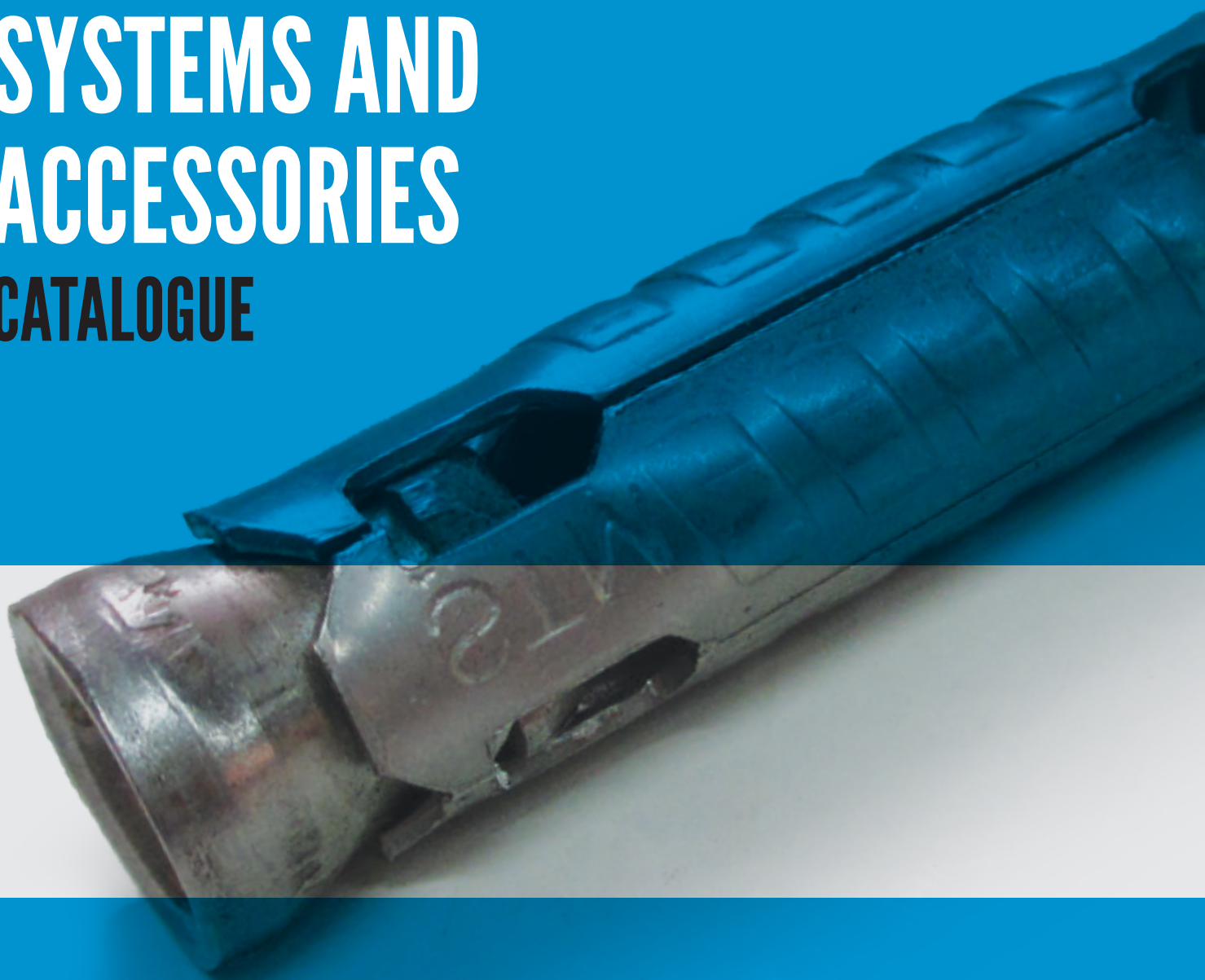


Specialized Factory for Steel Products
SIGMA Factory for Steel Products



CONCRETE ANCHORING SYSTEMS AND ACCESSORIES CATALOGUE



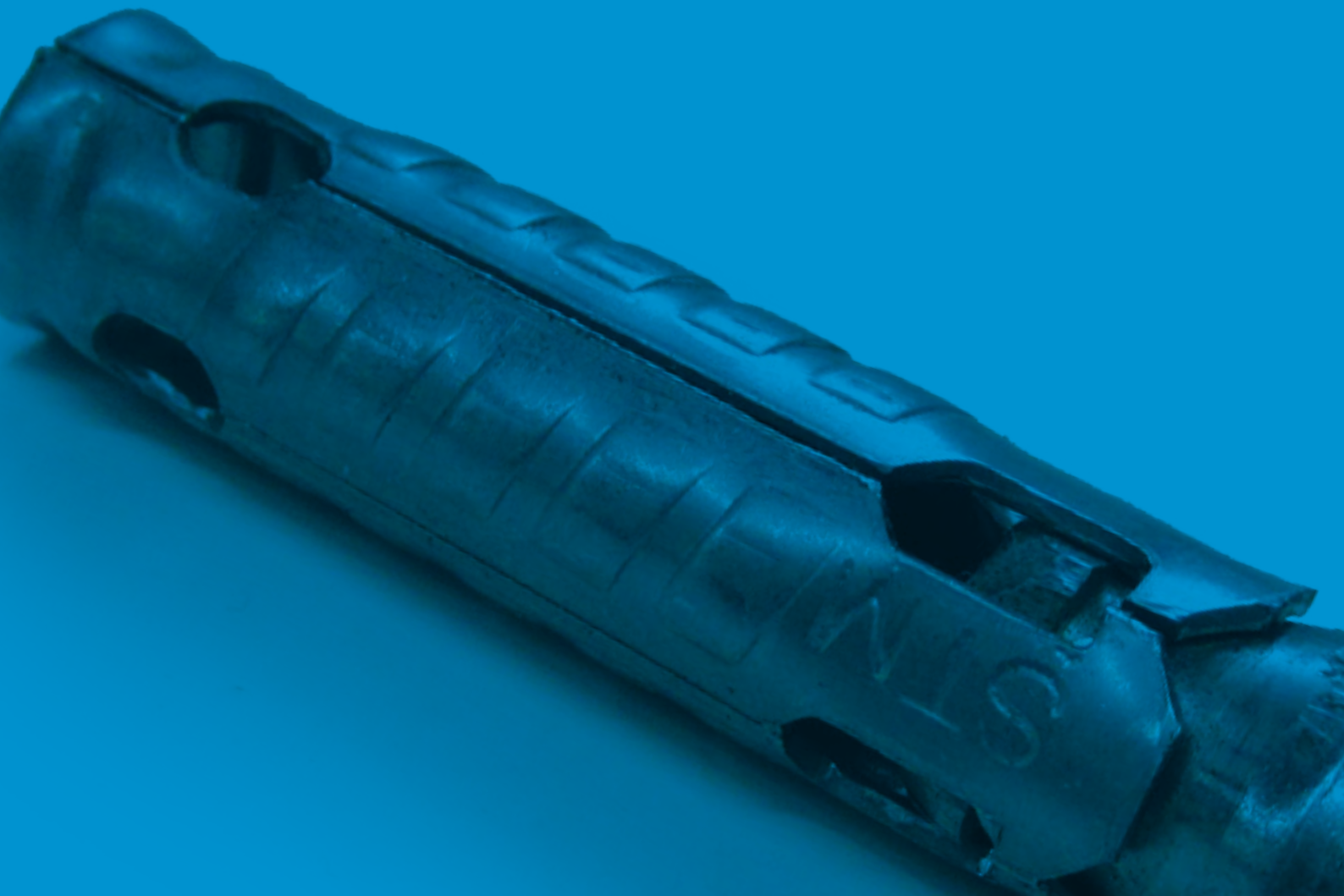
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Concrete Anchoring Systems and Accessories

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ABOUT SFSP



Specialized/Sigma Factory for Steel Products (SFSP) was first established in KSA in 1989 and has been expanding ever since through a variety of products and through its geographical presence.

