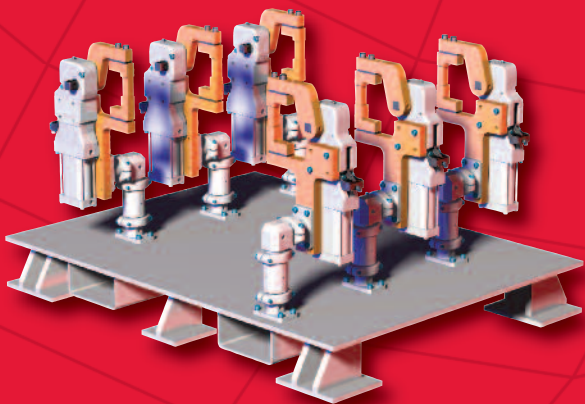
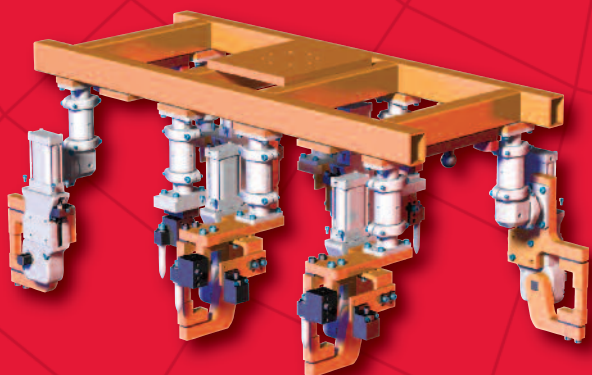
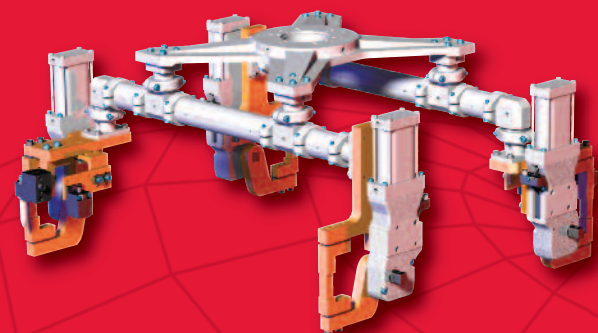




ALUMINUM

END EFFECTOR AND TOOLING SYSTEM

FEBRUARY 2009



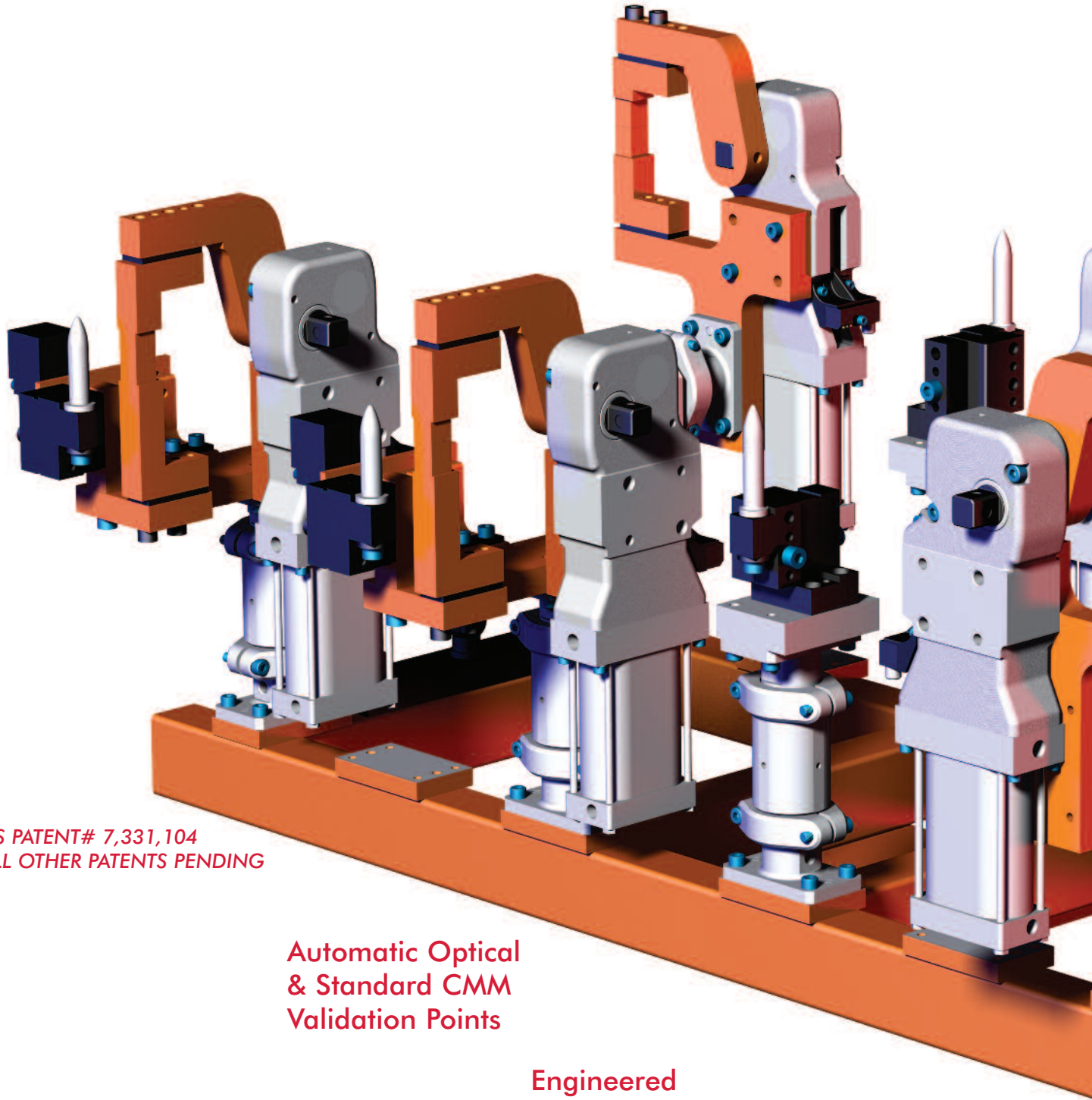
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CAD FILES
AVAILABLE
ONLINE



Introduction to the SpiderGrip End Effectors System Features and Benefits



US PATENT# 7,331,104
ALL OTHER PATENTS PENDING

Automatic Optical
& Standard CMM
Validation Points

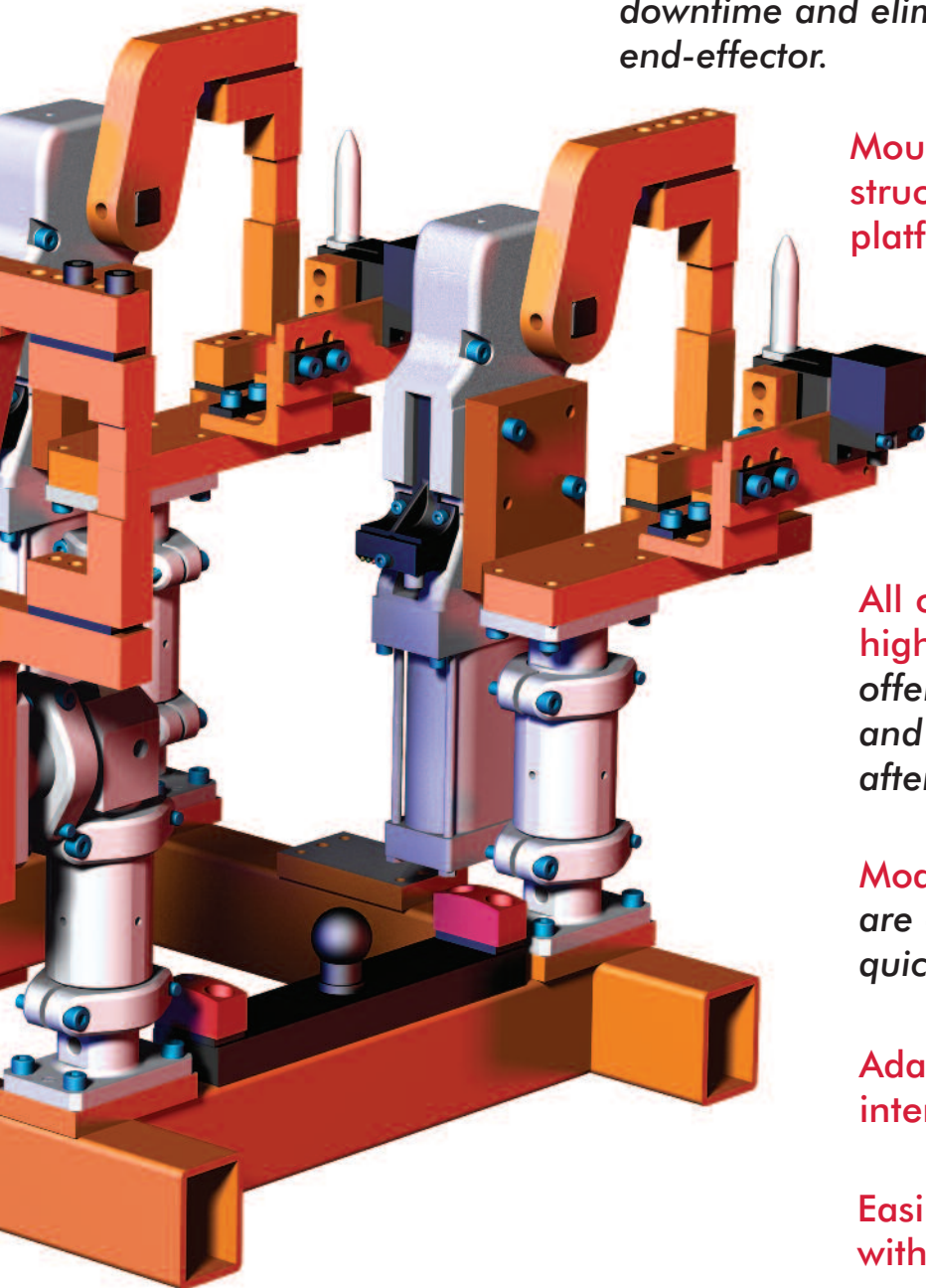
Engineered
Breakaway Feature

Crash Test Certified



Introduction to the SpiderGrip End Effectors System Features and Benefits

SpiderGrip Modular End Effector Tooling System offers a standard cost effective solution by making it easy for each component to be replaced individually in the robotic cell, dramatically reducing production downtime and eliminating the need for a second end-effector.



Mounts to a family of mounting structures and application driven platforms with standard hole patterns.

**Boom extensions available in lengths of 50mm to 600mm in 50 mm increments.
25mm boom available**

All components are constructed from high-grade aircraft quality aluminum offers high strength to weight ratios and maintains dimensional accuracy after continuous minor collisions.

Modular Components are easily configurable and provides quick crash recovery.

Adapts to all robot and tool changer interface patterns.

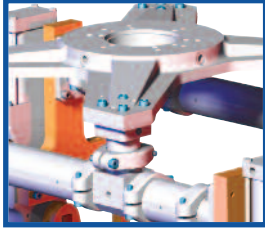
Easily Accommodates and is Compatible with Docking Applications.

Components available in all CAD formats.

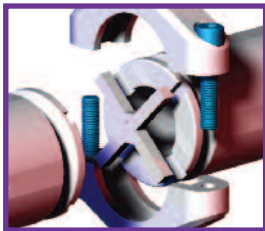


SpiderGrip End Effector Tooling Systems

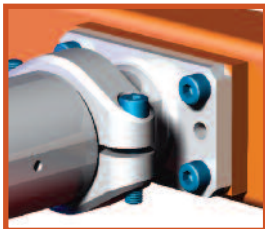
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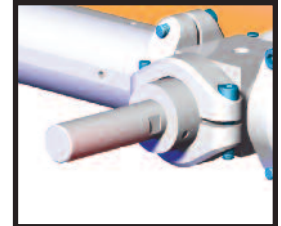


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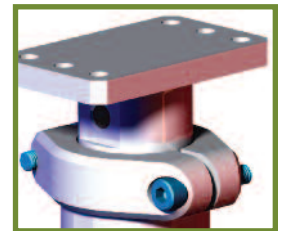


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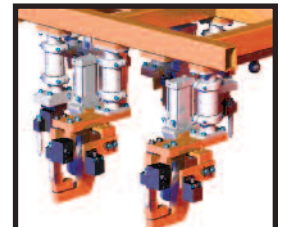
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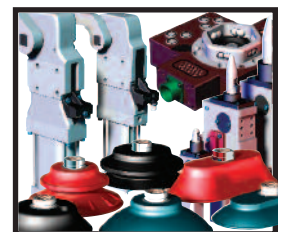
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 Ø60mm 90° Edge Part with 50mm Center to Face Offset Page 32
 Ø90mm 90° Edge Part with 75mm Center to Face Offset Page 33
 Ø60mm Offset Edge Part with 25mm Face Offset Page 34
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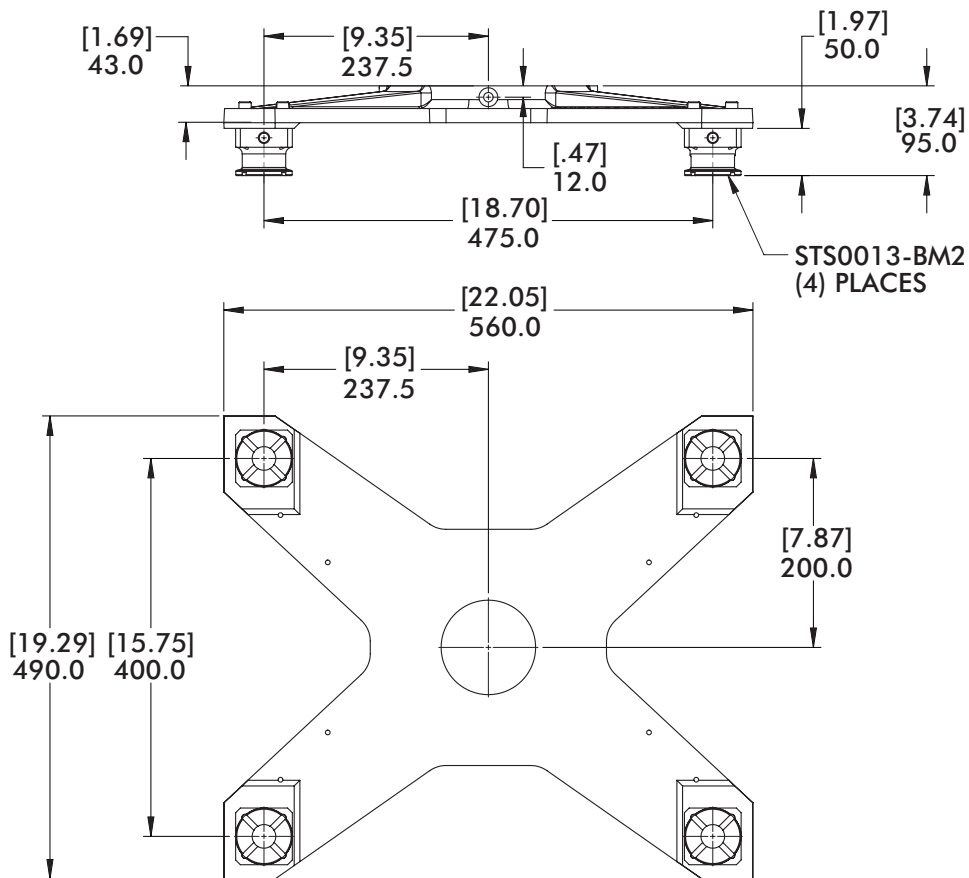
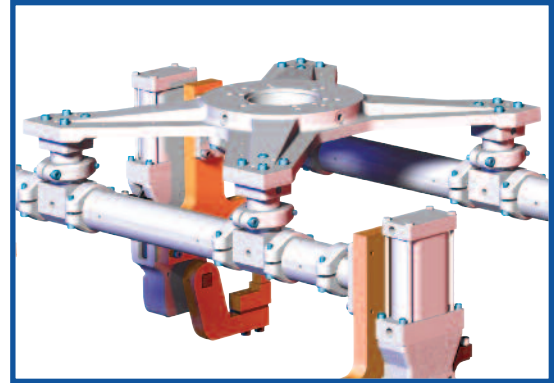
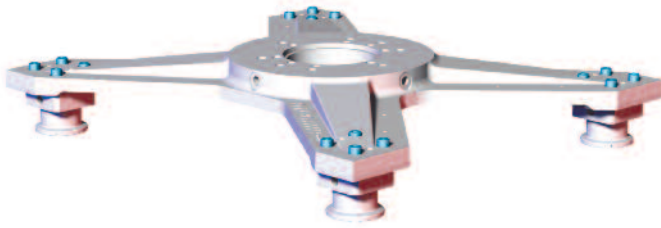
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DE-STA-CO offers a complete system solutionPage 38-39



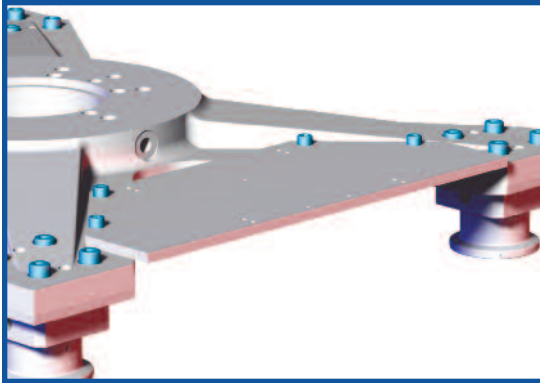
SpiderGrip Mid Mount Assembly Heavy-Duty Mid Mount Assembly-Dimensions



