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### THE OFFICIAL ERGODYNE









# **OBJECT PREVENTION**

### AT HEIGHTS SAFER AND MORE PRODUCTIVE

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### DROPPED OBJECTS OBJECTS REPRESENT 5% OF DEATHS 5% OF DEATHS OX THE JOBSITE. BUREAU OF LABOR STATISTICS



### **PREVENTION IS THE ANSWER.**

### *II* **WARNINGS & SPECIAL NOTICES**

The procedures outlined in this guide reference the best practices recognized by Ergodyne while using our safety solutions. Other manufacturers may have recommendations and rules specific to their equipment. Use of other manufacturer's equipment together with Ergodyne's equipment in a tool tethering system is not recognized as best practice and can also be considered a violation of our warranty. When in doubt, contact Ergodyne with any questions at www.ergodyne.com or +1 651 642 9889 // 800 225 8238.





Aerial safety goes beyond your standard fall protection. In the past, objects at heights hazard-planning has been an afterthought – or not even a thought. Today, regulators and safety professionals acknowledge the serious, life-threatening risks of falling objects and are considering or promoting rules to ensure proper precautions are followed in the workplace. The key to



# A COMPLETE TETHERING SYSTEM

any hazard planning is prevention. PPE will help protect workers and minimize the damage in the event of a drop – but **preventing** that object from ever falling will eliminate the incident from occurring. This guide will help you and your crew identify the best system of solutions to protect you and your fellow workers from these dangerous at heights risks.





# TOOL ANATOMY

The first step in safe Objects at Heights management is analyzing what objects you are working with at height. In order to prevent dropped objects from occurring, it is important to know the characteristics of those objects. From there, you can choose the solution that works best.

// TOOL ANATOMY Tool Type Tool Weight and Size

### **Tool Type**

To safely tether tools, start by identifying the type of tool it is, followed by its overall shape and body type (geometry). This will help determine:

- >> Whether your tool can be directly tethered to a lanyard or if a trapped connection point needs to be applied.
- >> Determine what type of retrofit connector is needed when your tool needs a connection point applied.

**Step 1:** Note which of these tool types best fits each tool being used and what type of geometry the tool has:

### **Primary Tool Types**



Hand Tools: Tools that have a natural, fully enclosed hole or handle built into the body of the tool.

Examples: Adjustable wrenches, hand saws, pipe wrenches

**Power Tools:** Tools that require a power source to operate. Most often a removable battery or cord.

Examples: Drills, impact drivers, grinders

**Instruments:** Tools with specific interfaces used for measuring, testing, communicating or lighting.

Examples: Tape measures, radios, cell phones, voltage meters

**Other:** Tools or equipment that don't fall into the other five categories.

Examples: PPE, clamps, canisters, water bottles





**Captive Hole or Handle:** Tool has enclosed hole or handle engineered into the tool.



Captive Waist or Neck: Tool has inner midsection between two thicker ends.



**Non-Captive:** Tool has no captive geometry. Consists of an open ended handle or other design.

### Tool Weight and Size

All Ergodyne Objects at Heights solutions, specifically dropped object prevention solutions, are built with a specified capacity marked on the product. You will need to compare the weight of the tool to the capacity of each solution you use.

Step 2: Measure the weight of each tool (do not guess!) and mark that weight on each tool, and/or note the weight in your equipment log.



**Note:** Add up the combined weight of the tool set being transported to an at-heights work location. This will be important when topped containers are discussed in a later section.



**Step 3:** Use a caliper, tape measure or ruler to measure the size of the tool to determine what type of attachments are needed to attach to it. For open ended and waisted tools, measure the diameter (thickness) of the area you would like a connection to be applied to. For captive tools, measure the size of the captive connection point to determine the appropriate lanyard connector to be used.



Step 4: Document the information in a tool inventory log.

Compa	ny A Tool Inven	tory Log									-	1
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### FOR FURTHER OBJECTS AT HEIGHTS ENLIGHTENMENT, BROWSE THE TENACIOUS U LIBRARY UNDER THE "LEARN" TAB ON WWW.ERGODYNE.COM.



### SECTION 2:

# THE THREE T'S

### THE GUIDE TO TOOL TETHERING

The Dropped Object Prevention Best Practice involves using the Three T's of Aerial Safety:

- )) Trapping Creating connection points on tools
- )) Tethering Connecting tools to an anchor
- )) Topping Covering open containers

### TRAPPING

Trapping refers to retrofitting a connection point onto a tool for a safer attachment point. Most tools do not come with a secure attachment point built into the tool. In these situations, a secure attachment point must be created.

