INSTALLATION HANDBOOK

TUFF-BRACKET CONCRETE LIFELINE

- Wall Bracket -

SafetyLink is an innovative anchor company achieving success and keeping you safe whilst working at heights.

- ROOF ANCHORS
- HORIZONTAL LIFELINES
- PERMANENT LADDERS
- LADDER STABILISERS
- TEMPORARY ANCHOR
- WALKWAY & GUARDRAIL
- X-RAIL - HORIZONTAL RAIL

Read entire handbook before installing SafetyLink products. All products must be installed in accordance with SafetyLink's installation handbook, using only products supplied by SafetyLink Pty Ltd. Failure to follow all warnings and instructions may result in serious injury or death.

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Innovative Fall Protection

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SCAN ME
FROGLINE VIDEO

SCAN ME
CATALOGUE

SCAN ME
WEBSITE

READ CAREFULLY SOMEONE'S LIFE DEPENDS ON IT

- The building or structure for the anchorages should be assessed by an engineer, unless it is clear to a competent height safety installer that the structure is adequate.

- SafetyLink Height Safety Systems must only be installed as per our installation guides, to structures as specified in the installation manual for each product.

- All safety procedures must be complied with in accordance with the current safety code(s) of practice(s) for working at heights. Ensure safety at all times by being attached to suitable anchor points and approved safety equipment or approved scaffolding.

- Installation is to be carried out by, or under the supervision of a competent height safety installer.

- To prevent galling of non-permanent or adjustable stainless steel components use nickel anti-seize or similar boundary layer lubricant.

- Recommended waterproofing for roof tiles: *Sika Flex Co-Polymer Sealant*.

- Recommended waterproofing for metal roof: S*ilicone* Sealant Neutral Cure.

- Recommended chemical is Fischer FIS-V. Prior to anchor installation, refer to installation procedure for individual anchor product and check chemical is within expiry date. The injection cartridge is for use with a standard caulking gun. Partially used cartridges can be re-used by changing the mixing nozzle. The entire surface of the anchors embedded section must be within the concrete and shall use sufficient adhesive gel mortar as specified in the table on APPENDIX 1.

- A personal energy absorber or a fall-arrest device with a personal energy absorber must be used in conjunction with all SafetyLink Anchorages and Lifeline systems.

- Install SafetyLink horizontal lifeline systems on roof pitches no greater than 15 degrees and across roof pitches no greater than 25 degrees.

⚠ **MAXIMUM NUMBER OF USERS PER SYSTEM IS FOUR (4).**

⚠ **MAXIMUM NUMBER OF USERS PER SPAN IS TWO (2).**

⚠ **REFER TO SYSTEM INFORMATION FOR SITE SPECIFIC USE.**

MAINTENANCE – PERIODIC INSPECTIONS

All items of height safety equipment which are in regular use shall be subjected to periodic inspection and servicing.

These regular scheduled inspections and servicing must be carried out by a competent height safety installer *(refer to AS/NZS 1891.4:2009 if clarification required or contact SafetyLink).*

SafetyLink Anchorages *(In accordance with AS/NZS 1891.4:2009)*

ALL ANCHORAGES MUST BE INSPECTED EVERY 12 MONTHS.

Procedures to be followed at inspection time:

- Visually inspect anchors for signs of deterioration.
- The FrogLine End, Intermediate and Corner anchor points have energy absorbing regions and stabilising joins. If these energy absorbing regions are expanded this will indicate the anchor point has arrested a fall and should be replaced. Similarly, if the stabilising joins have been broken this would also indicate the anchor point has arrested a fall and should be replaced. *(The design features of the FrogLine's curved profile provides the initial shock absorbing capabilities in the event of a fall. Further extension is provided in the serpentine shapes which progressively dissipate and absorb energy whilst retaining their strength. This lessens the force on the person falling and the structure the anchor is attached to).*
- Visually inspect the components of the anchor for corrosion, superficial surface marking is permitted while deeper corrosion or pitting would require attention.
- Manually (by hand) check the 16mm bolt securing the FrogLine Base to the TUFF-BRACKET for rigidity and tightness. If the Bolt can turn in the anticlockwise direction it will require attention.
- Visually inspect the attachment component of the anchorage where practically possible.
- Visually inspect the parent structure for modifications or deterioration which might lead to loss of anchorage strength.
- Check the full length of the stainless steel cable for any evidence of wear, cuts, looseness, extension, inter-strand wear, corrosion, stiffness, brittleness or fraying.
- Check the integrity of cable terminations and that lifeline tensioners are correctly adjusted (80kg/0.8kN/800N) and lock nuts are tensioned correctly.
- Check for the presence of contaminants or exposure to corrosive or extreme environment signs may include discoloration, crystalling or oxidation. These could significantly reduce the safe working load of the Lifeline.
- Run the FrogLine Shuttle along the full length of the life line to verify its correct function.
- For Concrete Installation Only: To comply with Australian Standards, each ConcreteLink must be tested after installation and at every recertification inspection. Ensure you wait the recommended curing time as specified by the chemical anchor instructions. The pull test can be done using a 16mm threaded eyebolt. Test consists of ultimate pull out force proof loading to 50% of design purpose of anchorage.

IN ADDITION TO SAFETYLINK PTY LTD EQUIPMENT, ALL ANCILLARY EQUIPMENT MUST BE INSPECTED IN ACCORDANCE WITH APPLICABLE REGULATORY REQUIREMENTS AND THE MANUFACTURER'S INSTRUCTIONS.

FOR MAINTENANCE ADVICE AND SERVICES PLEASE CONTACT SAFETYLINK
ON +61 249 641068 OR 1300 789545 FOR YOUR NEAREST SAFETYLINK INSPECTION SERVICE CENTRE
OR EMAIL: info@safetylink.com

WARRANTIES

EXTRACT: SafetyLink Pty Ltd STANDARD TERMS AND CONDITIONS

11.1 To the extent permitted by law all implied conditions, warranties and undertakings are expressly excluded.

11.2 Except as provided in this clause the Company shall not be liable for any loss or damage, whether direct or indirect (including consequential losses or damage) arising out of any breach of contract by the Company or any negligence of the Company, its employees or agents.

