



BOOK OF MODELS  
VORLESBÜCHER FÜR KINDER  
LIBRO DEI MODELLI  
MODELLBUCH FÜR KINDER  
LIBRO DE MODELOS  
LIBRO DE MODELOS  
MODELLBUCH

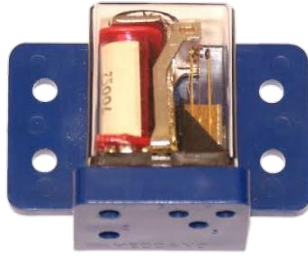
9

## February 2022 In this issue

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### How to use relays to apply the brakes to motors.



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This is entirely up to you but if you think this magazine was worth the price of a cup of coffee and you would like to contribute, click on the yellow 'Buy me a coffee' button above and it will take you to the website that gives you options.

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**BONUS**  
Full Model Plan Inside.

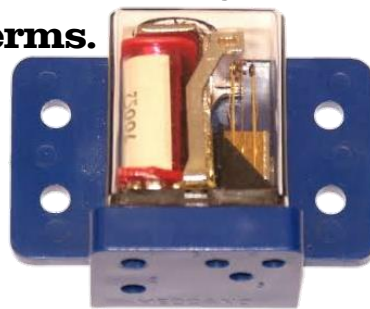
# How to use relays to apply the brakes.

## In layman's terms.

By John Burke

Contributors: Paul Dale, Tim Gant, Chris Goodwin, Andy Knox

Have you ever noticed that when you cut the power to a motor it doesn't always stop immediately? This is due to the inertia or stored energy. It will stop due to the friction in the bearings, but wouldn't it be nice if you could add some other force to slow it down faster. Like a brake. Well, there is. It's called regenerative braking. Basically, it's a short circuit across the motor.



Meccano Relay Part 606



Usually, a motor is used drive a mechanism, but they can also be used as dynamos or generators. You turn the motor shaft, and it produces electricity. Meccanoboy's with steam engines would have used Meccano motors to generate power for light bulbs. The faster you run the motor the brighter the light. But add too many lights and the steam engine will run out of power, as the higher the electrical load on the dynamo, the harder it is to turn it. A dead short is the highest load there is so you can see that by shorting the power terminals on a motor you increase the amount of force required to turn it. This is called regenerative braking.



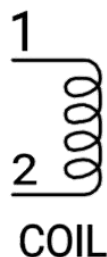
Motors comprise a field winding (stator) and armature (rotor) connected in series via a set of brushes and commutator. When current passes through the circuit, opposing magnetic fields are set up and as a consequence the rotor begins to rotate. As the rotor moves through the magnetic field a back EMF (fancy name for voltage; ElectroMotive Force) is established with the opposite polarity to that generating the magnetic field. The magnitude of the back EMF is proportional to the speed of rotation. Hence the current drawn by the motor is also proportional to its speed, and the torque produced depends on the motor current. The electrical short-circuit means there is a high current flow in the rotor & stator, hence why it is so hard to turn the motor under this condition.

So how do we use a Meccano Relay to put a dead short across the motor terminals when the power is switched off. First let's look at how the part 606 works. It has 3 main parts. A coil, a lever, and a switch. The switch is made up of 3 copper leaves with dimpled contacts on the end. In its resting state, the centre contact is touching the left contact. When the lever pushes the centre leaf it moves across and touches the contact on the right. This is called a single pole double throw switch or SPDT for short.

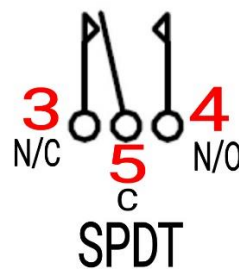
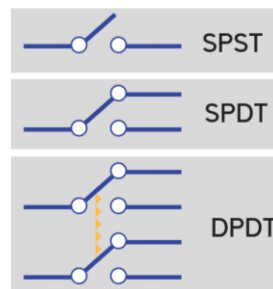
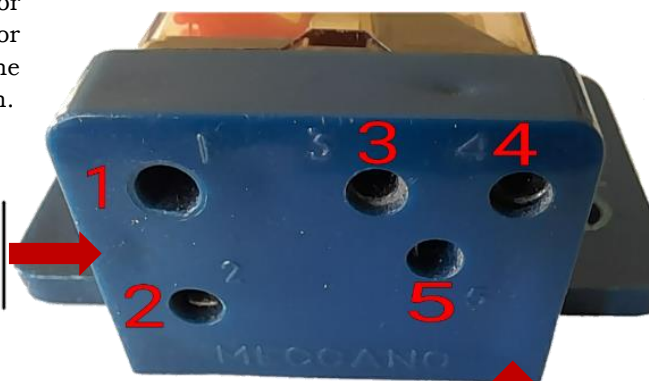
1 centre leaf means 1 pole and because it can be moved to touch either of the 2 contacts either side it's a double throw. The contact on the left in this case is known as the Normally Closed contact because the spring characteristics of the centre leaf keep it pushed up against the left contact unless a force is applied to it. Likewise, the contact on the right is called the Normally Open contact because it's not touching the centre leaf contact in its normal state. In addition, there are 'Make before break' and 'Break before make' contact configuration. In the case of the H bridge you really want break before make, otherwise the contacts will be briefly shorted together as the relay contacts move. In H bridge parlance, this is called 'shoot-through' and should be avoided like the plague because it releases the 'magic smoke' in a couple of microseconds unless the supply is current-limited in some way. In relays it burns out the contacts. The Meccano Relay is break before make so it avoids this problem. When you apply 12V DC to the coil it acts as an electromagnet and pulls the lever across which in turn pushes the centre spring leaf across thus breaking the circuit with the left contact and making the circuit with the right contact. Reversing switches are DPDT so in order to use Meccano SPDT Relays to reverse a motor we need 2 of them. The Normally Closed state is the key to using these Relays to apply the brakes. Study the circuit diagram bottom left. You can see that when no power is applied to either Relay the resting state puts both motor contacts into a dead short. When you apply power to the left relay coil the switch moves to the top connecting the positive power to the positive terminal on the motor and it runs clockwise. Apply power to the right relay coil and the positive goes to the negative terminal on the motor and it runs anticlockwise. This is known as a H bridge and it's the basis of nearly all motor control circuits. We can use a pair a Meccano Relays to build a H bridge as well as including the short across the motor terminals. See next page for details.

Enlarge the scope of Meccano – put real action into your models with the power from this sturdy Meccano Hand Generator. A real dynamo in miniature, it lets you generate your own electricity to drive your Meccano Motors. And it's not just to drive motors, either! You can use it as a power source for any purpose that requires an electricity supply of up to 12 volts D.C. And remember, the Meccano Hand Generator gives you power that you can control – the faster you turn it, the more power you get.

If you join the wires **TRY IT!** together it's harder to turn.



COIL



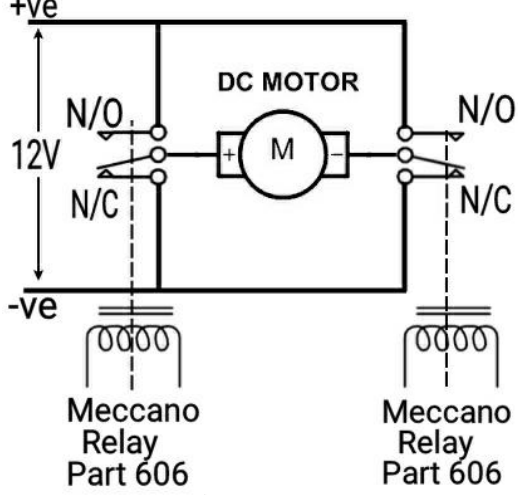
The Meccano Relay is a single pole double throw switch or **SPDT** for short.

The Poles are the number of circuits the switch has. The Throws are the number of On positions the switch has.

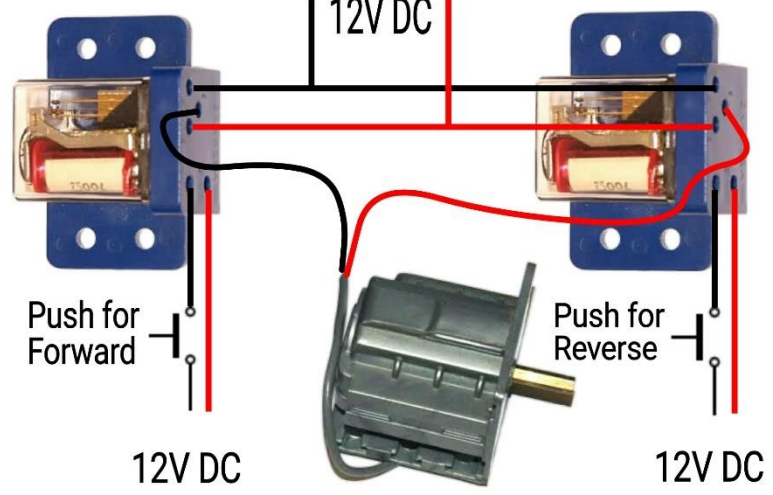
So, an **SPST** switch has 1 movable contact that can make an On or Off circuit with 1 other contact.

An **SPDT** switch also has 1 movable contact, but it can make an On or Off circuit with 2 other contacts.

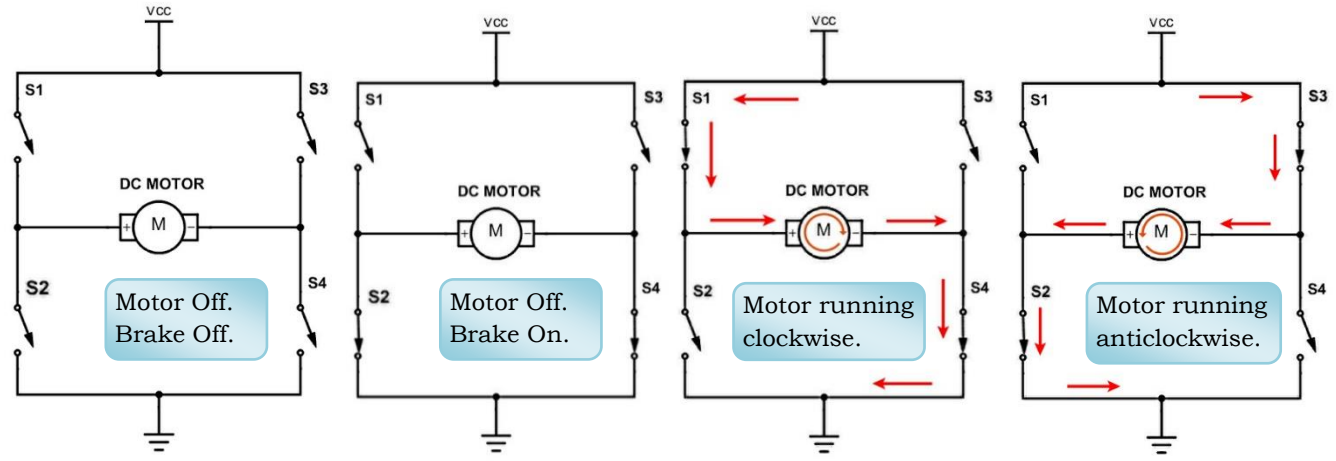
A **DPDT** switch has 2 moveable contacts that can make On or Off circuits with 2 other contacts.



To make a H bridge using Meccano relays you wire them as per the circuit diagram on the left. If you have trouble reading a circuit diagram it is nothing more than the symbols used to show the graphical version on the right.



Note how the N/C contacts are shorting out the motor terminals when the Relays are in their resting state. The resting state or normal state is when the coil is not energised.

