+PP black			73 A	
2,5	4,2	—	—	X	EPDM-X+PP black			73 A	
2	4,2	—	—	X	EPDM-X+PP black			73 A	*
2,5	~4,5	—	—	X	EPDM-X+PP black			80 A	
2,5	~4,5	—	—	X	EPDM-X+PP black			73 A	
2,5	4,1	—	—	X	EPDM-X+PP black			73 A	*
2,5	4,1	—	—	X	EPDM-X+PP black			64 A	*
5,5	4,1	—	—	X	EPDM-X+PP black			64 A	

Collar depth L4	Depth (from reference surface) L5	Mounting options			Material information				Comment
		Side insertion	Keyhole	Bore	TPE-V	TPE-E	Elastomer	Shore hardness**	
2,2	3,4	—	—	X		PEEST natural		38 D	*

** TPE-V: ASTM D2240; TPE-E: ISO 868

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