**Step 1:** Choose appropriate tool attachment based on determined tool anatomy. Refer to the documented tool anatomy from Section 1 (pg. 10).

### Hand Tools:

- >> Captive Hole/Handle: Consider Tool Tails<sup>™</sup> (pg. 17) or continue to Step 2
- >> Captive Waist/Neck: Continue to Shackles (pg. 19)
- >> Non-Captive: Continue to Traps and Tails (pg. 17-23)

### Power Tools:

- >> Captive Hole/Handle: Consider Tool Tails<sup>™</sup> (pg. 17) or continue to Step 2
- >> Captive Waist/Neck: Continue Power Tool Traps (pg. 24)
- >> Non-Captive: Continue to Brackets (pg. 25)

### Instruments:

- >> Captive Hole/Handle: Consider Tool Tails<sup>™</sup> (pg. 17) or continue to Step 2
- Description (pg. 17-23)
  Captive Waist/Neck: Continue to Traps and Tails
  (pg. 17-23)
- >> Non-Captive: Continue to Traps and Tails (pg. 17-27)

### Other:

>> Determine appropriate solution (pg. 17-27)



### Step 1B: Squids<sup>®</sup> Wire and Elastic Tool Tails<sup>™</sup>

Follow these simple steps to install the Squids<sup>®</sup> Wire Tool Tails<sup>™</sup>.

### 3704 WIRE LOOP TOOL TAIL™



**INSERT TAIL THROUGH TOOL** 



**CHOKE TOOL TAIL** 

### 3705 WIRE SCREWGATE TOOL TAIL™



**INSERT TAIL THROUGH TOOL** 



**CONNECT TOOL TAIL** 

### 3703/3713 ELASTIC TOOL TAIL™



WRAP TAIL AROUND TOOL



**CHOKE TOOL TAIL** 

### Step 1B: Squids<sup>®</sup> Hand Tool Traps<sup>™</sup>

Connection points can be tricky to find, especially on smaller hand tools like screw drivers and hex keys. Squids<sup>®</sup> Slips<sup>®</sup> are the perfect retrofit tool attachments for small hand tools.





**CHOOSE SLIP SIZE FOR TOOL** 



**PUNCTURE INNER MEMBRANE** 



**CENTER THE SLIP ON THE TOOL** 



**SLIDE THE SLIP INTO PLACE** 



### Step 1B: Squids<sup>®</sup> Shackle Traps

Stainless steel U shaped shackles connect to waisted/ necked tools (tapered midsections) or tools with captive holes, creating clean, secure attachment points for tethering.



**UNSCREW THE CROSSBAR** 





**SLIDE U-SHACKLE AROUND TOOL** 



**APPLY THREAD ADHESIVE** 



**RECONNECT THE CROSSBAR** 

TOOL SHACKLES	A	B	C	
3790S	.75" / 19MM	.40" / 10MM	.20" / 5MM	
3790M	1" / 26MM	.50" / 12MM	.20" / 5MM	
3790L	1.25"/ 32MM	.65" / 16MM	.30" / 8MM	
3790XL	1.5" / 38MM	.80" / 20MM	.40" / 10MM	

### Step 1B: Squids<sup>®</sup> Tape Traps

Follow these simple steps to install the Squids® Tape Traps.



How to Choose the Correct Trap and Tail:

Compare the weight of your tool and the tool's diameter to the Selection Grid to determine what combination of Tail and Trap works best for each tool. See selection grid in appendix, pg. 45.



### 3700 WEB TOOL TAIL + 3755 TAPE TRAP



**PLACE TAIL ON TOOL** 



WRAP TAPE AROUND TOOL & TAIL LAY END DOWN



**APPLY TAPE TRAP** 



### 3713 ELASTIC TOOL TAIL + 3755 TAPE TRAP



**CHOKE TOOL TAIL** 



**APPLY TAPE TRAP** 



**CINCH BARREL LOCK** 



LAY END DOWN

### Step 1B: Squids<sup>®</sup> Cold Shrink Traps

Follow these simple steps to install the Squids<sup>®</sup> Cold Shrink Traps.



TOOL







WRAP TAIL AROUND TOOL



**CINCH BARREL LOCK** 



PLACE CORE AROUND TOOL



**EXAMINE PLACEMENT** 



**CHOKE TOOL TAIL** 



**BEGIN PULLING TRAP CORE** 



**REMOVE ENTIRE CORE** 



ATTACH A LANYARD

### How to Choose the Correct Trap and Tail:

Compare the weight of your tool and the tool's diameter to the Selection Grid to determine what combination of Tail and Trap works best for each tool. See selection grid in appendix, pg. 45.

