

1

00:00:00,000 --> 00:00:06,200

On this episode of Mythbusters, will steel-toed boots cut your toes off?

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00:00:06,200 --> 00:00:10,000

Adam and Jamie take on a tall tale of shoe shearing.

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00:00:10,000 --> 00:00:12,000

Oh, man.

4

00:00:12,000 --> 00:00:14,000

And will Carrie take wing?

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00:00:14,000 --> 00:00:16,000

I have a piñata.

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00:00:16,000 --> 00:00:21,000

As a Japanese myth takes off in bottle rocket blast off.

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00:00:22,000 --> 00:00:26,000

Who are the Mythbusters?

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00:00:26,000 --> 00:00:27,000

Adam Savage

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00:00:27,000 --> 00:00:29,000

Anthral over my head, man!

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00:00:29,000 --> 00:00:30,000

Jamie Heineman

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00:00:30,000 --> 00:00:33,000

Gets me all worked up just lookin at it

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00:00:33,000 --> 00:00:34,000

Tori Balecci

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00:00:34,000 --> 00:00:35,000

Whoa!

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00:00:35,000 --> 00:00:36,000

Carrie Byron

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00:00:36,000 --> 00:00:37,000

That was crazy!

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00:00:37,000 --> 00:00:39,000

And Grant Imahara

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00:00:39,000 --> 00:00:40,000

Go get him, boy!

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00:00:40,000 --> 00:00:44,000

Between them over 50 years of special effects experience

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00:00:44,000 --> 00:00:45,000

Go!

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00:00:48,000 --> 00:00:49,000

No!

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00:00:49,000 --> 00:00:51,000

They don't just tell the myth.

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00:00:51,000 --> 00:00:55,000

They put them to the test.

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00:01:04,000 --> 00:01:07,000

Well, this one actually comes out of our own industry, Jamie.

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00:01:07,000 --> 00:01:10,000

And I've got some friends who I really wish were more skeptical than they are,

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00:01:10,000 --> 00:01:12,000

because they hold to this idea.

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00:01:12,000 --> 00:01:17,000

You mean the myth that steel-toed boots are actually more dangerous than regular boots?

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00:01:17,000 --> 00:01:22,000

For decades, safety campaigners have called for protective foot gear at work.

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00:01:22,000 --> 00:01:25,000

Suddenly, the worst happens.

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00:01:26,000 --> 00:01:29,000

But some workers won't believe the hype.

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00:01:29,000 --> 00:01:34,000

They have this idea that if there's an industrial accident where a huge weight falls on your foot,

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00:01:34,000 --> 00:01:40,000

that a steel cap boot will actually curl in and crush and cut off your toes,

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00:01:40,000 --> 00:01:44,000

whereas if you weren't wearing steel-tipped boots, you'd still have your toes.

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00:01:44,000 --> 00:01:50,000

So, steel boot caps, guardian toe angels, or serial toe slicers?

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00:01:50,000 --> 00:01:56,000

To test the myth, Adam and Jamie are going to try to turn a steel toe cap into a guillotine.

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00:01:57,000 --> 00:01:58,000

So what's the plan?

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00:01:58,000 --> 00:02:01,000

Well, as we always do, the plan's got two parts.

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00:02:01,000 --> 00:02:07,000

The first part is to duplicate the testing rig that they use to give these shoes their rating.

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00:02:07,000 --> 00:02:11,000

The second is to amp up that testing rig with weight or whatever we need to do

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00:02:11,000 --> 00:02:14,000

to duplicate the toe amputating circumstance.

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00:02:14,000 --> 00:02:18,000

What they need is a mobile safety shoe truck.

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00:02:18,000 --> 00:02:19,000

Hey, here's one.

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00:02:20,000 --> 00:02:23,000

Inside, it's Florida-sealing industrial footwear.

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00:02:24,000 --> 00:02:27,000

Emelda Marcos shoe closet, Mythbusters style.

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00:02:27,000 --> 00:02:28,000

This is great.

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00:02:28,000 --> 00:02:30,000

This is actually a steel cap.

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00:02:30,000 --> 00:02:31,000

That's a steel toe cap.

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00:02:31,000 --> 00:02:33,000

That's exactly what that is.

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00:02:33,000 --> 00:02:35,000

Now, I also have a titanium, too.

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00:02:35,000 --> 00:02:40,000

And Karen's also got fiberglass toe caps and steel-toed tennis shoes.

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00:02:40,000 --> 00:02:41,000

Steel-toed sneakers?

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00:02:41,000 --> 00:02:42,000

Yeah.

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00:02:42,000 --> 00:02:45,000

Everything here has some type of protective toe.

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00:02:45,000 --> 00:02:50,000

But Karen confesses that some customers do live in fear of the steel toe cutter.

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00:02:50,000 --> 00:02:53,000

If they were wearing steel toe, if something heavy enough fell on it,

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00:02:53,000 --> 00:02:57,000

that it would just cut their toes off completely rather than if they weren't wearing it,

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00:02:57,000 --> 00:03:01,000

then their toes would be protected, which of course sounds absurd to me.

57

00:03:04,000 --> 00:03:07,000

I apologize in advance for my foot odor.

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00:03:07,000 --> 00:03:11,000

With Karen wondering how quickly she can get the truck fumigated,

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00:03:11,000 --> 00:03:13,000

Adam shakes his booty back to base.

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00:03:13,000 --> 00:03:15,000

Can someone open the door for me?

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00:03:16,000 --> 00:03:21,000

Jamie gets down to what he does best, build stuff that breaks stuff.

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00:03:22,000 --> 00:03:25,000

Basically, what I'm going to be building is a large guillotine,

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00:03:25,000 --> 00:03:28,000

except we're not going to have an axe on the end of it that chops something off.

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00:03:28,000 --> 00:03:30,000

It's going to crush something.

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00:03:30,000 --> 00:03:33,000

The shock load rig is almost complete.

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00:03:33,000 --> 00:03:37,000

Adam, confident in his steel caps, tries it out.

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00:03:38,000 --> 00:03:39,000

There you go.

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00:03:39,000 --> 00:03:40,000

Are you sure?

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00:03:40,000 --> 00:03:42,000

I'm not sure how much further I'll go in a guzzle.

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00:03:42,000 --> 00:03:45,000

Albeit with the rig minimum of 25 pounds.

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00:03:46,000 --> 00:03:47,000

That's cool.

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00:03:47,000 --> 00:03:49,000

Dude, it's a guillotine.

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00:03:50,000 --> 00:03:51,000

Come on, you big baby.

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00:03:51,000 --> 00:03:52,000

No.

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00:03:55,000 --> 00:03:58,000

Adam, we can't see inside these shoes when they're being tested.

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00:03:58,000 --> 00:04:00,000

How are we going to know what our results are?

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00:04:00,000 --> 00:04:02,000

I mean, I'm not putting my feet in there. I don't know about you.

78

00:04:02,000 --> 00:04:04,000

No, I'm definitely not.

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00:04:04,000 --> 00:04:07,000

Well, I've actually got an idea about that, and it comes out of a technology

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00:04:07,000 --> 00:04:10,000

used for testing the effects of land mines.

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00:04:10,000 --> 00:04:11,000

Mine's a little bit different.

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00:04:11,000 --> 00:04:16,000

It's called a frangible foot, and it uses mostly our old friend Ballistics' gel.

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00:04:17,000 --> 00:04:21,000

To get a smooth mold, Adam once again shaves for the show.

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00:04:21,000 --> 00:04:23,000

This is a two-stage process.

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00:04:23,000 --> 00:04:27,000

The first stage, I'll be slathering what's called dental alginate over my leg,

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00:04:27,000 --> 00:04:30,000

and it's what the dentist used to cast your teeth.

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00:04:30,000 --> 00:04:35,000

For support, the alginate mold is covered with several layers of plaster bandages,

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00:04:35,000 --> 00:04:38,000

which, after hardening, can be cut and removed.

89

00:04:39,000 --> 00:04:41,000

Nicely done.

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00:04:41,000 --> 00:04:44,000

Next, he fills the mold with a silicon-based rubber.

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00:04:46,000 --> 00:04:47,000

Is it leaking over the side?

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00:04:47,000 --> 00:04:48,000

Oh.

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00:04:48,000 --> 00:04:51,000

Despite the spills, he's thrilled with the results.

94

00:04:54,000 --> 00:04:56,000

Mungo is happy.

95

00:04:57,000 --> 00:05:02,000

Stage two, Adam makes a plaster mother mold and takes a cast of his silicon foot.

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00:05:04,000 --> 00:05:06,000

Oh, it looks good.

97

00:05:06,000 --> 00:05:08,000

Look at that foot there.

98

00:05:08,000 --> 00:05:09,000

Look at that foot.

99

00:05:09,000 --> 00:05:12,000

But so far, he's only gone skin deep.

100

00:05:13,000 --> 00:05:18,000

To get right down to the bone, Adam tries out chicken legs and bamboo

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00:05:18,000 --> 00:05:21,000

for their similarity to human bones.

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00:05:21,000 --> 00:05:23,000

All of a sudden, I'm not sure I like bamboo.

103

00:05:23,000 --> 00:05:26,000

His tests show that neither is a match.

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00:05:26,000 --> 00:05:29,000

So he goes for a fiberglass alternative.

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00:05:29,000 --> 00:05:34,000

These are real human feet, and our ultimate goal is to make castings of these

106

00:05:34,000 --> 00:05:38,000

in a material that matches the bone exactly.

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00:05:38,000 --> 00:05:42,000

Stage three, Adam casts a mold of the skeletal feet.

108

00:05:43,000 --> 00:05:47,000

That one's done and mixes a hard resin cocktail.

109

00:05:47,000 --> 00:05:51,000

When set, it's a perfect substitute for real bone.