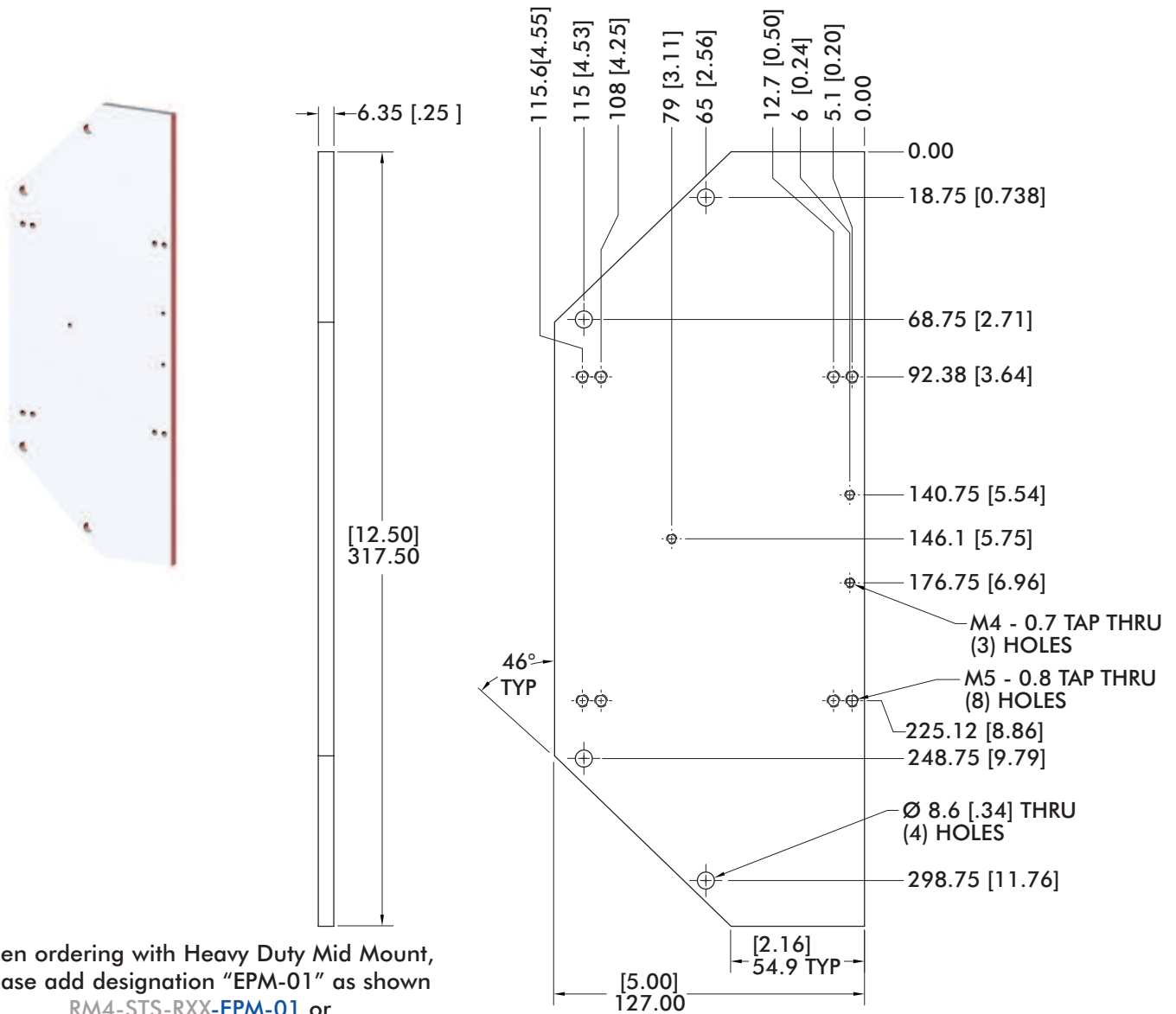
RM4-STX — **RXX** — **XX**

Model **Robot Interface Pattern** **Accessory**
(e.g. EPM-01)
(Leave blank if NONE)

Weight
10.4 kg [22.89 lb]



SpiderGrip Mid Mount Assembly Accessory Mount Plate

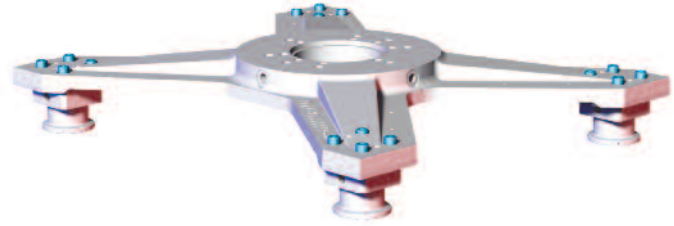


When ordering with Heavy Duty Mid Mount, please add designation "EPM-01" as shown RM4-ST5-RXX-EPM-01 or add designation "EPM-BLK" to order blank RM4-ST5-RXX-EPM-BLK To order separately use Model Number

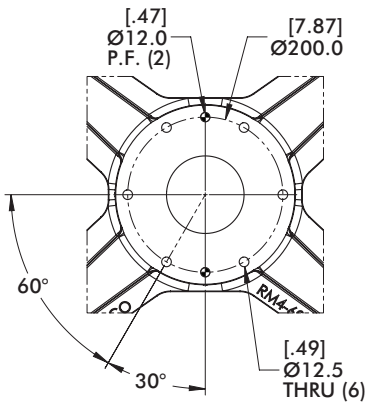
Model Number	Weight
CPI-BM2-EPM-xx	.63 kg [1.39 lb]



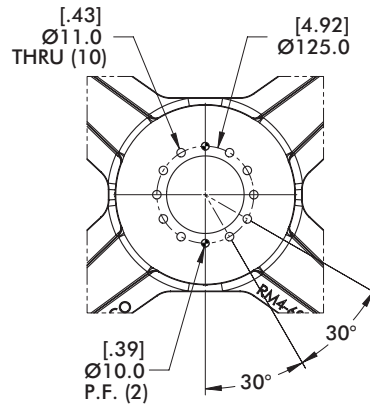
SpiderGrip Mid Mount Assembly Robot Interface Bolt Patterns



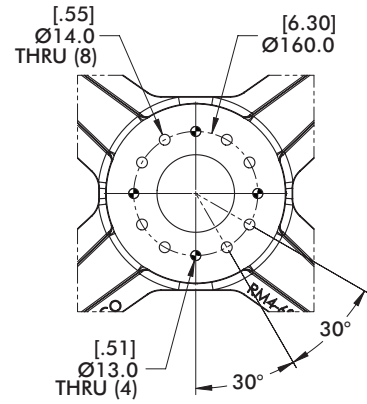
R01 (Ø200mm Bolt Circle)



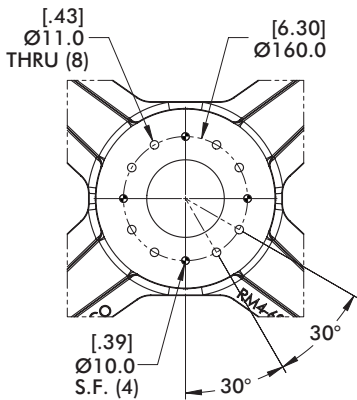
R02 (Ø125mm Bolt Circle)



R03 (Ø160mm Bolt Circle)



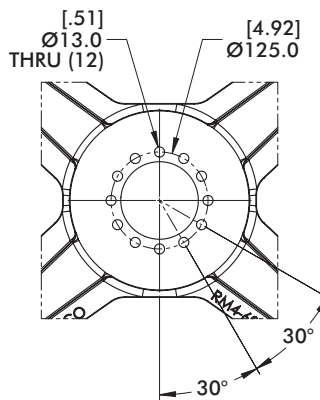
R04 (Ø160mm Bolt Circle)



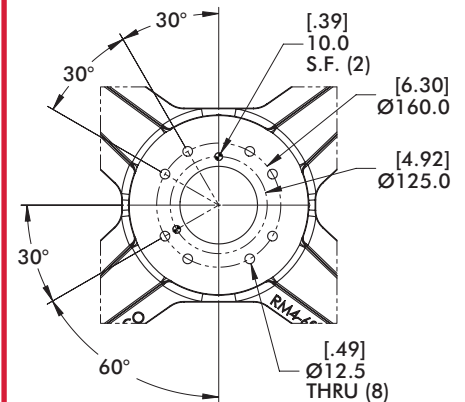
R05 (Ø125mm Bolt Circle)

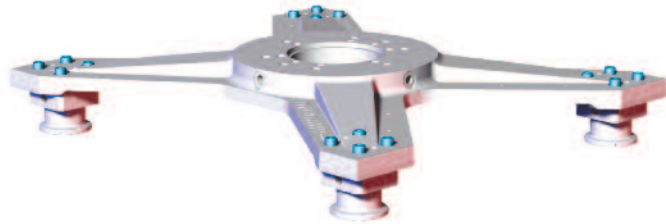


Includes Insulation
Add 1.5mm to Height (95.0 [3.74])



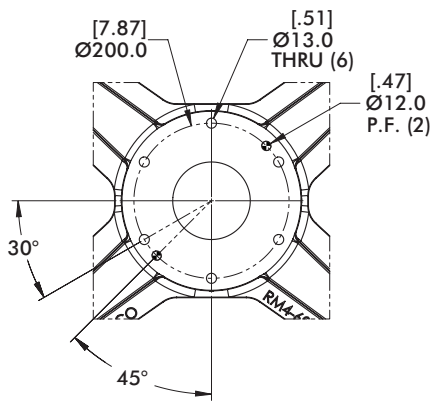
R06 (Ø125/160mm Bolt Circle)



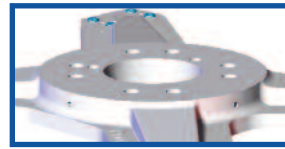


SpiderGrip Mid Mount Assembly Robot Interface Bolt Patterns

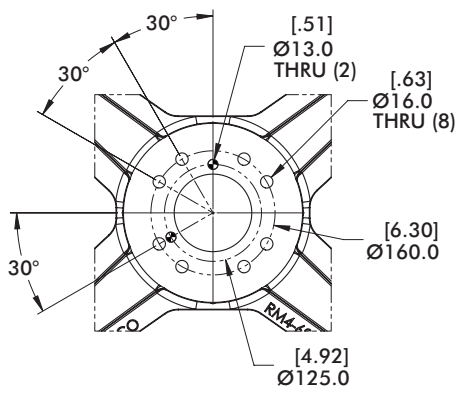
R07 (Ø200mm Bolt Circle)



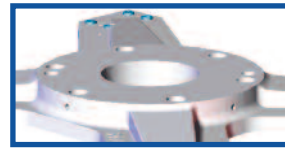
R08 (Ø125/160mm Bolt Circle)



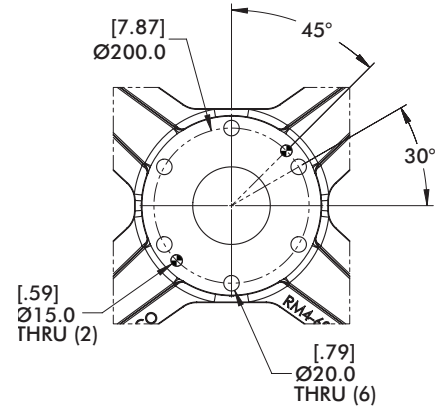
Includes Insulation
Add 1.5mm to Height (95.0 [3.74])



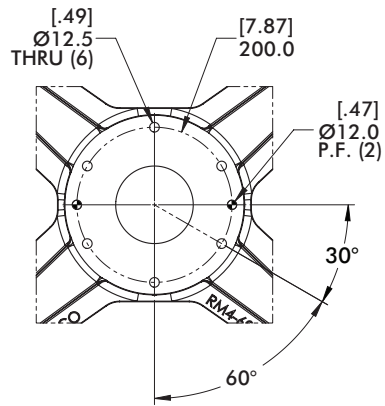
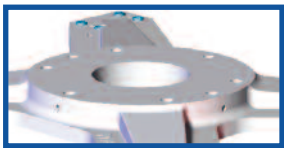
R09 (Ø200mm Bolt Circle)



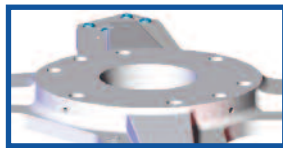
Includes Insulation
Add 1.5mm to Height (95.0 [3.74])



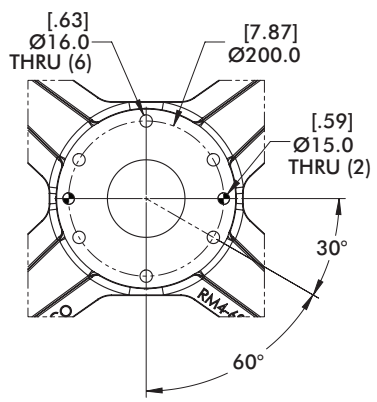
R10 (Ø200mm Bolt Circle)



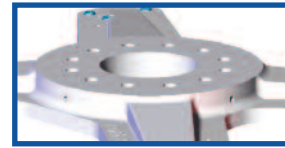
R11 (Ø200mm Bolt Circle)



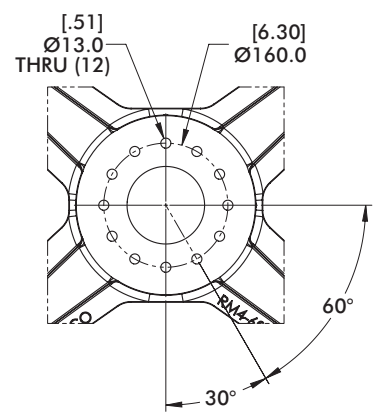
Includes Insulation
Add 1.5mm to Height (95.0 [3.74])



R12 (Ø160mm Bolt Circle)

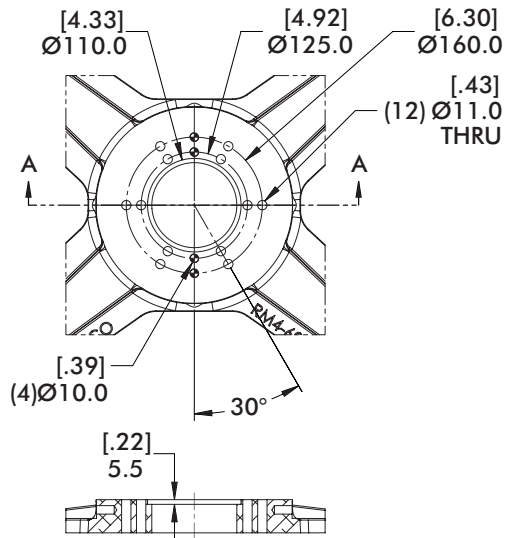
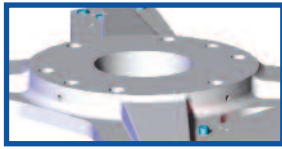


Includes Insulation
Add 1.5mm to Height (95.0 [3.74])

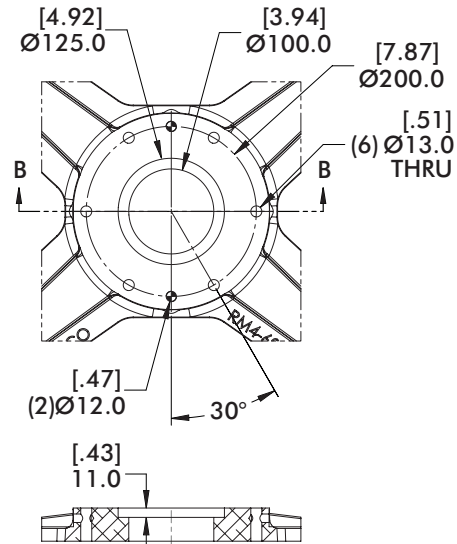
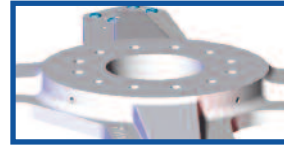


SpiderGrip Mid Mount Assembly Robot Interface Bolt Patterns

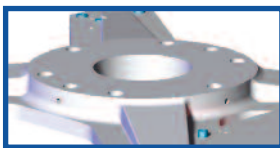
**R13 (Ø125/160mm Bolt Circle)
(Ø110mm Pilot, 5.5mm Deep)**



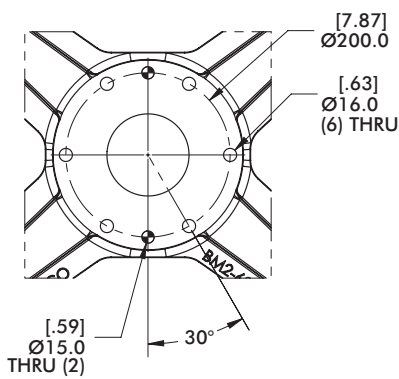
**R14 (Ø200mm Bolt Circle)
(Ø125mm Pilot, 11mm Deep)**



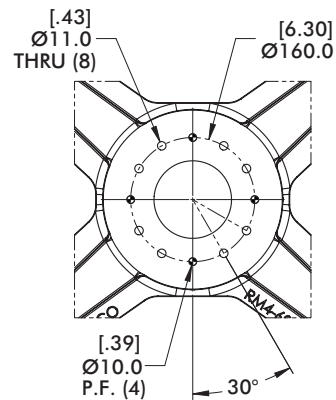
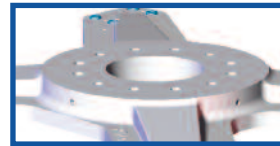
R16 (Ø200mm Bolt Circle)

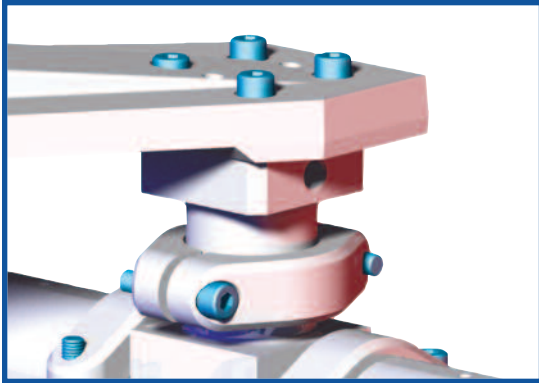


Includes Insulation
Add 1.5mm to Height (95.0 [3.74])



