



**POZZOLAN**

Construction Industries Co.



*Shahen Aghamal*  
*Managing Director & Founder*

## INTRODUCTION

Pozzolan Construction Industries was established in 1991 with full capacity to satisfy its clients' needs with regards to the production of plastic spacers and supporting parts for concrete cover.

In reinforced concrete structures the positioning of the steel bars in locations specified on the executive plans are of the extreme importance in order to maintain the quality and resistance of the reinforced concrete.

For many years, in Europe, it was believed that a concrete cover with a suitable thickness will guarantee the durability of the reinforced concrete structure and considered to be a major factor in preventing corrosion.

At the beginning of 1909 and onwards in Europe, with the collaboration of the University of Essen, The Specialized Institute of Precast Units authorized the use of plastic spacers of various types, according to DIN 1045 standard specification.

During this period a new industry was evolved and the production of plastic spacers spread in over 60 countries. A thorough and comprehensive study and careful systematic examination of events taking place in the construction industry where the director of Pozzolan was previously involved and active for many years, paved the way for Pozzolan to get gradually organized. The company then began attracting the attention of engineers, gaining their confidence, continued participation in major fundamental projects and established its name as a potential manufacturer of the product.

More than two decades ago, Pozzolan expanded its activities by extended research, improving quality of its products with three unique designs of spacers to be used in two-way rebar slabs.

Consequently, Pozzolan expanded its activities by exporting its products to all Middle Eastern countries, Africa and Europe, and is proud to be considered as one of the most credible manufacturers of plastic spacers and concrete accessory parts.





A significant achievement for Pozzolan was to obtain the ISO 9001:2008 standard certificate in 2006, issued by TQCSI of Australia with an objective to gain customers attention and to fulfill their essential requirements.

Pozzolan also succeeded in establishing a customer care management which resulted in obtaining ISO 10002:2004 standard certificate from the same Inspection Institute mentioned above.

The company has been assessed and deemed to comply with the requirements of CE in accordance with DIN 1045 standard related to construction materials and the relevant certificate has been issued in August 2013 approving Pozzolan as a manufacturer of plastic spacers for reinforced concrete cover.

The variety of Pozzolan products exceeds 250 types of spacers and accessories, enabling the company to gain the confidence and trust of many industry owners and engineers especially in Afghanistan, Ajman, Andorra, America, Iran, Iraq, Kuwait, Qatar, Oman, Saudi Arabia, Sri Lanka, United Arab Emirates, and Venezuela etc ...

Setec batiment, The Consulting Engineering company in charge of Tehran 54 story tower recommends the installation of Pozzolan plastic spacers for concrete covering and reinforcement instead of any other type specified. The recommendation is signed by Setec Representative, Mr. Jean-Claude Makountz.

Andrade Gutierrez Construction company, the constructor of Khayam Main Drain Project for Tehran Municipality, also strongly recommends the aforementioned, signed by the Project Manager, Dr. Gilberto Grillo.

Many of Pozzolan Customers are among leading international construction companies such as Orascom Construction Industries, Tecnimont, Samsung Engineering, Arc Line and Borouge etc...

The double rebar chair spacer of this company is used in two-way rebar slabs for the construction of Abu Dhabi International Airport expansion project.

The endurance of Pozzolan is mainly depended upon the reliability of the clients and engineers. The company wishes to obtain more reliance and satisfaction from its customers by offering better quality products and services and introducing greater innovations in future.





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**Design makes Pozzolan Plastic Spacers a hit.**

**Quality . Strength . Reliability**



Quality Beyer

This is to certify that

**Pozzolan  
Construction Industrials Co.**

No. 49, First Floor, Mojtabai Ave.,  
Sharyati St., Tehran, Iran

Has been assessed and deemed to comply with the requirements of



According to Din 1045 Relating to Construction Materials

This certificate is valid for the activities specified below:

**Manufacture Plastic Spacers for Reinforced  
Concrete Cover**

This certificate is valid until: 24 Oct. 2020

Chairman

Signature:



Certificate Reference No.: 100202

Issue Date: 25 Oct. 2017

www.qbceert.ir

Good Quality, Good Brand



ISO 9001:2008



# Registration Certificate

Issued to

**Pozzolan Construction Industrials Co.**

Carried out at following site:

No. 49, First Floor, Mojtabei Ave., Sharyati St., Tehran, Iran

for their

**QUALITY MANAGEMENT SYSTEM**

Scope of Activities covered by this Registration:

Manufacture Plastic Spacers for Reinforced Concrete Cover

REGISTRATION NO. : 10478

ISSUED ON : 13/03/2018

VALIDITY DATE : 12/03/2021

SUBJECT MUST BE SUCCESSFUL IN SURVEILLANCE AUDIT  
FOR VALID OF CERTIFICATION

1st Surveillance Due ON: 13/02/2019

2nd Surveillance Due ON: 13/02/2022



Authorised by  
CHAIRMAN / PRESIDENT

[www.zhikcert.com](http://www.zhikcert.com)



ISO 10002:2004



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**Quality management -- Customer satisfaction  
Guidelines for complaints handling in organizations**

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**PLASTIC STRAND & ROCK ANCHOR BOLT & LANTERN SPACERS**

For Separating Rebars & Nail (Centralizing) 20-21

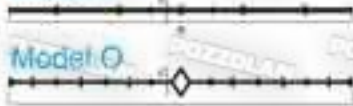


**PVC WATER STOP**



Model E

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Plastic Spacers For Reinforced Concrete Cover





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**NEW Product**

## Expansion Joint

Pozzolan Construction Industries Co. as the funder and the leader of supporting parts for reinforced concrete construction, specially plastic spacers is proud to introduce for the first time in IRAN, a new product called Expansion Joints, which is used to separate slabs in concrete flooring, such as large industrial halls, parking's and places of light and heavy vehicles traffic, and airports.

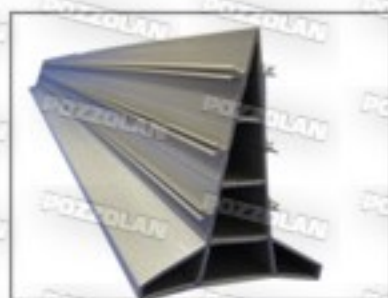
Expansion Joints will prevent cracking and breaking of concrete, and now it is introduced to industrial construction experts of the country.

### Expansion Joint



**Uses:** Expansion Joints are made of UPVC and are used to separate concrete flooring slabs.

**Instruction for use:** First of all, by using a topography Camera round iron bars of 12 to 14 mm diameter are placed in the concrete joints in a distance of 70 cm with a certain height and base locks and base locks are then placed on the iron bars and afterword's Expansion Joints are pressed and locked in the base locks and finally concrete is poured up to the height of the slabs.



Expansion Joint



base lock







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## HEAVY DUTY CHAIR SPACER WITH CLIP



Various Types of these spacers are made of strong and durable plastic material that can support a spot load of 100kg, in reference to the compression test certificate S/No. M88103011, dated 31 Jan 2010, Amirkabir University of Technology, Tehran-Iran. It has desirable stability and is adjusted to rebar diameters of up to 32 mm. Most of these spacers are used in heavy rebar cages. Spacers: F130, F131 and F132 are used in slabs, beams etc and F108 and F112 in foundations.



Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
F130	25/8-25	25 mm	8-25	1000	17.380
F131	30/8-25	30 mm	8-25	500	9.570
F132	40/8-25	40 mm	8-25	500	11.200
F108	50/12-32	50 mm	12-32	500	13.400
F109	75/12-32	75 mm	12-32	250	9.000
F112	100/12-32	100 mm	12-32	100	14.000

## SUPER GRIP SPACERS WITH CLIP



Super grip is a strong clip-on spacer used in heavy duty applications, such as foundations and base plate construction. It firmly clamps reinforcement bars up to 32 mm diameter and avoids bar movement. They offer more advantage over lighter duty spacers and are less used in quantity making the cages more secure. They may be used either horizontally or vertically. Spacers: F137, F138, F106 and F139 are used in slabs, and beams etc. F111 is used in foundations. Note: F139 can be used in foundation as well.



Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
F137	25/8-22	25 mm	8-22 mm	1000	7.000
F138	30/8-22	30 mm	8-22 mm	500	8.500
F106	40/8-22	40 mm	8-22 mm	500	10.780
F139	50/8-25	50 mm	8-25 mm	500	11.200
F140	60/8-25	60 mm	8-25 mm	500	18.150
F111	75/8-32	75 mm	8-32 mm	250	12.640



**SEESAW CHAIR SPACERS WITH CLIP**

The lower part of this spacer is made in such a way that when placed on the formwork it moves like a seesaw. When rebar is placed inside the spacer, after concrete is poured, no trace is visible due to the fact that the spacer stands on three points. These spacers are usually used for precast parts on composite slabs with light network rebars.



Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
F100	15/6 - 12	15 mm	6-12 mm	3000	13.700
F102	25/6 - 12	25 mm	6-12 mm	2000	15.530
F103	30/6 - 12	30 mm	6-12 mm	2000	16.750
F105	40/6 - 12	40 mm	6-12 mm	1500	12.900

**COMPOSITE CHAIR SPACERS**

These general purpose clip-on spacers are mostly used in precast yards, composite slabs and base plate woven with light rebars.

Refer to pages 13 & 14 for installation procedure.



Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
F115	15/6 - 16	15 mm	6-16 mm	3000	9.15
F116	20/6 - 16	20 mm	6-16 mm	2000	7.75
F117	25/6 - 16	25 mm	6-16 mm	2000	14.15
F118	30/6 - 16	30 mm	6-16 mm	2000	16.15
F119	35/6 - 16	35 mm	6-16 mm	2000	17.15
F120	40/6 - 16	40 mm	6-16 mm	1500	13.20
F121	50/6 - 16	50 mm	6-16 mm	1000	11.15
F122	60/6 - 16	60 mm	6-16 mm	500	6.15
F123	70/6 - 16	70 mm	6-16 mm	500	7.65
F124	75/6 - 16	75 mm	6-16 mm	500	10.40

**LINEAR CHAIR SPACERS**

Pozzolan's antirust margin Linear Chair Spacers with clip are applied horizontally and vertically. They are suitable for serial laying. Desired length may be obtained by joining them together. In vertical applications Pozzolan's Linear Chair Spacers prevent to fall down by being hanged to the steel bars. The general dimensions are 500mm long and 50mm wide.



Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
L15	15/500	15 mm	Free	100	6
L20	20/500	20 mm	Free	100	6.5
L25	25/500	25 mm	Free	100	7.3
L30	30/500	30 mm	Free	100	8
L35	35/500	35 mm	Free	100	8.3
L40	40/500	40 mm	Free	100	11.5
L50	50/500	50 mm	Free	100	12





## STYRO CHAIR SPACERS



Styro spacers are used to support rebar covers used in light slabs or base plates of Styrofoam blocks. It creates a 25 mm distance for the concrete cover from underneath the rebar to the foam surface, preventing the rebars to touch the foam. The base plate has a 38x38 mm. smooth plate which may be easily walked on without pressing the Styrofoam.



Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
SCH134	25/8-12	25 mm	8-12 mm	2000	17.100

## CHAIR SPACERS WITHOUT CLIP



These are one of the most widely used spacers for horizontal installation in precast parts, composite slabs and base plates having light and straight rebar network. Smooth and level rebar network is the main condition for using this spacer properly.



Code	Reference	Concrete Cover	Packing Qty.	Weight (Kg)
Chw 125	20	20 mm	2000	7.550
Chw 126	25	25 mm	2000	8.530
Chw 127	30	30 mm	1500	9.100
Chw 128	40	40 mm	1000	8.650
Chw 129	50	50 mm	1000	10.550

## PAD FIX CHAIR SPACERS



These are a kind of spacers, that contrary to other spacers have no clips to hold rebars, and are made of various stands with 25 mm height. Each pair of the stands are attached to each other. They are 25 cm in length used to create concrete cover under precast rebar network with a dimension of 100X100 mm or 150X150 mm. Pad fix chair spacers are also used in slabs and construction of floors for halls and enclosures.



Code	Reference	Concrete cover	Length	Packing Qty.	Weight (Kg)
PF25	25/220	25 mm	220 mm	200	12.600



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## ARCH DOUBLE REBAR CHAIR SPACERS



This spacer can create a concrete cover with the heights of 25, 30 and 35 mm (without clip) and by client request for the lower network, and a 100 mm (with clip) for the upper network. Refer to pages 13 & 14 for installation method.



Code	Reference	Packing Qty.	Weight (Kg)
DA100	100	200	12.600

## PT SLAB CHAIR SPACERS



This universal spacer is used in post tension concrete slabs to create a variable and flexible tendon profile.

Duct or sheathed tendons are placed on these spacers and tensioned with special stressing jacks after concrete is poured and cured.

In this process, the spacer's stability and design play a vital role to obtain maximum slab performance.



Code	Reference
BS 50	50
BS 70	30+40= 70
BS 100	30+70=100
BS 140	30+110=140
BS 180	100+80=180
BS 200	100+100=200
BS 220	100+120=220
BS 240	100+140=240
BS 260	30+130=260



## ROUND FIX CHAIR SPACERS



These kind of spacers are used to hold rebars, and are made to provide various concrete cover spacing with 20-30 mm height. Round fix chair spacers are also used in slabs and construction of floors for halls and enclosures.

One detachable set consists of 4 rings.



Code	Concrete cover	Diameter	Packing Qty.
RF20	20 mm	200 -310	200
RF25	25 mm	200 -310	150
RF30	30 mm	200 -310	100





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## STOOL DOUBLE REBAR CHAIR SPACERS



This piece is to create concrete cover in double layered slabs. It consists of two parts (base and shaft), that are coupled to one another. The first part (base) has a fixed height of 30 mm with four coverage distances of 25, 30, 35 and 40 mm, and the second part (shaft) comes in nine height variation to give (40, 50, 60, 70, 80, 90, 100, 110 and 120 mm) concrete coverage. This spacer is made to replace bolster, thus eliminating the use of chair spacers beneath the first network which is considerably cost effective. Refer to pages 13 & 14, installation method.



