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Foreword

More than 50 years after the launch of Powder Actuated Tools, **Spit Gas & Powder Nailing Systems** continue to increase their market share across Europe's construction jobsites.

With strong brand recognition **Spit Gas & Powder Nailing Solutions** offer significant technical and financial advantages to construction companies of any size:

¬ TECHNICAL ADVANTAGES

Spit Nailing Systems offer a user friendly, fast and reliable cordless solution for a variety of fixing requirements. The recent **'One Step Solution'** innovation has provided Spit customers with a unique way to fasten a variety of accessories and consumables into steel and concrete that is up to 8 times faster than traditional plug and screw methods.

¬ FINANCIAL ADVANTAGES

By being close to its customers Spit has been able to benefit from a sound understanding of their customers' needs and requirements. This understanding has enabled Spit to develop a complete range of products designed specifically to help contractors increase on site productivity and, in turn save significant time and money on any job.

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Site safety with Powder Actuated Tool 64

GAS Tool

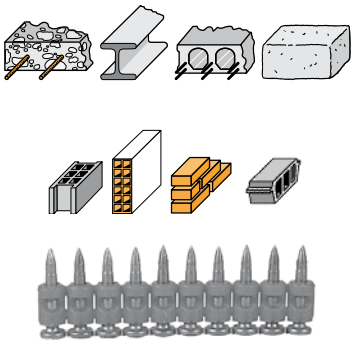
With it's own internal combustion engine, Pulsa fastens cable management, wiring accessories and dry wall track up to eight times faster than any other system.

PRINCIPLE







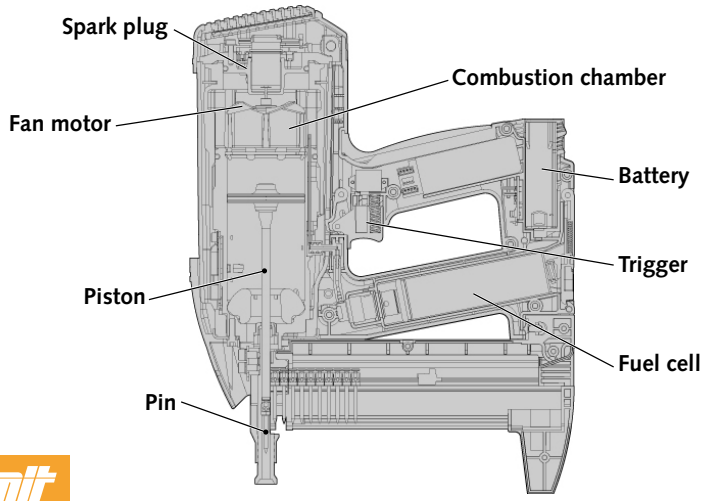


Train the operator ▶ Use the tool designed for your application Electrician : P700E Drywaller : P700P ▶ Fully automatic tool using fuel energy ▶ Select the correct pin depends on the base material

FEATURES

- **Fuel injection carried out by an electro valve and an electronic chip (fully automatic tool)**
- **Nails are delivered in 10 nails strips. Each fuel cell allows up to 850 nails at 20°C**
- **Oval battery : high autonomy. Capacity up to 1200 nails. Rechargeable battery (time 1 hour)**
- **Energy from 80 to 100 Joules**
- **Telescopic guide 5 kg actuation force : little effort required when fixing overhead, particularly for ceiling applications (the majority of powder actuated nailing tools required approximately 15 kg actuation force)**
- **Full range PULSA accessories for electrician application**
- **Small edge distance**
- **Working with extreme temperature : - 5°C ; + 40°C**
- **20 or 40 pins magazine**
- **Low recoil vibration**
- **CE marking**
- **Low maintenance**
- **Well adapted to low strength material (masonries)**

FUNCTIONING PRINCIPLE FOR GAS TOOL



PULSA is powered by easily replaceable fuel cells. Each time the nose of the tool is depressed a metered amount of air and fuel gas mixture is injected into the combustion chamber where it is ignited by a spark when the trigger is pressed. As in a car engine the piston is forced down, driving the fastener to a pre-set depth.

GAS Tool

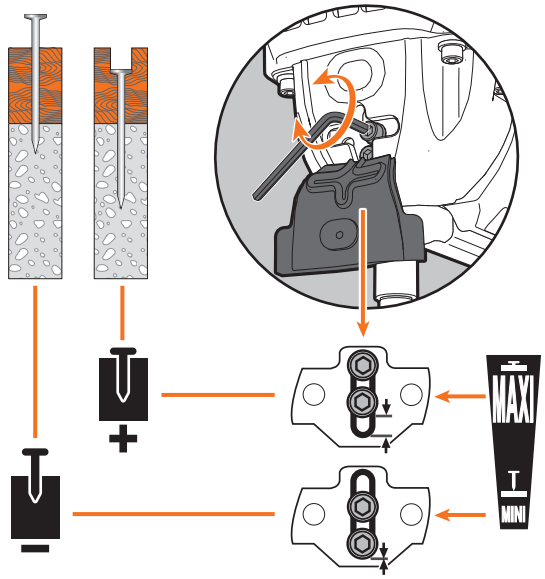
CONTACT PRESSURE SAFETY

2 conditions to obtain percussion, in order:

1 - Press the tool against the working surface
2 - Press the trigger

NAIL PENETRATION

The tool automatically absorbs excess of power to suit the supporting material. However, certain applications may require the nail to penetrate deeper into the base material or penetrate less.



Penetration is adjusted by slackening the two screws on the upper part of the barrel using the allen key provided and moving them backwards or forwards in the recess on plate. Intermediate adjustments between maximum and minimum are possible.

To ensure successful nailing of wiring and cable management accessories, it is recommended that the tool is set to the minimum drive position. Failure to do so could result in cracking or breaking of accessories and PVC-U trunking. The PULSA 700E is supplied adjusted to the minimum position, and the PULSA 700P is supplied adjusted to the maximum position.

Fuel cells

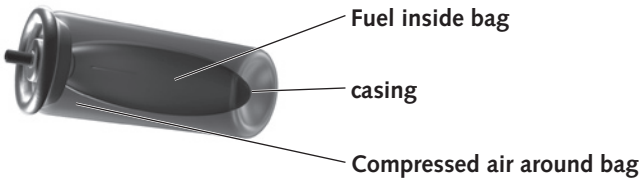
Fuel cell contains butane and propene. The safety data sheet is available on request.

BEST BEFORE DATE

The usage limit date is affixed to the fuel cell, after this date, the performance could be affected.

STORAGE CONDITIONS

- Storage temperature : +5 à +25°C.
- Protect from direct sunlight
- Use and keep in well ventilated area.
- Keep out of reach of children.



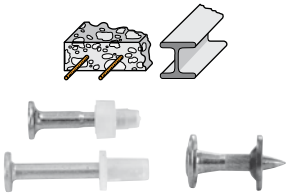
Powder Actuated tool (PAT)

PRINCIPLE







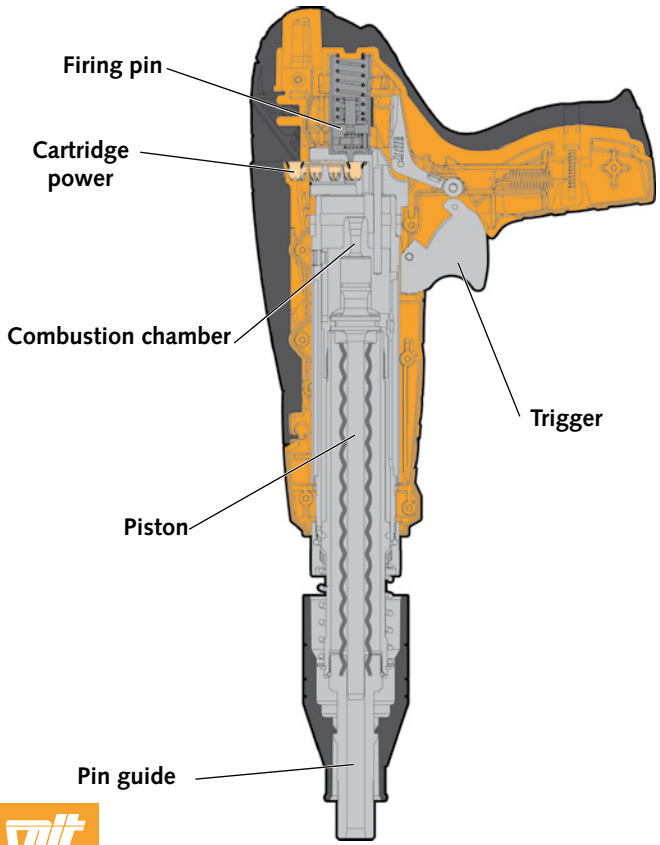


Train the operator ▶ Use the tool designed for your application ▶ Select the correct cartridge to adapt the power to the type of fixing ▶ Select the correct pin to suit fixture and base material

FEATURES

- Safety use
- Instant fixing
- High fixing rate
- Self contained
- Energy from 200 to 560 Joules
- Mechanical power adjustment on P370, P60 and P200 tools
- M.A.C. SYSTEM for P230 / P525L (no deformation of the metal sheet)
- Large consumable range (maximum pin length 90 mm)
- Operate temperature : - 15°C / + 50°C
- All weather condition
- Easy and low maintenance

FUNCTIONING PRINCIPLE FOR SPIT POWDER ACTUATED TOOLS



2 conditions to obtain percussion, in order:

1 - Press the tool against the working surface
2 - Press the trigger

The SPIT Powder Actuated Tools used the indirect firing system, this means that a piston is positioned between the fastener and the propellant charge, to reduce the speed of the pin.

The SPIT powder-actuated fastening tools employ the well-proven piston principle. Pulling the trigger causes ignition of the propellant and the energy it releases is then transferred to the piston.

The energy from the propellant charge transferred into combustion chamber on the piston. The accelerated mass of which drives the pin into the base material at a much lower velocity.

Powder Actuated tool (PAT)

SAFETY SYSTEM

CIP Agreement

All SPIT tools are approved according to CIP (Comité International Permanent) requirements for shot firing tools. CIP agreement is delivered by St Etienne testing Stand (French Institute). The CIP marking is affixed on all SPIT tools and also on the cartridge boxes.

Contact pressure safety

In conformity with AFNOR standards E71-700 and E71-101, all SPIT PAT tools are indirect firing tool, of class A symbol A*. So, the cartridge can only be fired if the tool is fully depressed and contact pressure is maintained hard up against the support material. The SPIT tools are approved by the St Etienne Testing Stand (French institute) or National institute.

Sequentiel trigger safety system

The cartridge cannot be fired even if the trigger is pulled prior the positioning the tool and taking up the full contact pressure.(CIP requirements).

Safety trigger

The trigger is locked in place when the tool is not in use. It cannot be fired unless the tool is in the full down-hand position. The trigger safety function will not permit the tool to be fired if the support material is not rigid enough. (except P370 tool).

Design safety

The cartridge disc is totally enclosed within the tool.

Load magazine chamber inspection

When the tool is loaded it is easy to verify the presence of the cartridge disc.

M.A.C. System for roofing tool, total on-site safety - PATENTED

The P230, P525L tools are fitted with the M.A.C. System. The M.A.C system prevents the pin from passing through the steel sheet if is not shot into the support frame.

Powder Actuated tool (PAT)

PRINCIPLE OF POWDER ADJUSTMENT

Procedure: 1 - Choose the pin length (see p.13)
2 - Choose the lowest cartridge power
3 - Adjust mechanically the tool power.

Always start by using the lowest possible cartridge and the lowest possible setting.

CARTRIDGE POWER

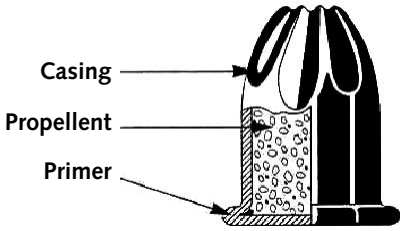
The wide range of cartridge types allows successful fixing to a variety of base materials.

To maintain reliability and reduce operator fatigue, use the lowest level of power to achieve and acceptable fix.

Pins are fired into the support by an explosive cartridge. To cover this range of applications, the SPIT range of cartridges is specifically calibrated to meet specific needs (2 calibers and 6 levels).

- Caliber 6.3/10
- Caliber 6.3/16





The cartridge power is identified by an international colour code within each calibre:

Brown, Green, Yellow, Blue, Red, Black.

Cartridge power	Low → Medium ← High						
Caliber type	**Brown**	**Green**	**Yellow**	**Blue**	**Red**	**Black/ Purple**	**Mechanical adjustement**
International Code	**2**	**3**	**4**	**5**	**6**	**7**	
SPIT P45	6.3/10	6.3/10	6.3/10		6.3/10		No
SPIT P60	6.3/10	6.3/10	6.3/10				Yes
SPIT P200	6.3/10	6.3/10	6.3/10		6.3/10		Yes
SPITFIRE P370	6.3/10	6.3/10	6.3/10		6.3/10		Yes
SPIT P230		6.3/16	6.3/16	6.3/16	6.3/16	6.3/16	No
SPIT P250			6.3/16	6.3/16	6.3/16	6.3/16	No
SPITFIRE P525L		6.3/16	6.3/16	6.3/16	6.3/16	6.3/16	No

MECHANICAL POWER ADJUSTMENT

Some of the Spit tools are equipped with mechanical power adjustment to allow flexibility to the end user with a same type of cartridge changing the tool power.

There are two different mechanical systems :

- combustion chamber volume adjustment by barrel rotation : P60 & P200
- combustion chamber fume exhausts adjustment by a knurling wheel : P370

Field of use

INTO A STEEL MEMBER



As the pin penetrates into the steel, it compresses the support material. The elasticity of the steel is what holds the pin firmly in place. The knurling on the pin further enhances this effect.

Construction grade steel is an excellent base material for reliable powder and gas tool.

Penetration depth depends on the strength steel quality and the thickness of the base material.

For each product, product data sheet gives the application field.

The principle steels suitable are :

(1)	E24	E28	E36	A60	(1) French designation
(2)	ST37	ST44	ST52	ST60	(2) German designation
(3)	S235	S275	S355	E335	(3) European standard NF EN 10027-1

Minimum ultimate tensile strength of steel base material (N/mm^2)

350	400	500	550	600	700	fuk (N/mm^2)

INTO CONCRETE BASE MATERIAL



As the pin penetrates into concrete, the pin displaces soft components such as cement, stone, and aggregates and heats up to as much as 900°C. This sinters the surface of the pin shank which becomes extremely rough.

A specific heat treatment increases SPIT pin resistance to shearing. Decarborating the steel increases the flexibility of the pin shank as the carbon atoms migrate to free air.

Four factors affect the suitability :

- Compressive strength of the concrete
- Age of the concrete
- Aggregate hardness, size, form and percentage

For information, the table below gives the correlation between characteristic values and average strength on cylindrical and cubic specimens in Mpa.

	Characteristic strength f_{ck}		Average strength		
Classes	**cylinder 16 x 32 cm**	**Cube 15 x 15 x 15 cm**	**cylinder (f_{cm}) 16 x 32 cm**	**Cube 15 x 15 x 15 cm**	**Cube 20 x 20 x 20 cm**
C 16/20	16	20	20	25	24
C 20/25	20	25	25	31	29
C 25/30	25	30	30	37	36
C 30/37	30	37	37	46	43
C 35/45	35	45	45	56	53
C 40/50	40	50	50	62	59
C 45/55	45	55	55	69	65
C 50/60	50	60	60	72	68

Prestressed concrete / concrete beam slab

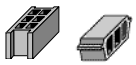


Over 90 days curing time, some concrete beam slab could reach **80 Mpa.**

INTO OTHER BASE MATERIAL



Solid brick



Hollow concrete block
Rc = 6.5 N/mm^2



Engineer clay brick rendered
Rc = 14.5 N/mm^2



Calcium silicate block
Rc = 16 N/mm^2

Suitable base material

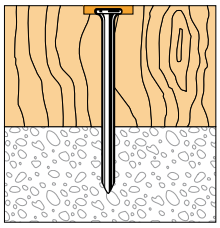
● Suitable

○ Verify the using limit on technical sheet or check by site suitability tests

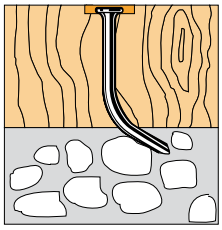
	Tools	p.	Steel ultimate strength < 500 N/mm²	Steel ultimate strength 500 to 680 N/mm²	Concrete C20/25 up to C25/30	Concrete C30/37 up to C40/50	- Hard concrete ≥ C50/60 - Concrete beam slab	Solid brick	Hollow concrete block	Engineer clay brick rendered	Calcium silicate block	Asphalte
Pins designation												
GAS Solutions												
SPIT C6	PULSA 700	26			●			○	○	○	○	○
SPIT HC6	PULSA 700	27	●	●	●	●	●	○	○	○	○	○
SPIT SC6	PULSA 700	28	●	○	●	●	○	○	○	○	○	○
SPIT CG6	PULSA 700	29			●			○	○	○	○	○
PAT Solutions												
SPIT HSBR14	P230 P525L	36	●	●								
SPIT SBR14	P230 P525L	38	●	○								
SPIT SBR9	P370 P200	40	●	○								
SPIT SC9 SPIT SC9 strip (P370)	P200 P370	41	●	○	●	●	○	○			○	○
SPIT C9 SPIT C9 strip (P370) SPIT CR9	P60 P370 P200	42			●	○		○			○	○
SPIT CR9T SPIT CR9TP CR9P	P45 P60 P200 P370	43			●	○		○				
SPIT C9 for posibanche fastener	P370 P60 P200	45			●	○						
SPIT C9 formwork spacer	P370 P60 P200	45			●	○						
SPIT C9 CLIP A	P370 P60 P200	46			●	○						●
SPIT SA9	P370 P200	47	●	○								
SPIT SA12-8	P250 P370	48	●	○								
SPIT CI6 – CI9	P200 P370	50			●	●					●	

Success rate in concrete

When the aggregate hardness is lower then fasteners will go into the aggregate, if it's hard, the fastener will deflect.



