



PLIA, a first class job turned out every time

Perhaps this is the best way to describe the Masterfix PLIA range of blind rivets. Masterfix PLIA rivets is a wide range of Multigrip rivets, offering substantial technical advantages over standard blind rivets, because of its special construction. This technique which was originally developed for the industry has been implemented in our standard PLIA range, which also includes a steel PLIA and a stainless steel PLIA with grooved mandrel for extra grip on the jaws.

What makes PLIA different from ordinary standard rivets?

A large bulb is formed at the back, spreading the clamping load over a wide area

After setting, the mandrel is retained in the rivet which makes it vibration resistant

A hole filling property, so the size of the predrilled hole is less critical

Large clamping capacity, so a significant reduction of stock can be achieved

PLIA is available with the following head shapes:

Dome head
Large flange
Extra large head
Countersunk head

materials:

Aluminium/Steel
Aluminium/Stainless steel
Steel/Steel
Stainless steel/Stainless steel

Applications

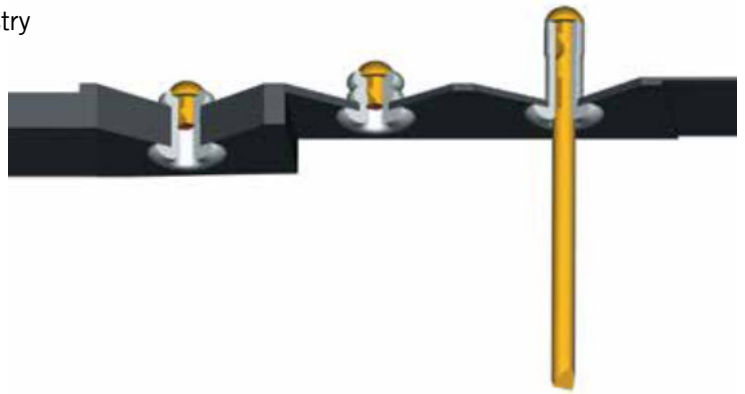
Combinations of hard and soft materials

Automotive, furniture & construction industry

HVAC applications

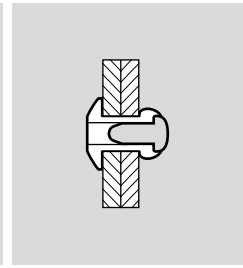
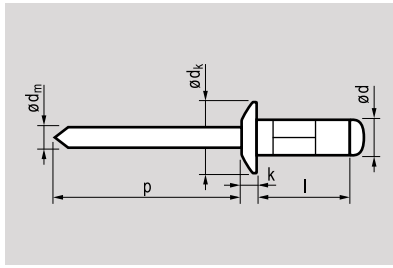
White goods

Repair & service industry










Info

-  **Aluminium** [AlMg2,5]
Polished
-  **Steel**
Zinc plated

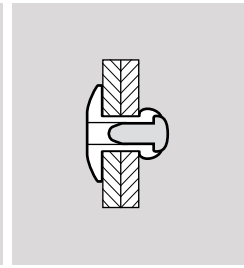
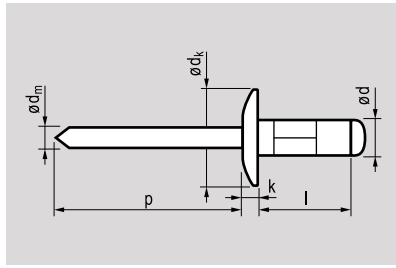