110

00:05:52,000 --> 00:05:56,000

Hot glue for tendons and the surrogate skeleton is complete.

111

00:05:56,000 --> 00:05:59,000

Stage four puts flesh on the bones.

112

00:05:59,000 --> 00:06:06,000

Adam uses a new ballistics material, which he pours over the skeleton in his plaster leg mold.

113

00:06:06,000 --> 00:06:08,000

I'm actually really pleased with this.

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00:06:08,000 --> 00:06:15,000

I think this is the state of the art for mythbusters and flesh limb analogs for testing damage.

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00:06:15,000 --> 00:06:19,000

There have been a ton of experiments we've done where we've needed bodies and skeletons

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00:06:19,000 --> 00:06:21,000

and things of different types.

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00:06:21,000 --> 00:06:23,000

How you doing there, buddy? How you doing?

118

00:06:23,000 --> 00:06:26,000

Yeah, you're doing so good. We're gonna shoot you.

119

00:06:28,000 --> 00:06:32,000

This is the best we've ever gotten in terms of something that will really show us

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00:06:32,000 --> 00:06:35,000

what happens when this accident occurs.

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00:06:37,000 --> 00:06:41,000

Meanwhile, Jamie has applied the finishing touches to his toe torturer,

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00:06:41,000 --> 00:06:44,000

and they're ready to start testing.

123

00:06:44,000 --> 00:06:48,000

All the shoes that we're testing are the highest rated safety boots

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00:06:48,000 --> 00:06:51,000

you can get, and that's called the ANSI 75 rating.

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00:06:51,000 --> 00:06:58,000

The plan is to systematically increase the height and the weight of the things that are dropped on the shoe,

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00:06:58,000 --> 00:07:01,000

probably until the shoe starts to crunch.

127

00:07:01,000 --> 00:07:05,000

Beyond that, we've got our mythbusters frangible legs,

128

00:07:05,000 --> 00:07:09,000

which should tell us the extent and severity of any injury that gets sustained.

129

00:07:09,000 --> 00:07:13,000

I still don't think that we're gonna get any cut off toes.

130

00:07:13,000 --> 00:07:17,000

Now we officially have a dangerous thing, so let's be careful around it.

131

00:07:17,000 --> 00:07:20,000

Wow, that feels really weird.

132

00:07:23,000 --> 00:07:25,000

How come you don't wear steel-toed boots, Jamie?

133

00:07:25,000 --> 00:07:28,000

I generally try not to drop things on my feet.

134

00:07:28,000 --> 00:07:30,000

Safety pin is out.

135

00:07:30,000 --> 00:07:36,000

First up on the chopping block, steel cap boot, 75 pounds from three feet.

136

00:07:36,000 --> 00:07:38,000

In three, two, one.

137

00:07:41,000 --> 00:07:42,000

Well, there you go.

138

00:07:42,000 --> 00:07:43,000

Well, there it is.

139

00:07:43,000 --> 00:07:49,000

I see a little distention in the leather here, but there doesn't seem to be any deformation at all.

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00:07:49,000 --> 00:07:50,000

Could be some variations.

141

00:07:50,000 --> 00:07:54,000

It looks like it may have mashed it just a hair, but not enough to hurt.

142

00:07:54,000 --> 00:07:57,000

It may just be the leather flapping at itself.

143

00:07:57,000 --> 00:08:02,000

That's an ANSI 75 rating at the official test height and weight.

144

00:08:02,000 --> 00:08:05,000

Big deal. Let's ramp it up.

145

00:08:08,000 --> 00:08:12,000

The impending Toma Geden has got Adam excited.

146

00:08:12,000 --> 00:08:15,000

Oh, yeah. Oh, yeah.

147

00:08:17,000 --> 00:08:19,000

Oh, that's great.

148

00:08:20,000 --> 00:08:22,000

You're gonna stand over there.

149

00:08:25,000 --> 00:08:29,000

The drop rig is now at toe-trembling 400 pounds.

150

00:08:29,000 --> 00:08:32,000

In three, two, one.

151

00:08:33,000 --> 00:08:34,000

Oh, man.

152

00:08:35,000 --> 00:08:37,000

These are resilient shoes.

153

00:08:37,000 --> 00:08:42,000

Even at the rig's maximum weight, the steel cap doesn't look to have been squashed flat.

154

00:08:44,000 --> 00:08:46,000

It's like stealing a dead guy's shoes.

155

00:08:48,000 --> 00:08:50,000

You haven't done that since the war, have you, Jimmy?

156

00:08:50,000 --> 00:08:51,000

Which war?

157

00:08:51,000 --> 00:08:55,000

I do have a broken metatarsal here.

158

00:08:55,000 --> 00:08:58,000

But they look like they might still be attached to your body.

159

00:08:58,000 --> 00:08:59,000

Oh, yeah, they would.

160

00:08:59,000 --> 00:09:02,000

But that's 400 pounds from three feet.

161

00:09:02,000 --> 00:09:04,000

What do you think we ought to go to? Let's go to six feet now.

162

00:09:04,000 --> 00:09:09,000

I want to see some toes cut off or crushed beyond all recognition.

163

00:09:09,000 --> 00:09:11,000

Three, two, one.

164

00:09:14,000 --> 00:09:17,000

Well, it sort of removed itself there.

165

00:09:20,000 --> 00:09:21,000

It's flat as a pancake.

166

00:09:21,000 --> 00:09:22,000

Wow.

167

00:09:22,000 --> 00:09:25,000

Dr. Heinemann performs a boot autopsy.

168

00:09:26,000 --> 00:09:30,000

Add the toes in bad shape, but it's still in one piece.

169

00:09:30,000 --> 00:09:33,000

We've got a break in the first metatarsal.

170

00:09:33,000 --> 00:09:35,000

We had a break in the second metatarsal.

171

00:09:36,000 --> 00:09:38,000

So there's your steel toe.

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00:09:38,000 --> 00:09:42,000

That's a pretty serious deformation, but it still ain't a toe cutting deformation.

173

00:09:42,000 --> 00:09:45,000

No amputation, no celebration.

174

00:09:45,000 --> 00:09:50,000

The myth of the steel toe cap toe slicer is looking shaky.

175

00:09:50,000 --> 00:10:09,000

The myth that we're about to do came as a result of an email that someone sent me from a clip from a Japanese game show.

176

00:10:09,000 --> 00:10:10,000

Oh, oh, yeah.

177

00:10:10,000 --> 00:10:19,000

The one where he's got the soda bottle strapped to his back full of water and like a bicycle pump full of air and he takes off like, I don't know, 30, 40 feet or something like that.

178

00:10:19,000 --> 00:10:21,000

Who's going to be stupid enough to strap this thing to their ass?

179

00:10:21,000 --> 00:10:28,000

Well, I think that would be Carrie, not because she's stupid, which we know she's not, but because she's lighter than you or I.

180

00:10:28,000 --> 00:10:33,000

I've seen that clip. I've seen it. I think that one's faked. There's got to be a cable involved somewhere.

181

00:10:33,000 --> 00:10:34,000

Well, you're going to find out.

182

00:10:34,000 --> 00:10:50,000

So can the mythbusters launch someone 40 yards on a ballistic trajectory with a bottle rocket jetback using just water for fuel?

183

00:10:50,000 --> 00:10:57,000

First, they need to build a prototype and Grant's found a recipe on the Internet.

184

00:10:58,000 --> 00:11:10,000

Our bottle rocket is going to be composed of a plastic soda bottle, a bike pump to provide air pressure, a rubber stopper and some plumbing bits from the hardware store.

185

00:11:10,000 --> 00:11:17,000

It's all hands to the pump. And when Tori adds a pointy bit, they've got themselves a rocket. Kind of thing.

186

00:11:17,000 --> 00:11:19,000

It's pretty cool.

187

00:11:19,000 --> 00:11:21,000

It's like a two second job.

188

00:11:21,000 --> 00:11:23,000

Let's do it.

189

00:11:23,000 --> 00:11:28,000

Outside, they add the power system, water and pressurized air.

190

00:11:28,000 --> 00:11:30,000

Starting to get a little pressure.

191

00:11:30,000 --> 00:11:32,000

Excellent. It won't be long now.

192

00:11:32,000 --> 00:11:34,000

I don't think I can hold on to it much longer.

193

00:11:34,000 --> 00:11:35,000

Really?

194

00:11:35,000 --> 00:11:36,000

It's starting to lift.

195

00:11:36,000 --> 00:11:38,000

Okay, put it down on the ground.

196

00:11:41,000 --> 00:11:42,000

Where'd it go?

197

00:11:45,000 --> 00:11:46,000

I guess it works.

198

00:11:46,000 --> 00:11:47,000

Well, I guess we know it works.

199

00:11:47,000 --> 00:11:51,000

Turns out being a rocket scientist isn't so hard after all.

200

00:11:51,000 --> 00:11:53,000

Hey, I got it.

201

00:11:53,000 --> 00:11:55,000

Okay, pay attention at the back.

202

00:11:55,000 --> 00:11:59,000

Bottle rockets are a perfect illustration of Newton's third law.

203

00:12:00,000 --> 00:12:02,000

The air inside is pressurized.

204

00:12:02,000 --> 00:12:11,000

When the rubber stopper is released, air and water rush down through the nozzle, thrusting the bottle up with an equal and opposite force.

205

00:12:11,000 --> 00:12:14,000

The guys have their proof of concept.

206

00:12:14,000 --> 00:12:16,000

So now the fine tuning.

207

00:12:17,000 --> 00:12:19,000

I can do this all day.

208

00:12:22,000 --> 00:12:24,000

See? Science is fun.