Code	Reference	Packing Qty.	Weight (Kg)
BOK70	30 + 40 = 70	100	5.950
BOK80	30 + 50 = 80	100	6.450
BOK90	30 + 60 = 90	100	6.950
BOK100	30 + 70 = 100	100	7.350
BOK110	30 + 80 = 110	100	7.850
BOK120	30 + 90 = 120	100	8.350
BOK130	30 + 100 = 130	100	8.850
BOK140	30 + 110 = 140	100	9.350
BOK150	30 + 120 = 150	100	9.850

## EIFEL DOUBLE REBAR CHAIR SPACERS



This spacer comprises of a 100 mm base with convenient seats provided on both sides for the rebars to rest on. It can create a concrete cover distance of 25-50 mm beneath the rebar, and in the second network with the connection of 9 types of shafts ranging from 40-120 mm on the 100 mm base it can create a concrete cover distance of 140-220 mm. Meanwhile by using a 13 cm intermediate shaft we can increase the height between the spacer and the base plate from 270 mm to 350 mm (light networks only: Ø 8-14 mm). This will eliminate the use of chair spacers beneath the first network, resulting in lower costs.



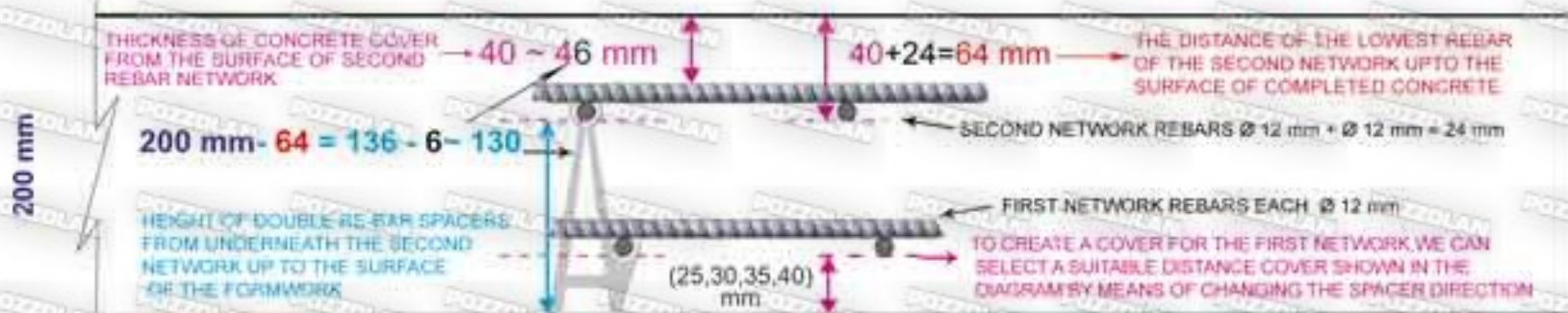
Code	Reference	Packing Qty.
DE140	100 + 40 = 140	100
DE150	100 + 50 = 150	100
DE160	100 + 60 = 160	100
DE170	100 + 70 = 170	100
DE180	100 + 80 = 180	100
DE190	100 + 90 = 190	100
DE200	100 + 100 = 200	100
DE210	100 + 110 = 210	100
DE220	100 + 120 = 220	100





## Calculation method for the selection of double rebar spacer to be used in double rebar slabs

This chart is being presented as an example



This chart is our recommendation



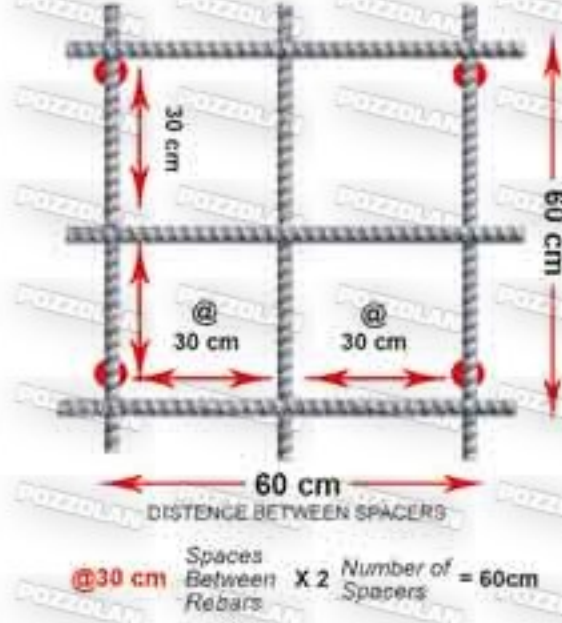
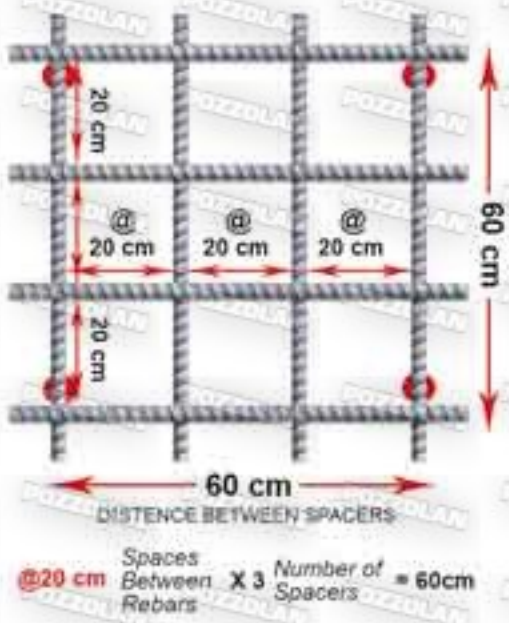
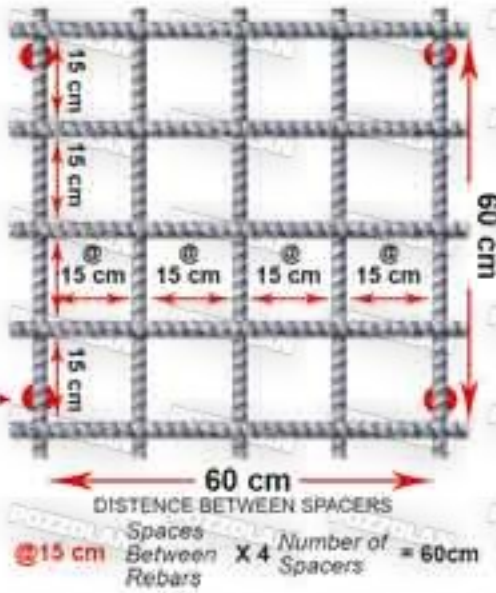




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## INSTALLATION METHOD FOR CHAIR AND DOUBLE REBAR SPACERS







## HEAVY CIRCULAR SPACERS



Circular spacers are widely used for on-site concrete pouring and precast applications to create concrete cover for walls, columns and concrete pipe networks. These spacers have clamps for various rebar sizes. The main pressure exerted on these spacers is absorbed by its spokes or stiffeners.