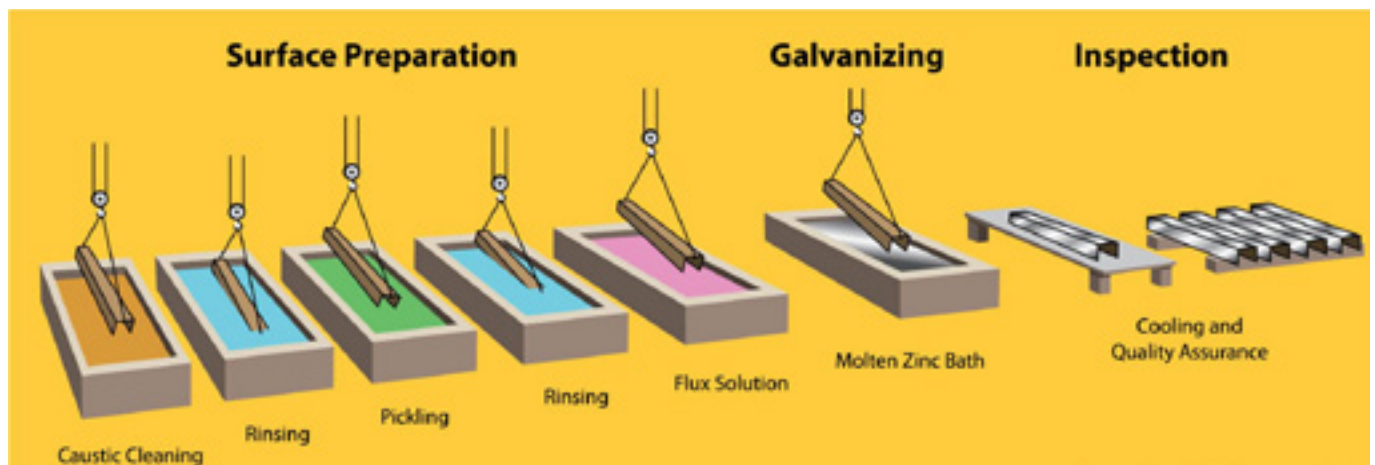
Production at the factory is observed using modern practices of manufacturing methods in the steel construction industry with a definite compliance to international standards of fabrication.

SFSP has manufacturing facilities in KSA, UAE, Egypt, and Lebanon. SFSP adapts quickly and easily to market demands and requirements. The factory is operating a top of the line production machinery, fully automated with highest technology to ensure quality and maintain speed with delicacy.

Quality at SFSP is uncompromised; the factories have been able to acquire ISO 9001: 2008 Quality Management System, ISO 14001:2004 Environmental Management certified factory, and OHSAS 18001:2007 Occupational, Health and Safety Management factory.

HOT-DIP GALVANIZATION

SFSP has an in-house state of the art Hot-Dip Galvanization facility, which permits a full control of the quality of its finished products, offering better services to our clients globally.





Specialized Factory for Steel Products Co. Ltd

www.sfsp-ikk.com

Specialized Factory for Steel Products Co., Ltd, which is part of Isam Khairi Kabbani Group of companies is a leading fabricator of steel construction products serving the kingdom of Saudi Arabia since 1989.

The factory operates under TQM ISO modules, using the latest modern technology in the steel fabrication and manufacturing industry in conformity with International standards for safety and in compliance with the environmental regulations in the Kingdom.

The factory has inaugurated its new manufacturing facilities which is located in the 3rd Industrial Area of Jeddah with a total built facilities of 37,000 squared meters.



The facilities include two manufacturing areas, a hot dip galvanization advanced section, warehousing areas and administrative building. The project is an advanced environmental low emissions factory built with a definite consideration of the safety of its workers and visitors.



TECHNICAL SERVICES

A crucial factor in the job of a factory is to provide continuous technical services and consultations. That's why SFSP has invested in a professional team of researchers and specialists.

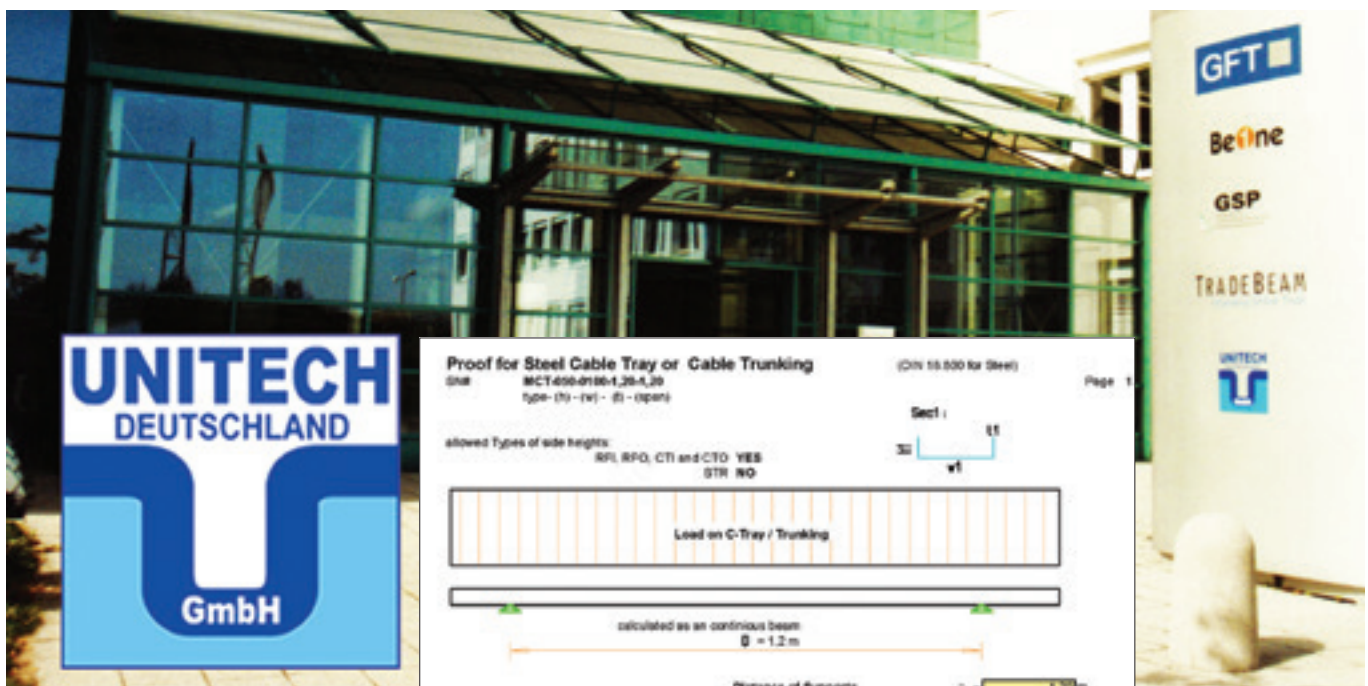
SFSP has recruited brilliant graduates and experienced engineers having the appropriate knowhow on the on latest technology changes and development in the steel building materials industry.

The product range is developed and updated according to the relevant standards of fabrication across markets, whilst the business processes are evaluated to achieve maximum efficiency.

SFSP R&D Core Objectives

- Carry out responsibilities effectively in a safe and healthy work environment.
- Develop and implement research programs relevant to the products and solutions introduced and ensure that the results are communicated clearly in-house and among the clients , concisely and accurately.

DESIGN AND ENGINEERING OFFICE - GERMANY



Unitech Deutschland GmbH is the design office of Unitech for Building and Construction Materials and is situated in Stuttgart, Germany.