209

00:12:27,000 --> 00:12:33,000

So, knowing that bottle rocketry is actually very popular, what is the current world record for altitude?

210

00:12:33,000 --> 00:12:39,000

The current world record is 517 meters set by US water rockets.

211

00:12:39,000 --> 00:12:45,000

And it was set by a device called the X-10, which is shrouded in secrecy.

212

00:12:46,000 --> 00:12:51,000

All of the specs we have of it are based on guesstimates from looking at photos and video.

213

00:12:51,000 --> 00:13:03,000

But it seems to be not a soda bottle, but actually an 8-foot tube of fluorescent light protective covering polycarbonate wrapped in high-strength composite and powered solely by tap water and air pressure.

214

00:13:03,000 --> 00:13:07,000

May 2005, Galway, New York State.

215

00:13:08,000 --> 00:13:17,000

The US water rockets team sets a new world record, as its X-10 rocket reaches 1,696 feet.

216

00:13:20,000 --> 00:13:30,000

Before parachute, perfecting the Hifbusters bottle rocket, they're looking for the water-to-air ratio that gives maximum thrust.

217

00:13:31,000 --> 00:13:36,000

Excellent.

218

00:13:36,000 --> 00:13:43,000

Several dry runs later, they conclude that one-third water, two-thirds air, is right on the money.

219

00:13:43,000 --> 00:13:50,000

I'm really excited. I think these tests went extremely well. I mean, we found the butter zone. About one-third full is exactly what we need.

220

00:13:50,000 --> 00:13:52,000

Now they want some payload data.

221

00:13:52,000 --> 00:13:58,000

So what we want to know now is how high a three-liter bottle can launch this two kilogram payload?

222

00:13:58,000 --> 00:14:03,000

20 psi? 40 psi?

223

00:14:03,000 --> 00:14:07,000

Carrie pumps as much air as she dares without bursting the bottle.

224

00:14:07,000 --> 00:14:09,000

Okay, we're at 60 psi.

225

00:14:09,000 --> 00:14:11,000

Okay, standby.

226

00:14:11,000 --> 00:14:16,000

Three, two, one, out!

227

00:14:16,000 --> 00:14:19,000

That's really stiff. This might be a two-hander.

228

00:14:19,000 --> 00:14:22,000

In three, two, one.

229

00:14:23,000 --> 00:14:31,000

Woo, that's awesome! That means we got two kilograms, 20 feet. That's a nice, easy round calculation.

230

00:14:31,000 --> 00:14:41,000

At 60 psi, they'll need 28 three-liter bottles just to get Carrie off the ground, let alone propel her 40 yards. Time to supersize.

231

00:14:41,000 --> 00:14:47,000

All right, this jug is 18.93 liters. I'm going to fill it one-third full with water.

232

00:14:47,000 --> 00:14:52,000

If the soda bottles fail to get Carrie airborne, this could be plan B.

233

00:14:52,000 --> 00:14:55,000

Okay, two kilogram load.

234

00:14:55,000 --> 00:14:57,000

I'd say I'm a little bit frightened.

235

00:14:57,000 --> 00:14:59,000

Be afraid. Be very afraid.

236

00:15:04,000 --> 00:15:06,000

Oh, it's getting crazy. We're going to have to launch it.

237

00:15:06,000 --> 00:15:07,000

All right.

238

00:15:07,000 --> 00:15:10,000

Stand back. We're going to have to do it.

239

00:15:10,000 --> 00:15:13,000

Three, two, one.

240

00:15:13,000 --> 00:15:15,000

Holy crap! Run!

241

00:15:15,000 --> 00:15:17,000

Run! Run!

242

00:15:21,000 --> 00:15:25,000

Now that's what I call a water cooler moment.

243

00:15:25,000 --> 00:15:30,000

That was a good launch. I went up about, I'd have to guess,

244

00:15:30,000 --> 00:15:32,000

How about 50, 60 feet?

245

00:15:32,000 --> 00:15:34,000

It had to be about 50, 60 feet in the air.

246

00:15:34,000 --> 00:15:38,000

There was plenty of thrust, but for our would-be astronaut,

247

00:15:38,000 --> 00:15:40,000

Exactly reassuring.

248

00:15:40,000 --> 00:15:45,000

I have to say it was extremely scary because this is very pointy, this is very heavy.

249

00:15:45,000 --> 00:15:50,000

It went really high in the air and for some reason it headed right for the cameraman

250

00:15:50,000 --> 00:15:51,000

and the sound woman.

251

00:15:51,000 --> 00:15:52,000

Run! Run!

252

00:15:52,000 --> 00:15:56,000

And he started running one way and she started running the other way and everybody going,

253

00:16:01,000 --> 00:16:06,000

In the myth of the steel cap toe cutters, the boys have given Adam's frangible foot

254

00:16:06,000 --> 00:16:08,000

a 400 pound stubby.

255

00:16:08,000 --> 00:16:13,000

The steel toe cap was severely dented, but not crushed completely flat.

256

00:16:15,000 --> 00:16:18,000

Now they're going to leave the toe cap out of the equation.

257

00:16:18,000 --> 00:16:26,000

Because the myth involves steel toe boots causing you more harm than they might actually protect you in an accident,

258

00:16:26,000 --> 00:16:30,000

we'd like to show what would happen if you weren't wearing steel toe boots at all.

259

00:16:30,000 --> 00:16:35,000

75 pounds, 3 feet, non-steel toe boot.

260

00:16:37,000 --> 00:16:42,000

But the results suggest that the guys have tripped over their own foot.

261

00:16:44,000 --> 00:16:46,000

Okay, I think we've got a problem here.

262

00:16:46,000 --> 00:16:51,000

Our new ballistic material, unlike the gelatin, it doesn't break or shatter under that kind of load,

263

00:16:51,000 --> 00:16:53,000

it tends to bounce back.

264

00:16:53,000 --> 00:16:58,000

I mean it matches the density of flesh, but perhaps not the behavior as much as we'd like.

265

00:16:58,000 --> 00:17:04,000

The springy consistency is pre-fanning a realistic record of impact damage.

266

00:17:04,000 --> 00:17:12,000

The boots on the wrong foot, so they decide to start from scratch with good old Plan B, which is...

267

00:17:12,000 --> 00:17:20,000

Take the toe of the boot, put a cylinder of clay in there, and see how much tension there is from the weight dropping on the boot.

268

00:17:20,000 --> 00:17:24,000

It's like the aftermath of a shot from like a samurai film, like,

269

00:17:24,000 --> 00:17:25,000

OYAKU!

270

00:17:27,000 --> 00:17:32,000

Their new method is borrowed from ANSI, the American National Standards Institute.

271

00:17:33,000 --> 00:17:39,000

For decades, men with beards and white coats have been crushing toes for science.

272

00:17:39,000 --> 00:17:46,000

It's easy to see what this impact would do to the unprotected foot, as represented by this foam wax form.

273

00:17:52,000 --> 00:17:57,000

A foot subjected to such a blow without protection is literally exploded.

274

00:17:58,000 --> 00:18:03,000

Alright, so this is 75 pounds from 3 feet ANSI test with steel-toed boot.

275

00:18:04,000 --> 00:18:08,000

And three, two, one!

276

00:18:10,000 --> 00:18:15,000

It's funny when you read the literature about the ANSI testing, they say that in order for the boot to be rated,

277

00:18:15,000 --> 00:18:20,000

at the total compression, there can't be less than half an inch.

278

00:18:20,000 --> 00:18:21,000

Which is what it is.

279

00:18:22,000 --> 00:18:26,000

So the steel caps passed the ANSI shock load criteria.

280

00:18:26,000 --> 00:18:30,000

Now for the all-important control test with no toe cap.

281

00:18:30,000 --> 00:18:31,000

Two, one!

282

00:18:33,000 --> 00:18:34,000

Oh, yeah.

283

00:18:34,000 --> 00:18:36,000

Oh, yeah, let's see.

284

00:18:36,000 --> 00:18:38,000

Oh, dude!

285

00:18:38,000 --> 00:18:40,000

I believe the compression of the clay is what we'd call total.

286

00:18:40,000 --> 00:18:44,000

Looks a little different than what we were seeing from the ballistic shell.

287

00:18:44,000 --> 00:18:46,000

Oh, dude!

288

00:18:46,000 --> 00:18:48,000

It's just instantaneous.

289

00:18:48,000 --> 00:18:53,000

Damning evidence, and the steel cap conspiracy could soon be getting the boot.

290

00:18:53,000 --> 00:18:58,000

You know, but we still have not seen the phenomenon in the steel cap

291

00:18:58,000 --> 00:19:01,000

that duplicates that mythical toe cutting action.

292

00:19:01,000 --> 00:19:06,000

Well, there's another type of a rig that simply crushes hydraulically,

293

00:19:06,000 --> 00:19:09,000

and we can also measure the pressures involved when that happens.

294

00:19:09,000 --> 00:19:13,000

Jamie begins with a shop-bought arbor press.

295

00:19:13,000 --> 00:19:19,000

While he grapples with the assembly, Adam imagines Christmas Eve at the Heinemann household.

296

00:19:19,000 --> 00:19:24,000

I can totally see your wife up all night, you know, like, with the thing down in the basement.

297

00:19:24,000 --> 00:19:26,000

Don't come down, honey!

298

00:19:28,000 --> 00:19:30,000

Look, honey, I got you a log splitter.

299

00:19:30,000 --> 00:19:32,000

Oh, honey, I'm touched.

300

00:19:32,000 --> 00:19:34,000

Thank you, honey.

301

00:19:36,000 --> 00:19:39,000

Jamie adds a pressure gauge and car jack,

302

00:19:39,000 --> 00:19:43,000

and soon he's got a compression test rig, which gets Adam thinking.

