

CODENAME

OPERATION TROOPER

◆ Build Manual ◆

▶ EDITION	PUBLIC RELEASE · FREE TO SHARE
▶ SUBJECT	Full armour
▶ BUDGET	€150-350+
▶ BUILD TIME	60-120 hrs
▶ TIMELINE	8 weeks

**A LONG TIME AGO, IN A WORKSHOP FAR, FAR
AWAY....**

FROM ZERO TO TROOPER

One build, two troopers: Clone or Stormtrooper. The biggest armour build in the series – a full white shell head to toe.

May the Force be with all who walk this path.



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READING ORDER · IF YOU READ NOTHING ELSE

Start here: Reality Check — it tells you what you are signing up for.

Before the event: Meeting Your Fans — the chapter that matters at hour two.

Everything in between is your build, in order. Take it one section at a time.



READ ME FIRST

This is a field manual, not a novel — you are not meant to read it front to back. Jump to the station you need:

RIGHT NOWReality Check + Clone or Stormtrooper?.

BEFORE BUYINGThe Complete Parts List — order everything in one batch; shipping is the bottleneck.

WHILE BUILDINGWork the build chapters in order; each one is a station, not a lecture.

BEFORE THE EVENTGame Day — the only chapter that matters at hour two.

RUNNING LATE?Open the companion WEEK-BY-WEEK calendar and jump to your current week.

■ ONE SITTING RULE

Read Reality Check + Clone or Stormtrooper? today. Everything else waits until its week.



PICK YOUR BAR

*The biggest shell in the line — three ways to wear white, from a first Halloween to a club card. The same build can be finished to three different bars — pick yours **now**, because builders who polish for the wrong one burn weeks.*

LEAN · €150-300

Casual

Reads as a Trooper at 5m under a strobe — a soft EVA-foam or budget ABS kit, glued seams, eye lenses you can actually see through. Skip the cold-cast detailing, run a single belt box, and don't sweat the boot covers.

EFFORT · ~50 hrs

MID · €300-550

Convention

Reads as a Trooper at conversation distance — most builders land here with a proper trimmed ABS armour set, strapped (not glued) so it moves, painted hand-guards and a helmet with even tube stripes. Solid all-day-on-the-floor costume that photographs clean.

EFFORT · ~85 hrs

501ST · €700+

Approved

Reads as a Trooper under inspection — screen-accurate kit (FX/AP or screen-matched Clone), every gap and return edge trimmed to CRL spec, correct fasteners, sized lenses and the right boots. This is the lifetime piece that passes 501st costume judging.

EFFORT · ~120 hrs



THE FALLBACK PLAN

*A first-time build of this suit is **60–120 hrs** of hands-on work across **8 weeks**. Life happens — so decide right now what gets cut when the clock wins. Finished beats perfect.*

BEHIND EARLY Drop first: No Cape. Nobody will notice at 5m.

BEHIND LATE Simplify next: Reference & Fit, Boots, Blaster — buy instead of make, or borrow.

EMERGENCY Every printed part has a buy option. Switching one part to bought can save a whole week.

ALWAYS The final week is for wearing it, not building it — dress rehearsal beats one more coat of paint.

🕒 THE HONEST RULE

If a piece is not started two weeks before the event, it is not in this year's costume. Build it for the next one.



THE COUNTDOWN

The whole plan on one page — tick the boxes as the weeks fall. The full week-by-week calendar is a separate companion PDF.

Weeks 8–7 ☐ Plan + order filament & supplies

Weeks 6–5 ☐ Print + finish the helmet

Weeks 4–3 ☐ Print the torso (chest, back, ab)

Week 2 ☐ Arms, legs, belt + straps

Week 1 ☐ Weather, dress rehearsal, game day



REALITY CHECK

*This is the **biggest build in the series** — a full-body white shell.*

~3–5 kg of filament, dozens of plates, weeks of sanding and painting. Very doable, but it's a marathon. Print ONE forearm first as your test.

Before you spend a cent or a gram, know what you are signing up for. That is not a reason to skip it — it is a reason to plan it.

Pieces	20+ separate armor parts (helmet, chest, back, ab, kidney, shoulder bells, biceps, forearms, hands, thighs, shins) plus a bodysuit
Finishing	Every piece needs sanding, priming and painting
Cost	Roughly €150–400 all-in, depending on free vs paid files and blaster props

Build a trooper if you have a reliable printer, time across several months, and you have finished at least one smaller armor piece before — the Anakin pauldron is a perfect warm-up. If this is your very first print ever, do a helmet or a single shoulder first, not the whole suit.



CLONE OR STORMTROOPER?

Same method, two troopers.

- ▶ **Clone** — curved T-visor helmet, can be coloured by legion.
- ▶ **Stormtrooper** — the classic angular white armour.

Pick before you print; the helmet differs most.

Quick Start

First trooper? Build a **Stormtrooper**. It is pure white — no unit markings to mask and paint — so it is a little less finishing work than a clone. Add coloured markings later and you basically have a clone.

