

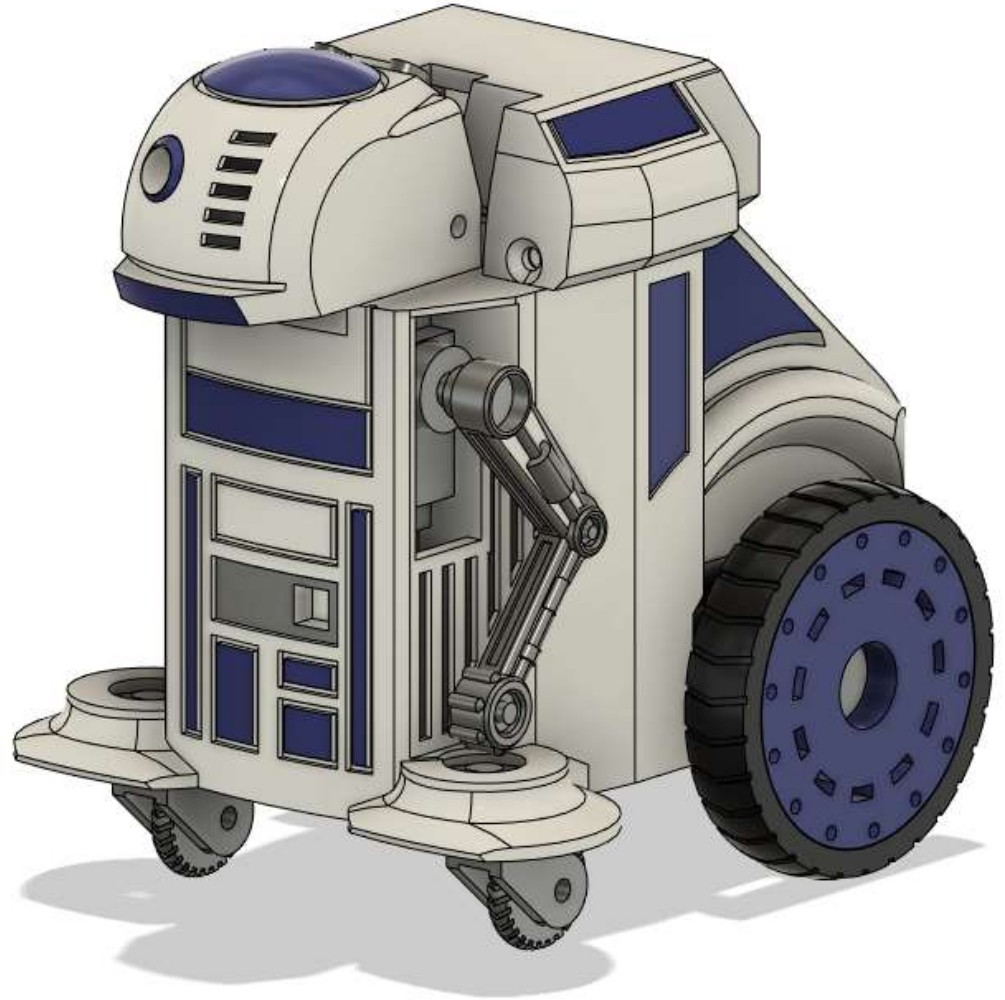
MrBaddeley
BR-US build instructions
(Draft)

<https://www.patreon.com/mrbaddeley>

for other parts and instructions

SU-MO Features

- Simple Build
- Single day print
- Works with any basic RC controller / Receiver (3 channels, tank mix)
- Cheap, basic electronics (FS90R continuous servos, battery and RC controller)