303

00:19:43,000 --> 00:19:47,000

Jamie, just as a point of comparison, so we can know what a pain threshold is

304

00:19:47,000 --> 00:19:50,000

versus a bone breaking threshold. Will you put your own foot into the shear rig?

305

00:19:50,000 --> 00:19:54,000

If I do it, you've got to do double that weight with your steel caps on.

306

00:19:54,000 --> 00:19:58,000

How about this? If you can get, if you can withstand it until it starts to register on the needle,

307

00:19:58,000 --> 00:20:00,000

I'll give you 20 bucks.

308

00:20:01,000 --> 00:20:05,000

All right. Pain threshold, test number one.

309

00:20:06,000 --> 00:20:07,000

Okay, are we ready?

310

00:20:07,000 --> 00:20:08,000

Okay.

311

00:20:08,000 --> 00:20:09,000

Okay.

312

00:20:09,000 --> 00:20:11,000

Oh, wow, it's already sitting at 100 pounds.

313

00:20:11,000 --> 00:20:13,000

That's because I was pushing down on it.

314

00:20:17,000 --> 00:20:20,000

You were getting your reading by pushing down on the gauge?

315

00:20:20,000 --> 00:20:22,000

You're cheating, bastard.

316

00:20:22,000 --> 00:20:24,000

But Adam has the last laugh.

317

00:20:24,000 --> 00:20:27,000

I'm going to go for the metatarsal protection.

318

00:20:27,000 --> 00:20:29,000

Laced up like Frankenstein's monster.

319

00:20:29,000 --> 00:20:30,000

Oh, yeah.

320

00:20:30,000 --> 00:20:33,000

Adam steps forward with confident tread.

321

00:20:36,000 --> 00:20:37,000

1200.

322

00:20:37,000 --> 00:20:39,000

It seriously squeezes my foot.

323

00:20:40,000 --> 00:20:41,000

15.

324

00:20:44,000 --> 00:20:45,000

God!

325

00:20:47,000 --> 00:20:48,000

Okay, that's it.

326

00:20:50,000 --> 00:20:52,000

1600 pounds.

327

00:20:52,000 --> 00:20:55,000

Which just goes to prove absolutely nothing at all.

328

00:20:59,000 --> 00:21:05,000

The guys want to compare the failure point of boots with and without steel toe caps.

329

00:21:08,000 --> 00:21:11,000

First in the mangle, the steel-toed variety.

330

00:21:12,000 --> 00:21:13,000

5000.

331

00:21:14,000 --> 00:21:15,000

6000.

332

00:21:16,000 --> 00:21:18,000

Come on. Keep going.

333

00:21:19,000 --> 00:21:20,000

We lost our toes yet?

334

00:21:20,000 --> 00:21:21,000

Let it go and see.

335

00:21:22,000 --> 00:21:23,000

Sorry.

336

00:21:25,000 --> 00:21:27,000

That doesn't look very comfortable.

337

00:21:27,000 --> 00:21:28,000

No, that doesn't.

338

00:21:29,000 --> 00:21:33,000

That looks like we've lost our toes.

339

00:21:33,000 --> 00:21:36,000

So, 6000 pounds of pressure on your tootsies,

340

00:21:36,000 --> 00:21:38,000

and you'll be changing shoe size for good.

341

00:21:38,000 --> 00:21:40,000

Now for a regular boot.

342

00:21:40,000 --> 00:21:41,000

Can you say flat?

343

00:21:41,000 --> 00:21:46,000

With no steel cap, it crushes so quickly that Adam can barely get a reading.

344

00:21:46,000 --> 00:21:50,000

But total failure occurs at around 1200 pounds.

345

00:21:50,000 --> 00:21:52,000

Oh, it's like a clay extrusion hole.

346

00:21:53,000 --> 00:21:57,000

I don't know about you, but that seems like pretty crushed toes to me.

347

00:21:59,000 --> 00:22:04,000

So, steel toe caps provide five times more protection than regular boots.

348

00:22:04,000 --> 00:22:07,000

So, this myth is looking as flat as a pancake.

349

00:22:07,000 --> 00:22:09,000

You know, a load of crepe.

350

00:22:13,000 --> 00:22:15,000

In the myth of the bottle rocket,

351

00:22:15,000 --> 00:22:20,000

Tori Grant and Carrie have been conducting rigorous scientific experiments.

352

00:22:21,000 --> 00:22:23,000

Holy crap! Run!

353

00:22:23,000 --> 00:22:24,000

Run! Run!

354

00:22:25,000 --> 00:22:30,000

To see if soda bottles, air and water, could launch a human 40 yards.

355

00:22:32,000 --> 00:22:33,000

Translator.

356

00:22:33,000 --> 00:22:38,000

At Grand Control, Grant's received a translation of the Japanese game show

357

00:22:38,000 --> 00:22:40,000

that featured the alleged bottle rocket.

358

00:22:41,000 --> 00:22:42,000

That's kind of scary.

359

00:22:42,000 --> 00:22:46,000

It appears that they used just 15 bottles for blast off.

360

00:22:46,000 --> 00:22:52,000

Way less than the 28 at 60 psi, their own tests showed they'd need.

361

00:22:53,000 --> 00:22:55,000

I guess that's what we're going to shoot for.

362

00:22:55,000 --> 00:22:59,000

The only solution is to try and force the pressure in each bottle way up

363

00:22:59,000 --> 00:23:01,000

over 60 psi.

364

00:23:01,000 --> 00:23:05,000

Pressure is the only thing that they don't specify in the video.

365

00:23:05,000 --> 00:23:07,000

Which means, one more test.

366

00:23:07,000 --> 00:23:11,000

We need to find out how much pressure a three liter soda bottle can take.

367

00:23:12,000 --> 00:23:14,000

Faster, Grant. Faster.

368

00:23:14,000 --> 00:23:16,000

I'm booping as fast as I can!

369

00:23:16,000 --> 00:23:19,000

The myth specifies using a bike pump.

370

00:23:21,000 --> 00:23:24,000

And between them, they managed to boost the pressure inside the bottle

371

00:23:24,000 --> 00:23:27,000

to 95% of the pressure in the bottle.

372

00:23:27,000 --> 00:23:29,000

To 95 psi.

373

00:23:30,000 --> 00:23:33,000

But if Carrie's going to strap 15 of these to her back,

374

00:23:33,000 --> 00:23:37,000

she's keen to know at what point they'll become plastic bombs.

375

00:23:37,000 --> 00:23:40,000

But we need to know when is it going to blow.

376

00:23:40,000 --> 00:23:43,000

So I've got this rig, I've taken out of my combat robot,

377

00:23:43,000 --> 00:23:47,000

and I can provide higher pressure air than we can get here in the shop.

378

00:23:48,000 --> 00:23:53,000

Grant spent years perfecting the design of Dead Blow, his title fighting battle bot.

379

00:23:53,000 --> 00:24:00,000

In 2000, his creation beat all comers to reach the final of the hit television show, Battle Bots.

380

00:24:00,000 --> 00:24:03,000

These home-built robots would fight it out gladiator style.

381

00:24:03,000 --> 00:24:09,000

It's designed to pierce the armor of its opponents with a pneumatically powered titanium arm.

382

00:24:09,000 --> 00:24:14,000

It just gets on the other robots and pounds them mercilessly until they submit.

383

00:24:14,000 --> 00:24:19,000

Now, Grant plans to use that pneumatic power to test the limits of their soda bottles.

384

00:24:20,000 --> 00:24:24,000

Safely behind the blast shield, Grant applies the pressure.

385

00:24:24,000 --> 00:24:25,000

140!

386

00:24:26,000 --> 00:24:27,000

145!

387

00:24:28,000 --> 00:24:29,000

150!

388

00:24:31,000 --> 00:24:35,000

I guess about 150 is the limit.

389

00:24:36,000 --> 00:24:39,000

150 psi, definitely not safe.

390

00:24:40,000 --> 00:24:43,000

I think we're going to stick to the 95 we got with the bike pump.

391

00:24:43,000 --> 00:24:49,000

While Carrie and Grant are limited to the myth's Bicycle Pump-Prime 15 bottle rig,

392

00:24:49,000 --> 00:24:51,000

Tori looks into Plan B.

393

00:24:51,000 --> 00:24:54,000

For that, he's thinking big.

394

00:24:54,000 --> 00:24:56,000

Nine water coolers big.

395

00:24:56,000 --> 00:25:01,000

So the first thing I got to do is find out how much air pressure one of these bad boys would take.

396

00:25:03,000 --> 00:25:04,000

Eight more.

397

00:25:04,000 --> 00:25:06,000

I'm going to go to the bathroom.

398

00:25:06,000 --> 00:25:08,000

This is a game called Guess What I Had for Luck.

399

00:25:08,000 --> 00:25:10,000

You know, that's real material.

400

00:25:10,000 --> 00:25:17,000

On a serious note, safety concerns mean they need to repeat the failure pressure test on a water cooler bottle.

401

00:25:17,000 --> 00:25:20,000

In that way, no one gets hurt.

402

00:25:21,000 --> 00:25:22,000

75!

403

00:25:23,000 --> 00:25:24,000

80!

404

00:25:26,000 --> 00:25:27,000

85!

405

00:25:28,000 --> 00:25:29,000

90!

406

00:25:29,000 --> 00:25:31,000

Ha ha ha ha ha ha ha ha!

407

00:25:32,000 --> 00:25:33,000

Wow!

408

00:25:33,000 --> 00:25:35,000

Ha ha ha ha ha ha!

409

00:25:35,000 --> 00:25:36,000

Wow!

410

00:25:38,000 --> 00:25:39,000

Wow!

411

00:25:40,000 --> 00:25:42,000

Fire in the hole?

412

00:25:42,000 --> 00:25:45,000

Just goes to show size isn't everything.