PLIA I multigrip I dome head







$\varnothing d$	l [+1/-0,2]		Item nr.	$\varnothing d_k$	k	$\varnothing d_m$	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
3,0	6,0	0,5-3,0	*10013006						
[+0,05/-0,13]	8,0	0,5-5,0	*3008						
	10,0	2,5-7,0	*3010	6,0 [+/-0,24]	≤1,4	~1,70	≥27	655	520
$\varnothing 3,1$ [3,3 max]	12,0	4,5-9,0	3012						
3,2	6,0	0,5-3,0	10013206						
[+0,05/-0,13]	8,0	0,5-5,0	3208						
	9,5	2,0-6,5	3209						
$\varnothing 3,3$ [3,5 max]	10,0	2,5-7,0	3210						
	11,1	3,5-8,0	3211	6,0 [+/-0,24]	≤1,4	~1,78	≥27	980	680
	12,0	4,5-9,0	3212						
	12,7	5,5-9,5	3213						
	14,0	6,5-11,0	3214						
	16,0	8,5-13,0	3216						
4,0	6,0	0,5-2,5	*10014006						
[+0,05/-0,13]	8,0	0,5-4,5	*4008						
	9,5	1,0-6,0	4009						
$\varnothing 4,1$ [4,3 max]	10,0	1,5-6,5	*4010						
	12,0	3,5-8,5	*4012						
	12,7	4,0-9,5	4013	8,0 [+/-0,29]	≤1,7	~2,18	≥27	1.600	1.150
	14,0	5,5-10,5	*4014						
	16,0	7,5-12,5	*4016						
	17,0	8,5-13,5	4017						
	18,0	9,5-14,5	*4018						
	20,0	11,5-16,5	4020						
4,8	10,0	0,5-5,0	*10014810						
[+0,05/-0,13]	10,3	0,5-5,5	4811						
	12,0	2,0-7,0	*4812						
$\varnothing 4,9$ [5,2 max]	14,0	4,0-9,0	*4814						
	15,1	5,0-10,5	4815						
	16,0	6,0-11,0	*4816	9,5 [+/-0,29]	≤2,0	~2,78	≥27	2.350	1.500
	17,0	7,0-12,0	4817						
	18,0	8,0-13,0	*4818						
	20,0	10,0-15,0	*4820						
	22,0	12,0-17,0	4822						
	24,0	14,0-19,0	4824						
	24,8	14,5-19,5	*4825						

 **Aluminium** [AlMg2,5]
Polished

 **Steel**
Zinc plated



PLIA I multigrip I large head

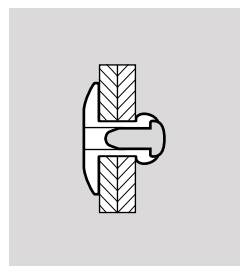
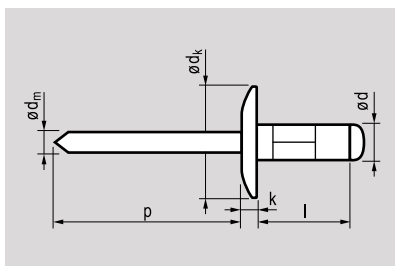
Ø d	l		*Item nr.	Ø d _k	k	Ø d _m	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
3,2	8,0	0,5,-5,0	10023208						
[+0,05/-0,13]	9,5	2,0-6,5	3209						
	10,0	2,5-7,0	3210						
Ø 3,3 [3,5 max]	11,1	3,5-8,0	3211	9,5	≤2,0	~1,78	≥27	980	680
	12,0	4,5-9,0	3212	[+0/-0,5]					
	14,0	6,5-11,0	3214						
	16,0	8,5-13,0	3216						
4,0	8,0	0,5-4,5	10024008						
[+0,05/-0,13]	10,0	1,5-6,5	4010						
	11,1	2,5-7,5	4011						
Ø 4,1 [4,3 max]	12,0	3,5-8,5	4012						
	12,7	4,0-9,5	4013	12,0	≤2,5	~2,18	≥27	1.600	1.150
	14,0	5,5-10,5	4014	[+0/-0,5]					
	16,0	7,5-12,5	4016						
	17,0	8,5-13,5	4017						
	18,0	9,5-14,5	4018						
	20,0	11,5-16,5	4020						
4,8	10,0	0,5-5,0	*10024810						
[+0,05/-0,13]	12,0	2,0-7,0	*4812						
	14,0	4,0-9,0	*4814	14,0	≤2,5	~2,78	≥27	2.350	1.500
Ø 4,9 [5,2 max]	16,0	6,0-11,0	*4816	[+0/-0,5]					
	18,0	8,0-13,0	*4818						
	20,0	10,0-15,0	*4820						

* these rivets of ranges 1001 and 1002 are also available in blister pack.