Printing guidelines

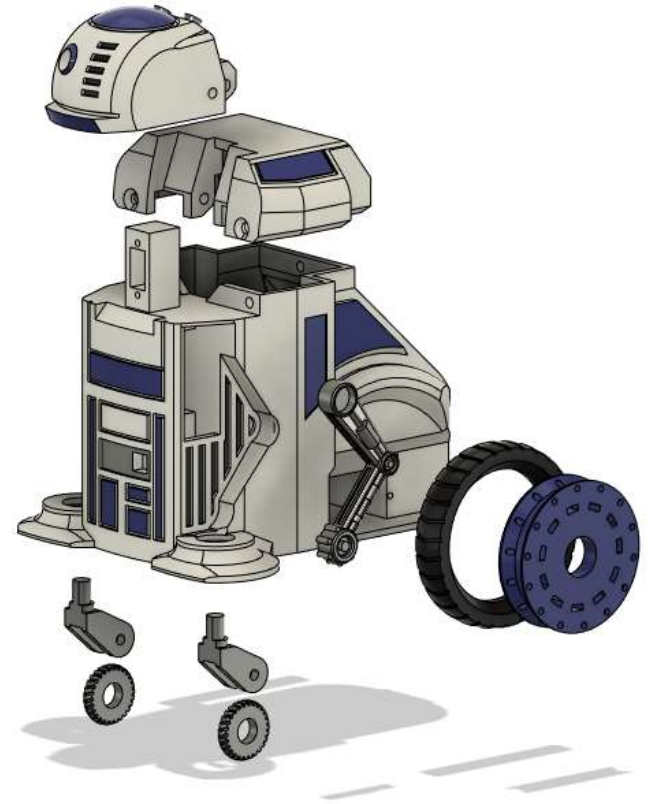
Support Needed:

No parts need support

All parts are oriented for printing!! No support needed.

Generally all parts should be printed with a .2 layer height as maximum. 3 outer walls (1.2mm Cura) and around 15% infill.

The tyres need to be printed in flex, check the web for settings / recommendations. Print slow and hot with no retraction. Loosening the tension on the extruder can also help a lot.



Hardware & electronics

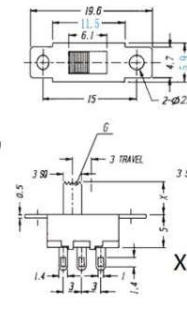
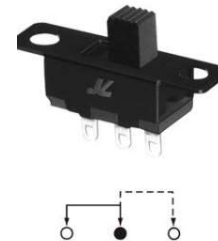
Hardware:

683ZZ (x2)
M3x12mm countersunk bolts (x2)
M3x18mm countersunk bolt (x1)
M3x30mm countersunk bolt (x1)
M3x5mm countersunk bolt (x3),
MR625-ZZ (x2)

MG92b servo (x1)
FS90R servo (x2)
DuPont connector & crimper
Servo cable
5mm red LED
SS12F15G5 mini toggle switch
RC receiver / controller
4.8v 1200mah Battery
Battery connector.



SS-12F15 (1P2T)
Rating:
0.5A 50V DC



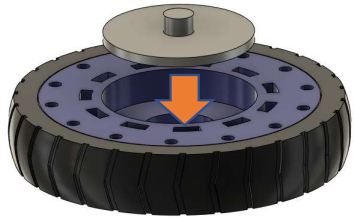
Making the wheels..



First, make up the two wheels. Push the tyre onto the wheel. Repeat twice.

Then take the two wheels and use two part epoxy to glue the circular servo horn (supplied with the FS90R servo), ensure it fits level and flush with the servo connector on the same side as the ridge.

Next we'll assemble the casters. Take the two printed parts. You'll need MR625-ZZ bearings (16x5x5) x2 and 683ZZ (3x7x3) x2.



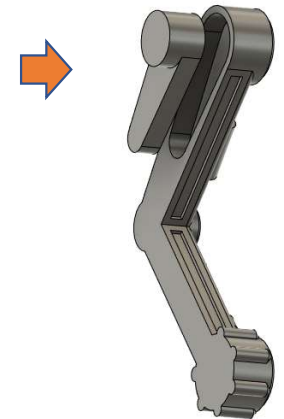
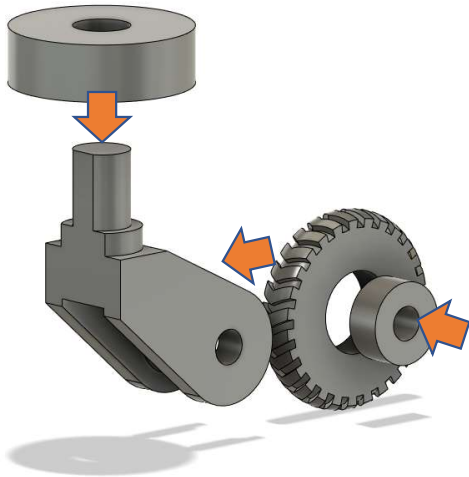
Slip the 683ZZ into the small wheel. This goes into the caster and is secured with a M3x12 bolt (you can use slightly longer if it's all you've got).

Next, push the caster assembly into the MR625-ZZ and you've for the first assembly, repeat for the second.