SOFT aggregate types



HARD aggregate types

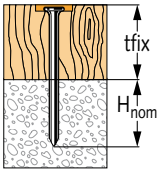
Using in ceiling position or in floor direction :

In case of overhead fastening the density of aggregates is more important on the under part of the slab because of the aggregates migration during concrete pouring. This phenomenon involves that the rejection factor will be more important for firing in ceiling. The nail suitable for this kind of application is the HC6 range.

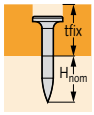
PIN LENGTH SELECTION

The choice of the pin length is linked to the embedment depth of the pin in the base material. The embedment depths depends on the compressive strength of the concrete, or the ultimate limit strength of the steel, and whatever the thickness of the base material.

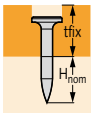
So, **Total pin L = H_{nom} + t_{fix}**



¬ In **concrete base material**, the table below gives an information of the minimum embedment depth related to concrete compressive strength :

H_{nom} (mm) 		H_{nom} (mm)(1)		
		C9 / SC9	C6	SC6 / HC6
	C16/20	30 – 35	25 – 28	25 – 28
	C20/25	25 – 30	20 – 22	20 – 22
	C25/30	25 - 28	15 – 20	15 – 20
	C30/37	20 – 25	15 – 18	15 – 18
	C40/50	15 – 20		13 – 16
	C50/60	15 – 20		12 – 15

¬ In **steel base material**, the table below gives an information of the minimum embedment depth related to the ultimate limite strength of the steel :

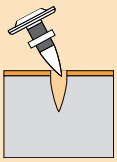
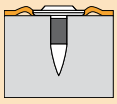
H_{nom} (mm) 		H_{nom} (mm)(1)	
		SC9	SC6 / HC6
	fuk = 350 N/mm²	12	6.5
	fuk = 500 N/mm²	10	

fuk : ultimate strength

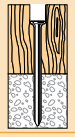
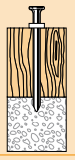
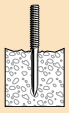
(1) All figures given are to be used as a guide and a job site suitability tests is always recommended.

Trouble shooting

FIXINGS TO STEEL

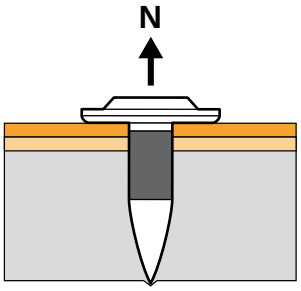
Pin is not deep enough in the steel		Too less power Base material to hard	Use stronger cartridge if possible More power Use high performance pins
Pin does not stick to the steel		Base material not thick enough (> 5 mm)	Decrease power adjustment or cartridge Check pin selection
Pin breaks		Too much power Base material to hard Pin to long	Use weaker cartridge or decrease power setting Use shorter pin Check tool piston wear
Pin head damages the material to be fixed		Too much power	Use weaker cartridge Less power
Hurt pin head		Too much power Damage piston	Decrease tool power setting Use weaker cartridge Change piston

FIXINGS TO CONCRETE

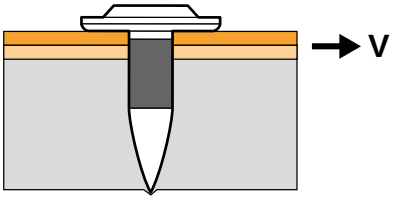
Pin to deep		Pin to short Too much power Depth adjustment incorrect (GAS)	Use longer pin Less power (PAT) Use weaker cartridge (PAT) Increase depth adjustment (GAS)
Pin not deep enough		Pin to long Too less power Depth adjustment incorrect (GAS)	Use shorter pin More power (PAT) Use stronger cartridge (PAT) Increase depth adjustment (GAS)
Pin is bent		Hard and/or big supplementaries in the concrete Rebar directly under the surface Hard surface (steel)	Use shorter pin Drilling before setting Use stronger cartridge Check perpendicularity shooting
Concrete flakes off		Prestressed concrete Hard and/or big supplementaries in the concrete Old concrete	Use shorter pin Drilling before setting
Hurt pin head		Too much power Damaged piston	Less power Use weaker cartridge Change piston

Type of actions

TENSILE loading is applied along the axis of the fastener.



SHEAR loading is applied perpendicular to the axis of the fastener.



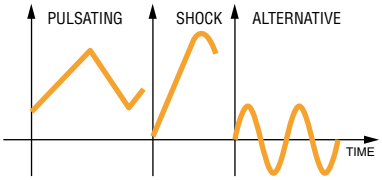
TYPE OF LOADS

¬ Static or quasi-static loads



The static or quasi-static loads are dead loads of the element fixed, permanent and variable actions as wind, snow …

¬ Dynamic loads



The dynamic loads are variable actions in time with a medium or high amplitude. For example, motor vibration, regular shock …
Some dynamic loads could be considered as quasi-static loads (wind …).

Resistance

THE RESISTANCE DEPENDS ON MANY FOLLOWING CONDITIONS

¬ Base material :

The same fastener will behave differently if fixed into concrete than if fixed into steel.

¬ Base material properties :

- For concrete,
  - concrete strength
  - aggregate size and hardness
- For steel,
  - Steel tensile strength
  - Steel thickness

¬ Part to be fixed :

Thin or weak items may be pulled over the fastener.

Firing through thick or strong parts may absorb driving energy.

¬ Penetration depth :

As penetration depth increases, so does pullout resistance. The recommended penetration depth depends on the fastener shank length chosen.

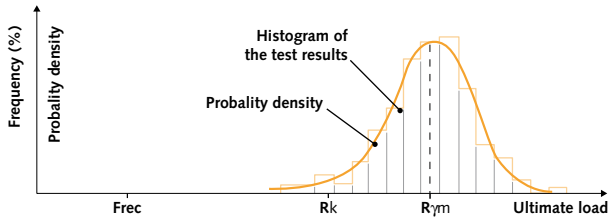
¬ Spacing and edge distance :

The recommended resistance can be achieved at the minimum dimensions for spacing (Smin), and edge distance given in the data sheet.

Resistance

CHARACTERISTIC RESISTANCE

The characteristic resistance is calculated from the average value of the mean failure load. It corresponds to the 5%-fractile of failure loads for the level of confidence (90%). The estimation depends on number of tests and the variation coefficient of tests.



DESIGN, RECOMMENDED RESISTANCE AND SAFETY FACTORS

Out of the characteristic loads, the safety factors are then applied to give the design resistance (using partial safety factor) and recommended resistance (using global safety factor).

The global safety factor takes account of both the uncertainty of applied load and of resistance.

The global safety factor are slowly being replaced by partial safety factor which allow the two uncertainties to be treated separately.

S : Action

F_{rk} : characteristic resistance

F_{rd} : Design resistance

F_{rec} : recommended resistance

γ_M : partial safety factor for resistance

γ_F : partial safety factor for action

$\nu = \gamma_M \cdot \gamma_F$: global safety factor

Design resistance

$$F_{Rd} = \frac{F_{Rk}}{\gamma_M} \geq S.\gamma_F$$

Recommended resistance

$$F_{Rec} = \frac{F_{Rk}}{\nu} \geq S$$

¬ Fixing to steel

Static tests are performed on all SPIT fasteners, and the mean ultimate resistance obtained are used to calculate the characteristic resistance.

So, typically, the following global safety factors are applied : $\nu \geq 2.5$.

For HSBR14, and SBR14, the cycle test program is carried out on these fasteners, so the following global safety factors must be applied : $\nu \geq 2$.

¬ Fixing to concrete

Hard aggregates, in concrete may result a failed installation. The proportion of failed installation to successful ones increase with concrete compressive strength and maximum aggregate size.

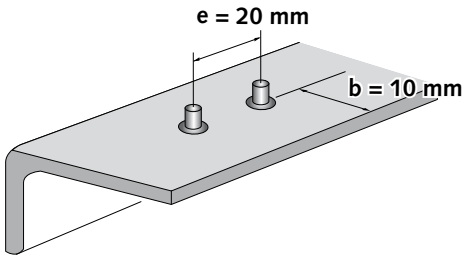
As a result, we recommend to use the individual resistance of one fastener to design the application, but with condition that at least 5 fixings are used to fix each part into concrete. So the following global safety factors must be applied : $\nu \geq 3$.

Edge and spacing distance recommandation

Distance recommandations with GAS technology



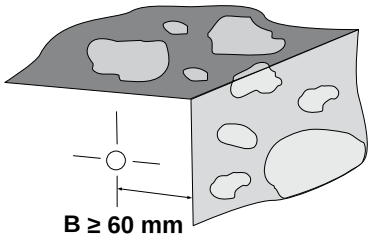
Steel



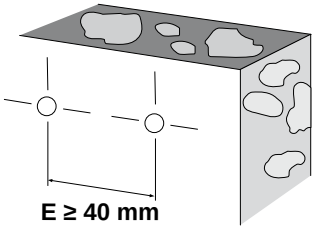
e = the minimum space between two fixings

b = the minimum distance from the edge

Concrete



B = the minimum distance from the edge

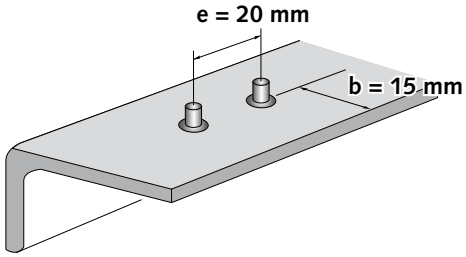


E = the minimum space between two fixings

Distance recommendations with POWDER technology



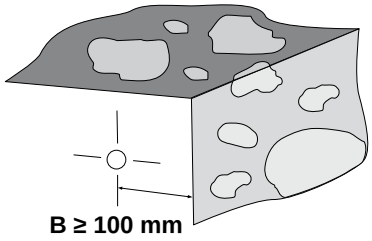
Steel



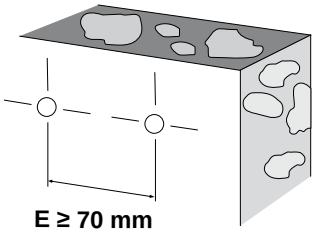
e = the minimum space between two fixings

b = the minimum distance from the edge

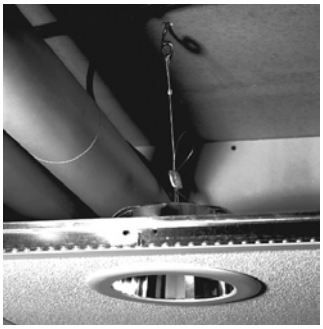
Concrete

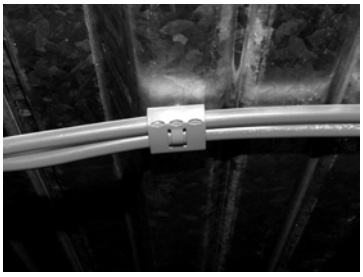
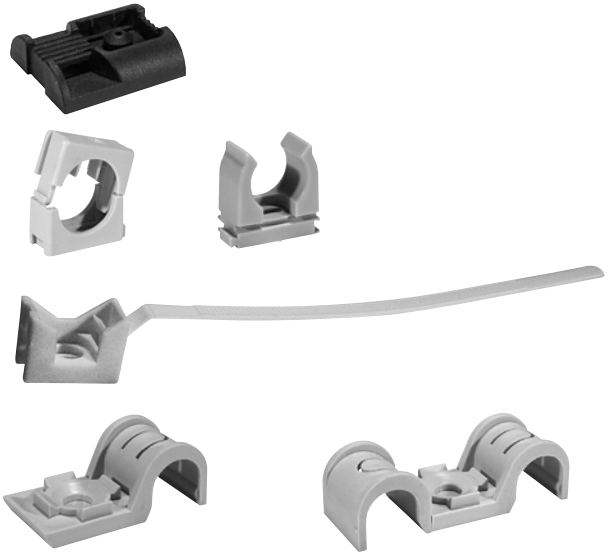
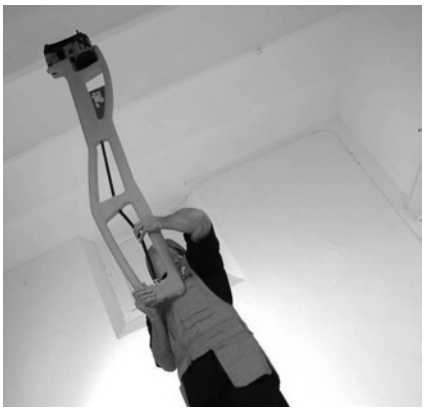


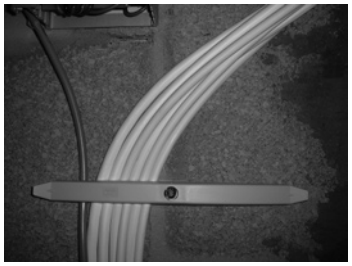
B = the minimum distance from the edge

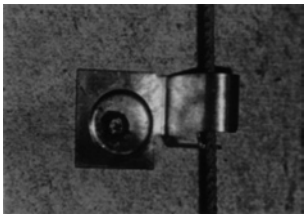


E = the minimum space between two fixings

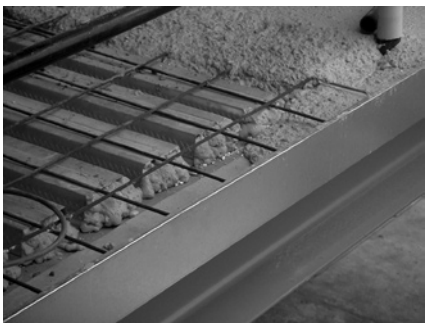
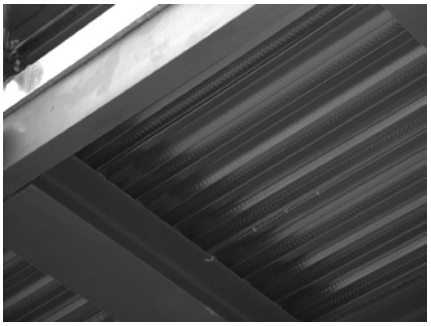
ELECTRICIAN & PLUMBER Applications		Gas solutions	Powder solutions
 	Junction boxes PVC-U back boxes	CG6 Threaded C6	
	Light cable ways Cable tray on composite flooring (limit application, check regulation in country)	TRH-CLIP HC6	
	Security cable for lightening	TRH-CLIP	
 	PVC-U trunking Metal trunking	CG6 (through pre-drilled trunking system SC6	SC9
	Electric tube Floor conduits With SPIT metal clip	C6 SC6 HC6	SC9
	Plastic pipe	C6 SC6 HC6	

ELECTRICIAN & PLUMBER Applications		Gas solutions	Powder solutions
	Fire resistant cabling With PIRELLI FP	C6 HC6 SC6	
	PULSABLE accessories SPIT range	C6 SC6 HC6	
	Legrand accessories	C6 SC6 HC6	
	Pole system	C6 HC6 SC6	
	Steel band	C6 HC6 SC6	

ELECTRICIAN & PLUMBER Applications		Gas solutions	Powder solutions
	Collar fixing	C6 HC6 SC6	
	for conduit and pipe work With P-CLIP	C6 HC6 SC6	C9
 	Low voltage cabling & temporary lighting With Single & double cable bows Steel band	C6 HC6 SC6	