Proof for Steel Cable Tray or Cable Trunking			
(CIN 15.030 for Steel)			
Page 1			
allowed Types of side heights: RFL, RPD, CTI and CTD: YES STR: NO			
Load on C-Tray / Trunking			
calculated as an continuous beam $l = 1.2 \text{ m}$			
Distance of Supports Load on Cable Tray			
Cable Tray Sec 5:			
*** Center Load only possible for $wf \leq 300 \text{ mm}$!!			
SN	Mechanical Properties	Equations	Figures unit
1	Type of materials used	$DIN 50102$	S 235 JR02
2	Allow. 0.2 Yield Stress up to 50°C	$F_{0.2} = F_{0.2} / 1.5$	21.82 N/mm ²
3	Allow. Shear Stress		12.60 N/mm ²
4	Allow. Deflection	$l/200$	6.00 mm
5	Modulus of Elasticity		21 000 N/mm ²
Applied Loads			
1	Distance of Supports	$D =$	120.00 cm
2	Self Weight Cable	W_{c}	1.74 N/mm
3	Self Weight Cable Tray	$W_{tr} <$	0.02 N/mm
4	Self Weight	$W_{tr} = W_{c} + W_{tr}$	1.76 N/mm
Design of Elements			
1	Cable Tray / Trunking		
1	Description	Equations	Figures unit
Structural Properties of Sec. 5			

SOCIAL RESPONSIBILITY

Being socially responsible is a part of who we are and how we do our business. We aim to provide useful products and services, to provide jobs and development opportunities for our communities, and to gain satisfaction through meaningful work.

We make a difference by acting on the values and principles of our societies and we inspire others to do so. At SFSP, we anticipate and reduce threats caused by environmental changes or natural disasters, and we are well adapted to significant social changes.

We contribute to a more sustainable society by means of value and support to our consumers, supply chains, and stakeholders. We are keen to identify ways they can improve our impacts on the people and places we work and live in, and thereby become more valuable and valued members of society.

- Organizational governance: We promote accountability and transparency at all levels, thus, promoting responsibility
- Human care: We treat individuals with respect; and make efforts to help members of vulnerable groups
- Labor practices: We provide just, safe and favorable conditions to workers
- Environment: At SFSP, we identify and improve environmental impacts of our operations, including the resource use of natural resources and waste disposal.



- Fair operating practices: Practicing accountability and fairness in dealings with other businesses

At SFSP, we are committed to continuous improvement ongoing learning, process review and innovative thinking that foster new initiatives; and better practices. Our environmental programs evolve to meet today's changing needs while; protecting resources for future generations.

HEALTH AND SAFETY

The Factory Management regard the health and safety of the employees, clients and all others that may be affected by their operations to be of a major importance.

In support of this, the management promotes health and safety throughout the Factory's operations and endeavour to engender a positive attitude in all employees towards the prevention of accidents and maintenance of healthy working arrangements.

The Factory satisfies the requirements of the Health, Safety and related legislation by setting out the responsibilities of all levels of staff and the arrangements for carrying out those responsibilities and in particular do what is reasonably practicable to:

1. Maintains safe & healthy working conditions.

2. Ensures that all facilities and equipment are safe and properly maintained.
3. Provides products that can be applied and used safely and without risk to health.
4. Provides and maintain working procedures, that are safe and without risk to health, throughout the its operations in respect of:
 - The use, handling, storage, transports and disposal of materials and substances.
 - The use of factory equipment.
 - Potential emergency situations, including first aid, fire and escape of substances.
5. Ensure the competence of employees.

The factory is an OHSAS 18001:2007 Occupational, Health and Safety Management certified Factory.



ENVIRONMENTAL AWARENESS

SFSP is committed to the following:

- Compliance with all statutory and regulatory requirements related to its activities, products and services and the environmental aspects.
- Identifying quality and environmental objectives by review and audit of the processes both in-house and on-site.
- Formally setting objectives based on the results of the process reviews and their significance in relation to their impact on the environment and the continual improvement of the quality and environmental management system.
- Implementing management programs to achieve these objectives.
- Investing in a well-trained and motivated workforce.
- Working closely with suppliers and customers to ensure mutual understanding and benefits of the environmental aspects consideration.
- Reviewing our policy and objectives as part of the Management Review Process.
- Communicating this policy to all persons working for or on behalf of the organization.
- Preventing and minimizing Pollution to the environment.



SFSP operates under environmental management system certification BS EN ISO 14001:2004 and maintain it through registration and annual review.



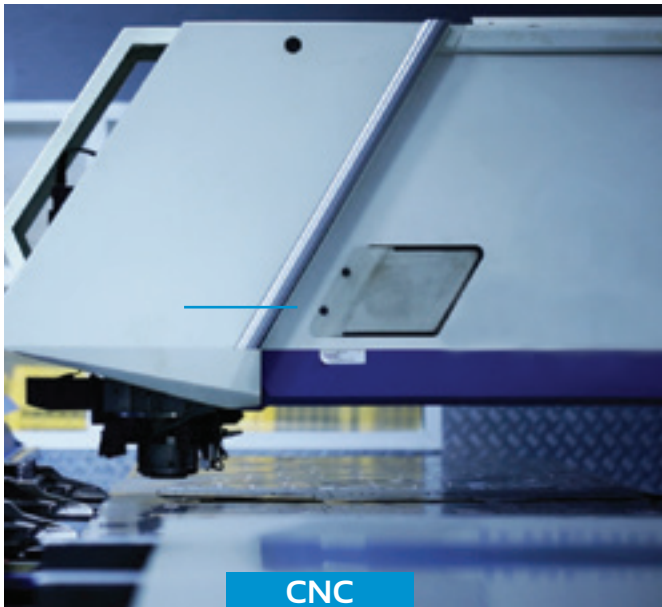
SFSP facilities are equipped with the most technologically advanced machinery amongst are Laser Cut Machines, Robot Bending Sets, Welding Robot Sets, sophisticated Cable Management Production Lines, as well as Specialized Industrial Sections for its Hot Dip Galvanization facilities.



CNC MACHINES



WELDING
ROBOT
SETS



CNC
PUNCHING



FIBER LASER
CUT



ROBOTIC
BENDING
CELL

SFSP CERTIFICATION

**ISO 9001 certified
(Quality Management System)**

**ISO 14001 Certified
(Environment Management System)**



**ISO 18001 Certified
(Health & Safety Management system)**



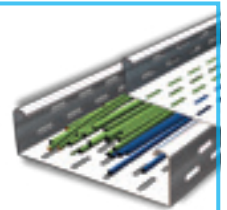


SFSP PRODUCTS

SFSP produces a variety of products ranging from cable management systems; cable trays, cable ladders, basket trays, trunkings and support systems, to mechanical cladding fixations, steel lintels and block work accessories, plasterers' beads, expanded metal and block work reinforcement, strut channel systems, pipe clamps & hangers, gypsum profiles as well as garbage and linen chutes. With the introduction of new machines and the enhancement of production methods, SFSP continues to develop its production methods systematically as well as thoroughly. Its design office in Stuttgart, Germany provides a comprehensive design and calculation case studies, enabling the factory to have the safety factors required for the usage of its products.

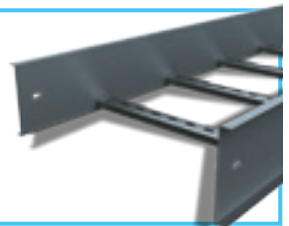
CABLE TRAYS & ACCESSORIES

Cable Trays are designed to meet most requirements of cable and electrical wire installations and comply to local and international standards of fabrications and finishes.



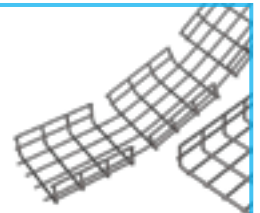
CABLE LADDERS (WELDED & SWAGED)

Cable Ladders of different side heights are available upon request.



BASKET TRAYS & ACCESSORIES

SFSP's Basket Tray systems make connections fast and simple with limited need for tools. Its design allows for continuous airflow, and prevents heating up of cables. SFSP's Basket Tray comes in a full range of sizes and is made with high-strength welded steel wires.



CABLE TRUNKINGS

Cable Trunkings and Accessories are offered in a comprehensive range. Mill galvanized, hot-dip galvanized, and powder coated are the various finishes produced in our factories.



UNDERFLOOR TRUNKING

Underfloor Trunking Systems solutions incorporate a range of products for the distribution of power and data services, it is a coordinated set of containments that protect, segregate, contain, and route cables within a given environment.