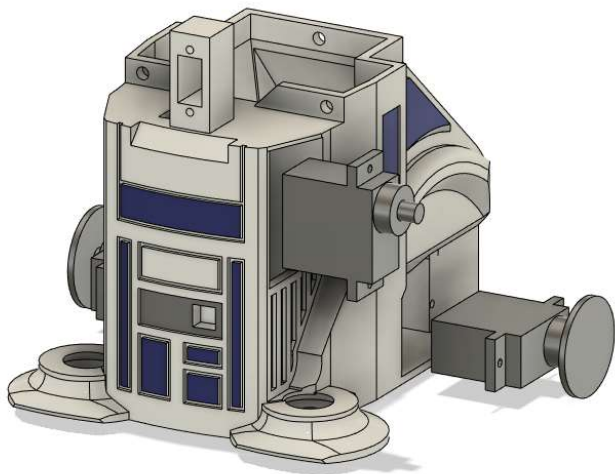
Finally for this section, take the arm and glue in the Servo horn in as shown.

You've now got two sets of wheels and casters, along with the "punch" arm.

Hardware two 683ZZ (x2), M3x12mm countersunk bolts (x2) MR625-ZZ (x2)



Next the body..



Next, take the main body and three servos (MG92b x1, FS90R x2).

They fit into the main body as shown, two FS90R in the rear lower slots and the MG92b in the upper front arm slot. Feed the cables so they all go into the main body cavity where the RC receiver and battery goes.

Take the securing screws which came with the servos and secure the three servos in place.

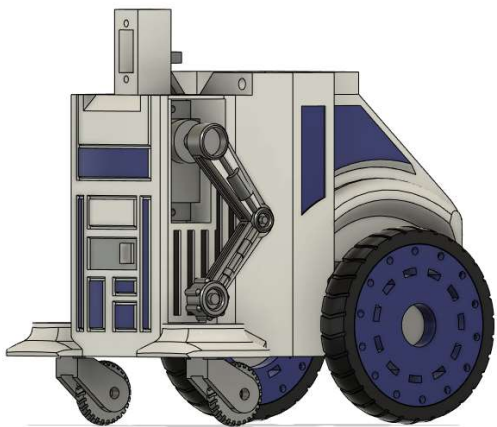
Next we'll attach the wheels, this is simply a process of popping the wheels onto the FS90R servos and secure with the screw provided.

Finally the arm, firstly with a Servo tester or using the RC receiver position the servo so that it's as far counterclockwise as possible (so the starting position is the arm in the down position). Attach the arm in the down position and secure with the screw provided with the MG92b. (Don't worry too much about the position as you can easily remove and reposition at anytime).

Then take the two caster assemblies and fit into the frame, the bearings should slot into the two circular holes. A little two part epoxy can be used to secure them in place, but ensure none of it gets into the mechanism or bearing obviously.

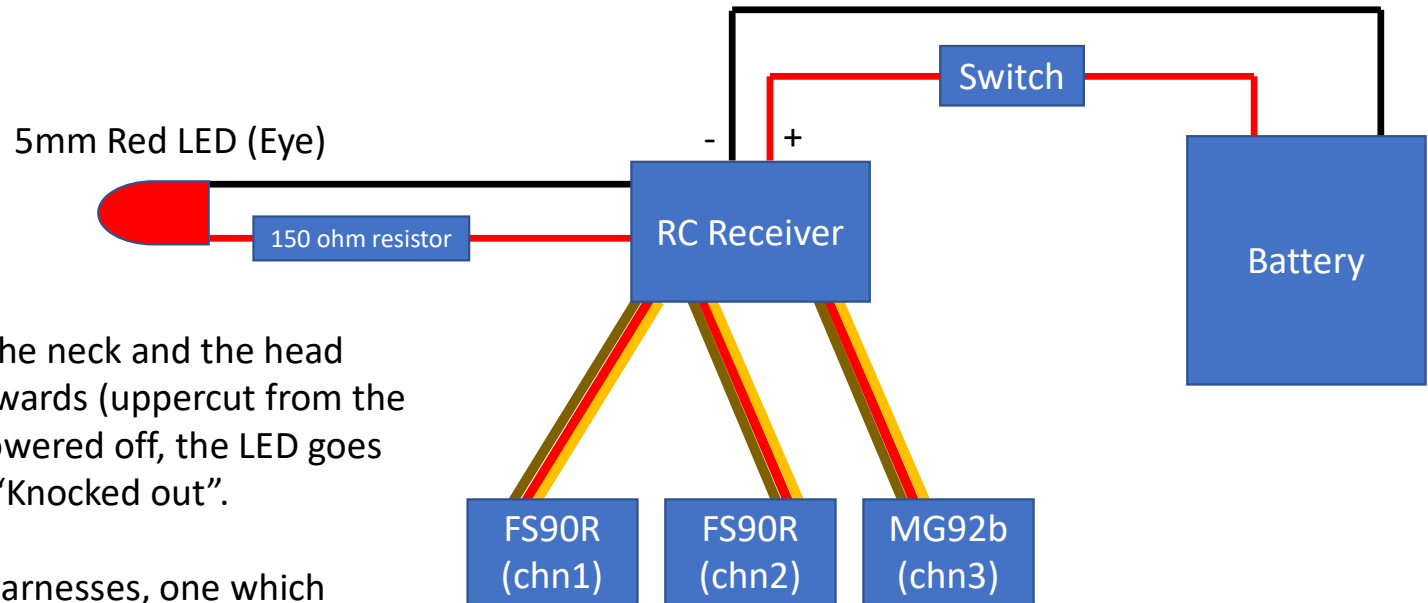
This pretty much finishes the main body assembly.