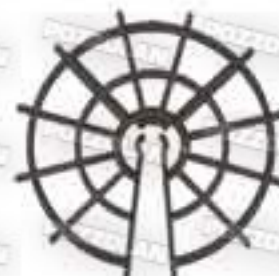


Code	Reference		Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
H Ci200	20/6-8	P	20 mm	6-8 mm	2000	11.900
H Ci223	25/6-8	P	25 mm	6-8 mm	1500	15.200
H Ci201	30/6-8	P	30 mm	6-8 mm	1000	10.000
H Ci202	30/8-10	P	30 mm	8-10 mm	1000	11.000
H Ci203	25/8-12	C-W	25 mm	8-12 mm	1000	9.500
H Ci205	30/8-12	C-W	30 mm	8-12 mm	1000	9.700
H Ci207	30/14-20	W	30 mm	14-20 mm	700	9.250
H Ci208	40/8-10	P-C	40 mm	8-10 mm	500	9.330
H Ci209	40/8-12	C-W	40 mm	8-12 mm	500	8.550
H Ci212	40/14-20	W	40 mm	14-20 mm	500	8.850
H Ci213	50/8-12	C-W	50 mm	8-12 mm	250	6.650
H Ci215	50/12-20	W	50 mm	12-20 mm	250	6.040
H Ci216	50/20-32	W	50 mm	20-32 mm	200	8.850
H Ci217	70/12-16	W	70 mm	12-16 mm	150	8.010
H Ci219	75/20-32	W	75 mm	20-32 mm	100	7.030
H Ci220	100/16-20	W	100 mm	16-20 mm	50	7.210
H Ci221	100/12-32	W	100 mm	12-32 mm	50	7.210

## LIGHT CIRCULAR SPACERS



A range of widely used plastic spacers which are light weight and used for different bar sizes with light network for walls and precast concrete parts.



Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
L Ci222	20/8-12	20 mm	8-12 mm	2000	10.000
L Ci234	25/8-12	25 mm	8-12 mm	1500	8.900
L Ci224	25/12-16	25 mm	12-16 mm	1000	6.200
L Ci206	30/8-12	30 mm	8-12 mm	1000	7.400
L Ci210	40/8-12	40 mm	8-12 mm	500	5.650
L Ci211	40/12-20	40 mm	12-20 mm	500	5.850
L Ci225	50/8-12	50 mm	8-12 mm	400	6.690
L Ci214	50/12-20	50 mm	12-20 mm	400	5.830
L Ci218	75/12-20	75 mm	12-20 mm	150	7.300





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## HEAVY DUTY PILE CAGE SPACERS

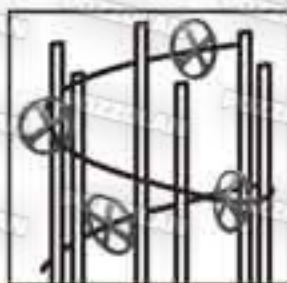


These spacers are designed in sizes of 75 and 100 mm in two types to provide cover for the pile cage.

1-Type (O) At the time when pile cage rebars are being set, the spiral rebars are pressed through the (O) center spacer holes and in proportion of the pile cage diameter a maximum of 8 numbers of spacers are distributed in pile cage surrounding in each spiral bar and are placed with the height of 1.5 meters from each other.



2- Type (V) After the bar mat texture of the pile cage rebars are formed and when the pile cage is ready to enter the excavated hole, a maximum of 8 numbers of spacers are arranged in each spiral bar from bottom to top in the proportion of the pile cage diameter and with distance of 1.5 meters, they are pressed and clipped through the (V) cleavage into the spiral rebars, to create a concrete cover distance from the side wall.



Type O



Type V

Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
PO226	75/12-16	75	12-16 mm	25	2.130
PV227	75/12-16	75	12-16 mm	25	1.720
PO228	100/12-16	100	12-16 mm	25	2.400
PV229	100/12-16	100	12-16 mm	25	2.700

## SLAB FIX



SLF14  
SLF19



SLF13

This spacer is not designed to be used in concrete structures.

It is used to maintain distance of stones and tiles from the floor surface, 14 mm height and 3.5 mm between tiles. The purpose of using this part is to create a special stone or tile floor in order to prevent accumulation of water and rain on its surface and guide the water 14 mm beneath the surface. These pieces may also be used on the roof tops to prevent damage to the sealed surface. Meanwhile this is also used to prevent water accumulation in pedestrian crossing areas.

### Instruction for use:

These base plates are placed under stones and tiles with corners of tiles to meet in the center of the spacer leaving 3.5 mm distance from each other.



Code	Spacing	Diameter	Joint thickness	Packing Qty.	Weight (Kg)
SLF13	13	150 mm	3.7 mm	250	12.00
SLF14	14	150 mm	3.7 mm	250	12.00
SLF19	19	150 mm	3.7 mm	250	12.00



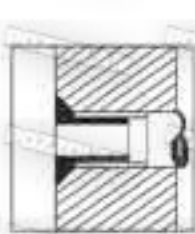


## CONES



Used in both ends of high pressure PVC pipes for metal bolts to pass through.

These cones consist of two types in various sizes. The heavy type cones may be reused for a few times after placement, but the light type cones are not reusable, and should be removed after dismantling the formwork.



Co301-L-305



Co302



Co303

After removal  
of the cone



Code	Reference	Inside tube diameter	Height	Packing Qty.	Weight (Kg)
Co305	L- Cone Ø18/h10	22 mm	10 mm	2000	6.530
Co301	H- Cone Ø18/h10	22 mm	10 mm	2000	9.700
Co302	H- Cone Ø22/h10	28 mm	10 mm	2000	13.750
Co304	H- Cone Ø18/h40	22 mm	40 mm	500	11.900
Co303	H- Cone Ø20/h30	30 mm	30 mm	500	11.900
Co305	H- Cone 20/h75	—	75 mm	250	20.680

## SLEEVE AND CONE FOR Ø 16, 18 & 25 mm BOLTS



These sleeve and cone spacers are made of a PVC pipe and cone with outer diameter of 25 - 26 mm.

These spacers are used to create a distance between two concrete wall formworks for the metal bolts up to 18 mm diameter to pass through, and fixing the formworks, preventing leakage of laitance from the formwork. After pouring of concrete and unfolding the formworks, the cones are removed and the bolt opening is formed without any chipped edges. Heavy cones may be reused, but light cones are for one time use only.



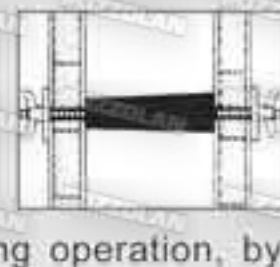
Code	Tube diameter	Bolt Ø	Height	Packing Qty.
Cone 22/32	25 mm	18	200 mm to 500 mm	100
Cone 18/25	32 mm	22	200 mm to 500 mm	100

## CONICAL SPACER



This spacer is a conical piece, having a strong body made of plastic material. It can resist strokes, temperature and formwork oils to a great extent. Based on its application it is mainly used in tunnels and ordinary formworks.

Having a hole provided in its center, it helps to stabilize the wall formworks enabling the preparation of concrete pouring operation, by



means of anchor bolts, and to create expose walls of 20-30 cm thickness. It is to be mentioned that immediately after removing the formwork, the conical spacer which has a length equal to the thickness of the concrete wall should be removed from the concrete with moderate strokes to prevent any damage. This spacer may be used for several times without any problem.

