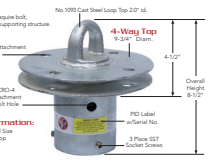
Super Anchor Safety 2024 Quick Reference

CRO-4 HLL 4-Way Anchors

4.5"od. CRO-4 HLL Anchors
Specified for HLL end and intermediate anchors, that require bolt, field weld, or concrete embedment attachment to the supporting structure.



Specifications
- Min. tensile strength 5,000lb
- Compatible w/SAS HLL accessories
- Hot dip galvanized (HDG), 304sst or 316sst
- 3rd Party engineering by DH Glabe & Assoc. Report available on request
- Contact SAS sales team for custom mfg. and lead times

9/16" Component Attachment Bolt Holes

Compliance:
ANSI Z359.18-17 Type A/T
CSA Z259.15-22 Type A/T
OSHA 1926.502

Ordering Information:
- Order CRO-4 Model Size
- Order CRO 4-Way Top

CRO-4 4-Way Top

Part Name	Part No.	Type	Loop Top	wt.
▲CRO 4-Way	1400-4WG	HDG	No.1093 Q345 Steel	16lb

▲ *Stock Part includes attachment bolt pkg. and socket screws. Not available in stainless steel*

CRO-4 Anchor

Request Unit Pricing

Riser Height	Part Name	Part No.	Material Type	Base Plate	4-Way □Top	Anchor wt.	Riser ▲Sch
12	▲CRO-4-12	1401-4G	HDG	12x12x3/4 8 Hole	1400-4WG w/1093 Loop Top	47lb	80 0.337 4.5" od
		1401-4S	304sst				
18	▲CRO-4-18	1402-4G	HDG			62lb	
		1402-4S	304sst				
24	▲CRO-4-24	1403-4G	HDG			71lb	
		1403-4S	304sst				
30	▲CRO-4-30	1404-4G	HDG			79lb	
		1404-4S	304sst				
36	▲CRO-4-36	1405-4G	HDG			88lb	
		1405-4S	304sst				

■ Standard Design Custom mfg. ▲Nominal Dimension.
△ Bolt, concrete embedment, expansion bolts or field welded.
□ Order 4-Way top separately.
Note 1: Max. proof load 2,500lb.
Note 2: Backer plates may be required for installation.

Bolt Pkg.
1/2"x 7.0" 18-Bast
Attachment Bolt w/Lock Nut
Bonded SST Seal Washers

CRR-4 HLL 4-Way Field Weld Risers

4.5"od. CRR-4 HLL Field Weld Risers
Specified for HLL end and intermediate anchors field welded to a supporting structure.

Specifications
- Min. tensile strength 5,000lb
- Compatible w/SAS HLL accessories
- Hot dip galvanized (HDG), 304sst or 316sst
- 3rd Party engineering by DH Glabe & Assoc. Report available on request
- Contact SAS sales team for custom mfg. and lead times

Compliance:
ANSI Z359.18-17 Type A/T
CSA Z259.15-22 Type A/T
OSHA 1926.502

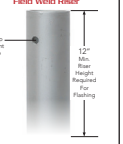
Ordering Information:
- Order CRR-4 Model Size
- Order CRO 4-Way Top

CRO-4 4-Way Top

Part Name	Part No.	Type	Loop Top	wt.
▲CRO 4-Way	1400-4WG	HDG	NO.1093 Q345 Steel	16lb

▲ *Stock Part includes attachment bolt pkg. and socket screws. Not available in stainless steel*

CRR-4 Field Weld Riser



Request Unit Pricing

Riser Height	Part Name	Part No.	Material Type	4-Way □Top	Anchor wt.	Riser ▲Sch
12	CRR-4-12	1202-4G	HDG	1400-4WG w/1093 Loop Top	19lb	80 0.337 4.5" od
		1202-4S	304sst			
18	CRR-4-18	1203-4G	HDG		28lb	
		1203-4S	304sst			
24	CRR-4-24	1204-4G	HDG		35lb	
		1204-4S	304sst			
30	CRR-4-30	1205-4G	HDG		44lb	
		1205-4S	304sst			
36	CRR-4-36	1206-4G	HDG		53lb	
		1206-4S	304sst			

■ Standard Design Custom mfg. ▲Nominal Dimension.
□ Order 4-Way top separately.
Note 1: Max. proof load 2,500lb.
Note 2: If required, foam filling to be provided by contractor after welding.