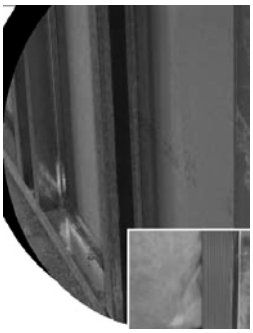
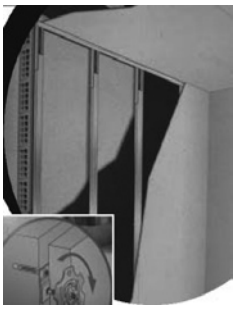
BUILDER Applications		Gas solutions	Powder solutions
	Wood to concrete		C9 SC9
	Wooden plate onto steel / Concrete	C6	C9 SC9 CR9
	Re-enforcement CT30		C9 with CT30
	Waterproof join		CR9P
 	Mould concrete		C9 posibanche C9 formwork spacer

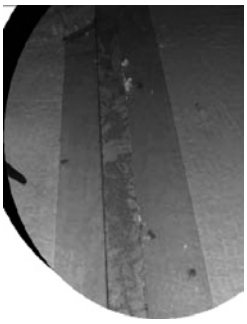
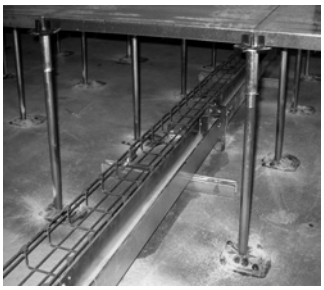
Application list

BUILDER Applications		Gas solutions	Powder solutions
	Metal bracket to aline fix window frame		C9
 	Composite flooring		SBR9 SBR14
	Connectors		SBR14 HSBR14
	Steel mesh		C9 CLIP-A

STEEL FABRICATORS Applications		Gas solutions	Powder solutions
 	Roofing		SBR14 HSBR14
	Cladding panels		HSBR14 SBR14 SBR9
	Grating system		SA12-8

INSULATION/FIRE PROTECTION Applications		Gas solutions	Powder solutions
 	Rigid / semi-rigid insulation		CI6 or CI9
	Expanded metal latch	C6 SC6 HC6	
	Fire protection	C6 SC6 HC6	C9 CR9 CR9TP

DRYWALL AND SUSPENDED CEILING Applications		Gas solutions	Powder solutions
	Angle bracket in PVC and Aluminium Cornière de rive	C6	
	Suspended ceiling Check regulation in country	C6 SC6 HC6	
	Internal insulation on hollow concrete block, hollow bricks	C6	C9
 	Metallic sole plate / Dry partition walls	C6 SC6 HC6	C9 SC9
	Tracks Optima	C6 SC6 HC6	

DRYWALL AND SUSPENDED CEILING Applications		Gas solutions	Powder solutions
	Wood to concrete	C6	SC9 C9
	Floating floor Check regulation in country	C6	C9

TUNNELS Applications		Gas solutions	Powder solutions
 		C6	CR9T CR9TP CR9P C9

GAS NAILS

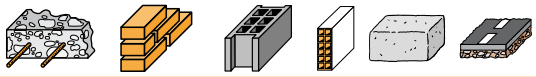
SPIT C6

SPIT HC6

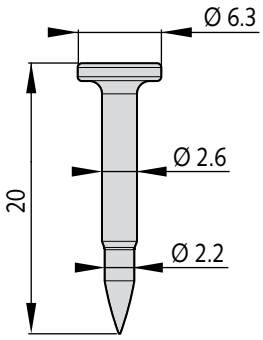
SPIT SC6

SPIT CG6

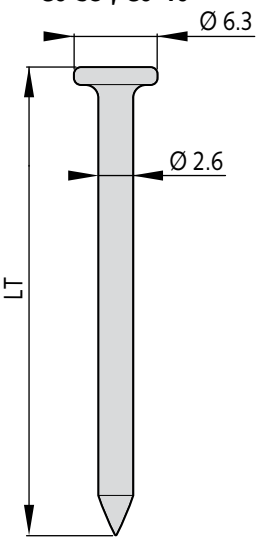
SPIT C6



C6-20



C6-25 ; C6-30
C6-35 ; C6-40



DESCRIPTION

- Using with wiring accessories, to fix drywall track.

PROPERTIES MATERIAL

Shank in carbon steel

- Total length Lt : 20, 25, 30, 35 or 40 mm
- Electrogalvanised, min zinc coating 5 µm
- Hardness (C6-20) : 53 to 56 HRc
- Hardness (C6-25/30/35/40) : 50 to 55 HRc

TOOLS

P700 E - P700 P

AGREEMENT

CSTB Technical approval 3/06 - 460

ACCESSORIES

Magnetic noze pieces for:

- Fixing Metal latch



code 333 700

- Metal P-CLIP

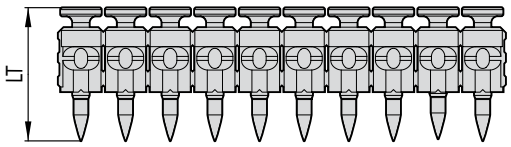


code 320 940

- Other accessories
  - Wiring accessories for electrician & Plumber
  - Pirelli FIREFIX for fire resistant cabling
  - Threaded rod hanger : TRH CLIP

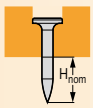
NAIL LENGTH SELECTION

C6 range	Length (LT)	Black strip 500 pcs/box	Black strip 1500 pcs/box	Flush head nail range * 500 pcs/box
C6-20	20	046310	046410	011225
C6-25	25	046320	046420	011853
C6-30	30	046330	046430	011860
C6-35	35	046340	046440	-
C6-40	40	-	-	046350



* : leaves no plastic residue after fixing

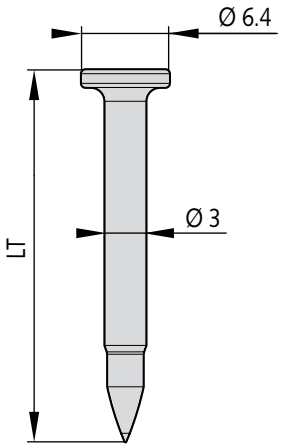
RECOMMENDED LOAD

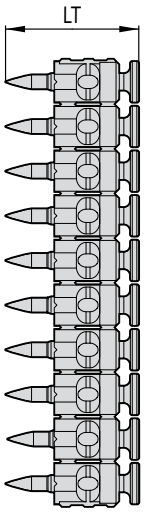
C6 range		Characteristic resistance		Recommended load	
		N_{Rk} (kN)	V_{Rk} (kN)	N_{Rec} (kN)	V_{Rec} (kN)
 C20/25 to C30/37	H_{nom} (1) = 10 mm	0.34	0.75	0.10	0.25
	H_{nom} (1) = 15 mm	0.87		0.30	
	H_{nom} (1) = 18 mm	1.19		0.40	
	H_{nom} (1) = 20 mm	1.41		0.47	

(1) Embedment depth H_{nom} = 15-20 mm is recommended

L = H_{nom} + tfix (see p. 13)

SPIT HC6





DESCRIPTION

- Using in hard material, to improve the success rate

PROPERTIES MATERIAL

Shank in carbon steel

- Total length Lt : 15, 17, 22, or 27 mm
- Orange collated strip
- HC6 - 17,22,27
- Mechanical zinc plating, min zinc coating 10 µm
- Hardness ≥ 56 HRc
- HC6 - 15
- Electrogalvanised, min zinc coating 5 µm
- Hardness : 53 to 56 HRc

TOOLS

P700 E - P700 P

AGREEMENT

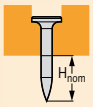
CSTB Technical approval 3/06 - 460

NAIL LENGTH SELECTION

HC6 range	Length shank	Orange strip 500 pcs/box	Orange strip 1500 pcs/box	Flush head nail range* 500 pcs/box
HC6-15	15	053206	053208	-
HC6-17	17	011876	-	053893
HC6-22	22	011891	-	053204
HC6-27	27	011877	-	053205
HC6-32	32	053207	-	-

* Leaves no plastic residue after fixing

RECOMMENDED LOAD

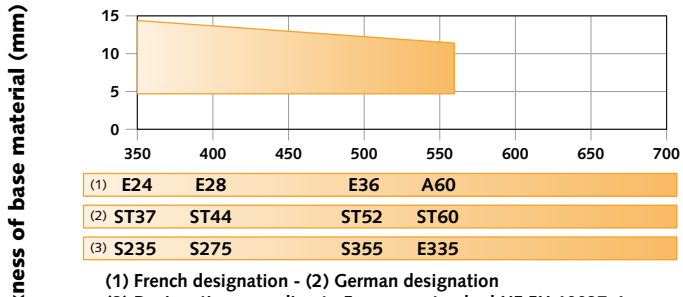
HC6 range		Characteristic resistance		Recommended load	
		N_{Rk} (kN)	V_{Rk} (kN)	N_{Rec} (kN)	V_{Rec} (kN)
 C20/25 to C60/70	H_{nom} = 10 mm	0.34	0.75	0.10	0.25
	H_{nom} = 15 mm	0.87		0.30	
	H_{nom} = 18 mm	1.19		0.40	
	H_{nom} = 20 mm	1.41		0.47	
 f_{uk} = 410 - 450 N/mm²	**H_{nom} = 6.5 mm**	5.0	3.6	1.5	1.2
 f_{uk} = 500 - 550 N/mm²					

APPLICATION LIMIT

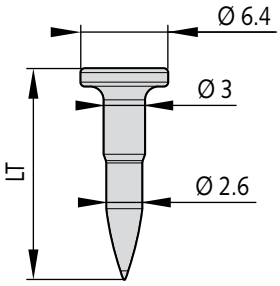
 Concrete: C50/60

 Prestressed - Prefabricated concrete C60/70

 Steel



SPIT SC6



DESCRIPTION

- Using for steel and hard concrete

PROPERTIES MATERIAL

Shank in carbon steel

- Total length Lt : 15, 20 mm
- Electrogalvanised, min zinc coating 5 µm
- Hardness : 53 to 56 HRc

TOOLS

P700 E - P700 P

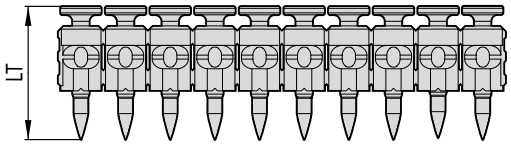
AGREEMENT

CSTB Technical approval 3/06 - 460

NAIL LENGTH

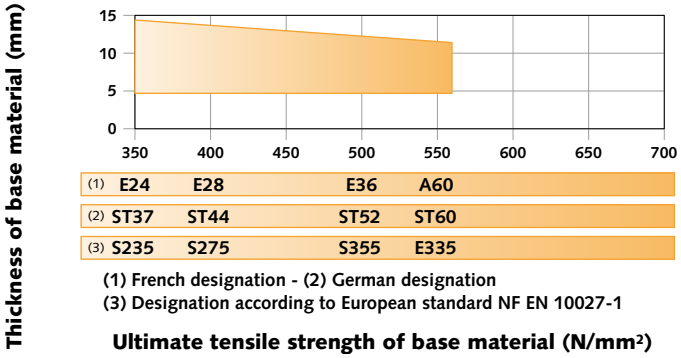
SC6 range	Length (LT)	Black strip 500 pcs/box	Black strip 1500 pcs/ box	Flush head nail range * 500 pcs/box
SC6-15	15	046300	046400	011885
SC6-20	20	011226	-	-

* : leaves no plastic residue after fixing



APPLICATION LIMIT

Maximum concrete strength : C40/50



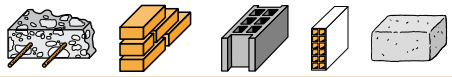
RECOMMENDED LOAD

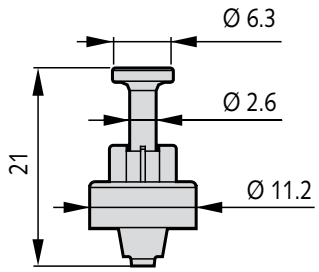
SC6 range	H_{nom}	Characteristic resistance N_{Rk} (kN)	Characteristic resistance V_{Rk} (kN)	Recommended load N_{Rec} (kN)	Recommended load V_{Rec} (kN)
C20/25 to C40/50	H_{nom} (1) = 10 mm	0.34	0.75	0.10	0.25
	H_{nom} (1) = 15 mm	0.87		0.30	
	H_{nom} (1) = 18 mm	1.19		0.40	
f_{uk} = 410 - 450 N/mm²	**H_{nom} = 6.5 mm**	5.0	3.6	1.5	1.2
f_{uk} = 500 - 550 N/mm²					

(1) Embedment depth H_{nom} = 15-18 mm is recommended

L = H_{nom} + tfix (see p. 13)

SPIT CG6





DESCRIPTION

- Using for PVC-U truncking
- The patented energy absorber design eliminated damage to the truncking and prevents deformation.
- The head of the nail is designed to countersink into the washer stopping contact between the metal nail head and cabling.

PROPERTIES MATERIAL

Shank in carbon steel

- Total length Lt : 20, 25, 30, 35 mm
- Electrogalvanised, min zinc coating 5 µm
- Hardness (CG6-20) : 53 to 56 HRc
- Hardness (CG6-25/30/35) : 50 to 55 HRc

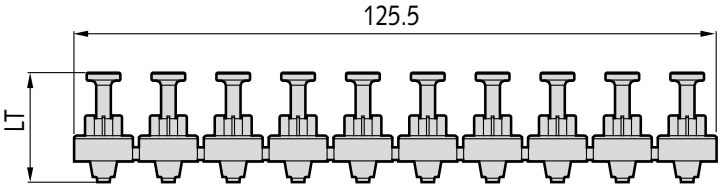
TOOLS

P700 E

NAIL LENGTH SELECTION

CG6 range	Length (LT)	White strip 500 pcs/box
CG6-20	20	046610
CG6-25	25	046620
CG6-30	30	011211
CG6-35	35	011212

* : leaves no plastic residue after fixing



RECOMMENDED LOAD

CG6 range		Characteristic resistance		Recommended load	
		N_{Rk} (kN)	V_{Rk} (kN)	N_{Rec} (kN)	V_{Rec} (kN)
 C20/25 to C30/37	H_{nom} (1) = 10 mm	0.34	0.75	0.10	0.25
	H_{nom} (1) = 15 mm	0.87		0.30	
	H_{nom} (1) = 18 mm	1.19		0.40	
	H_{nom} (1) = 20 mm	1.41		0.47	

(1) Embedment depth H_{nom} = 15-20 mm is recommended

L = H_{nom} + tfix (see p. 13)

WIRING ACCESSORIES

ECAV



CT-CLIP



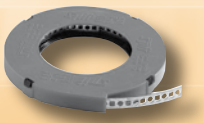
CLIPELEC



CLIP METAL



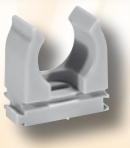
STEEL BAND



P-CLIP



E-CLIP

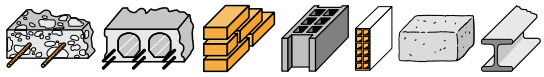


Single & double CABLE COWS

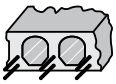
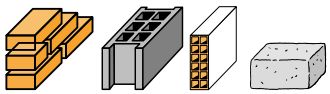


the right fixing

SPIT wiring accessories



THEORITICAL NAIL LENGTH SELECTION*

SPIT wiring Accessories	Pins selection					
	Concrete C20/25	Concrete C30/37	Concrete C40/50	Prestresed/ Prefabricated concrete	Masonries	Steel
						
ECAV CT-CLIP P-CLIP simple P-CLIP double CLIPELEC	C6-25 C6-30 HC6-22 HC6-27	C6-25 HC6-17 HC6-22	HC6-17 HC6-22	HC6-17 HC6-22	C6-25 C6-30 HC6-22 HC6-27	HC6-15 HC6-17 SC6-15
E-CLIP	C6-30 HC6-27	C6-25 HC6-22 HC6-27	HC6-22	HC6-22	C6-30 C6-35 HC6-27 / HC6-32	HC6-15 HC6-17 SC6-15
Single & double cable bows	C6-30 C6-35 HC6-27 HC6-32	C6-30 HC6-22 HC6-27	HC6-22	HC6-22	C6-30 C6-35 HC6-27 HC6-32	HC6-17 HC6-22
Metal P-CLIP	C6-20 C6-25 HC6-17 HC6-22	C6-20 HC6-17	HC6-15 HC6-17	HC6-15 HC6-17	C6-25 HC6-22	HC6-15 SC6-15
Steel band	C6-20 C6-25 HC6-17 HC6-22	C6-20 HC6-17	HC6-15 HC6-17	HC6-15 HC6-17	C6-25 HC6-22	HC6-15 SC6-15
Pirelli	C6-20 C6-25 HC6-17 HC6-22	C6-20 HC6-17	HC6-15 HC6-17	HC6-15 HC6-17	C6-25 HC6-22	HC6-15 SC6-15
Drywall track	C6-20 C6-25 HC6-17 HC6-22	C6-20	HC6-15 HC6-17	HC6-15 HC6-17	C6-25 HC6-22	HC6-15 SC6-15
Wood plate with thickness 27 mm	C6-40	C6-40	-	-	C6-40	-

* Check by site switability tests.