Code	Reference	Concrete Wall Diameter	Bolt Diameter	Packing Qty.	Weight (Kg)
Col298	150/22	150 mm	27 mm	50	7.178
Col299	200/22	200 mm	27 mm	50	9.660
Col300	250/22	250 mm	27 mm	50	13.180
Col301	300/22	300 mm	27 mm	50	17.300





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## SEALING MIDDLE BOLT



This is used in water and sewage reservoirs, pools and concrete water treatment plants as water sealant in concrete structure at the point of bolt passage.

These products have been tested in Iran by Sano Engineering Laboratories that conform to DIN-1048 for water sealing up to 5.5 mm and suitability for use in sewage plants.

This unique middle bolt comprises of various parts which makes a complete assembly:

1- Two parts of PVC high pressure pipe with 25 mm outer diameter and 1.9-2.00 mm thickness, having a rough surface.

2- Two pieces of cones with 40 mm. height made for a 16-18 mm diameter bolt to pass through.

3- Two pieces pipe surface sealant which due to its geometric shape prevents penetration of water through the pipe surface, the diameter of its two sealing sheets are 7 cm.

4- One diaphragm water stop pulley with 8 cm diameter.

5- Three pieces of pipe interior sealant plugs, two with edges and one with no edge.

### ASSEMBLY:

First, the two parts of rough PVC pipes are connected through the diaphragm water stop pulley. The two double water stop pulleys are then placed on both ends of the pipes. The two cones are now installed on the double water stop pulleys.

All the above mentioned parts are pre assembled in the factory and delivered to the client as a complete sealing middle bolt assembly. Instruction to use:

The sealing middle bolt is placed between two wall formworks and the metal bolt with screw ends are passed through it, the formworks are fastened by means of nuts, and finally the concrete pouring operation begins.

At this stage the cones play a critical role.

They prevent discharge of laitance out of the formwork, and fix the double water stop pulleys in a depth of 4 cm in the concrete wall.

When the concrete is set, the formworks are dismantled and by means of the same metal bolt the cones are removed from the sealing middle bolt buried in the concrete by moving them to the left and right, and up and down.

The sealing middle bolt is then sprinkled with water causing slipperiness and the pipe interior sealant is also wetted.

By means of 25 cm long punch having the same diameter as the pipe and a 5 kg hammer various strokes are struck until this piece is fixed in the middle of the concrete wall.

Please note that all the above operation is performed from the inside of the water and sewage reservoirs.

Two pieces of the edgy pipe interior sealant are moved with the same punch and hammer into the middle bolt pipe, one from the inside of the reservoir and the other from outside.

Finally the hollow created by 40 mm cone is filled with grout, and a perfect seal is created in the desired point.



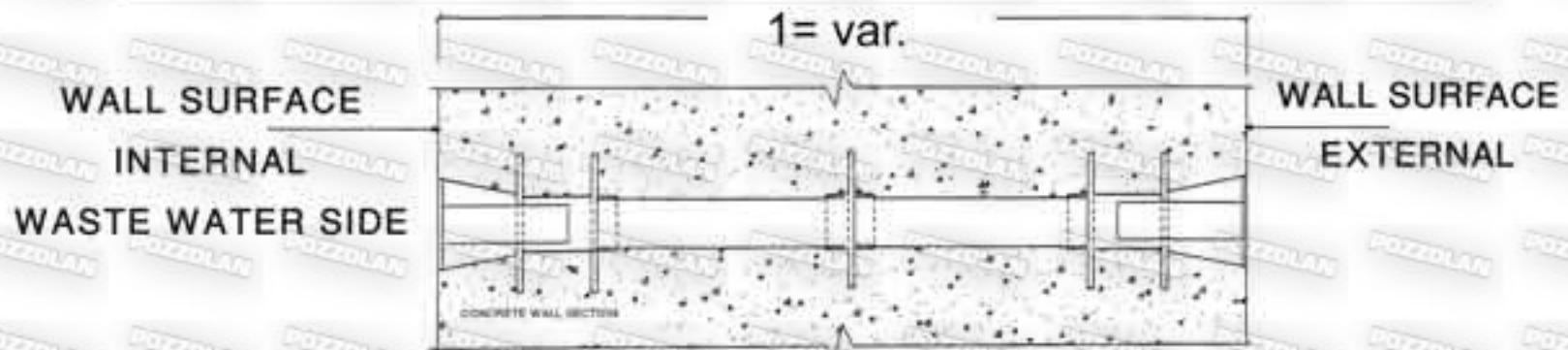




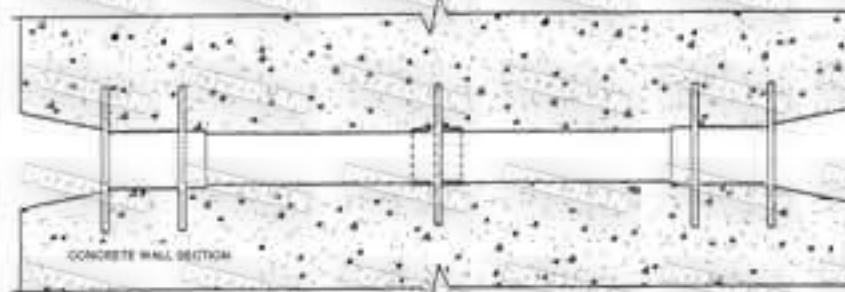
Code	Reference	Length	Packing Qty.	Weight (Kg)
Mb 125	Sealing middle bolt	200 mm	50	5,650
Mb 125	Sealing middle bolt	250 mm	50	6,150
Mb 125	Sealing middle bolt	300 mm	50	6,650
Mb 125	Sealing middle bolt	350 mm	50	7,150
Mb 125	Sealing middle bolt	400 mm	50	7,650
Mb 125	Sealing middle bolt	450 mm	50	8,150
Mb 125	Sealing middle bolt	500 mm	50	8,650
Mb 125	Sealing middle bolt	550 mm	50	9,150



