



SUPER ANCHOR SAFETY®

CRA Commercial Roof Anchors Instruction/Specification Manual 01-2023

ENGLISH
VERSION

!WARNING TO USER!

You are required to read and use the Instruction/ Specification manual supplied at the time this device was shipped. Improper use and installation can result in serious injury or death. Follow inspection requirements before each use.

Material Specifications

Imported: Q235 Steel, 304sst.

Domestic: A-36, 304sst, 316sst.

Finish: ASTM 123 Hot dip galvanized.

Loop Tops: No.1090=Q235 cast steel.
No.1090-S=316 cast sst.

Low Temperature: -30°F to +130°F

Foam Filling: Polyurethane

References: **SAS**= Super Anchor Safety
(X)= Inspection Points

"Qualified" and "Competent Person"
See OSHA definitions.

Compliance

ANSI Z359.18-17 Type A/T* OSHA 1926.502/1910.140(13).

CSA Z259.15:22 Type A/T** ANSI/IWCA 1-14.1 Window Washing

*Intertek lab report 8-2020. Intertek lab report 01-2023

3rd party engineering: DH Glabe & Assoc.

Strength Rating

Ultimate Strength: Min. 5,000lb(22.5kN) in any direction the load is applied to a loop top. No.1090 loop top: 10,000lb min. tensile strength.

Proof Loading: Max. on site 2,500lb(11.3kN). DO NOT proof load screw attached anchors. **4-1 Design Load:** 1,250lb(567kg).

Specified Use

Single Person Anchor: Max. user wt. 340lb including tools and equipment. Used as an anchorage connector designed to support a suspended component/tie-back line or an active fall protection system with a maximum free fall exposure of 6ft(1.8m). Fall arrest, work positioning and fall restraint.

PPE Equipment: Users are required to wear a full body harness (FBH), a personal energy absorber and other fall protection components that comply with current OSHA/ANSI/CSA standards.

Horizontal Lifelines (HLL): End anchors as shown on pg.4.

Window Washing: Fall Arrest and boatswain suspension anchors.

Alternate Installation: May be installed vertical or inverted as specified by the project engineer.

Structural Support

The anchor attachment point must be capable of supporting 5,000lb or 2x the intended fall protection load per OSHA 1910.140(13). See Window Washing section below.

Anchor Spacing

Anchor structural attachment locations are specified by the project architect, engineer, or safety consultant. Single person and HLL's anchors are spaced 20-30ft o.c.

Window washing anchors are spaced 12ft o.c. or less (Fig.5,6).

Fastener Options: See Page 3.

Screws: Use only **SAS** factory supplied No.2022 hex head, HeadLOK™ or WS screws.

Max. Riser Ht. Single person anchor with a max. riser height of 18". DO NOT use screws for window

washing or HLL end anchors. **Bolts:** Risers over 18" must be bolted, field welded, or concrete embedded.

Alternate fastener types may be used when specified by a qualified or competent person*.

*See OSHA definition.

Wood Substrates: Min.3/4" plywood or 1-1/2" T/G decking requires 40ea. No.2022 #14 hex head screws, WS Screws or HeadLOK gimlet point wood screws (Figs.13,22,25,26).

Type B Metal Decking: Min. 22 gauge or thicker requires 36ea. No.2022 screws through the top flange only (Figs.4,7).

Insulation Panels: Use **SAS** supplied HeadLOK SD tip screws (Fig.12).

Bolts: Grade 8, grade 5, 18-8 grade stainless steel and A307 threaded Rod. Use same grade lock nuts.

Window Washing Anchors

Bolt attached (Figs.7,8), field welded (Figs.10,11) or concrete embedded (Fig. 9). Two anchors are required for each drop point designation: 1 suspension rope anchor use for the workers boatswain chair and one fall arrest anchor. Anchors have spacing requirements (Figs.5,6).

Consult **SAS** Window Washing manual for additional information.

ANSI/IWCA.1-14.1 applicable standards:

- 1) Analysis of the anchors structural supporting member shall be performed by a registered professional engineer*. 9.1.7
- 2) Anchors used for fall arrest shall be independent from the anchorage used for the suspension system. 13.3.3
- 3) Fall arrest lifeline max. angle 15° from perpendicular. 5.7.17(d)
- 4) Workers may not reach more than 6ft left or right from the drop point. 5.7.10
- 5) Anchors closer than 6ft from the roof edge, parapet wall or drop point. Max spacing between anchors is 12ft. Appendix C
- 6) Anchors inspected annually by a "qualified" person. 9.1.9
- 7) Anchors recertified at least every 10 yrs. 9.1.9 by a registered professional engineer. 9.1.10

*Project architect/engineer.

