



### THE OFFICIAL ERGODYNE



DROP COPS® GUIDE





# **OBJECT PREVENTION**

#### AT HEIGHTS SAFER AND MORE PRODUCTIVE

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# DROPPED OBJECTS REPRESENT 5% OF DEATHS ON THE JOBSITE.

\*BUREAU OF LABOR STATISTICS 2016



#### PREVENTION IS THE ANSWER.

#### **//WARNINGS & SPECIAL NOTICES**

The training and 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





any hazard planning is prevention. PPE will help protect workers and minimize the damage in the event of a drop – but <u>preventing</u> 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.

		1
TETHERING	TOPPING	
		or sodyne



#### SECTION 1:

# TOOL ANATOMY THE GUIDE TO TOOL TETHERING

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 their overall shape and body type. The tool type will 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:

#### **Primary Tool Types**



#### **Captive 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



#### **Open Ended Tools**

Tools with handles that are open ended with no captive connection point built in.

Examples: Hammers, socket wrenches, screwdrivers



#### **Waisted Tools**

Tools that have thinner "neck," "waist," or mid-section between two thicker sections.

Examples: Combination wrenches, spud 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

#### 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.



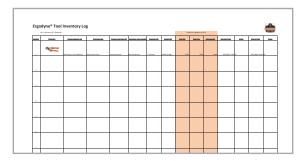
**Note:** Add up the combined weight of the tool set being transported to an at heights work location. This will be important when topped containers are discussed in a later section.



**Step 3:** Use a caliper, tape measure, or ruler to measure the size of the tool to determine what type of connectors 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.



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).



Step 1A: Choose a retrofit connection.

(pg. 24)

Power Tool ->

Continue to Traps

Other -> Determine

appropriate solution

For tools under 15 lbs. (6.8kg) Squids® Tool Attachments can be applied to create a retrofit connection point on the tool.

Instrumentation ->

Continue to Traps

(pg. 24)



#### Tails & Traps

Open Ended or Waisted Tool Types can use Squids® Tails and Traps to create a connection point.

Squids® Tool Tails™ – Loose connection points meant to be attached or "trapped" to applicable tool types.



Squids® Tool Traps™ – Solution for attaching or "trapping" the Tool Tail™ onto applicable tool types.



3755 Tape Traps Up to 10 lbs. (4.5kg)

3723-3726 Cold Shrink Traps Up to 15 lbs. (6.8kg)

#### 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. 40.

#### Step 1B: Squids® Tape Traps

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







**MEASURE AND CUT TAPE** 



**PLACE TAIL ON TOOL** 



**WRAP TAPE AROUND TOOL & TAIL** 



STRETCH AS YOU GO



**LAY DOWN END** 



**ATTACH A LANYARD** 

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

Follow these simple steps to install the Squids® Cold Shrink Traps.









WRAP TAIL AROUND TOOL



**CHOKE TOOL TAIL** 



**CINCH BARREL LOCK** 



BEGIN PULLING TRAP CORE



**PLACE CORE AROUND TOOL** 



REMOVE ENTIRE CORE



**EXAMINE PLACEMENT** 



#### Step 1B: Squids® Tool Shackles

Waisted Tools or Captive Tools with connection points that are too small for carabiners can use Tool Shackles to create a connection point.

Compare the diameter of the tool's waist or neck and the thicker portion of the tools end. Use the Tool Shackle grid below to determine the appropriate size shackle to use.



TOOL SHACKLES	A	В	C	
3790\$	. <b>75</b> " (19mm)	.40" (10mm)	.20" (5mm)	
3790M	1" (26mm)	. <b>50</b> " (12mm)	. <b>20</b> " (5mm)	<del>                                    </del>
3790L	<b>1.25</b> " (32mm)	. <b>65</b> " (16mm)	.30" (8mm)	
3790XL	1.5" (38mm)	.80" (20mm)	.40" (10mm)	_ B