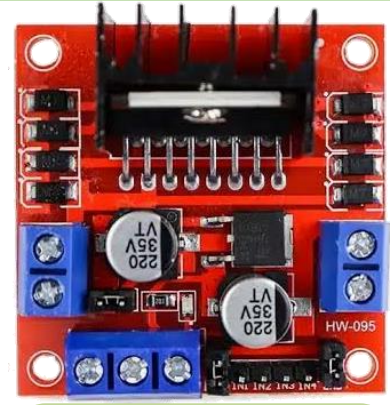
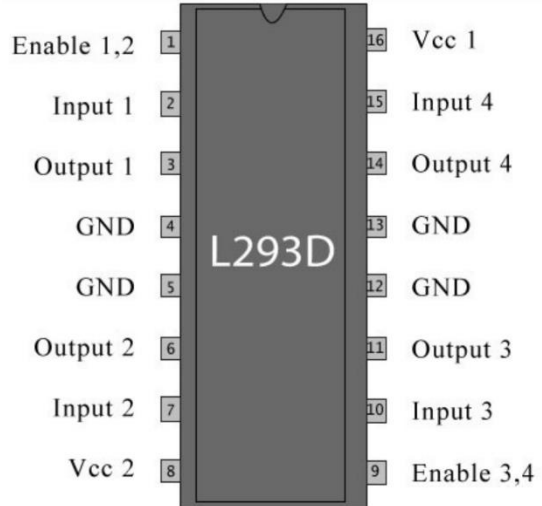


The H-bridge arrangement is generally used to reverse the polarity/direction of the motor but can also be used to 'brake' the motor, where the motor comes to a sudden stop, as the motor's terminals are shorted, or to let the motor 'free run' to a stop, as the motor is effectively disconnected from the circuit. The table to the right summarises operation, with S1-S4 corresponding to the circuit diagrams, above.

S1	S2	S3	S4	Result
1	0	0	1	Motor runs clockwise
0	1	1	0	Motor runs anticlockwise
0	0	0	0	Motor coasts
1	0	0	0	Motor coasts
0	1	0	0	Motor coasts
0	0	1	0	Motor coasts
1	1	0	0	Motor brakes
0	0	1	1	Motor brakes
x	x	1	1	Short circuit
1	1	x	x	Short circuit

**Shoot-Through.** Sounds rather scary doesn't it! Although this short circuit condition of S1 and S2, (or S3 and S4) being closed at the same time can cause smoke, it can't happen with the Meccano Relay setup because its SPDT switch is an exclusive OR operator. That is, the centre leaf can only contact the left OR the right. Not both. So, no worries there but you do have to be careful if you are controlling motors with other forms of H bridges such as MOSFETs. I've used a H bridge to control the N20 motor in my Rocket Launcher. It's an L293D Integrated Circuit and although it has internal switching transistors, they are configured to prevent a shoot-through condition. So, for a single motor you would connect it to GND and Output 1 as per the L293D pinouts below and set Enable 1,2 high. There are no Enable 1,4 or 2,3 pins to prevent Shoot-Through.

Meccano relays need DC to operate properly. If you give them AC they just buzz and smell bad. Relays with AC coils have a slightly different design.



This H bridge is the L298N and is supplied on a board with a voltage regulator and ready to connect to your Arduino microcontroller.

Of course, you can do so much more than switch a motor on and off with silicon chip technology. Microcontrollers like the Arduino allow us to change the motor speed by switching the power on and off rapidly in a pulsed signal and varying the time between the pulses of power. This is called Pulse Width Modulation or PWM. There are Arduino codes for PWM and you can also use the Arduino to brake the motor using a degree of regenerative control or allow the motor to coast by setting the Enable pin to low. The L293D at left allows you to control 4 motors while the L298N above is for 2 motors.

# Obstacle avoiding car

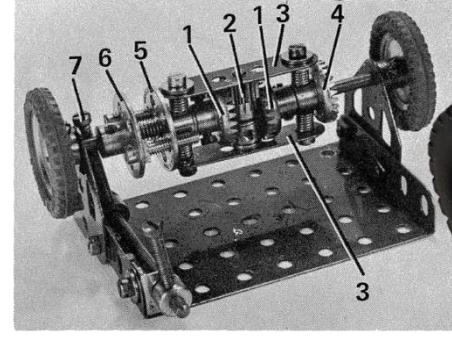
The Meccano community has an annual Christmas challenge. This year the rules were simply to build a model with road wheels that consisted of part 20 1" Pulleys and part 142 Tyres. This presents a challenge as the overall diameter of the Pulley with the Tyre fitted is only 1 1/2" which makes it a tight squeeze if you wanted to fit a differential.

There was a narrow diameter differential published in the [Meccano Magazine in Oct 1976](#) but it had a locking mechanism that I didn't need.

After building it without the locking part I wasn't happy with its operation as the Anchor Springs used as spacers were distorting when I tightened them and the inner Contrates were rubbing against the Collar so I decided to redesign it.



MECCANO Magazine



A Lockable Differential by Mr. James Grady of Dundee.

Getting this diff to run freely requires a lot of sorting through Contrates as they vary a lot. You might notice the Contrate on the left of the Pinion has a slightly smaller crown than the Contrate on the right of the Pinion. The drive Contrate on the very left was the only one in my collection that would allow me to lock the Bolt to the boss without the hex Nut getting fouled by the crown. If you can't get the hex Nut to turn, try the following alternatives.

### Alternative methods of locking the Narrow Strips to the bosses.

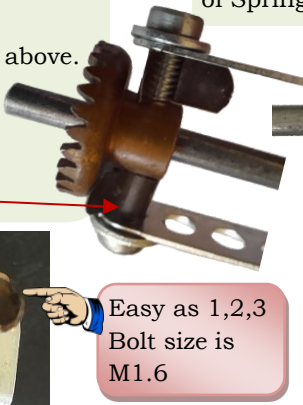
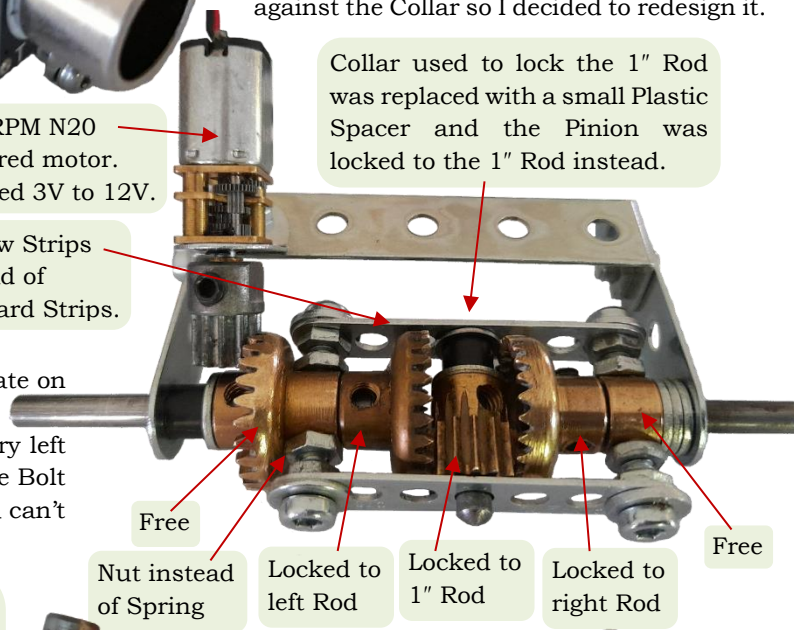
1. Part 176 Cord Anchor Springs as in the MM diagram above.
2. 4mm ID brass tube.
3. Round off the hex Nuts.
4. File a flat on a small Plastic Spacer.
5. Part 35 Spring Clip.



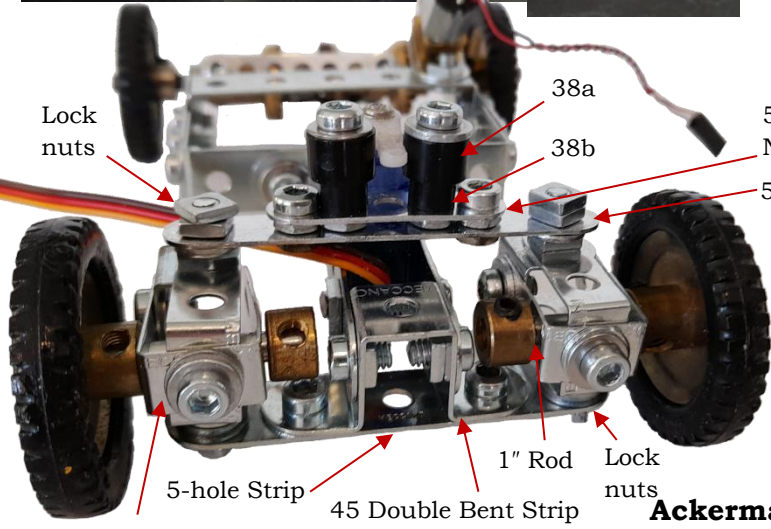
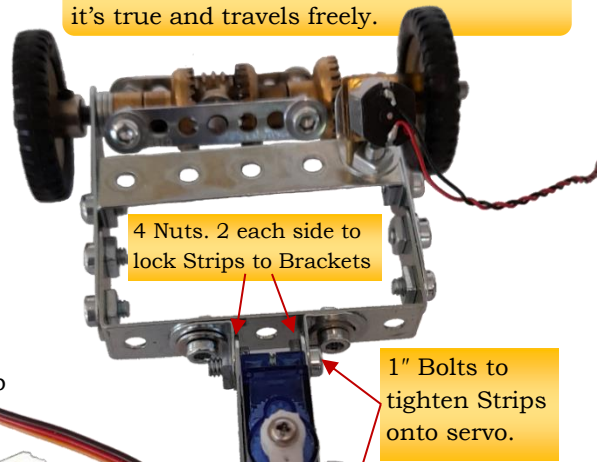
60RPM N20 geared motor. Rated 3V to 12V.

Narrow Strips instead of standard Strips.

Collar used to lock the 1" Rod was replaced with a small Plastic Spacer and the Pinion was locked to the 1" Rod instead.

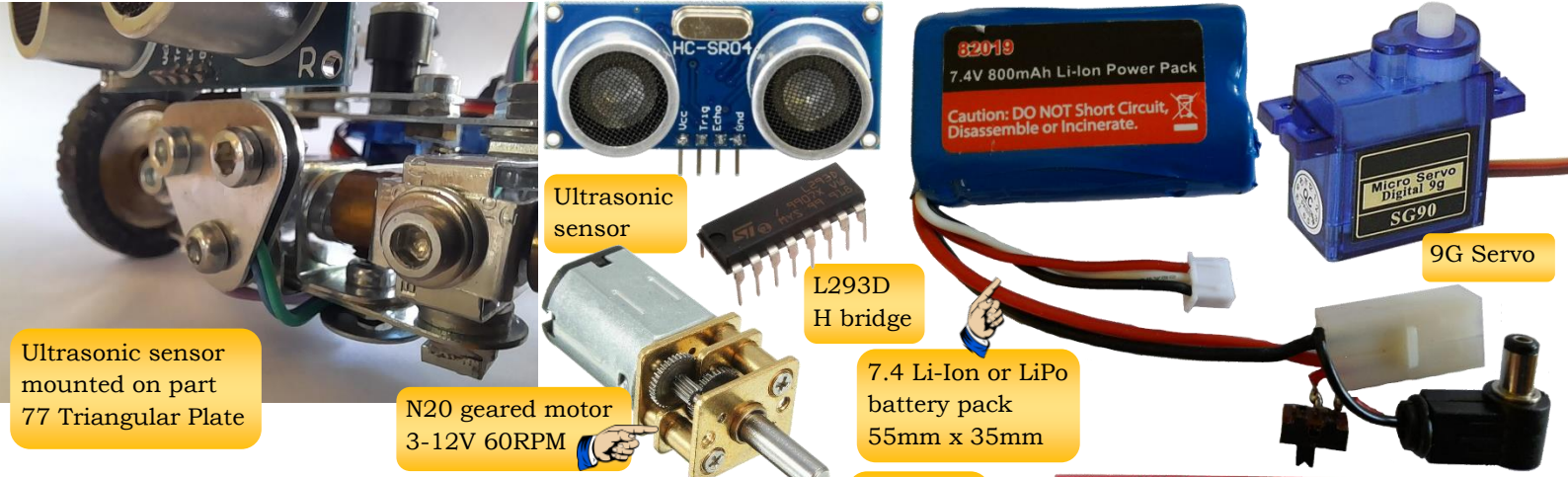


1st step. Use a Rod for alignment. Ensure it's true and travels freely.