Consult **SAS** plan service for HLL's, PPE single anchor and window washing system design. 3rd party structural engineering available upon request.

CRA-W

Fig.1

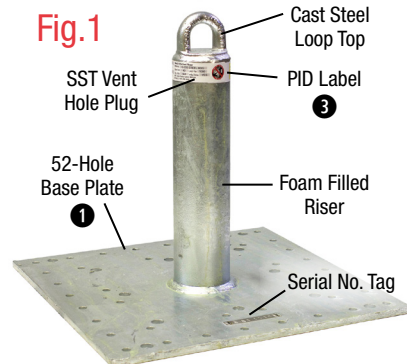


Fig.2

Screw Fasteners
52-Hole Base Plate

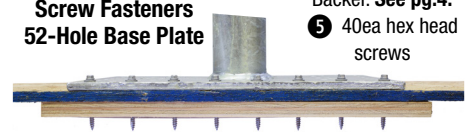


Fig.3

Screw Fasteners
52-Hole Base Plate

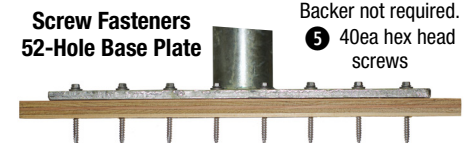


Fig.4

Type B Metal Deck
52-Hole Base Plate

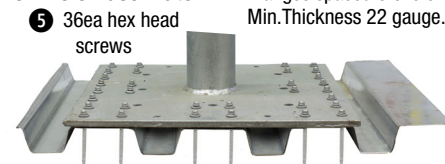


Fig.5

Max. Spacing @ Max. 15° Angle

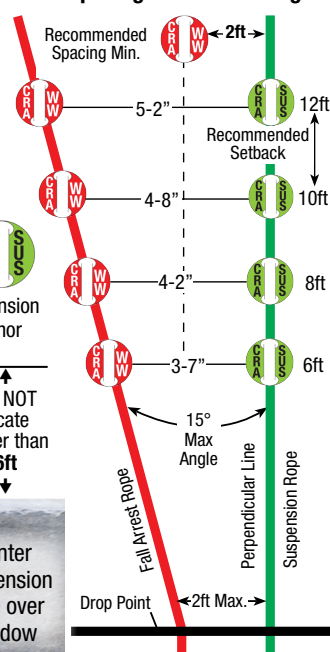
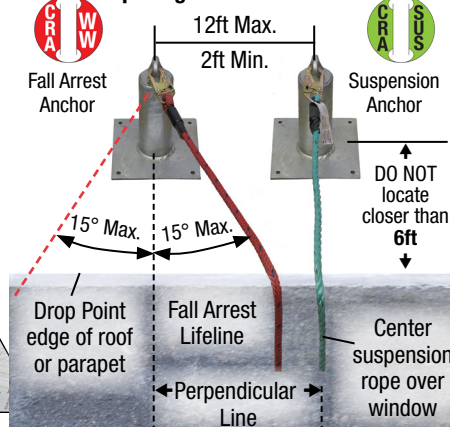


Fig.6

Spacing Between Anchors



Bolt Attached Base and Backer Plates

Use a min. of 4 each 1/2" diam. grade 8, grade 5, 18-8sst or A307 threaded rod with the same grade lock nuts. See **Figs. 7, 8, 21, 24**. Backer plates are required when the supporting structural member or substrate does not meet the strength requirement for the intended fall protection load (e.g., concrete slabs that are less than 4" thick).

Type-B Metal Decking: Note that anchor bolt or screw attached to metal decking may flex when proof loaded.

Structural Steel and Wood Beams w/ Backer Plate

Use long bolts or A307 rod as close as possible to the beam edges (**Figs. 8, 21**). If necessary, drilling of plate bolt holes may be performed by a competent person only with **SAS** authorization. Order custom size base and backer (B/B) plates with bolt hole locations to fit structural members as specified by the project architect/engineer.