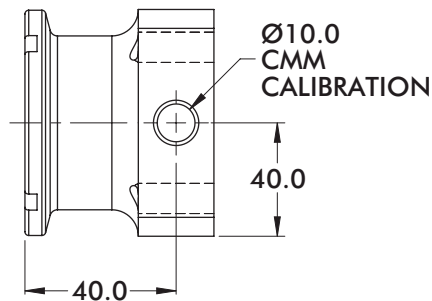
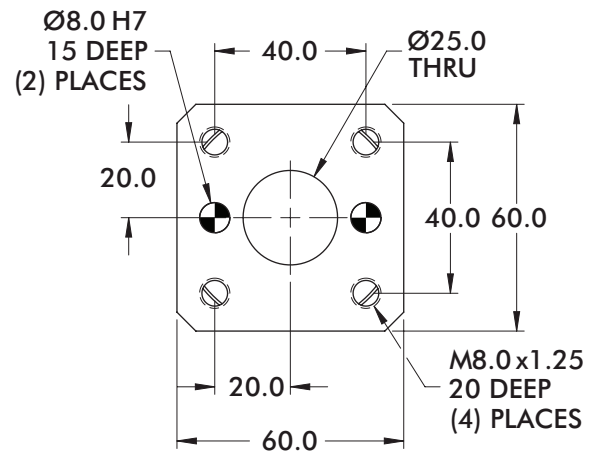
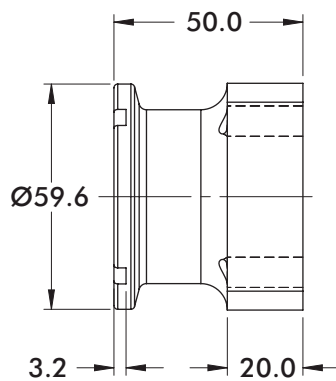
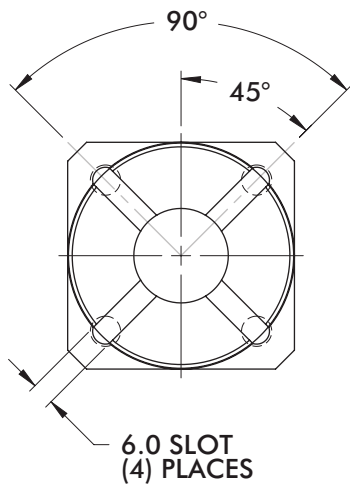
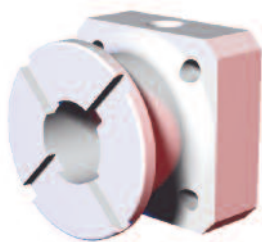
R17 (Ø160mm Bolt Circle)





SpiderGrip Mid Mount Assembly

Ø60mm Mid Mount Anchor
40mm x 40mm Mounting Pattern - 50mm Face Offset



Model Number	Weight
STS0013-BM2	.25 kg [1.50 lb]

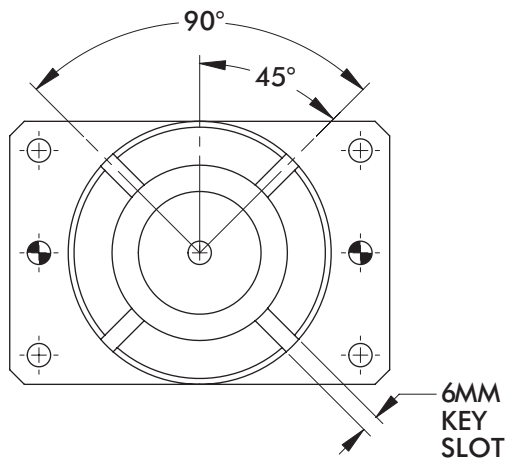
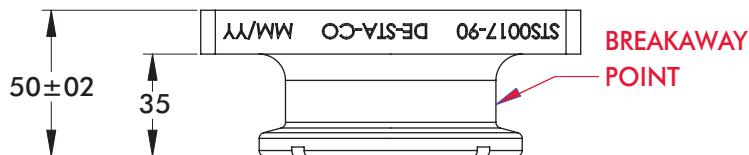
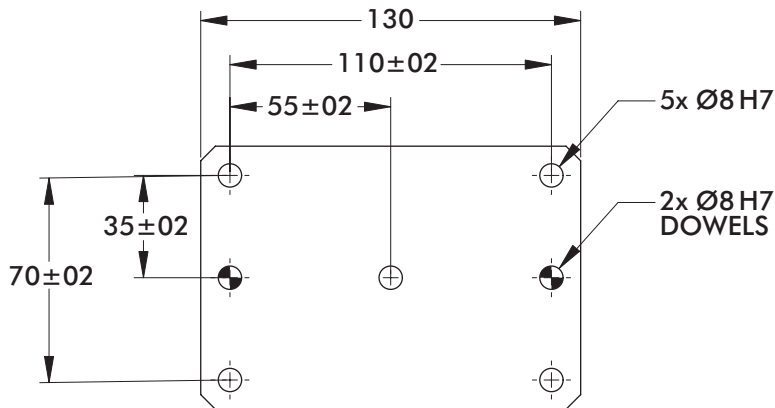
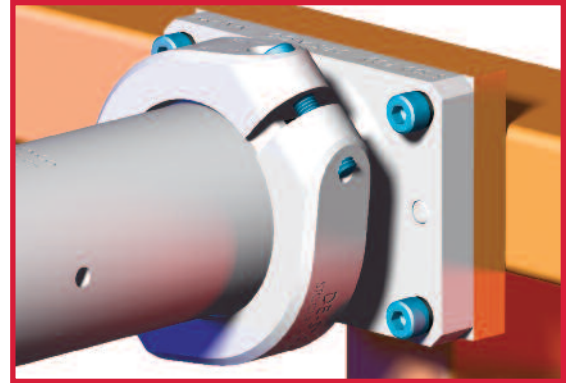


SpiderGrip Anchors and Collar Assemblies

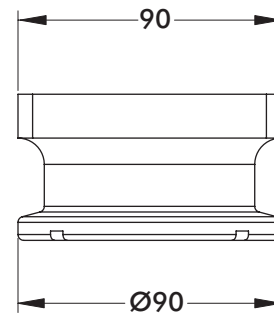
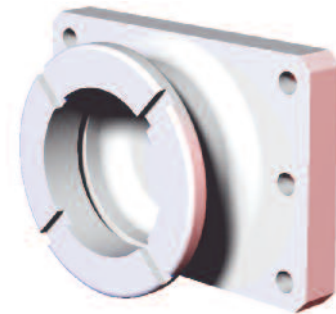
Ø90mm Base Anchor

110mm x 70mm Mounting Pattern-50mm Face Offset

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ALL OTHER PATENTS PENDING

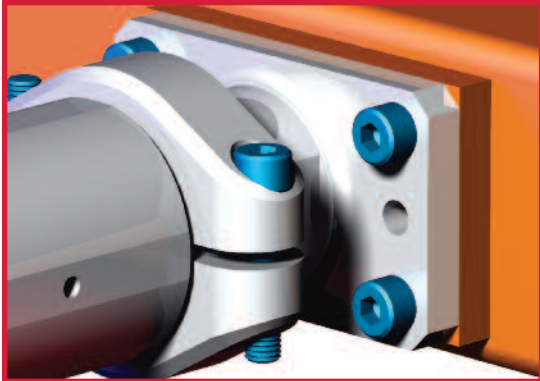


Engineered Breakaway Part



This Product is designed to breakaway at 2440 N*m [1800 ft-lb]

Model Number	Weight
STS0017-90	.64 kg [1.40 lb]

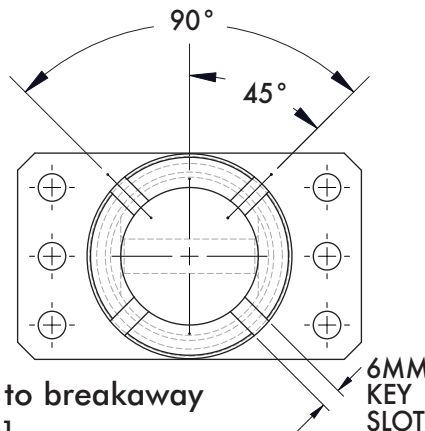
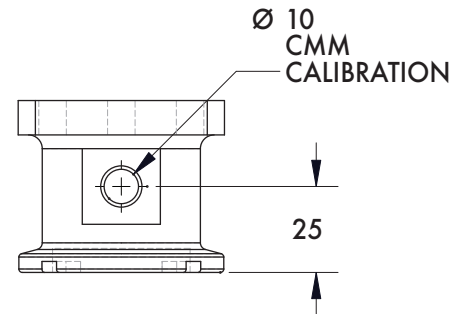
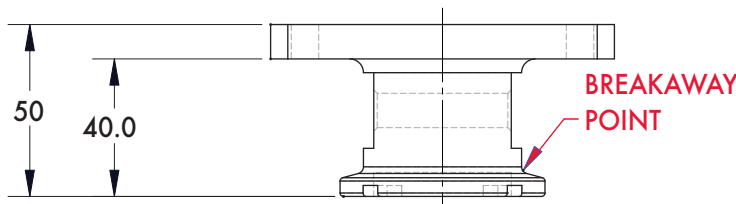
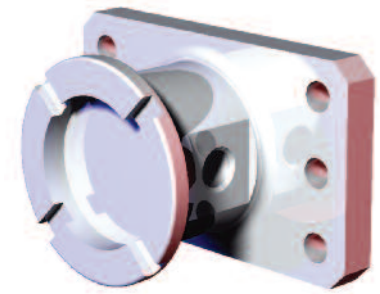
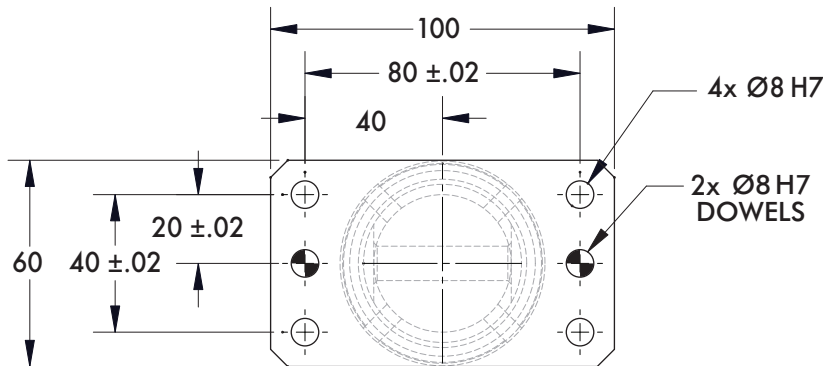


SpiderGrip Anchors and Collar Assemblies

Ø60mm Base Anchor with 50mm Face Offset
80mm x 40mm Mounting Pattern

US PATENT# 7,331,104
ALL OTHER PATENTS PENDING

Engineered Breakaway Part



This Product is designed to breakaway at 1627 N*m [1200 ft-lb]

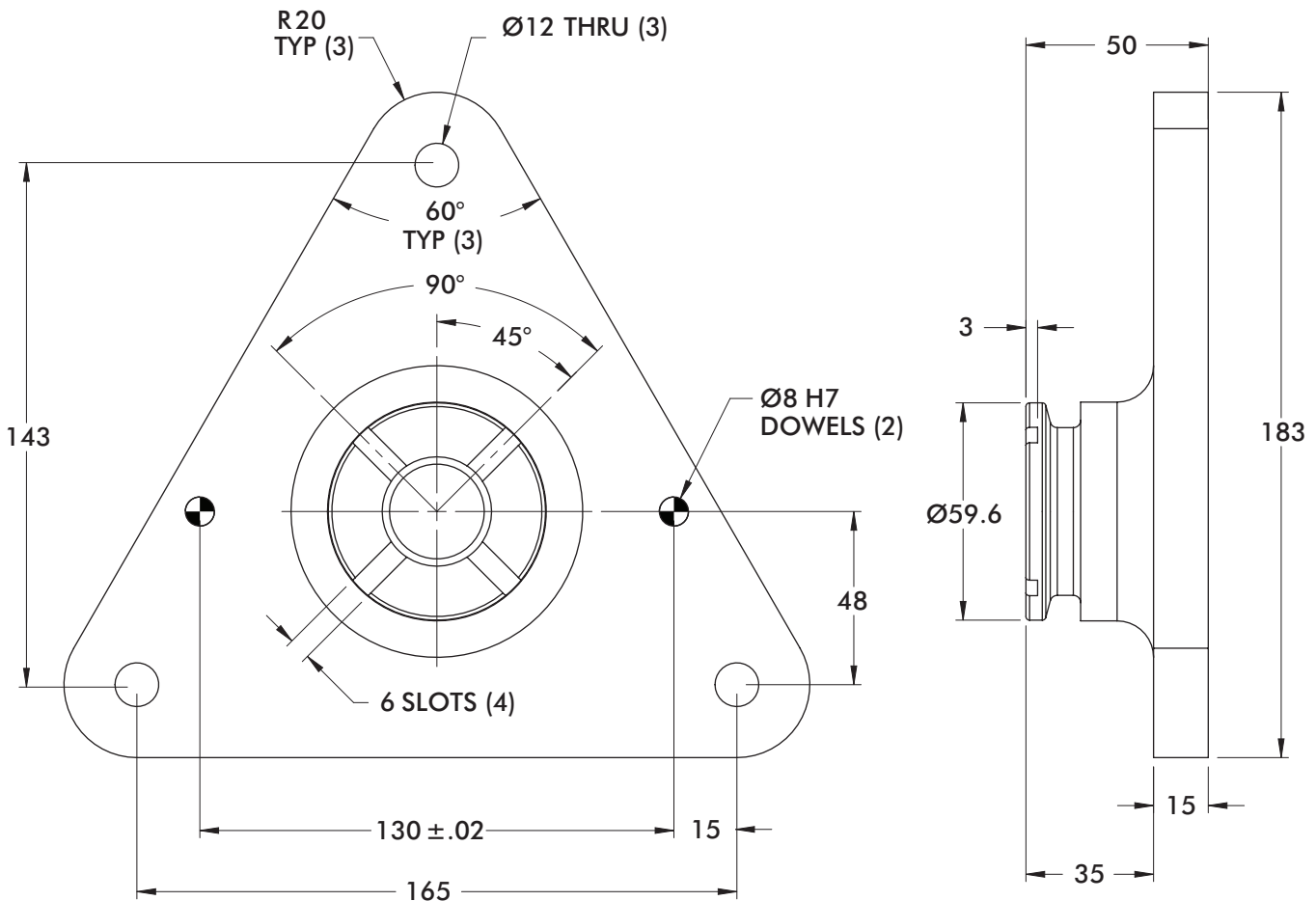
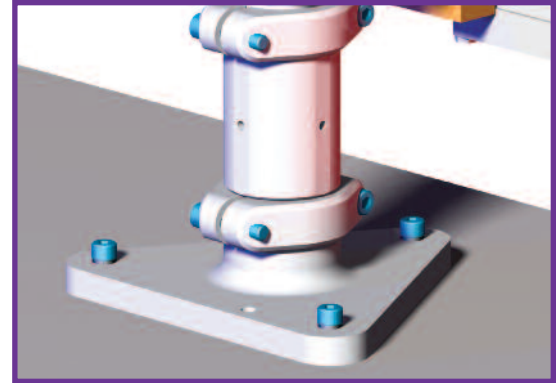
Model Number	Weight
STS0016-NA	.31 kg [.68 lb]



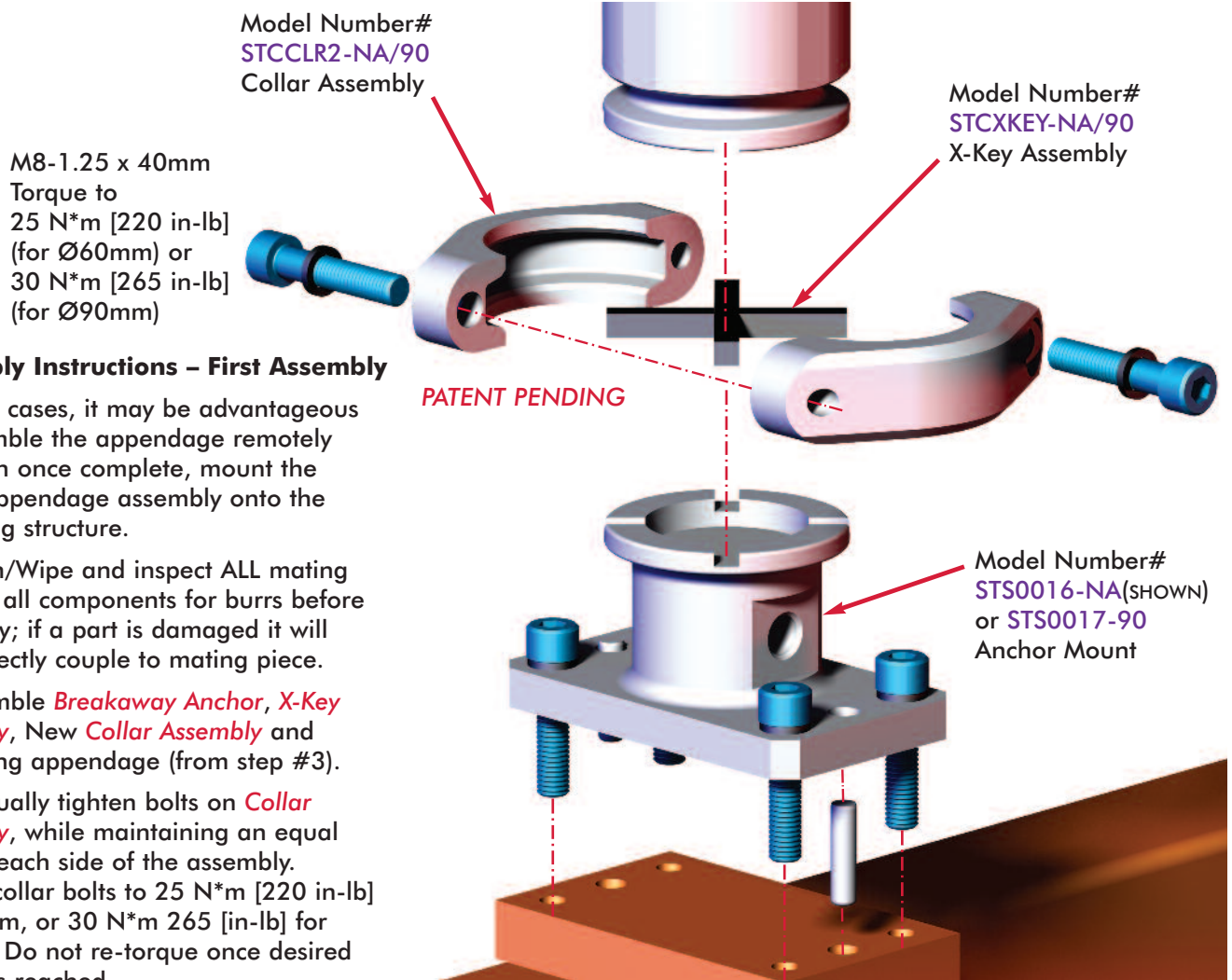
SpiderGrip Anchors and Collar Assemblies

Ø60mm HD Anchor Mount

(3) Hole Ø190mm Mount Pattern



Model Number	Weight
STP0001-NA	1.09 kg [2.40 lb]



Assembly Instructions – First Assembly

In many cases, it may be advantageous to assemble the appendage remotely and then once complete, mount the entire appendage assembly onto the mounting structure.