### Ackerman steering

811a Narrow Double Bracket



Ultrasonic sensor mounted on part 77 Triangular Plate

N20 geared motor 3-12V 60RPM

Ultrasonic sensor

L293D H bridge

7.4 Li-Ion or LiPo battery pack 55mm x 35mm

9G Servo

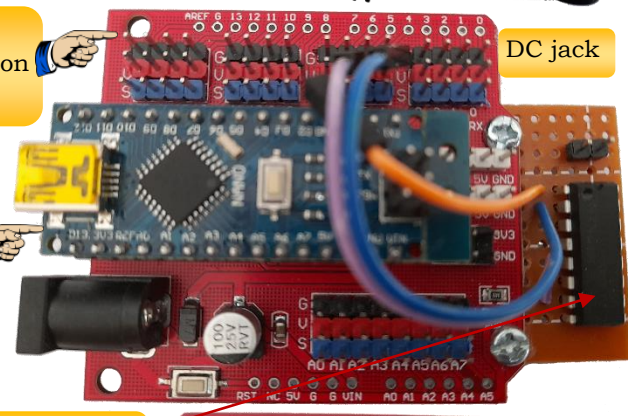
We want the car to travel forward until an obstacle is detected then it needs to turn the steering and reverse for 3 seconds. Then it must return the steering to straight ahead and drive forward again. To do this I've used an ultrasonic detector available for just a few dollars anywhere that supplies Arduino parts. Then a microcontroller is required to read the signal and operate the motor and servo motor accordingly. I used a Nano because I had one spare and I figured small was good. You can just as easily use a Uno. As it turned out I didn't save much space because it was easier to use a Nano expansion shield than try to solder all those wires in.

Before we get started on the wiring and coding, let's get all the parts mounted. For the ultrasonic detector I found that the 4 header plugs fitted snugly between the Bolts in a part 77 Triangular Plate so I bolted 2 together and squeezed the leads in. (Quite a bit of force was required!) The Plate can then be bolted to an Angle Bracket which is bolted to the Part 45 Double Bent Strip at the front.

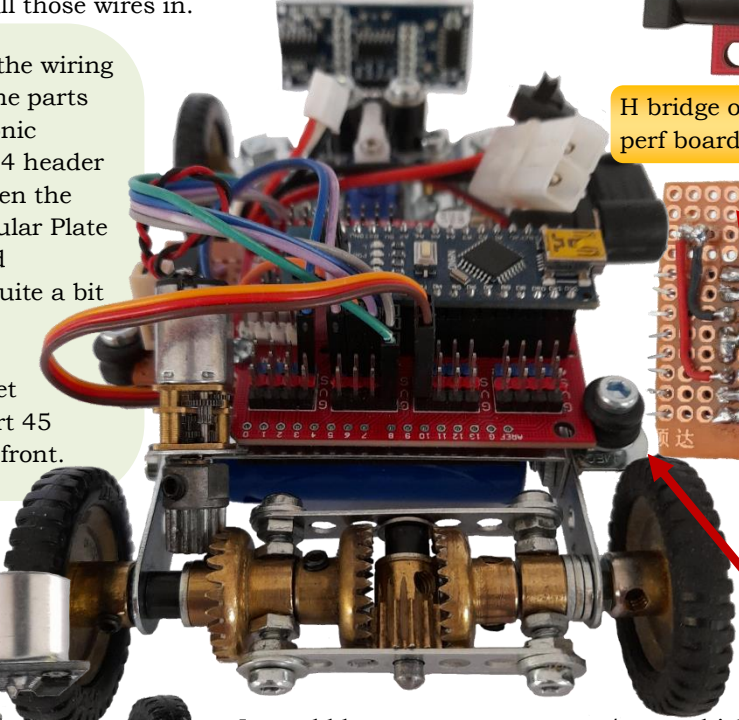
Nano expansion shield

DC jack

Nano



H bridge on perf board.

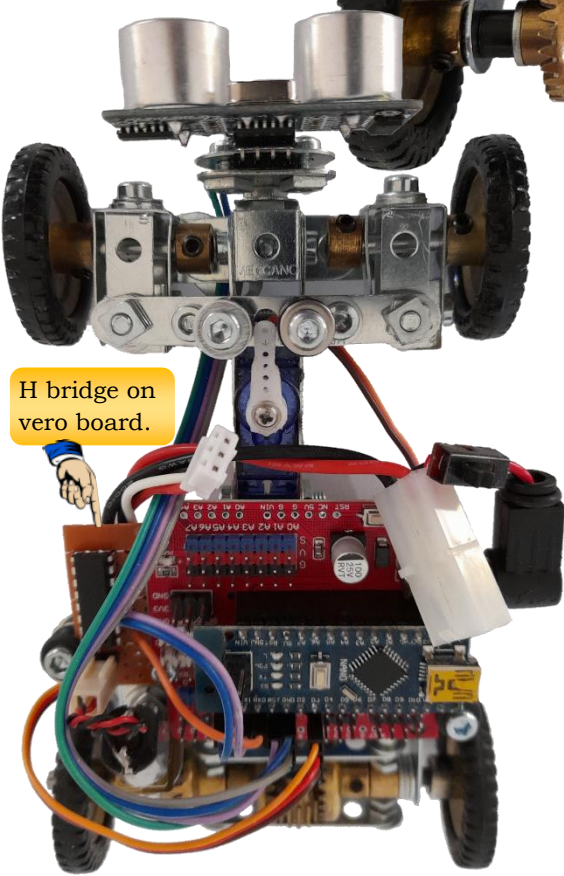


Note: Don't take the power for the motor from the expansion board as it only supplies 5V. Take it from the DC socket to get the full 7.4V.

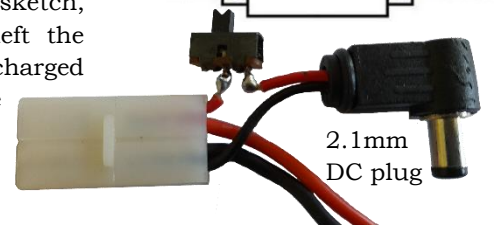
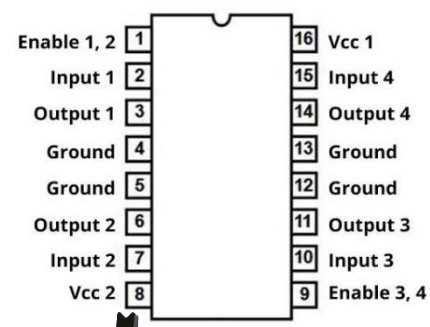
The Nano expansion board can be mounted with part 23c rubber Pulleys which are bolted to the slotted hole on Angle Brackets to allow adjustment. You must use locknuts, or the rubber distorts.

It would be easy to use a motor/servo shield but after writing the article on how to use H bridges I thought it would be more interesting to grab a L293D H bridge from my bag of goodies and put in on a scrap of perf board. Allow 8 holes for the IC pins and 4 more for a 2-way header pin for the motor. You only need to solder one side as we only need 2 channels to control 1 motor. Look at the pinouts to the right. The power for the motor goes to pins 4,5 (Ground) and 8 (+ve). The motor is connected to pins 3 and 6. If Input 1 is set to low and Input 2 high then the motor will run forward. Set Input 1 to high and Input 2 to low and the motor will run backwards. You also need to set pin 1 high to enable both channels but more on this in the section about the sketch, which is Arduino jargon for code. I left the Tamiya plug on the battery so it can be recharged as normal and piggy backed a right angle DC plug with a micro slide switch on the positive lead.

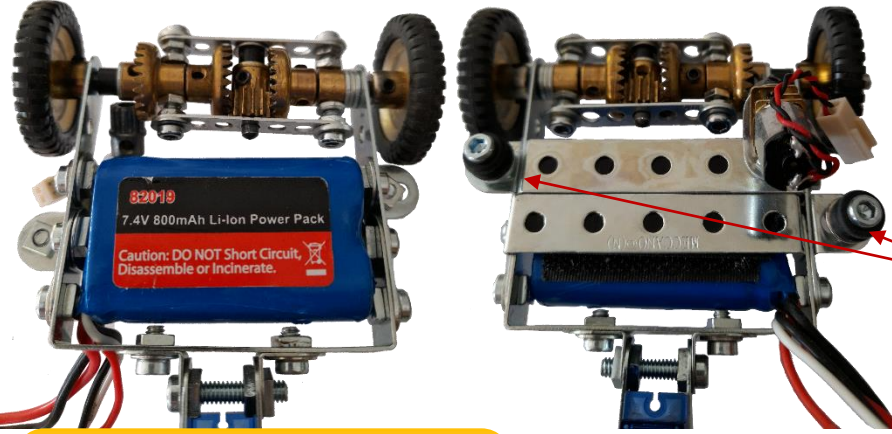
H bridge on vero board.



L293D

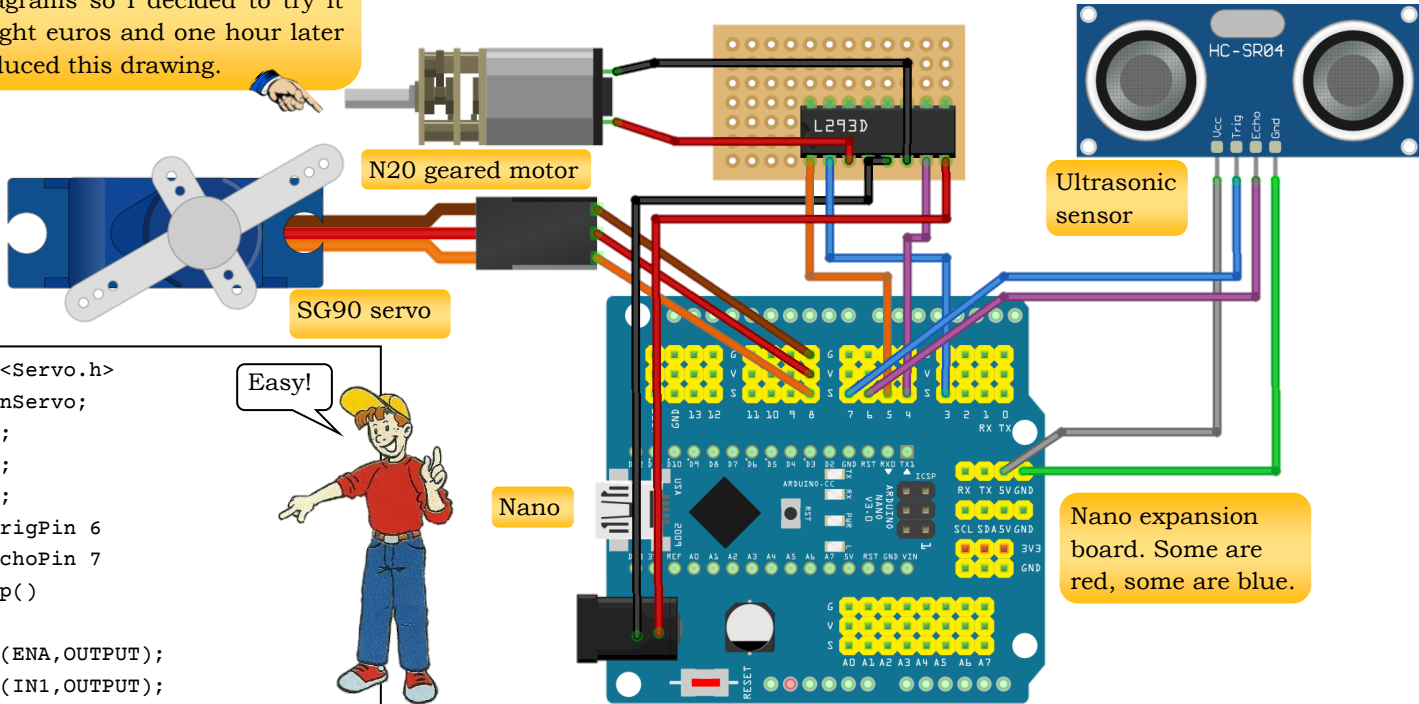


2.1mm DC plug



Mount the 7.4V Li-Ion or LiPo battery as shown using a bit of adhesive Velcro. I added another Double Angle Strip to stabilise it. The home-made perf board with the H bridge is bolted to the Nano expansion board with M3 bolts. You need to drill the 3mm holes in the perf board. The completed assembly slides into the grooves of the two Rubber Pulleys. Make sure nothing is touching the metal before you plug the battery in and switch it on! Now it's just a matter of connecting the wires as shown in the Fritzing diagram below. This is my first attempt at a Fritzing and some wire colours are duplicated to match what I actually used on the model. Next time I'll try to remember to use a different colour for every connection.