CABLE MANAGEMENT SUPPORT SYSTEMS

Cable Support Systems are well designed to provide necessary support for cable trays, cable ladders and trunkings. Cable supports are manufactured according to common standards from high quality raw materials.



C-CHANNEL STRUT SYSTEMS

SFSP's Metal Framing Systems provide an economical solution for electrical, mechanical and industrial supports with a wide variety of applications in the construction industry.

Applications: - Pipe and Conduit Supports - Tunnel Pipe Stanchions - Racks and Shelvings - Wall Framings.



EXPANDED METALS, PLASTERERS' BEADS

Expanded Metals help the formation of joints, protection of corners and resistance against cracks, chips and impact damage.

BLOCK LADDER REINFORCEMENT

SFSP ladder and truss types are used for the reinforcement of brick and block masonry to give improved tensile strength to walls subjected to lateral loading e.g. wind and seismic. SFSP block reinforcements reduces the risk of cracking either at stress concentration around opening.

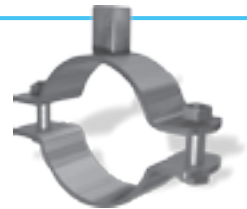
STEEL LINTELS & BLOCK WORK ACCESSORIES

Steel Lintels provide a combination of strength and light weight, resulting in efficient load bearing performance and increased productivity on site. They are characterized by their ease of installation in addition to time as well as money saving.



PIPE CLAMPS & HANGERS

Pipe Clamps and Hangers from SFSP used in the support of pipes and equipments are manufactured according to the highest standards of fabrication. A diversified choice of Pipe Hangers, Pipe Clamps, EMT Straps, Omega Clamps, Beam Clamps, J and U-Bolts and Threaded Accessories.



MARBLE & GRANITE FIXINGS

Stangle Cladding Fixation includes design, calculation and production of several types of mechanical fixings and accessories used for cladding purposes. Stainless and galvanized steel are among the various materials used in the fabrication.



DRY WALL & CEILING PROFILES

SFSP provides a complete product range for dry wall and ceiling constructions. Studs, Runners, Furring Channels, Ceiling Channels and Wall Angles are among the range of products produced to service the dry wall installers.



GARBAGE & LINEN CHUTES

Chutes from SFSP are very convenient, simple and low cost method of controlling and disposing of refuse and linen. Chutes meet the most stringent requirements of environmental health and safety. Chutes are used as original equipment in new buildings, such as : Hotels, Hospitals, High Rises and Residential Towers.





SFSP Products are solely distributed by UNITECH for Building and Construction Materials

All Products Manufactured by SFSP are Solely Distributed by SFSP Sister Companies in the Following Countries

KSA

Isam Kabbani & Partners for Building and Construction Materials Co., Ltd.

شركة عصام قباني وشركاه لمواد الإنشاء والتعمير المحدودة

BAHRAIN

Isam Kabbani Trading Est.

مؤسسة عصام قباني التجارية

UAE

Issam Kabbani Trading Est.

مؤسسة عصام قباني للتجارة

KUWAIT

Hassan Kabbani for General Contracting Est.

مؤسسة حسان قباني للمقاولات العامة للمباني

OMAN

Isam Kabbani & Partners Trading Co.

شركة عصام قباني وشركاه للتجارة

EGYPT

UNITECH Egypt for Building Materials

شركة يونيتك مصر لمواد البناء

JORDAN

Jordan Build Co. for Building & Construction Materials

شركة بناء الأردن لمواد الإنشاء والتعمير والكهرباء

LEBANON

UNITECH ME s.a.r.l

شركة يونيتك ميدل إيست ش.م.م

SFSP CUSTOMER SERVICE CALL CENTER

KSA

+966 13 8590097, Ext. 3214

UAE

+971 4 8181925, Ext. 4269



IKK

Group of Companies

The IKK Group is a major business institution, serving most of the Arab World in the industrial, construction and trading fields, as well as in specialized maintenance and services.

Today, the IKK Group of Companies is a pioneer in waterproofing, weatherproofing, building material supplies, UPVC and CPVC and high density polyethylene pipes and fittings and several other products for the construction industry.

The Group is also represented in the sanitary products, steel production, kitchen manufacturing, telecommunications, food, decoration, re-insurance and real estate business domain.

Composed of 60 companies, the IKK Group operates through almost 200 divisions, branches and outlets; it is spread over 12 countries, covering all major cities in the region and employing around 13,000 employees.

Our vision is to maintain and improve our leading position as a contractor whose reputation is built on the ability to completely satisfy customers by providing high quality services. As specialists in their respective fields, our teams of professionals are dedicated to a standard of excellence for quality and performance, through continuous development, which will set standards in our industry. We are simply providing solutions for a future of success.

Our mission is to provide our part of the Arab World with local and reliable services in a variety of sectors and products.

To create employment to thousands of personnel and in-house training for hundreds of young Arab graduates in crucial sectors to the benefit of the IKK Group, the graduates themselves and their own communities.

To set a good example of our basic business philosophy: "Hire well, train well, pay well and treat well."

UNITECH

ISAM KABBANI & PARTNERS FOR BUILDING & CONSTRUCTION MATERIALS

Isam Kabbani & Partners for buildings & construction materials co. Ltd (UNITECH) which is part of the IKK group of companies is recognized and acknowledged for the quality and reliability of its products and services as well as for the commitment, professionalism and experience of its employees.

Isam Kabbani & partners for buildings & construction materials co. Ltd (UNITECH) core values are to offer value products and services to its clients, to work closely with them in a lasting business partnership that provides an outstanding performance.

A partnership based on trust, harmony, and a hard to beat services and solutions.

Our Factories have acquired, in addition to ISO 9001:2008 Quality Management System, the ISO 14001:2004 Environmental Management System.

Our care for the environment has been translated via Isam Kabbani & partners for buildings & construction materials co. Ltd (UNITECH)'s membership in the US Green Building Council as a Golden Member.

Our Vision

UNITECH to be the Customer's First Choice.

Our Mission

We have the conviction to be the leader in building & construction industry through:

- Providing Excellence in Services with Passionate and Educated Sales Force
- Strengthen Culture through Unified Sense of Purpose
- Innovative Product Range which is Customer Centric
- Reputable and Quality Service Company
- Attracting, Engaging and Retaining Talent



ANCHORS



www.sfsp-ikk.com

HEAVY DUTY ANCHORS

Direction of Loading

The direction of the applied load shall be considered to determine the most appropriate anchor .
The tension and shear components shall be less than the recommended load/design resistance in the direction concerned.

Tensile Loads

Tensile loads are applied along the axis of fixing (see Fig.1).
Common examples include suspended ceiling applications and the suspension of mechanical services, pipework, ductwork, etc.

Shear Loads

Shear loads act at right angles to the axis of fixing and directly against the face of the structural material (see Fig.2).
Shear performance is governed mainly by the shear strength of the bolt material and by the compressive strength of the supporting substrate.

Oblique / Combined Loads

Oblique loads are a combination of tension and shear components (see Fig.3).
If the angle of the applied oblique load is within 10° of pure tension or pure shear, the safe working load for that direction may be assumed. Otherwise, the applied oblique load shall be resolved into its shear and tensile components.

Offset Loads

Offset loads act at right angles to the fixing axis but are offset from the surface (see Fig.4).
In this situation, the deflection of the bolt due to bending needs to be considered as well as the shear capacity of the anchor.