11.3 Should the Company be liable for a breach of a guarantee, condition or warranty implied by the Australian Consumer Law (not being a guarantee, condition or warranty implied by sections 51, 52 and 53 of that Law) then its liability for a breach of any such condition or warranty express or implied shall be limited, at its option, to any one or more of the following.

A) in case of Goods
- (I) the replacement of the Goods or the supply of equivalent Goods.
- (II) the repair of the goods,
- (III) the payment of the cost of replacing the Goods or acquiring equivalent Goods.
- (IV) The payment of the cost of having the Goods repaired.

Provided that any such Goods are returned to the Company by the Purchaser at the Purchaser's expense.

B) in the case of services
- (i) the supply of the services again,
- (ii) the payment of the cost of having the services supplied again.

11.4 The Company will not be liable for the costs of recovery of the Goods from the field, loss of use of the Goods, loss of time, inconvenience, incidental or consequential loss or damage, nor for any other loss or damage other than as stated above, whether ordinary or exemplary, caused either directly or indirectly by use of the Goods.

11.5 The Company warrants that at the time of shipment, Products manufactured by it will be free from defects in material and workmanship. In the absence of a modified written warranty, the Company agrees to making good any such defects by repairing the same or at the Company's option by replacement, for a period of (1) one year from the date of shipment. This limited warranty applies provided that:

(a) defects have arisen solely from faulty materials or workmanship;
(b) the Products have not received maltreatment, inattention or interference;
(c) **the Products have been installed in accordance with the Company's Installation Handbooks using only products supplied by the Company;**
(d) accessories used with the Products are manufactured by or approved by the Company;
(e) the Products are maintained in accordance with Australian Standard 1891.4 (section 9).
(f) you notify any claim under this warranty to SafetyLink in writing to the address below no later than 14 days after the event or occurrence concerning the product giving rise to the claim and you pay all costs related to your claim.

This warranty does not apply to any defects or other malfunctions caused to the Goods by accident, neglect, vandalism, misuse, alteration, modification or unusual physical, environment or electrical stress.

Please note that the benefits to the purchaser (as a consumer) given by this warranty are in addition to your other rights and remedies under the Australian Consumer Law. Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

11.6 If any goods are not manufactured by the Company, the guarantee of the manufacturer thereof shall be accepted by the Purchaser as the only express warranty given in respect of the goods.

11.7 Except as provided in this clause 11, all express and implied warranties, guarantees and conditions under statute or general law as the merchantability, description, quality, suitability or fitness of the Products for any purpose or as to design, assembly, installation, materials or workmanship or otherwise are hereby expressly excluded (to the extent to which they may be excluded by law).

PLEASE SEE SAFETYLINK PTY LTD FULL STANDARD TERMS OF CONDITIONS OF SALE FOR FURTHER REFERENCE.

TUFF-BRACKET – Concrete Mounted Components

TUFF BRACKET END ANCHOR – PRODUCT CODE: STAT.FROGTUFF002C-BRKT			
PRODUCT COMPONENTS	**DESCRIPTION**	**MATERIALS**	**QTY**
FROGLINE END	FrogLine Base End	316SS	1
BOLT-M16x35mm-SS	Bolt: M16x35mm Set Screw 316SS	316SS	1
WASHER M16_Spring	Washer: M16 Spring	316SS	1
WASHER M16	Washer: M16	316SS	1
NUT M16	Nut: M16	316SS	1
TUFF-BRACKET	TUFF-BRACKET	316SS	1
CON-M16x160	Anchor Rod M16x160	316SS	2
WASHER M16_DONUT	Washer: M16 Donut	316SS	2
WASHER M16_316	Spring Washer: M16	316SS	2
NUT M16	Nut: M16	316SS	2

TUFF BRACKET INTERMEDIATE ANCHOR – PRODUCT CODE: STAT.FROGTUFF001C-BRKT			
PRODUCT COMPONENTS	**DESCRIPTION**	**MATERIALS**	**QTY**
FROGLINE INT	FrogLine Base Intermediate	316SS	1
BOLT-M16x35mm-SS	Bolt: M16x35mm Set Screw 316SS	316SS	1
WASHER M16_Spring	Washer: M16 Spring	316SS	1
WASHER M16	Washer: M16	316SS	1
NUT M16	Nut: M16	316SS	1
TUFF-BRACKET	TUFF-BRACKET	316SS	1
CON-M16x160	Anchor Rod M16x160	316SS	2
WASHER M16_DONUT	Washer: M16 Donut	316SS	2
WASHER M16_316	Spring Washer: M16	316SS	2
NUT M16	Nut: M16	316SS	2

TUFF BRACKET INTERMEDIATE EXT ANCHOR ANCHOR PRODUCT CODE: STAT.FROGTUFF008C-BRKT			
PRODUCT COMPONENTS	**DESCRIPTION**	**MATERIALS**	**QTY**
FROGLINE INT_EXT	FrogLine Base Intermediate Extended	316SS	1
BOLT-M16x35mm-SS	Bolt: M16x35mm Set Screw 316SS	316SS	1
WASHER M16_Spring	Washer: M16 Spring	316SS	1
WASHER M16	Washer: M16	316SS	1
NUT M16	Nut: M16	316SS	1
TUFF-BRACKET	TUFF-BRACKET	316SS	1
CON-M16x160	Anchor Rod M16x160	316SS	2
WASHER M16_DONUT	Washer: M16 Donut	316SS	2
WASHER M16_316	Spring Washer: M16	316SS	2
NUT M16	Nut: M16	316SS	2

TUFF BRACKET CORNER ANCHOR – PRODUCT CODE: STAT.FROGTUFF003C-BRKT			
PRODUCT COMPONENTS	**DESCRIPTION**	**MATERIALS**	**QTY**
FROGLINE CNR	FrogLine Base Corner	316SS	1
BOLT-M16x35mm-SS	Bolt: M16x35mm Set Screw 316SS	316SS	1
WASHER M16_Spring	Washer: M16 Spring	316SS	1
WASHER M16	Washer: M16	316SS	1
NUT M16	Nut: M16	316SS	1
TUFF-BRACKET	TUFF-BRACKET	316SS	1
CON-M16x160	Anchor Rod M16x160	316SS	2
WASHER M16_DONUT	Washer: M16 Donut	316SS	2
WASHER M16_316	Spring Washer: M16	316SS	2
NUT M16	Nut: M16	316SS	2

**** Recommended chemical anchor: Fischer FIS-V as per Fischer Product Supplement Data sheets.**

FROGLINE CONCRETE TUFF BRACKET LIFELINE

All safety procedures must comply in accordance with the current safety code(s) of practice(s) for working at heights. Ensure safety at all times during and after installation by using an appropriate height safety system.