EDGE AND DISTANCE SPACING

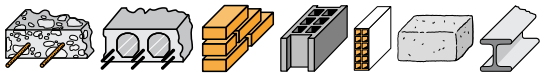
Base material	Minimum edge distance C	Minimum spacing distance S
Concrete	60	40
Prestressed / Prefabricated concrete	40	30

DENSITY FIXING

For electrician applications, we recommended to use the following spacing between 2 fixings :

- Horizontal position : 0.4 meter for light cables and 0.7 meter for reinforced cables.
- Vertical position : 1 meter.

SPIT wiring accessories



RECOMMENDED LOAD AND DISPLACEMENT

Accessories	Failure load (kN)	Displacement at the failure load (mm)	Recommended load (kN) for a displacement equal to 1 mm for accessories N_{rec} (d = 1 mm)
Metal P-CLIP	0.30	13 mm	0.07
ECAV	0.25	3 mm	0.075
CT-CLIP	0.30	4 mm	0.10
P-CLIP simple	0.22	10 mm	0.03
P-CLIP double	0.10	9 mm	0.06
CLIPELEC	0.60	22 mm	0.20
E-CLIP	0.04	1 mm	0.04
Single cable bows	0.10	16 mm	0.025
Double cable bows	0.16	16 mm	0.04
Drywall track	1.0	-	0.20
Wood sole plate with thickness 27 mm	1.2	-	0.16

Check that the embedment depth is adapted to the recommended load requested for the accessories.

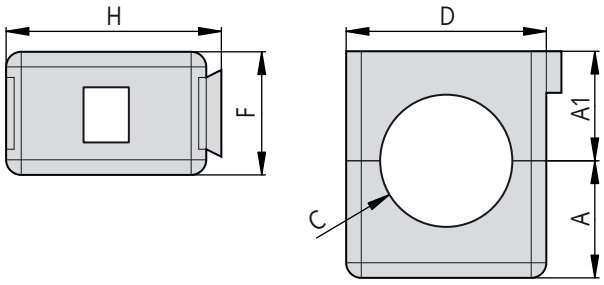
ECAV ASSEMBLED E CLIP FOR CONDUIT, PIPEWORK, HOT AND COLD PIPING

- Description :
  - Cables : Ø mini 12 – Ø maxi 25
  - Tubes IRL : Ø12 – Ø16 – Ø23
- Raw material : Polyamid 6-6 selon ISO 1874
- Color : Grey, RAL 7035.
- Installation temperature : T°C : -5°C / +40°C
- Working temperature: T°C : -30°C / 65°C
- Burning properties : Incandescent wire test according to CEI 695-2-1/2.: 650°C passed

Nail selection guide

 ECAV	C6-20	C6-25	C6-30	HC6-15 / SC6-15	HC6-17	HC6-22	HC6-27
Concrete C20/25		●	●			●	●
Concrete C30/37		●			●	●	
Concrete C40/50					●	●	
Prestressed / Prefabricated concrete					●	●	
Solid brick		●	●			●	●
Hollow brick rendered		●	●			●	●
Hollow concrete block		●	●			●	●
Calcium silicate block		●	●			●	●
Steel				●	●		

Tool : P700E

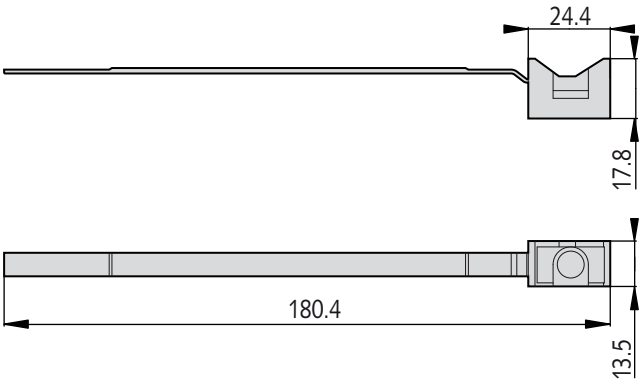


SPIT ECAV	A	A1	C	D	H	F	code
D 16	14.2	15.2	19.4	26.6	29.1	16.7	565502
D 16-20	16.2	17.5	22.8	30.7	33.3		565503
D 20-25	15.8	19.5	25.7	50.0	37.0		565504

SPIT wiring accessories

CT-CLIP FOR CONDUIT, PIPEWORK, LOW VOLTAGE CABLING, ARMOURED CABLING

- Description : Cables : Ø mini 16 – Ø maxi 32
  Tubes IRL : Ø16 – Ø20 – Ø25 – Ø32.
- Raw material : Polyamid 6-6 selon ISO 1874
- Color : Grey, RAL 7035.
- Burning properties : Incandescent wire test according to CEI 695-2-1/2.: 630°C passed
- Installation temperature : T°C : -5°C / +35°C.
- Working temperature: T°C : -40°C / +70°C.



Nail selection guide

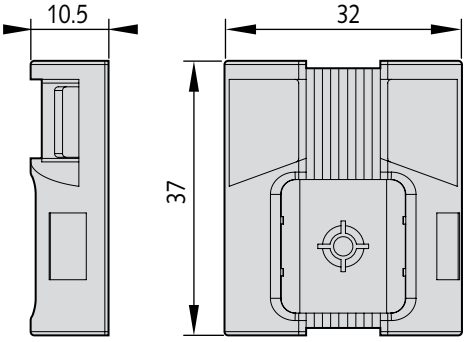
CT-CLIP	C6-20	C6-25	C6-30	HC6-15 / SC6-15	HC6-17	HC6-22	HC6-27
Concrete C20/25		●	●			●	●
Concrete C30/37		●			●	●	
Concrete C40/50					●	●	
Prestressed / Prefabricated concrete					●	●	
Solid brick		●	●			●	●
Hollow brick rendered		●	●			●	●
Hollow concrete block		●	●			●	●
Calcium silicate block		●	●			●	●
Steel				●	●		

Tool : P700E

CLIPELEC FOR CONDUIT, PIPEWORK, LOW VOLTAGE CABLING, ARMOURED CABLING

It is for use with cable ties (not included).

- Code product : 011203
- Raw material : copolymer polypropylene
- Color : black
- Allogene free
- Burning properties : Incandescent wire test according to CEI 695-2-1/2.: 750°C passed
- Installation temperature : T°C : -5°C / +35°C
- Working temperature : T°C : -30°C / +55°C



Nail selection guide

CLIPELEC	C6-20	C6-25	C6-30	HC6-15 / SC6-15	HC6-17	HC6-22	HC6-27
Concrete C20/25		●	●			●	●
Concrete C30/37		●			●	●	
Concrete C40/50					●	●	
Prestressed / Prefabricated concrete					●	●	
Solid brick		●	●			●	●
Hollow brick rendered		●	●			●	●
Hollow concrete block		●	●			●	●
Calcium silicate block		●	●			●	●
Steel				●	●		

Tool : P700E

SPIT wiring accessories

PERFORATED STRIP & CLIP METAL

Using only for fixing on floor.

- Perforated strip
  - Ø 12 mm x 10 m : 064320
  - Ø 17 mm x 10 m : 064340



- Metal P-Clip, Ø 16, Ø 20, Ø 25, Ø 32.



Possible to use with C9 pins

- Magnetic noze piece



Nail selection guide

PERFORATED STRIP AND CLIP METAL	C6-20	C6-25	C6-30	HC6-15	SC6-15	HC6-17	HC6-22	HC6-27
Concrete C20/25	●	●				●	●	
Concrete C30/37	●					●		
Concrete C40/50				●	●	●		
Prestressed / Prefabricated concrete				●	●	●		
Solid brick		●					●	
Hollow brick rendered		●					●	
Hollow concrete block		●					●	
Calcium silicate block		●					●	
Steel				●	●			

P-CLIP FOR CONDUIT, PIPEWORK, HOT AND COLD PIPING

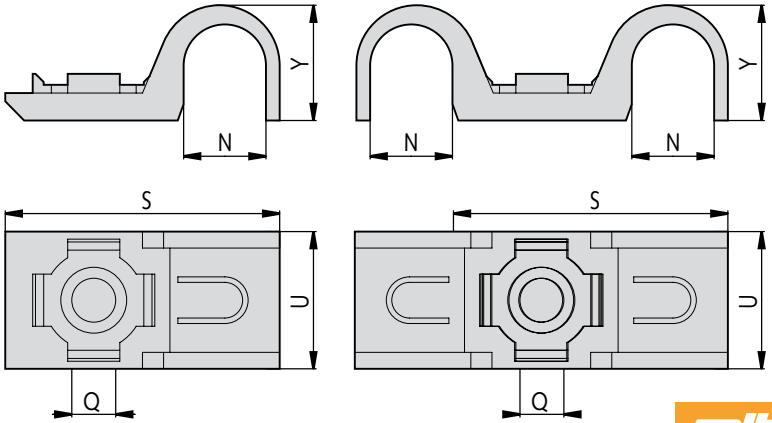
- Description for P-CLIP simple :
  - Cables : Ø mini 16 – Ø maxi 25
  - Tubes IRL : Ø16 – Ø18 – Ø20 – Ø22 – Ø25
- Description for P-CLIP double :
  - Cables : Ø mini 16 – Ø maxi 22
  - Tubes IRL : Ø16 – Ø18 – Ø20 – Ø22
- Raw material: Polypropylen
- Color : Grey, RAL 7035
- Burning properties : Incandescent wire test according to CEI 695-2-1/2.: 630°C passed
- Installation temperature : T°C : -5°C / +35°C
- Working temperature: T°C : -30°C / +60°C

Nail selection guide

 P-CLIP	C6-20	C6-25	C6-30	HC6-15 / SC6-15	HC6-17	HC6-22	HC6-27
Concrete C20/25		●	●			●	●
Concrete C30/37		●			●	●	
Concrete C40/50					●	●	
Prestressed / Prefabricated concrete					●	●	
Solid brick		●	●			●	●
Hollow brick rendered		●	●			●	●
Hollow concrete block		●	●			●	●
Calcium silicate block		●	●			●	●
Steel				●	●		

Tool : P700E

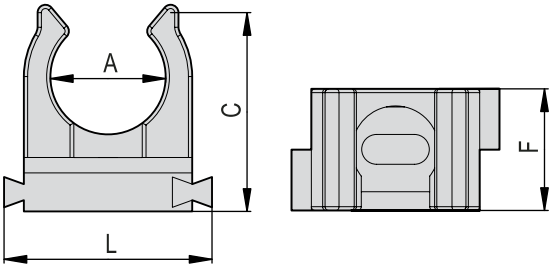
SPIT P-CLIP	N	S	Y	Q	U	code
P-CLIP 16	16.2	50	20.5	8	25	565080
P-CLIP 18	18.5	52.8	22.6			565081
P-CLIP 20	20.0	54	25.0			565082
P-CLIP 22	21.6	56.3	27.3			565083
P-CLIP 25	24.7	59.8	30.6			565084
P-CLIP 16x16	16.2	68.3	20.5			565085
P-CLIP 20x20	20.0	78.4	25.0			565086
P-CLIP 22x22	21.6	80.6	27.3			565087



SPIT wiring accessories

E-CLIP CONDUIT CLIP FOR CONDUIT AND PIPEWORK

- Description : Cables : Ø mini 16 – Ø maxi 50
  Tubes IRL : Ø16 – Ø20 – Ø25 – Ø32 – Ø40 – Ø50
- Raw material : Polypropylen
- Color : Grey, RAL 7035
- Burning properties : Incandescent wire test according to CEI 695-2-1/2.: 630°C passed
- Installation temperature : T°C : -5°C / +35°C
- Working temperature : T°C : -30°C / +55°C



SPIT E-CLIP	A	C	F	L	code
D.16	14.7	26.9	16.1	27.1	56031
D.20	18.6	29.3		32.8	56032
D.25	23.5	35.5		39.1	56033
D.32	30.5	43.5		46.2	56034
D.40	38.1	49.7		53.1	56035
D.50	48.5	58.5		64.4	56036

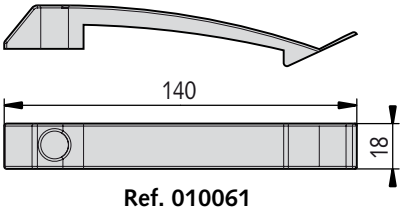
Nail selection guide

E-CLIP	C6-20	C6-25	C6-30	C6-35	HC6-15 / SC6-15	HC6-17	HC6-22	HC6-27	HC6-32
Concrete C20/25			●					●	
Concrete C30/37		●					●	●	
Concrete C40/50							●		
Prestressed / Prefabricated concrete							●		
Solid brick			●	●				●	●
Hollow brick rendered			●	●				●	●
Hollow concrete block			●	●				●	●
Calcium silicate block			●	●				●	●
Steel					●	●			

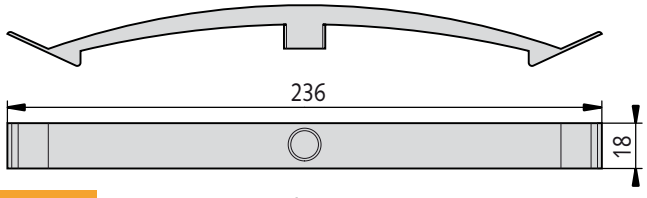
Tool : P700E

SINGLE & DOUBLE CABLE BOWS : FOR LOW VOLTAGE CABLING AND TEMP LIGHTING

- Cables: 8 cables 3x1.5 (simple version)
  16 cables 3x1.5 (double version)
- Raw material: Polypropylen copolymer
- Color: Grey, RAL 7035.
- Burning properties: Incandescent wire test according to CEI 695-2-1/2.: 650°C passed
- Installation temperature: T°C : -5°C / +35°C.
- Working temperature: T°C : -20°C / +70°C



Ref. 010061



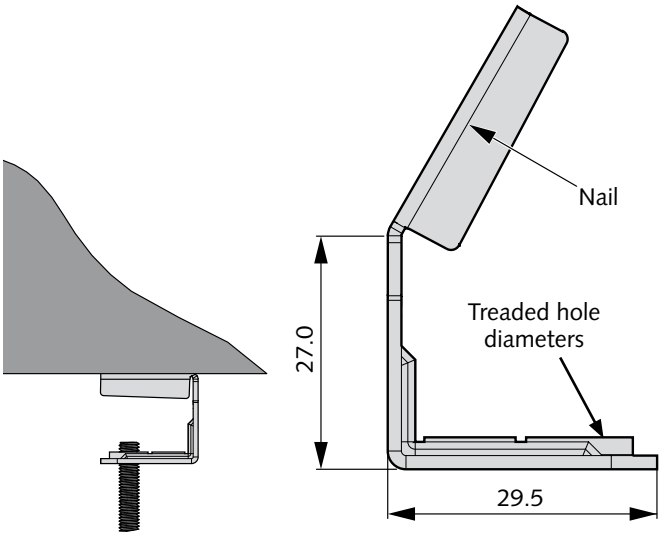
Ref. 010060

Nail selection guide

CABLE BOWS	C6-20	C6-25	C6-30	C6-35	HC6-15	HC6-17	HC6-22	HC6-27	HC6-32
Concrete C20/25			●	●				●	●
Concrete C30/37			●				●	●	
Concrete C40/50							●		
Prestressed / Prefabricated concrete							●		
Solid brick			●	●				●	●
Hollow brick rendered			●	●				●	●
Hollow concrete block			●	●				●	●
Calcium silicate block			●	●				●	●
Steel						●	●		

Tool : P700E

SPIT threaded rod hanger



PROPERTIES MATERIAL

- Steel E24, thickness 1.5 mm
- Coating , electroplating 7 to 15 µm
- TRH-CLIP element with threaded hole diameters for M6-M8 (code 011430) or M8- M10 (code 011431)

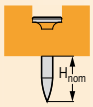
TOOLS

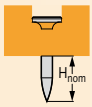
P700 E

NAILS TYPE RECOMMENDED

- SC615 in steel base material
- HC6-15, HC6-17, HC6-22 in concrete C50/60 and prestressed concrete
- C6-20, C6-25 in concrete C30/37 maximum

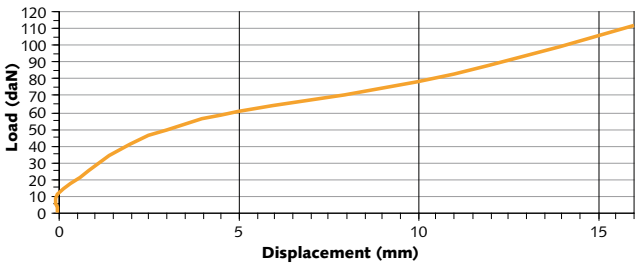
RECOMMENDED LOAD

SC6-15 HC6-15			Characteristic resistance	Recommended load	TRH-CLIP displacement at the recommended load
			N_{Rk} (kN)	N_{Rec} (kN)	$d(N_{Rec})$ (mm)
	f_{uk} = 410 – 450 N/mm²	H_{nom} = 6.5 mm	5.0	1.5	9.5
	f_{uk} = 500 – 550 N/mm²				

HC6 range			Characteristic resistance	Recommended load	TRH-CLIP displacement at the recommended load
			N_{Rk} (kN)	N_{Rec} (kN)	$d(N_{Rec})$ (mm)
	C20/25	H_{nom} = 15 mm	0.87	0.30	1.0
		H_{nom} = 20 mm	1.41	0.47	2.0
	C40/50	H_{nom} = 10 mm	0.34	0.10	0.4
		H_{nom} = 15 mm	0.87	0.30	1.0
	Prefabricated Prestressed	H_{nom} = 10-12 mm	0.34	0.10	0.4

Nrec = N_{Rk} / 3: the recommended load is calculated from the characteristic load and a global safety factor equal to 3.