413

00:25:46,000 --> 00:25:49,000

The big bottles fail at 90 psi.

414

00:25:50,000 --> 00:25:53,000

60 psi less than the soda bottles.

415

00:25:53,000 --> 00:25:54,000

90!

416

00:25:57,000 --> 00:25:58,000

Oh shoot.

417

00:25:58,000 --> 00:25:59,000

Sorry about that.

418

00:25:59,000 --> 00:26:01,000

We should have warned our neighbors.

419

00:26:01,000 --> 00:26:02,000

Sorry about that.

420

00:26:02,000 --> 00:26:05,000

Plan B won't be involving water coolers.

421

00:26:05,000 --> 00:26:09,000

Not unless Carrie's shrapnel insurance is up to date.

422

00:26:09,000 --> 00:26:11,000

So back to Plan A.

423

00:26:11,000 --> 00:26:14,000

15 soda bottles and a bicycle pump.

424

00:26:14,000 --> 00:26:20,000

We know that there are 15 bottles in the rig that they used in the film because we have a translation.

425

00:26:20,000 --> 00:26:29,000

So we're going to take one fifteenth of my weight, strap it to a three liter bottle, bring it up to 90 psi and see how high we can get.

426

00:26:29,000 --> 00:26:34,000

If one bottle can lift one fifteenth of Carrie's weight, they're in business.

427

00:26:34,000 --> 00:26:36,000

Three, two, one.

428

00:26:40,000 --> 00:26:43,000

Wow! That went exactly to the top of the scale.

429

00:26:43,000 --> 00:26:49,000

That means we've got exactly 16 feet and that's not metric.

430

00:26:49,000 --> 00:26:52,000

So let me do some conversions really fast and it's really high.

431

00:26:52,000 --> 00:26:54,000

We'll come back to that.

432

00:26:54,000 --> 00:27:02,000

This three liter bottle at 90 psi lifted three and a half kilograms, 490 centimeters.

433

00:27:02,000 --> 00:27:06,000

That's amazing because that's one fifteenth of my weight.

434

00:27:06,000 --> 00:27:10,000

15 bottles could possibly lift me to the top of this scale.

435

00:27:10,000 --> 00:27:15,000

And I can't wait to tell the boys because we all kind of, and it's probably faked.

436

00:27:15,000 --> 00:27:16,000

Maybe not.

437

00:27:16,000 --> 00:27:21,000

Encouraged by the test runs, Carrie and Grant get down to the real thing.

438

00:27:22,000 --> 00:27:27,000

Their job, the fifteenth bottle rig as specified in the game show clip.

439

00:27:27,000 --> 00:27:29,000

Oh yeah. Are you ready to fly?

440

00:27:29,000 --> 00:27:31,000

That's going to be amazing.

441

00:27:31,000 --> 00:27:35,000

And Grant's come up with a new way to pop Carrie's cork.

442

00:27:35,000 --> 00:27:44,000

Put the bottle on like that, cable ties click around this lip and you slide the ring up to secure it.

443

00:27:44,000 --> 00:27:47,000

It's locked now. Cable ties are holding it on.

444

00:27:47,000 --> 00:27:54,000

When you want to launch, pull the ring down and that'll release the bottle straight up.

445

00:27:54,000 --> 00:27:55,000

Simple.

446

00:27:55,000 --> 00:28:00,000

So with the design stage approved, mass production can begin at MASA,

447

00:28:00,000 --> 00:28:04,000

the Mythbusters Aeronautical and Space Administration.

448

00:28:04,000 --> 00:28:08,000

The bottles will be filled with air via bicycle inner tube valves,

449

00:28:08,000 --> 00:28:11,000

which are glued into place in rubber stoppers.

450

00:28:11,000 --> 00:28:14,000

So air will get in but not out.

451

00:28:14,000 --> 00:28:19,000

They carefully assemble fifteen cable tie quick release systems,

452

00:28:19,000 --> 00:28:22,000

which they secure and apply with housing.

453

00:28:24,000 --> 00:28:27,000

The PVC collars are fixed to a trigger plate

454

00:28:27,000 --> 00:28:32,000

and placed over the quick release platform to complete the rig.

455

00:28:32,000 --> 00:28:34,000

That is so awesome.

456

00:28:34,000 --> 00:28:38,000

Looks good, but can it walk the walk?

457

00:28:38,000 --> 00:28:40,000

Ha ha!

458

00:28:40,000 --> 00:28:44,000

Oh yeah, that is going to rock.

459

00:28:44,000 --> 00:28:49,000

Except for the gluing part if it comes out, that part would probably suck,

460

00:28:49,000 --> 00:28:51,000

but the rest of it is going to rock totally.

461

00:28:51,000 --> 00:28:55,000

Next, our rocket scientists have to come up with a remote mechanism

462

00:28:55,000 --> 00:28:58,000

to retract the trigger plate and launch the rocket.

463

00:28:58,000 --> 00:29:02,000

What we've got is all the trigger rings are connected to a plate.

464

00:29:02,000 --> 00:29:04,000

The plate is going to be pulled by one of these.

465

00:29:04,000 --> 00:29:07,000

This is a pneumatic actuator. It's air powered.

466

00:29:07,000 --> 00:29:10,000

If I put air in here, pushing the diaphragm down,

467

00:29:10,000 --> 00:29:15,000

it's going to pull the plate and pop all fifteen trigger valves at once.

468

00:29:19,000 --> 00:29:20,000

Perfect.

469

00:29:20,000 --> 00:29:26,000

Meanwhile, Tori is on a separate mission to get carry in the air by any means necessary.

470

00:29:29,000 --> 00:29:32,000

Here at Mythbushes, we have mandatory drug testing

471

00:29:32,000 --> 00:29:34,000

to ensure the safety of all our employees.

472

00:29:34,000 --> 00:29:36,000

And I pass every time.

473

00:29:36,000 --> 00:29:40,000

Tori is also going with a cable tie quick release system.

474

00:29:40,000 --> 00:29:42,000

But that's where the similarity ends.

475

00:29:42,000 --> 00:29:48,000

According to his calculations, he needs not fifteen, but fifty bottles

476

00:29:48,000 --> 00:29:51,000

to replicate the parameters of the game show flight.

477

00:29:51,000 --> 00:29:55,000

Since I'm not restricted by the myth, I'm not going to be using bicycle pump

478

00:29:55,000 --> 00:29:57,000

to fill this thing up with air.

479

00:29:57,000 --> 00:29:59,000

So I'm going to go ahead and use PVC pipe.

480

00:29:59,000 --> 00:30:02,000

I'm going to use compressed air and then I'll just plumb the whole thing together.

481

00:30:02,000 --> 00:30:05,000

So it'll be a big pipe system underneath the rig.

482

00:30:05,000 --> 00:30:09,000

While Tori builds his behemoth, out in the parking lot,

483

00:30:09,000 --> 00:30:14,000

Karrion Grant are preparing their official bottle rocket for a test launch.

484

00:30:14,000 --> 00:30:20,000

They fill their three liter rockets with one liter of water, then lock and load.

485

00:30:20,000 --> 00:30:23,000

Oh yeah, it's almost there.

486

00:30:23,000 --> 00:30:24,000

Nervous much?

487

00:30:24,000 --> 00:30:25,000

Yeah.

488

00:30:25,000 --> 00:30:29,000

And for good reason, as their plans suddenly spring a leak.

489

00:30:29,000 --> 00:30:32,000

Or to be more precise, fifteen leaks.

490

00:30:32,000 --> 00:30:36,000

Turns out that our valves, once they're screwed in,

491

00:30:36,000 --> 00:30:40,000

we didn't think about the fact that that is just going to turn it into a little hose.

492

00:30:40,000 --> 00:30:43,000

And all of our water is just stripping out like rain.

493

00:30:43,000 --> 00:30:49,000

Before they take the rig apart, they run a quick test of the pneumatic trigger.

494

00:30:49,000 --> 00:30:51,000

At least something works.

495

00:30:51,000 --> 00:30:55,000

Which is more than Tori can say for his rig.

496

00:30:55,000 --> 00:30:58,000

I don't know if this is going to work.

497

00:30:58,000 --> 00:31:05,000

He's been delayed by ill fitting stoppers, which have left him short on time and low on morale.

498

00:31:05,000 --> 00:31:12,000

I know on the show we always say failure is always an option, but let's face it, who wants to fail?

499

00:31:12,000 --> 00:31:16,000

While Tori derails, Grant and Karrison are back on track.

500

00:31:16,000 --> 00:31:17,000

Here's the new solution.

501

00:31:17,000 --> 00:31:21,000

Hose barb on either end of a ball valve when we want to pressure up.

502

00:31:21,000 --> 00:31:25,000

We open it, pump it up, and when we're done, we close it.

503

00:31:25,000 --> 00:31:27,000

No water leaking, no air leaking.

504

00:31:27,000 --> 00:31:29,000

Sounds good.

505

00:31:29,000 --> 00:31:34,000

Grant gives each bottle rocket a ball valve and launches just one step away.

506

00:31:34,000 --> 00:31:37,000

Okay, that should do it.

507

00:31:37,000 --> 00:31:41,000

All that's left is for Karrion to put her shoulder to the pump.

508

00:31:41,000 --> 00:31:43,000

Bottle three, I'm already getting tired.

509

00:31:43,000 --> 00:31:48,000

A dozen later, and she's just enough strength left to open the valve for launch.

510

00:31:48,000 --> 00:31:51,000

Ready to go? In three, two, one.

511

00:31:52,000 --> 00:31:54,000

Woo!

512

00:31:56,000 --> 00:31:59,000

Well, at least we know it works.

513

00:31:59,000 --> 00:32:01,000

Final test run?