Previously I relied on Murray from Diyode Magazine to draw my Fritzing circuit diagrams so I decided to try it myself. Eight euros and one hour later I had produced this drawing.



```
#include <Servo.h>
Servo TurnServo;
int ENA=5;
int IN1=4;
int IN2=3;
#define trigPin 6
#define echoPin 7
void setup()
{
  pinMode (ENA,OUTPUT);
  pinMode (IN1,OUTPUT);
  pinMode (IN2,OUTPUT);
  pinMode (trigPin, OUTPUT);
  pinMode (echoPin, INPUT);
  digitalWrite (ENA, HIGH);
  TurnServo.attach(8);
  TurnServo.write(100);
}
void loop()
{
  long duration, distance;
  digitalWrite (trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite (trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite (trigPin,LOW);
  duration = pulseIn(echoPin, HIGH);
  distance = (duration/2) / 29.1;
  if (distance <6)
  {
    TurnServo.write(130);
    digitalWrite(IN1, LOW);
    digitalWrite(IN2, HIGH);
    delay(3000);
  }
  else
  {
    TurnServo.write(100);
    digitalWrite(IN1, HIGH);
    digitalWrite(IN2, LOW);
  }
  delay(500);
}
```

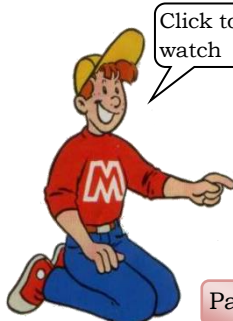


- H bridge 1 Ena - 5
- 2 In 1 - 3
- 3 Out1 - Motor
- 4 Grd - DC Socket -ve
- 5 Grd - DC Socket -ve
- 6 Out2 - Motor
- 7 In 2 - 4
- 8 Vcc - DC Socket +ve
- Sensor Vcc - 5V
- Trig - 7
- Echo - 6
- Grd - Grd
- Servo Sig - 8
- Grd - Grd
- Vcc - 5V

Pinouts as per the Fritzing

I'm a rank amateur at this Arduino coding but it's starting to fall into place. I watched Paul McWhorter on YouTube showing how to control a motor with an Arduino and a H bridge. His example was a 4-wheeled car with steering done by switching the LH motors forward and the RH motors reverse to turn right. His explanation was enough to figure it out for one motor. The servo control was simple as I've used that before in my Rocket Launcher and Marble Maze. The ultrasonic sensor was foreign, so I just copy pasted the code from the Arduino website examples. You can do the same or copy paste my code on the left. The code is also in the NZMeccano gallery.

Sketch. <http://www.nzmeccano.com/image-164255>



# Gears

By John Burke  
(with a little help  
from my friends).



## Are the top 3 examples the same ratio?

At first glance I would say no.

Fig. 1. with the 2 x 1" Gears would have a ratio of 1:1 and the yellow plastic 95t Gears would turn in opposite directions at the same speed.

Fig. 2. with the 19t Pinion and the 57t Gear looks as though the yellow plastic 95t Gear on the right would turn slower. In fact, if I put my mind to it, I'd divide 57 by 19 and tell you that for every 3 turns of the left 97t Gear, the right one would turn once. Or a 3:1 ratio. **NOT SO.**

Figs. 1, 2, 3 and 4 are all **simple gear trains** while Fig. 5. is a **compound gear train**. Let's look at the formula for calculating gear ratios in a **simple gear train** from the Master of Mathematics, Tim Gant.



Fig. 1.

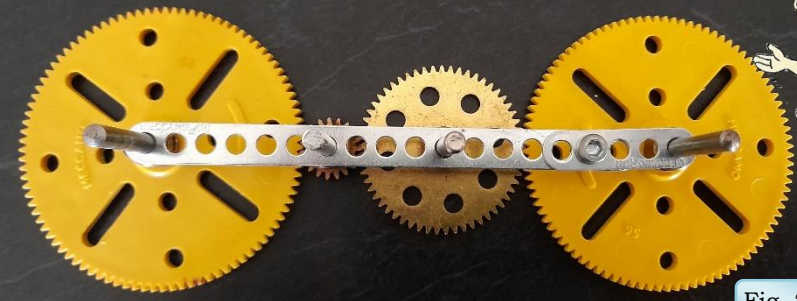


Fig. 2.

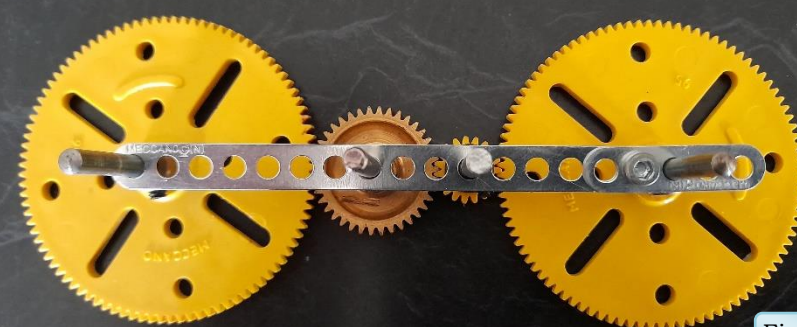


Fig. 3.

Ratio =

$$\frac{t_1}{t_2} \times \frac{t_2}{t_3} \times \frac{t_3}{t_4} \dots \times \frac{t_{n-2}}{t_{n-1}} \times \frac{t_{n-1}}{t_n}$$

Simplified equation.

$$\frac{t_1}{t_2} \times \frac{t_2}{t_3} \times \frac{t_3}{t_4} \dots \times \frac{t_{n-2}}{t_{n-1}} \times \frac{t_{n-1}}{t_n}$$

See how all the intermediate (or idler gears) cancel each other out.

$$= \frac{t_1}{t_n}$$

Final ratio.

Fig. 1. we have  $95/38 \times 38/38 \times 38/95 = 1$  I cheated and used the calculator on my phone.

Fig. 2. we have  $95/19 \times 19/57 \times 57/95 = 1$  Then Fig. 3. is  $95/38 \times 38/19 \times 19/95 = 1$

Any way you do it the gear ratio is 1:1 because idler gears make no difference to the final gear ratio as all the intermediate gears cancel each other out. The gear ratio is always *driven* gear divided by *driving* gear.

Richard Payn explained this to me with a photo, Fig 4. All these arrangements give the same ratio when they are all on separate axes.

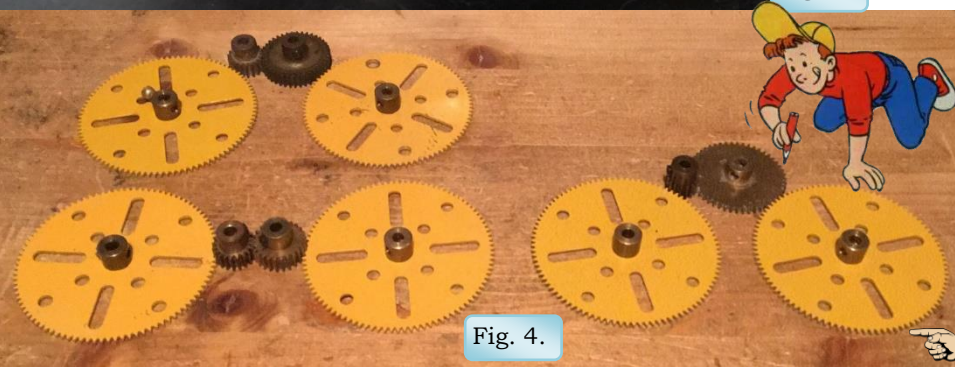


Fig. 4.

Fig. 5. Is a **compound gear train**. This is how you get a reduction in gear trains. To calculate the total reduction, you take each union and multiply by the next union. The first union here is the 19t and 38t while the second union is 19t and 95t. Remembering the *driven* divided by *driving* rule we get  $38/19 \times 95/19 = 10$  so the overall ratio is 10:1 meaning the yellow plastic 19t pinion will turn 10 times for each rotation of the 95t Gear.

In Fig. 6. Below the 38t Gear is an idler so it makes no difference to the ratio, which is 1:1. However, in this example the yellow plastic 95t Gears will rotate in the same direction.



Fig. 5.

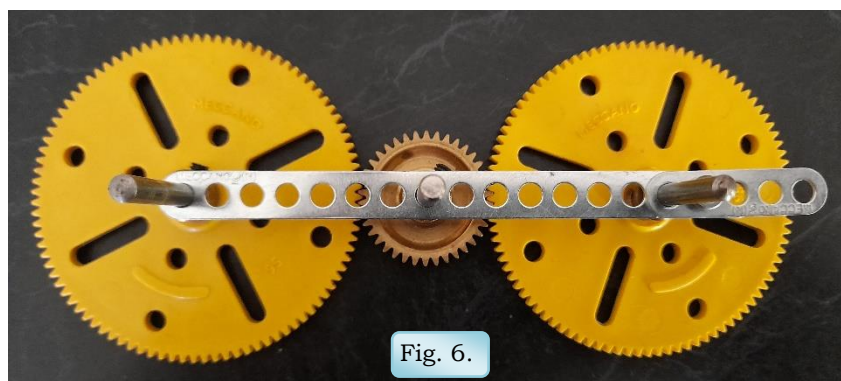


Fig. 6.

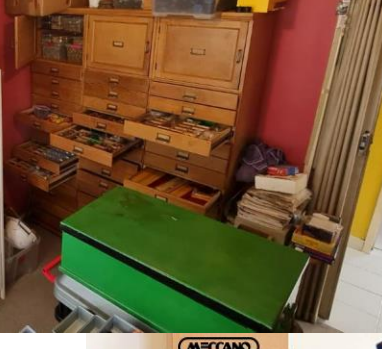
This all came about because Graham Jost built a Hexcaltor and he needed both 95t Gears to run in opposite directions at the same speed. Instinct told him to use 2 idler gears both the same size hence the 2 x 1" gears in Fig. 1. Then Graham noticed Rob Mitchell from the Sheffield Meccano Guild had built a similar Hexcalator but used a 19t and 57t as in Fig. 2. Had Graham realised this counter-intuitive fact he would not have needed to resort to quarter inch spaced narrow strips and the more expensive 1" Gears.



# Show Us Your Meccano Room



## Anthony Els - SA



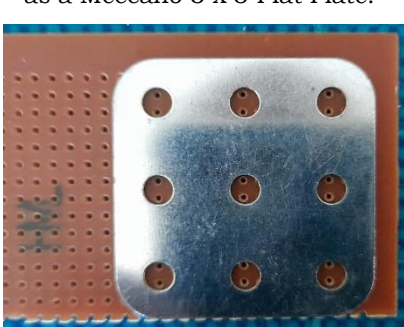
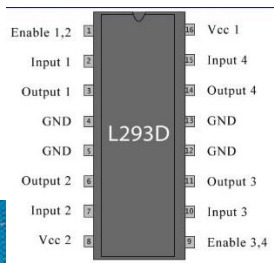
I store my Meccano in oak Singer sewing machine cabinets and purpose made melamine drawers. I've been caught in three avalanches now!



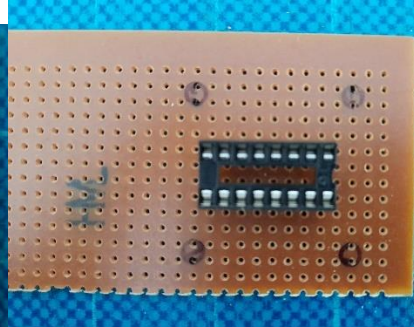


# Make your own motor shield

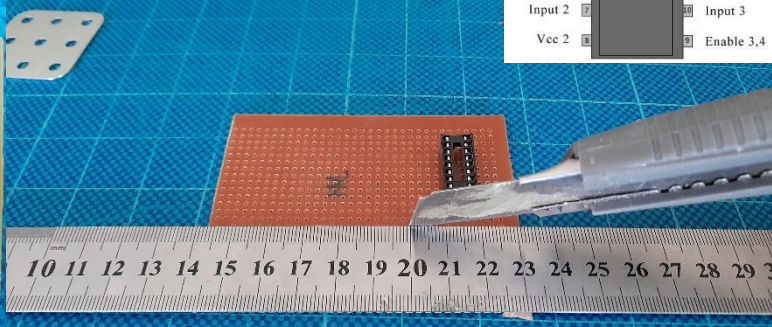
After making my own perf board H bridge for the Obstacle Avoidance Car I thought it would be neater to make another using vero board to take advantage of the copper tracks and it seemed logical to make it the same size as a Meccano 3 x 3 Flat Plate.