Quick Start

Pick one before you start — it changes the colours, a few plate shapes, and the bodysuit underneath. First trooper? Build a Stormtrooper: it is pure white, no unit markings to mask and paint, so a little less finishing work. Later, add coloured unit markings, swap the helmet top to a fin, and tweak a couple of plates — and you've got a Clone Trooper from the same suit.

Fun Fact

Stormtroopers are the bad guys and Clones fight for the Republic, but BOTH are welcomed by the 501st Legion — the costuming club for Imperial and trooper armor. Jedi go in the Rebel Legion; troopers go in the 501st.



ANATOMY OF A TROOPER

A trooper is a lot of separate plates strapped over a bodysuit. Here is the full parts map so nothing surprises you.

Head	Helmet (dome + face + back), visor
Torso	Chest, back, ab and kidney plates
Shoulders	Two shoulder bells
Arms	Two biceps, two forearms, two hand guards
Waist	Belt + drop boxes (the little buttoned boxes)
Legs	Two thighs, two shins
Under	Bodysuit, gloves, boots

Print in Batches

You do not print this all at once. Work zone by zone: helmet, then torso, then arms, then legs. Each finished zone feels like a win and keeps the project from feeling endless.

How It All Holds On

- ▶ Chest + back joined at the shoulders with elastic straps, so they hang like a sandwich.
- ▶ Ab + kidney joined the same way around the waist.
- ▶ Shoulder bells, biceps and forearms held with elastic loops around the arm.
- ▶ Thighs and shins with elastic or velcro around the leg.
- ▶ Everything sits over the bodysuit — that hides gaps and stops plastic rubbing your skin.

Loose armor that flaps around ruins the look (and the photos).



PROCUREMENT ROSTER

Three ways to gear up: (A) buy a finished armor kit, (B) 3D-print the armor yourself, (C) mix — print the hard stuff, buy the bodysuit and boots. Paste Chinese into Taobao or use English on AliExpress / eBay.

Full armor kit	白兵 cosplay 全套 — or search "stormtrooper armor kit" on AliExpress / eBay
Pre-made helmet	白兵 头盔 ABS — or "stormtrooper helmet ABS" on AliExpress
Black bodysuit	连体紧身衣 黑色 — the under-layer base
White gloves	白色 手套
Tall white boots	白色 高筒靴 — or paint black boots
Filament	白色 PLA 耗材 — white PLA for the print path
Blaster prop	E-11 (storm) / DC-15 (clone)

Print vs Buy

A bought ABS armor kit is faster and already smooth, but costs more and may not fit a kid. Printing is cheaper and you can scale it to your size — but it is the big time investment this whole manual is about. Many people print the helmet (the showpiece) and buy a soft-armor kit for the body.



THE HELMET

Start here — it's the showpiece and your skills test.

Print in pieces, glue, seam-fill, sand smooth, prime, then gloss white. Tinted visor so you can see out.

Free Helmet Files

- ▶ Stormtrooper ANH helmet by KeepTheBOX · FREE · Printables model 3041 (full-scale, wearable) — printables.com/model/3041-stormtrooper-anh-helmet
- ▶ Full-scale wearable Stormtrooper helmet · Thingiverse (community remix, free)
- ▶ Clone helmet — search "Phase 2 clone helmet" on Cults3D / Printables (free + paid)

It is one self-contained project that teaches every skill you need for the rest of the suit. The visor is usually dark mesh fabric or a strip of tinted plastic glued behind the slot — you need to be able to SEE out, so test it before the event. The little mic tips on the sides are called Hovi tips.



PRINTING THE ARMOUR

Zone by zone: chest, back, shoulders, arms, legs, belt.

0.2mm layers, 3 walls, 10–15% infill. Split big plates for a small printer.

Size It to You

Most trooper files are modelled for a 6-foot adult. If you are smaller, scale the whole set down in your slicer (try 85–90%) and — importantly — scale every piece by the **same** amount so they still fit together. Test-print one small part at your chosen scale first.

Free Full-Armor Files

- ▶ Wearable Stormtrooper armor (full suit) · FREE · Thingiverse — community set, "not screen-accurate" but great to learn on
- ▶ Stormtrooper armor (WIP, 501st-aimed) by KeepTheBOX · FREE · Printables model 56373
- ▶ Screen-accurate / 501st sets · paid (e.g. Galactic Armory) — buy once you know you will finish; worth it for 501st approval

Start on a free set to practise — you WILL re-print pieces as you learn.

Size It to You

Most files fit a 6-foot adult. Smaller? Scale the whole set down in your slicer (try 85–90%) and scale every piece by the **SAME** percent — or nothing lines up. Use a brim (the flat skirt the printer adds so a part grips the bed) on tall pieces.



FINISHING

Sand → fill → prime → gloss white → detail → clear coat.

SPRAY SAFETY

Spray outside, wear a mask, and have an adult with you if you're under 18.