514

00:32:01,000 --> 00:32:04,000

Obviously a complete success, a little scary.

515

00:32:04,000 --> 00:32:07,000

All right, so lesson number one, tape the bottles better.

516

00:32:07,000 --> 00:32:12,000

The rocket's maiden voyage was also its last,

517

00:32:12,000 --> 00:32:18,000

leaving our maiden rocketeer in two minds about launch day.

518

00:32:18,000 --> 00:32:22,000

This could be pretty dangerous, so I think maybe I'm going to shoot the simulate off first

519

00:32:22,000 --> 00:32:28,000

and see how it reacts and make sure I'm not going to, you know, break my neck.

520

00:32:29,000 --> 00:32:33,000

Despite her misgivings, Karrion remains the designated pilot,

521

00:32:33,000 --> 00:32:35,000

and Grant needs to measure her up.

522

00:32:35,000 --> 00:32:38,000

Not for a coffin, but for a launch gantry.

523

00:32:38,000 --> 00:32:45,000

According to the game show clip, the angle for a bottle rocket launch is 60 degrees.

524

00:32:46,000 --> 00:32:48,000

Just about perfect.

525

00:32:48,000 --> 00:32:50,000

That's it, that's just like the video.

526

00:32:50,000 --> 00:32:55,000

Next, Karrion tests out various harness options for the bottle rocket backpack.

527

00:32:58,000 --> 00:33:00,000

Wow, a miracle of flight.

528

00:33:00,000 --> 00:33:03,000

What the hell are you guys doing?

529

00:33:03,000 --> 00:33:05,000

I'm a piñata!

530

00:33:05,000 --> 00:33:09,000

One way or another, the guys are determined to get Karrison airborne.

531

00:33:10,000 --> 00:33:15,000

Tari's had a problem with the stopper design on his 50 bottle rig,

532

00:33:15,000 --> 00:33:18,000

but he's worked through the night and he thinks he's got it linked.

533

00:33:18,000 --> 00:33:20,000

There was another design that we found on the internet,

534

00:33:20,000 --> 00:33:23,000

and it was basically taking a PVC coupler,

535

00:33:23,000 --> 00:33:28,000

cutting a groove in it and slipping an O-ring over it.

536

00:33:28,000 --> 00:33:33,000

And then the bottle slips over that, and it gives us a great seal.

537

00:33:33,000 --> 00:33:34,000

I mean, it's like a perfect seal.

538

00:33:34,000 --> 00:33:39,000

After burning the midnight oil, it's a champagne moment for Tari.

539

00:33:39,000 --> 00:33:41,000

Three, two, one.

540

00:33:44,000 --> 00:33:46,000

I think it works.

541

00:33:46,000 --> 00:33:47,000

Hey, that worked.

542

00:33:47,000 --> 00:33:51,000

But on the eve of launch day, this rocket scientist has grave concerns.

543

00:33:51,000 --> 00:33:53,000

Are we going to get Karrion in the air?

544

00:33:53,000 --> 00:33:56,000

I don't know if she's going to really want to do this.

545

00:33:56,000 --> 00:33:59,000

I saw the 15 bottles launch yesterday, and it's pretty frightening.

546

00:33:59,000 --> 00:34:03,000

50 bottles, I don't know, she might get hurt.

547

00:34:05,000 --> 00:34:12,000

The myth that steel toe cap boots are more dangerous than regular boots is sinking fast.

548

00:34:12,000 --> 00:34:17,000

I don't know about you, but that seems like pretty crushed toes to me.

549

00:34:17,000 --> 00:34:22,000

But the boys won't be happy until some toes get the chop.

550

00:34:22,000 --> 00:34:28,000

So they turn to the shear attachment, or as it's affectionately known, the blade.

551

00:34:28,000 --> 00:34:31,000

Oh, there's one. 500.

552

00:34:32,000 --> 00:34:35,000

Oh, there's one. 500, 600.

553

00:34:35,000 --> 00:34:37,000

Oh, yuck.

554

00:34:37,000 --> 00:34:39,000

Oh.

555

00:34:39,000 --> 00:34:40,000

You had enough yet?

556

00:34:40,000 --> 00:34:41,000

Yes, not.

557

00:34:41,000 --> 00:34:44,000

Okay, we're at 1400, and we're pretty much cut all the way.

558

00:34:44,000 --> 00:34:45,000

The bar is flat against the bottom.

559

00:34:45,000 --> 00:34:47,000

So here's some handy facts.

560

00:34:47,000 --> 00:34:51,000

750 pounds will break every bone in your toes.

561

00:34:51,000 --> 00:34:56,000

1400 pounds, and you won't have any toes left to break.

562

00:34:57,000 --> 00:35:01,000

Oh, that's yummy.

563

00:35:01,000 --> 00:35:06,000

Meanwhile, the MythBusters research department has made a surprising discovery.

564

00:35:08,000 --> 00:35:12,000

Well, you know, as often as the case on MythBusters, we've uncovered some information

565

00:35:12,000 --> 00:35:19,000

that actually lends a little credence to this concern about amputation involved with steel tip shoes.

566

00:35:19,000 --> 00:35:23,000

Absolutely. It was really difficult to find this piece of information,

567

00:35:23,000 --> 00:35:29,000

but we did turn up a case in 2002 in Australia of a man who had an accident involving his steel toe boots.

568

00:35:29,000 --> 00:35:32,000

He was working near a forklift, was loading some pipe,

569

00:35:32,000 --> 00:35:36,000

and one of the pipes fell off the forklift onto his steel toe boot,

570

00:35:36,000 --> 00:35:39,000

and he lost the third toe on his right foot.

571

00:35:39,000 --> 00:35:45,000

So just when it seemed out for the count, this myth staggers to its feet for one final round.

572

00:35:45,000 --> 00:35:49,000

To deliver the knockout blow, it's back to the guillotine,

573

00:35:49,000 --> 00:35:52,000

and this time the boys mean business.

574

00:35:52,000 --> 00:35:57,000

They fitted the shear attachment to simulate a worst case industrial scenario.

575

00:35:57,000 --> 00:35:59,000

This is a danger zone now.

576

00:35:59,000 --> 00:36:06,000

With the rig at maximum height and weight, this will be the ultimate test of a steel capped boot.

577

00:36:06,000 --> 00:36:09,000

In three, two, one.

578

00:36:12,000 --> 00:36:14,000

Dude!

579

00:36:15,000 --> 00:36:19,000

Oh, it slid right off the steel, because it landed right where I placed it,

580

00:36:19,000 --> 00:36:24,000

but it slid off the steel toe and sliced the entire shoe in half.

581

00:36:26,000 --> 00:36:33,000

Does that mean that because of the steel toe, you're actually going to lose slightly more of your toes?

582

00:36:33,000 --> 00:36:40,000

But it's not the steel toe that's actually cutting your foot off, it's just providing a ramp.

583

00:36:40,000 --> 00:36:44,000

It's an intriguing result, which prompts a second take.

584

00:36:44,000 --> 00:36:47,000

In three, two, one.

585

00:36:52,000 --> 00:36:55,000

Well, did that also glance off the steel toe?

586

00:36:55,000 --> 00:36:57,000

That did exactly that.

587

00:36:57,000 --> 00:36:59,000

Even though we put it way farther out.

588

00:36:59,000 --> 00:37:02,000

Yeah, we couldn't have really placed it any differently.

589

00:37:02,000 --> 00:37:08,000

This is probably the closest thing that we've seen to the circumstances that the myths say

590

00:37:08,000 --> 00:37:12,000

or that could well have been involved with amputating the toes.

591

00:37:19,000 --> 00:37:21,000

I'm really glad we took this as far as we did.

592

00:37:21,000 --> 00:37:26,000

We finally did get an amputation, and we showed that if you're wearing steel toe boots,

593

00:37:26,000 --> 00:37:30,000

there is a circumstance under which you can lose your toes.

594

00:37:30,000 --> 00:37:35,000

Of course, it involves dropping massive amounts of weights with a tiny blade at the end on them.

595

00:37:35,000 --> 00:37:39,000

Yeah, nevertheless, I mean, given the same set of circumstances,

596

00:37:39,000 --> 00:37:46,000

you will always have more damage to your feet if you're not wearing steel tips than if you are wearing them.

597

00:37:46,000 --> 00:37:48,000

It's just across the board.

598

00:37:48,000 --> 00:37:51,000

Absolutely. This myth is busted completely.

599

00:37:55,000 --> 00:37:58,000

It's launch day for the myth of the bottle rocket,

600

00:37:58,000 --> 00:38:04,000

and Grant and Carrie arrive at their very own Cape Canaveral, pier 50, San Francisco.

601

00:38:04,000 --> 00:38:07,000

The day has finally come for the launching.

602

00:38:07,000 --> 00:38:10,000

I have to say I have a few butterflies in my stomach.

603

00:38:10,000 --> 00:38:12,000

Oh my God, this is insane.

604

00:38:12,000 --> 00:38:16,000

The launch profile entails splashdown in the bay,

605

00:38:16,000 --> 00:38:20,000

which has our bottle rocketeer asking the obvious question.

606

00:38:20,000 --> 00:38:22,000

How am I going to get out?

607

00:38:22,000 --> 00:38:29,000

There's going to be a boat and a jet ski to fish you out, I mean to rescue you, I mean to get you.

608

00:38:30,000 --> 00:38:35,000

Joking aside, Carrie's well-being is paramount,

609

00:38:35,000 --> 00:38:42,000

and Simulate Jane is on hand in case the safety officers from medics at the movies veto launching a human.

610

00:38:43,000 --> 00:38:46,000

Carver Patrol arrive with a splash.

611

00:38:46,000 --> 00:38:47,000

Woo hoo hoo!