TUFF-BRACKET is designed to be anchored into concrete wall of a height safety system therefore TUFF-BRACKET **must only** be used in conjunction with a SafetyLink lifeline or eyebolt system.

POSITIONING OF TUFF-BRACKET

- The pendulum effect applies.
- TUFF-BRACKET must be in a position easily and safely reached from a safe access point.
- TUFF-BRACKET must **not** be installed close to concrete edges, minimum distance to concrete edge is **150mm**.
- **Minimum concrete thickness 150mm.**
- **Minimum concrete grade MPA32.**
- **Minimum anchor rod embedment 115mm.**
- **Recommended chemical anchor: Fischer FIS-V as per Fischer Product Supplement Data sheets.**

⚠ If any doubt exists with the strength of the structure an engineer should make the assessment.
⚠ Installation must be carried out by, or under the supervision of a competent height safety installer.
⚠ During installation you must be safe at all times.

LOCATING THE STEEL REINFORCING IN THE CONCRETE

Use of a digital metal detector (example: Bosch DMO 10) to locate the steel reinforcing in the concrete is recommended when determining the anchor hole locations for the TUFF-BRACKET. This ensures steel is avoided when drilling.

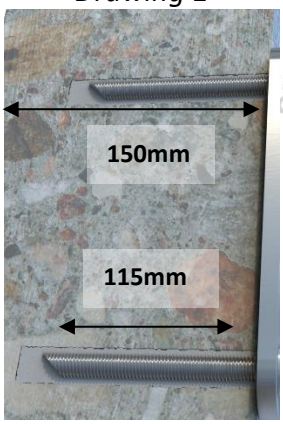
DRILLING THE HOLES

TUFF-BRACKET - Drill 2 x M18 holes.
Drill a minimum depth of 120mm with a hammer drill and masonry drill bit.

PREPARING THE HOLES

The holes must be moisture and dust free. Remove dust using compressed air, small brush and vacuum cleaner.

Drawing 1



INSTALLING ANCHOR ROD

TUFF-BRACKET - must be held down with a minimum of 2 x CON-M16x160.

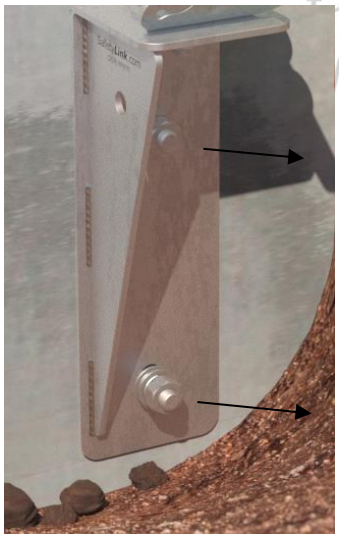
Anchor rod length must be a minimum of 160mm however will be determined based on water proofing membrane thickness under the TUFF-BRACKET.

- Fill 18mm holes with chemical adhesive gel mortar as specified with the Fischer product use data sheet *(see Appendix 1).*
- Fit anchor rods ensuring a minimum of 115mm is embedded in the concrete and chemical adhesive gel mortar.
- Remove any chemical adhesive gel mortar that has been displaced from the anchor hole during installation.
- Allow chemical adhesive gel mortar to cure to full strength as indicated in the Fischer product use manual.
- Once chemical adhesive gel mortar has cured each Anchor Rod will need to be load tested with a calibrated pull testing machine to 7.5kN, refer to *Drawing 3.*
- Once pull testing is completed, place the TUFF-BRACKET onto anchor rods.
- Place washer, spring washer and nut onto anchor rods.
- Ensure all nuts are torque tighten to 50NM/60NM respectively for M12/M16.

Annual recertification will require the TUFF-BRACKET to be load tested as a complete unit with a calibrated pull testing machine to **7.5Kn**.

Drawing 3

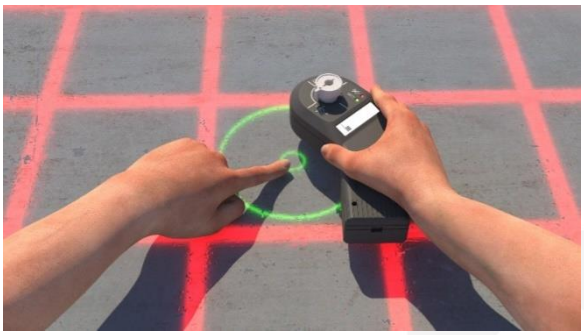
2 x Anchor Rod – 7.5kN Pull



INSTALLATION TO CONCRETE

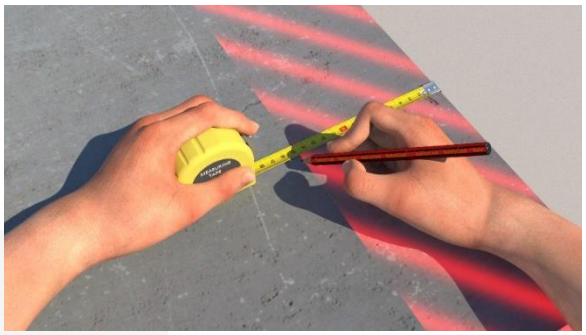
STEP 1

LOCATE THE STEEL IN THE CONCRETE. Use a digital metal detector to locate the steel when positioning the Anchor Rod into the concrete. This ensures steel is avoided when drilling.