Shopping List

- ▶ Sandpaper — wet/dry, 180 / 320 / 600 (add 800–1000 for extra shine)
- ▶ Grey filler primer + gloss white spray
- ▶ Black acrylic — the detail lines (frown, vents, markings)
- ▶ Respirator/dust mask, painter's tape, super glue, putty for seams
- ▶ Clone only: coloured spray for unit markings + masking tape

Troopers are GLOSS white, so the smoother you sand, the better the shine. Join multi-part pieces, putty the joins, cure, sand flat. Mask before painting the black frown and vents (and clone colour markings). Spray outside or in an open garage only — never indoors.



STRAPPING & FIT

Elastic and webbing hold the plates on.

Do a 90-minute test wear — armour is hot and limits movement. Fix the pinch points at home.

Do a full test wear at home before the event: armor pinches, straps slip, and you find out fast if you can sit, walk, and see. Fix it in the workshop, not at the con.



GAME DAY

Visor clear, plates secure, blaster ready.

- ▶ Repair kit: spare elastic, super glue, white touch-up paint.
- ▶ Take helmet breaks; have a buddy guide you on stairs.

● ● MORE GAME DAY LINES

- ▶ “Look sir, droids!” — *point at the floor, sudden and proud*
- ▶ “Move along. Move along.” — *flat and bored, one lazy hand wave*
- ▶ “There's one. Set for stun.” — *call it across the room, aim a finger*

😄 FOR LAUGHS — KID EDITION

- ▶ I had a clear shot in dodgeball. I missed. It's tradition.
- ▶ Move along, move along — the snack table isn't going anywhere.
- ▶ Look sir, homework! ...I've decided not to hit that either.



MEETING YOUR FANS

Half the magic of a costume is what you say when someone walks up. Here are in-character lines ready to go — gentle ones for little kids, and bigger ones for older fans and photos.

For Little Kids · Kind and Playful

- ▶ "A clone trooper always looks out for little ones — reporting for duty!"
- ▶ "Stand tall, recruit! You'd make a great trooper."
- ▶ "We stick together. That's how the good guys win."

Big and In-Character · For Older Fans and Photos

- ▶ "Rookies. They never listen."
- ▶ "Hold the line."
- ▶ "We're soldiers — we do our duty."

The Golden Rule · Read the Room

Kneel to their eye level, keep it warm, and never break character to correct them. Ask their name and make them the hero — and if a prop weapon is involved, keep it lowered and pointed away. The goal is simple: every kid walks away thinking they just met the real one.

COMPLETE PARTS LIST

Every piece referenced in this manual, grouped by where you get it. Shop in batches — fewer trips, fewer forgotten items.

PRINT THESE PARTS

Your 3D-printing queue. Test-print one piece before committing the whole suit.

- **Helmet** — Clone T-visor or Stormtrooper dome. Print, seam-fill, gloss white.
- **Chest + back plate** — Core of the armour — split for small printers.
- **Shoulder bells (x2)** — Mirror one STL.
- **Ab / kidney plate** — Links chest to belt.
- **Forearms + biceps (x4)** — Test-print ONE forearm first.
- **Shin + knee plates** — Both legs.
- **Belt boxes** — Mount on a webbing belt.
- **Codpiece + thighs** — Elastic straps.

BUY THESE

Order all at once — shipping is the bottleneck.

- **White boots** — Plain, under the leg armour.
- **Black/white gloves** — Clone black, Stormtrooper white.
- **Filler primer + gloss white** — 2–3 cans.
- **Sandpaper 120–400** — For smoothing seams.
- **Elastic + webbing belt** — Straps everything on.
- **Blaster** — DC-15 (Clone) or E-11 (Stormtrooper).

3D FILES & SOURCES

Where to find the printable files and reference standards. Nothing copyrighted is hosted here — these point to community designers and costume-club resources. Always check a model's licence before printing.

Stormtrooper armour STL

search Thingiverse / Cults3D

[▶ thingiverse.com](#)

Clone trooper armour STL

search Cults3D

[▶ cults3d.com](#)

E-11 blaster STL

Thingiverse

[▶ thingiverse.com](#)

501st Legion standards

501st.com

[▶ 501st.com](#)



THE REPAIR KIT

Everything breaks at hour two. A sandwich bag with these seven things turns a costume emergency into a two-minute pit stop.

SUPER GLUE GELReattaches snapped prints and popped seams in 60 seconds. Gel doesn't run.

BLACK GAFFER TAPEInvisible on dark builds — holds a cracked plate through a whole event.

SAFETY PINS + VELCROInstant strap repair, hem fix, cape re-hang.

ZIP TIES (BLACK)Broken buckle, loose greeble, sagging belt box — tie it and move on.

PAINT PEN (BLACK + SILVER)Covers scratches and scuffed edges between photos.

SPARE BATTERIESFor LEDs and soundboards. The saber always dies at the door.

MICROFIBRE CLOTHHelmet fingerprints, lens fog, dusty boots.

■ PACK IT THE NIGHT BEFORE

One bag, one pocket (or a helper's backpack). If you have to go looking for glue, it is already too late.



Mid-build with painty fingers? This is the inside back cover index — every station and its page.

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MAY THE FORCE BE WITH YOU

"These aren't the droids you're looking for."

— ALWAYS —

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