Concrete Substrates

Wedge Type: 1/2" or greater diameter to be specified by the project architect/engineer and installed per bolt mfg. specifications. Flat washers are required. See **Fig. 9** and **Table 2** for bolt specifications.

Epoxy Type: Must be specified by the project architect/engineer to meet the intended fall protection load.

Poured-in-Place: 1/2" diam. J-bolts or equivalent specified by the architect/engineer.

Concrete PSI: 2500lb min. concrete must be sufficiently cured to support the fall protection load prior to use.

Field Welded Anchors

Base plates may be welded to a structural steel member of the same or greater thickness (**Figs. 10, 11**) or as specified by the project engineer. Field welding is required to be performed by a certified welder using E70XX electrode or equal with a min. weld depth of 1/4". Field welding must be inspected by a "qualified" person. Anchors used for window washing must be proof loaded to 2,500lb prior to use for fall protection.

Fig. 10 Field Weld Specifications

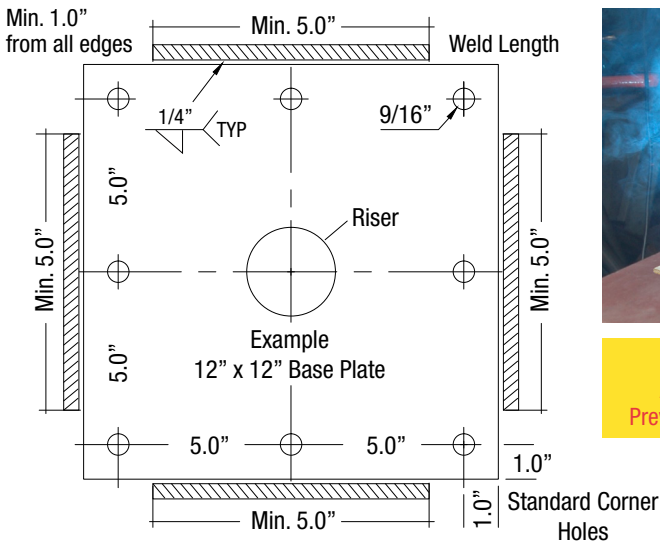


Fig. 11 Field Welded Base Plate



Field Welding
Apply 2 coats or more of a rust
Preventative coating to all field welds.

Model Specifications

Standard CRA model designs shown in **Table 1.0** may be custom mfg. with specific riser heights, base plate dimensions and bolt hole diameters. Request custom mfg.

Vent Hole: 3/8" threaded vent holes are required for welding (See **Fig. 17**).

Base Plate Drain Hole: 1.0" diam. hole is required for Hot dip galvanizing process.

Table 1.0

Riser Height	Part Name	Part No.	Material Type	Loop Top		Riser Material		Base /Backer Plate
				No.	Type	O.D./wt.	Sch.	
8	CRA-8W	1035-W	▲ HDG	1090	Q235	3.0"	40 0.203	16"x16"x3/8" 52 Hole
		1035-WS	304sst	1090-S	316sst	36lb		
12	CRA-12W	1032-W	▲ HDG	1090	Q235	3.0"		
		1032-WS	304sst	1090-S	316sst	38lb		
18	CRA-18W	1033-W	▲ HDG	1090	Q235	3.0"		
		1033-WS	304sst	1090-S	316sst	40lb		
24	CRA-24W	1042-W	▲ HDG	1090	Q235	3.0"	80 0.276	16"x16"x3/8" 16 Hole
		1042-WS	304sst	1090-S	316sst	67lb		
30	CRA-30W	1025-W	HDG	1090	Q235	3.0"		12"x12"x3/4" 4-8 Hole
		1025-WS	304sst	1090-S	316sst	57lb		
36	CRA-36W	1026-W	HDG	1090	Q235	3.0"		
		1026-WS	304sst	1090-S	316sst	61lb		

▲ Stock Part.

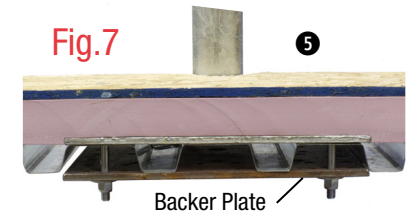
* Serial No. Tag stock models only. Custom models use PID label serial no.

□ #14 screw, bolt attached, concrete embedded or field welded.

△ Bolt attached, concrete embedded or field welded.