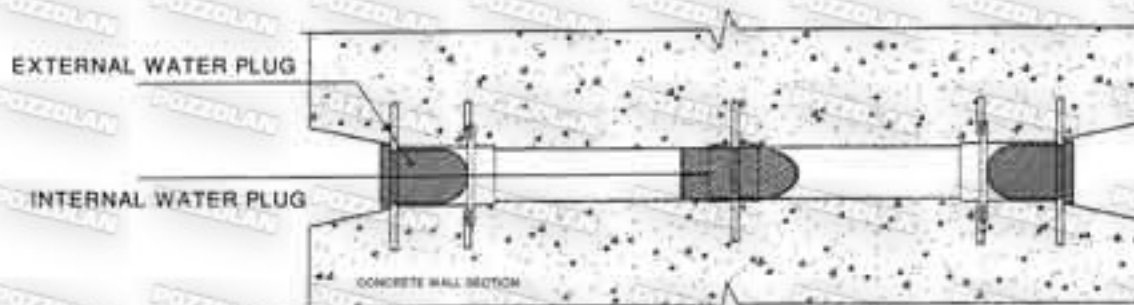
### WALL CONSTRUCTION STAGES FOR SEALING MIDDLE BOLT ASSEMBLY



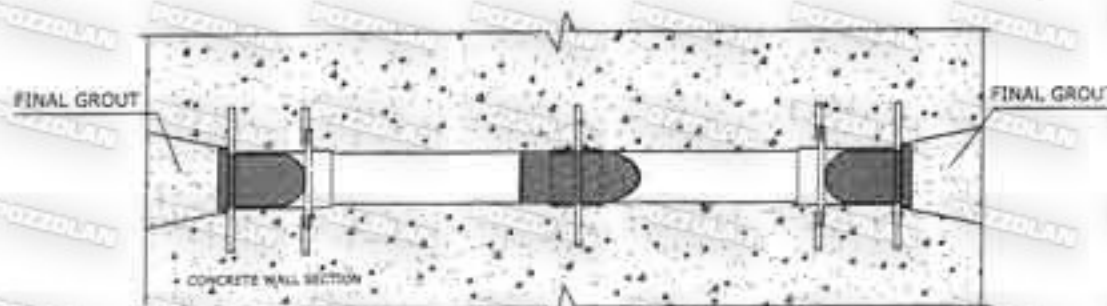
#### 1- SEALING MIDDLE BOLT SLEEVE ASSEMBLY IN CONCRETE



#### 2 - SEALING MIDDLE BOLT SLEEVE IN CONCRETE, WITH CONE REMOVED



#### 3 - INTERNAL AND EXTERNAL WATER PLUGS PLACED



#### 4- FINAL STAGE OF SEALING MIDDLE BOLT ASSEMBLY AFTER GROUTING





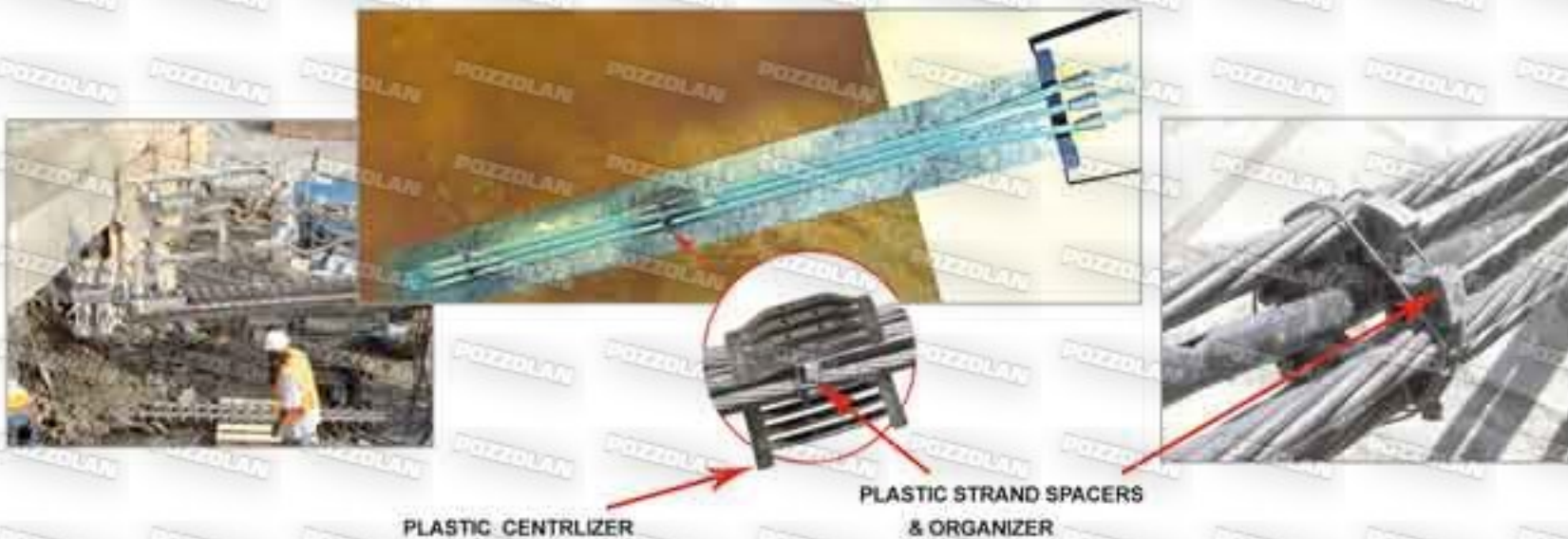
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## PLASTIC STRAND SPACERS & ORGANIZER



Strand spacers are provided in the anchor bond zone to separate the strand and provide for the minimum required grout cover around each strand for corrosion protection and bond strength development. The strand spacers are normally located 30-60 cm above the bottom of the anchor and at the top of the bond zone. The intermediate strand spacers are typically placed at a distance of 150-300 cm, center to center along the bond zone between the top and bottom spacer.



## ROCK ANCHOR BOLT SPACERS



After drilling operation of bores is performed by the drill wagon, rock anchor bolt spacers which are designed with three concrete cover distances of 1 cm, 2 cm, and 3 cm are used to cover anchor bars in order to strengthen the soil.

**Instruction for use:** Rock Anchor Bolt spacers are selected according to the bore diameter and are placed around the anchor bolts (rebars of 32 mm diameter and over) as per illustration and



simultaneously the injection pipe and anchor bolt are placed in the drilled bore, so that the spacers provide suitable concrete cover distance around the anchor bolt and to stabilize the rebar in the bore center, preventing the anchor bolt to touch the soil and thus to avoid corrosion. At this stage the grout injection operation begins. This operation will prevent probable land slip in the trenches and the tunnel.



Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.	Weight (Kg)
Rs240	10/32-42	10	32-42	400	10.980
Rs241	20/32-42	20	32-42	400	12.800
Rs242	30/32-42	30	32-42	400	14.500





## LANTERN SPACERS - CENTRALIZER



Pozzolan's "Lantern" Spacers fulfill the need to keep steel bars in a drilled hole in ground anchoring applications. Lantern centralizers also allow grout and grout tube to pass down the hole when bar is installed.

Lantern centralizers can be attached securely to the bar quickly and effectively using wire ties.

Benefits:

- Easy application.
- Range of sizes for common applications.
- Allowing space for grout tube to be installed.
- Economical.

• This item is available in different sizes and dimensions. Required measures should be given and confirmed prior any order.

## PVC WATER STOP



Formworks at interruption points of high concrete walls are usually performed in various stages. Water stop tape are therefore used in between two concrete walls to prevent water penetration.



Reference	Size "a"	Size "c"	Weight/meter
PW1-170	170	4	1.1
PW1-240 A	240	4	1.6
PW1-240 B	240	6	2.5
PW1-300	300	4-5	2.8
PW2-170	170	3-4	1.1
PW2-200	200	4	1.7
PW2-240 A	240	4-5	1.8
PW2-240 B	240	5-6	1.9
PW2-240 C	240	5	2.1
PW2-240 D	240	5-6	2.1
PW2-300 A	300	4-5	2.8
PW2-300 B	300	4-5	2.9
PW3-300	300	4	2.9
PW4-300	300	4	3
PW5-240	240	9-10	4.5
PW5-300	300	8	3.3
PW6-150	150	9-10	3.1
PW6-220	220	10	4.1
PW6-300	300	7-9	4

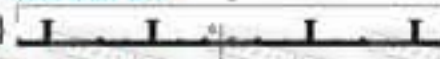
Model E



Model O



Model EF



Model OF



Model EM



Model OM







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## PLASTIC CAP SPACER

To be used in concrete pipes for corrosion prevention of vertical rebars. Fits tightly on reinforcement bars and eliminates formwork contact.



