GEOMETRIC PRECISION

SpiderGrip™
End Effector and Tooling System
Introduction to the SpiderGrip End Effectors System  
Features and Benefits

*Engineered Breakaway Feature*

*Automatic Optical & Standard CMM Validation Points*

*Crash Test Certified*

**US PATENT# 7,331,104**  
**ALL OTHER PATENTS PENDING**
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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SpiderGrip End Effector System

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

Dimensions and technical information are subject to change without notice

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

Weight
10.4 kg [22.89 lb]
When ordering with Heavy Duty Mid Mount, please add designation “EPM-01” as shown RM4-STS-RXX-EPM-01 or add designation “EPM-BLK” to order blank RM4-STS-RXX-EPM-BLK

To order separately use Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI-BM2-EPM-xx</td>
<td>.63 kg [1.39 lb]</td>
</tr>
</tbody>
</table>
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)

R06 (Ø125/160mm Bolt Circle)

Includes Insulation
Add 1.5mm to Height (95.0 [3.74])
SpiderGrip End Effector System

SpiderGrip Mid Mount Assembly
Robot Interface Bolt Patterns

R07 (Ø200mm Bolt Circle)

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

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)

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

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 End Effector System

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

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST50013-BM2</td>
<td>.25 kg [1.50 lb]</td>
</tr>
</tbody>
</table>
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]

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS0016-NA</td>
<td>.31 kg [.68 lb]</td>
</tr>
</tbody>
</table>
SpiderGrip Anchors and Collar Assemblies
Ø60mm HD Anchor Mount
(3) Hole Ø190mm Mount Pattern

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP0001-NA</td>
<td>1.09 kg [2.40 lb]</td>
</tr>
</tbody>
</table>
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 also be wrapped around the appendage to reduce cable slack.
SpiderGrip Anchors and Collar Assemblies
Ø60mm Collar Components and Assembly

<table>
<thead>
<tr>
<th>Assembly Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STCCLR2-NA</td>
<td>.16 kg [ .35 lb]</td>
</tr>
</tbody>
</table>

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]

Patch-lock fasteners included.

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STCCLR2-NA</td>
<td>.16 kg [ .35 lb]</td>
</tr>
</tbody>
</table>

Material: Steel

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STCXKEY-NA</td>
<td>.03 kg [ .07 lb]</td>
</tr>
</tbody>
</table>
SpiderGrip Anchors and Collar Assemblies

9 inch and 16 inch Tether Assemblies

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS-TETHER-09</td>
<td>.07 kg [.15 lb]</td>
</tr>
</tbody>
</table>

FLAT WASHER IS REQUIRED FOR ALL M6 BOLTS
M6-30mm SHCS PATCHLOCK
(TO BE SUPPLIED BY END USER)

Ø.33
8.75" ±3/16"
1/8" DIA NYLON SHIELDED
7-19 WIRE ROPE

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS-TETHER-16</td>
<td>.09 kg [.19 lb]</td>
</tr>
</tbody>
</table>

FLAT WASHER IS REQUIRED FOR ALL M6 BOLTS
M6-30mm SHCS PATCHLOCK
(TO BE SUPPLIED BY END USER)

Ø.33
16.0" ±3/16"
1/8" DIA NYLON SHIELDED
7-19 WIRE ROPE
SpiderGrip Booms, Adaptors and Spacers
Ø60mm Boom Dimensions and Lengths

M6 Hole Spacing

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Length “L”</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STB0050-NA</td>
<td>50mm ±0.02</td>
<td>.20 kg [.43 lb]</td>
</tr>
<tr>
<td>STB0075-NA</td>
<td>75mm ±0.02</td>
<td>.32 kg [.71 lb]</td>
</tr>
<tr>
<td>STB0100-NA</td>
<td>100mm ±0.02</td>
<td>.45 kg [.99 lb]</td>
</tr>
<tr>
<td>STB0150-NA</td>
<td>150mm ±0.02</td>
<td>.70 kg [1.54 lb]</td>
</tr>
<tr>
<td>STB0200-NA</td>
<td>200mm ±0.02</td>
<td>.95 kg [2.09 lb]</td>
</tr>
<tr>
<td>STB0250-NA</td>
<td>250mm ±0.02</td>
<td>1.20 kg [2.64 lb]</td>
</tr>
<tr>
<td>STB0300-NA</td>
<td>300mm ±0.02</td>
<td>1.44 kg [3.18 lb]</td>
</tr>
<tr>
<td>STB0350-NA</td>
<td>350mm ±0.02</td>
<td>1.74 kg [.39 lb]</td>
</tr>
</tbody>
</table>

M6 tapped holes along the boom are used to mount accessories.
SpiderGrip End Effector System

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

Ø60mm Non-Breakaway Boom Spacer

Ø60mm 25mm Engineered Breakaway Boom Spacers

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

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>STB0025-NA</td>
<td>.08 kg [.18 lb]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STB0025-BA-800</td>
<td>.08 kg [.18 lb]</td>
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</tbody>
</table>
## SpiderGrip Junction Components

### Ø60mm 2-Face 45° Junction

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
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<tbody>
<tr>
<td>STN0C45-NA</td>
<td>.42 kg [.93 lb]</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STN0T3F-NA</td>
<td>.60 kg [1.31 lb]</td>
</tr>
</tbody>
</table>
SpiderGrip Junction Components
Ø60mm 4-Face Junction

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STN0T4F-NA</td>
<td>.67 kg [1.47 lb]</td>
</tr>
</tbody>
</table>
SpiderGrip Junction Components
Ø60mm 5-Face Junction

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STN0T5F-NA</td>
<td>.71 kg [1.56 lb]</td>
</tr>
</tbody>
</table>
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 End Effector System

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

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS0010-NA</td>
<td>.31 kg [.69 lb]</td>
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</table>
SpiderGrip End Effector System

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

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS0011-NA</td>
<td>.35 kg [.77 lb]</td>
</tr>
</tbody>
</table>
SpiderGrip Edge Mounting Components

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

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS0012-NA</td>
<td>0.47 kg [1.04 lb]</td>
</tr>
</tbody>
</table>
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 Edge Mounting Components
Ø60mm In-line Edge Part with 50mm Face Offset
80mm x 40mm Mounting Pattern

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS0019-NA</td>
<td>.32 kg [.71 lb]</td>
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</table>
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 Application Guide

<table>
<thead>
<tr>
<th>Distance (mm)</th>
<th>CG Weight (Kg) Ø60 mm SpiderGrip</th>
<th>Ø90 mm SpiderGrip</th>
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<tbody>
<tr>
<td>0</td>
<td>900</td>
<td>800</td>
</tr>
<tr>
<td>5</td>
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<tr>
<td>10</td>
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<td>100</td>
</tr>
<tr>
<td>40</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions and technical information are subject to change without notice.
SpiderGrip End Effector System

SpiderGrip End Effector Tooling Systems

ANCHORS, COLLAR ASSEMBLIES AND COMPONENTS, AND TETHERS

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

COLLAR ASSEMBLY
Ø60mm: STCCLRX-NA

ALUMINUM BOOMS, ADAPTERS AND SPACERS

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

ENGINEERED BREAK-AWAY PART

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

JUNCTION COMPONENTS

SINGLE END EXTENSION

100mm = STV0100-NA
200mm = STV0200-NA
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 contaminates.

**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 contaminates.

**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 contaminates.

**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.