### Step 1B: Squids<sup>®</sup> Power Tool Traps

The power tool trap securely wraps around the battery portion of drills, impact drivers and other cordless power tools. D-ring connection point attaches to a lanyard to prevent drops.



**UNDO ALL HOOK & LOOP STRAPS** 



WRAP VERTICAL STRAP AROUND



FEED STRAP THROUGH BUCKLE



**SECURE HOOK & LOOP STRAPS** 





**PLACE POWER TOOL INTO TRAP** 



**SECURE VERTICAL STRAP** 



**PULL TIGHTLY AND SECURE** 



**ATTACH A LANYARD** 



### Step 1B: Squids<sup>®</sup> Brackets

The Power Tool Bracket for Grinders creates a unique tool attachment point to tether corded and cordless grinder power tools with a tool lanyard.



**ALIGN ALL COMPONENTS** 



**TIGHTEN ALL THE WAY** 





**THREAD INTO OPEN SCREWPORT** 



**APPLY TORQUE TO FASTENER** 

### Additional brackets also available



### Step 1B: Squids<sup>®</sup> Tape Measure Trap

The tape measure trap securely wraps around most standard tape measures. The D-ring connection attaches to a lanyard to prevent a dropped object.





**UNDO ALL HOOK & LOOP STRAPS** 



**SECURE HORIZONTAL STRAP** 



SECURE BOTTOM STRAP OVER TOP



**PLACE TAPE MEASURE INTO TRAP** 



FOLD TOP FLAP DOWN



**ATTACH A LANYARD** 



### Step 1B: Squids<sup>®</sup> Sleeves

Water resistant phone and tablet pouches and traps make it easy to carry and use your devices on the job while preventing dropped objects when working at-heights.



**OPEN ZIPPER & INSERT PHONE** 



**CLOSE ZIPPER** 

### Additional sleeves also available



# OUT RAINING<br/>HANNDER<br/>DANNER<br/>DANNDER<br/>ON NOUR<br/>CO-WORKERS.





### Factor #1: Weight of Tool

The first factor to consider is the weight of the tool and properly match that with the capacity of the tool lanyard. Review the individual weight of each tool, then move onto the next factor. Ergodyne Tool Lanyards are categorized in the following capacity ranges:





## Factor #2: Type of connector(s) on lanyard

Review the connection location on the tool and on the intended anchor location. Also, consider the way the tool is used to determine the best type of connector to use. Consider the following elements:

### A. Loop vs. Carabiner



Loop – Fits through a larger variety of connection points on tools/anchor points but does not connect or exchange quickly.



Carabiner – Allows for quicker connection and exchange but may not fit on as many tools/anchor points as a loop.

### **B. Security of Carabiner**

Consider the elements of an automatic locking carabiner vs. a manual-locking screw-gate carabiner and choose how secure your carabiner should be.



Manual-Locking Screw Gate: Secure when locked by worker



Double-Action Self Locking: Secure, quick connection



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Self Locking with Swivel Design: Swivel point helps prevent lanyard from twisting

XL Self Locking: Anchor heavy-duty tools to structure or beams

### C. Connector Material

Heavily dependent on working environment. Some environments lend themselves to non-metal connections, some to corrosion-resistant options and others call for the lightest option available.



Non-Metal Connection: Non-Conductive // Non-Marring // Non-Sparking



Aluminum: Lightweight connection



Stainless Steel: Corrosion-resistant



Swiveling Design: If you are using a rotating tool, a swiveling design helps prevent the pigtail effect (binding of lanyard from twisting motion).



### Factor #3: Clearance, Reach, and Snag Hazard

Length of your lanyard should be determined by these three factors. Determine how much clearance you need between the anchoring location of your lanyard and the nearest sensitive surface, object or person below. Also determine how long the user's reach is, so the lanyard expands far enough. If you are working in a confined space or other applications where lanyards with excess slack will become snag hazards, you may want a short or expandable lanyard.

Wrist -> 7.5" / 19cm Coil -> 7.5" - 48" / 19cm - 123cm Retractable -> 11" - 48" / 28cm - 123cm Stretch -> 35" - 48" / 89cm - 123cm

### Factor #4: Additional Options

### **Modular Quick Connect**

Quick connecting buckle allows for exchange of multiple tools to a single lanyard. Tool Tails<sup>™</sup> (additional accessory) are available for this system.





### Twin Leg

Twin leg lanyards allow for two tools to be connected or 100% tie off for one tool when transferring tools from point 'A' to point 'B'. From a hoist bucket to a structure, for example.