STEP 2

Mark out the position to be drilled. NOTE: Anchor should not be positioned close to an edge, minimum distance 150mm. If any doubt exists as to the strength of the structure an engineer should make the assessment.



STEP 3

Mark drill bit or set drill depth to 120mm, this enables easy detection of correct length.

STEP 4

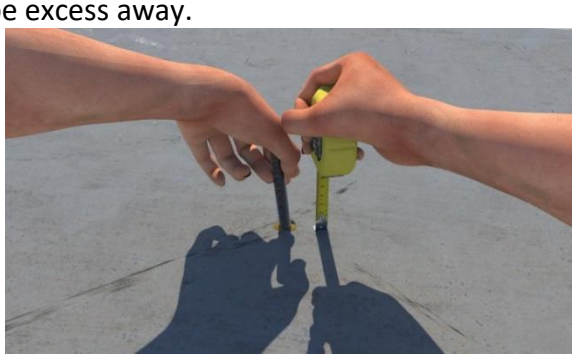
Drill a 18mm hole into the concrete (minimum 115mm embedment into structure concrete). The hole must be moisture and dust free (using a form of compressed air, vacuum or brush to clean it).

STEP 5

Apply the recommended epoxy adhesive into the hole at the rate stated by the product manufacture. Refer the adhesive manufacturer's catalogue for the adhesive strength and installation requirements *(see Appendix 1).*

STEP 6

Insert the M16 anchor rod down into the adhesive in the hole. Ensure you use enough adhesive chemical as specified by the chemical manufacturer to cover the hole. A small amount of gel should be expelled once the rod is installed, wipe excess away.

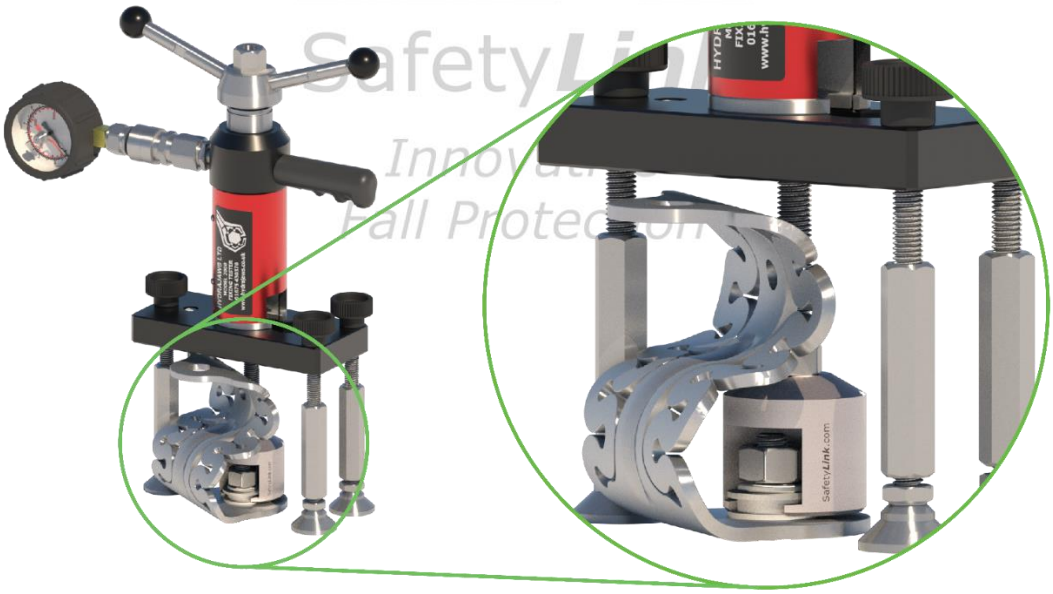


FROGLINE CONCRETELINK LIFELINE – TESTING FROGLINE DONUTLINK

- To comply with current Standards, each Concrete anchor must be tested after installation and at every recertification inspection.
- Ensure you wait the recommended curing time as specified by the chemical manufacturer.
- The pull test can be done using DonutLink washer as an attachment point.
- Use the DonutLink adaptor with Hydrajaws pull tester to connect into DonutLink washer.
- Test consists of proof loading to 50% of the intended anchor rating of 15kN.
- Install the pull test adaptor with calibrated pull test device into DonutLink washer as shown below image. Load anchorage point to 7.5kN, refer pull test device instructions.
- Ensure energy absorbing regions of the anchor system are not loaded during this test.
- Check concrete and chemical adhesive as secure and damage free, refer to periodic inspections.

DonutLink Adapter

DonutLink Adapter with Pull Tester



Note: Drilled-in anchorages such as friction and glued-in anchorages shall be placed so that the shear load is at least twice the tension load. For FrogLine DonutLink components this translates to a pull at an angle not exceeding 20 degrees to the surface in which the bolt is installed.

⚠ Recommended chemical anchor: Fischer FIS-V as per Fischer Product Supplement Data sheets.
⚠ DonutLink should not be positioned close to an edge, minimum distance 150mm.
⚠ If any doubt exists as to the strength of the structure an engineer should make the assessment.
⚠ During installation you must be safe at all times.

FROGLINE CONCRETE TUFF BRACKET LIFELINE

LIFELINE CABLE

Following cables can be used for SafetyLink lifeline systems,

- Cable (STAT.CABLE001): 8mm dia, 7x7 wire rope
- Cable (STAT.CABLE_8MM_7X19_SS): 8mm dia, 7x19 wire rope. It provides high flexibility and suited for lifelines with short intermediate intervals and multiple corners.
- Cable (STAT.CABLE_8MM_1X19_SS): 8mm dia, 1x19 wire rope. It provides limited flexibility for overhead lifeline and suited for easy transitions over intermediates with SRL's. *DO NOT USE WITH SWAGELESS FITTINGS.*

Note: It is always recommended to install at least one intermediate in overhead lifeline system when SRL's are used.