Insulated Panels w/Metal Decking

Bolt attach base plate on top of metal panel or insulation substrate w/backer plate.



Bolt Attached w/Backer Plate Structural Steel or Wood Beams

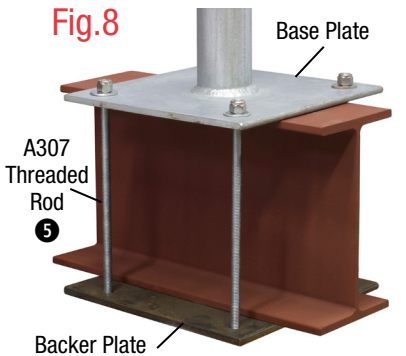


Fig. 9 Concrete Substrates
4 or 8 Bolt Attachment
See Table 2.0.

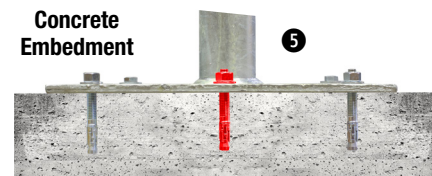


Table 2.0 Concrete Embedment

Model	Min. Embed		Base Plate
	4 bolt	8 bolt	
CRA-W8	2.625	N/A	10"x10" up to 16"x16"
CRA-W	3.75		
CRA-W18	5.50	3.50	
CRA-W24	6.875	4.50	
CRA-W30	N/A	5.50	
CRA-W36		6.50	

Reference: DHG report July 18-2018 pg.5.

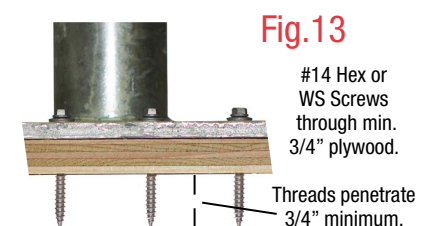
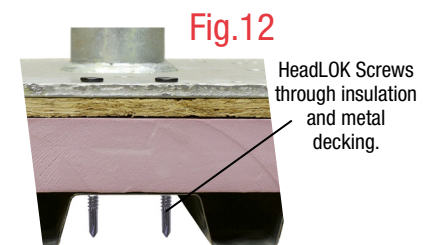
Hilti KB-TZ Expansion anchors or =.

Fastener Penetration

Wood substrates and Type B metal decking require a min. thread penetration of 3/4" not including the screw tip.

Note: Proof Loading

Anchors attached to wood or metal substrates may flex when proof loaded. Release tension and the riser should return to a vertical position.



B/B Plate Specifications

B/B plates have the same bolt hole size and locations. Standard backer plate models (Figs.14,15,16) are identical to the corresponding CRA anchor models. All anchor base plates may be field welded or used for concrete substrates. Backer plates may be supplied raw uncoated or hot dip galvanized. Custom size B/B plates are available on request. See **Table 3.0**.
Note: The drain hole is not counted as a bolt hole.

Table 3.0 Standard B/B Plate Specifications

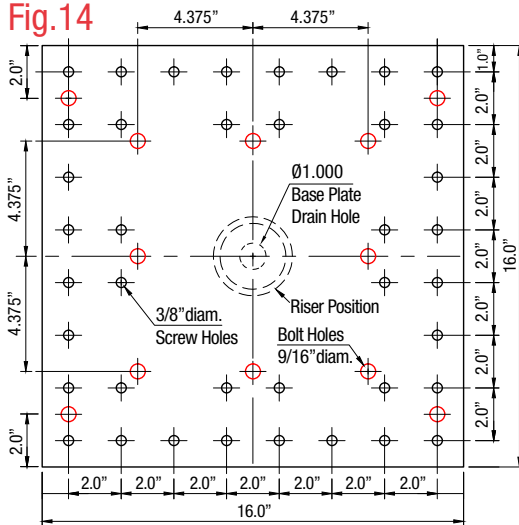
Part No.	Name	Dimension	Bolt Holes
1084	52-Hole	3/8"x16"x16"	40ea 3/8" 12ea 9/16"
1085	16-Hole	5/8"x16"x16"	16ea 9/16"
1409	8-Hole	5/8"x12"x12"	4 or 8ea 5/8"
1410	8-Hole	3/4"x12"x12"	
1412	8-Hole	1-1/8"x12"x12"	

See **Table 1.0** for applications.