TRH-CLIP DEFORMATION



FIRE TEST

Test report. nb 05-158/A (CSTB)

TRH-Clip + HC6-17 pin	Characteristic resistance under fire exposure		
	$N_{Rk,fi}$ (kN) 30 mn	$N_{Rk,fi}$ (kN) 60 mn	$N_{Rk,fi}$ (kN) 90 mn
C20/25 H_{nom} = 15 mm	0.25	0.13	0.02

$N_{Rd,fi}$ (t) = $N_{Rk,fi}$ / γ_M, usually the safety factor under fire exposure $\gamma_{M,fi}$ = 1.

PIRELLI FIREFIX using SPIT Pulsa nailing



CLIP conform fixing requirements of BS5839-1:2002 standard

DESCRIPTION

Pirelli has developed FP FirefixTM in partnership with ITW Construction Products. Pirelli has designed special cable clips and adaptators to fit PULSA 700E.

Pirelli clip is used to fix fire performance cables, holds one or two cables.

PROPERTIES MATERIAL

- Stainless steel
- Available in red or white LSOH powder coating

TOOLS

P700E

SIZE SUITABLE

		Code for Red coating clip	Code for White coating clip
FP200 Gold®	2 core x 1.5 mm²	UFPNF02R	UFPNF02W
	3 core x 1.0 mm²		
	3 core x 1.5 mm²	UFPNF04R	UFPNF04W
	4 core x 1.0 mm²		
FP Plus™	4 core x 1.5 mm²	UFPNF06R	UFPNF04W
	2 core x 1.5 mm²	UFPNF06R	UFPNF06W

APPLICATION FIELD

- Concrete
- Steel
- Composite steel decking
- Masonry
- Block work

Nail selection guide

PIRELLI FIREFIX	C6-20	C6-25	C6-30	HC6-15	HC6-17	HC6-22	HC6-27
Concrete C20/25	●	●					
Concrete C30/37		●			●		
Concrete C40/50				●	●		
Prestressed / Prefabricated concrete				●	●		
Solid brick		●	●				
Hollow brick rendered		●	●				
Hollow concrete block		●	●				
Calcium silicate block		●	●				
Steel				●			

FIXING DENSITY

Recommended maximum spacing of FP FIREFIXTM clips

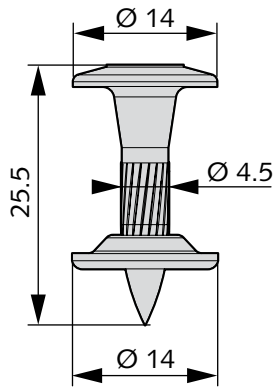
Cable diameter (mm)	Horizontal spacing (mm)	Vertical spacing (mm)
Not exceeding 15 mm	300	400

Note

POWDER NAILS

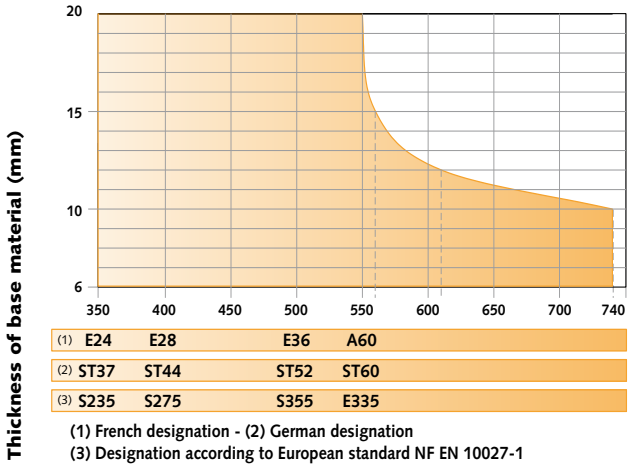
- SPIT HSBR14
- SPIT SBR14
- SPIT SBR9
- SPIT SC9
- SPIT C9 - CR9
- SPIT CR9TP - CR9P
- SPIT CR9T
- SPIT C9 Formwork spacer
- SPIT C9 for posibanche fastener
- SPIT C9 Clip-A
- SPIT CT30
- SPIT SA9
- SPIT SA12
- SPIT SA12-8 / grating system
- SPIT CI6-CI9

SPIT HSBR14



code 011391 (in tube) / code 011390 (in bulk)

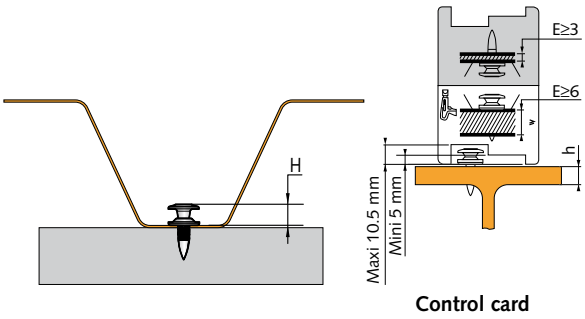
APPLICATION LIMIT



(1) French designation - (2) German designation
(3) Designation according to European standard NF EN 10027-1

Ultimate tensile strength of base material (N/mm²)

CONTROL FIXING



Control card

Thickness of base material	H_{min} (1) (mm)	H_{max} (1) (mm)
h ≥ 6 mm	5	10.5

(1) Values obtained with 0.75 mm steel sheet.

DESCRIPTION

¬ Cladding panels, roafing

PROPERTIES MATERIAL

The HSBR14 nails is composed of :

¬ Shank in carbon steel

- Ultimate tensile strength : 2300 N/mm²
- Yield strength : 1600 N/mm²
- Mechanical zinc plating, min zinc coating 10 µm
- Hardness > 57 HRc

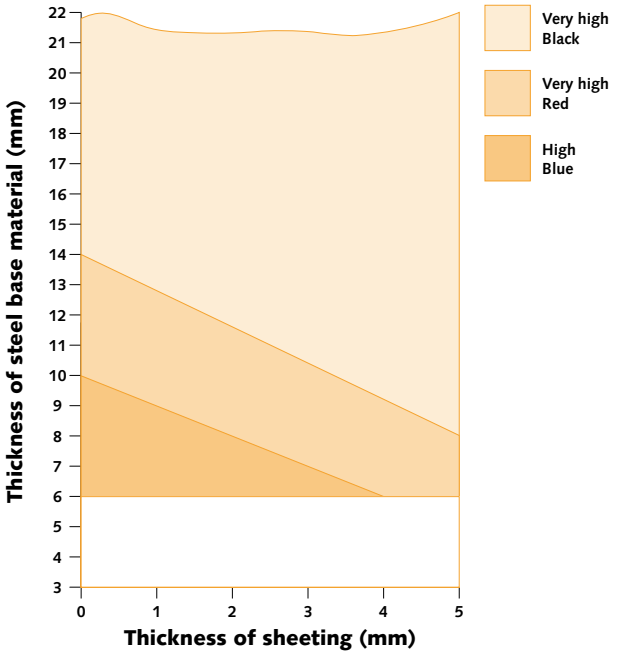
¬ One steel washer

- Min zinc coating 8 µm
- Electrogalvanizing
- The plate washer developed for a good clamping of the plates to avoid damages when shooting.

TOOLS

P230 – P525L

POWER SETTING

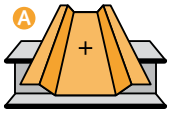


SPIT HSBR14

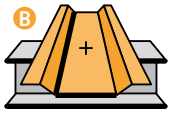
¬ Base material :

Resistance of base material S235 (E24) and with a thickness higher than 6mm according to the field of application given in the first page.

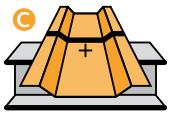
¬ Sheetings and type of connections :



1 sheeting



2 sheetings



2 Sheetings



4 sheetings

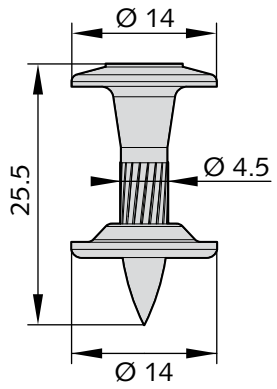
Sheeting thickness (mm)	Characteristic loads [kN]		Design loads [kN]		Recommended laods [kN]		Connection type
	Shear	Tensile	Shear	Tensile	Shear	Tensile	
	V_{Rk}	N_{Rk}	V_{Rd}	N_{Rd}	V_{Rec}	N_{Rec}	
0.63	3.4	2.4	2.5	1.8	1.7	1.2	A B C D
0.75	4.4	4.0	3.3	3.0	2.2	2.0	A B C D
0.88	5.6	5.2	4.2	3.9	2.8	2.6	A B C D
1.00	6.8	6.4	5.1	4.8	3.4	3.2	A B C D
1.13	8.2	7.8	6.1	5.9	4.1	3.9	A
1.25	9.4	9.4	7.1	7.1	4.7	4.7	A
1.50	9.4	9.4	7.1	7.1	4.7	4.7	A
1.75	9.4	9.4	7.1	7.1	4.7	4.7	A
2.00	9.4	9.4	7.1	7.1	4.7	4.7	A
2.50	9.4	9.4	7.1	7.1	4.7	4.7	A

$V_{Rd} = V_{Rk} / \gamma_M$: the design load is calculated from the characteristic load and a partial safety factor **$\gamma_M = 1.33$.**

$N_{Rd} = \alpha_{cycl} \times N_{Rk} / \gamma_M$: the design load is calculated from the characteristic load and a partial safety factor **$\gamma_M = 1.33$** and **$\alpha_{cycl} = 1$.**

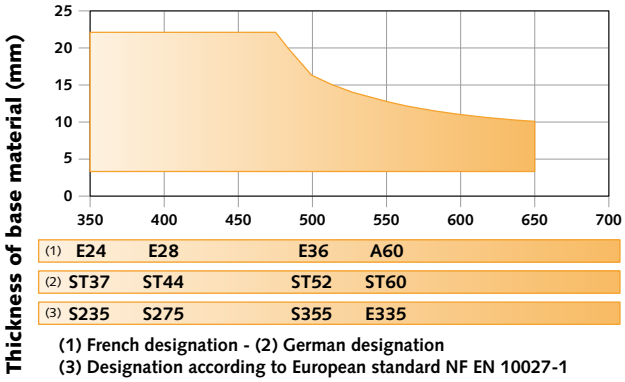
For the calculation of the recommended load, we applied the partial safety factor **$\gamma_F = 1.5$.**

SPIT SBR14



Code 030750 (in bulk) / 030760 (in tube)

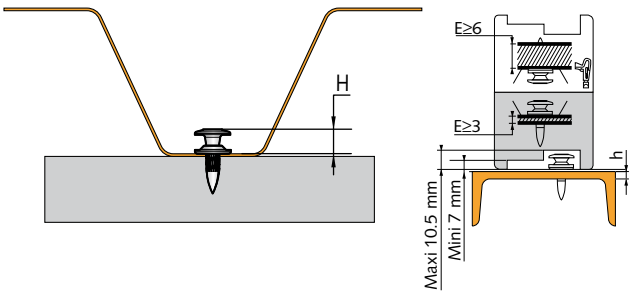
APPLICATION LIMIT



(1) French designation - (2) German designation
(3) Designation according to European standard NF EN 10027-1

Ultimate tensile strength of base material (N/mm²)

CONTROL FIXING



A control card

Thickness of base material	H_{min}[1] (mm)	H_{max}[1] (mm)
3 ≤ h < 6 mm[2]	7	10.5
h ≥ 6 mm	5	10.5

(1) Values obtained with 0.75 mm steel sheet.
(2) French rules AT CSTB.

DESCRIPTION

Cladding panels / roofing

PROPERTIES MATERIAL

The SBR14 nails is composed of :

Shank in carbon steel

- Ultimate tensile strength : 2300 N/mm²
- Yield strength : 1600 N/mm²
- Electrogalvanizing, min zinc coating 7 µm
- Hardness : 54 to 58 HRc

One steel washer

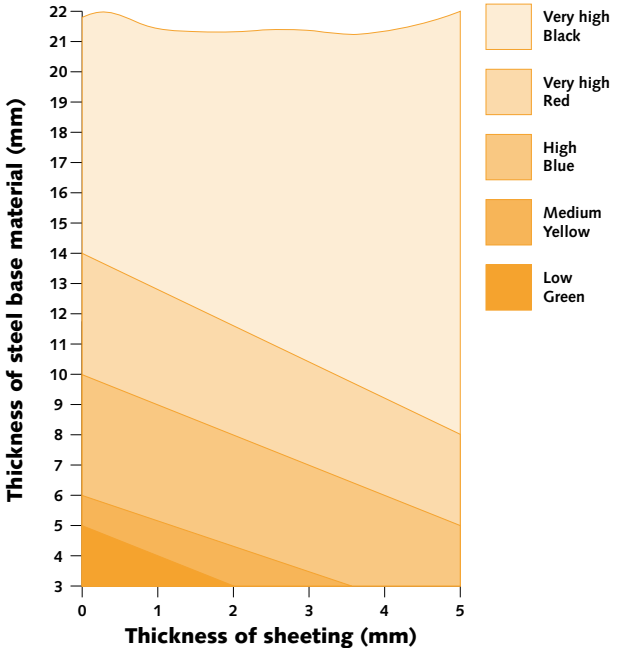
- Min zinc coating 8 µm
- Electrogalvanizing
- The plate washer developed for a good clamping of the plates to avoid damages when shooting.

Kesternitch test, 2 cycles exposure

TOOLS

P230 – P525L

POWER SETTING



SPIT SBR14

ACCORDING FRENCH RULES (TECHNICAL APPROVAL ISSUE FROM CSTB, N° 5/04-1775) :

Thickness of base material S235 (E24) quality	Characteristic load[1] (kN), for connection of one sheet with thickness 0,75 mm **fuk > 400 N/mm² (S280GD)** N_{rk}
3 ≤ h < 6 mm	3
h ≥ 6 mm	6

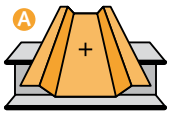
[1] according to the standard NF P 84-206, ref. DTU 43.3

ACCORDING DIBT GERMAN APPROVAL N° Z-14.1-4 :

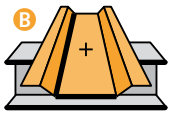
¬ Base material :

Resistance of base material S235 (E24) and with a thickness higher than 6mm according to the field of application given in the first page.