 **Aluminium** [AlMg2,5]
Polished

 **Steel**
Zinc plated

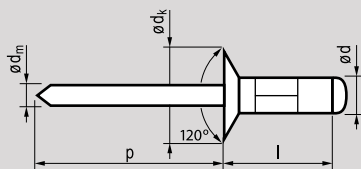


PLIA I multigrip I extra large head







$\varnothing d$	l		Item nr.	$\varnothing d_k$	k	$\varnothing d_m$	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
4,8	10,0	0,5-5,0	10034810						
[+0,05/-0,13]	10,3	0,5-5,5	4811						
	12,0	2,0-7,0	4812						
$\varnothing 4,9$ [5,2 max]	14,0	4,0-9,0	4814						
	16,0	6,0-11,0	4816						
	17,0	7,0-12,0	4817						
	18,0	8,0-13,0	4818	16,0	$\leq 2,5$	$\sim 2,78$	≥ 27	2.350	1.500
	20,0	10,0-15,0	4820						
	22,0	12,0-17,0	4822						
	24,0	14,0-19,0	4824						
	24,8	14,5-19,5	4825						
	27,0	16,0-22,0	4827						

 **Aluminium** [AlMg2,5]
Polished

 **Steel**
Zinc plated



PLIA | multigrip | countersunk head

$\varnothing d$	l		Item nr.	$\varnothing d_k$	k	$\varnothing d_m$	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
3,2	8,0	1,5-5,0	10043208	6,0 [+/-0,24]	-	~1,78	≥27	980	680
[+0,05/-0,13]	9,7	2,5-6,5	3209						
	10,0	2,5-7,0	3210						
Ø 3,3 [3,5 max]	12,0	4,5-9,0	3212						
4,0	8,0	1,5-4,5	10044008	8,0 [+/-0,29]	-	~2,18	≥27	1.600	1.150
[+0,05/-0,13]	10,0	1,5-6,5	4010						
	11,3	2,5-7,5	4011						
Ø 4,1 [4,3 max]	12,0	3,5-8,5	4012						
	14,0	5,5-10,5	4014						
4,8	10,0	1,5-5,0	10044810	9,5 [+/-0,29]	-	~2,78	≥27	2.350	1.500
[+0,05/-0,13]	12,0	2,0-7,0	4812						
	14,0	4,0-9,0	4814						
Ø 4,9 [5,2 max]	16,0	6,0-11,0	4816						
	16,9	7,0-12,0	4817						



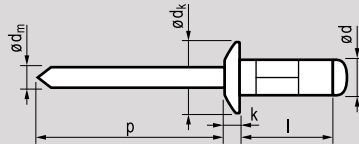
Aluminium [AlMg2,5]

Polished



Steel

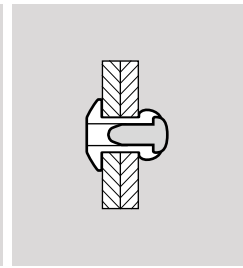
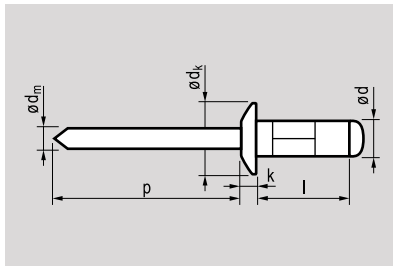
Zinc plated