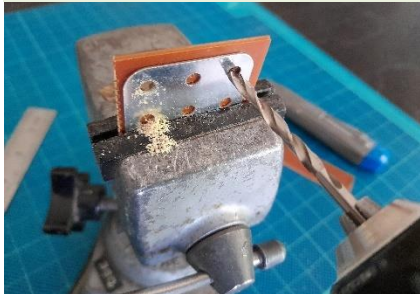
1. Position the Flat Plate and mark the holes.



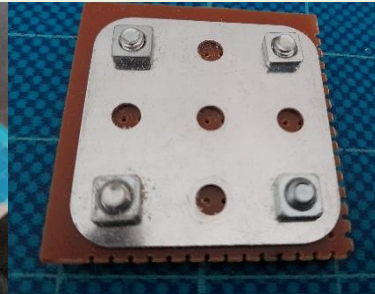
2. Place the chip socket temporarily to make sure it fits.



3. Score along both sides of the holes with a utility knife and snap along the scored line carefully with your hands.



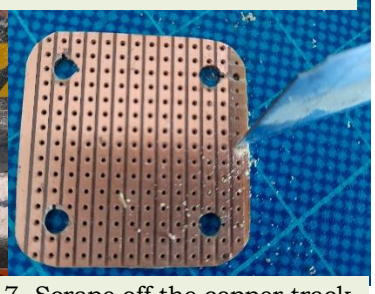
4. Drill 4mm holes on high speed and don't push too hard.



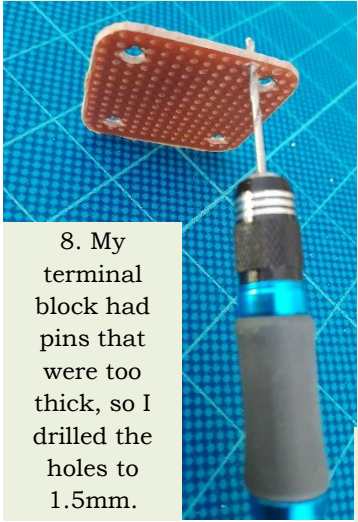
5. Bolt the plate on ready for sanding.



6. Sand to shape.



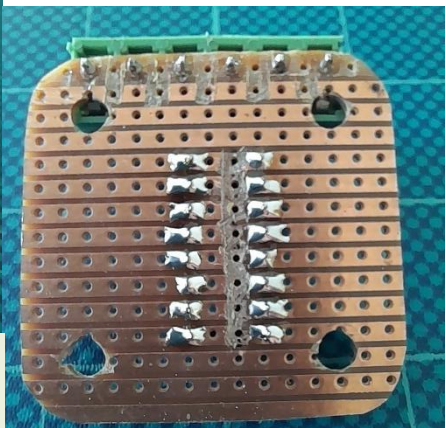
7. Scrape off the copper track. After doing this I realised I had nothing left to solder on to but what's done is done. The solder blobs hold the terminal block in anyway.



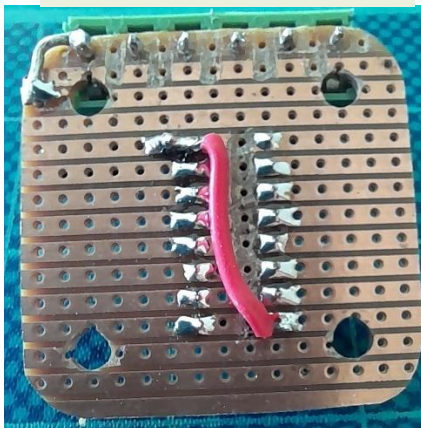
8. My terminal block had pins that were too thick, so I drilled the holes to 1.5mm.



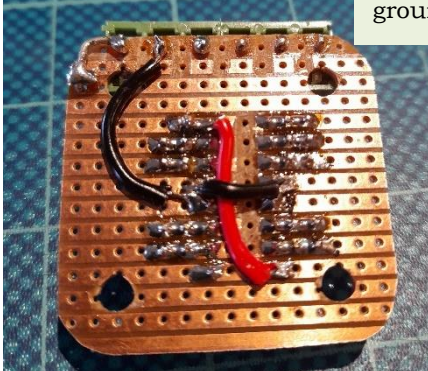
9. Insert the IC socket and mark where to cut the track. Don't cut the tracks for ground (4,5,12,13) like I did!



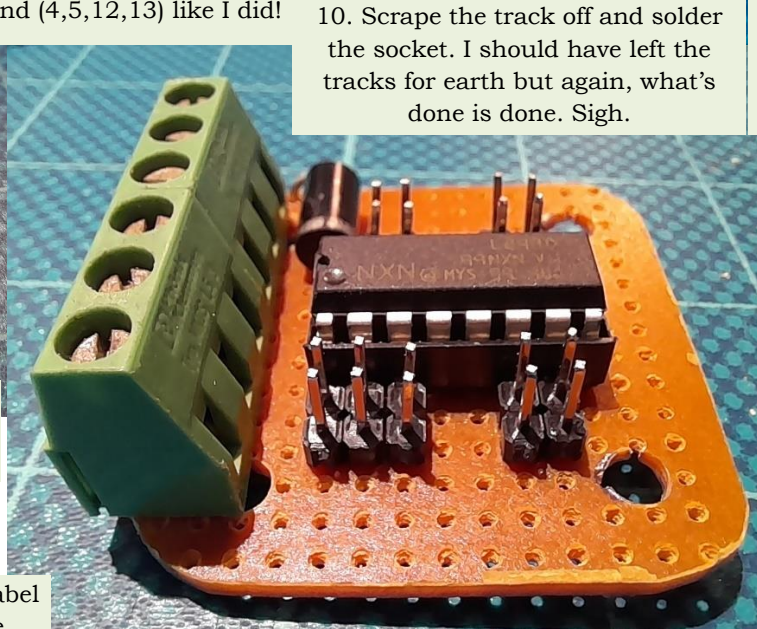
10. Scrape the track off and solder the socket. I should have left the tracks for earth but again, what's done is done. Sigh.



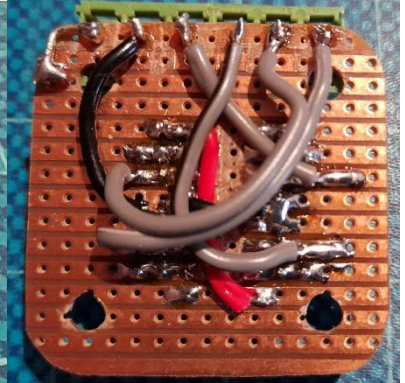
11. Solder a red wire from pin 1 to pin 9 for Vcc and solder a diode from pin 1 to the + of the terminal block. 1N4004 is OK.



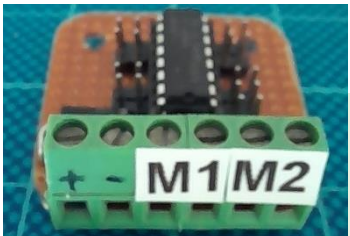
12. Solder a black wire from pins 4,5,12 and 13 to the -ve of the terminal block.



14. I used 2 header pins for each control pin to give a bit more scope for piggy backs etc.



15. Solder M1 and M2 terminals to the L293D. M1 to 3 (Output 1) and 6 to (Output 2). M2 to 11 (Output 3) and 14 to (Output 4).

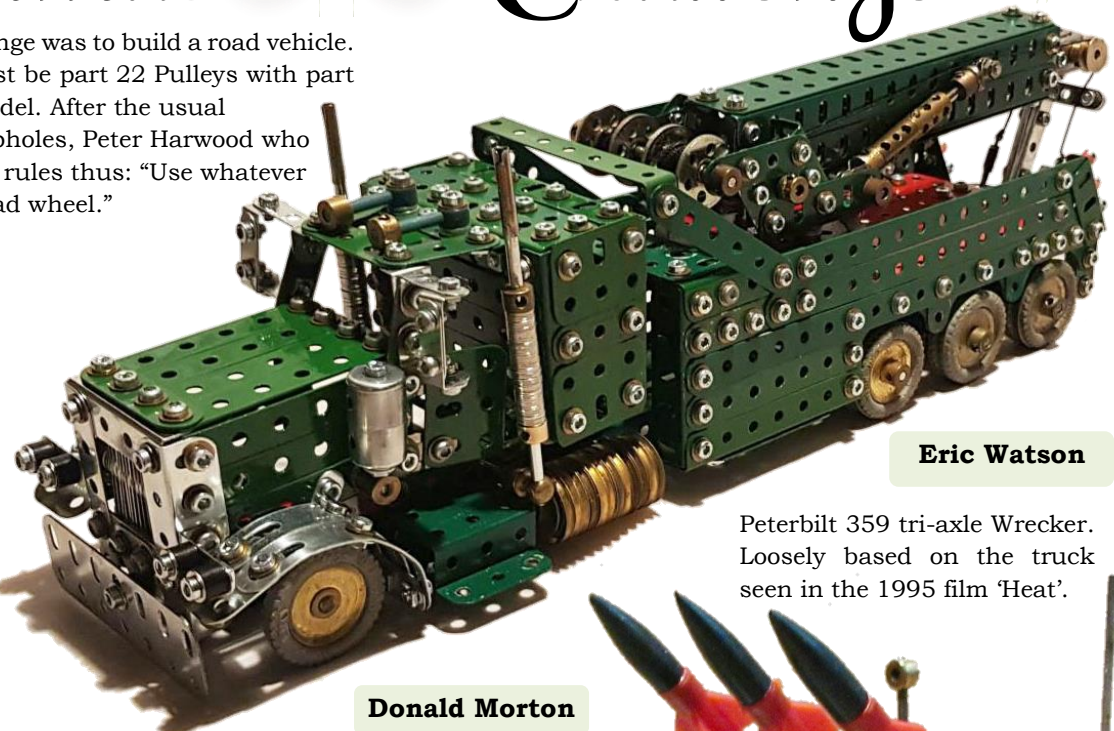
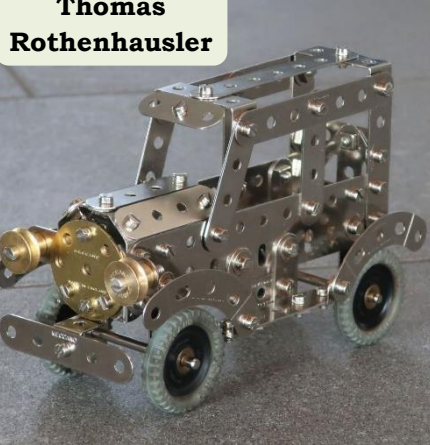


13. Label the terminal block.

# Christmas Challenge

The 2021 Spanner Christmas Challenge was to build a road vehicle. The rules were: the road wheels must be part 22 Pulleys with part 142c Tyres and it must be a new model. After the usual discussion on technicalities and loopholes, Peter Harwood who proposed the challenge, clarified the rules thus: "Use whatever else you like so long as it is not a road wheel."

**Thomas Rothenhausler**



**Eric Watson**

Peterbilt 359 tri-axle Wrecker. Loosely based on the truck seen in the 1995 film 'Heat'.