Hardware MG92b x1, FS90R x2



Head and electronics..

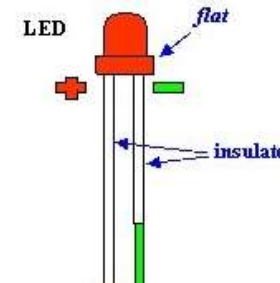
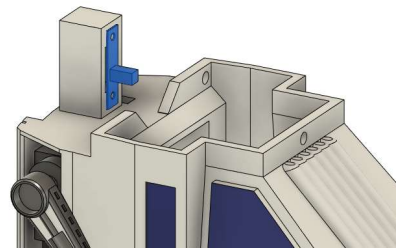
Here's the basic wiring diagram of what we're going to use.



Basically the switch is fitted to the neck and the head pivots, if the head is pushed upwards (uppercut from the opposing droid) the switch is powered off, the LED goes out and the droid is effectively "Knocked out".

You'll need to make two cable harnesses, one which connects from the battery, through the switch to the RC receiver and the second one is a LED with the positive connected to 150 ohm resistor and both ends going into a standard DuPont 3 pin connector which takes the red and brown from the RC receiver.

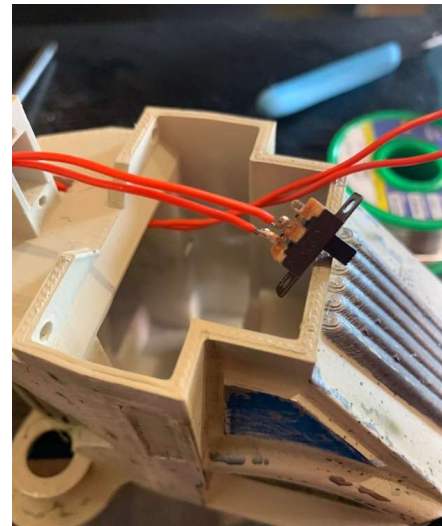
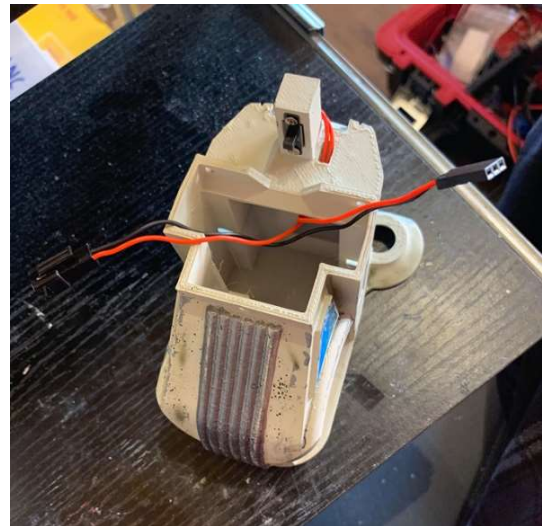
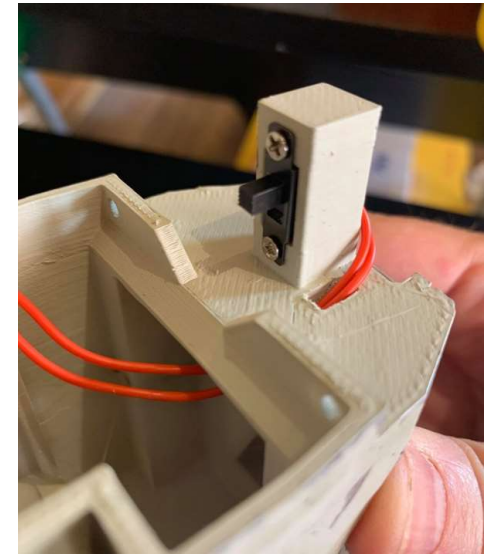
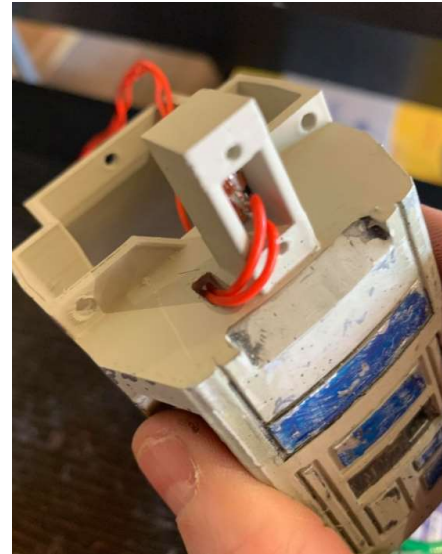
Hardware: DuPont connector & crimper, Servo cable, 5mm red LED, SS12F15G5 mini toggle switch, RC receiver / controller, 4.8v 1200mah Battery, Battery connector.