52-Hole 16"x16" B/B Plates

Specified for use with any 52-hole base plate anchors. Fabricated with 3/8" holes for use with #14 screws, WS-Screws and HeadLOK screws. 9/16" diam. holes shown in red are specified for 1/2" diam. bolts.

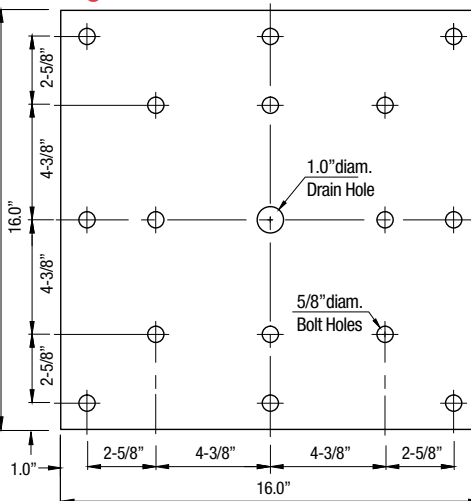
Fig.14



16-Hole 16"x16" B/B Plates

Bolt attached B/B plates specified for use with CRA-24W or any 12- or 16-hole base plate anchors. 5/8" diam. holes are specified for 1/2" diam. bolts.

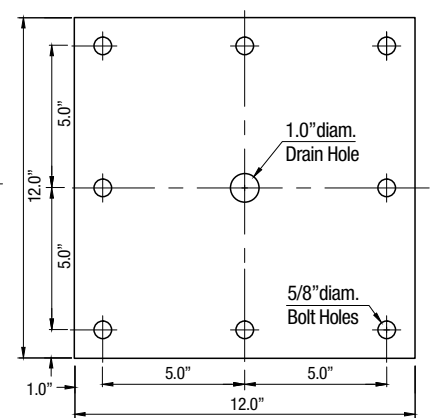
Fig.15



4 or 8 Hole 12"x12" B/B Plates

Backer plates with 4 or 8 holes are compatible with anchor base plates with 4 or 8 holes provided the bolt hole margins are the same. 5/8" holes are specified for a min. 1/2" diam. bolts.

Fig.16

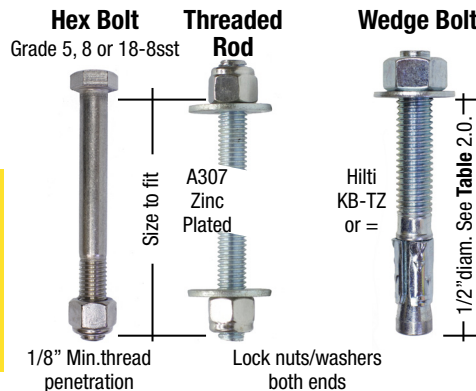


Fastener Specifications

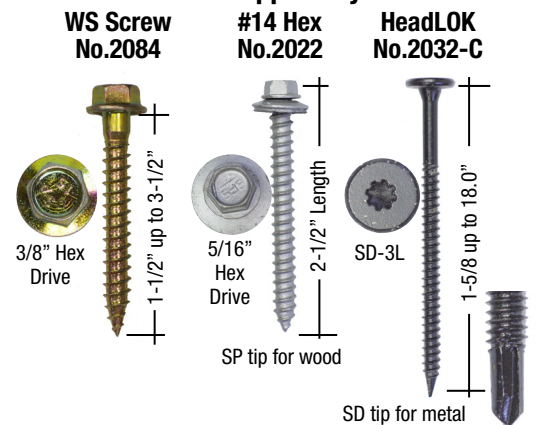
Use only **SAS** factory supplied screws shown in product catalog. Use only certified grade bolts and lock nuts. Grade 5 bolts may be used if grade 8 lengths are not available. Bolts may be supplied by **SAS** on request. Consult bolt mfg. torque specifications for the bolt type.

Contractor to Supply Bolts and Lock Nuts

WARNING! DO NOT use hot dip galvanized bolts.



Screws Supplied by SAS



Enlarging Bolt Holes

B/B bolt holes may be shop or field drilled for larger diameter bolts. Notify **SAS** for authorization. Apply rust preventive coating to bare metal. **WARNING! DO NOT torch cut holes.**

Loop Top Fixtures

No.1090/1090-S are compatible with snaphooks, carabiners, and **SAS** HLL end anchor components. Avoid incompatible connectors. Connector abrasion may wear the HDG coating causing red rust to appear. Remove rust and apply 2 coats of cold zinc spray.