**Peter Harwood**

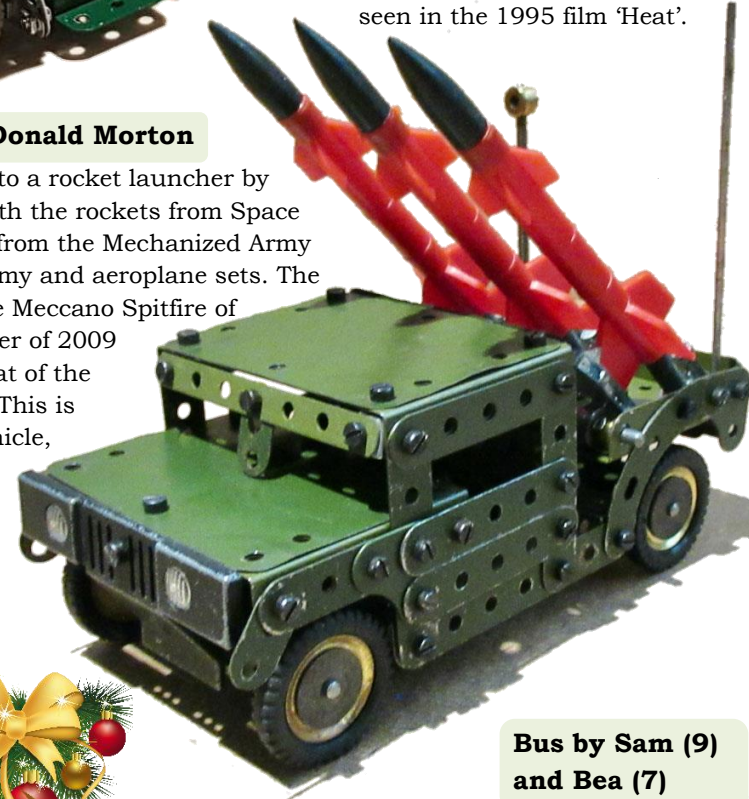
I came across this 1913 3½ ton lorry built by McCurd & Co. in Hayes. The chassis was used for many types of vehicle, such as the van in Tate and Lyle livery in the film Chitty Chitty Bang Bang.



**Steve Butterworth**

**Donald Morton**

Humvee converted to a rocket launcher by Raytheon. Along with the rockets from Space 2501, I used parts from the Mechanized Army set and the later army and aeroplane sets. The green colours of the Meccano Spitfire of 2005 and the Harrier of 2009 are very close to that of the Mechanized Army. This is certainly a road vehicle, but usually not welcome along the neighbourhood streets.



**Bus by Sam (9) and Bea (7)**



22-wheel Missile Transporter Erector Launcher (TEL). The front four pairs of wheels steer one way while the rear three pairs steer in the opposite direction. This arrangement has been replicated in the model and activated through a steering wheel at the rear. The launching base detaches after the missile has been erected and can be levelled with adjustable feet. The model weighs nearly 3.5kg and has not been motorised.



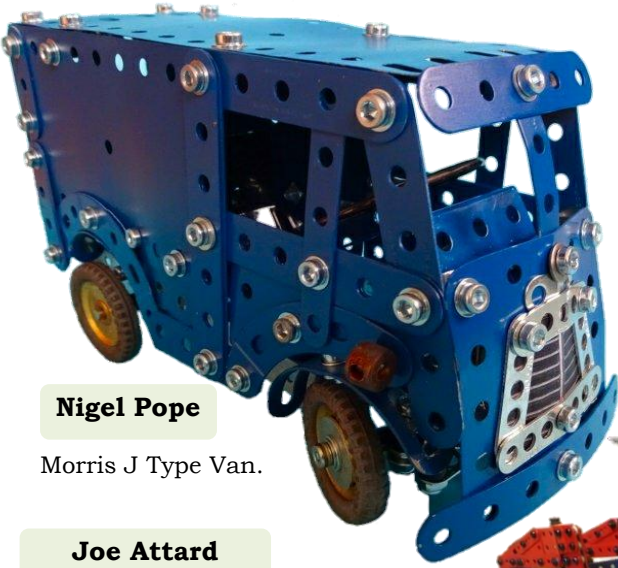
**Philip Webb**

Tanker based on one of Nick Rodgers' Transport Fleet.



**Nigel Pope**

Morris J Type Van.



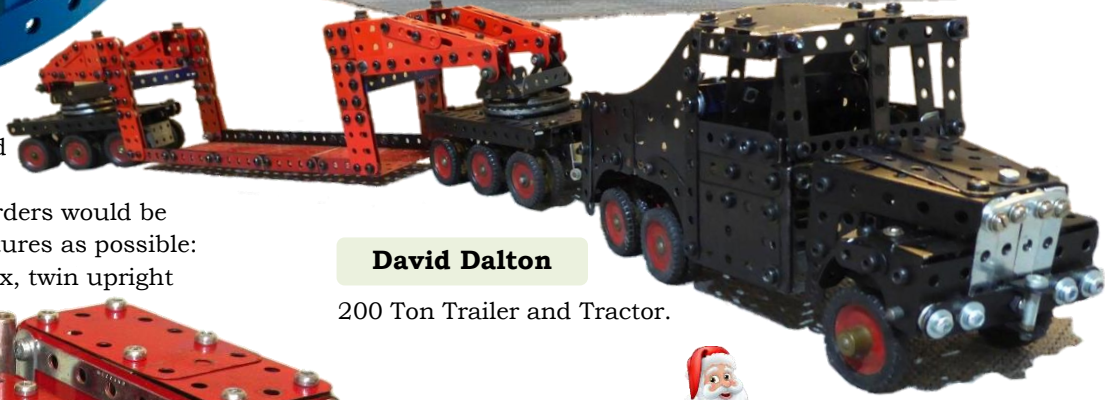
**Joe Attard**

Scaled down version of my American Tractor. Wheels and tyres determined the ratio, about 30% in size. At that scale, I thought narrow strips and girders would be better. I tried to include as many features as possible: 4 air horns, huge air cleaners, toolbox, twin upright exhausts, independent rear suspension, simulated front suspension, etc, etc. The black washers and bright spacers are Märklin, the rest is Meccano.



**David Dalton**

200 Ton Trailer and Tractor.



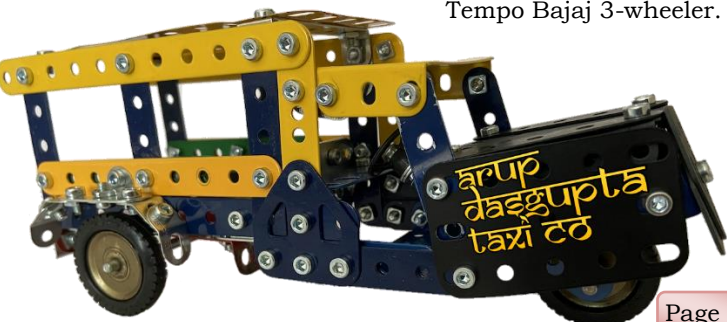
**Ted Pritchard**

Steering from the spare wheel on the back.



**Arup Dasgupta**

Tempo Bajaj 3-wheeler.

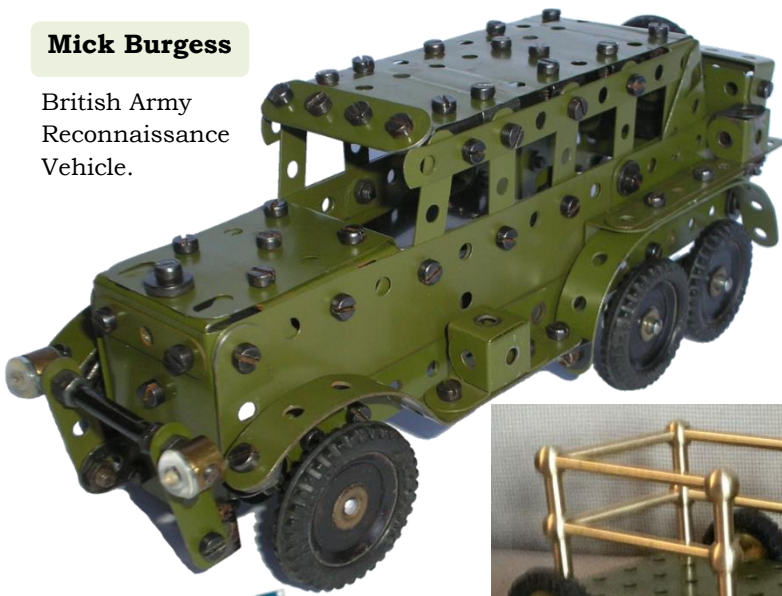


**Peter Harwood**

40-ton Lorry.

**Mick Burgess**

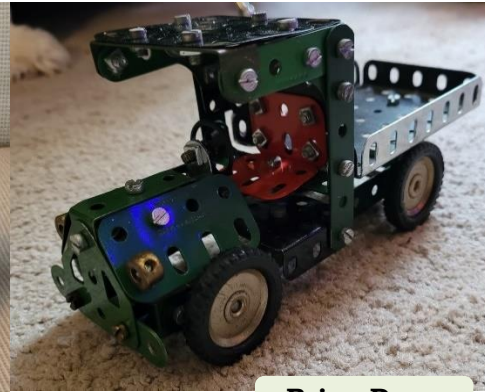
British Army  
Reconnaissance  
Vehicle.



This model is based on the Dinky Toy No.152b British Army Reconnaissance Vehicle issued between 1937 & 1954. Constructed from a mix of Army and Combat Multikit parts together with some Korean war blackened parts. Only Meccano parts were used. No electrics. It is fitted with a Magic Motor and runs quite well on smooth surfaces; the model weighs 713g so is quite heavy. The rear wheels are articulated, and the front wheels are mounted in the slots of some Fishplates so the whole model is quite flexible in transit. 8 x 1" Pulleys and 7 x 1" Tyres were used in the construction. Due to the shortage of appropriately coloured parts a few items were cut down to create un-available lengths.



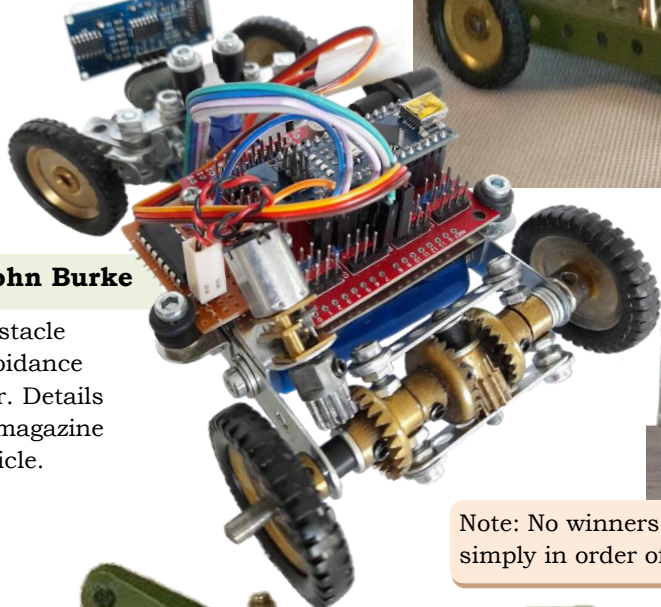
**Stuart Borrill**



**Brian Dawe**

**John Burke**

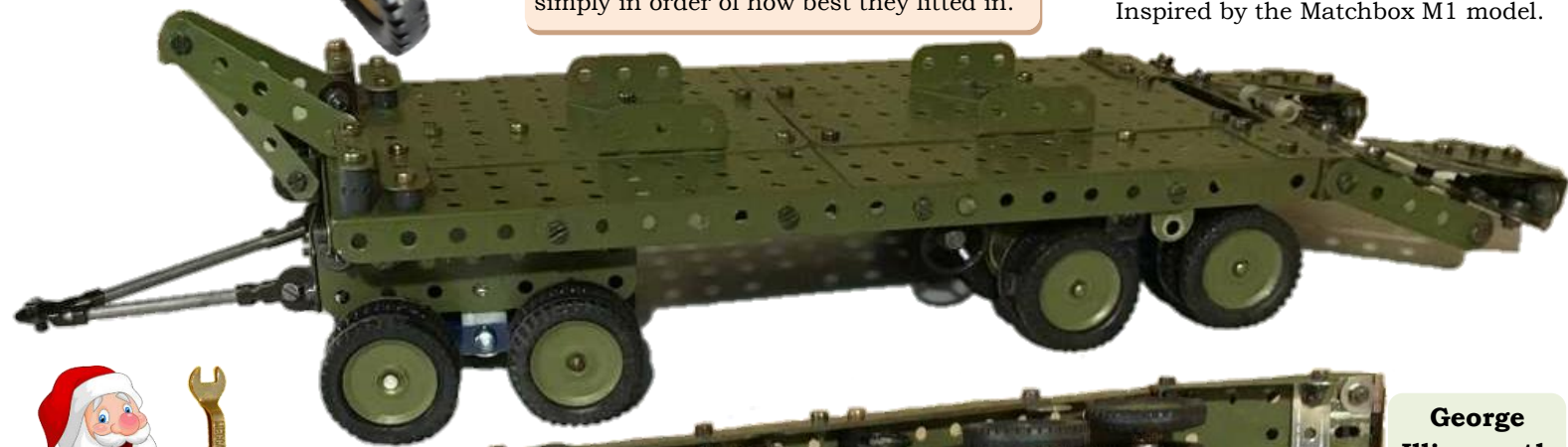
Obstacle  
Avoidance  
Car. Details  
in magazine  
article.