1. Clean/Wipe and inspect ALL mating faces of all components for burrs before assembly; if a part is damaged it will not correctly couple to mating piece.
2. Assemble *Breakaway Anchor*, *X-Key Assembly*, New *Collar Assembly* and remaining appendage (from step #3).
3. Gradually tighten bolts on *Collar Assembly*, while maintaining an equal gap on each side of the assembly. Torque collar bolts to 25 N*m [220 in-lb] for 60mm, or 30 N*m 265 [in-lb] for 90mm. Do not re-torque once desired torque is reached.
4. Mount appendage as assembled to steel backbone and insert new 8mm dowels into the dowel holes on the *Breakaway Anchor*.
5. Insert new M8-1.25 patchlock bolts into *Breakaway Anchor*, torque in a cross pattern following NAAMS recommended torque.
6. Attach steel tether (*STS-TETHER-08* or *STS-TETHER-16*) to appendage via one of the bolts located on the base of the *Breakaway Anchor*. The other loop will be attached to the first threaded M6 hole (located on the boom) or the M8 hole located on the edge part. The tether may



SpiderGrip Anchors and Collar Assemblies

Ø90mm Collar Components and Assembly

Assembly Number	Weight
STCCLR-90	.40 kg [.88 lb]

Includes (1) Collar Assembly (STCCLR2-90)
and (1) X-Key Assembly (STCXKEY-90).
Patch-lock fasteners included.



Max bolt torque when clamping to: 30 N*m [265 in-lbs]

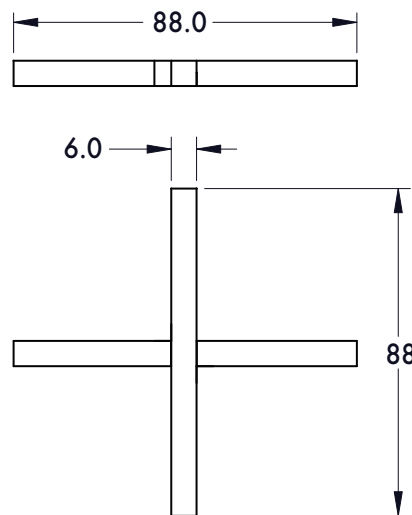
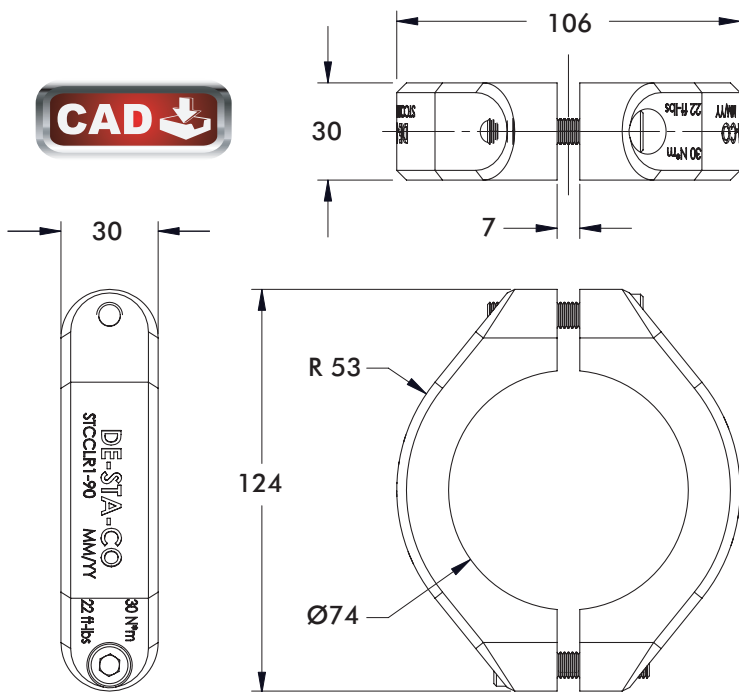


US PATENT# 7,331,104
ALL OTHER PATENTS PENDING



Patch-lock fasteners included.

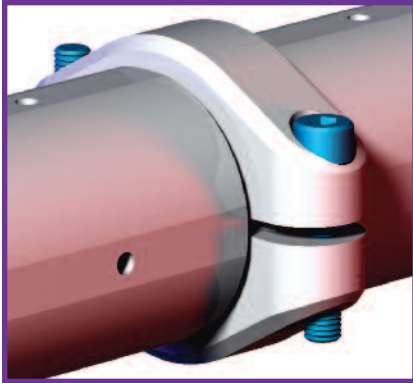
Model Number	Weight
STCCLR2-90	.35 kg [.77 lb]



Material: Steel

Model Number	Weight
STCXKEY-90	.05 kg [.11 lb]





SpiderGrip Anchors and Collar Assemblies Ø60mm Collar Components and Assembly

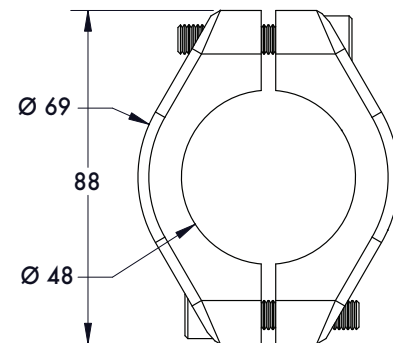
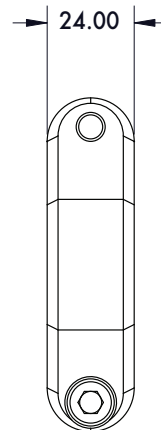
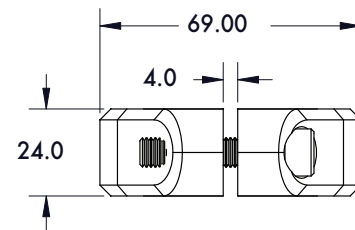
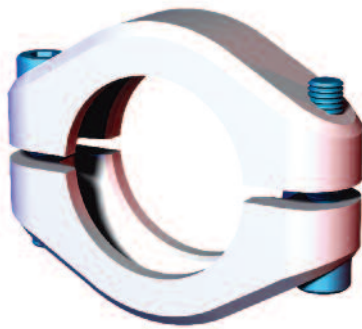
Assembly Number	Weight
STCCLR2-NA	.19 kg [.42 lb]

Includes (1) Collar Assembly (STCCLR2-NA) and (1) X-Key Assembly (STCXKEY-NA). Patch-lock fasteners included.



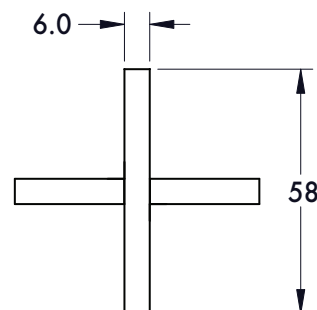
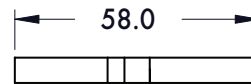
Max bolt torque when clamping to: 25 N*m [220 in-lbs]

US PATENT# 7,331,104
ALL OTHER PATENTS PENDING



Patch-lock fasteners included.

Model Number	Weight
STCCLR2-NA	.16 kg [.35 lb]

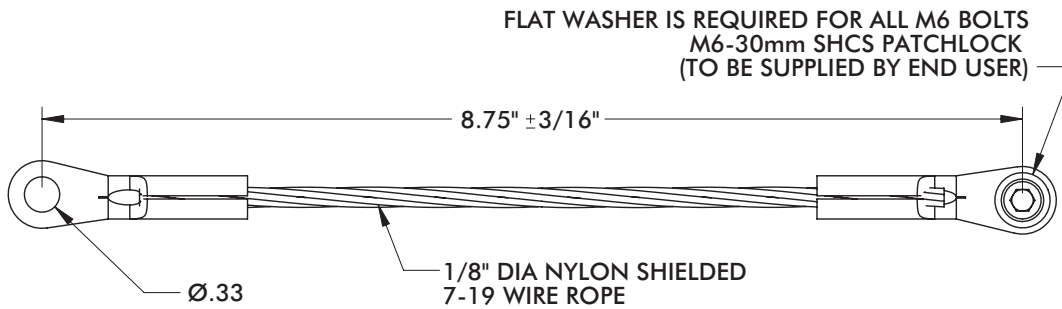
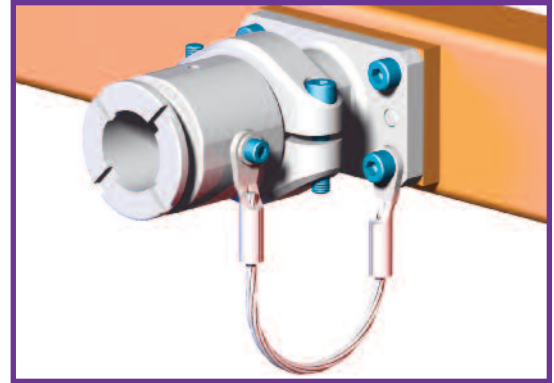


Material: Steel

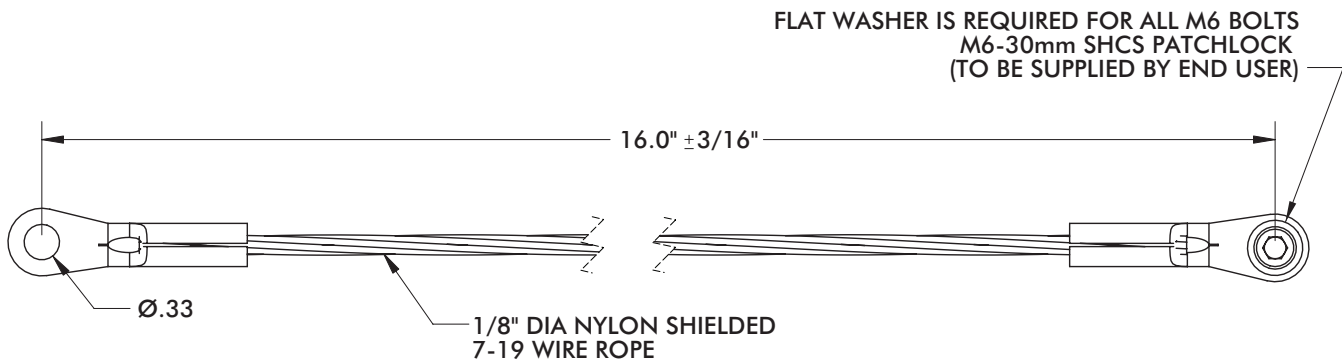
Model Number	Weight
STCXKEY-NA	.03 kg [.07 lb]



SpiderGrip Anchors and Collar Assemblies 9 inch and 16 inch Tether Assemblies



Model Number	Weight
STS-TETHER-09	.07 kg [.15 lb]



Model Number	Weight
STS-TETHER-16	.09 kg [.19 lb]

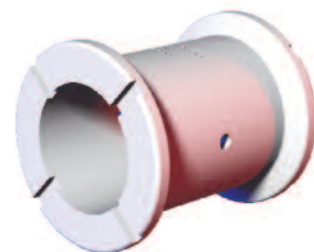


SpiderGrip End Effector System

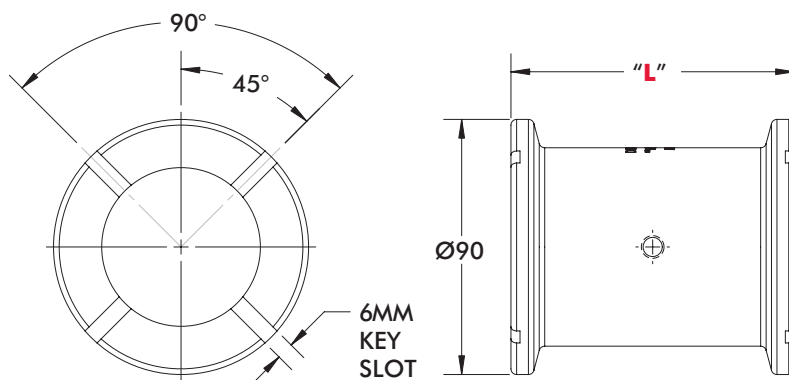


SpiderGrip Booms, Adaptors, and Spacers

Ø90mm Boom Dimensions and Lengths
See below for Lengths

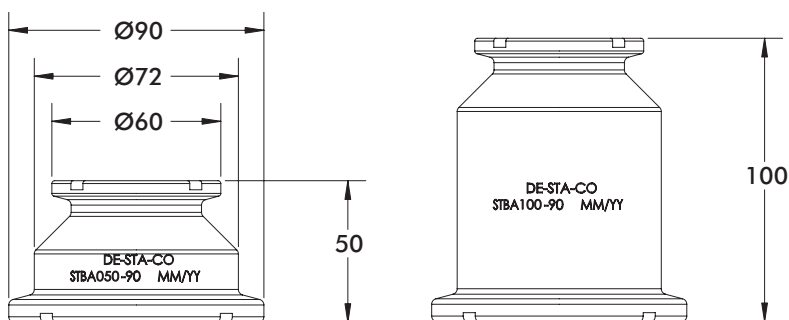
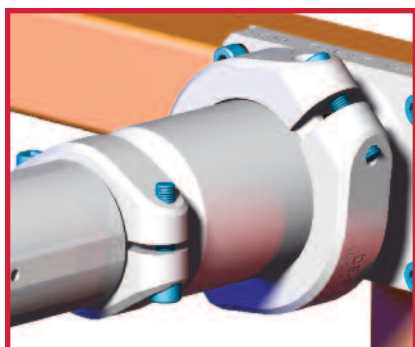


"L" = 50MM	Weight
STB0050-90	.30 kg [.66 lb]
"L" = 100MM	Weight
STB0100-90	.49 kg [1.07 lb]
"L" = 200MM	Weight
STB0200-90	.86 kg [1.90 lb]



Ø90mm to Ø60mm Boom Adaptor

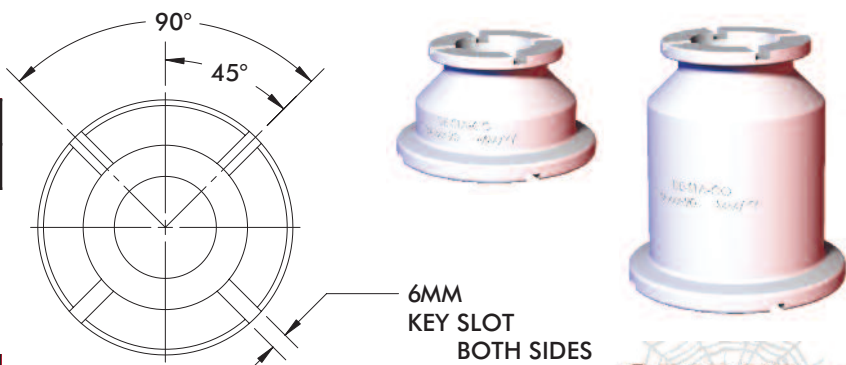
See below for Lengths



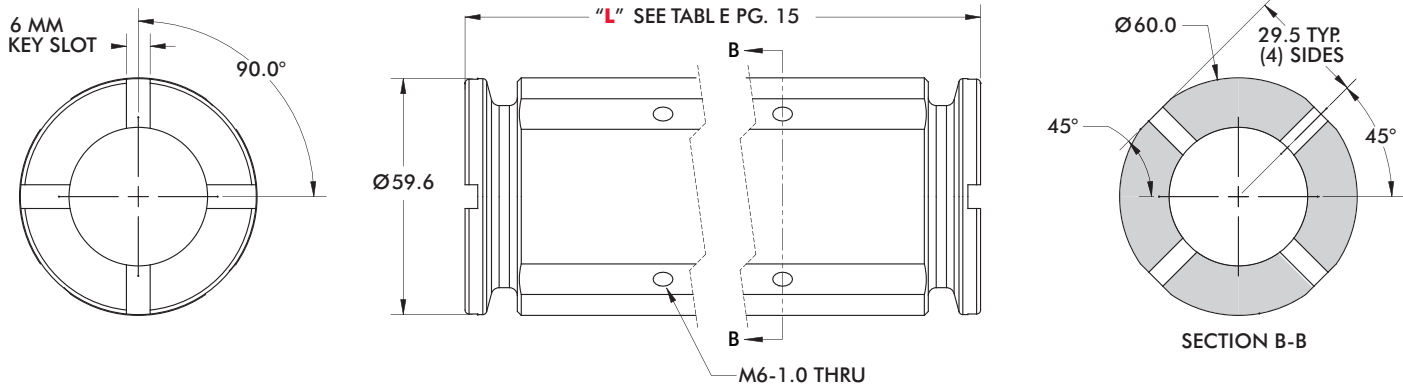
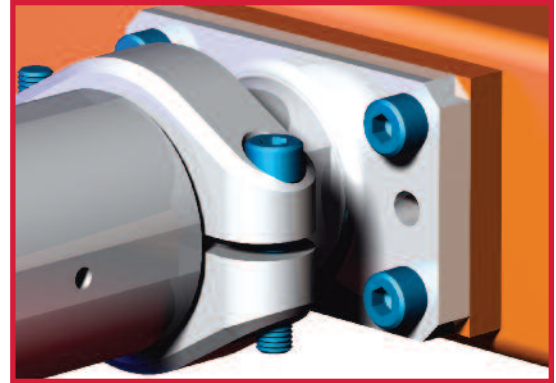
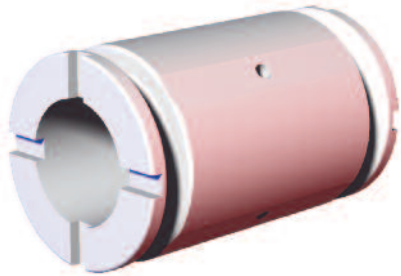
Model Number	Weight
STBA050-90	.23 kg [.51 lb]