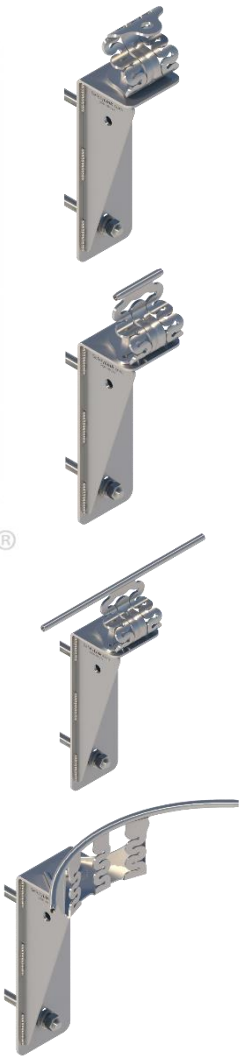
FOLLOW BELOW STEPS FOR END, INTERMEDIATE AND CORNER UNITS

STEP 1

Once TUFF-BRACKET is installed as per previous page instructions. Place FrogLine Base on top of the installed TUFF-BRACKET. Then place Bolt through Spring Washer into TUFF-BRACKET.

STEP 2

Tighten the fasteners making certain the FrogLine Base Unit lines up with the direction of the lifeline.



Note: Drilled-in anchorages such as friction and glued-in anchorages shall be placed so that the shear load is at least twice the tension load. For FrogLine ConcreteLink components this translates to a pull at an angle not exceeding 20 degrees to the surface in which the bolt is installed.

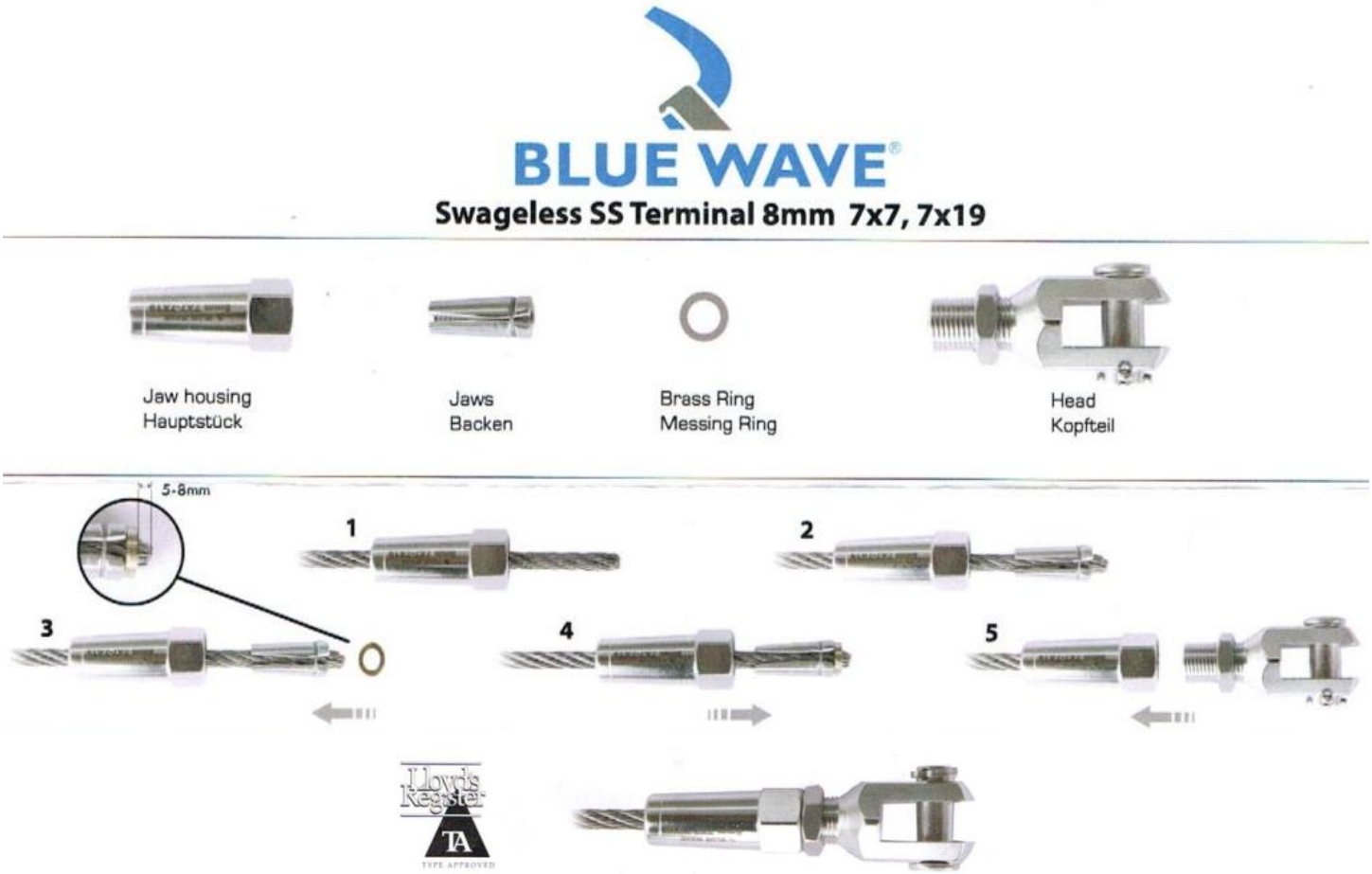
INSTALLATION: CABLE, TENSIONERS & TERMINATION FITTINGS

1. Install *Swaged/Swageless Termination* to the cable in accordance with product guidelines. See Appendix A or B.
2. Determine which end is most suitable to have the cable *Tensioner with Tension Indicator.* (Some lifelines may require a *Tensioner with Tension Indicator* on both ends). Connect the cable with *Termination* end to the *FrogLine End Anchor* top connection point. This will be at the opposite end to where the *Tensioner* end will be. (Ensure securing pin has been installed correctly).
3. Install the cable through *Intermediates* and *Corners* to the opposite end of the Lifeline system (Intermediates must be installed as per installation manual, maximum distance between End, Intermediate and Corner Anchors is 10 metres).
4. Connect *Swaged/Swageless Tensioner with Tension Indicator* to *FrogLine End Anchor* top connection point. (Do not attach *Tensioner* to cable at this stage).
5. Adjust the *Tensioner* out to the maximum safe length.
6. Match the cable along the side of the *Tensioner* and mark where to cut cable so that it will reach safely into the *Tensioner* unit in accordance with product guidelines. Appendix A or B.
7. Cut cable to length.
8. Install *Swaged/Swageless Tensioner* fitting to cable as per Appendix A or B. Connect *Tensioner* to *FrogLine End Anchor* top connection point (Ensure securing pin has been installed correctly).
9. Tension cable until the disc on the Tension Indicator can spin and indicates 80kg/0.8kN/800N.