PLIA I multigrip I dome head white

$\varnothing d$	l [+1/-0,2]		Item nr.	$\varnothing d_k$	k	$\varnothing d_m$	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
3,2	6,0	0,5-3,0	11713206	6,0 [+/-0,24]	≤1,4	~1,78	≥27	980	680
[+0,05/-0,13]	8,0	0,5-5,0	3208						
	9,5	2,0-6,5	3209						
$\varnothing 3,3$ [3,5 max]	10,0	2,5-7,0	3210						
	11,1	3,5-8,0	3211						
	12,0	4,5-9,0	3212						
	12,7	5,5-9,5	3213						
	14,0	6,5-11,0	3214						
	16,0	8,5-13,0	3216						
4,0	6,0	0,5-2,5	11714006	8,0 [+/-0,29]	≤1,7	~2,18	≥27	1.600	1.150
[+0,05/-0,13]	8,0	0,5-4,5	4008						
	9,5	1,0-6,0	4009						
$\varnothing 4,1$ [4,3 max]	10,0	1,5-6,5	4010						
	12,0	3,5-8,5	4012						
	12,7	4,0-9,5	4013						
	14,0	5,5-10,5	4014						
	16,0	7,5-12,5	4016						
	17,0	8,5-13,5	4017						
	18,0	9,5-14,5	4018						
	20,0	11,5-16,5	4020						
4,8	10,0	0,5-5,0	11714810	9,5 [+/-0,29]	≤2,0	~2,78	≥27	2.350	1.500
[+0,05/-0,13]	10,3	0,5-5,5	4811						
	12,0	2,0-7,0	4812						
$\varnothing 4,9$ [5,2 max]	14,0	4,0-9,0	4814						
	15,1	5,0-10,5	4815						
	16,0	6,0-11,0	4816						
	17,0	7,0-12,0	4817						
	18,0	8,0-13,0	4818						
	20,0	10,0-15,0	4820						
	22,0	12,0-17,0	4822						
	24,0	14,0-19,0	4824						
	24,8	14,5-19,5	4825						

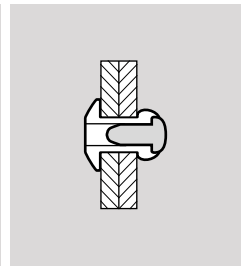
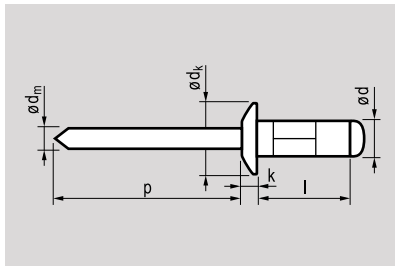
-  **Aluminium** [AlMg2,5]
Polished
-  **Steel**
Zinc plated









PLIA I multigrip I dome head black

Ø d	l		Item nr.	Ø d _k	k	Ø d _m	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
3,2	6,0	0,5-3,0	11813206	6,0 [+/-0,24]	≤1,4	~1,78	≥27	980	680
[+0,05/-0,13]	8,0	0,5-5,0	3208						
	9,5	2,0-6,5	3209						
Ø 3,3 [3,5 max]	10,0	2,5-7,0	3210						
	11,1	3,5-8,0	3211						
	12,0	4,5-9,0	3212						
	12,7	5,5-9,5	3213						
	14,0	6,5-11,0	3214						
	16,0	8,5-13,0	3216						
4,0	6,0	0,5-2,5	11814006	8,0 [+/-0,29]	≤1,7	~2,18	≥27	1.600	1.150
[+0,05/-0,13]	8,0	0,5-4,5	4008						
	9,5	1,0-6,0	4009						
Ø 4,1 [4,3 max]	10,0	1,5-6,5	4010						
	12,0	3,5-8,5	4012						
	12,7	4,0-9,5	4013						
	14,0	5,5-10,5	4014						
	16,0	7,5-12,5	4016						
	17,0	8,5-13,5	4017						
	18,0	9,5-14,5	4018						
	20,0	11,5-16,5	4020						
4,8	10,0	0,5-5,0	11814810	9,5 [+/-0,29]	≤2,0	~2,78	≥27	2.350	1.500
[+0,05/-0,13]	10,3	0,5-5,5	4811						
	12,0	2,0-7,0	4812						
Ø 4,9 [5,2 max]	14,0	4,0-9,0	4814						
	15,1	5,0-10,5	4815						
	16,0	6,0-11,0	4816						
	17,0	7,0-12,0	4817						
	18,0	8,0-13,0	4818						
	20,0	10,0-15,0	4820						
	22,0	12,0-17,0	4822						
	24,0	14,0-19,0	4824						
	24,8	14,5-19,5	4825						

-  **Aluminium** [AlMg2,5]
Polished
-  **Stainless steel** [A2]
Polished




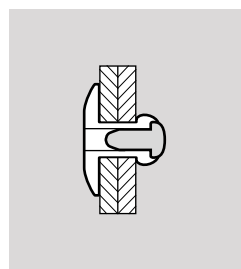
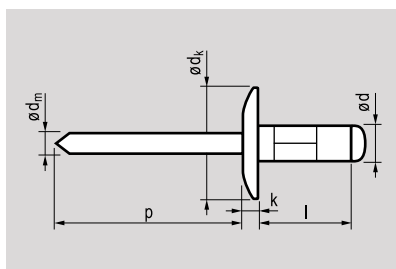
PLIA | multigrip | dome head