Model Number	Weight
STBA100-90	.42 kg [.93 lb]

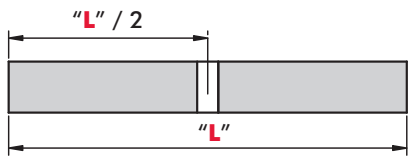



SpiderGrip Booms, Adaptors and Spacers Ø60mm Boom Dimensions and Lengths



M6 tap holes along the boom are used to mount accessories



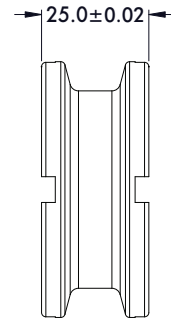
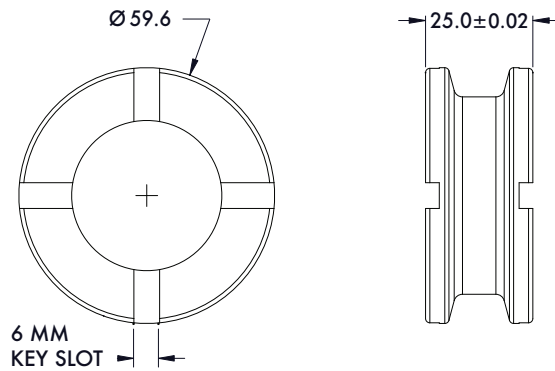
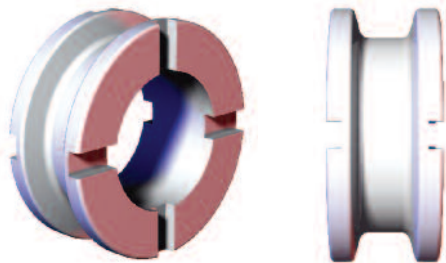
M6 Hole Spacing	Model Number	Length "L"	Weight
 <p>"L" / 2</p> <p>"L"</p>	STB0050-NA	50mm ±0.02	.20 kg [.43 lb]
	STB0075-NA	75mm ±0.02	.32 kg [.71 lb]
	STB0100-NA	100mm ±0.02	.45 kg [.99 lb]
	STB0150-NA	150mm ±0.02	.70 kg [1.54 lb]
	STB0200-NA	200mm ±0.02	.95 kg [2.09 lb]
 <p>50</p> <p>50</p> <p>"L"</p>	STB0250-NA	250mm ±0.02	1.20 kg [2.64 lb]
	STB0300-NA	300mm ±0.02	1.44 kg [3.18 lb]
	STB0350-NA	350mm ±0.02	1.74 kg [3.84 lb]



SpiderGrip Booms, Adaptors and Spacers Ø60mm Breakaway and Non-Breakaway Boom Spacers

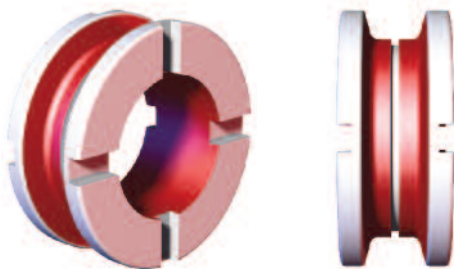


Ø60mm Non-Breakaway Boom Spacer



Model Number	Weight
STB0025-NA	.08 kg [.18 lb]

Ø60mm 25mm Engineered Breakaway Boom Spacers



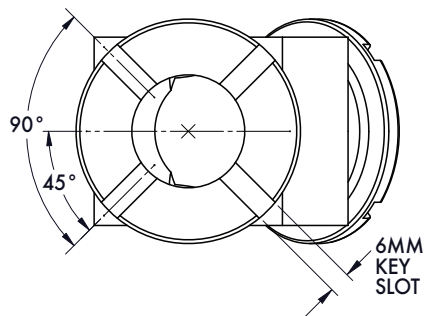
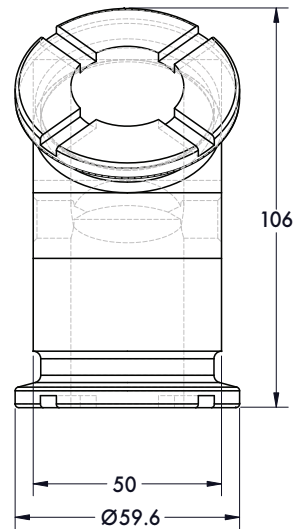
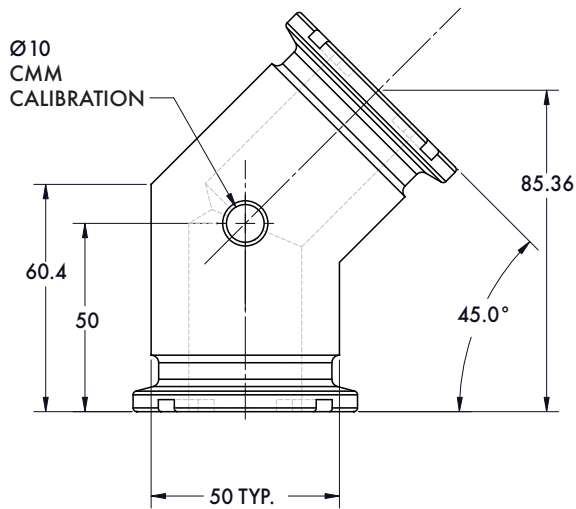
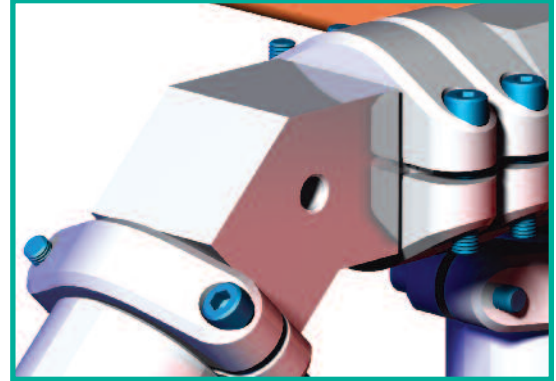
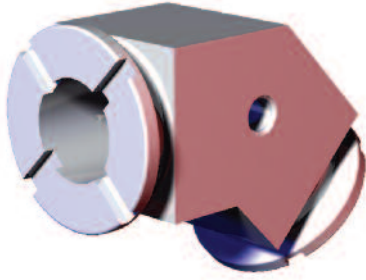
This Product is designed to breakaway at 800 N*m [590 ft-lb]

Model Number	Weight
STB0025-BA-800	.08 kg [.18 lb]

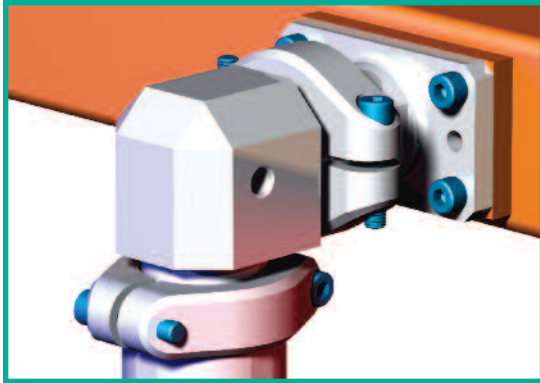


SpiderGrip Junction Components

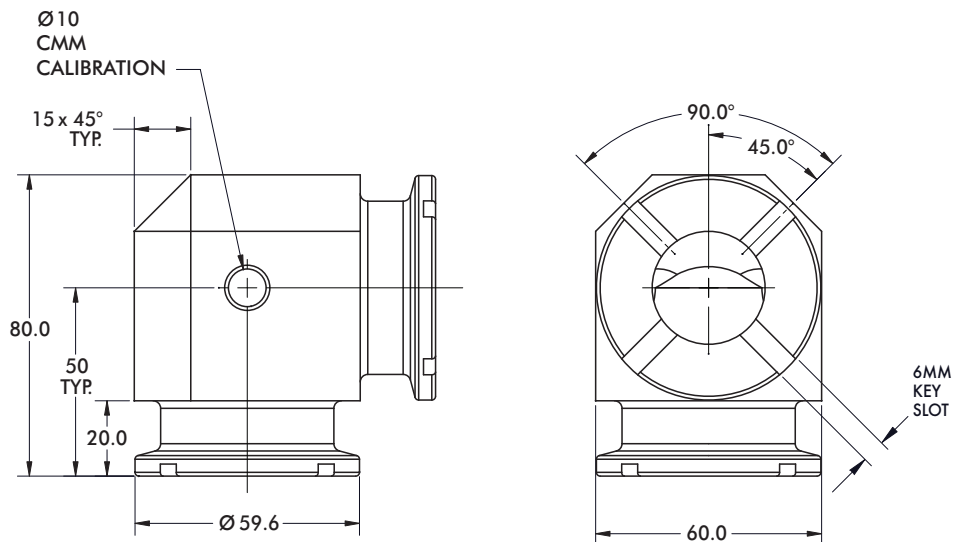
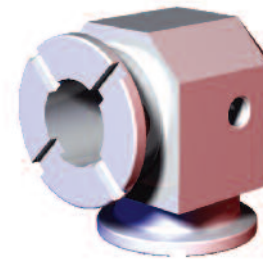
Ø60mm 2-Face 45° Junction



Model Number	Weight
STN0C45-NA	.42 kg [.93 lb]



SpiderGrip Junction Components Ø60mm 2-face 90° Junction

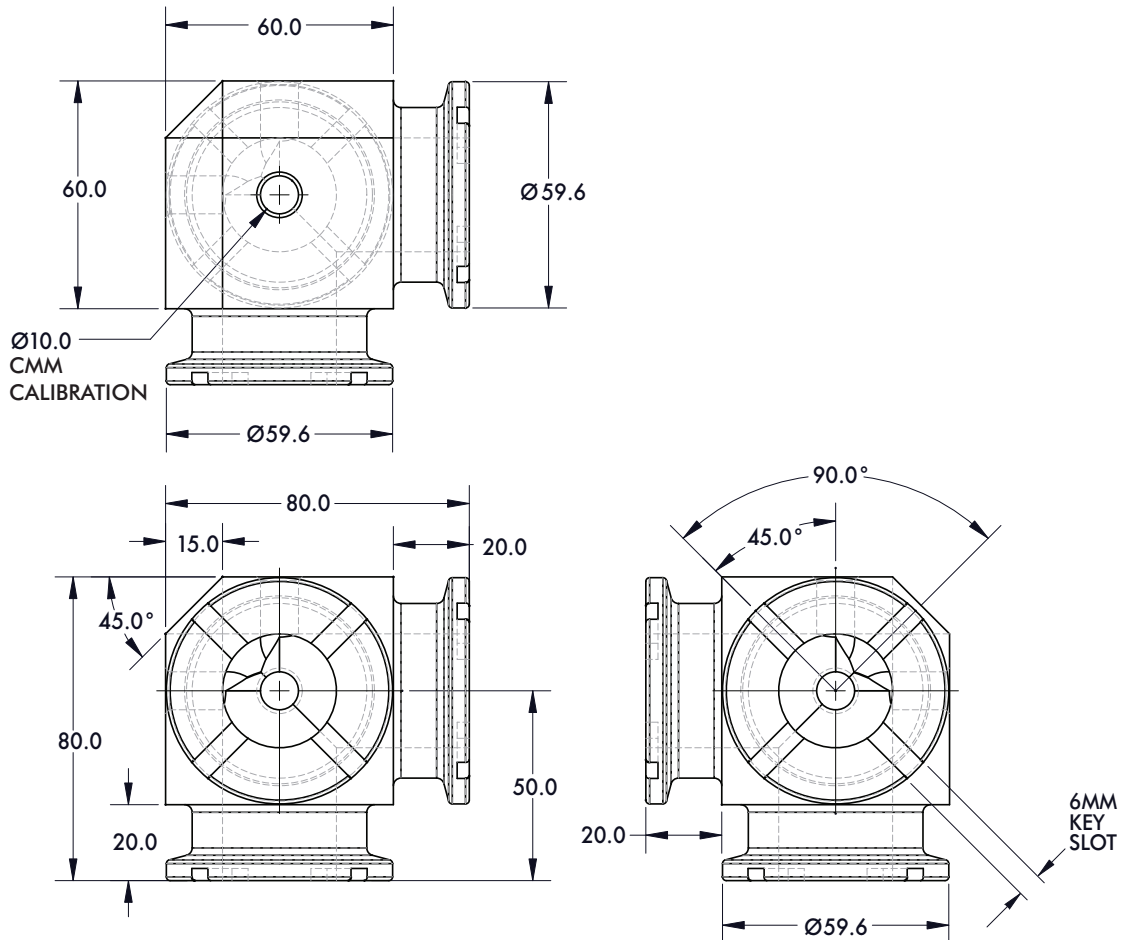
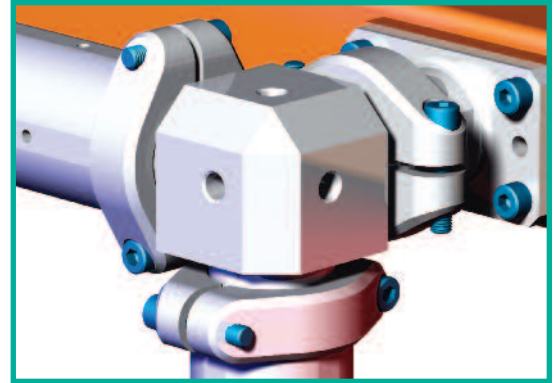
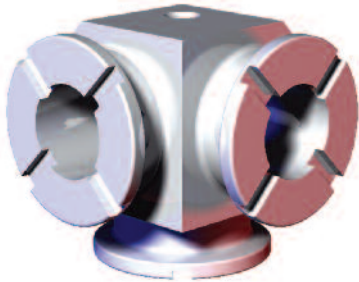


Model Number	Weight
STN0C90-NA	.53 kg [1.16 lb]

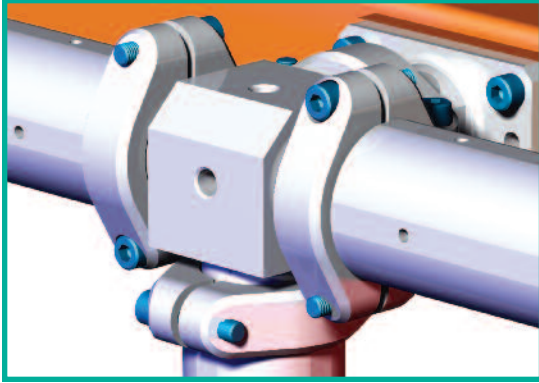


SpiderGrip Junction Components

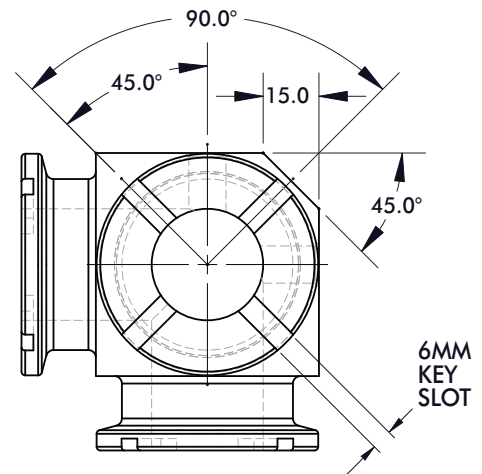
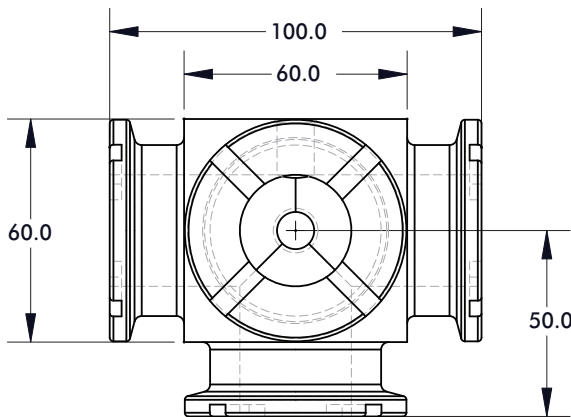
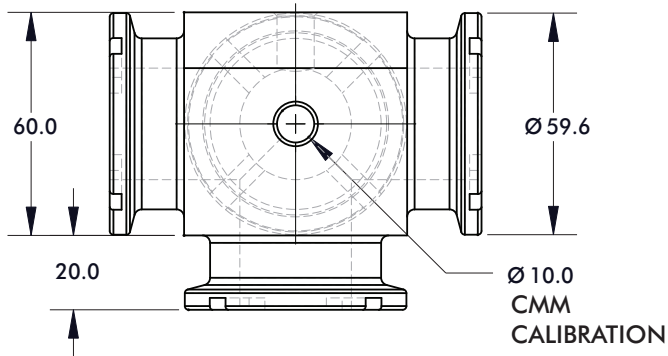
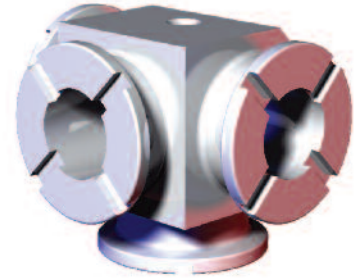
Ø60mm 3-Face Junction