**Jef Lockyer**

Note: No winners or losers. Photos are simply in order of how best they fitted in.

Caterpillar Earth Mover.  
Inspired by the Matchbox M1 model.



**George Illingworth**



Dyson 50-ton Trailer.  
I realise that many of you think that I can only build fire engines.



The first entries in this competition suggested that more wheels were good and fire engines only have a few, so my mind went back to the 1960s when we had a Dyson 50 ton Trailer on which we moved the Centurion ARV towed by an Antar tractor. This trailer had 32 wheels. Model at 1/24th scale. – George.

# This Month's Meccanoboy

## Howard Somerville - UK

*When were you born?*

Sorry, I don't remember (I was very young at the time).

*and where?*

In Hammersmith, and I've lived in Ealing (a London suburb) - in the same house - ever since.

*Where did you go to school?*

In a now-extinct private school in Ealing founded over 200 years ago. By a strange coincidence, the late Spanner Don Somerville (no relation) went to the same school and was flagellated by the same terrifying headmaster.

*Did you have Meccano as a boy?*

Oh yes indeed. All my pocket money went on additional parts. I was the bane of the life of the assistants at the local toyshop, tying them up while I pored over the green price list, inspected wrapped parts, calculated costs then changed my mind.

*Did you always build with Meccano or was there the usual cars, girls, party hiatus in your teenage years?*

Well yes, at thirteen, a familiar story unfolded. I was expected by then to have "grown out" of Meccano and was prevailed upon to let my collection be sold, for £8 - a fraction of its value, even then. I had acquiesced in the sale, but I never really forgave my mother.

*So, what rekindled your interest?*

Normally, when boy meet girl, Meccano gets relegated permanently to the attic of his life. Yet soon after I met Shirley in 1983, the opposite was to happen. Our first summer holiday was in Crete - my first stay at a foreign beach resort since childhood. And there I was to undergo a strange, impassioned, Damascene conversion. Suddenly and unexpectedly, the sun, sand and the state of relaxation reignited the old yearning for Meccano, dormant for twenty years, and it was too intense to ignore.

*Are you married?*

I was, happily but only briefly. Shirley and I married, eventually, in 2011, but sadly she died 7 months later, aged 55. There were no children.

*Did she share your interest in Meccano?*

Although she initially resented the competition from Meccano for my time and attention, she came along to club meetings, and appeared regularly at Skegness and other main events.



Howard looking quite dapper above and walking the aisle with Shirley in 2011 below.

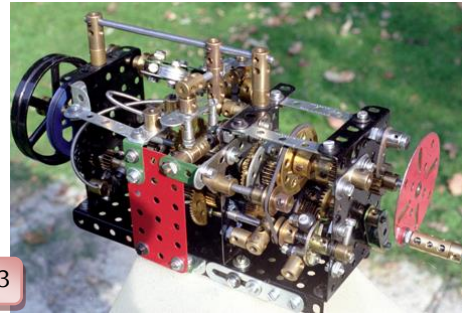


*What did you do for a living? Tell me all your jobs in order.*

I trained as a computer programmer in the 1970's, in the steam age of computing - punched cards, coding sheets and big mainframe computers with less processing power than a modern smartphone and I stayed in IT ever after, working for firms large and small and finally freelance. I applied some of the IT skills to Meccano, creating the Inclusive Parts List website, and in the 1990's writing the inventory application MeccInv, which is still sold and used today.

*What was your first model?*

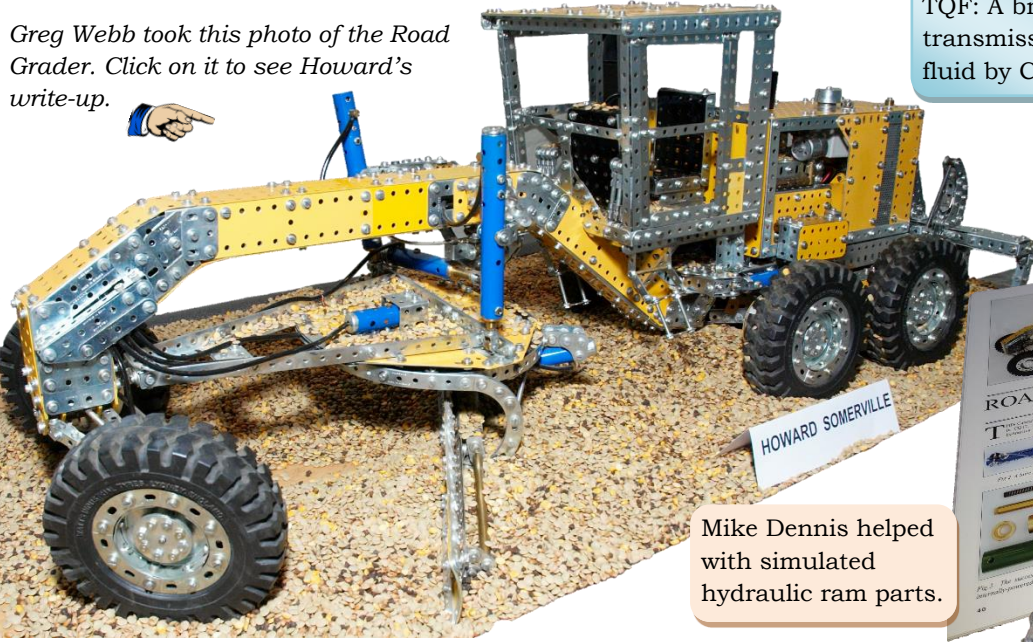
I can't remember, but my first model after returning to the hobby in 1984 was an automatic transmission. It worked, but absorbed 90% of the motor's power, so the design was unlikely to go into production. The model was demonstrated by turning the red handle, right (very fast and hard!) As input speed increased, drive was taken up by a differential, the free pulley on one side of which was progressively braked by a cord. Input speed was measured by a layshaft which via a slip clutch placed a bias on a torsionally sprung rod. The cord was wound on this rod. As the rod twisted, the cord pulled tight, braking the differential pulley, and drive passed to the transmission proper (left).



*What's your best model?*

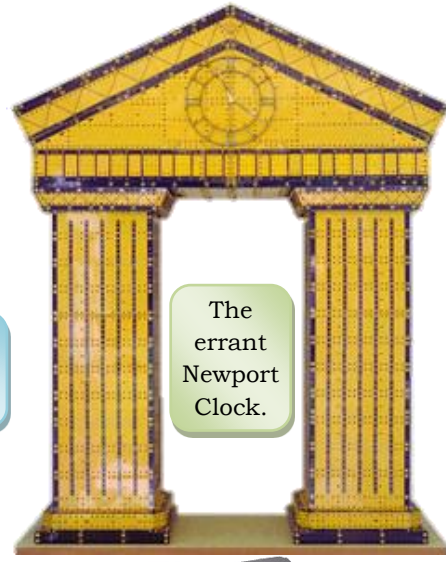
Very difficult to say, because my two most complex and original models (the SLR Camera and the original Newport Clock) never worked properly. My Road Grader, built in 1992 and still extant, may deserve the title, and was the subject of two CQ articles. The first was about its original incarnation using real hydraulics and related the saga of the Perspex valves which exploded on the first pressurisation, coating my ceiling and walls with TQF. The second was about the model's rehabilitation by being retrofitted with Mike Dennis-made simulated hydraulics. Mostly I've concentrated on historic steam engines. Although I've chosen ones with the most complex valve gear and motions, these devices basically go round and round and up and down and can be made to work.

Greg Webb took this photo of the Road Grader. Click on it to see Howard's write-up.



TQF: A brand of transmission fluid by Castrol.

Mike Dennis helped with simulated hydraulic ram parts.



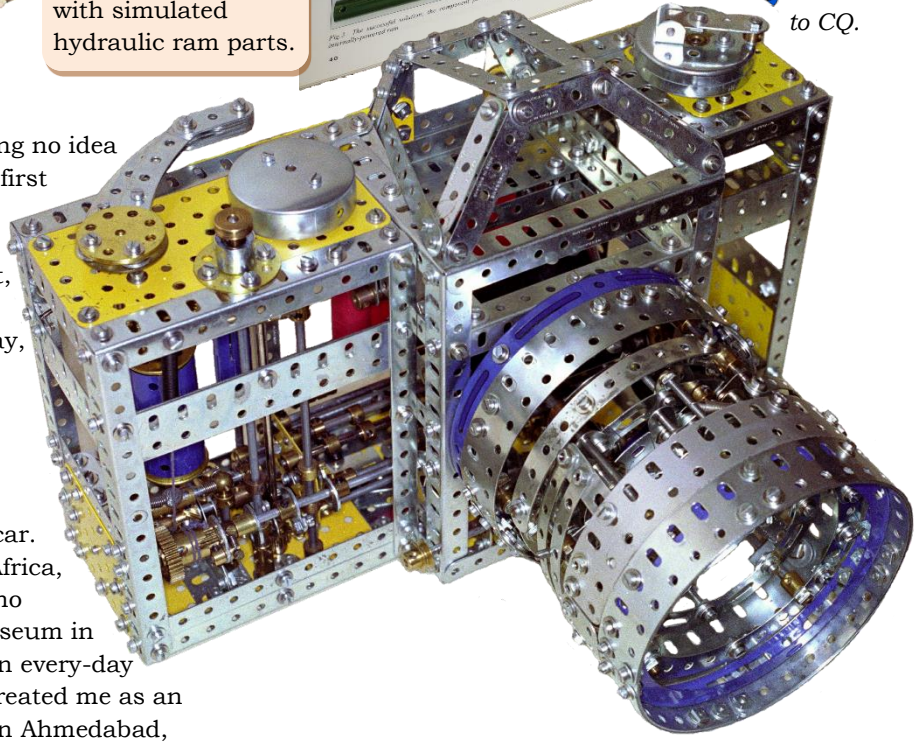
The errant Newport Clock.



Click to subscribe to CQ.

*Tell me about the SLR Camera.*

These complex cameras always fascinated me but having no idea how a real SLR was constructed, I designed mine from first principles. It had all the mechanical features of a contemporary 35mm SLR, including an instant-return mirror, automatic diaphragm, lever-wind film transport, helical focussing, and a variable-speed focal plane shutter, albeit at a larger-than-life scale. Needless to say, with no glass and with light entering through every Meccano hole, it could not be used to take pictures.



*Have you travelled much?* Yes, widely, especially in the last decade. My most memorable trips were to China, India, Burma, Borneo, Ethiopia, Bhutan and Madagascar. In 1988 I was sent on a 4-week secondment to South Africa, a Meccano "World of Giants" - big houses, huge Meccano models and Peter Matthews' hangar-sized Meccano Museum in a theme park outside Johannesburg which served as an every-day meeting venue for the Transvaal Meccano Guild, who treated me as an honoured guest. I was also a guest of Ashok Banerjee in Ahmedabad, India, with Stan Baker and Tim Robinson. It was very interesting to say the least, being in a part of the country where few western tourists go, and very much the 'Real India'.

Trip to India in 2012 with L-R, Ashok, Tim Robinson, Stan Baker, Lisa Robinson, and Howard.