### Topping

There are different ways of transporting equipment to heights and a variety of containers used to store the equipment while in transit. Regardless of what container is used, there are three critical best practices:

Hands Free Climbing Container should allow for three points of contact at all times.

**Closed Container** The solution should have a secure top or closure that does not allow the contents to spill out if it tips over or becomes inverted in transit.

**Weight Rating** The container should be weight rated, stamped with that weight rating and include a safety factor to minimize the risk of misuse.





Whether you are carrying or hoisting equipment, the following factors will help you determine what containers to use:

### Factor #1: Carrying vs. Hoisting

When bringing equipment to heights, there is often a desire to bring more equipment than is actually needed. No worker wants to leave a tool behind that they might need because climbing back down to grab it and climbing back up to finish the job results in both a loss of productivity and an increased safety risk of additional movement and time at height.

### Factor #2: Type of Equipment

Small parts can be carried up by the worker, but they need a means of being controlled other than tethering. (i.e. nuts, bolts, nails, screws).

Hand tools can be carried up by the worker who may have a desire for organized holstering. (i.e. screwdrivers, hammers, wrenches, small power tools).

Large items do not lend themselves to be carried up safely by a worker. (i.e. 5 gallon pails, larger power tools).

Extra large loads usually need to be lifted by a crane (i.e. scaffolding, rebar, Joboxes, other structural material).

### Factor #3: Weight of Equipment

≤ 33lb (22.7kg) – Maximum capacity of individual Ergodyne tool pouches and bolt bags.

≤150lb (68kg) – Maximum capacity of individual Ergodyne hoisting solutions.

≥1511bs (68.5kg) -Would require more than one container.

### Factor #4: Container Material

Canvas – Heavy-duty cottonbased canvas provides traditional durability.

Synthetic (nylon or polyester) – Often more resistant to water, dirt and other substances.

Tarpaulin – Waterproof material helps keep contents dry and protected from the elements.





# SOLUTIONS TRAPPED // TETHERED // TOPPED



3191 POWER TOOL TETHERING KIT

Tether: one standard cordless power tool









### 3192 3LB / 1.4KG Tool tethering kit

Tether: up to four 3lb / 1.4kg tools



### 3193 TAPE MEASURE Tethering kit

Tether: one standard tape measure





### 3194 HAND TOOL

TETHERING KIT

Tether: up to four screwdrivers/hex keys



### 3195 CELLPHONE Tethering kit

Tether: one standard or plus size phone







3196 GRINDER TETHERING KIT

Tether: one 8lb / 3.6kg grinder



### // TOOL TETHERING KITS



### 3183 CARPENTERS/ LABORERS TETHERING KIT

Tether: Hard Hats Gloves Tape Measures Claw/Sledge Hammers Cordless Drills/Drivers Adjustable Wrenches Speed Squares Pry Bars Cats Paws Piliers Utility Knives Torpedo Levels Multi-Tool Scrapers Jab Saws





### 3184 FINISHERS/MASONS Tethering kit

Tether: Hard Hats Gloves Tape Measures Claw/Sledge Hammers Grinders Pliers Utility Knives Margin/Mason Trowels Floats/Edgers/Mag







### **3185 GLAZIERS** TETHERING KIT

Tether: Hard Hats Gloves Tape Measures Cordless Drills/Drivers Piliers Utility Knives 8" Flat Bars Spray Bottles Caulking Knives





### 3186 IRON/STEEL Workers Tethering Kit

Tether: Hard Hats Gloves Tape Measures Claw/Sledge Hammers Cordless Drills/Drivers Sleever Bars Pliers Spud Wrenches Folding Tape Measures Bolt Cutters





### 3187 SCAFFOLDERS Tethering kit

Tether: Hard Hats Gloves Tape Measures Claw/Sledge Hammers Mallets Adjustable Wrenches Scaffolders 3-In-1 Tool Nips Levels