TIGHTENING ASSEMBLY & TORQUE SETTINGS FOR SWAGELESS TERMINALS

Wire size:		Nm	Lbf ft
Ø 3	-	11	8.25
-	1/8”	11	8.25
Ø 4	5/32”	17	12.75
-	3/16”	22	16.5
Ø 5	-	22	16.5
-	7/32	38	28.5
Ø 6	-	38	28.5
-	1/4”	38	28.5
Ø 7	9/32”	48	35.5
Ø 8	5/16”	58	43.0
-	3/8”	75	55.5
Ø 10	-	75	55.5
Ø 12	-		
-	1/2”		
Ø 14	-		
Ø 16	-		

APPENDIX A – SWAGELESS/SWAGED FITTINGS INSTALLATION



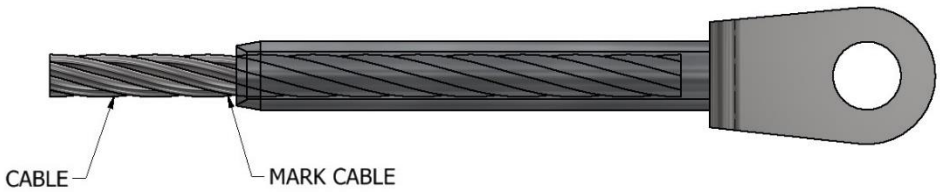
Make sure that the cable matches the terminal.
The SS terminal use only for 8mm 7x7 and 7 x 19 Stainless Wire.
Do not reuse jaws or house.

1. Slide the jaw housing in place on the cable.
2. Slide the jaws onto the cable, ensuring there is equal space between the jaws.
3. Place the brass pressure ring on the end of the cable. Make sure that the distance from the pressure ring to the end of the cable is 5-8mm.
4. Slide the jaw housing over the jaws.
5. The terminal can now be assembled. Screw the head on the jaw housing with a torque wrench – **min. 58 Nm (43Lbf ft),** Tighten the lock nut with **min. 50 Nm (36 Lbf ft).**

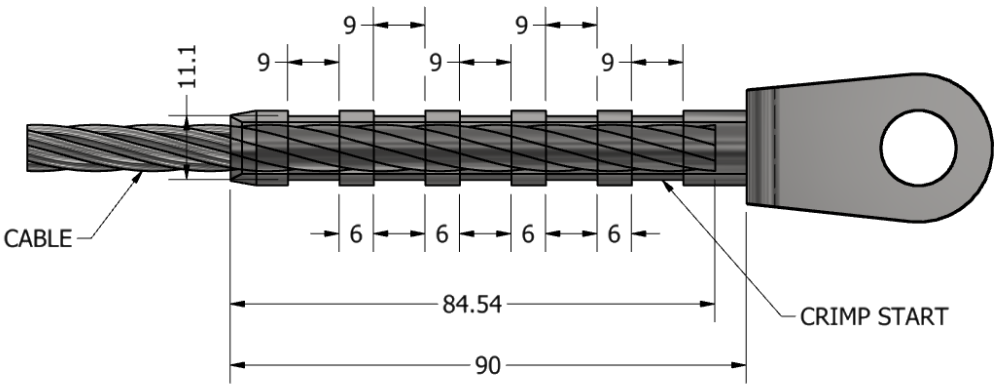
Note: after the first dynamic load the terminal **MUST** be tightened again. When assembling Swageless Terminals the breaking strength of the cable will be reduced by 0-15%.

The user is responsible for choosing the proper cable, and for correct assembly.

APPENDIX B – CRIMPED FITTINGS INSTALLATION



1. Insert the cable into the open end of the fitting to be swaged, mark the cable where the cable and the fitting meet. Remove the cable and check that the mark is at least 84mm from the cable end.



2. Re-insert the cable into the fitting to distance previously marked. Start swaging the fitting from the closed end as shown above. Continue to swage as indicated above 5 times, first swage is 6mm from the depth indicator.
3. Ensure that you can no longer see the mark that was made in Step 1. Check the crimped sections are within the allowable tolerances using Vernier Callipers. (Allowable tolerances = 11.10 + - 0.2mm).

IMPORTANT NOTES TO REMEMBER

⚠ Ensure marked cable as indicated in step one is a minimum of 84mm.

⚠ Ensure all crimped sections (flat) are with 11.10mm, with a tolerance level of + or - 0.2mm. This distance should be the case of all 8mm 1x19, 7x19 and 7x7 cable. The measurement should be taken with Vernier Callipers to ensure accuracy. If your measurements are outside the acceptable tolerance range this can be a sign of either a loss of pressure in your swaging tool or an indication that your dies are worn or incompatible. Any swaging that occurs outside the acceptable tolerances will need to be restarted using the appropriately amended tools.

⚠ When swaging terminations, the mark made in step 1 will disappear during the final swage due to the lengthening of the material during the swaging operation.

⚠ The swaged end has a mark indicating the end of the solid section (depth indicator) of the unit and the start of the hollow section. Start swaging 6mm from the mark indicating the solid section.

⚠ When completed the swaged section should be a minimum of 80mm long. The dies are made with a 9mm wide section to crimp. These 9mm crimping sections need to completed 5 times, leaving five flat sections along the swaged end. In between each crimped section you need to maintain a distance of between 5mm and 6mm.

⚠ **DO NOT** swage the solid section indicated by the mark on the unit this will damage the swaging tool and the dies.