Code	Reference	Concrete Cover	For Steel Diameter	Packing Qty.
Mc170	10/8	10 mm	6 mm	5000
Mc171	10/8	10 mm	8 mm	5000
Mc172	10/10	10 mm	10 mm	5000
Mc173	10/12	10 mm	12 mm	5000

## REBAR SAFETY CAP (orange)



By placing safety caps with fluorescent colour on waiting rebars to avoid possible injury, safe environment is created for workers, technicians and construction engineers.

These caps are made in two sizes suitable for rebars having 8-16 mm and 16-32 mm diameters and are used to cover rebars of 8-16 mm diameter to prevent damage to formworks and to hide appearance of rebar ends from the concrete surface.



Code	Reference	For steel Diameter	Packing Qty.	Weight (g)
RSC450	8/16	8/16	500	310
RSC451	16/30	16/30	250	400

## MUSHROOM REBAR SAFETY CAP (yellow)



Plastic rebar safety caps with fluorescent colour are highly visible and are used on the top of waiting rebars to help ensure construction site safety, and to protect against impalement injuries caused by protruding rebars.



Code	Reference	Rebar Diameter	Height	Packing Qty.	Weight (g)
MR360	50/80	8-16	70 mm	200	840
MR361	50/50	16-32	70 mm	200	840





## FORMWORK SPACER (RAMKA)



This is used to create a distance between two formworks of concrete wall or column.

This valuable piece is installed by 4 steel nails or connected to the rebars by wire, between two chalk lines. The formworks are then attached to the formworks spacer and begin setting the formworks.

Through the use of these spacers, exact adjustment of wall or column concrete thickness is made possible.



Code	Re bar diameter	Packing Qty.	Weight (Kg)
Fs370	8 mm	500	12.850



## SWITCHBOX



The switchbox is used in fixed or prefabricated concrete walls for the installation of sockets and light switches and junction boxes.

They are made in 5 and 8 cm depths and have a sealed cap.



Code	Reference	Diameter	Height	Packing Qty.	Weight (g)
SW360	50/80	50	80 mm	200	840
SW361	50/50	50	50 mm	200	840



## SHIM PAD



Horse Shoe Shim Pad

These shims are fitted around projecting bars and suitable for packing of precast concrete units during construction. They are also used when shim has to be pushed over concrete dowels.

Plates with superior load bearing characteristics made from high strength polycarbonate plastic are available on request.



Square Shim Pad

Code	Reference	Thickness	Weight	Packing Qty
SP365	70X70X2	2 mm	7gr up to 35gr	250
SP366	70X70X3	3 mm	10gr up to 50gr	250
SP367	70X70X5	5 mm		
SP368	70X70X10	10 mm		





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## PIPE SPACER FOR PVC CABLE DUCTS (ALSO UNDERGROUND DUCT BANK)

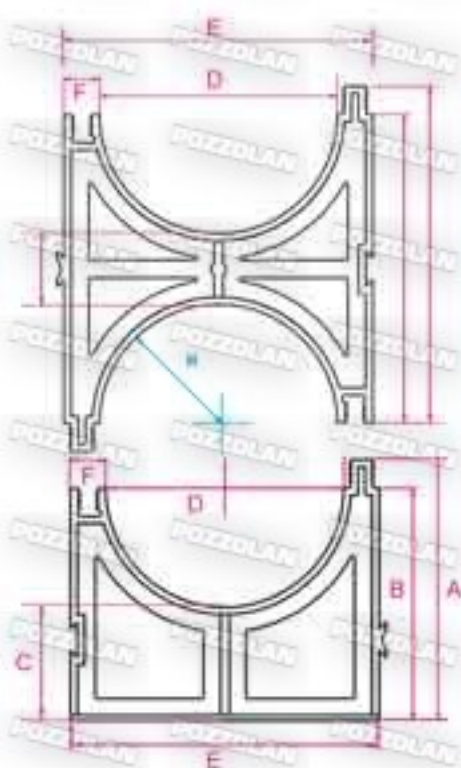
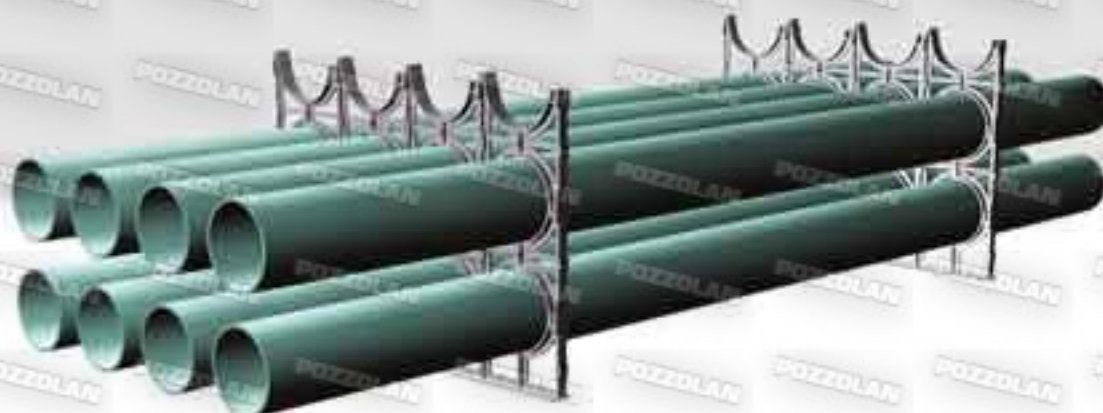


Base



Intermediate

Pipe spacers are used as a multichannel and multilevel system for all kinds of underground cable duct systems, especially recommended in various underground cabling applications. They are especially designed with interlocking devices to also make an assembly of duct bank outside trenches stable. Pipe spacers have base and intermediate parts that connect horizontally and vertically to provide for as many ducts needed.



PVC Pipe spacer for 4" and 6" and 8" pipes

Base

	Code	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Diameter
Type A	DSb114 ASTM	122	102	45	114	155	20	4"
	DSb114 DIN	120	100	45	110	152	20	4"
Type B	DSb114 ASTM	145	127	70	115	155	20	4"
	DSb168 ASTM	202	182	100	168	215	25	6"
	DSb160 DIN	175	157	80	160	206	25	6"
	DSb203 ASTM	222	200	100	203	250	25	8"

Intermediate

	Code	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Diameter
Type A	DSi114 ASTM	166	147	30	114	155	20	4"
	DSi114 DIN	162	143	30	110	152	20	4"
Type B	DSi114 ASTM	188	140	55	115	154	20	4"
	DSi168 ASTM	237	220	50	168	215	25	6"
	DSi168 DIN	225	205	50	160	206	25	6"
	DSi203 ASTM	270	250	50	203	250	25	8"



Quality . Strength . Reliability

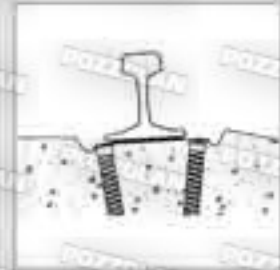
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## ROLL PLUG AND CAP FOR RAILWAY TRAVERSE

These roll plugs are used to fasten the rails to the concrete traverse.