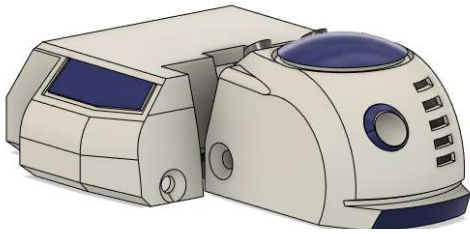
Note the long lead on the LED is the positive and should be connected to the resistor

Here's some pictures showing the actual installation of the cables. Start with soldering the switch (making sure the down position is on, and the up is off), run the two cables through the hole back into the body. Then take a connector from the battery, going to the switch, and with a DuPont connector for the RC receiver power.

The dome LED is a simple two wire loom with a resistor in series on the red cable. This runs into the main cavity again. Once you're happy with it, the LED can be held in place in the dome with a little hot glue.

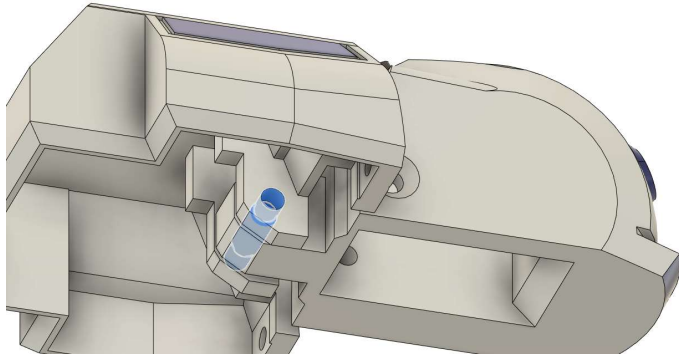


Head and shoulder..



Finally assemble the head and shoulders. Firstly, take the head and slot into the shoulders, this is held in place and a M3x18 bolt which screws into the pivot hole (shown in blue), it should just self tap so no nuts are needed to hold this on.

Check the head moves freely up on the pivot.

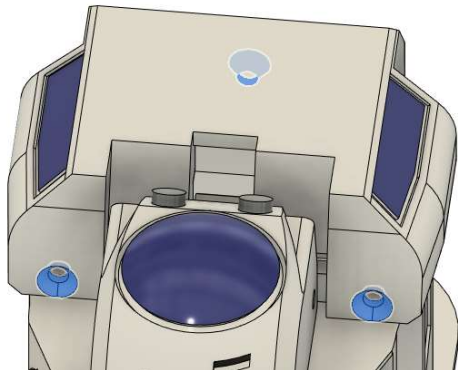


Next take this to the main body, place the LED in the eye socket, you can secure with hotglue or bluetak temporarily (you should leave enough cable, it feeds through the same slot as the power switch cable).

The shoulders should clip over the body and the head over the neck / switch.

Next you need M3x30 countersunk bolt, press the head down (which powers up the droid) and the M3x30 countersunk bolt goes through the head, it goes under the switch on the inside and will mean once in place, when you lift the head it powers the droid off.

Finally secure the shoulder with M3x5mm (x3) bolts, two at the front and one at the back, again they self tap in place.