$\varnothing d$	l [+1/-0,2]		Item nr.	$\varnothing d_k$	k	$\varnothing d_m$	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
3,2	8,0	0,5-5,0	14413208						
[+0,05/-0,13]	9,5	2,0-6,5	3209	6,0	$\leq 1,4$	$\sim 1,78$	≥ 27	980	680
	11,1	3,5-8,0	3211	[+/-0,24]					
$\varnothing 3,3$ [3,5 max]									
4,0	9,5	1,0-6,0	14414009						
[+0,05/-0,13]	12,7	4,0-9,5	4012	8,0	$\leq 1,7$	$\sim 2,18$	≥ 27	1.600	1.150
	16,9	8,5-13,5	4016	[+/-0,29]					
$\varnothing 4,1$ [4,3 max]									
4,8	10,3	0,5-5,5	14414810						
[+0,05/-0,13]	15,1	5,0-10,5	4815	9,5	$\leq 2,0$	$\sim 2,78$	≥ 27	2.350	1.500
	16,9	7,0-12,0	4816	[+/-0,29]					
$\varnothing 4,9$ [5,2 max]	24,8	14,5-19,5	4824						







MFX 1443

 **Aluminium** [AlMg2,5]
Polished

 **Stainless steel** [A2]
Polished



PLIA I multigrip I extra large head

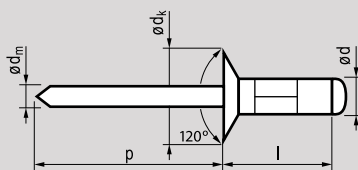
$\varnothing d$	l [+1/-0,2]		Item nr.	$\varnothing d_k$	k	$\varnothing d_m$	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
3,2	8,0	0,5-5,0	14433208						
[+0,05/-0,13]	9,5	2,0-6,5	3209	9,5	$\leq 2,0$	$\sim 1,78$	≥ 27	980	680
	11,1	3,5-8,0	3211	[+0/-0,5]					
$\varnothing 3,3$ [3,5 max]									
4,0	12,7	4,0-9,5	14434012						
[+0,05/-0,13]	16,9	8,5-13,5	4016	12,0	$\leq 2,5$	$\sim 2,18$	≥ 27	1.600	1.150
				[+0/-0,5]					
$\varnothing 4,1$ [4,3 max]									
4,8	10,3	0,5-5,5	14434810						
[+0,05/-0,13]	16,9	7,0-12,0	4816	16,0	$\leq 2,5$	$\sim 2,78$	≥ 27	2.350	1.500
	24,8	14,5-19,5	4824	[+0/-0,5]					
$\varnothing 4,9$ [5,2 max]									



Aluminium [AlMg2,5]
Polished




Stainless steel [A2]
Polished

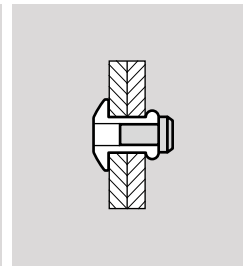
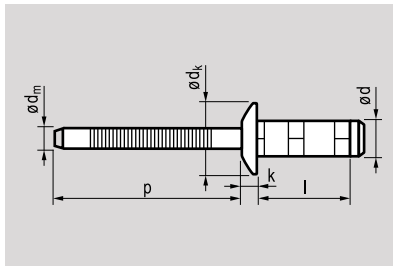


PLIA I multigrip I countersunk head







$\varnothing d$	l		Item nr.	$\varnothing d_k$	k	$\varnothing d_m$	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
3,2 [+0,05/-0,13] $\varnothing 3,3$ [3,5 max]	9,7	2,0-6,5	14443209	6,0 [+/-0,24]	-	~1,78	≥ 27	980	680
4,0 [+0,05/-0,13] $\varnothing 4,1$ [4,3 max]	9,5 11,3	1,5-6,0 3,0-8,0	14444009 4011	7,5 [+/-0,29]	-	~2,18	≥ 27	1.600	1.150
4,8 [+0,05/-0,13] $\varnothing 4,9$ [5,2 max]	12,1 16,9	2,0-7,0 7,0-12,0	14444812 4816	9,0 [+/-0,29]	-	~2,78	≥ 27	2.350	1.500