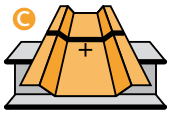
¬ Sheetings and type of connections :



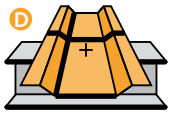
1 sheeting



2 sheetings



2 Sheetings



4 sheetings

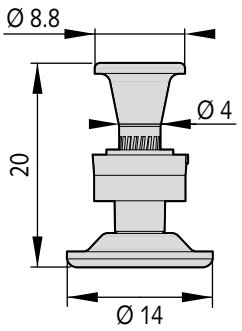
Sheeting thickness (mm)	Characteristic loads [kN]		Design loads [kN]		Recommended laods [kN]		Connection type
	Shear	Tensile	Shear	Tensile	Shear	Tensile	
	V_{Rk}	N_{Rk}	V_{Rd}	N_{Rd}	V_{Rec}	N_{Rec}	
0.63	3.4	2.4	2.5	1.8	1.7	1.2	A B C D
0.75	4.4	4.0	3.3	3.0	2.2	2.0	A B C D
0.88	5.6	5.2	4.2	3.9	2.8	2.6	A B C D
1.00	6.8	6.4	5.1	4.8	3.4	3.2	A B C D
1.13	8.2	7.8	6.1	5.9	4.1	3.9	A
1.25	9.4	9.4	7.1	7.1	4.7	4.7	A
1.50	9.4	9.4	7.1	7.1	4.7	4.7	A
1.75	9.4	9.4	7.1	7.1	4.7	4.7	A
2.00	9.4	9.4	7.1	7.1	4.7	4.7	A
2.50	9.4	9.4	7.1	7.1	4.7	4.7	A

$V_{Rd} = V_{Rk} / \gamma_M$: the design load is calculated from the characteristic load and a partial safety factor **$\gamma_M = 1.33$.**

$N_{Rd} = \alpha_{cycl} \times N_{Rk} / \gamma_M$: the design load is calculated from the characteristic load and a partial safety factor **$\gamma_M = 1.33$** and **$\alpha_{cycl} = 1$.**

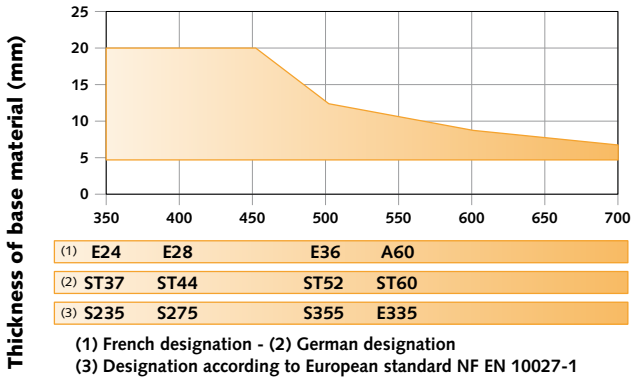
For the calculation of the recommended load, we applied the partial safety factor **$\gamma_F = 1.5$.**

SPIT SBR9



Code 032650

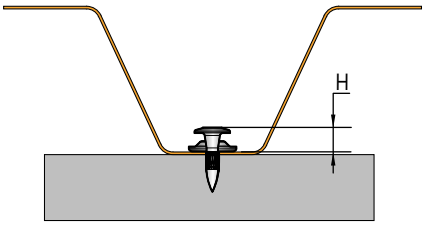
APPLICATION LIMIT



(1) French designation - (2) German designation
(3) Designation according to European standard NF EN 10027-1

Ultimate tensile strength of base material (N/mm²)

CONTROL FIXING



- H_{mini} = 5 mm and H_{maxi} = 7 mm for guaranteeing the recommended working loads within the application limits.
- Maximum sheet thickness : 2 sheets with max thickness of 1 mm.

DESCRIPTION

Fix metal cladding sheets to steel framework.

PROPERTIES MATERIAL

The SBR9 nails is composed of :

Shank in carbon steel

- Ultimate tensile strength : 2000 N/mm²
- Yield strength : 1600 N/mm²
- Hardness : 54-58 HRc
- Electrogalvanizing, Min zinc coating 7 µm

One steel washer

- Min zinc coating 8 µm
- The plate washer developed for a good clamping of the plates to avoid damages when firing.

TOOLS

P370 – P200

RECOMMENDED LOAD

The recommended load given below, are suitable for a resistance of base material higher than 400 N/mm² and with a minimum thickness of 5 mm.

Sheet thickness (1) Fuk > 390N/mm² (S320GD)	Design resistance [kN]		Recommended load [kN]	
	Shear	Tensile	Shear	Tensile
	N_{Rd}	V_{Rd}	V_{Rec}	N_{Rec}
0.75 mm	2.5	2.2	1.7	1.4
1.00 mm	3.2	3.2	2.2	2.2
1.25 mm	4.0	4.7	2.6	3.1
1.50 mm	4.1	4.7	2.8	3.1
2.00 mm	4.3	4.7	2.9	3.1

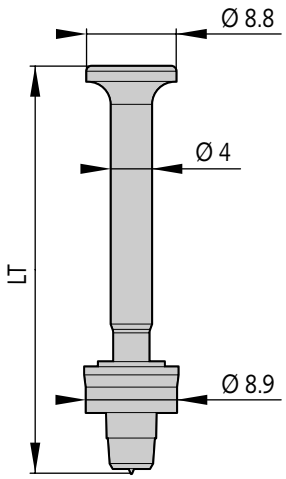
$F_{rec} = F_{Rk} / 2.5$: the recommended load is calculated from the characteristic load and a global safety factor equal to 2.5.

Recommended load is calculated with a safety factor **$\gamma_F = 1.5$.**

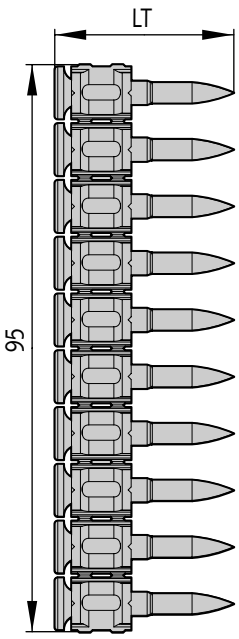
(1) For a sheet thickness equal to 2 mm, it is possible to use 2 sheets of 1 mm.

SPIT SC9 - SC9 strip

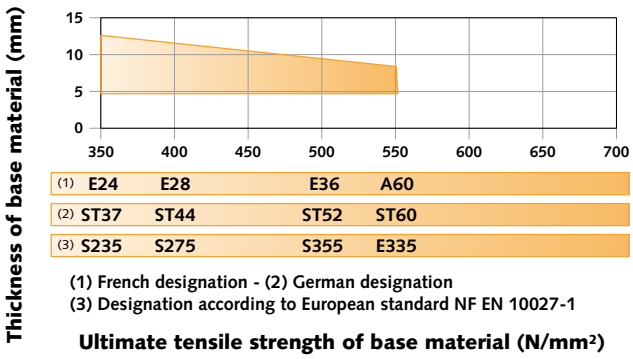
SC9



SC9 strip



APPLICATION LIMIT

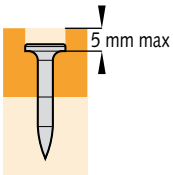


(1) French designation - (2) German designation
(3) Designation according to European standard NF EN 10027-1

Ultimate tensile strength of base material (N/mm²)

CONTROL FIXING

Fixing of timber



Embedment depth in base material

		H_{nom} (1) (mm)
	E24	12
	ST 52	10
Concrete C20/25	**C30/37**	20 - 25
	C40/50	15 - 20
	C50/60	15 - 20

(1) indicative value

DESCRIPTION

- Timber to concrete
- Timber to steel
- Steel to Steel
- Steel to concrete

PROPERTIES MATERIAL

- Core hardness : 54-58 HRC
- Electrogalvanizing, min zinc coating 7µm

TOOLS

P370 – P200 -P60
SC9 strip only with P370 C60

NAIL LENGTH SELECTION

Fixing of steel sheet

SC9 (SC9-LT)	Thickness of steel sheet		Code for SC9 strip	Code for SC9 loose
	E24	C30/37 (1)		
SC9-15	≤ 1.5	-	011340	032500
SC9-20	≤ 3	-	011341	032510
SC9-25	-	≤ 3	011342	032950

Fixing of timber

SC9 (SC9-LT)	Thickness of timber C30/37 (1)	Code for SC9 strip	Code for SC9 loose
SC9-25	≤ 5	011342	032950
SC9-30	5 - 10	011343	032930
SC9-35	10 - 15	011344	032940
SC9-40	15 - 20	011345	032920
SC9-50	25 - 30	011346	032910
SC9-60	35 - 40	011347	032900
SC9-70	45 - 50	-	032890

(1) For other concrete class, select the length of pin with the embedment depth given above.

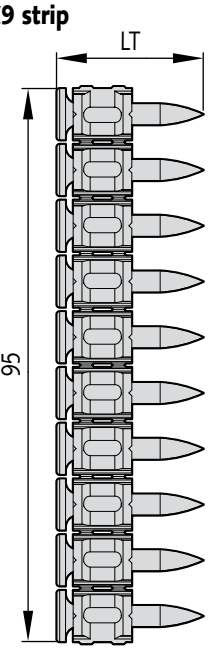
RECOMMENDED LOAD

Base material	N_{Rec} (kN)	V_{Rec} (kN)
Steel E24 Thickness min. 5 mm	2.0	2.0
Concrete C20/25	0.5	0.5

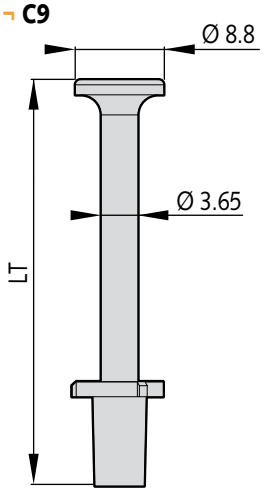
Recommended loads are calculated with global safety factor.

SPIT C9 - C9 strip - CR9

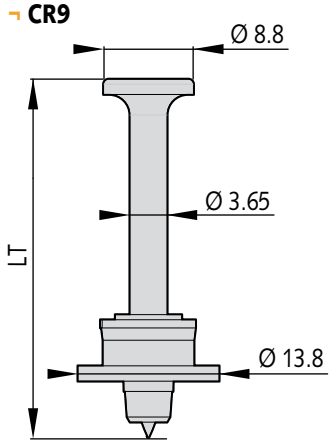
C9 strip



C9



CR9

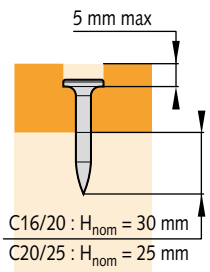


APPLICATION LIMIT

- For harder concrete > 25 Mpa, use the same setting and a shorter pin or SC9 with the same length.

CONTROL FIXING

Fixing of timber



Embedment depth in base material

		H_{nom} (1) (mm)
	C16/20	30 - 35
	C20/25	25 - 30
	C25/30	25 - 28

(1) indicative value

DESCRIPTION

- Timber to concrete
- Steel sheeting to concrete with a max thickness of 5 mm (except for CR9)
- The version CR9 with metallic washer allows to flatten in against wood, and to avoid wood splitting.

PROPERTIES MATERIAL

- Core hardness : 50-55 HRC
- Electrogalvanizing, min zinc coating 7 µm
- Washer, electrogalvanizing (CR9)

TOOLS

P60 – P200 – P370

C9 strip only for P370 C60

ACCESSORIES

Accessories available, see the product catalogue.

NAIL LENGTH SELECTION

Fixing of timber

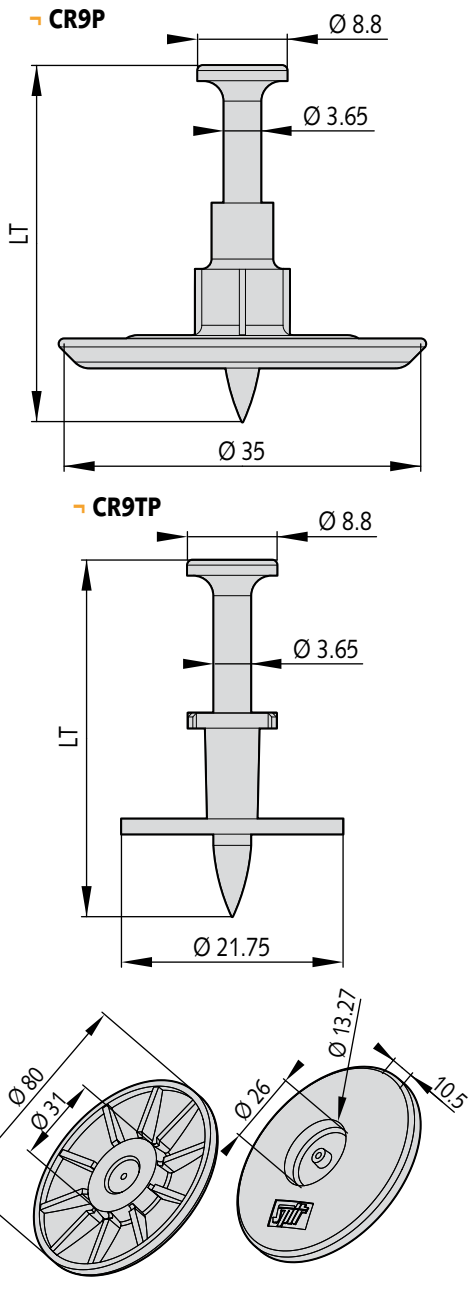
C9 (C9-LT)	Thickness of timber		Code for C9 strip	Code for C9 loose	Code for CR9 R.14 loose
	C16/20	C20/25			
C9-20			011330	032740	-
C9-25			011331	032520	032070
C9-30		≤ 5	011332	032530	032100
C9-35	≤ 5	5 - 10	011333	032540	-
C9-40	5 - 10	10 - 15	011334	032550	032090
C9-50	15 - 20	20 - 25	011335	032560	032010
C9-55	20 - 25	25 - 30	011337	032210	-
C9-60	25 - 30	30 - 35	011336	032570	032020
C9-70	35 - 40	40 - 45		032580	032030
C9-80*	45 - 50	50 - 55		032590	
C9-90*	55 - 60	60 - 65		032600	

*Pre-drive before firing

RECOMMENDED LOAD

Base material	N_{Rec} (kN)	V_{Rec} (kN)
Concrete C20/25	0.5	0.5

SPIT CR9TP - CR9P



PVC : 498130

DESCRIPTION

- CR9P : Fastening of waterightness membranes
- CR9TP for PVC Washer (Ø80 mm) : using in tunnel for fastening of the geotextile for the waterdrainage. The layer is welded on the PVC washer.

PROPERTIES MATERIAL

- **Shank in carbon steel**
  - Hardness : 50 – 55 HRC
  - Electrogalvanizing, min zinc coating 7 µm
- **CR9P**
  - Plastic washer : Ø 35 mm
- **CR9TP**
  - Flat metallic washer
  - Ø 21.75 mm
  - Electrogalvanizing, min zinc coating 3 µm
  - Plastic tip for pin centering
- **PVC washer** for CR9T / CR9TP : Ø 80 mm, thickness 10 mm

TOOLS

P60 – P200 – P370

CR9TP only for P45

NAIL LENGTH SELECTION

Designation	Ø washer	Code
CR9-35 TP	21.75	011321
CR9-40 TP	21.75	011322
CR9-30 P	35	038090
CR9-40 P	35	038100
CR9-50 P	35	038110

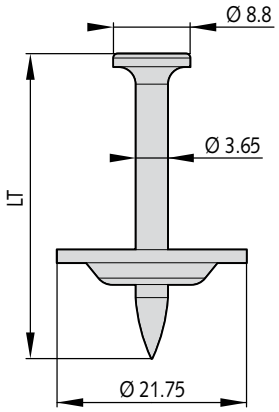
DENSITY FIXING

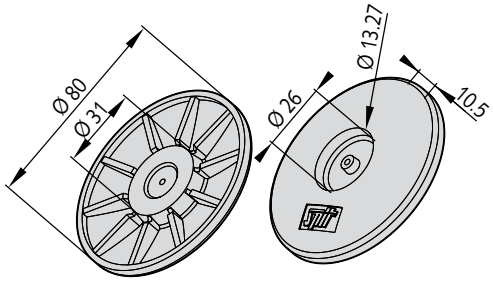
- 3 pins per m^2 for vertical installation.
- 5 pins per m^2 for ceiling installation.
- Maximum spacing between washer : 0.7 meter.

SPIT CR9T

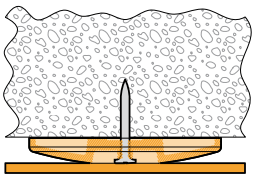
Recommanded by
AFTES







PVC : 498130



DESCRIPTION

- Using in tunnel for fastening of the geotextile for the waterdrainage.
- The membrane is welded on the PVC washer.

The using of CR9T is recommended by AFTES (Association Française Tunnels et Equipements Souterrains)

PROPERTIES MATERIAL

Shank in carbon steel

- Hardness : 50 – 55 HRC
- Electrogalvanizing, min zinc coating 7 µm

Curved washer

- Ø 21.75 mm
- Electrogalvanizing, min zinc coating 3 µm

PVC washer for CR9T :

Ø 80 mm, thickness 10.5 mm. The following tests were performed and accepted by AFTES.

- Washer / Nail tear strength tests
- Membrane / washer peeling strength tests

TOOLS

P45

NAIL LENGTH SELECTION

Designation	Code
CR9-30 T	032350
CR9-35 T	032240
CR9-40 T	032230

DENSITY FIXING

- 3 pins per m^2 for vertical installation.
- 5 pins per m^2 for ceiling installation.
- Maximum spacing between washer : 0.7 meter.

CONVENIENCE TEST FOR EACH JOBSITE

Pull out of the fastened from the support

A convenience proof will be carried out for each support type.

To impede the nail to pull up from the support in case of stress on the fastener, a tensile strength exercised by a dynamometer is defined at a tensile speed of 1 to 2 mm per minute:
Out of 10 traction tests, the average of the pulling up values must be superior to 1 kN after suppression of a maximum of 2 values lower than 0.75 kN.