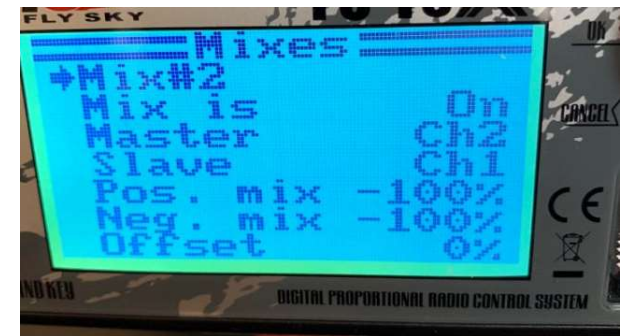
Hardware: M3x18 (x1), M3x30 (x1), M3x5 (3)

Finishing off

For mixing, it's normally Channel 1 (drive) as the master and Channel 2 (steer) as the slave, pos mix +100. neg mix +100 combined with a second mix, where Ch2 is the master and Ch1 the slave with -100 for both pos and neg (as shown in the pics, this is for the FlySky i6-x transmitter).

For the punch arm, you can put this on a stick or a switch using the appropriate channel.

If you've got two, you can try a match, a well placed uppercut will switch off the power to your opponent.





Huge thank you to 3Dutchie , A- G, Aaron Brendel, Adam , Adam Boeglin, Adam Catt, Adam Egginton, Adam Howard, Adam Jansen, adam mantium, Adam Perkins, Adam Scott, Aditya , Adrian Colin, Aimee Demuth, Alan Williams, Alejandro , Alessandro Di Cesare, Alex Barszap, Alex Cobb, Alex Hills, Alex Lee, Alexander Centeno, Alexander Kennedy, Alexandra Bergier, Alexandre Rondeau, Alistair Blake, Allen Mahurin, Allen Watson, Anders Sandstrom, Andre Maas , Andreas Schäfer, Andreas Selin, Andrew Armstrong, Andrew Baker, Andrew custer, Andrew Fingard, Andrew Finkelstein , Andrew Mayhugh, Andrew Phillips, Andrew Schwartz, Andrew Thayer, Andrew Whiteley, Andrew Wigg, Andy Foster, Andy Hill, Andy Oprisko, Andy Pattenden, Andy Podmore, angel gutierrez, Angel Marin Merino, Anjelica Brady, Anna Lenhart Murray, Anthony Couch, Anthony Harris, Anthony Jukes, Anthony Pizzuto, Anthony Wilson, Anti-Social-Society , ANTONIO , Aren Moffatt, Arif Sethi, Armido Ferretti, Arnaud Jaloin, Art Faxas, Art Percy, Aubrey Kuefner, Aurelien Perard, Austin , Austin Henley, Autumn , Babak Rezaï, Barry Ashcroft, Beau Jaramillo, Beaux Bougher, Ben Black, Ben Johnson, Ben Langley, Ben Lewitt, Ben Rieël, Ben Snell, Ben W Bell, Benjamin Arendt, Benjamin D. 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Traveler, Moon jung hun, Morpheus , mortag93 , Mr Pheer, Mr.HelpfulAsian , Nabih Saikaly, Naila , Nancy Schunke, Natalie Greco, Nate Hoffman, Nate Petro, Nate Stroth, Nathan Duncan, Nathan Loding, Nathan Lucci, Nathan Pratt, NAVARRO Stéphane, Neill Gorton, Ngamata Tere, Nic Jones, Nicki Holm, Nicole Moyle, Nigel Chua, NixonFiles , Noah Lewkowit, noel turnbull, Norbert Andreas Richartz, Norm Wilson, Nova C Crawford, Oliver Eckel, Olivier Labbé, Omar , Orpheus1103 , Oscar Madrid, Pablo Gonzalez, Palmer Reale, Patrick, Patrick Coajou, Patrick Coyne , Patrick Hankamer, Patrick Ryan, Patrick Schneider, Patrick Vrancken, Paul , Paul Carter, Paul Carter, Paul Gentile, Paul giovannucci, Paul Godden, Paul Hesketh, Paul Mandell, Paul May, Paul Moloney, Paul Murphy, Paul Smith, Paul Stre, Paul Yanzick, Pavol Procházka, PD Foster, Pedge , Penelope Blake, Peter Richards, Peter Thompson, Phil Carper, Phil Hallard, Phil Taylor, Philipp , Phillip Proctor, Phillip Williams, Pierre-Alain Ney, Porscifant 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