## STEEL INSERT

Thick walled, seamless heavy duty steel cast-in socket with metric thread. Punched flat end makes higher tensile load possible. Yellow electro galvanized, multi-purpose socket enables high draw-out values obtainable even without reinforcement. These inserts come with pre-assembled nailing plate.



## SMALL SOCKET

This piece is used to create precast holes in underground tunnel segments to install air vents or installation canals. Instruction for use is as follows:  
After the small plastic socket is taken out of the concrete segments it leaves a hole with 1 cm diameter and 10 cm depth. When the roll bolt is placed in the hole created in the concrete segment, all installation network are installed on tunnel walls by means of clamps.



Code	Reference	Diameter	Height	Weight (Kg)
400	15/77	15	77 mm	1







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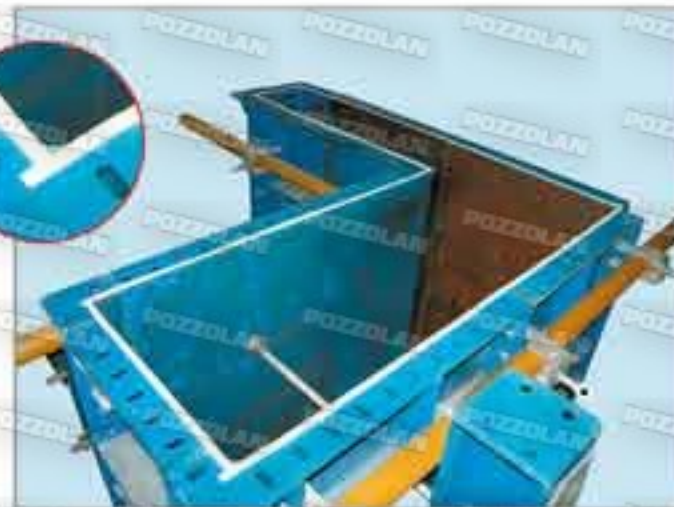
## SEALANT FOAM TAPE



This is a 10 m long, 10 mm wide and 3 mm thick (and more as per your order) rolled tape with one strong adhesive side. It is used to prevent leakage of concrete laitance from the formwork.



Code	Reference	Width	Thickness
SFT310	10/3	min 10 mm	min 3 mm



## CONCRETE FOAM HASP TAPE



The HASP tape consists of pressed foam on one side, covered with strong waterproof adhesive used to fade out formwork seam. The dimensions are 10x20x1500 mm.

**Installation procedures:** First remove the oily surface, make sure there is no residue on the concrete surface, wipe with clean cloth to make it completely dry and then fix the tape.







## CHAMFERS

### TRIANGLE CHAMFERS

Triangle chamfers are made in types A, B and C, used in wooden or metal formwork corners. They create a bevel at the edge of finished columns, beams, slabs and etc.



**A-PLASTIC CHAMFER WITH NAILING FLANGE** To install this chamfer, first the point of bevel and formwork are aligned then the edge of chamfer is nailed to the base plate of the wooden formwork.

**B-PVC CHAMFERS** This chamfer is placed in the corner of the wooden formwork and nailed to the formwork at the corner of the chamfer.

Reference	Size "A"	Size "B"	Size "C"	Length
PVC Chamfer N11	20 mm	28mm	45mm	2500mm

Reference	Size "A"	Size "B"	Length
PVC Chamfer 20	20 mm	28mm	2500mm

## HOOK AND TIE WIRE



Tie wires are used by an instrument called the rotating hook, especially made for this purpose. This instrument is designed for three different lengths to tie up a total of 8-12, 14-16 and over 16 rebars.

Reliable simple and eight (8) shaped ties are made possible by using this instrument.

The tie wires are packed in bundles of 5000 pieces. This hook can tie the looped tie-wires that come in the following sizes:

80 mm	for	8x8	and	below
150 mm	for	8x8	to	16x16
180 mm	for	16x16	and	up







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### Conditions and Remarks

- Reproduction of this brochure in any form without prior written consent of Pozzolan is prohibited.
- Pozzolan have made every possible effort to ensure that accurate information is provided in this booklet, but however it is the user's responsibility to determine the suitability of a product for a specific application prior to its use.
- Some of the data presented here may be found invalid due to product developments in future. In case you wish to be assured, please contact us for consultation.

### Sales Prices

Our prices are to be understood in US\$ ex-works factory packed free on truck. The prices invoiced would be those in effect at time of delivery.

### Delivery Terms

Delivery time quoted is subject to prior confirmation. Delivery period will commence when goods are ready for shipment. Claims for compensation are expressly excluded in all late delivery cases. Minimum delivery would be one packing unit per size. All weights are per 100 pieces or 100 meters.

### Defective Material

We accept responsibility for any goods supplied and proved to have been defected in manufacture or poor quality. These items will be repaired free of charge or replaced with new ones, provided that written notice is received before six weeks after delivery. Responsibility for defects resulting from improper use shall not be accepted for replacement.

### Packing and Sizes

Contents and number of pieces in a packing shall be determined by weighing. Slight deviation may occur from differing densities of the raw material. All weights stated on the packing are approximate and are only used to determine cost of transportation.

### Dispute

In the event of litigation, the courts of the supplier's country shall have sole jurisdiction for all disputes arising from contractual relationships.





### Safety Notes:

- 1- The client must evaluate suitability of the product for every application and the prevention of excessive load. If in doubt, individual testing must be carried out.
- 2- All products are subject to wear, corrosion, deformation and excessive loading and alteration. Reusable products should be inspected regularly to evaluate its continued use.
- 3- Some products are a part of a system, therefore no single components should be replaced by another manufacturer's products, in which case no responsibility can be accepted
- 4- Pozzolan reserves the right to modify the design of products shown in this brochure without prior notice.
- 5- The following should be taken into consideration for the use of all plastic spacers:
  - Spacers may not be twisted, fall or moved after assembly.
  - Spacers may not be largely deformed by forces applied.
  - Spacers must be firmly attached to the reinforcement.
  - Spacers may display differing properties at different temperatures
- 6- Considering that Pozzolan has no control over the conditions under which the spacers are used, therefore no guarantee can be given for the use of the products shown in this catalogue.
- 7- Please make sure that packages containing plastic spacers are stored in a covered location, away from direct sunlight.
- 8- Spacers are usually manufactured from PE raw material which is physiologically resistant against all acids and alkaline solutions used in the construction industry.
- 9- Pozzolan has a fully equipped workshop which allows production of custom made items according to your requirement. Please contact us if further information is required.
- 10- Pozzolan spacers have been used in many different climates all around the world with complete customer satisfaction.