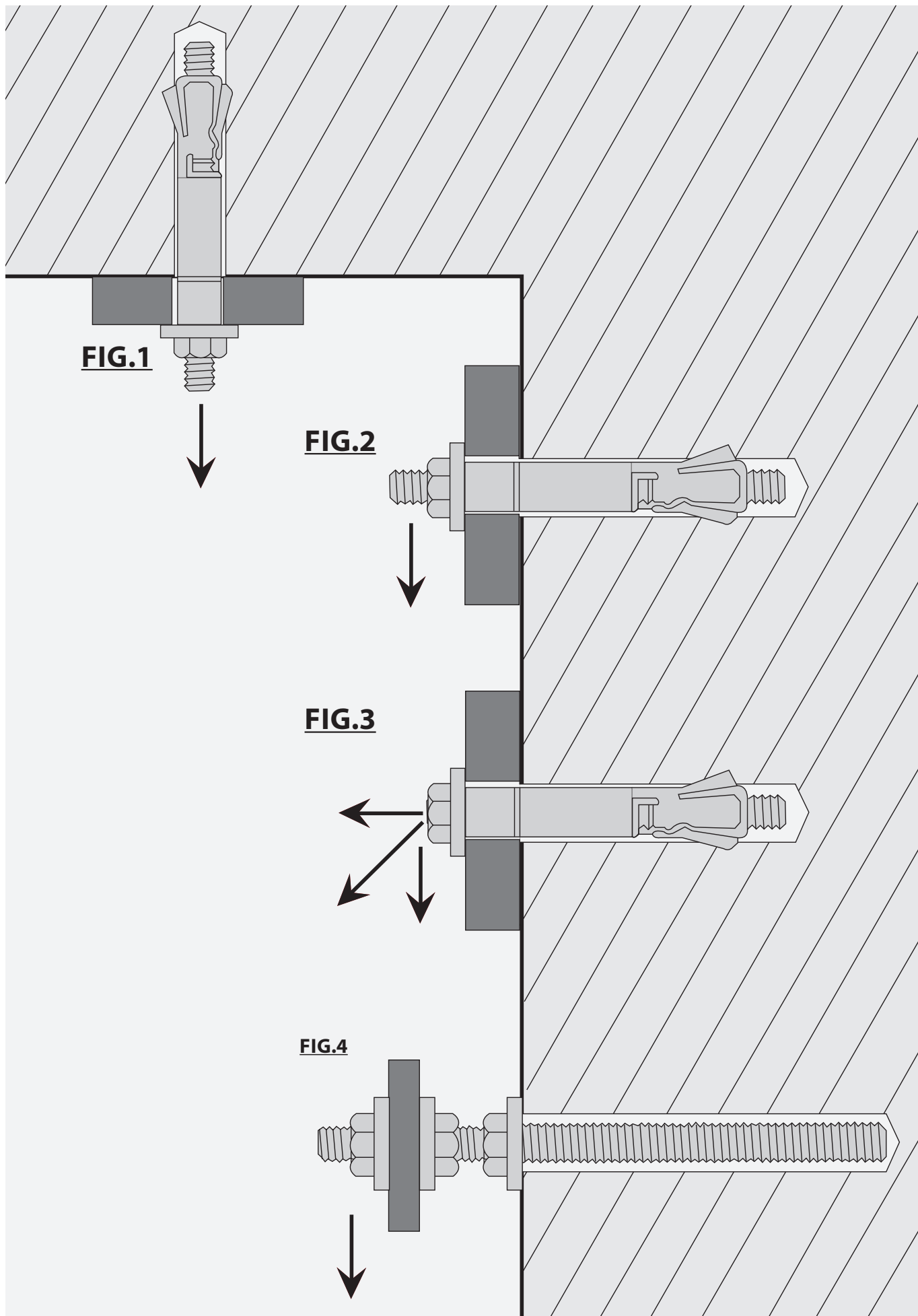
Slotted Holes in Fixture

When fixing anchors through slotted holes; it is important to ensure that there is an adequate surface contact between the washer and the fixture to guarantee a positive clamping force.
If in doubt, a square plate washer with a thickness of 3mm or above would be recommended in place of the standard washer supplied.

General Information

Diamond Drilled Holes

When holes are formed in the structure using a diamond drilling system; extra care is required to ensure the holes are thoroughly cleaned by brushing and blowing for at least three times. Also, to make a key for the anchor (particularly if a bonded anchor is installed) the sides of the hole shall be roughened up by inserting a standard masonry bit into the hole attached to a hammer action drilling machine.
A resin with minimal shrinkage shall be selected for diamond drilled holes.



EXPANSION STEEL ANCHOR - STM

Typical Applications:

Cable trays, handrails, brackets, staircases, ladders, machines, window panels, base plates, scaffoldings and frameworks .



STM

Expansion Steel Anchor



STM/H



Features:

- Suitable for all screws or threaded bolts with metric thread.
- Low energy impact, power-saving assembly.
- Multiple removing and fixing.
- Inside threaded anchor, allows great flexibility.
- Can use variable lengths and art of threaded rods or bolts.
- Small edge distance and small distance between anchors.
- Provide uniform load by tightening the screw or hexagon nut, the cone pulls into the expansion anchor and tightens against the drilled hole.
- Suitable for use in concrete and natural stone.

Materials:

- zinc plated steel.
- stainless steel [SS 304 (A2) , SS 316 (A4)].

Technical Data:

Recommended loads (non-cracked concrete C 20/25).

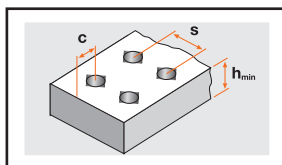
Type (order No)	Tension Load (KN)	Shear Load (KN)	Torque Moment (Nm)	Screw Grade
M6	2.5	2.3	10	4.6
M8	3.3	4.4	17	4.6
M10	4.7	6.5	34	4.6
M12	6.9	8.5	60	4.6

*for cracked Concrete we shall use 0,5 x this value (approximately)

Setting Data:

Edge distance $> 1,0 \times H_{eff}$, distance between anchors $> 3 \times H_{eff}$.

Thickness of foundation $> 3 \times H_{eff}$.

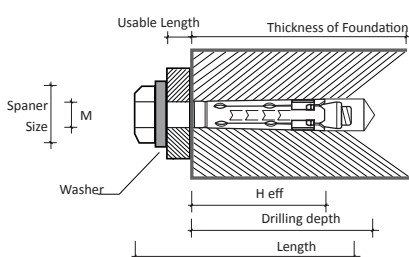


Size	H eff. (mm)	Edge Distance C (mm)	Distance Between Anchors S (mm)	Thickness of Foundation h_min (mm)	Washer (Ø)	Tightening Torque (Nm)	Spanner size (mm)
M6	40	60	120	100	x 1.6 12	10	10
M8	45	68	135	100	x 1.6 16	20	13
M10	55	83	165	110	x 2.0 20	40	17
M12	70	105	210	140	x 2.5 24	75	19

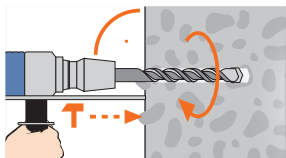
Installation Parmeters:

H_{eff} = Effective anchorage depth.

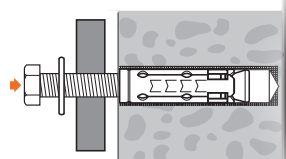
Bolt Size	Length exp.unit (mm)	Drill (Ø) (mm)	Drilling depth (mm)	H eff. (mm)	Usable Length (mm)	Screw Ø x Length (mm)
M6	45	10	55	40	5	M6 x 50
M8	50	12	60	45	10	M8 x 60
M10	60	15	80	55	20	M10 x 80
M12	75	18	90	70	25	M12 x 90



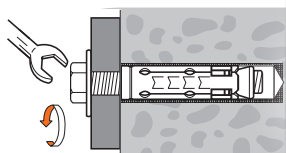
INSTALLATION



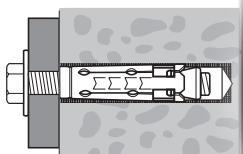
- 1** Drill a hole and clean it with a brush, remove dust with a blower.



- 2** Place the plug and the object to fix.



- 3** Tighten the screw.



- 4** Fixing completed.

DROP IN ANCHOR - SDA

Typical Applications:

- Pipes, ventilation ducts, suspended ceilings, sprinkler systems, brackets, threaded rods, cable trays.

SDA



Materials:

- zinc plated steel.
- stainless steel [SS 304 (A2) , SS 316 (A4)].

Features:

- Provides permanently fixed threaded socket in concrete.
- Use in non-cracked concrete or cracked concrete and natural stone.
- The anchor will spread and tighten against the drilled hole after inserting with setting tool.
- Low setting depth, reduced drilling time.
- Enables cost-effective assembly .
- Multiple removing and fixing.