612

00:38:47,000 --> 00:38:49,000

How action movie is this?

613

00:38:49,000 --> 00:38:56,000

It may look Hollywood, but any injuries sustained will be real, so Carrie is taking no chances.

614

00:38:57,000 --> 00:39:01,000

I might have to launch the Simulate a few times before I can actually commit to this,

615

00:39:01,000 --> 00:39:03,000

because it's looking somewhat dangerous.

616

00:39:04,000 --> 00:39:10,000

The Simulate's knees are giving way at the prospect, so they shore her up with an aluminum frame.

617

00:39:10,000 --> 00:39:12,000

It looks like a garter for a robot.

618

00:39:12,000 --> 00:39:17,000

And with no time for swimming lessons, Carrie applies the final touches.

619

00:39:17,000 --> 00:39:19,000

As the gantry is moved into place,

620

00:39:19,000 --> 00:39:20,000

Yeah, it's perfect.

621

00:39:20,000 --> 00:39:25,000

Tori arrives direct from the late shift and gets straight into the spirit of the occasion.

622

00:39:27,000 --> 00:39:29,000

Okay, we're gonna get you.

623

00:39:29,000 --> 00:39:31,000

Get it tonic, what do you want?

624

00:39:32,000 --> 00:39:34,000

Rocket grabbery, you got it.

625

00:39:34,000 --> 00:39:38,000

When Tori's finished fueling, it's time to assemble the rocket.

626

00:39:38,000 --> 00:39:42,000

First, load the 15 motors onto the release platform.

627

00:39:42,000 --> 00:39:43,000

Alright, that's it.

628

00:39:43,000 --> 00:39:45,000

And secure them tightly.

629

00:39:45,000 --> 00:39:48,000

Don't be shy, I've got lots of tape.

630

00:39:48,000 --> 00:39:50,000

Beef up the safety measures,

631

00:39:50,000 --> 00:39:52,000

and install the pilot.

632

00:39:53,000 --> 00:39:56,000

Mount the bottle rocket on the launch pad.

633

00:39:56,000 --> 00:39:58,000

Good, beauty.

634

00:39:58,000 --> 00:40:00,000

And have a joke at Carrie's expense.

635

00:40:00,000 --> 00:40:02,000

Eventually another dummy's gonna get in there.

636

00:40:02,000 --> 00:40:04,000

I'm kidding, come on, I'm joking.

637

00:40:04,000 --> 00:40:06,000

Carrie's too nervous, no more joking.

638

00:40:06,000 --> 00:40:08,000

Let's grim up.

639

00:40:08,000 --> 00:40:11,000

And finally, prime the engines.

640

00:40:12,000 --> 00:40:14,000

Can't believe you have to do these one by one.

641

00:40:15,000 --> 00:40:17,000

How many more to go, Yamahara?

642

00:40:17,000 --> 00:40:18,000

Four.

643

00:40:18,000 --> 00:40:21,000

I'm glad that there's four, because I just didn't want this to be over yet.

644

00:40:22,000 --> 00:40:24,000

Everything's set for launch.

645

00:40:24,000 --> 00:40:27,000

So inevitably the rocket springs a leak.

646

00:40:27,000 --> 00:40:29,000

Okay, Carrie, pressure in the middle now.

647

00:40:29,000 --> 00:40:30,000

We don't like hand on it.

648

00:40:30,000 --> 00:40:32,000

This is the one that's hemorrhaging.

649

00:40:32,000 --> 00:40:34,000

I know, there's nothing more I can do.

650

00:40:34,000 --> 00:40:37,000

While the Grand Crew make frantic repairs,

651

00:40:37,000 --> 00:40:39,000

Tori plays for time.

652

00:40:39,000 --> 00:40:41,000

There's no problem.

653

00:40:41,000 --> 00:40:44,000

Grant brings the leak under control.

654

00:40:44,000 --> 00:40:49,000

And it's pump-like mad to bring the last bottles up to 90 psi.

655

00:40:49,000 --> 00:40:51,000

Last one.

656

00:40:51,000 --> 00:40:53,000

Okay, everybody get ready, this is the last one.

657

00:40:53,000 --> 00:40:55,000

The distance markers are all in place.

658

00:40:55,000 --> 00:40:57,000

And if there's anything to go by,

659

00:40:57,000 --> 00:41:00,000

someone's expecting a long-haul flight.

660

00:41:00,000 --> 00:41:02,000

We're about to do the 15 bottle test.

661

00:41:02,000 --> 00:41:05,000

I saw it launch yesterday, and it's pretty powerful.

662

00:41:05,000 --> 00:41:07,000

I think she's just gonna go straight out there,

663

00:41:07,000 --> 00:41:09,000

go out about 20 feet up,

664

00:41:09,000 --> 00:41:13,000

and continue on total path about 40 feet.

665

00:41:13,000 --> 00:41:16,000

It might just like swing up over her head,

666

00:41:16,000 --> 00:41:18,000

and just like spin her into the water.

667

00:41:18,000 --> 00:41:19,000

She's not gonna pinwheel,

668

00:41:19,000 --> 00:41:21,000

I think she's just gonna go straight.

669

00:41:21,000 --> 00:41:24,000

This is probably more important for me than anybody else,

670

00:41:24,000 --> 00:41:26,000

because this right here is gonna tell me

671

00:41:26,000 --> 00:41:28,000

whether I want to get in this or not.

672

00:41:28,000 --> 00:41:30,000

So I'm crossing my fingers.

673

00:41:30,000 --> 00:41:34,000

Grant attaches the pneumatic trigger release.

674

00:41:34,000 --> 00:41:38,000

It's zero hour for Jane the Simulate.

675

00:41:38,000 --> 00:41:40,000

You guys ready? We've got to pull the blocks out.

676

00:41:40,000 --> 00:41:42,000

Okay.

677

00:41:44,000 --> 00:41:46,000

Okay, high speed ready.

678

00:41:47,000 --> 00:41:51,000

Three, two, one!

679

00:41:54,000 --> 00:41:57,000

Hard to tell who flew furthest, Grant or Jane.

680

00:41:57,000 --> 00:42:01,000

Good job, buddy. That looked great. Where'd she go?

681

00:42:01,000 --> 00:42:03,000

Straight down, apparently.

682

00:42:03,000 --> 00:42:05,000

Something malfunctioned,

683

00:42:05,000 --> 00:42:08,000

and the high-speed camera should hold the answer.

684

00:42:08,000 --> 00:42:11,000

Wow!

685

00:42:11,000 --> 00:42:14,000

It looked like it just shot right off her back.

686

00:42:14,000 --> 00:42:17,000

There was like one tie that held on.

687

00:42:17,000 --> 00:42:18,000

I guess those straps.

688

00:42:18,000 --> 00:42:20,000

While the team discusses harness failure,

689

00:42:20,000 --> 00:42:23,000

the safety expert catalogues pilot injuries.

690

00:42:23,000 --> 00:42:27,000

Anything from abrasions, lacerations to sprains, strains,

691

00:42:27,000 --> 00:42:33,000

possible dislocated bones, possibly broken bones,

692

00:42:33,000 --> 00:42:35,000

possibly concussions, head, neck, back injuries

693

00:42:35,000 --> 00:42:37,000

are always the most serious.

694

00:42:37,000 --> 00:42:39,000

Well, I don't want that to happen to me,

695

00:42:39,000 --> 00:42:41,000

so I think we need another test with the dummy

696

00:42:41,000 --> 00:42:42,000

and get it right before you put me in the rig.

697

00:42:42,000 --> 00:42:45,000

After the trial run, the jury's still out.

698

00:42:45,000 --> 00:42:48,000

The bottle rocket has significant thrust.

699

00:42:50,000 --> 00:42:53,000

But can that force be harnessed safely?

700

00:42:53,000 --> 00:42:55,000

Time for another launch.

701

00:42:55,000 --> 00:42:56,000

Let's go to lunch.

702

00:43:00,000 --> 00:43:03,000

Jane, the simulate's maiden bottle rocket flight

703

00:43:03,000 --> 00:43:05,000

was less than a success.

704

00:43:07,000 --> 00:43:10,000

Without a safe test launch, carry will be grounded,

705

00:43:10,000 --> 00:43:12,000

and the myth busted.

706

00:43:12,000 --> 00:43:15,000

I have a lot of doubts about the last test.

707

00:43:15,000 --> 00:43:17,000

I just don't know what's really going to happen,

708

00:43:17,000 --> 00:43:20,000

and unless we can get this to work in a way

709

00:43:20,000 --> 00:43:23,000

that's a little bit safer, I just, I don't want to get on it.

710

00:43:23,000 --> 00:43:26,000

The team resets, and to avoid backflips,

711

00:43:26,000 --> 00:43:29,000

Jane is positioned higher on the rocket.

712

00:43:29,000 --> 00:43:32,000

The safety harness is given careful attention,

713

00:43:32,000 --> 00:43:35,000

but carries less than impressed with Tori's tether.

714

00:43:35,000 --> 00:43:37,000

This is supposed to be me.

715

00:43:37,000 --> 00:43:40,000

We cannot use this particular method on me.

716

00:43:41,000 --> 00:43:42,000

Let's see why not.

717

00:43:42,000 --> 00:43:44,000

Looks like it's working pretty good.

718

00:43:44,000 --> 00:43:47,000

Passenger comfort will come as standard on a later model.

719

00:43:48,000 --> 00:43:51,000

Get three, two, one.

720

00:43:52,000 --> 00:43:54,000

Oh.

721

00:43:55,000 --> 00:43:58,000

Maybe I shouldn't stand right behind it next time.

722

00:43:59,000 --> 00:44:00,000

That didn't look that bad.

723

00:44:00,000 --> 00:44:01,000

That was cool.