 **Stainless steel [A2]**
Polished

 **Stainless steel [A2]**
Polished



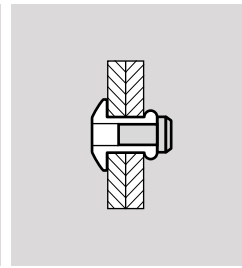
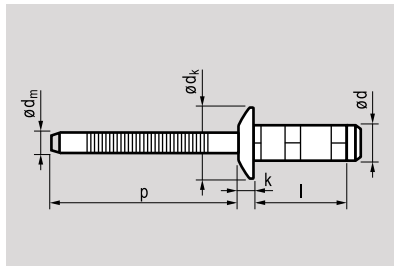
PLIA I multigrip I dome head

$\varnothing d$	l		Item nr.	$\varnothing d_k$	k	$\varnothing d_m$	p		
[mm]	[mm]	[mm]		[nom.]	[max.]	[mm]	[mm]	[N]	[N]
3,2 [+0,08/-0,15]	9,9	1,0-4,8	14513210	6,4 [+0,45/-0,40]	1,02	~2,20	≥27	2.000	1.700
 Ø 3,3									
4,0 [+0,08/-0,15]	12,0 13,6 16,8	1,6-6,4 3,2-8,0 6,4-11,2	14514012 4013 4016	7,9 [+0,45/-0,40]	1,27	~2,70	≥27	3.200	2.900
 Ø 4,1									
4,8 [+0,08/-0,15]	12,7 14,3 17,5 19,3	1,6-6,4 3,2-8,0 6,4-11,2 8,0-12,7	14514812 4814 4817 4819	9,5 [+0,55/-0,50]	1,52	~3,10	≥27	4.800	4.100
 Ø 4,9									







MFX 1461

 **Steel**
Zinc plated

 **Steel**
Zinc plated



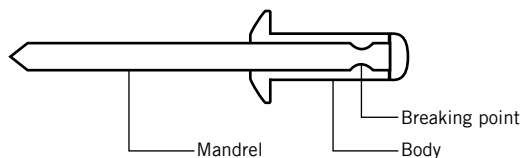
PLIA | multigrip | dome head

$\varnothing d$	l [+1/-0,2]		Item nr.	$\varnothing d_k$ [nom.]	k [max.]	$\varnothing d_m$	p		
[mm]	[mm]	[mm]		[mm]	[mm]	[mm]	[mm]	[N]	[N]
3,2* [+0,08/-0,15]	11,4	1,6-6,4	14613211	6,4 [+0,45/-0,40]	1,02	~2,05	≥27	1.400	1.100
 Ø 3,3									
4,0* [+0,08/-0,15]	12,0 13,6	1,6-6,4 3,2-8,0	14614012 4013	7,9 [+0,45/-0,40]	1,27	~2,65	≥27	2.100	1.800
 Ø 4,1									
4,8 [+0,08/-0,15]	12,7 14,3 19,3	1,6-6,4 3,2-8,0 8,0-12,7	14614812 4814 4819	9,5 [+0,55/-0,50]	1,52	~3,00	≥27	3.100	2.600
 Ø 4,9									

* do NOT have grooved mandrels

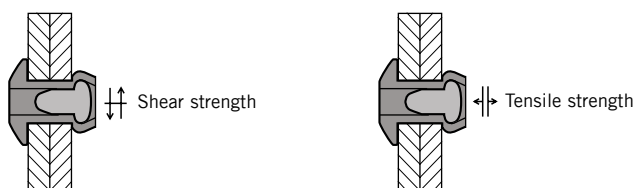
Blind rivet breaking point

The rivet is made of two parts namely, the body and the mandrel. The body is deformed when the rivet is set and it is this part which clamps the materials together. The function of the mandrel is to deform the body of the rivet. The mandrel is therefore always stronger than the body. The mandrel breaks off at its specific breaking point. The breaking point ensures that the mandrel breaks off at the right moment so that the body is correctly deformed. The breaking load can be adjusted so that the mandrel breaks at a sooner or a later point of time.



