3M Science. Applied to Life.™

Dropped Objects

Risks of Dropped Objects – Using 3M Fall Protection for Tools to help Prevent Drops

Why care about dropped objects?

People (Safety)	Productivity	Property
• Deaths • Injuries	• Work stop • Tool retrieval	• Systems downtime and maintenance • Damaged tools

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Fall Protection is about you

Drop Prevention is about those around you

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What are the leading causes of death in the workplace?

*Per 2016 report by U.S. Bureau of Labor Statistics**

*Source: US Bureau of Labor Statistics https://www.bls.gov/news.release/pdf/cfoi.pdf

#1 cause of death in workplace*:

Transportation Incidents

*Source: US Bureau of Labor Statistics https://www.bls.gov/news.release/pdf/cfoi.pdf

#2 cause of death in workplace*:

Falls

*Source: US Bureau of Labor Statistics https://www.bls.gov/news.release/pdf/cfoi.pdf

#3 cause of death in workplace*:

Contact with Objects

*Source: US Bureau of Labor Statistics https://www.bls.gov/news.release/pdf/cfoi.pdf

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How many

“Struck-by Falling Object” OSHA Recordables

are there annually?

*Per 2015 report by U.S. Bureau of Labor Statistics**

*Sources:
1) US Bureau of Labor Statistics http://www.bls.gov/iif/oshwc/osh/case/ostb4397.pdf,
2) US BLS http://www.bls.gov/news.release/cfoi.nr0.htm

42,400

OSHA “Struck-By Falling Object” Recordables

*Per 2015 report by U.S. Bureau of Labor Statistics**

*Sources:
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2) US BLS http://www.bls.gov/news.release/cfoi.nr0.htm

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116

Per day

*Per 2015 report by U.S. Bureau of Labor Statistics**

*Sources:
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2) US BLS http://www.bls.gov/news.release/cfoi.nr0.htm

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Every 12 minutes

*Per 2015 report by U.S. Bureau of Labor Statistics**

*Sources:
1) US Bureau of Labor Statistics http://www.bls.gov/iif/oshwc/osh/case/ostb4397.pdf,
2) US BLS http://www.bls.gov/news.release/cfoi.nr0.htm

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Impact forces of a dropped object

Direct Impact

Impact of an 8.3 lb. (3.6 kg) dropped wrench*

Drop Height		Speed		Impact Force	
Feet	Meters	MPH	KPH	Lbs.	Newtons
5	1.5	12	19	166	738
10	3	17	27	332	1477
25	7.6	27	43	830	3692
50	15.2	39	63	1660	7384
100	30.5	55	88	3320	14768
200	61	77	124	5540	29536
300	91	95	152	9960	44304
400	122	109	175	13280	59072
500	152	122	196	16600	73840

*Assumes a 3 in. (7.6 cm) deceleration distance for purposes of this calculation of impact force.

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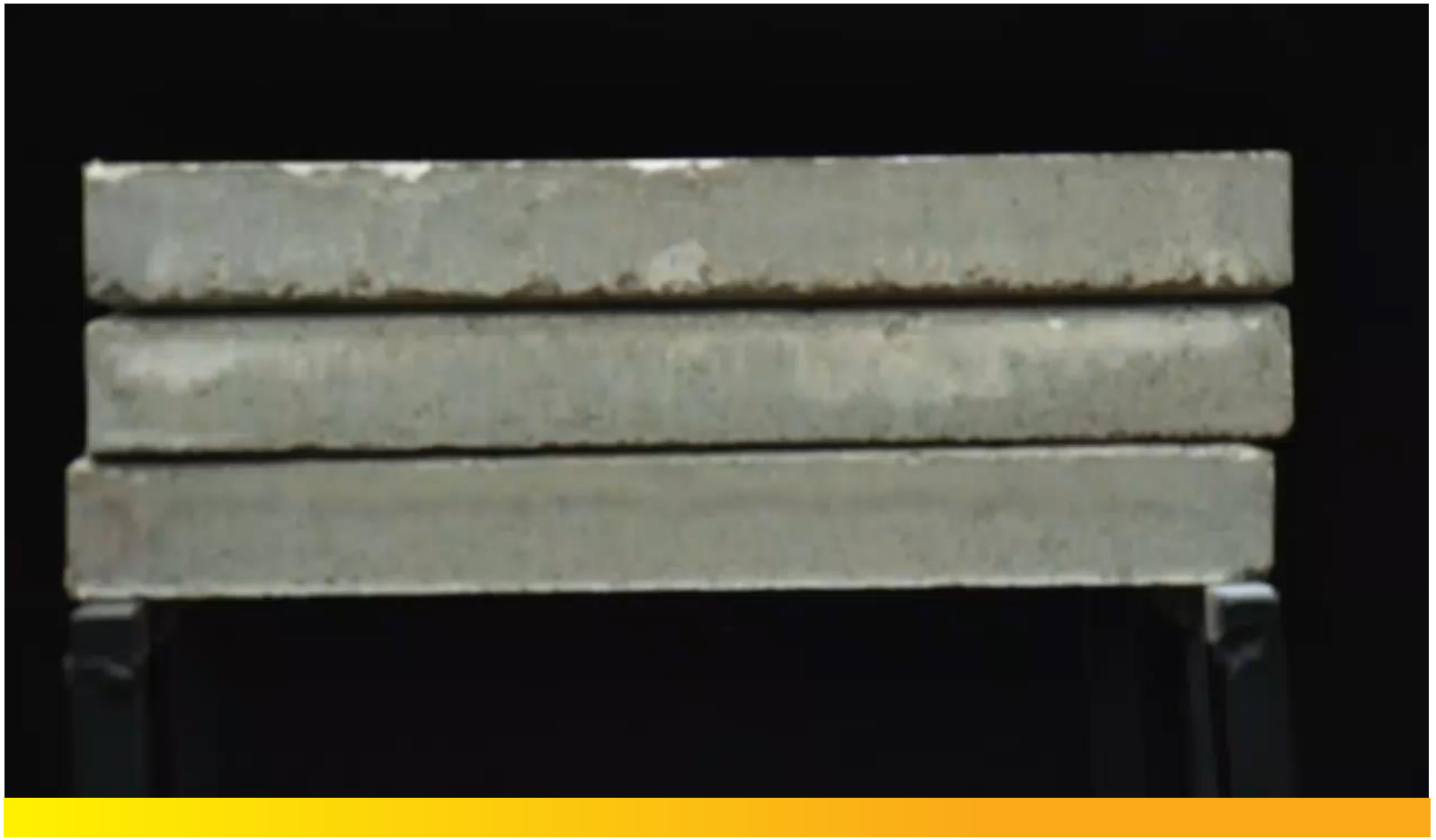
Simulated drop of an 8 lb. wrench from 200 ft.*