SAFETYLINK FROGLINE SHUTTLE

Product Code: STAT.SHUTL003

CONNECTING TO THE LIFELINE SYSTEM

1. Remove the Karabiner from the FrogLine Shuttle. The supplied Karabiner is a SafetyLink steel trilock and needs three distinct movements to be removed from the shuttle (Slide gate up, twist gate, depress gate).
2. Slide the inner component of the FrogLine shuttle to the right or left of the shuttle body. This will put the two shuttle karabiner connecting holes adjacent to each other and widen the mouth of the shuttle. The shuttle is now in the open position and can be placed face down onto the lifeline cable.
3. To lock the shuttle onto the cable, push the inner component from its position to the right or left back across the shuttle body. This will re-align the karabiner connection holes and narrow the mouth of the shuttle.
4. Insert the SafetyLink Karabiner through both connecting holes. This locks the shuttle body and inner component of the shuttle together and ensures the shuttle remains in the closed position. Check that the Karabiner has locked correctly. The Shuttle is now secured to the life line system.
5. It is a requirement when connecting a lanyard between the users harness and FrogLine shuttle/lifeline system that a personal tear web energy absorber be used. This tear web energy absorber needs to be at the harness end of the lanyard to ensure maximum energy absorption.

⚠ **MAKE SURE YOU ARE SAFE AT ALL TIMES WHILST ATTACHING OR DETACHING FROM THE FROGLINE LIFELINE SYSTEM.**

⚠ **A FALL RESCUE PLAN SHOULD BE DEVELOPED PRIOR TO USING SAFETYLINK EQUIPMENT.**

⚠ **ENSURE YOU USE THE SAFETYLINK KARABINER SUPPLIED ONLY.**

PROGRESSING ALONG THE LIFELINE SYSTEM

1. Always progress the system manually. Do not progress in any vehicle or motioning device.
2. When progressing towards a corner, to ensure the FrogLine Shuttle continues on a smooth path avoid cutting the corner sharply.
3. Do not place any tools or equipment onto the lifeline system.

DISCONNECTING FROM THE LIFELINE SYSTEM

1. If you are attaching to an alternative fall arrest system ensure you are attached to that system before disconnecting from the FrogLine System.
2. Unlock Karabiner and detach it from the FrogLine Shuttle.
3. Slide the inner component of the FrogLine shuttle to the right or left of the shuttle body. This will put the two shuttle karabiner connecting holes adjacent to each other and widen the mouth of the shuttle. The shuttle is now in the open position and can be removed from the lifeline cable.
4. Slide inner component of Shuttle into original position and insert Karabiner through the two connecting holes to store.

⚠ **REMEMBER YOU MUST BE SAFE AT ALL TIMES.**

Where a risk of a fall exists on entering or exiting the lifeline system additional fall prevention measures must exist. Where additional fall prevention exists on entry and exit the user must ensure:

1. Attachment is correctly made to the lifeline system before detaching from the additional fall prevention system.
2. DO NOT detach from the lifeline system unless correct attachment is made to the additional fall prevention system.

APPENDIX 1 – CONCRETE INJECTION MORTAR

POSITIONING OF CONCRETE ANCHOR - The Concrete Anchor must be in a position easily and safely reached from a safe access point. Concrete anchor should not be positioned close to an edge, minimum distance 150mm. Minimum concrete thickness 150mm.

LOCATING THE REINFORCING STEEL BAR (REO BAR) IN THE CONCRETE - Use *Digital metal detector (Example: BOSCH DMO 10)* to locate the Reo bar in the concrete when positioning the Concrete Anchor. This ensures reo bars are avoided when drilling.

DRILLING THE HOLE - Drill a hole to a depth and width as suggested in below table.

PREPARING THE HOLE - The hole must be moisture and dust free. Remove dust using compressed air, small brush, and vacuum cleaner.

INSTALLING THE CONCRETE ANCHOR - Recommended chemical is **Fischer FIS-V**.

- Prior to anchor installation, refer to installation procedure for individual anchor product and check chemical is within expiry date.
- The injection cartridge is for use with a standard caulking gun.
- Partially used cartridges can be re-used by changing the mixing nozzle.
- The entire surface of the anchors embedded section must be within the concrete and shall use sufficient adhesive mortar as specified in the table below.

PRODUCT CODE: CON-CHEM-FISV.300			
Product Code	Description	Qty	
CON-CHEM-FISV.300.01	Injection Mortar FIS V Cartridge 300ml	1	
CON-CHEM-FISMR	Static Mixer FIS MR	2	

FIS V 300T: INJECTION MORTAR					
APPLICATION	**ANCHOR DIAMETER(mm)**	**DRILL HOLE DIAMETER(mm)**	**DRILL HOLE DEPTH(mm)**	**MORTAR/ FIXING(ml)**	**NO# OF FIXING/ CARTRIDGE**
DonutLink FrogLine	16	18	95	15	20
Concrete Insert	24	28	90	40	7.5
One Piece Eyebolt	16	18	90	15	20
WindowLink	53&25	55&28	20&122	60	5
SwiveLink	24	28	90	40	7.5
M12x160 Anchor Rod	12	14	115	10	30
M16x160 Anchor Rod	16	18	115	15	20
X-Rail	12	14	95	10	30