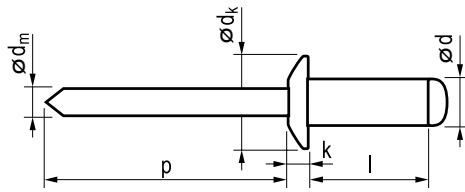
Tensile and shear strength

The tensile strength is the maximum force the rivet, rivet nut or rivet bolt can bear lengthways (see arrows) before it gives out. The tensile strength is obtained through tests and is always the smallest average value. The shear strength is the maximum force the rivet, rivet nut or rivet bolt can bear vertical to its length (see arrows) before it gives out. The shear strength is obtained through tests and is always the smallest average value. By changing the breaking point, the shear strength will be increased or decreased. Both tensile and shear strength are expressed in Newton ($1 \text{ kg} = 10 \text{ N}$).



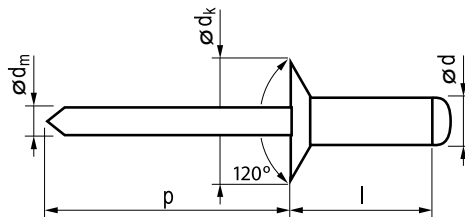
Technical details

Dimensioning rivets

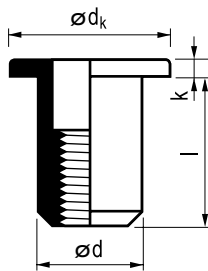


Standard rivet (all sizes in mm)

- Ø d = Rivet body diameter
- Ø d_k = Head diameter
- Ø d_m = Mandrel diameter
- k = Head height
- l = Rivet body length
- p = Mandrel length

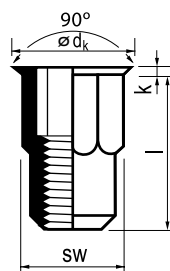


Dimensioning rivet nuts



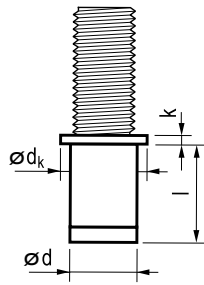
Standard rivet nut (all sizes in mm)

- Ø d = Rivet nut body diameter
- Ø d_k = Head diameter
- k = Head height
- l = Rivet nut body length
- sw = Key size



Technical details

Dimensioning rivet bolts



Standard rivet bolt (all sizes in mm)

$\varnothing d$ = Rivet nut body diameter

$\varnothing d_k$ = Head diameter

k = Head height

l = Rivet nut body length

Technical details

Aluminium AL 99,5

Low weight

Easy to deform

Highly electrical and warmth conductive

Aluminium alloys AlMg

Solid and strong - easy to polish

If the degree of Mg increases, the strength of the rivet increases and the deformability decreases

Steel

Suitable for heavy constructions

Easy to deform

Easy to coat (e.g. with anti-corrosion coating)

Stainless steel

Highly resistant to corrosion

Suitable for heavy constructions

A4 has a higher resistance to acids than A2

Copper

Highly electrical and warmth conductive

Easy to deform

Suitable for soldering

Material features

Contact corrosion

When different metals come in contact with each other, contact corrosion will arise. The table below shows how the different materials combine.

Material rivet body	Material to be connected			
	Aluminium	Copper	Steel	Stainl.steel
Aluminium	++	--	+	+
Copper	--	++	--	+
Steel	+	--	++	++
Stainl. steel	+	+	++	++
i Monell [®]	--	+	++	+

++ very good | + good | - moderate | -- bad

Coatings

Corrosion can never be reduced to 0%. However, coatings can help to reduce the chance of corrosion or delay corrosion:

Painting

2-Components painting is possible in many colors. All RAL-colours can be delivered on request.

Zinc plating

This is a coating obtained through electrolysis and consists of a Zinc-iron alloy. This coating is characterized by a high resistance to wear and tear.

Material features

STANLEY
Engineered Fastening

Edition September 2015