Bolt Pkg.
1/2"x 7.0" 18-Bast
Attachment Bolt w/Lock Nut
Bonded SST Seal Washers

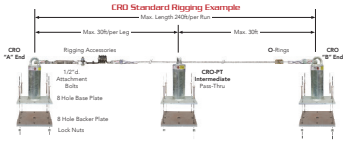
CRO HLL Rigging

CRO HLL Standard Rigging
CRO 4.5"od. risers use standard rigging accessories with special couplers designed to fit No.1093/1093-S loop tops with 2.0"id. openings. SAS HLL instruction/specification manuals designate "A" and "B" ends to specify the positions of rigging accessories. Turnbuckles are used at the "A" end to tension the cable and are coupled to a spring E/A. The spring E/A tension gauge when fully deployed provides a visible indicator that approx. 250-300lb has been applied to the cable. The "B" end is always terminated with an eye thimble swage. Intermediate 4-Way anchors are rigged the same way unless otherwise specified on the roof plan.

Compliance/Certification
SAS anchors and accessory components are 3rd party certified to comply with current ANSI and OSHA standards.
- CRA/CRO Intertek Lab Reports
- Engineering by DH Glabe & Assoc.
- HLL drop test by SAS

Report available on request.

CRO Standard Rigging Example



Standard Rigging Specifications:
- **Anchor Attachment to Structure:**
  a) Bolt attached
  b) Concrete embedment
  c) Concrete expansion bolts
  d) Epoxy wedge bolts
  e) Field welded
- **Max. HLL Length (Run):** 240ft
- **Max. Anchor Spacing (Leg):** 30ft
- **"A" and "B" ends:** Loop top or 4-Way anchor.
- **Intermediate Anchor:** Pass-Thru or 4-Way anchor
- **"A" end:** Coupler + turnbuckle + spring E/A
  Note: Turnbuckles when used with No.1093/1093-S loop tops require the use of coupler No.1086-S
- **"B" end:** Cable termination + coupler No.1086-S

User Specifications:
- **Fall Arrest:** Max 2 persons per HLL run w/max 3 person per leg
- **Fall Restraint:** 4 persons per HLL run w/max. 2 persons per leg
- Personal energy absorber required for each person

Cable Terminations:
- Field swage both ends of HLL length
  a) Cable clamps
  b) Optional 8001-CFS on site hyd. crimper system
  c) One end factory swaged

HLL Cable:
- Cut to length +5ft as measured from roof plane and verified by field measure.
- Bulk cable cut to length on site

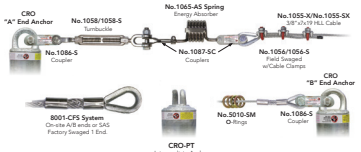
Alternate Rigging
Turnbuckles and spring E/As may be attached to opposite end of a HLL length using special application couplers.

CRO HLL Rigging Specifications

CRO HLL Standard Rigging
Specified for use with end, intermediate, and 4-Way anchors mfg. with 4.5" od. risers and HLL rigging accessories. End users can use these same components to arrange their own job specific HLL systems. Consult catalog HLL accessory pages for component specifications.

Specifications
- 2 person fall arrest
- 4 person fall restraint
- Max. HLL lengths 240ft
- Max. end and intermediate anchor spacing 30ft
- 4.5" od. end, pass-thru and 4-way anchors
- No.1093/1093-S 2.0" id. loop tops
- No.1091/1091-S pass-thru tops
- Hot dip galvanized and stainless steel systems
- Max. weight of persons attached to the HLL system is 310lbs requires the use of a personal energy absorber
- Optional 8001-CFS hydraulic field swage system
- 3rd party engineering by DH Glabe & Assoc. Report available on request
- Contact SAS sales team for HLL plan service

CRO HLL Standard Rigging End/Intermediate Anchors
Models mfg. with No.1093/1093-S Loop Tops. Note: "A" and "B" end designations are for reference.

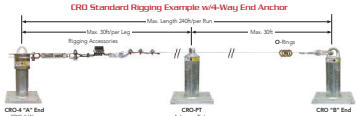


CRO HLL Standard Rigging w/4-Way Anchors
4-Way's are specified for connecting additional HLL runs or extending HLL lengths longer than 240ft.