**UNSCREW THE CROSSBAR** 



**SLIDE U-SHACKLE AROUND TOOL** 



APPLY THREAD ADHESIVE



RECONNECT CROSSBAR



**USE PLIERS TO FIRMLY TIGHTEN** 



**TEST THE SECURITY OF SHACKLE** 

#### Step 1B: Squids® Tape Measure Traps

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



PLACE TAPE MEASURE INTO TRAP





FIRMLY SECURE ALL STRAPS



FIRMLY SECURE ALL STRAPS



ATTACH A LANYARD



#### 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** 

PLACE POWER TOOL INTO TRAP







WRAP VERTICAL STRAP AROUND

**SECURE VERTICAL STRAP** 





FEED STRAP THROUGH BUCKLE

**PULL TIGHTLY AND SECURE** 





**SECURE HOOK & LOOP STRAPS** 

**ATTACH A LANYARD** 

# OLTRANGE HEAVY METAL THUNDER ON YOUR CO-WORKERS.



#### Step 2: Tethering

Once all tools have a connection point the appropriate tethering solution can be selected. Consider the following factors to select the appropriate solution:



Factor #1: Weight of Tool

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

Factor #3: Clearance, Reach, and Snag Hazard

Factor #4: Additional Options

#### 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

#### 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" - 50" (19cm - 127cm)

Retractable -> 11" - 48" (28cm - 122cm)

Stretch lanyard: Short -> 28" - 35" (71cm - 89cm)
Stretch lanyard: Standard -> 35" - 42" (89cm - 107cm)
Stretch lanyard: Extended -> 42" - 54" (107cm - 137cm)

#### Factor #4: Additional Options

#### Modular Quick Connect

Quick connecting buckle allows for exchange of multiple tools to a single lanyard. Tool Tails™ (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

 $\leq$  33lb (22.7kg) -Maximum capacity of individual Ergodyne tool pouches and bolt bags.

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

≥151lbs (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





#### 3180 2LB (0.9KG) TOOL TETHERING KIT

Kit includes: 3700: 4.5" (11.5cm) Web Tool Tails (6 Pack) 3755: Self-Adhering Tape requires no heat 3130S: Coiled lanyard design prevents snagging

Tether up to six 2lb (0.9kg) tools









#### 3181 5LB (2.3KG) Tool tethering kit

Kit includes:

3103: Accessory Kit Detachable Loops (3 Pack)
3755: Self-Adhering Tape
requires no heat
3102F(x): Detachable Single

Carabiner



Kit includes:

**3713:** Elastic Loop Tool Tails™ Swivel

**3755:** Self-Adhering Tape requires no heat

**3100F(x):** Tool Lanyard Single Carabiner

Tether up to three 10lb (4.5kg) tools











3190 // 3193 **TAPE MEASURE** TETHERING KITS

3190 kit includes:

3770: Tape Measure Trap 3130S: Coiled lanyard

3193 kit includes:

3770: Tape Measure Trap 3100F(x): Tool Lanyard Single Carabiner

Tether one standard 2lb (0.9kg) tape measure





### 3191 POWER TOOL TETHERING KIT

Kit includes:

3780: Power Tool Trap 3100F(x): Tool Lanyard Single Carabiner

Tether one standard 6lb (2.7kg) cordless power tool









# 3192 3LB (1.4KG) TOOL TETHERING KIT

Kit includes:

3103: Accessory Kit -Detachable Loops (3 Pack) 3755: Self-Adhering Tape requires no heat

3116: Pull-On Wrist Lanyard with Buckle

Tether up to four 3lb (1.4kg) tools





### **3770 TAPE MEASURE TRAP**







## 3780 POWER TOOL TRAP™ **AVAILABLE IN TWO SIZES**







3760 CELL PHONE TRAP - SLEEVE (AVAILABLE IN STANDARD AND PLUS SIZES) **3765 TABLET TRAP - SLEEVE** 

3775 WATER BOTTLE/CANISTER TRAP - SLEEVE







3 LBS

1.4 KG



3775



POWER TOOL TRAP™ 3796 DRILL/IMPACT DRIVER BRACKET **3797 GRINDER BRACKET 3798 PNEUMATIC BRACKET** 



3796



















- · No adhesives for easy replacement
- Fiberglass reinforcement
- Cut and puncture resistant
- Added grip to handle of tools
- Used w/ Tool Tail<sup>™</sup>; creates retrofit tether point

TOOL TRAP SOLUTION	TOOL TRAP Model Number	TOOL TAIL MODEL (TYPE)
	3723	3703 (Elastic)
SHRINK TRAP	3724	3703 (Elastic) 3713 (Elastic)
	3726	3703EXT (Elastic)
TAPE TRAP	3755	3700 (Web)
		3703 (Elastic)