Technical Data:

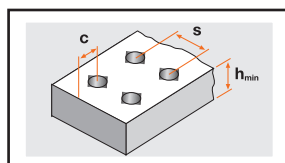
Recommended loads (non-cracked concrete C 20/25).

Threaded size	Tension Load (KN)	Shear Load (KN)	Torque Moment (Nm)
M6	2.0	1.2	4.0
M8	3.5	2.2	8.0
M10	4.25	3.5	15.0
M12	5.55	5.0	35.0

*for cracked Concrete we shall use 0,5 x this value (approximately)

Setting Data:

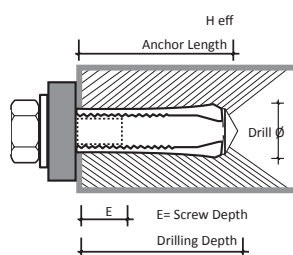
Edge distance $> 1.5 \times$ effective anchorage depth, distance between anchors $> 3,0 \times$ effective anchorage depth, min. thickness of foundation $> 2,5 \times H_{eff}$.



Size	H eff. (mm)	Edge Distance C (mm)	Distance Between Anchors S (mm)	Thickness of Foundation h _{min} (mm)	Tightening Torque (Nm)	Spanner size
M6	25	37.5	75	100	4	10
M8	30	45	90	100	9	13
M10	40	60	120	130	17	17
M12	50	75	150	140	30	19

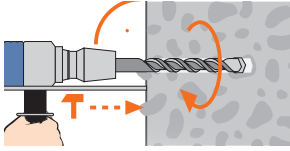
Installation Parmeters:

H_{eff} = Effective anchorage depth.

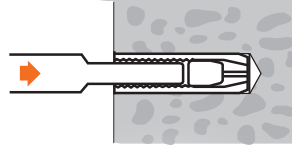


Thread Size	Anchor Length (mm)	Thread Length (mm)	Drill (Ø) (mm)	Drilling Depth (mm)	Effective Anchorage Depth H_{eff} (mm)	Min. Screw Depth E (mm)	Max. Screw Depth E (mm)
M6	25	11	8	25	25	6	12
M8	30	13	10	30	30	8	13
M10	40	15	12	40	40	10	17
M12	50	20	16	50	50	12	18

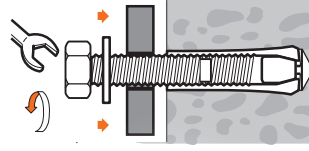
INSTALLATION



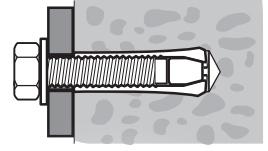
1 Drill a hole and clean it with a brush, remove dust with a blower.



2 Insert the anchor sleeve in the hole.



3 Tighten to the recommended torque.

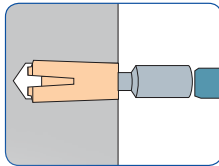


4 Fixing completed.

Manual Setting Tool



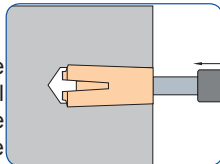
Use the setting tool to drive the internal wedge into the anchor.



Mechanical Setting Tool



Alternatively use the mechanical setting tool with an appropriate drilling machine.



SLEEVE ANCHOR - SAS

:Typical Applications

Uni-channel ,railings, steel constructions , machines, high-racks, cable support .systems and mechanical fixations

SAS



Materials:

- zinc plated steel.
- stainless steel [SS 304 (A2) , SS 316 (A4)].

Features:

- Suitable for use in concrete, natural stone, brickwork and blockwork- small distance between anchors.
- Optimum performance in most base material types.
- No protruding threads after installation.
- Small distance between anchors and from edge.
- Controlled expansion.
- Zinc plated > 5µm.
- Effective force distribution in the drilled hole.
- Sleeve anchor with hexagon screw or with threaded bolt.

Technical Data:

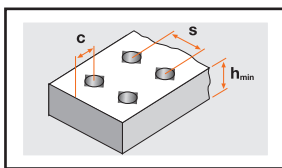
Recommended loads (non-cracked concrete C 20/25).

Bolt Size	Tension Load (KN)	Shear Load (KN)	Torque Moment (Nm)
M6	1.40	2.0	10
M8	2.45	3.3	25.0
M10	3.5	5.0	40.0
M12

*for cracked Concrete we shall use 0,5 x this value (approximately)

Setting Data:

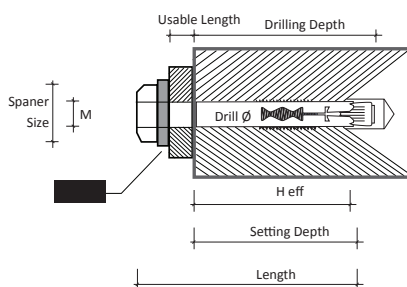
Edge distance > 1.5 x effective anchorage depth, distance between anchors > 3,0 x effective anchorage depth, min. thickness of foundation > 2,5 x H_{eff}.



Bolt Size	H _{eff} (mm)	Edge Distance C (mm)	Distance Between Anchors S (mm)	Thickness of Foundation h _{min} (mm)	Washer (Ø) (mm)	Tightening Torque (Nm)	Spanner size
M6	35	52.5	105	70	x 1.6 18	8	10
M8	40	60	120	80	x 1.6 16	25	13
M10	50	75	150	100	x 2.0 20	40	17
M12	75	112.5	225	150	x 2.0 26	50	19

Sleeve Anchor - SAS:

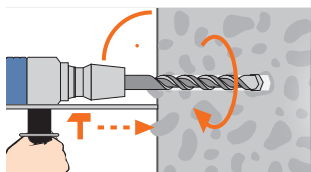
with hexagon screw (non-cracked concrete C20/25).



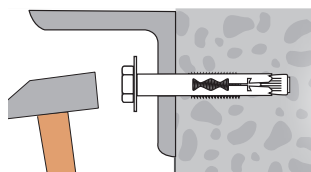
Size	Length (mm)	Drill (Ø) (mm)	Hole Ø in Fixture (mm)	Drilling Depth (mm)	Setting Depth (Ø)	H _{eff} (mm)	Min.Usable Length (mm)
M6	45	8	10	55	35	35	5
M6	60	8	10	55	35	35	15
M8	60	10	12	60	40	40	15
M8	80	10	12	60	40	40	25
M10	70	12	14	70	50	50	15
M10	100	12	14	70	60	50	35

.(x this value (approximately) ,° for cracked Concrete we shall use*

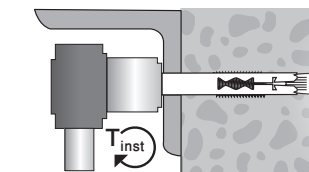
Installation of Sleeve Anchor - SAS



- 1 Drill a hole and clean it with a brush, remove dust with a blower.



- 2 Insert the sleeve anchor through the fixture into the hole.

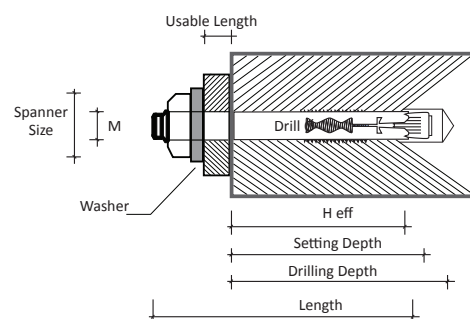


- 3 Tighten to the recommended torque.