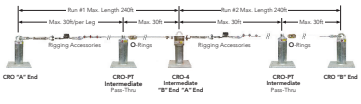
CRO HLL Rigging

CRO 4.5"od. risers use standard rigging accessories with special couplers designed to fit No.1093/1093-S loop tops with 2.0"id. openings.

CRO Standard Rigging Example w/4-Way End Anchor



CRO Standard Rigging Example w/4-Way Intermediate

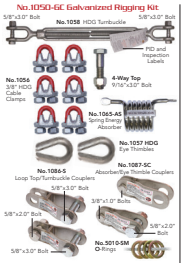


4-Way Rigging Examples

CRO HLL Rigging Kits

HLL rigging kits for CRO anchors mfg. with No.1093/1093-S loop tops. Supplied with 18-8 or+ sst bolts and lock nuts. Order No.1055-X/1055-SX HLL cable separately.

No.1050-GC Galvanized Rigging Kit



Part No.	No.Pcs	Description	Finish
1056-S	2ea	3/8" Cable Clamps	HDG
1057-S	1ea	3/8" Eye Thimble	304SHS
1058	1ea	3/4"x4" Turnbuckle	HDG
	2ea	5/8"x2.0" Bolt	18-Bast
1065-AS	1ea	Spring Absorber	304sst
1086-S	1ea	Couplers	
	2ea	5/8"x2.0" Bolt	18-Bast
	2ea	5/8"x3.0" Bolt	
1087-SC	2ea	Absorber Couplers	304sst
	2ea	3/8"x1.0" Bolts	18-Bast
	1ea	5/8"x2.0" Bolt	
4-Way Bolt	1ea	9/16"x3.0" Bolt	18-Bast
5010-SM	4ea	HLL O-Rings	Zinc

Request Unit Pricing

Part No.	Contents	pkg/wt.
1050-GC	Galvanized Rigging Kit	14.5lb

No.1051-SC SST Rigging Kit

Part No.	No.Pcs	Description	Finish
1058-S	2ea	3/4" Cable Clamps	316sst
1057-S	1ea	3/8" Eye Thimble	304SHS
1058-S	1ea	3/4"x4-1/2" Turnbuckle	316sst
	2ea	5/8"x2.0" Bolt	18-Bast
1065-AS	1ea	Spring Absorber	304sst
1086-S	1ea	Couplers	
	2ea	5/8"x2.0" Bolt	18-Bast
	2ea	5/8"x3.0" Bolt	
1087-SC	2ea	Absorber Couplers	304sst
	2ea	3/8"x1.0" Bolts	18-Bast
	1ea	5/8"x2.0" Bolt	
4-Way Bolt	1ea	9/16"x3.0" Bolt	18-Bast
5010-SM	4ea	HLL O-Rings	Zinc

Request Unit Pricing

Part No.	Contents	pkg/wt.
1051-SC	SST Rigging Kit	12.5lb

CRO HLL Couplers

CRO Couplers
CRO couplers are specified for use with No.1093/1093-S 2.0"id. loop tops and are required for rigging HLL systems using CRO model anchors.

No.1086-S Coupler

1086-S pkg. Contents
1ea No.1086-S 11ga.316sst coupler
1ea 5/8"x2.0" eye thimble bolt
1ea 5/8"x3.0" turnbuckle bolt
1ea 5/8"-±3.0" No.1093/1093-S loop top bolt
Min. tensile strength 5,000lb
Compatibility
- 3/8" Eye thimbles
- No.1093/1093-S loop top anchors
- No.1058/1058-S turnbuckles

Attachment Bolts
Eye Thimble 3/8"x2.0"
Turnbuckle/No.1093/1093-S Loop Tops 5/8"x3.0"

No.1086-SA Coupler

1086-SA pkg. Contents
1ea No.1086-SA 11ga.316sst coupler
1ea 3/8"x1.0" spring E/A bolt
1ea 5/8"x3.0" No.1093/1093-S loop top bolt
Min. tensile strength 5,000lb
Compatibility
- No.1065-AS spring E/A
- No.1093/1093-S loop top anchors

Attachment Bolts
Spring E/A 3/8"x1.0"
No.1093/1093-S Loop Tops 5/8"x3.0"

Request Unit Pricing

Part No.	Contents	pkg/wt.
1086-S	See pkg. Contents	26.0 oz
1086-SA		15.0 oz

CRO Standard Rigging Example
Shown without Intermediate Pass-Thru Anchors

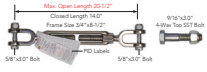
HLL Rigging Accessories

HLL accessories are components required for rigging a complete HLL system and may be purchased separately or in a kit.