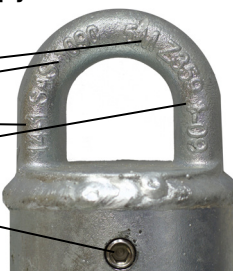
Fig.17

◀ Window Washing/HLL ▶
Apply Load in This Direction

Markings

Min. Strength Rating
SAS Part No.
Date of Mfg.
ANSI Z359.1
3/8" [10mm]
Hex Head Screw

1 2 6



Specified Class 1 Connectors

Connectors must conform to current ANSI, OSHA or CSA fall protection standards with 3,600lb gate strengths. Window Washers may use approved knots.

Incompatible Connectors

- Connectors do not rotate freely.
- Fittings or connectors not designed or specified for fall protection.

Loop Top
Side View

◀ Window Washing/ HLL ▶
DO NOT Apply Load in This Direction

Fig.18



Fig.19

Snaphook
or
Carabiner



Fig.20

Incompatible
DO NOT attach two connectors to a loop top.



Wood Framing Details

When the primary sheathing is OSB or less than 3/4" plywood, a plywood backer installed under or over the top of the sheathing or a backer plate is required (Figs. 21-26). Attachment of the primary sheathing to the framing and the framing to which it is attached must be approved by the project engineer and be able to support the intended fall protection load.

Strongest Installation

- Attach center row fasteners to a top chord (Figs. 22, 23).
- Use a backer plate under the top chord (Fig. 24).

The project architect/engineer may provide alternate framing/attachment specifications. Anchors attached with screws should not be on site proof loaded.

Fig. 21 Bolt Attached Wood Beam

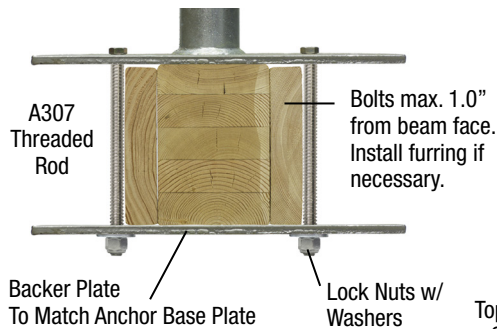


Fig. 22 52-Hole BP w/Plywood Backers

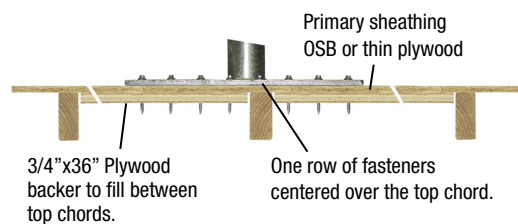


Fig. 24 Top Chord Backer Plate Bolt Attached

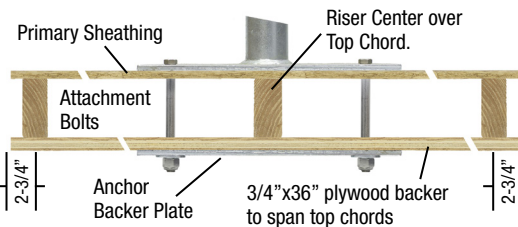


Fig. 25 Surface Installed Backer 52-Hole BP

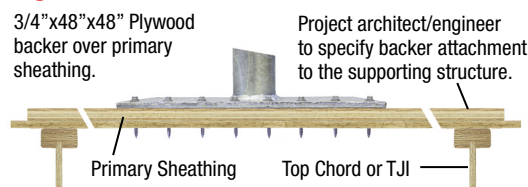
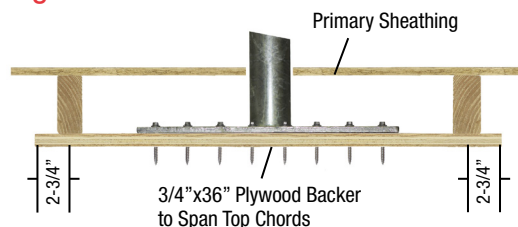