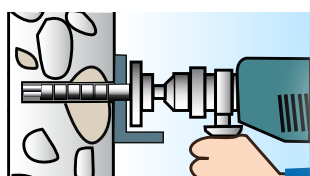
Sleeve Anchor - SAB:

with threaded bolt and nut

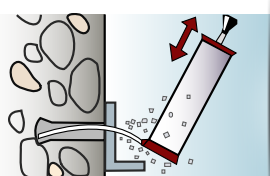
Size	Length (mm)	Drill (Ø) (mm)	Hole Ø in Fixture (mm)	Min. Drilling Depth (mm)	Min. Setting Depth (Ø) (mm)	H eff. (mm)	Max. Usable Length (mm)
M6	49	8	10	29	27	25	20
M6	64	8	10	29	27	25	35
M8	60	10	12	34	32	30	25
M8	75	10	12	34	32	30	40
M8	105	10	12	34	32	30	70
M8	85	10	12	34	32	30	50
M10	73	12	14	44	42	40	25
M10	88	12	14	44	42	40	40
M10	108	12	14	44	42	40	60
M10	138	12	14	44	42	40	90
M12	100	16	18	64	62	60	30
M12	120	16	18	64	62	60	50
M16	165	20	22	84	82	80	70



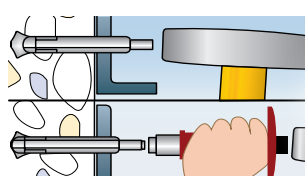
Installation (push-through installation)



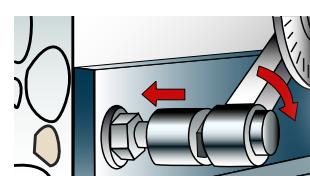
- 1 Place the fixture (object) and drill a hole.



- 2 Remove dust with a blower and clean the hole with a brush.

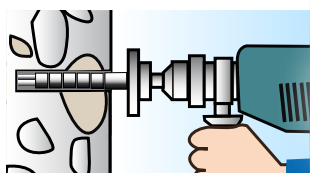


- 3 Tap the anchor through the fixture with a hammer or a setting tool.

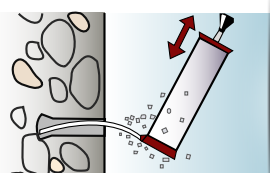


- 4 Tighten to the recommended torque.

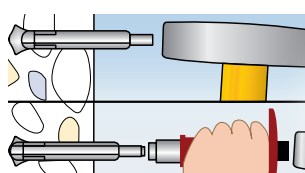
Installation (pre-positioned installation)



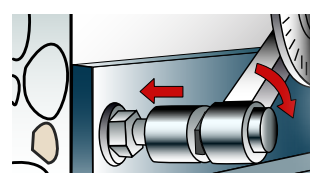
- 1 Drill a hole of requested diameter and depth.



- 2 Remove dust with a blower and clean the hole with a brush.



- 3 Tap with a hammer or a setting tool until fixing depth is reached.



- 4 Tighten to the recommended torque.

THROUGH BOLT (WEDGE ANCHOR) - STB

Typical Applications:

Uni - channel, hand rails, steel construction, cable trays, supports, bracket, ducts and shelf feet.

STB

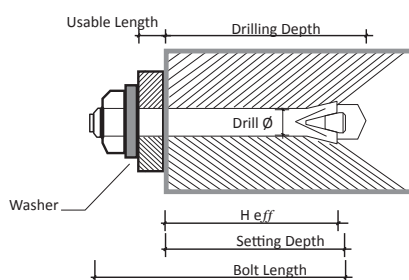
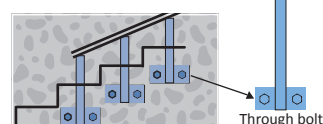
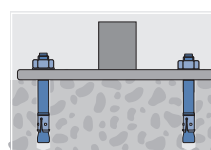
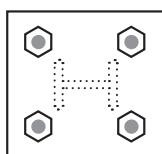


Materials:

- zinc plated steel.
- stainless steel [SS 304 (A2) , SS 316 (A4)].

Features:

- Suitable for use in cracked concrete or in non-cracked concrete and in natural stone.
- Special design of the clip in stainless steel which ensures a safe hold in the hole.
- Torque controlled expansion.
- Zinc plated > 5µm.
- User friendly, face fixing or through fixing.



Technical Data:

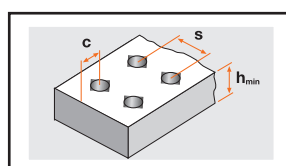
Through bolt zinc plated (non-cracked concrete C20/25).

Bolt Size	Tension Load (kN)	Shear Load (kN)	Torque Moment (Nm)
M6	2.0	1.90	4.0
M8	4.0	4.0	15.0
M10	5.95	5.95	30.0
M12	7.5	10.0	50.0
M16	12.0	16.0	100

*for cracked Concrete we shall use 0,5 x this value (approximately)

Setting Data:

Edge distance > 1,5 H eff. , distance between anchors > 3 x H eff.
Thickness of foundation > 2 x H eff.



Bolt Size	H eff. (mm)	Edge Distance C (mm)	Distance Between Anchors S (mm)	Washer (Ø)	Thickness of Foundation h _{min} (mm)	Tightening Torque (Nm)	Spanner Size
M6	40	60	120	x 1.6 12	100	7	10
M8	50	75	150	x 1.6 16	100	14	13
M10	58	87	174	x 2.0 20	120	30	17
M12	68	102	204	x 2.5 24	140	35	19
M16	80	120	240	x 3.0 30	160	80	24

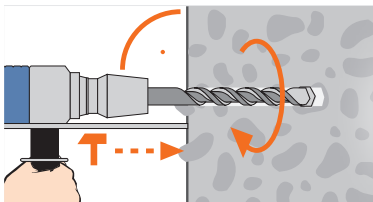
INSTALLATION

Installation Parameters:

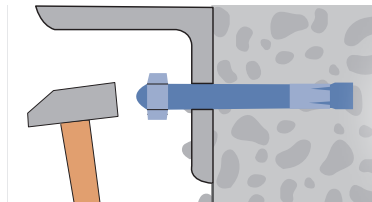
.Through bolt zinc plated, stainless steel or hot dip galvanized

Bolt Size	Bolt Length (mm)	Drill Ø (mm)	Hole Ø in Fixture (mm)	Drilling Depth (mm)	Setting Depth (mm)	H eff. (mm)	Usable Length Fix (mm)
M6	40	6	6.5	35	27	3
	55	6	6.5	35	35	35	15
	70	6	6.5	35	35	35	30
	95	6	6.5	35	35	35	55
M8	50	8	9	35	35	10
	65	8	9	40	40	20
	80	8	9	40	40	40	35
	95	8	9	40	40	40	50
	105	8	9	40	40	40	60
M10	65	10	11	40	40	40	15
	80	10	11	50	50	50	20
	95	10	11	50	50	50	35
	115	10	11	50	50	50	55
	120	10	11	50	50	50	60
M12	80	12	13	65	50	50	20
	100	12	13	65	60	60	30
	120	12	13	65	60	60	50
	135	12	13	65	60	60	65
M16	105	16	18	85	70	70	15
	140	16	18	85	80	80	40
	180	16	18	85	80	80	80
	220	16	18	85	80	80	120

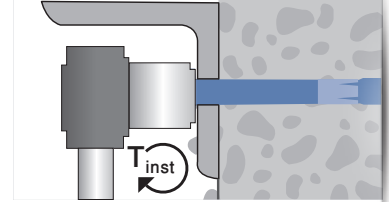
H eff.= Effective anchorage depth



- 1 Drill a hole and clean with a brush, remove dust with a blower.



- 2 Place the fixture and insert the through bolt with a hammer.



- 3 Tighten to the recommended torque.

SHIELD ANCHOR - SHA

Features:

- Assembly detachable, multiple removing and fixing.
- Low energy impact, power-saving assembly.
- Force controlled expansion.
- Flexibility inside threaded anchor.
- Variable length and art of threaded rods or bolts.
- By tightening the screw, the cone pulls into the sleeve and tense against the drill hole.
- Small edge distance and small distance between anchor.
- Expansion elements are held together by a spring.
- Optimum taper nut angle for maximum expansion.
- Pressed steel segment ensure consistent dimensional accuracy.
- Provide a projecting stud to support fixture during installation and removal.
- Suitable for use in concrete, natural stone, Brick and sand stone.

Typical Applications:

For fixing : steel construction, handrail, console, bracket, ladders, gate and spacing design.