### 3723 – 3726 COLD Shrink Traps









### AVAILABLE IN THREE SIZES

# TECH TAGS: 👸 🔔 🥄 🗽

- Cold Shrink technology requires no heat source
- No additional tools needed to ensure a secure connection on tool
- Uses no adhesives, can be removed and replaced without a mess
- EDPM rubber material resists acids, alkalies, and extreme temps
- Fits tool diameters ranging from 0.75" to 2.5" (1.9cm 6.4cm)
- Maximum working capacity up to 15lbs. (6.8kg) depending on model, tool, tail, and lanyard used
- Patented

TOOL DIAMETER MIN/MAX	TOOL DIAMETER MIN/MAX WITH CAPACITY	
0.75" - 1.50" (16mm - 38mm)	0.75" - 1.25" (16mm - 32mm)	2 lbs. (0.9 kgs)
	1.25" - 1.50" (32mm - 38mm)	5 lbs. (2.3 kgs)
1.25" · 1.75" (38mm · 45mm)	1.25" - 1.50" (32mm - 38mm)	5 lbs. (2.3 kgs)
	1.50" - 1.75" (38mm - 45mm)	10 lbs. (4.5 kgs)
1.75" - 2.50" (45mm - 63mm)	1.75" - 2.25" (45mm - 57mm)	10 lbs. (4.5 kgs)
	2.25" - 2.50" (57mm - 63mm)	15 lbs. (6.8 kgs)
All Diameters	All Diameters	2 lbs. (0.9 kgs)
	All Didilleters	10 lbs. (4.5 kgs)











≤2lbs (0.9kg) Coil Lanyards // Manual Screw Gate Carabiner (Stainless Steel)

**Dual Carabiner** 3130S



≤5lbs (2.3kg) Coil Lanyards // Manual Screw Gate Carabiners (Stainless Steel)

**Dual Carabiner** 3130M



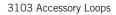






≤5lbs (2.3kg) Shock Absorbing Lanyard // Single Action Carabiner (aluminum)

Single Carabiner with Loop End Standard length 3102F(x) (modular)







≤10lbs (4.5kg)
Shock Absorbing Lanyard //
Single Action Carabiner (Aluminum)

Single Carabiner Standard Length 3100F(x)







Standard Length 3108F(x)





≤15lbs (6.8kg) Stretch Lanyards // Manual Screw Gate Carabiners (Stainless Steel)

**Dual Carabiner** Standard Length 3111 Extended Length 3111EXT

Single Carabiner with Loop End Standard Length 3101 Extended Length 3101EXT

Triple Carabiner (Twin Leg) Standard Length 3311







≤40lbs (18.1kg) Heavy-Duty Lanyards // Swiveling Double Action Carabiner (Aluminum)

Single Carabiner Standard Length 3129

Double Carabiner Standard Length 3139





2lbs (0.9kg) Hard Hat Lanyard

Elastic with buckle 3150 Elastic with clamp 3155





2lbs (0.9kg) Hard Hat Lanyard

Coil with buckle 3157 Coil with clamp 3158

Coil with Single Carabiner 3156 Coil with Dual Carabiner 3166

# Container Options // Carrying







≤20lbs (9.1kg)

5517 – Premium Topped Parts Pouch - Zipper

5527 – Premium Topped Parts Pouch - Hinge

≤20lbs (9.1kg)

5528 - Topped Parts Pouch - Canvas

 $5538-\mbox{Topped Parts Pouch}$  - Tarpaulin









≤25lbs (12kg)

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







≤5lbs (2.3kg)

5561 - Small Tool Holster

5562 – Hammer Holster

5563 - Power Tool Holster

≤33lbs (15kg)

5516 - 1680D Ballistic Polyester Covered Tool Pouch w/ Strap Design

5518 - 1680D Ballistic Polyester Covered Tool Pouch w/ Loop Design





# **Carry or Hoist**

≤50lbs (22.6kg)

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.



# **Hoisting Options**

≤150lbs (68kg)

Canvas Bucket - Web Handle 5930T - Large

5935T - XLarge





≤150lbs (68kg)

Canvas Bucket -Swiveling Carabiner 5940T – Large 5945T – XLarge











≤150lbs (68kg)

Canvas Bucket with D-Rings 5960T











# **TENACIOUS SINCE 1983.**

#### INTERGALACTIC HEADQUARTERS:

44° 58' 18.31" N 93° 09' 12.88" W ALT. 934 FT.

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