Peter Matthews' Meccano Museum



*Tell me about the infamous Dunhill project.*

In 2004 I was invited to help to design and build a working Meccano window display for Alfred Dunhill's flagship store in London, using the vast private Meccano collection of Richard Dunhill, the company patriarch, in the garage of his home in Denham. Our team of three from the West London Meccano Society had just over 2 months, working full-time, to finish it in time for the Christmas season, which we just managed to do.

The mammoth construction consisted of a 14' girder bridge standing on 8' high towers, each containing a working, 3-story elevator with, as a centrepiece, a concentric, contra-rotating carousel to carry Dunhill merchandise. The project, with its challenges, stress, glamour, and ultimate triumph was a bonding experience like that had by sailors who, in peril on the sea, had served together.

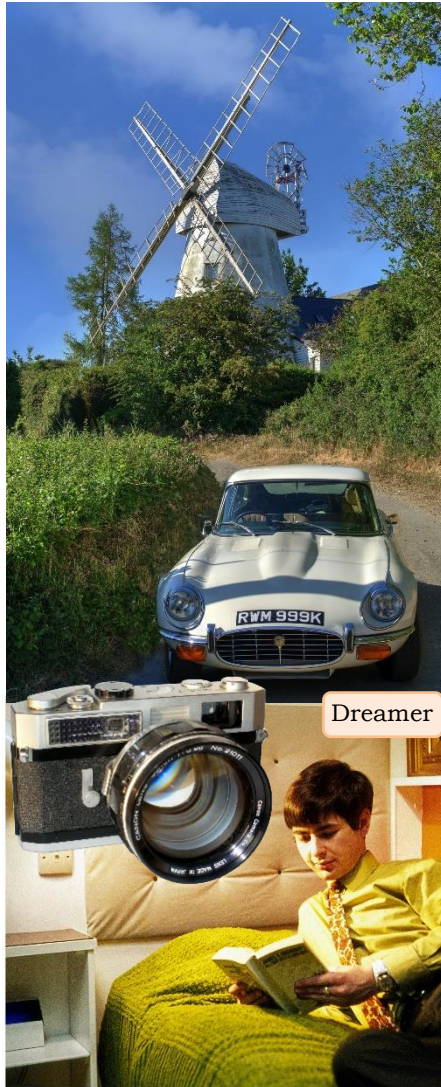
*What other interests do you have?*

They include rambling and classic cars.

I have an E-Type Jaguar, which I took to SkegEx once to show off. It was admired by all but broke down on the way home leaving me stranded on a red route for the entire Sunday night. Perhaps it served me right.

*Tell me about your photography.*

A keen photographer from my early teens, while others worshipped film and sports stars, I worshipped cameras, and to have had a (then completely unaffordable) Leica, Canon, Zeiss, Minolta or Nikon flagship camera of the time would for me have been life's ultimate joy, or so I thought. In the 2000's, when those cameras were appearing on eBay at bargain prices, I amassed a collection of over 50 cameras from the 1950's and 60's, many of which I've used. It was the same delayed gratification as that had from buying the Jaguar and Meccano collection, even if the joy soon faded. I now use a digital camera and enjoy the (hitherto unimagined) possibilities that digital photography has created, but still take the same twee, pictorial subjects - landscapes, thatched cottages, windmills, churches, canal boats, flowers, quaint villages, waterfalls and castles - that I did 50+ years ago, and now have enough such pictures to launch a thousand chocolate boxes and calendars.



Dreamer

*How do you look back on your life? Any regrets?*

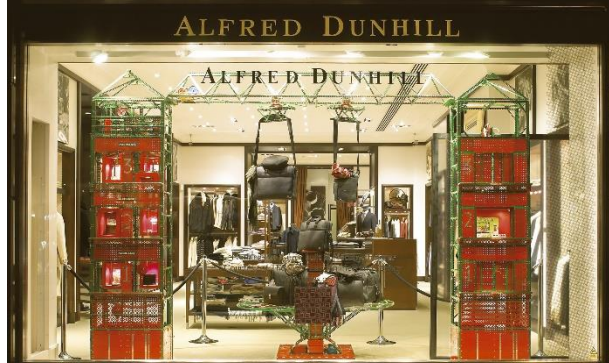
Too many to mention. I've oft pipe-dreamed about having my life again knowing what I know now, but I'd probably have made as many mistakes, albeit different ones. We do what we do because we are who we are, and freewill (if it even exists) I think plays little part in it.

*Has Meccano helped you in life?*

Enormously, not least on the social side. I've met many talented and interesting people, some of whom became my most valued and admired friends.

*What are your plans for the future? Any new models on the horizon?*

I prefer not to tempt fate by looking too far ahead but am hoping to complete my current model for SkegEx 2022, if there is one. It's a rebuild of my 1993 model of the Newport Clock - the only model which I ever regretted having taken down. The new model, on which I've been working on and off (mostly off, as other things have intervened) is better designed than the original and will work!



*Are you in a Meccano Club?*

Many. The first club I joined, in 1985, was the WLMS, which was local to me, and for the last 15 years I've been Membership Secretary. The photo above is of the WLMS team with Dunhill's top brass. From left to right. Colin Davies, Howard Somerville, Paul Joachim, John Abbate (Dunhill), Roger Poulet and Richard Dunhill. To the left is Howard's Jaguar hiding away during lockdown in Great Bardfield, Essex.

*What did you dream of as a youngster?*

Jaguars and cameras, especially the Canon 7, a Leica M rival. It was notable for its unique f0.95 standard lens. More than a stop faster than an f1.4, it was called the "Dream" lens because it supposedly admitted 4 times as much light as the human eye.

*Any advice for young people today?*

I cannot offer them any advice, because I was never young in the world of today and have no better idea than them of what the future holds. I can only wish them well.

*What was your crowning achievement?*

A pivotal moment in my Meccano life was in 2006 when Geoff Wright was forced, suddenly, to retire. The famous MW Models shop had closed in 2003, but Geoff had, trading as MW Mail Order, continued selling Meccano literature and software (MeccInv included) from home. While it was still a going concern, I bought MW from him lock, stock and barrel, and that included The Meccanoman's Club with its copyrights, entitlements, and the title of 'Chief Meccanoman' which I became in lineal succession to Frank Hornby, G. Maurice Morris, and Geoff Wright. It's an honour which I shall never quite live up to.



Geoff Wright, in Meccano Wonderland.

Follow Howard on Flickr



<https://www.flickr.com/photos/14463685@N07>

We are John & Johnny. A father and son team who like Meccano. We're nothing to do with Spin Master who own the brand. Contact us at

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<https://nmmg.org.uk>

<https://www.selmec.org.uk>

<https://southwestmeccano.org.uk>

<https://londonmeccanoclub.org.uk>

<http://www.hsomerville.com/wlms>

<http://www.northwestmeccano.co.uk>

<https://northeasternmeccano.org.uk>

<https://www.meccanoscotland.org.uk>

<http://www.corlustmeccanoclub.co.uk>

<https://runnymedemeccanoguild.org.uk>

<http://www.midlandsmeccanoguild.com>

<http://www.internationalmeccanomen.org.uk>

Other Countries

<http://club-amis-meccano.net/>

<http://www.meccaninfos.com.ar/>

<http://www.meccanogilde.nl>

<http://meccano.free-bb.fr/>

<https://www.aceam.org/es/>

<http://www.meccanoweb.es/>

<https://www.metallbaukasten-forum.de/>

<http://www.amsclub.ch/>

<http://www.la-roue-tourne.fr/index.php/le-meccano/notices-et-plans>

USA and Canada

[https://www.spinmaster.com/brand.php?brand=cat\\_meccano](https://www.spinmaster.com/brand.php?brand=cat_meccano)

<https://www.usmeccano.com>

<http://www.meccano.com>

<http://www.cmamas.ca>

<http://www.bcmeccanomodellers.com/meccano-in-canada.html>

<http://www.meccanoquebec.org/index2ang.html>

<http://www.melright.com/meccanosales/>

New Zealand

<http://www.nzmeccano.com>

<http://www.nzfm.co.nz>

<https://www.facebook.com/MWT-Meccano-Club-1476153515979522/>

Australia

<http://www.mmci.com.au>

<http://www.sydneymeccanomodellers.org.au>

<http://www.webjournalist.com.au/maylands/index.html>

South Africa

Meccano Club of South Africa

<http://www.mecworld.co.za/cmpr/>

Personal pages

<http://www.meccano.us>

<https://www.alansmeccano.org>

<https://www.meccanoindex.co.uk>

<http://www.meccanokinematics.net>

<http://www.users.zetnet.co.uk/dms/meccano>

<http://www.dalefield.com/meccano/index.html>

<https://neilsmeccanoandstuff.jimdo.com/neil-s-meccano-models>

Meccano suppliers

<http://www.meccanohobby.co.uk>

<https://www.meccanoshop.co.uk>

<http://meccanoman.co.uk/catalog>

<https://www.meccanospars.com>

<https://ralphsshop.com>

<http://www.hsomerville.com/mwmailorder>

<http://www.metalconstructiontoys.com>

<http://www.meerlu.com.au/>

<https://tinyurl.com/AshokBanerjee>



Doctor! Doctor! - You have to help me out!  
Certainly, which way did you come in?  
- Michael J Walker



Doctor! I said to the baker "How come all your cakes are 50p but that one is £1?"

He said: "That's Madeira cake." - Jimmy Chan.

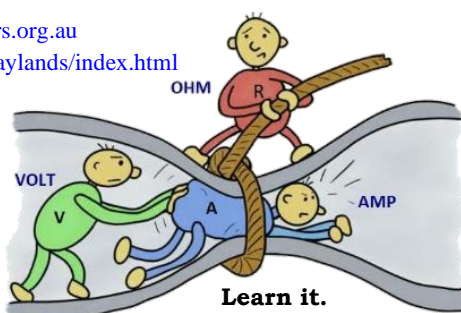
A musician parked his car in a tough neighbourhood and left his accordion on the back seat concealed under some newspapers. When he returned, his heart sank at the sight of a smashed rear window. Someone had thrown 2 more accordions into the car. - Dave Heathcote.

NEW!



**Tip:** Use Chrome for foreign language sites.

A banner will pop up at the bottom of the page offering to translate to English.



Learn it.  
Live it.  
Love it.

Meccgear Jeff Clark New Zealand  
sales@meccgear.co.nz

Pricelist with photos can be downloaded here

<http://www.nzmeccano.com/image-151916>

Bespoke parts from Corlust Meccano Club

Ian Wilson [bespokecraftshack@gmail.com](mailto:bespokecraftshack@gmail.com)

Mike Rhoades. Link to price list below.

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I went to the doctor today. He said I was paranoid. Well, he didn't actually say it, but I knew what he was thinking. - Reg Barlow.

The inventors of the Ferris wheel and the merry-go-round never met each other. They moved in different circles.

A couple were Christmas shopping. The shopping centre was packed, and as the wife walked through one of the malls she was surprised when she looked around to find that her husband was nowhere to be seen. She was quite upset because they had a lot to do and so she became so worried that she called him on her mobile phone to ask him where he was.

In a quiet voice he said, "Do you remember the jewellers we went into about five years ago where you fell in love with that diamond necklace that we couldn't afford, and I told you that I would get it for you one day?"

The wife choked up and started to cry and said, "Yes, I do remember that shop."

He replied, "Well, I'm in the pub next door." - Doug Hedgley

Doctor! Doctor! I snore so loud I keep waking myself up!  
Sleep in another room, then! - Michael J Walker.

Breaking news. A man who sued an airline for losing his luggage has lost his case.

An engineer, a statistician, and a physicist are out hunting. They spot a deer, and each take a turn to try and bag it. The physicist goes first. He pulls out his lab book and quickly calculates the trajectory of the bullet, assuming it is a perfect sphere in a vacuum. The bullet falls 20m short of the deer. The engineer goes second. He pulls out his engineers' pad and book of projectile assumptions. After a few minutes he's ready, he takes aim, and he fires. The bullet lands 20m past the deer.

The statistician leaps in the air shouting, "We got it!"

When one door closes another one opens.  
Other than that, it's a pretty good car.

If you don't look back on your younger self and think, "I was so stupid then!", you're probably still stupid.