SHA



Materials:

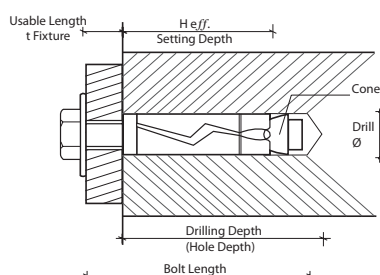
- zinc plated and die-cast.

Technical Data:

Recommended loads (concrete C 20/25 and in brick work).

Size	Concrete		Torque Concrete N.m
	Tension Load KN	Shear Load KN	
M6	1.2	1.2	10
M8	1.6	1.6	25
M10	3.2	3.2	40
M12	4.8	4.8	60

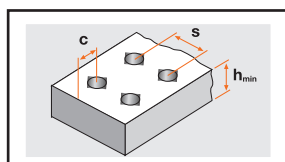
*for cracked Concrete we shall use 0,5 x this value (approximately)



Setting Data:

Edge distance $> 1,5 \times H_{eff.}$, distance between anchors $> 3 \times H_{eff.}$

Thickness of foundation $> 2 \times H_{eff.}$



Size	Distance to Edge C (mm)	Distance Between Anchors S (mm)	Min. Thickness of Foundation h_{min} (mm)	$H_{eff.}$ (mm)
M6	52.5	105	70	35
M8	60	120	80	40
M10	75	150	100	50
M12	90	180	120	60

INSTALLATION

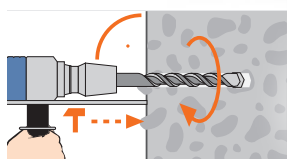
Installation Parameters:

A- Using a hexagon screw: insert shield only, place the fixture over the hole and insert a hexagon screw with a washer through the fixture.

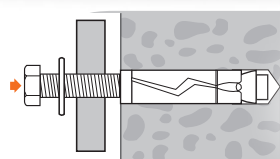
B- Using a threaded bolt and nut: insert the shield with a threaded bolt, position the fixture over the thread and add a washer with a nut.

A- Shield anchor with hexagon screw:

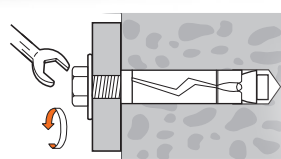
Size	Bolt Length (mm)	Min. Drill Ø (mm)	Shield Length (mm)	Min. Hole Depth (mm)	Setting Depth H eff.	Usable Length (mm)	Spanner Size (mm)
M6	55	12	45	50	35	10	10
	70					25	
	85					40	
M8	65	14	50	55	40	10	13
	80					25	
	95					40	
M10	75	16	60	65	50	10	17
	90					25	
	115					50	
M12	90	20	75	85	60	10	19
	105					25	
	120					40	



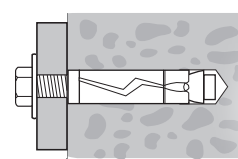
1 Drill a hole and clean it with a brush, remove dust with a blower.



2 Place the plug and the object to fix.



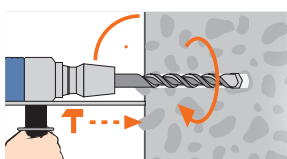
3 Tighten the screw.



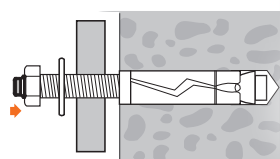
4 Fixing completed.

B- Shield anchor with threaded bolt and nut:

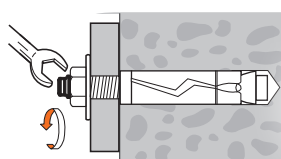
Size	Threaded Length (mm)	Min. Drill Ø (mm)	Shield Length (mm)	Min. Hole Dep (mm)	Setting Depth H eff.	Usable Length (mm)	Spaner Size (mm)
M6	65	12	45	50	35	10	10
	80					25	
	115					60	
M8	75	14	50	55	40	10	13
	90					25	
	115					50	
	125					60	
M10	90	16	60	65	50	15	17
	105					30	
	135					60	
M12	110	20	75	85	60	15	19
	125					30	
	170					75	



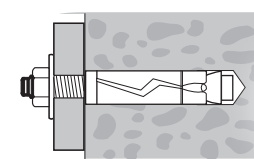
1 Drill a hole and clean it with a brush, remove dust with a blower.



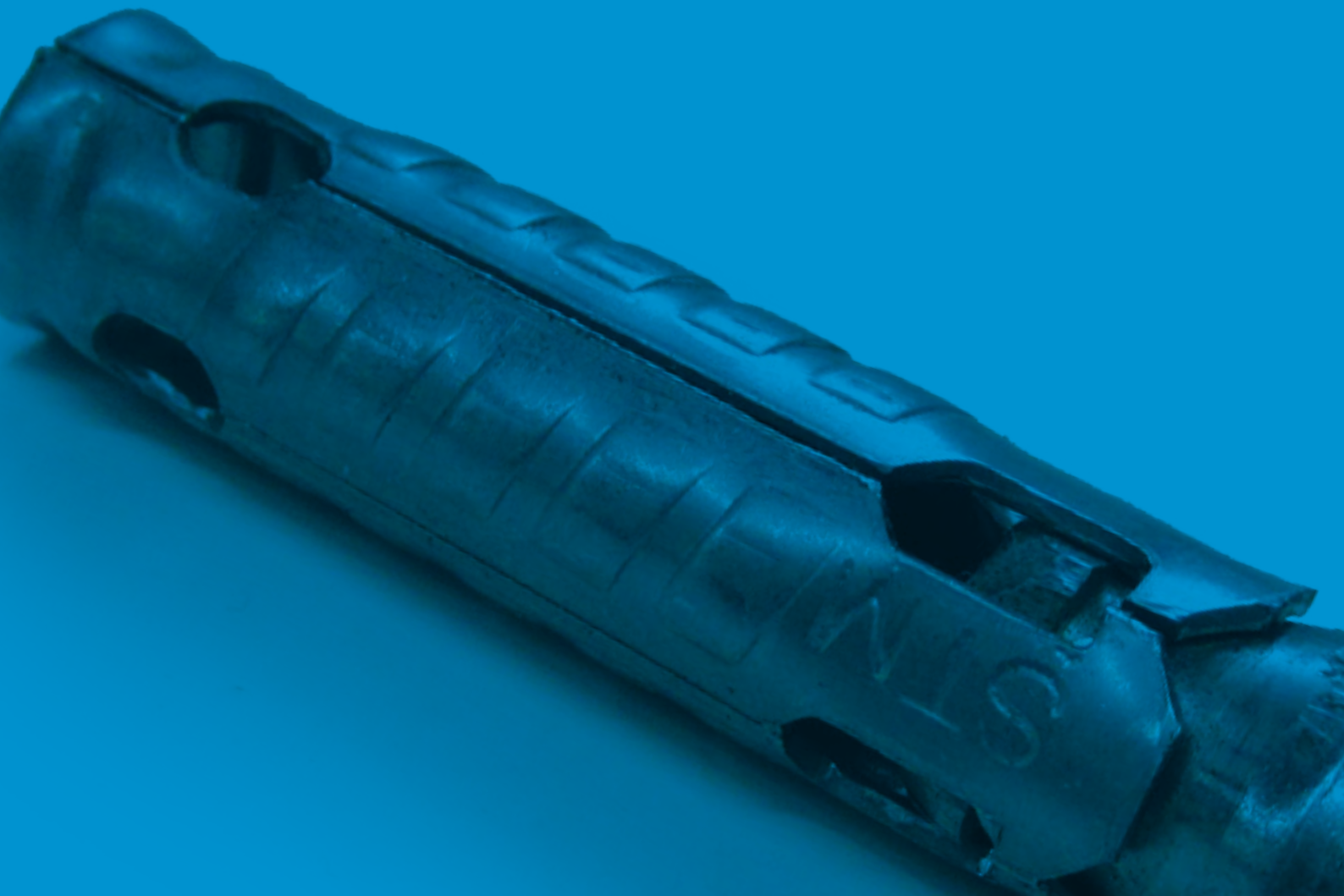
2 Place the plug and the object to fix.



3 Tighten the screw.



4 Fixing completed.



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