Cement blocks



*Test conducted at Polytechnic Institute in 2010.

Simulated drop of an 8 lb. wrench from 200 ft.

Hard hat on mannequin

*Test conducted at Polytechnic Institute in 2010.

False sense of security

Hard hats

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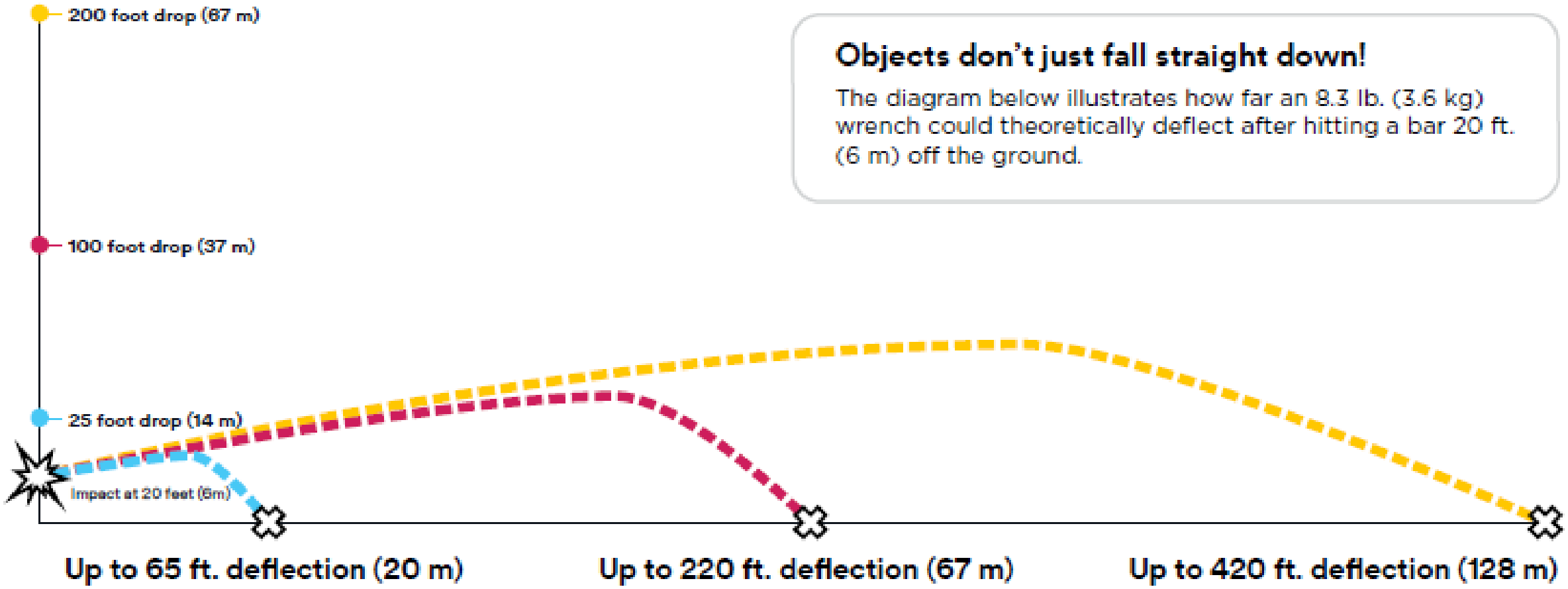
False sense of security

Netting & toe boards

False sense of security

Drop zones

Falling Object Deflections



Objects don't just fall straight down!