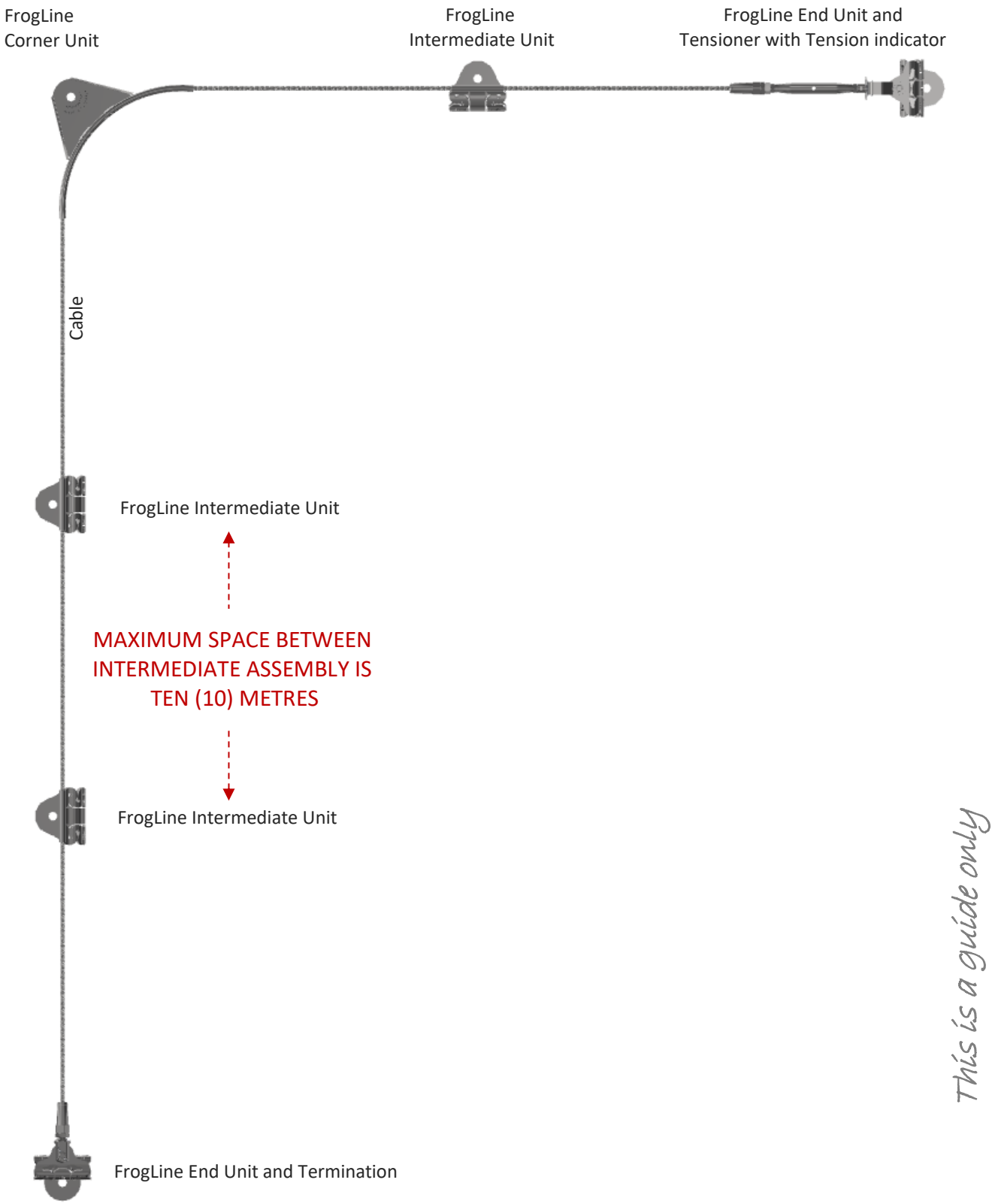
CURING TIME FIS V			
Cartridge Temperature (mortar)	Gelling Time	Temperature at anchoring base	Curing Time
		- 5°C - ± 0°C	24 hours
+ 0°C - + 5°C	13 minutes	± 0°C - + 5°C	3 hours
+ 5°C - + 10°C	9 minutes	+ 5°C - + 10°C	90 minutes
+ 10°C - + 20°C	5 minutes	+ 10°C - + 20°C	60 minutes
+ 20°C - + 30°C	4 minutes	+ 20°C - + 30°C	45 minutes
+ 30°C - + 40°C	2 minutes	+ 30°C - + 40°C	35 minutes

The above times apply from the moment of contact between resin and hardener in the static mixer.
For installation, the cartridge temperature must be at least +5°C. For longer installation times, ie when interruptions occur in work, the mixer should be replaced.

Testing for concrete mounted anchor.
To comply with current Standards each Concrete unit must be tested after installation. Allow required curing time as specified in above table before testing. Test consists of pull out force to 50% of design load of anchorage.
Note: Drilled-in anchorages such as friction and glued-in anchorages shall be placed so that the shear load is at least twice the tension load. For collared eyebolts this translates to a pull at an angle not exceeding 20 degrees to the surface in which the bolt is installed.

EXAMPLE: HORIZONTAL LIFELINE ON PITCHES BELOW 25 DEGREES

All working at heights safety procedures must be complied with when installing SafetyLink Height Safety Systems. For more information refer to your state or territories current legislation, regulations, policies and codes of practices. Horizontal height safety lifelines must only be installed and used by competent people with relevant current height safety qualifications.



SAFETYLINK HEIGHT SAFETY SYSTEMS MUST ONLY BE INSTALLED AS PER OUR INSTALLATION GUIDES, TO STRUCTURES AS SPECIFIED IN THE INSTALLATION MANUAL FOR EACH PRODUCT. SHOULD ANY DOUBT EXIST IN REGARD TO THE STRUCTURES INTEGRITY AN ENGINEER SHOULD BE CONSULTED.

IN CASE OF ACCIDENT

⚠ A FALL RESCUE PLAN SHOULD BE DEVELOPED PRIOR TO USING SAFETYLINK EQUIPMENT.
⚠ PERSONS WORKING AT HEIGHTS SHOULD NOT WORK ALONE.

It is critical that before using any SafetyLink Systems a fall rescue plan is in place for any persons suspended mid-air following a fall. Serious injury or death can occur in a matter of minutes, particularly if a person's movement or breathing is restricted or loss of consciousness has occurred. In accordance with your fall rescue plan and appropriate first aid procedures it is essential to remove the person from the suspended position as quickly as possible.

IN ACCORDANCE WITH AS/NZS 1891.4:2009 CLAUSE 9.5

EQUIPMENT WHICH HAS ARRESTED A FALL OR SHOWS A DEFECT

Any piece of equipment including both personal and permanently installed items, which has been used to arrest a fall or which shows any defect during operator or periodic inspection shall be withdrawn from service immediately and a replacement obtained if necessary. A label indicating the condition or defect should be attached to the equipment, and it should be examined by a competent height safety installer who will decide whether the equipment is to be destroyed or repaired if necessary and returned to service. In the latter case, details of any repair shall be documented, and a copy given to the operator.

SafetyLink®
Innovative
Fall Protection

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