Fig. 26 Sub-Surface Installation 52-Hole BP



Inspections/Maintenance

Prior to installation, inspect each anchor to confirm they are free from defects or damage caused by shipping or handling. Prior to use for fall protection, the project specific anchor installations must be inspected and certified by a qualified or competent person. Documented annual anchor inspections should be performed by the building owner's maintenance personnel. The inspection points in this manual are recommendations only and intended to be used as a guideline for the building owner's fall protection maintenance plan. **Warning!** Anchors subjected to a free fall or other damage must be tagged to prevent further use until inspected by a qualified or competent person. Remove from service if anchors do not pass inspection or if structural damage to the supporting structure has occurred. Contact **SAS** for anchor inspection report or visit www.superanchor.com

Fig. 23



Inspection points ☒ = Remove From Service. ☑ = Repair.

- 1 Inspect welds. If cracks present. ☒
- 2 Rust present. ☑ Clean and apply cold zinc coating.
- 3 PID Label Missing. ☑ Request replacement labels.
- 4 Riser is bent or deformed. ☒
- 5 Missing fasteners. **DO NOT use anchor until installation is corrected.**
- 6 Vent hole plug missing. ☑ Request replacement vent plug.



PID Label

Vinyl adhesive backed label with a clear protective cover provides the anchor specifications and warnings. Labels are replaceable upon request.

Strength Rating	Model	Material Specifications	Compliance
Commercial Roof Anchor Min. Breaking Strength: MBS 5,000lb with load applied to loop top in any direction. 4/1 working load. Specified Use: Fall protection for one person w/max user wt. of 340lb. PPE: anchor point, Window Washing, Horizontal Lifeline Systems. Warning! Max. proof load 2,500lb (11kN)	CRA-12W Part No. 1032-W DOM YYYY-MM	Material: 0235 Steel, 1090 Loop Top, 3" Pipe o.d. Finish: Hot Dip Galvanized (HDG) CRA-12/18: Sch 40 (6mm) Riser 3/8" Base Plate CRA-24: Sch 80 (8mm) Riser 5/8" Base Plate CRA-30-36: Sch 80 (8mm) Riser 3/4" Base Plate Riser: Foam Filled Super Anchor Safety® Monroe WA 98272 USA 425-488-8868	Compliance: OSHA 1910.140(13) ANSI/IFC 1-14.1-2001 ANSI Z359.18 Type A/T CSA Z259.15.22 Type A/T 1-3/8" I.d. Loop Top Fixture Service Temp: -30°F / +130°F

HLL System Rigging Example

CRA loop top anchors are specified for **SAS** HLL systems. Screws should not be used for end anchors due to HLL cable vibration caused by wind and tension applied to the line during use. Consult **SAS** CRA-HLL Manuals for specifications.
Note: "A" and "B" ends use for reference.

Fig. 27



Fig. 28

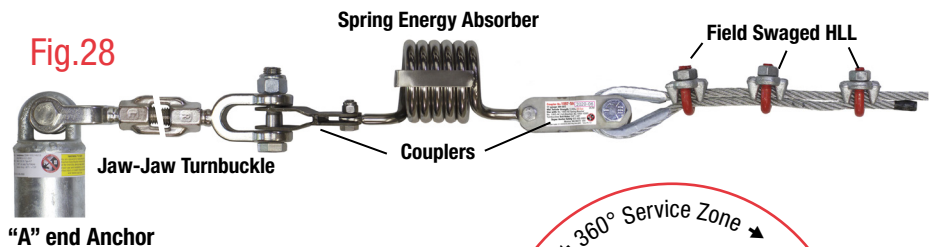
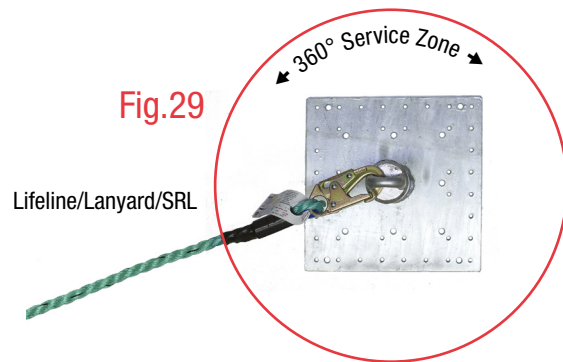


Fig. 29



Service Zones

The service load may be applied at any angle (Fig. 29).
Note: DOES NOT apply to window washing systems.