The diagram below illustrates how far an 8.3 lb. (3.6 kg) wrench could theoretically deflect after hitting a bar 20 ft. (6 m) off the ground.

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We already prevent

some objects

from falling in the first place.

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What about these objects?

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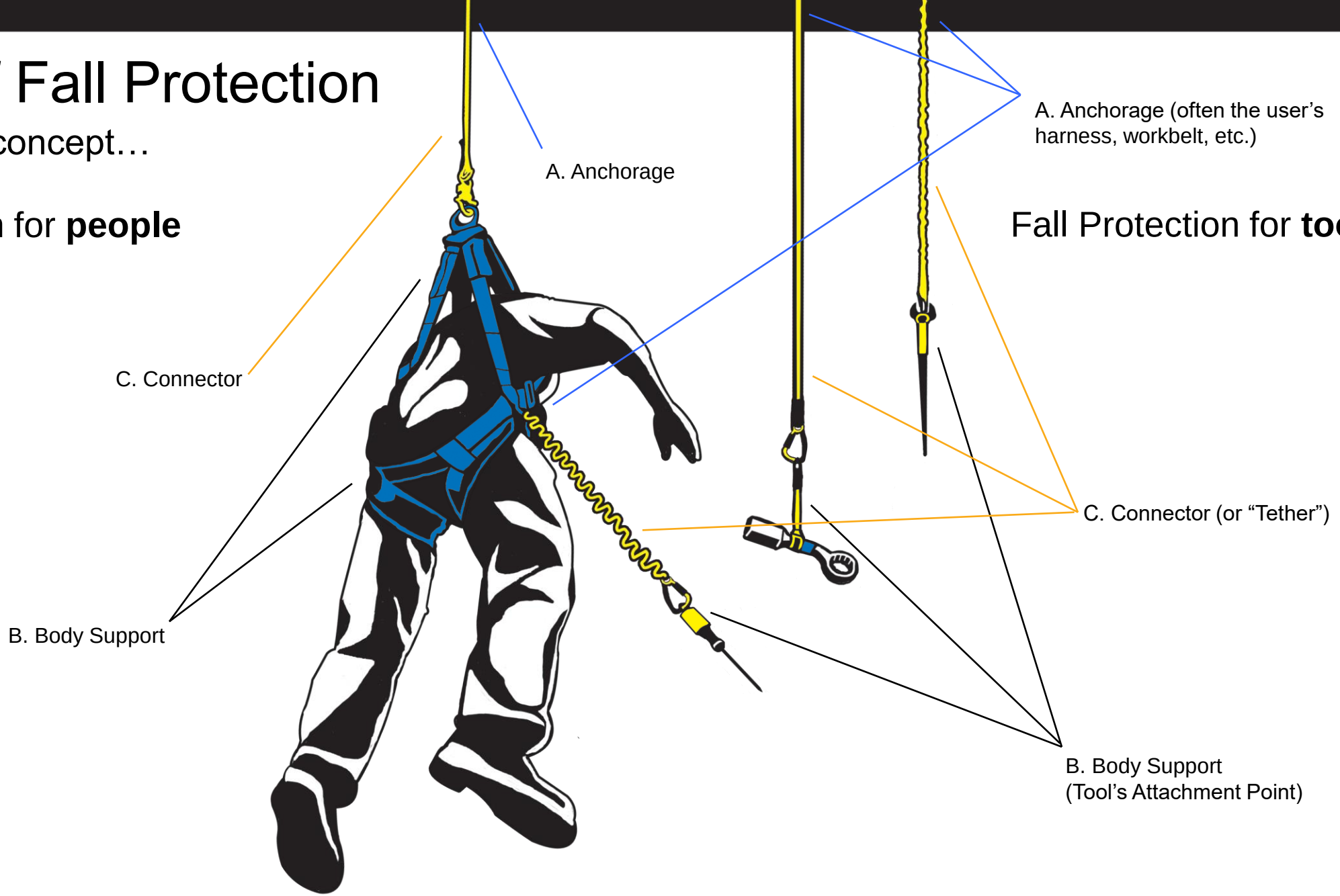
A tool tether might not always be the best solution

ABC’s of Fall Protection

It’s the same concept…

Fall Protection for **people**



Fall Protection for **tools**

A. Anchorage (often the user’s harness, workbelt, etc.)

C. Connector (or “Tether”)

B. Body Support
(Tool’s Attachment Point)

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It should be more than just using a tool tether

Use the right tool for the job

Attachment Points

Tool Belts

Tool Tethers

Tool Pouches

Wristbands

Spill Control Buckets

Tool Holsters

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