Model Number	Weight
STN0C3F-NA	.58 kg [1.29 lb]



SpiderGrip Junction Components Ø60mm 4-Face Junction

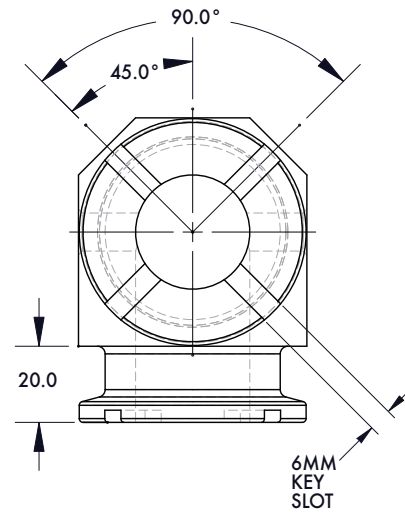
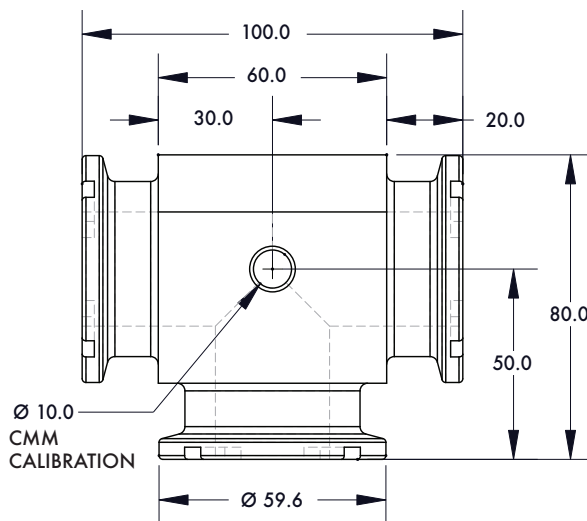
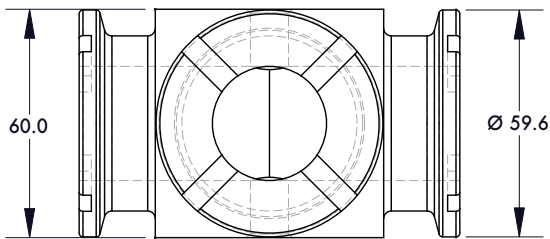
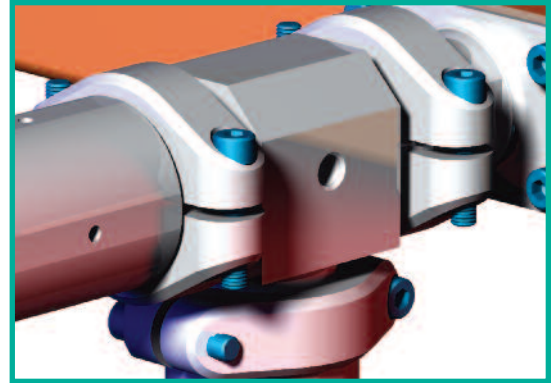
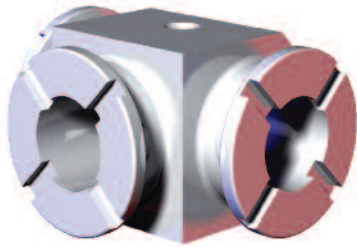


Model Number	Weight
STN0C4F-NA	.65 kg [1.43 lb]



SpiderGrip Junction Components

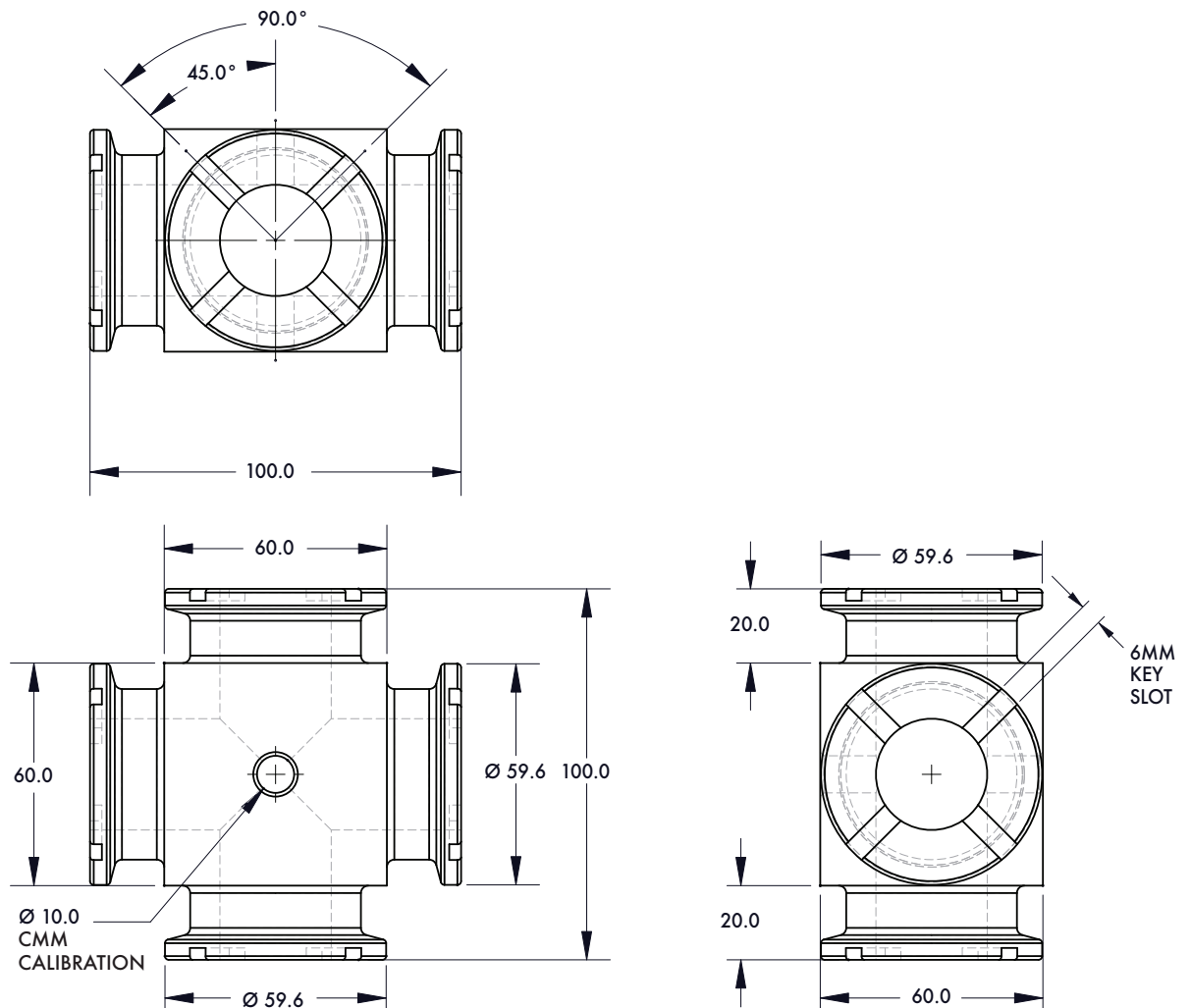
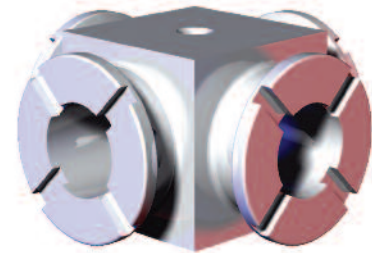
Ø60mm 3-Face Junction



Model Number	Weight
STN0T3F-NA	.60 kg [1.31 lb]



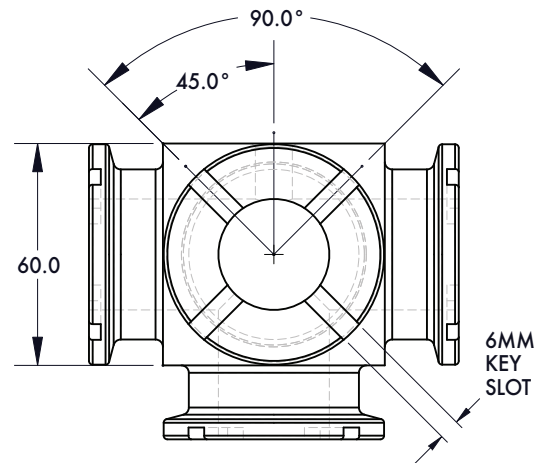
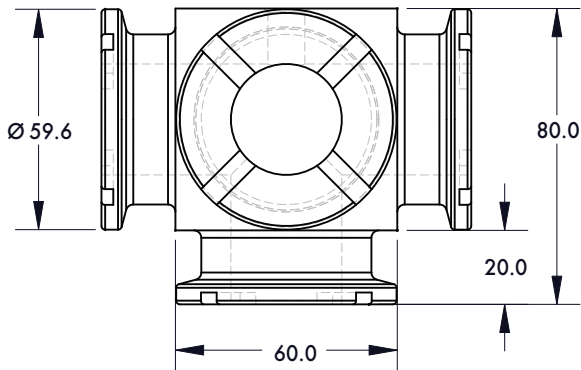
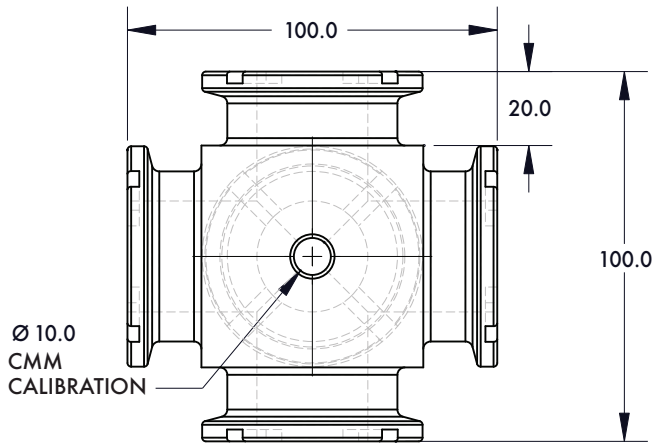
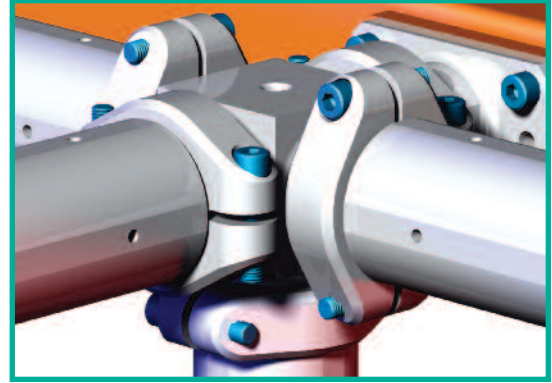
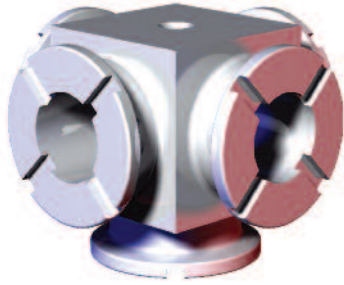
SpiderGrip Junction Components Ø60mm 4-Face Junction



Model Number	Weight
STN0T4F-NA	.67 kg [1.47 lb]

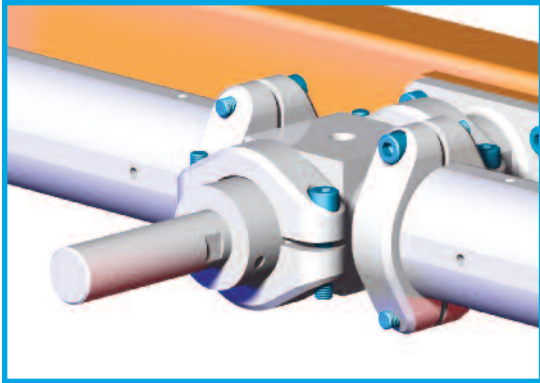


SpiderGrip Junction Components
Ø60mm 5-Face Junction

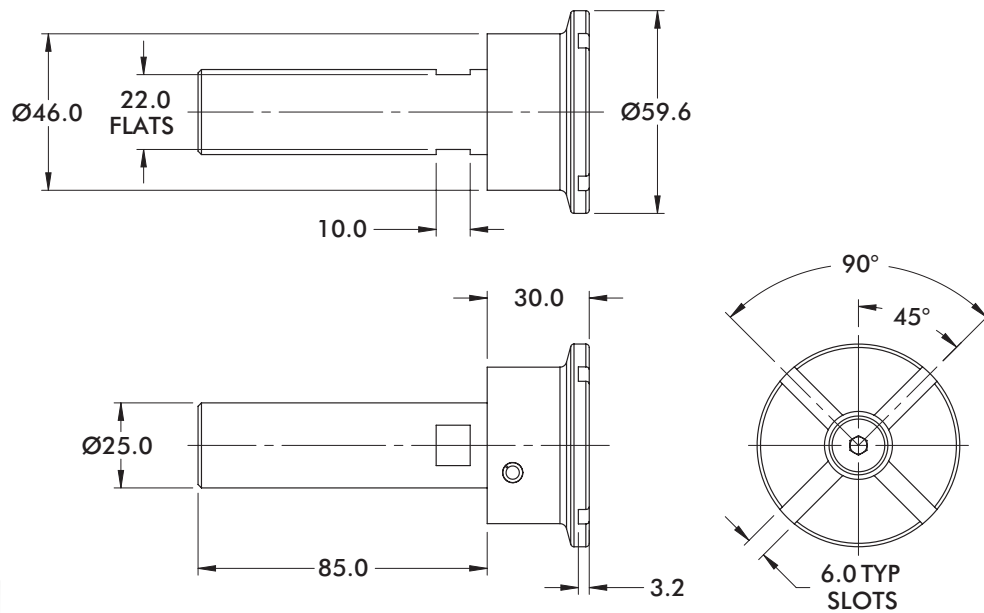
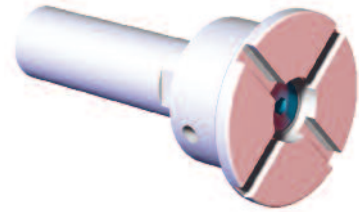


Model Number	Weight
STN0T5F-NA	.71 kg [1.56 lb]

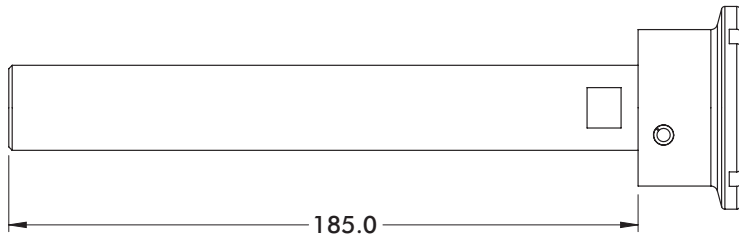
SpiderGrip End Effector System



SpiderGrip Single End Extension Mount Ø60mm to Ø25mm Single End Extension



Model Number	Weight
STV0100-NA	.26 kg [.58 lb]

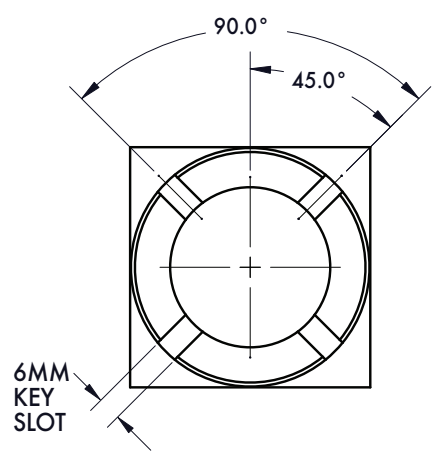
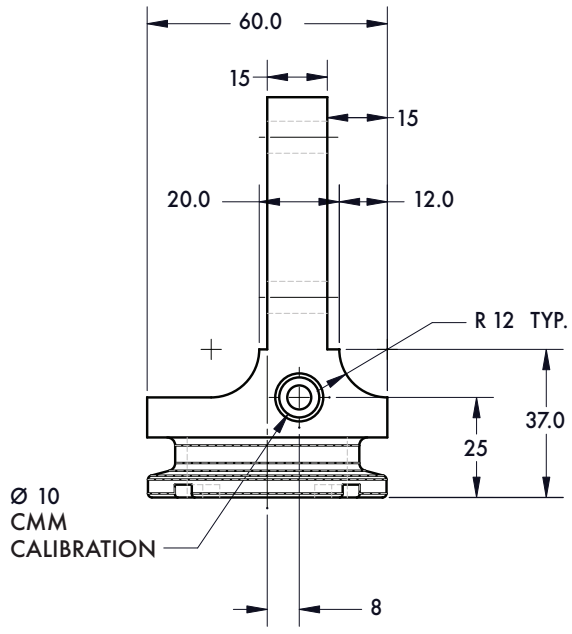
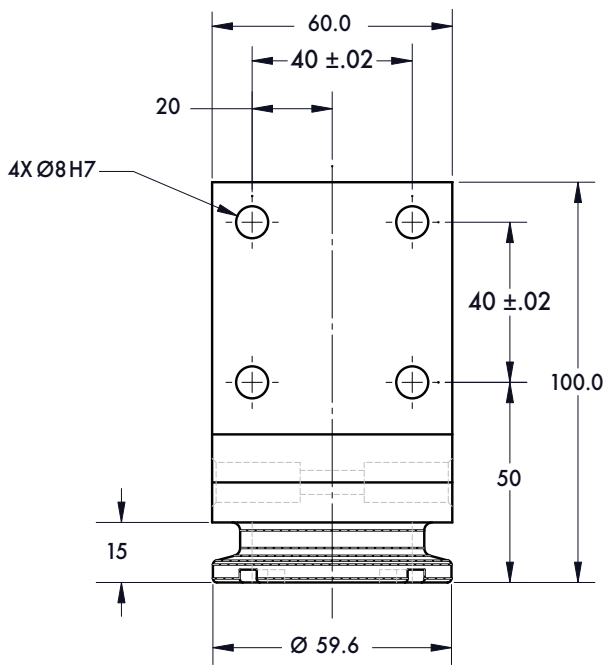
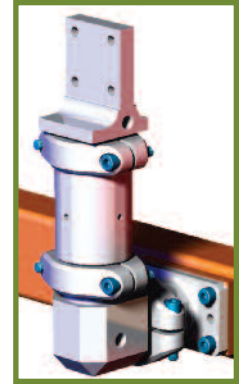
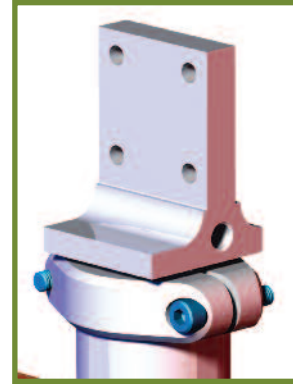
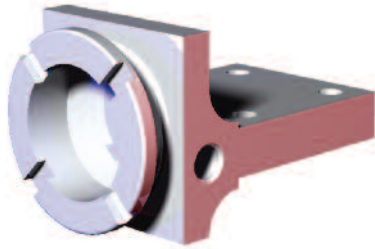