These tests are carried out by incorporating between the support and the tensile sleeve a 600 g geotextile to simulate the pulling,

In young concrete (less than 2 days), the number of fasteners will be doubled.

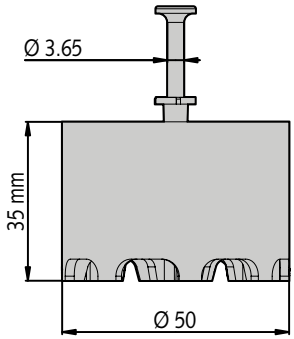
Dimensions of the PVC washers

To guarantee a sufficient welding surface and a good membrane/washer weldability PVC washers must have the minimum following size:

- minimum diameter: 80 mm
- minimum thickness at the centre (nail head): 8 mm

Out of 10 nailing tests of the washer on concrete, no protruding of the nail head must be observed.

SPIT C9 formwork spacer



DESCRIPTION

- Form work spacer block for pillar, round post, round elements, cardboard formwork...

PROPERTIES MATERIAL

- Polyethylene high density

TOOLS

P370 - P60 - P200

NAIL LENGTH SELECTION

Designation	Code
Formwork spacer + C9-60	032750

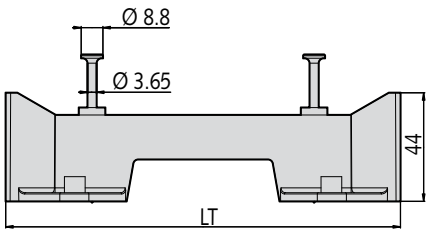
RECOMMENDED LOAD

Base material	N_{Rec} (kN)
Concrete C20/25	0.5

DENSITY FIXING

- Fixing in staggered with a spacing equal to 1 meter or 1.25 meter in line.

SPIT C9 for posibanche fastener



DESCRIPTION

- All type of form work.

PROPERTIES MATERIAL

- Polyethylene high density

TOOLS

P370 - P60 - P200

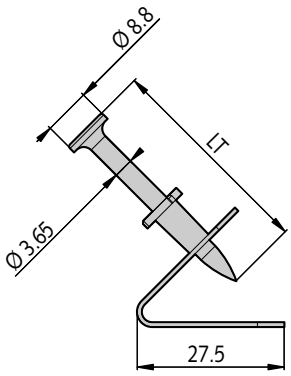
NAIL LENGTH SELECTION

Designation	Color	Code with pin
Posibanche 150 + C9-60	Brick	053241
Posibanche 160 + C9-60	Grey	496750
Posibanche 180 + C9-60	Green	496760
Posibanche 200 + C9-60	Beige	496710

DENSITY FIXING

- Fixing in staggered with a spacing equal to 0.8 meter in line.
- Suitable for maximum compressive strength of 2.5 kN.

SPIT C9 Clip-A



DESCRIPTION

- Fixing systems for steel mesh
- Wire nets on concrete or asphalt road attachment

PROPERTIES MATERIAL

- Pin Electrogalvanised
- Clip in galvanised sheet

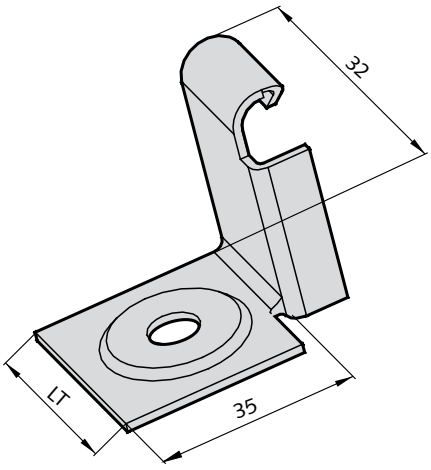
TOOLS

P370 - P60 - P200

NAIL LENGTH SELECTION

Designation	Code
C9-30 Clip-A	033300
C9-40 Clip-A	032980
C9-50 Clip-A	032990
C9-60 Clip-A	320840
C9-70 Clip-A	320340

SPIT CT 30



DESCRIPTION

- Re-enforcement of wire mesh

NAIL SELECTION

- C6-20, HC6-17, HC6-22
- C9-25

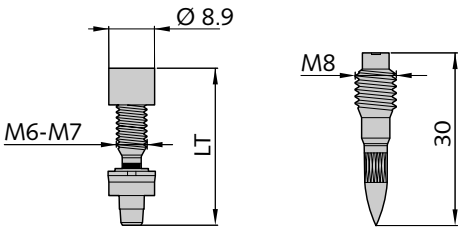
TOOLS

- P700 P
- P370 - P60 - P200

RECOMMENDED LOAD

Deformation of the hook at 1 kN.

SPIT SA9



NAIL LENGTH SELECTION

SA 9	Thread diameter	Thread length	Pin length	Code
SA9- 6 6/21	M6	6	21	034820
SA9-6 10/25		10	25	034850
SA9-6 15/30		15	30	034900
SA9- 7 6/21	M7	6	21	034000
SA9-7 10/25		10	25	034050
SA9-7 15/30		15	30	034070
SA9-8 15/30	M8	15	30	033790

DESCRIPTION

- Fixing of threaded pins onto steel
- Using for attachment an collar

PROPERTIES MATERIAL

- Fine carbon steel
- Core hardeness : 54 - 58 HRC
- Electrogalvanizing - min. zinc. coating 7 µm

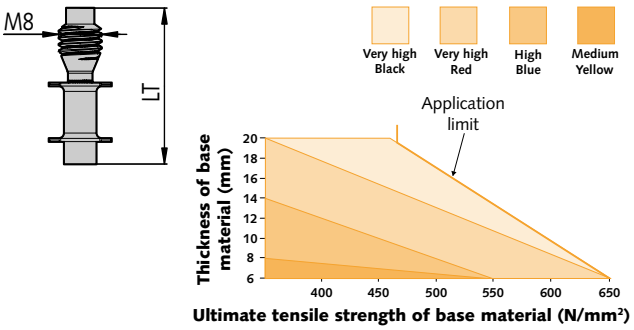
TOOLS

P370 - P200

RECOMMENDED LOAD

Base material	N_{Rec} (kN)	V_{Rec} (kN)
Steel E24 thickness min. 5 mm thickness max. 12 mm	2.0	0.8

SPIT SA12



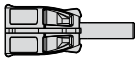
NAIL LENGTH SELECTION

SA 12	Thread diameter	Thread length	Pin length	Code
SA12 8 10/25	M8	10	25	033750
SA12-8 15/30		15	30	033760

ACCESSORIES

- For SA12-8 pins, using adaptor for P200 and P370 tool:

Product code :
P370 : - Kit SA12 – 011033



DESCRIPTION

- Fixing of threaded pins onto steel
- Using for attachment an collar

PROPERTIES MATERIAL

- Fine carbon steel
- Core hardeness : 54 - 58 HRC
- Electrogalvanizing - min. zinc. coating 7 µm

TOOLS

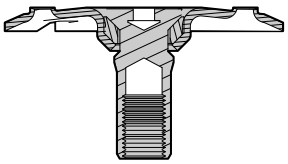
P250 recommended.

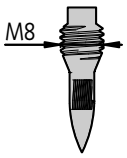
P370 - P200 (with specific adaptor) for low grade steel.

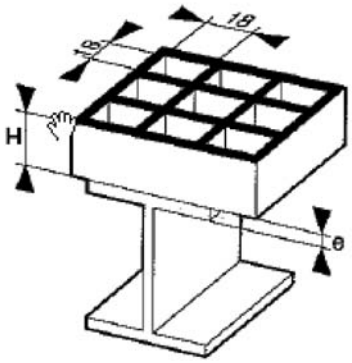
RECOMMENDED LOAD

Base material	N_{Rec} (kN)	V_{Rec} (kN)
Steel E24 thickness min. 5 mm thickness max. 12 mm with using P250 tool (no limit)	3.0	0.8

SPIT SA12-8 / grating system







APPLICATION

Fixing of grating

Suitable for grids of 20 to 55 mm in height and base steel at least 6 mm thick, with a mesh dimension higher than 18x18 mm to allow the clearance of the setting tool.

PROPERTIES MATERIAL

Pin

- Fine carbon steel.
- Core hardeness : 54 - 58 HRc.
- Electrogalvanizing min. zinc coating 7 µm.

Spacer washer

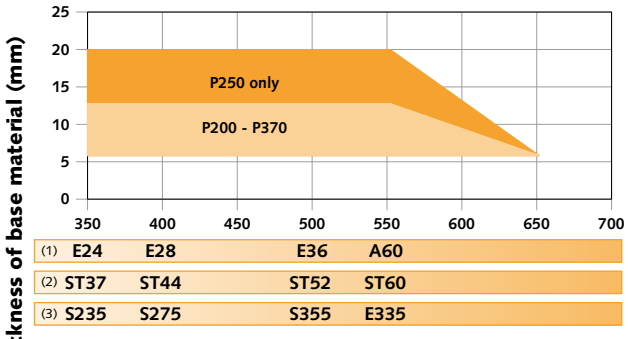
- **S**leeve steel, coated with 15 to 20 µm zinc plating.
- Ring in thermoplastic (anti-UV).
- Washer in steel with high yield limit coated with 15 à 20 µm zinc plating.

TOOLS

P250 recommended.

P200 - P370 (with specific adaptor) for low grade stell.

APPLICATION LIMIT



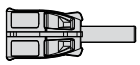
(1) French designation - (2) German designation
(3) Designation according to European standard NF EN 10027-1

Ultimate tensile strength of base material (N/mm²)

ACCESSORIES

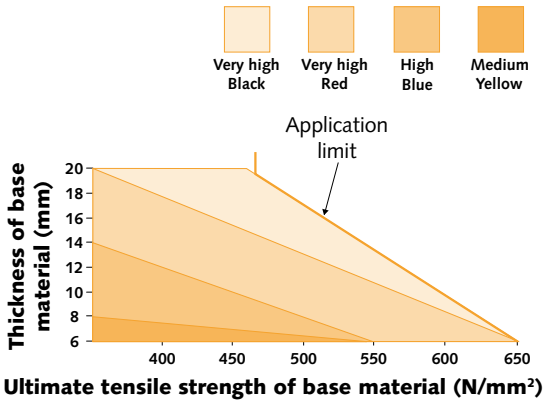
- For SA12-8 pins, using adaptator for P200 and P370 tool:

Product code :



- P370 : - Kit SA12 – 011033

POWER SETTING



Ultimate tensile strength of base material (N/mm²)

SPIT SA12-8 / grating system

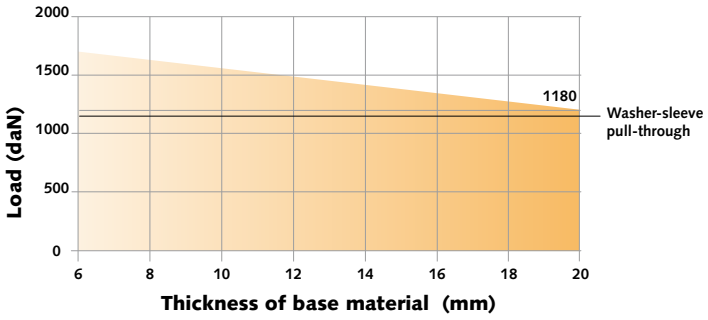
NAIL LENGTH SELECTION

Pins designation	Thikness of grids						
	25	30	35	40	45	50	55
SA 12-8 10/25 Code : 033750	RE 25 499610	RE 30 499620	-	RE 40 499630	-	RE 50 499640	-
SA 12-8 15/30 Code : 033760	-	RE 30 499620	RE 30 499620	RE 40 499630	RE 40 499630	RE 50 499640	RE 50 499640

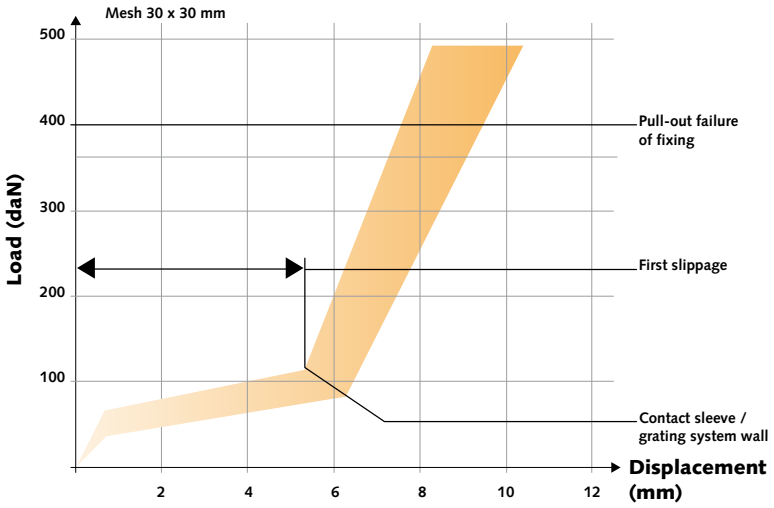
RECOMMENDED LOAD

The pull-through value of the spacer-washer is 1180 daN.

Tensile

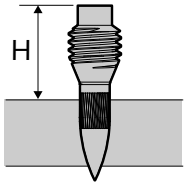


Shear



- **Fixing density :** Arround 4 or 5 fixings per m² (see the specification sheet of the supplier of grating).
- **Fixing position :** Minimum distance from edge of the beam is 15 mm.
- **Screwing washer-sleeve :** Tighten to the torque equal to 6 Nm (correspond to the load 250 daN).

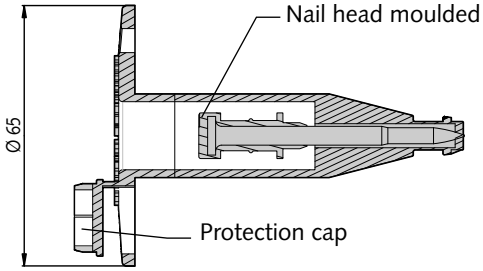
CONTROL FIXING

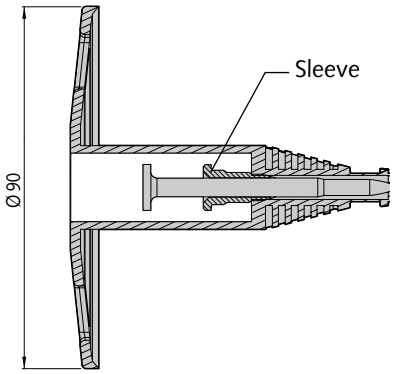


	Hmin	Hmax
SA 12-8 10/25	10	13.5
SA 12-8 15/30	15	18.5

SPIT CI6 – CI9







NAIL LENGTH SELECTION

Designation	Type of insulation	Insulation thickness	Code
CI 6-40	Rigid insulation	40	038500
CI 6-50		50	038520
CI 6-60		60	038530
CI 6-70		70	038540
CI 6-80		80	038550
CI 6-90		90	038580
CI 6-100		100	038560
CI 6-120		120	038570
CI 9-60	Semi-rigid insulation	60	038720
CI 9-75		75	038730
CI 9-100		100	038750

DESCRIPTION

- Polyethylen High density.
- CI-6 :
  - The nail head (for CI-6) is mould in thermoplastic-elastomer to improve the corrosion resistance
  - A protection cap to allow a good waterproofness and to reduce thermic transmission
- CI-9 : The nail is introduce in a sleeve to improve the guidance.

PROPERTIES MATERIAL

Plastic sleeve head

- CI6 : Ø65 head – Natural color
- CI9 : Ø90 head - Black anti-UV

Nail shank

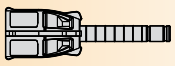
- Carbon steel
- Core hardness : 50 - 55 HRC
- Electrogalvanizing, min zinc coating 7 µm

TOOLS

P200 - P370 using adaptor

ACCESSORIES

Using CI adaptator kit for P370 tool

	**P370**
Adaptor kit for CI 50 to CI 120	011030

POWER SETTING

Choose the cartrige color on the job site

SPIT CI6 – CI9

DISTANCE RULES

Between 2 fixings : minimum distance of 90 mm

Distance from edge : minimum distance of 100 mm

APPLICATION LIMIT

The mean compressive strength of the concrete must be between C20/25 and C40/50.

ANCHOR DEPTH



It must be between 25 and 31 mm to ensure the recommended load given above.

RECOMMENDED LOAD

TENSILE

The recommended load (kN) are calculated from the mean ultimate load and a safety factor higher than 4.

Insulation thickness (mm)	40	45	50	60	70	75	80	100	120
Recommended loads	0.30								

SHEAR

The recommended load (kN) are calculated from the mean load with a displacement equal to 10 mm and a safety factor higher than 3.