Turnbuckles
Required for HLL tensioning.

No.1058 Galvanized
Max. Open Length 34-1/2"

No.1058-S 316sst
Max. Open Length 20-1/2"



No.1058 pkg. Contents
- 1ea No.1058 galv. turnbuckle, working load 5,200lb, min. breaking strength 26,000lb
- 2ea 5/8"x3.0 nut bolts
- 1ea 9/16"x3.0" 4-Way sst bolt

No.1058-S pkg. Contents
- 1ea No.1058-S 316sst turnbuckle, working load 5,200lb, min. breaking strength 15,600lb
- 2ea 5/8"x3.0 sst bolts
- 1ea 9/16"x3.0" 4-Way sst bolt

Request Unit Pricing

Part No.	Description	pkg/wt.	pcs/pkg.
1052-G	Factory Swage Galv.	N/A	1
1052-S	Factory Swage SST		
1053-A	HLL Cable Galv.	0.243lb per.ft.	Per/HLL Length
1053-SA	HLL Cable SST		
1056	Cable Clamps Galv.	7.3oz	1
1056-S	Cable Clamps SST		
1057	Eye Thimble Galv.	3.5oz	
1057-S	Eye Thimble SST		
1058	Turnbuckle Galv.	6lb	
1058-S	Turnbuckle SST	10lb	
5010-SM	O-Ring Small Diam.	1.6oz	

3/8"x7x19 HLL Cable

Order cut to length by the ft.
Note: SAS adds an additional 4ft to the HLL cable length

Part No.	Type	Strength	wt. per/ft.
1055-A	Galv.	14,000lb	0.243lb
1055-SX	316sst	12,500lb	

3/8" Cable Clamps
Field swage HLL terminations with 3/8"x7x19 cable. 3 required for swage.

3/8" Eye Thimbles
Required for 3/8" HLL terminations.

Connector O-Ring
No.1052-G/S Zinc Plated

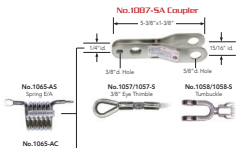
Connects PPE to HLL cable. Sized to fit pass-thru tops. ▲5,000lb min. tensile strength

Factory/Swage
No.1052-G/S
HLL cables can be specified for one end to be factory swaged.

Special Application HLL Couplers

Non-Standard Rigging Couplers
Specified for use with No.1065-AC coil E/A or No.1065-AS spring E/A. 18-8 stainless steel attachment bolts and lock nuts supplied with each coupler.

No.1087-SA Coupler



No.1087-SA pkg. Contents
1ea No.1087-SA 11ga.304sst coupler
1ea 3/8"x1.0" spring E/A bolt
1ea 5/8"x2.0" eye thimble bolt
1ea 5/8"x3.0" eye thimble bolt
1ea 5/8"x3.0" turnbuckle bolt
Min. tensile strength 5,000lb
Compatibility
- No.1065-AS spring E/A
- No.1065-AC coil E/A
- No.1057/1057-S 3/8" eye thimbles
- No.1058/1058-S turnbuckles

Attachment Bolts
18-8sst w/sst Lock Nuts
Spring E/A 3/8"x1.0"
Coil E/A 5/8"x1-1/2"
Eye Thimble 5/8"x2.0"
Turnbuckle 5/8"x3.0"

No.1087-SB Coupler

No.1087-SB pkg. Contents
1ea No.1087-SB 11ga.304sst coupler
1ea 3/8"x1.0" spring E/A bolt
1ea 5/8"x3.0" eye thimble bolt
1ea 9/16"x3.0/4" 4-Way top bolt
1ea 5/8"x2-1/4" No.1090/1090-S loop top bolt
Min. tensile strength 5,000lb
Compatibility
- No.1065-AS spring E/A
- No.1065-AC coil E/A
- No.1054-G/1054-S 4-Way tops
- No.1090/1090-S loop tops

Attachment Bolts
18-8sst w/sst Lock Nuts
Spring E/A 3/8"x1.0"
Coil E/A 5/8"x1-1/2"
4-Way Top 9/16"x2-1/4"
No.1090/1090-S Loop Tops 5/8"x2-1/4"

Request Unit Pricing

Part No.	Contents	pkg/wt.
1087-SA	See pkg. Contents	22.0oz
1087-SB		

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