Model Number	Weight
STV0200-NA	.40 kg [.87 lb]

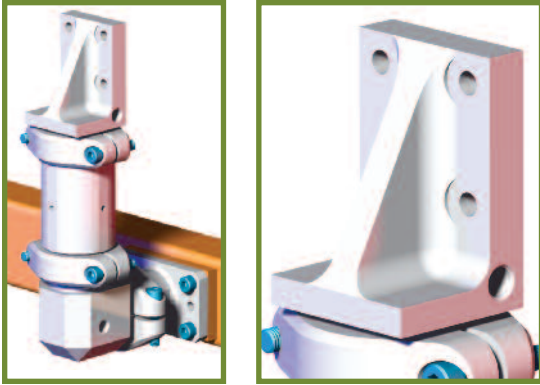


SpiderGrip Edge Mounting Components

Ø60mm 90° Edge Part with 15mm Center to Face Offset
40mm x 40mm Mounting Pattern

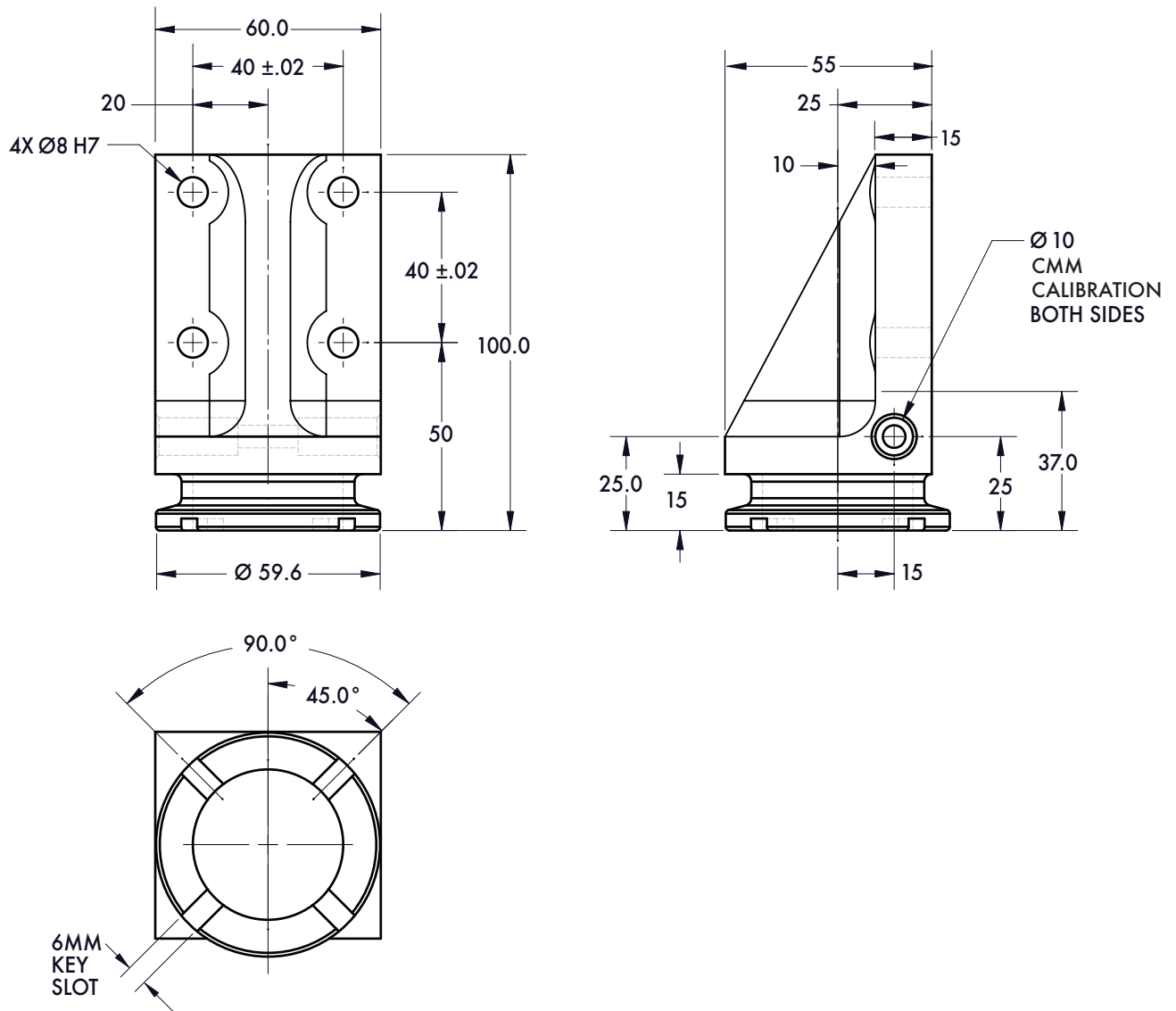
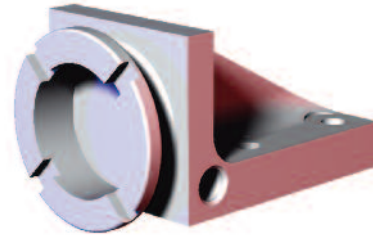


Model Number	Weight
STS0010-NA	.31 kg [.69 lb]



SpiderGrip Edge Mounting Components

Ø60mm 90° Edge Part with 25mm Center to Face Offset
40mm x 40mm Mounting Pattern

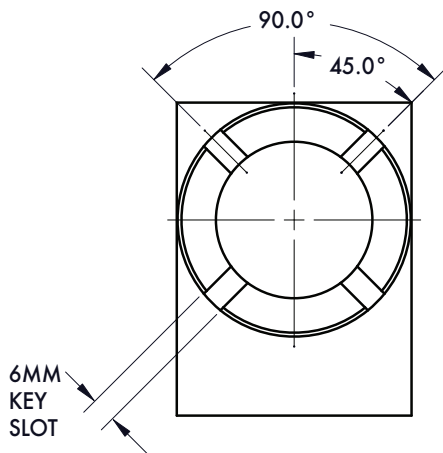
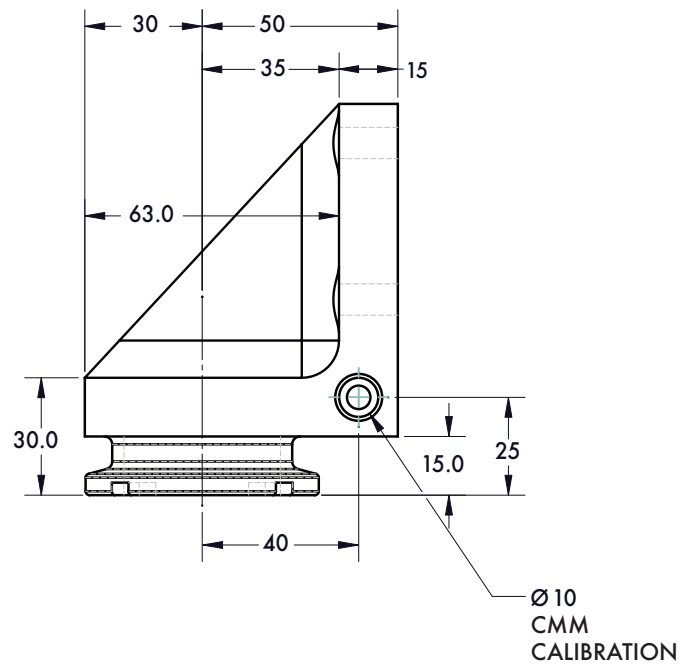
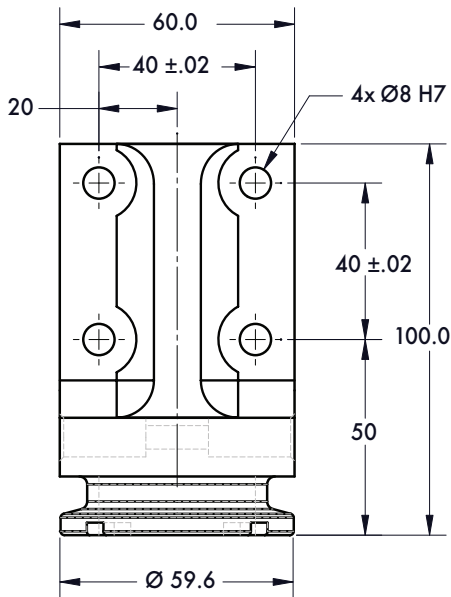
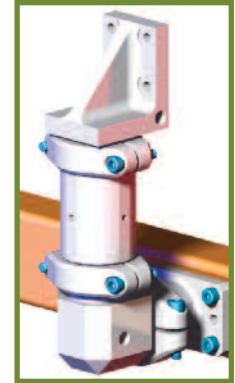
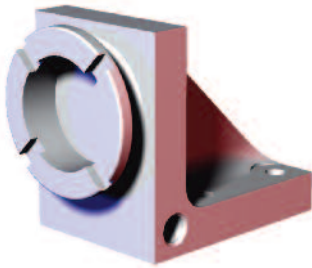


Model Number	Weight
STS0011-NA	.35 kg [.77 lb]



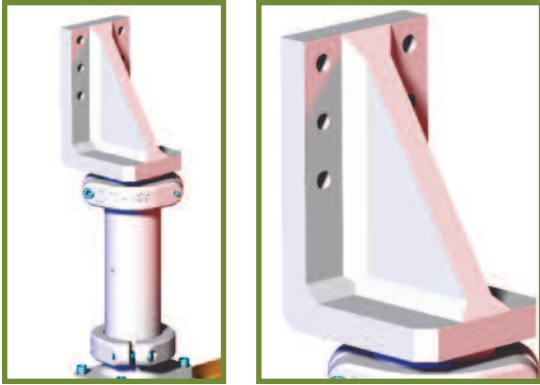
SpiderGrip Edge Mounting Components

·Ø60mm 90° Edge Part with 50mm Center to Face Offset
40mm x 40mm Mounting Pattern



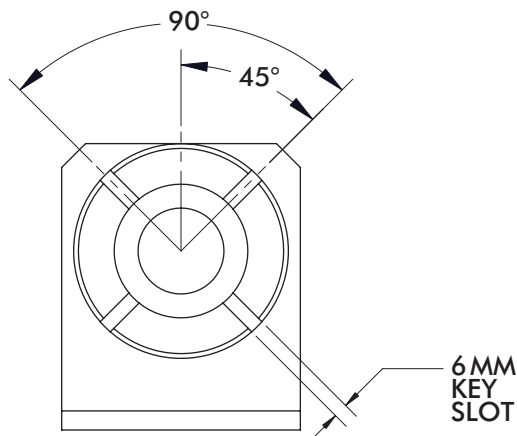
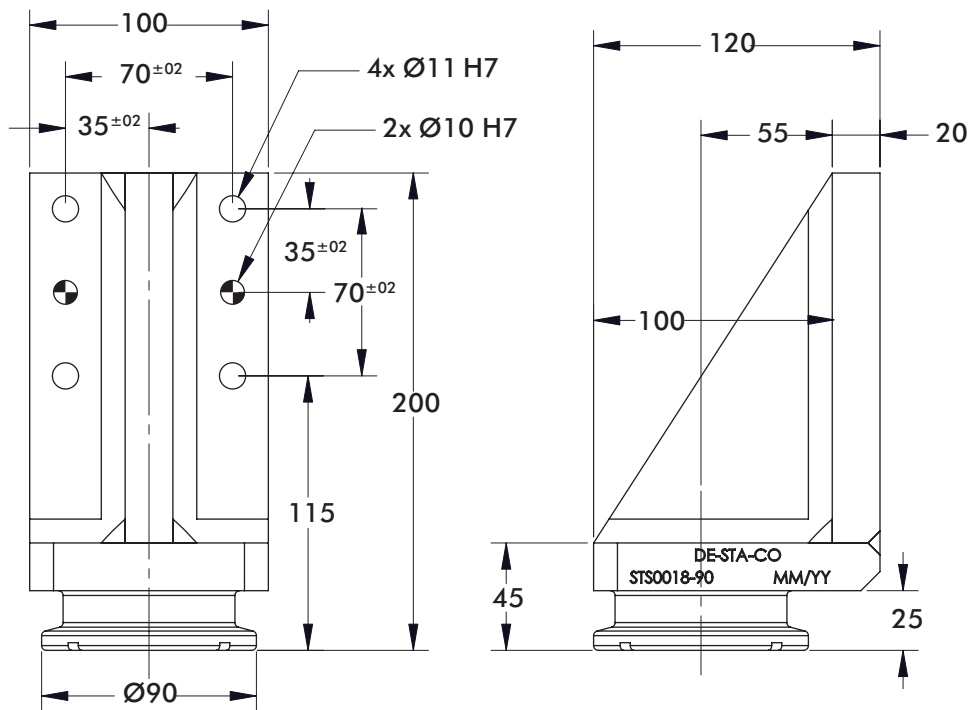
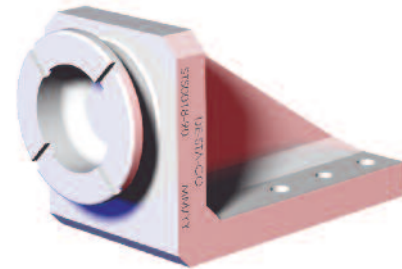
Model Number	Weight
STS0012-NA	.47 kg [1.04 lb]

SpiderGrip End Effector System



SpiderGrip Edge Mounting Components

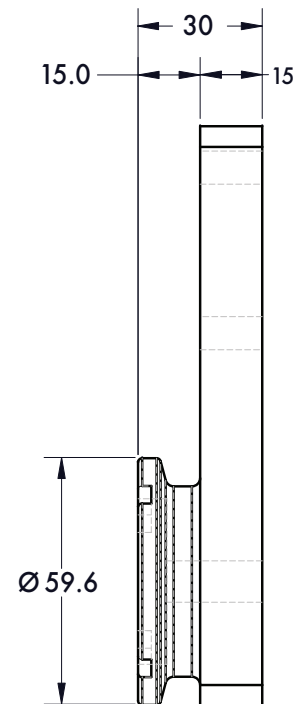
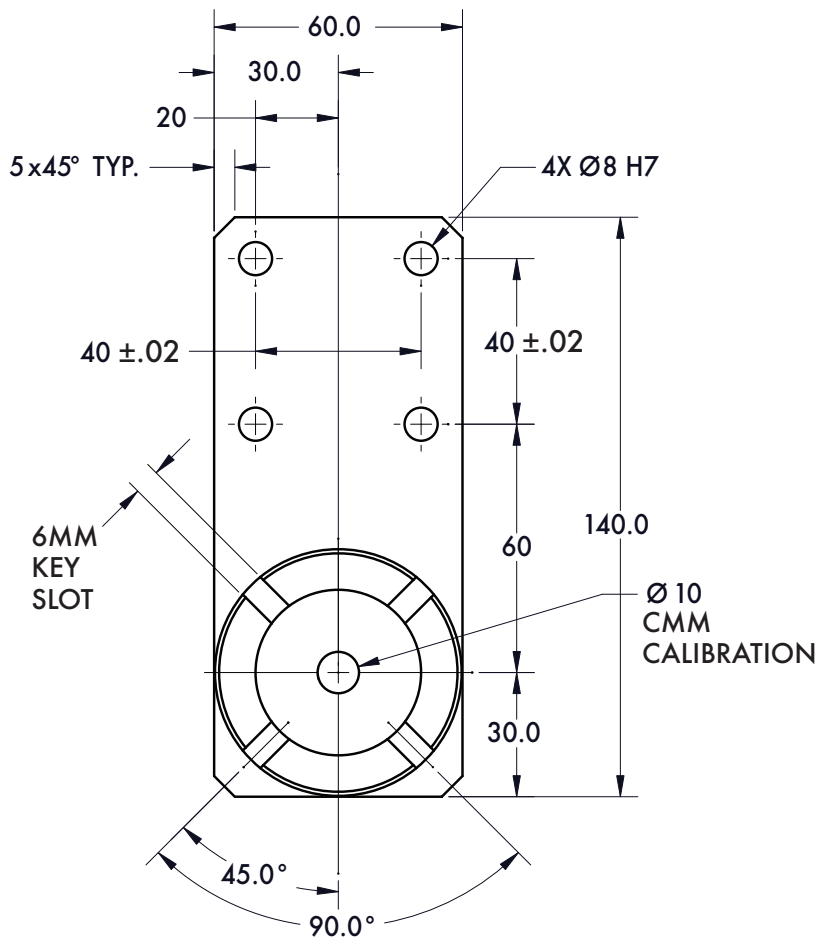
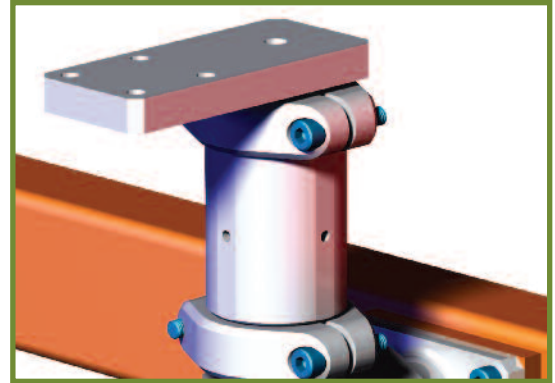
Ø90mm 90° Edge Part with 75mm Center to Face Offset
70mm x 70mm Mounting Pattern