724

00:44:01,000 --> 00:44:03,000

That was just a backflip.

725

00:44:03,000 --> 00:44:04,000

Just a backflip?

726

00:44:04,000 --> 00:44:08,000

Yeah, a rocket-assisted 20-foot-high backflip.

727

00:44:08,000 --> 00:44:09,000

Oh.

728

00:44:10,000 --> 00:44:11,000

That's not very ballistic.

729

00:44:11,000 --> 00:44:13,000

It looks a lot of film.

730

00:44:13,000 --> 00:44:15,000

Oh my God, looks just going for a nose dive.

731

00:44:15,000 --> 00:44:17,000

That's a headshot right into the water.

732

00:44:17,000 --> 00:44:18,000

Oh.

733

00:44:18,000 --> 00:44:21,000

It looks a blast, but what's the official word?

734

00:44:21,000 --> 00:44:23,000

After the two experiments I've seen,

735

00:44:23,000 --> 00:44:25,000

I would not let you get on that.

736

00:44:25,000 --> 00:44:26,000

No way.

737

00:44:27,000 --> 00:44:28,000

See, Dave's pulling rank.

738

00:44:28,000 --> 00:44:29,000

I'm not getting on it.

739

00:44:30,000 --> 00:44:31,000

You're off the hook.

740

00:44:31,000 --> 00:44:34,000

I didn't want to chicken out, but I did not sleep last night.

741

00:44:34,000 --> 00:44:37,000

I kept thinking I was going to break my neck on this thing.

742

00:44:37,000 --> 00:44:38,000

Well, I'm a little bummed, though,

743

00:44:38,000 --> 00:44:40,000

that we're not going to actually launch a person on it.

744

00:44:40,000 --> 00:44:42,000

I mean, looking at the high speed, that looked fun.

745

00:44:42,000 --> 00:44:44,000

It didn't look that dangerous,

746

00:44:44,000 --> 00:44:47,000

but, you know, I guess we're all worried about breaking necks

747

00:44:47,000 --> 00:44:49,000

and people getting paralyzed.

748

00:44:49,000 --> 00:44:50,000

I'm really, really relieved.

749

00:44:50,000 --> 00:44:52,000

I don't have to do it.

750

00:44:52,000 --> 00:44:57,000

So no aerial acrobatics or a trip to the chiropractor for Carrie.

751

00:44:57,000 --> 00:44:59,000

But what about the myth?

752

00:44:59,000 --> 00:45:03,000

This myth is about strapping 15 soda bottles to a person's back

753

00:45:03,000 --> 00:45:06,000

and having them fly in a ballistic trajectory.

754

00:45:06,000 --> 00:45:09,000

Based on what we've seen here, it's totally busted.

755

00:45:09,000 --> 00:45:11,000

And busted on two counts.

756

00:45:11,000 --> 00:45:15,000

First, neither the height nor distance match those of the myth.

757

00:45:15,000 --> 00:45:21,000

And second, this rig isn't close to being safe for a human passenger.

758

00:45:21,000 --> 00:45:25,000

Oh! This being myth busters, now that the myth is busted,

759

00:45:25,000 --> 00:45:27,000

we need to ramp this up.

760

00:45:27,000 --> 00:45:29,000

So we're going to go to Torrey's 50 bottle rig.

761

00:45:29,000 --> 00:45:32,000

I just finished it maybe a few hours ago.

762

00:45:32,000 --> 00:45:36,000

I stayed up till two in the morning last night trying to get it finished.

763

00:45:36,000 --> 00:45:40,000

So I haven't actually tested it, so I don't know if it's going to work.

764

00:45:40,000 --> 00:45:42,000

I'm hoping. I'm very hopeful.

765

00:45:42,000 --> 00:45:44,000

With Carrie off the hook,

766

00:45:44,000 --> 00:45:46,000

I'm going to go to the chiropractor.

767

00:45:46,000 --> 00:45:48,000

I'm going to go to the chiropractor.

768

00:45:48,000 --> 00:45:50,000

I'm very hopeful.

769

00:45:50,000 --> 00:45:52,000

With Carrie off the hook,

770

00:45:52,000 --> 00:45:56,000

Jane's safety is now in Torrey's sleep deprived hands.

771

00:45:56,000 --> 00:46:00,000

I like to call this my safety friend.

772

00:46:00,000 --> 00:46:02,000

This is what happens when I don't get enough sleep.

773

00:46:02,000 --> 00:46:05,000

All 50 bottles are filled with one liter of water,

774

00:46:05,000 --> 00:46:08,000

then loaded onto the O-rings for a pressure test.

775

00:46:08,000 --> 00:46:11,000

All right, the moment of truth.

776

00:46:11,000 --> 00:46:14,000

I don't hear any hissing.

777

00:46:14,000 --> 00:46:16,000

I don't either. That's a good sign.

778

00:46:16,000 --> 00:46:18,000

A word of warning.

779

00:46:18,000 --> 00:46:22,000

Simultaneous triggering, as seen on 360 swing set,

780

00:46:22,000 --> 00:46:24,000

is a very tall order.

781

00:46:31,000 --> 00:46:35,000

With 50 rockets to trigger, there's plenty of scope for failure.

782

00:46:35,000 --> 00:46:36,000

Get on.

783

00:46:36,000 --> 00:46:40,000

Which, on this show, is par for the course.

784

00:46:40,000 --> 00:46:43,000

This is 50 bottle blast off. You guys ready?

785

00:46:43,000 --> 00:46:44,000

Ready.

786

00:46:44,000 --> 00:46:46,000

Opening the valve.

787

00:46:48,000 --> 00:46:50,000

All right, pulling out the safety blocks.

788

00:46:51,000 --> 00:46:52,000

Okay.

789

00:46:52,000 --> 00:46:55,000

Three, two, one.

790

00:46:59,000 --> 00:47:01,000

What do we do?

791

00:47:09,000 --> 00:47:11,000

That was great.

792

00:47:11,000 --> 00:47:12,000

Wow.

793

00:47:14,000 --> 00:47:16,000

Well, something happened.

794

00:47:16,000 --> 00:47:19,000

It didn't work exactly the way I thought it would,

795

00:47:19,000 --> 00:47:22,000

but hey, no, it was perfect.

796

00:47:22,000 --> 00:47:25,000

Did you see my trigger mechanism?

797

00:47:27,000 --> 00:47:29,000

That was pretty cool.

798

00:47:29,000 --> 00:47:31,000

No backflips this time.

799

00:47:31,000 --> 00:47:34,000

Just some crash test dummy yoga.

800

00:47:34,000 --> 00:47:35,000

But what went wrong?

801

00:47:35,000 --> 00:47:38,000

It might just be the collective, because look out.

802

00:47:38,000 --> 00:47:40,000

Yeah, these guys are tight.

803

00:47:40,000 --> 00:47:42,000

Okay, how do you like my O-rings now?

804

00:47:45,000 --> 00:47:49,000

The high angle footage shows the rockets on the left releasing cleanly,

805

00:47:49,000 --> 00:47:53,000

but on the right, the O-rings hold them back.

806

00:47:53,000 --> 00:47:55,000

Sticky O-rings, eh?

807

00:47:55,000 --> 00:47:58,000

Tired to put Jamie's shop motto into action.

808

00:47:58,000 --> 00:48:00,000

When in doubt, lubricate.

809

00:48:00,000 --> 00:48:02,000

So we had two problems with our last launch.

810

00:48:02,000 --> 00:48:04,000

One, it didn't release cleanly.

811

00:48:04,000 --> 00:48:07,000

We dealt with that by lubing up, and two,

812

00:48:07,000 --> 00:48:10,000

the bottom bottles filled up with water because of our angle.

813

00:48:10,000 --> 00:48:13,000

So what we're going to do now is have a more flat launch.

814

00:48:13,000 --> 00:48:15,000

We've got our lube, and we're ready to go.

815

00:48:16,000 --> 00:48:21,000

Lucky last, the team has one more chance to get Jane airborne.

816

00:48:21,000 --> 00:48:25,000

It seems like more soda bottles should mean more thrust.

817

00:48:25,000 --> 00:48:28,000

Okay, I'm pressurizing to 100. You guys ready?

818

00:48:28,000 --> 00:48:29,000

In one, in one.

819

00:48:29,000 --> 00:48:32,000

In three, two, one.

820

00:48:34,000 --> 00:48:35,000

Hang on.

821

00:48:40,000 --> 00:48:42,000

I wouldn't have been scared of doing that.

822

00:48:44,000 --> 00:48:45,000

Well...

823

00:48:45,000 --> 00:48:47,000

It wasn't impressive, but it sure was fun.

824

00:48:47,000 --> 00:48:54,000

I just do not see soda bottles and water and air being any means of a jet pack whatsoever.

825

00:48:54,000 --> 00:48:59,000

Yeah, it seems like we should have more soda bottles that mean more thrust.

826

00:48:59,000 --> 00:49:01,000

More bottles means more complications,

827

00:49:01,000 --> 00:49:07,000

and simultaneous release is one of our hugest problems in any experience we do.

828

00:49:07,000 --> 00:49:10,000

You know, we didn't get her too high, but...

829

00:49:10,000 --> 00:49:11,000

I'm still happy.

830

00:49:11,000 --> 00:49:14,000

I would say we can call this one busted.

831

00:49:14,000 --> 00:49:15,000

And call it a day.

832

00:49:15,000 --> 00:49:16,000

Yeah, busted.

833

00:49:16,000 --> 00:49:17,000

Let's get out of here.

834

00:49:17,000 --> 00:49:18,000

We're only going to bed.

835

00:49:18,000 --> 00:49:19,000

I'm tired.

836

00:49:41,000 --> 00:49:52,000

Thanks for watching.