Insulation thickness (mm)	40	45	50	60	70	75	80	100	120
Polystyren density =15 kg/m3	0.13								
Polystyren density =30 kg/m3	0.20								

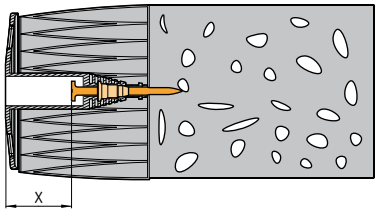
PULL-THROUGH

The recommended pull-through (kN) are calculated from the failure load and a safety factor equal to 3.

Insulation thickness (mm)	40	45	50	60	70	75	80	100	120
Rock wool density =120 kg/m3	0.12				0.16				
Polystyren density =15 kg/m3	0.20								
Polystyren density =30 kg/m3	0.30								

CONTROL FIXING

Ref		Insulation thickness (mm)								
		40	45	50	60	70	75	80	100	120
CI-6	Xmini	0	4	9	19	29	34	39	59	79
	Xmaxi	6	10	15	25	35	40	45	65	85
CI-9	Xmini	2	6	11	21	31	36	41	61	81
	Xmaxi	8	12	17	27	37	42	47	67	87



TOOLS

TOOLS

GAS TOOLS

- SPIT PULSA 700 E
- SPIT PLUSA 700 P

POWDER TOOLS

- SPIT P45
- SPIT P60
- SPIT P200
- SPITFIRE P370
- SPIT P250
- SPIT P230
- SPITFIRE P525L

Product sheet for tools

GAS TOOLS

- SPIT PULSA P700 E
- SPIT PULSA P700 P

POWDER TOOLS

- SPIT P45
- SPIT P60
- SPIT P200
- SPIT SPITFIRE P370
- SPIT P250
- SPIT P230
- SPIT SPITFIRE P525L

SPIT P700E



In accordance to :

EN 292-1 et 2 & 12549

EN 50081-1 et 2

EN 55011 / 55014 / 55104

EN 50082-1

prEN 792-1 & 792-13 :2000E

Directive tool :

98/37/CEE & 89/392/CEE

CEM 89/336/CEE & 93/68/CEE

Fuel cell : 75/324/CEE

Battery : 98/101/EC

Tool specifications	
Name	SPIT P 700 E
Impact force (Joules)	82
Weight (kg)	3.6
Overall dimension LxlxH (mm)	383/109/295
Energy	Fuel cell & Battery
Fastener lengths (mm)	15 to 40 mm in strip

Characteristics
Electrical accessories pin-guide
Fully automatic tool (1000 shots per hour)
20 pins magazine (10 in strip)
Low push down force (5 kg)
Automatic energy absorber
Automatic gaz dosage (used T° - 5 °C to + 40 °C)
Battery charging time : 1 hour
Fuel cell : 850 shots (20 °C), battery : 1200 shots

Safety specifications
CE agreement
Complete tool pressure necessary to generate the shot
Security with on / off led indicator
Noise level, EN 12549 : LWA,1s = 109 dB(A) / LpA,1s,1m = 96 dB(A) / LpA,1s,0 = 100 dB(A)
Vibration, EN ISO 8662-11 : 3.1 $m\text{-}s^{-2}$

Accessories	**Consumables**
40 pins magazine - Pulsa lift	C6 , SC6, HC6, (in strip) CG6, CT-CLIP, E-CLIP, E-CAV, CLIPELEC, ...TRH SPIT & LEGRAND accessories
Magnetic pin guide	Metal P-CLIP
Cleaning kit	

Product sheet

SPIT P700P





In accordance to :

EN 292-1 et 2 & 12549

EN 50081-1 et 2

EN 55011 / 55014 / 55104

EN 50082-1

prEN 792-1 & 792-13

Directive tool :

98/37/CEE et 89/392/CEE

CEM 89/336/CEE et 93/68/CEE

Fuel cell : 75/324/CEE

Battery : 98/101/EC

Tool specifications	
Name	SPIT P 700 P
Impact force (Joules)	100
Weight (kg)	3.6
Overall dimension LxlxH (mm)	383/109/295
Energy	Fuel cell & Battery
Fastener lengths (mm)	15 to 40 mm in strip

Characteristics
Drywall pin guide
Fully automatic tool (1000 shots per hour)
20 pins magazine (2 x 10 in strip)
Low push down force (5 kg)
Automatic energy absorber)
Automatic gaz dosage (used T° - 5 °C to + 40 °C)
Battery charging time : 1 hour
Fuel sell : 690 shots (20 °C), battery : 1200 shots

Safety specifications
CE agreement
Complete tool pressure necessary to generate the shot
Security with on / off led indicator
Noise level, EN 12549 : LWA,1s = 110 dB(A) / LpA,1s,1m = 97 dB(A) / LpA,1s,0 = 101 dB(A)
Vibration, EN ISO 8662-11 : 3.2 m-s^{-2}

Accessories	**Consumables**
40 pins magazine - Pulsa lift	C6 , SC6, HC6, (in strip)
Magnetic pin guide	Metal washer
Cleaning kit	

SPIT P45



Tool specifications	
Name	SPIT P 45
Impact force (Joules)	320
Weight (kg)	2.1
Overall dimensions LxlxH (mm)	295/62.5/180
Ammunition caliber	6.3/10 (10 loads in disc)
Disc loads colors	Brown, Green, Yellow, Red
Fastener lengths (mm)	20 to 40

Characteristics
Automatic cartridge advance
Semi-automatic tool
No power adjustment
Reliable, light
Easy maintenance
Low actuation contact pressure (7 kg)
Specialised tool for tunnels

Safety specifications
C.I.P agreement 001061 - BS 4078. Part 2
Belgium agreement 085 / Holland agreement 085
Indirect action class A1 (A*), velocity < 100 m/s
Complete contact pressure necessary to generate the shot
Window for checking cartridge presence
Noise level at operator, EN 12549 : LWA,1s = 113 dB(A) / LpA,1s,1m = 100 dB(A) / LpA,1s,0 = 104 dB(A)
Vibration, EN ISO 8662-11 : 9.5 $m\text{-}s^{-2}$

Consumables
CR9T with 21.75 washer for PVC
CR9TP

SPIT P60



Tool specifications	
Name	SPIT P 60
Impact force (Joules)	280
Weight (kg)	2.2
Overall dimensions LxlxH (mm)	310/62.5/180
Ammunition caliber	6.3/10 (10 loads in disc)
Disc loads colors	Brown, Yellow
Fastener lengths (mm)	15 to 60

Characteristics
Automatic cartridge advance
Semi-automatic compact tool
Power adjustment 8 positions
Reliable, light
Easy maintenance

Safety specifications
C.I.P agreement 001002
Indirect action class A1 (A*), velocity < 100 m/s
Complete contact pressure necessary to generate the shot
Window for checking cartridge presence
Noise level at operator, EN 12549 : LWA,1s = 113 dB(A) / LpA,1s,1m = 100 dB(A) / LpA,1s,0 = 104 dB(A)
Vibration, EN ISO 8662-11 : 7.9 m-s^{-2}

Consumables
C9, CR9, CR9P, SC9, CT30, CR9TP
C9 clip A, Posibanche, Formwork spacer, metal P-CLIP

SPIT P200



Tool specifications	
Name	SPIT P 200
Impact force (Joules)	370
Weight (kg)	2.8
Overall dimensions LxlxH (mm)	368/62.5/180
Ammunition caliber	6.3/10 (10 loads in disc)
Disc loads colors	Brown, Yellow, Red
Fastener lengths (mm)	15 to 70 (80 & 90 if predriven)

Characteristics
Automatic cartridge advance
Universal semi-automatic tool
Power adjustment 5 positions
Reliable
Easy maintenance

Safety specifications
C.I.P agreement 001051 / BSI Kitemark agreement KM05325
Belgium agreement 074 / Holland agreement 072
Indirect action class A1 (A*), velocity < 100 m/s
Complete contact pressure necessary to generate the shot
Window for checking cartridge presence
Noise level at operator, EN 12549 : LWA,1s = 114 dB(A) / LpA,1s,1m = 101 dB(A) / LpA,1s,0 = 105 dB(A)
Vibration, EN ISO 8662-11 : 8.2 $m\text{-}s^{-2}$

Consumables
C9, CR9, CR9P, SC9, SBR9, SA9, CT30, C9 clip A, formwork spacer, CR9TP, posibanche fastener, metal P-CLIP

SPITFIRE P370



Tool specifications		
Name	Spitfire P 370	Spitfire P 370 C60
Impact force (Joules)	340	340
Weight (kg)	2.8	3.2
Overall dimensions LxlxH (mm)	435/69/208	450/69/240
Ammunition caliber	6.3/10 (10 loads in disc)	6.3/10 (10 loads in disc)
Disc loads colors	Brown, Green, Yellow, Red	Brown, Green, Yellow, Red
Nail capacity (nbr)	1 in pin guide	10 in magazine (1 strip)
Fastener, lengths mm	15 to 70 (80 and 90 if predriven)	15 to 60 in strip

Characteristics
Automatic piston return by rubber spring
Universal fully automatic tool (1 nail per second with magazine)
Power adjustment by wheel with indicator
Different nose adapters for different application

Safety specifications
C.I.P agreement 001137 / BSI Kitemark agreement KM05325
Belgium agreement 104 / Holland agreement 100
Indirect action class A1 (A*), velocity < 100 m/s
Complete contact pressure necessary to generate the shot
Shock energy absorber for comfort
Easy and quick maintenance
Window for checking cartridge presence
Noise level at operator, EN 12549 : LWA,1s = 114 dB(A) / LpA,1s,1m = 101 dB(A) / LpA,1s,0 = 105 dB(A)
Vibration, EN ISO 8662-11 : 6.6 $m\text{-}s^{-2}$

Accessories	Consumables
Single shot	C9, CR9, CR9P, SC9, SBR9, SA9, CT30, C9 clip A, Posibanches, Formwork spacer, staff, metal P-CLIP, CR9TP
Magazine	C9, SC9 (15 to 60 mm in strip), metal P-CLIP
Kit CI 40 to 120	CI-6 & CI-9
Kit SA12-8	SA12-8 + RE 25 to 40

SPIT P250



Tool specifications	
Name	SPIT P 250
Impact force (Joules)	520
Weight (kg)	3.7
Overall dimensions LxlxH (mm)	360/70/200
Ammunition caliber	6.3/16 (10 loads in disc)
Disc loads colors	Green, Yellow, Blue, Red, Black
Fastener lengths (mm)	25 to 30

Characteristics
Automatic cartridge advance
Semi-automatic tool
No mechanical power adjustment
Easy maintenance
Only used for grid floor fixing system

Safety specifications
C.I.P agreement 001102
Belgium agreement 095 / Holland agreement 096
Indirect action class A1 (A*), velocity < 100 m/s
Complete contact pressure necessary to generate the shot
Window for checking cartridge presence
Noise level at operator, EN 12549 : LWA,1s = 114 dB(A) / LpA,1s,1m = 101 dB(A) / LpA,1s,0 = 105 dB(A)
Vibration, EN ISO 8662-11 : 7.0 $m\text{-}s^{-2}$

Accessories	Consumables
Standard	SA12-8 for RE 25 to 50

SPIT P230



Tool specifications	
Name	SPIT P 230
Impact force (Joules)	530
Weight (kg)	3.6
Overall dimensions LxlxH (mm)	354/70/200
Ammunition caliber	6.3/16 (10 loads in disc)
Disc loads colors	Green, Yellow, Blue, Red, Black
Fastener lengths (mm)	26

Characteristics
Automatic cartridge advance
Semi-automatic tool
No mechanical power adjustment
Reliability
Easy maintenance
Specialised tool for cladding, roofing & decking
M.A.C. SYSTEM

Safety specifications
C.I.P agreement 001035
Belgium agreement 073 / Holland agreement 065
Indirect action class A1 (A*), velocity < 100 m/s
Complete tool pressure necessary to generate the shot
Window for check disc presence
M.A.C. SYSTEM
Noise level at operator, EN 12549 : LWA,1s = 116 dB(A) / LpA,1s,1m = 103 dB(A) / LpA,1s,0 = 107 dB(A)
Vibration, EN ISO 8662-11 : 9.1 $m\text{-}s^{-2}$

Accessories	Consumables
Standard	SBR14, HSBR14
Special Pin guide for 3 mm steel	SBR14, HSBR14

SPITFIRE P525L



Tool specifications	
Name	SPITFIRE P 525L
Impact force (Joules)	560
Weight (kg)	10.5
Overall dimensions LxlxH (mm)	1000/130/230
Ammunition caliber	6.3/16 (10 loads in disc)
Disc loads colors	Green,Yellow, Blue, Red, Black
Fastener lengths (mm)	26

Characteristics
Automatic cartridge advance
Fully automatic tool (1000 pins per hour)
34 pins magazine in tube
No mechanical power adjustment
Easy maintenance
Only use for decking & roofing

Safety specifications
C.I.P agreement 001139 / BSI Kitemark agreement KM05325
Indirect action class A1 (A*), velocity < 100 m/s
Complete contact pressure necessary to generate the shot
Window for checking cartridge presence
M.A.C. SYSTEM
Noise level at operator, EN 12549 : LWA,1s = 117 dB(A) / LpA,1s,1m = 104 dB(A) / LpA,1s,0 = 104 dB(A)
Vibration, EN ISO 8662-11 : 3.3 $m\text{-}s^{-2}$

Accessories	Consumables
Standard	SBR14, HSBR14
Special pin guide for 3 mm steel	SBR14

Site safety with GAS Tools








- Read safety manual and operators manual before use.
- Wear hearing protection equipment.
- Wear safety glasses.
- Only use the device for its intended use.
- Only use the device on material to be nailed down.
- This is not a toy. Never point it at people.
- Always assume that the tool is loaded.
- Never transport the tool with your finger on the trigger.
- Never insert the pin guide with the back of your hand.
- When servicing, remove the gas cartridge, battery and nails from the magazine.
- Warning: the contents of the gas cartridge are flammable.
- The gas cartridge is under pressure. Protect it from temperatures above 50°C (sunlight).
- Do not open, puncture or burn the cartridge.
- Keep the cartridge away from flames, sparks and heat. Do not spray near flames or incandescent objects.
- The gas cartridge cannot be recharged. Do not attempt to fill or recycle it.
- Place empty cartridges in the bio-bag and send to SPIT After-Sales Service.
- Keep tool, gas cartridges and battery away from children.
- Only use the tool in well-ventilated areas. Store the gas cartridges in a well-ventilated place.
- Do not use the PULSA 700 in rainy or excessively humid conditions.
- Only use PULSA specified consumables or compatibles. In accordance with EN 792-13, PULSA has specified, in its operating instructions, PULSA consumables as safe to use. In case of use non-specified consumables, ensure that they are compatible, safe and lawfully on sale in european Union.
- For the maintenance of SPIT fastener driving tools, only spare parts specified by the manufacturer or his authorized representative shall be used (Item 7.2.1e).

Site safety with PAT Tools






- Read operator manual before use.
- Only qualified persons over 18 years of age can be permitted to use a PAT Tool. These persons must know perfectly how the tool works and must follow exactly the manufacturer's instructions and the safety regulations. They must be capable of maintaining the tool.
- The PAT Tool must be checked before use, so as to ensure that the safety devices are working properly and that the front end and the munition carrier are clean. Also ensure that the moving part generally slides well.
- The tool must be loaded just before use. If the tool is not in use, it must be unloaded and put back into its original packing. It must not under any circumstances be transported loaded.
- When firing, the operator must be in a stable position. The tool must be held at right angles to the base material.
- When a firing incident occurs, the tool must be unloaded immediately, taking all necessary precautions. If several incidents occur, inform the manufacturer.
- The PAT Tool and its charges must only be transported in their original packing.
- Never point the end of the nose pieces at anyone. The driver must always be pointed downwards.
- Never operate the driver with the flat of the hand.
- **The user must check the condition of the tool, even if it is not used, at least once a year.**
- It is prohibited for unauthorized persons to use a pat tool.
  It is prohibited to make any modification to the tool other than those specified in this manual.
- It is prohibited to operate the tool on profiled sheet or a metal structure before having ensured that there is no-one behind it.
- Fixing must not be attempted at a point where the profiled sheet support iron has been damaged or is defective. Fixing must be done at least 2 cm away from this area.
- It is prohibited to attempt fixing on materials which are not rigid or strong enough: hollow brick, plasterboard, slate, etc.
- It is prohibited to drive studs into brittle, hard materials, like cast iron, hardened steel, marble or granite.
- It is prohibited to do any fixing on concrete less than 10 cm from the edges.
  It is prohibited to use a stud driver in workshops or other premises where there are explosion risks.
- When using the tool, the user and bystanders must wear suitable safety glasses, a hard hat and hearing protection.
- The operator must be applied the National regulation.
- Safety data sheet on cartridges are available on request.

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Design AXESS

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