Cold Shrink Traps

Available in 3 sizes: 3723: 5lb / 2.3kg 3724: 10lb / 4.5kg 3726: 15lb / 6.8kg



	IIVE			TRAP MODEL (TYPE: MODEL)		
TOOL WEIGHT	MODEL NUMBER	SHAFT DIAMETER: < 0.75IN / 19MM	SHAFT DIAMETER: 0.76-1.25IN / 19-32MM	SHAFT DIAMETER: 1.26-1.751N / 32-44MM	SHAFT DIAMETER: 1.76-2.25IN / 44-57MM	SHAFT DIAMETER: 2.26-2.50IN / 57-63MM
	Web Tail:	Tape Traps: 3755 Length = ≥ 12IN / 31CM	Tape Traps: 3755 Length = ≥ 12IN / 31CM	Tape Traps: 3755 Length = ≥ 18IN / 46CM	Tape Traps: 3755 Length = ≥ 18IN / 46CM	Tape Traps: 3755 Length = ≥ 24IN / 61CM
WEIGHT	3700 (all sizes)	Cold Shrink Trap: N/A				
≤ 2LBS / 0.9KG	Elastic Tail:	Tape Traps: 3755 Length = > 12IN / 31CM	Tape Traps: 3755 Length = ≥ 12IN / 31CM	Tape Traps: 3755 Length = ≥ 18IN / 46CM	Tape Traps: 3755 Length = ≥ 18IN / 46CM	Tape Traps: 3755 Length = ≥ 241N / 61CM
	3703, 3703EXT, 3713	Cold Shrink Trap: N/A	Cold Shrink Trap: 3723	Cold Shrink Trap: 3723, 3724	Cold Shrink Trap: 37.26	Cold Shrink Trap: 3726
WEIGHT	Elastic Tail:	Tape Traps: 3755 Length = ≥ 18IN / 46CM	Tape Traps: 3755 Length = ≥ 18IN / 46CM	Tape Traps: 3755 Length = ≥ 24IN / 61CM	Tape Traps: 3755 Length = ≥ 24IN / 61CM	Tape Trap: 3755 Length = ≥ 30IN / 76CM
≤ 5LBS / 2.3KG	3703, 3703EXT, 3713	Cold Shrink Trap: N/A	Cold Shrink Trap: N/A	Cold Shrink Trap: 3723, 3724	Cold Shrink Trap: 3726	Cold Shrink Trap: 3726
WEIGHT	Elastic Tail:	Tape Trap: 3755 Length = > 24IN / 61CM	Tape Trap: 3755 Length = ≥ 24IN / 61CM	Tape Trap: 3755 Length = ≥ 30IN / 76CM	Tape Trap: 3755 Length = ≥ 30IN / 76CM	Tape Trap: 3755 Length = ≥ 36IN / 91CM
≤ 10LBS / 4.5KG	3703, 3703EXT, 3713	Cold Shrink Trap: N/A	Cold Shrink Trap: N/A	Cold Shrink Trap: 3724	Cold Shrink Trap: 3726	Cold Shrink Trap: 3726
WEIGHT	Elastic Tail:	Tape Trap: 3755 Length = ≥ 36IN / 91CM	Tape Trap: 3755 Length = ≈ 36IN / 91CM	Tape Trap: 3755 Length = ≈ 36IN / 91CM	Tape Trap: 3755 Length = ≈ 36IN / 91CM	Tape Trap: 3755 Length = ≥ 48IN / 122CM
15LBS / 6.8KG	3703, 3703EXT	Cold Shrink Trap: N/A	Cold Shrink Trap: N/A	Cold Shrink Trap: N/A	Cold Shrink Trap: N/A	Cold Shrink Trap: 3726



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Coil Lanyards // Dual Manual Screw Gate Carabiners (Stainless Steel)

**3130S:** ≤2lbs / 0.9kg **3130M:** ≤5lbs / 2.3kg





### // TETHERED



Manual Screwgate Carabiner (Aluminum)

Single Carabiner Standard Length 3100F(x)

Shock Absorbing Lanyard // Manual Screwgate Carabiner (Aluminum)





Single Carabiner Standard Length 3108F(x)



### // TETHERED





### **Container Options // Carrying**





5517 – Premium Topped Parts Pouch - Zipper

5527 – Premium Topped Parts Pouch - Hinge

5528 – Topped Parts Pouch - Canvas 5538 – Topped Parts Pouch - Tarpaulin









5725 – Canvas Bolt Bag Short 5728 – Canvas Bolt Bag Tall



5561 – Small Tool Holster 5562 – Hammer Holster







### **Carry or Hoist**

5843 - Tool Backpack

Designed to be carried around the jobsite or used for hands free climbing when worn on back. For heavier loads up to 50 lbs., the top straps of the bag can be used for hoisting.

### // TOPPED

### **Hoisting Options**

Canvas Bucket - Web Handle 5930T - Large 5935T – XLarge





Canvas Bucket with D-Rings 5960T





### **TENACIOUS SINCE 1983.**

INTERGALACTIC HEADQUARTERS:

44° 58' 18.31" N 93° 09' 12.88" W ALT. 934 FT. 1021 BANDANA BOULEVARD EAST SUITE 220 SAINT PAUL, MN, USA 55108 PHONE 651 642 9889 // 800 225 8238 WWW.ERGODYNE.COM

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