Model Number	Weight
STS0018-90	2.11 kg [4.65 lb]

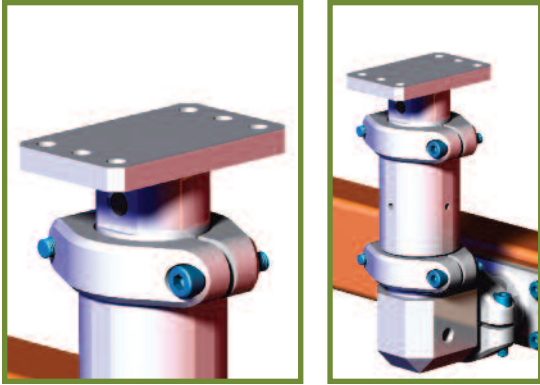


SpiderGrip Edge Mounting Components
 Ø60mm Offset Edge Part with 25mm Face Offset
 40mm x 40mm Mounting Pattern

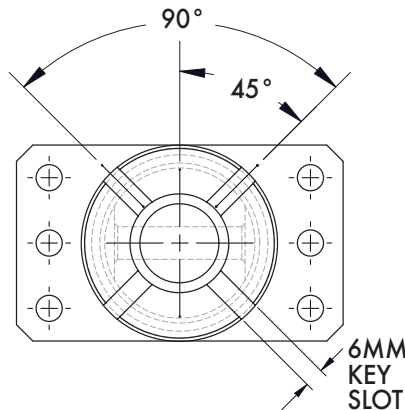
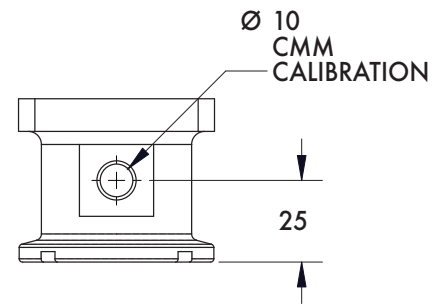
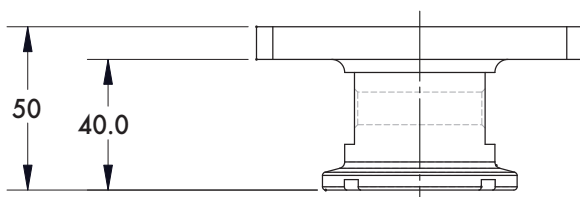
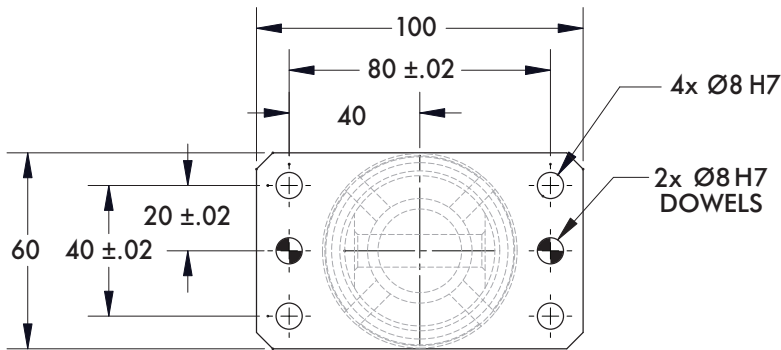
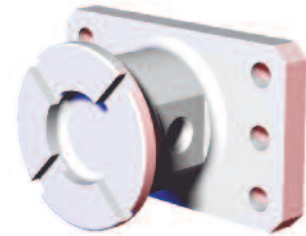


Model Number	Weight
STS0014-NA	.39 kg [.85 lb]

SpiderGrip End Effector System



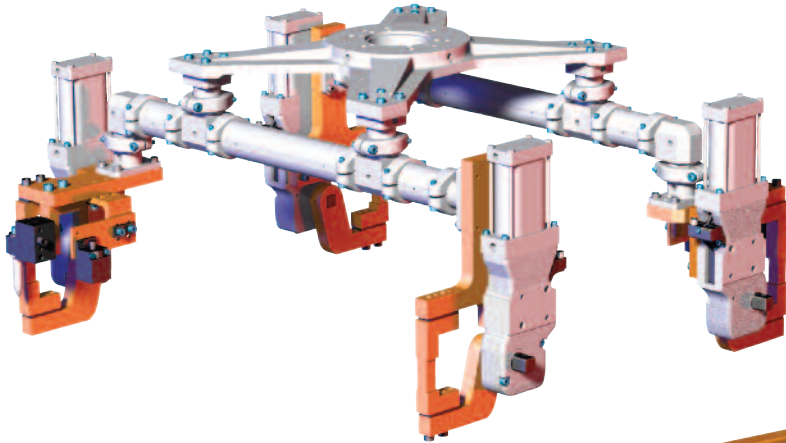
SpiderGrip Edge Mounting Components Ø60mm In-line Edge Part with 50mm Face Offset 80mm x 40mm Mounting Pattern



Model Number	Weight
STS0019-NA	.32 kg [.71 lb]

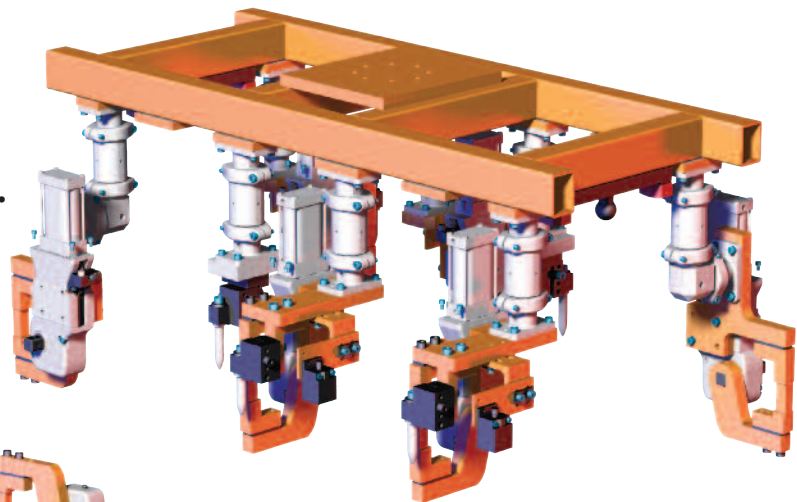


SpiderGrip End Effector Tooling Systems

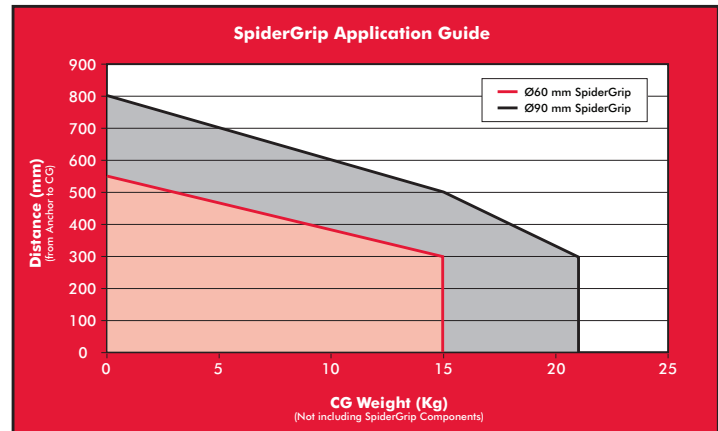
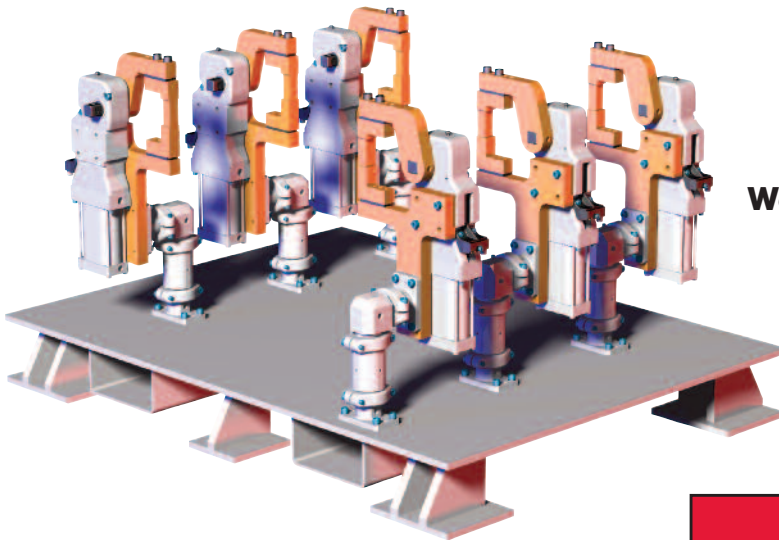


Materials Handling End Effector Tooling System with RM4 Heavy Duty Mid-Mount Assembly (RM4-STS).

Geometric End Effector Tooling System with Steel Frame Backbone.



Weld Fixture Tooling System



SpiderGrip End Effector Tooling Systems

ANCHORS, COLLAR ASSEMBLIES AND COMPONENTS, AND TETHERS

STS0017-90
ENGINEERED
BREAK-AWAY PART

STS0016-NA
ENGINEERED
BREAK-AWAY PART

STP0001-NA

COLLAR ASSEMBLY
Ø60mm: **STCCLR-X-NA**
Ø90mm: **STCCLR-X-90**

STCCLR2-NA **STCCLR2-90**

STCXKEY-NA **STCXKEY-90**

9" TETHER: **STS-TETHER-09**
16" TETHER: **STS-TETHER-16**

ALUMINUM BOOMS, ADAPTERS AND SPACERS

STBA050-90

STBA100-90

350

300

250

200

150

100

075

050

60MM ALUMINUM BOOMS (STB0xxx-NA) (xxx = length in mm)

STB0025-NA **STB0025-NA-800**
ENGINEERED
BREAK-AWAY PART

US PATENT# 7,331,104
ALL OTHER PATENTS PENDING

JUNCTION COMPONENTS

STN0C45-NA **STN0C90-NA** **STN0C3F-NA** **STN0C4F-NA** **STN0T3F-NA** **STN0T4F-NA** **STN0T5F-NA**

SINGLE END EXTENSION

100mm = **STV0100-90**
200mm = **STV0200-90**

EDGE MOUNTING COMPONENTS



DE-STA-CO offers Complete End Effector System Solutions

Pneumatic Modular Grippers

GR1 Modular Gripper

- Can be flange or cylinder mounted.
- Offered with several different jaw opening and point options.
- Toggle-Locking Mechanism holds the part if air pressure is lost.

GR84 Enclosed Modular Mini Clamp

- Also offers several different jaw and tip options.
- Can also be flange or cylinder mounted.
- Locking Mechanism holds the part if air pressure is lost and is protected from contaminants.



Pneumatic Enclosed Power Clamps

82M Series Clamps

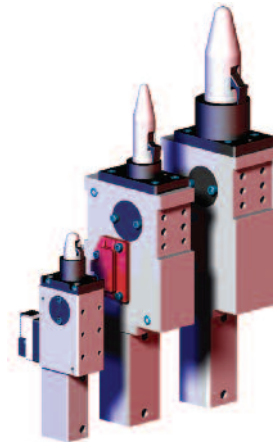
- Offered in two sizes, 50mm and 63mm.
- Angle of arm opening can be adjusted in the field in 15° increments.
- Lightweight - highest weight to power ratio.
- Optional integrated open/closed sensing package will accommodate all major switches.
- Built-in flow controls.
- NAAMS style arms and mounting.
- Sealed roller bearing.
- Toggle-locking mechanism holds the part if air pressure is lost
- Protected from contaminants.



Pneumatic Locating Pin Clamps

82P Series Pin Clamps

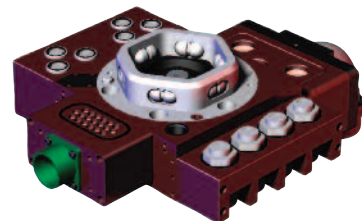
- Optional "Weld-Slag Resistant" offers protection from contamination entering the unit
- Standard rest blocks heights of 25 and 50mm, with others block heights available.
- Hardened and ground precision tool steel locating pin
- Enclosed aluminum body houses a full toggling mechanism that secures the part in place even when air is removed from the tool.
- Protected from contaminants.



Modular Tool Changer

Quick Change 1200 Series

- End effector tooling can be changed quickly and easily to accommodate many different styles of parts on the same robot.

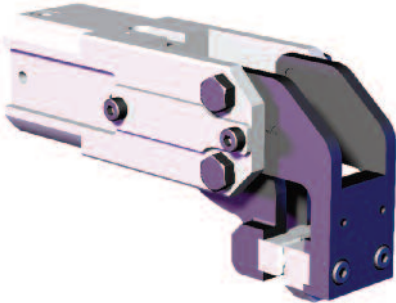


DE-STA-CO offers Complete End Effector System Solutions

Pneumatic Modular CAM Grippers

84A2 and 84A3 Modular CAM Gripper

- Two sensing systems are provided along with interchangeable gripper teeth and pads.
- High speed material movement in restricted spaces.
- High clamping force and fast opening and closing action.
- Roller and cam principal, self-locking at end stop position.
- Multiple mounting and jaw opening options.
- Small size, low weight.



Vacuum Cup Mounts and Adapters

CPI-500 and 750 Series Port Only Adapters

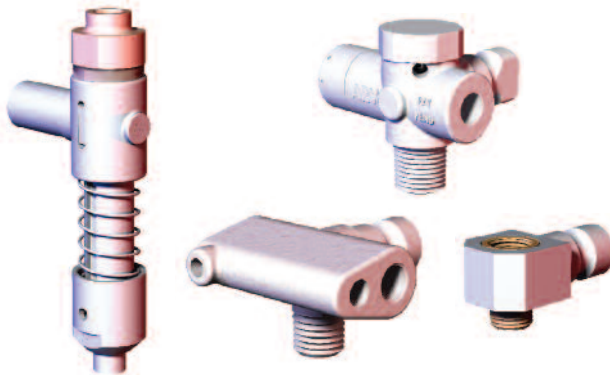
- Provides an option for integrating swivel arms and vacuum cups with a remote vacuum source.

CPI-ARV AND VSA Series Venturi Adapters

- Generates vacuum at the cup level.
- Integrated automatic quick panel release (ARV).
- Available with blow-off and low-profile.

CPI-SCM Series Spring Loaded Cup Mounts

- Available in different porting and travel options.
- Works with CPI-750 Series Venturi Adapters.



Pneumatic Actuated Magnets

CPI-TPLP Series Magnets

- Provides instantaneous pick up and release without electricity, maintaining positive hold even when air pressure is lost.
- Supplied with urethane pad which softens the impact of the magnet and avoids damage to delicate surfaces.



Vacuum Cups

Flatfoot Vacuum Cups

- Maximizes lifting capacity and minimizes slip.

Belcup Vacuum Cups

- Picks up material that vary slightly in position.

Traction Vacuum Cups

- For applications with wet or oily surfaces or for destackers.

Deepdish Vacuum Cups

- Works best on materials with convex surfaces.



A TRUE GLOBAL PRESENCE

Through a constant commitment to the Team DE-STA-CO philosophy, we draw from our worldwide pool of information and resources to offer the highest levels of service to each of our customers, regardless of geographic location. Our status as a truly global company empowers us to improve the global competitiveness of your operations. Whatever your automation or workholding need, Team DE-STA-CO has the best possible solution.



ABOUT DE-STA-CO

DE-STA-CO, a Dover Company, was founded in 1915. In 1936 the company designed and manufactured the first manual toggle clamp.

Innovations, quality and acquisitions have made DE-STA-CO the worldwide leader in the design, manufacture and support of clamping, gripping, transferring and robotic tooling solutions for workplace and flexible automation needs.

The family of brands has enabled DE-STA-CO to establish leading productivity improvement and cost-reduction manufacturing solutions for our customers using the breadth of products and value-added services we offer.

Our customer base covers a wide range of industries requiring a global customer service network offering consistent solutions and program support. With over 85 years of experience, DE-STA-CO brings a quality philosophy unsurpassed by its counterparts.

DE-STA-CO LEAN INITIATIVE

The DE-STA-CO family of companies is committed to being a lean resource for its customers, providing ways to eliminate waste in manufacturing processes through the use of optimal clamping and automation solutions that eliminate bottlenecks.

DE-STA-CO's wide range of products allows the company to offer its customers an Automation Continuum™ providing solutions that increase profitability and efficiency, while reducing waste.

PRODUCT WARRANTY

All DE-STA-CO Products are thoroughly inspected and tested. We fully guarantee all materials and workmanship to be free of defects. Any product that is found to be defective in design, material or workmanship in the course of its normal use will be promptly replaced.

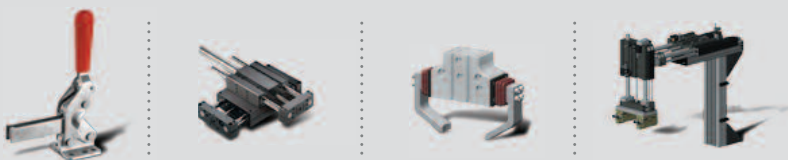
This Warranty does not apply to any product where the failure is a result of misapplication or abuse, nor is there any Warranty expressed or implied as to the merchantability or fitness for a particular purpose of the product and any warranty is limited to the above express warranty.

This Warranty is null and void if the product is repaired, modified or altered in any way.

DE-STA-CO is not liable for labor, special, direct, incidental, or consequential damages and under no circumstances any charges in excess of the invoice amount of the product proven to be defective.



A DOVER COMPANY



Positioning our customers for productivity.

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