So, taking the bull by the horns I decided to have a go with one of the not-too-expensive double din head units on offer via t'interweb. I decided on a Chinese unit made by Joying. They have a UK web site www.carjoying.co.uk and a German warehouse, so it looked a safer bet than most eBay stuff. My birthday was looming so the wife and kids agreed to chip in.

I'm no connoisseur of audio but just wanted some Android goodies in the van which is a 2007 Mark Two (new shape) 2 litre long wheelbase Scudo Combi. I wanted to be able to play my own music either from my Galaxy Note 3 or some other source that my factory radio couldn't do (it had a knackered cd drive as well as no Bluetooth or mini-din plug inputs). I also wanted a decent GPS as my phone, although brilliant with Google Maps, gets way too hot over not too many miles. The other thing I'd fancied was reversing sensors as my mate who drives me around quite a bit is crap at reversing and can't manage without help. He has sensors on his own van, see.

I did oodles of Googling before jumping in as I was very wary of cocking the whole van up having never heard of Canbus, but hey in I went. Before boring you with minute detail I'm happy to report a successful outcome. The unit I chose was the latest Android 5.1.1. Lollipop double din head unit and I paid 210 quid for it direct from Germany. It took about 10 days to arrive so may have started out in Hong Kong before heading for the Motherland. This is it – the Universal model.

You can read the spec yourself on their web site so no repeats here.

I couldn't find ANYTHING exactly representative of the standard Scudo radio wiring but I mooched around Googledom for ages and pulled some info from (don't be scared by this!) the Vauxhall Nova forums (gulp, I hear you crying) and Fiat Punto stuff on here as well as some American audio forums (Google brings them up, unsurprisingly, but there are a few interesting snippets around). I spent more time looking for radio harness adaptors/convertors than any other aspect of this job but I think it was worth the effort. I hope I can save you some of that.

So, order of operations:
Strip out rear side panels in passenger area (my van has 8 seats so 2 rows of 3 behind the driver. This is the magic

little top hat gadget that holds the panels on if you're not familiar. The rectangular plastic centre eases back out with a sharp blade or screwdriver tip then you can pull the whole body away from the panel to release it from the bodywork behind, brilliant.

I did this because there are no rear speakers fitted in my van and in order to hear the radio in the back you have to deafen the front two poor souls. So I needed to throw a couple in. These are they, a mere £20 from Halfrauds. Like I said, I'm no audio buff, more Van Driver than Vangelis, to me a speaker is a speaker and at least these are made by Pioneer, they of the £700 double din unit, so can't be total sh:t@?

I was pleasantly surprised to find some cables dangling unused behind the side panels, just where you'd expect rear speakers to be in front of the third row of seats, just behind the back of the sliding side doors, and so it proved. On the driver's side there were two pairs in connectors, one with thin white and purple cables and the other with larger blue and yellow. I tested these with a multimeter (set to DC volts) and found the thicker pair included a permanent live, so this may be for a power outlet in, for example, a caravette conversion. Well done Fiat. For the other pair I was pretty sure they'd be speaker feeds so I turned on the radio and poked a spare hifi speaker unit cable in and sure enough it produced nice radio sound!

The other side of the van had no power feed cable, just the speaker pair, so I got on with mounting the speakers on the panels and that was that taken care of. On the passenger side I also found a whole bunch of cables terminated in safe connectors but just lying spare. I think they are also for caravette conversions although one very thick yellow cable may just be for the optional electric rear air conditioning unit I read about somewhere.

I also had to make space for a double din unit where there was none, so this little strip of plastic had to be chopped out with a junior hacksaw. It was the support between the radio and the little storage compartment below it:

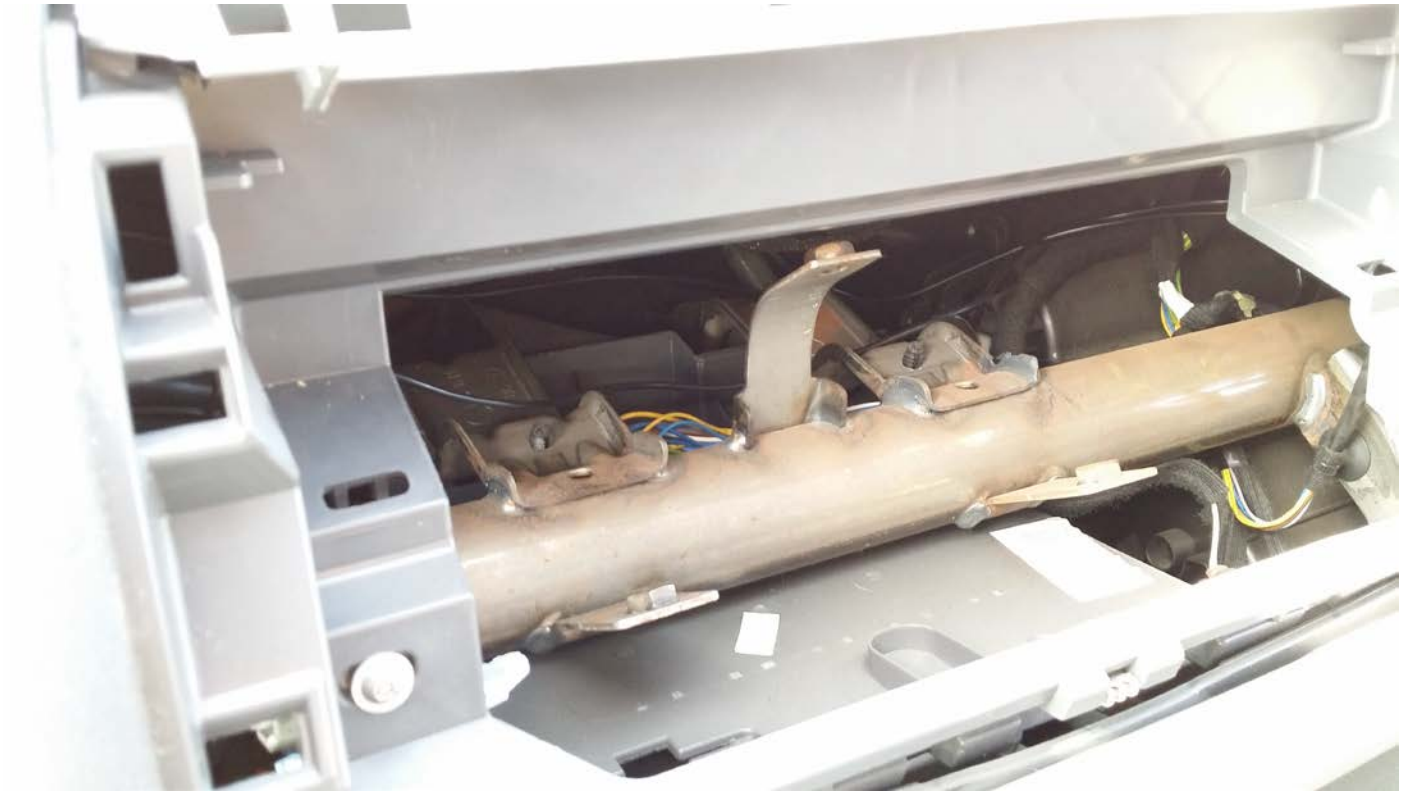
I can rarely see out the back windows with a full set of passengers so rather than proximity squeakers on the back I fancied a rear view camera. Not just for my mate's reversing skill but also possibly as a rear view mirror. So I bought Joying's own camera:

I ran the long video cable (lower left) from the back nearside corner of the van, behind the side panel, past the new speaker position then down to the floor edge where I managed to tuck it under the edge of the vinyl flooring. The DC power cable (lower right) has to run from the camera (the black mini plug goes in the end of the red camera socket) to an earth or “ground” (black wire) and reversing light supply (red). I picked these up easily from the nearside rear lamp cluster with the inside cover removed and used a bolt under the cluster for the earth. This is where I mounted the camera on the side of the inner number plate lamp cover:

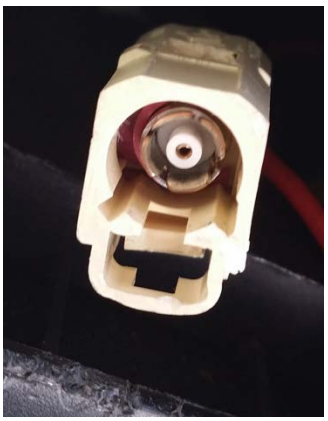
And this is how I got the cables up from the camera into the van inside the nearside back door, through the tricky rubber pipe (I used a long, bendy sink drain cleaning spring to drag the cables through):

I ran the camera cables up from the floor in the passenger foot well into the gap above the glovebox (a pig to get the top plastic cover off in pic below – use the Force!):

The red wire you see (above right with white tape inside the nearside rear door) is extended from the side of the black video cable supplied with the camera which it pops out of for a few inches, back into the van and connected again to the reversing light +ve feed at the lamp cluster together with the red feed wire I just mentioned.

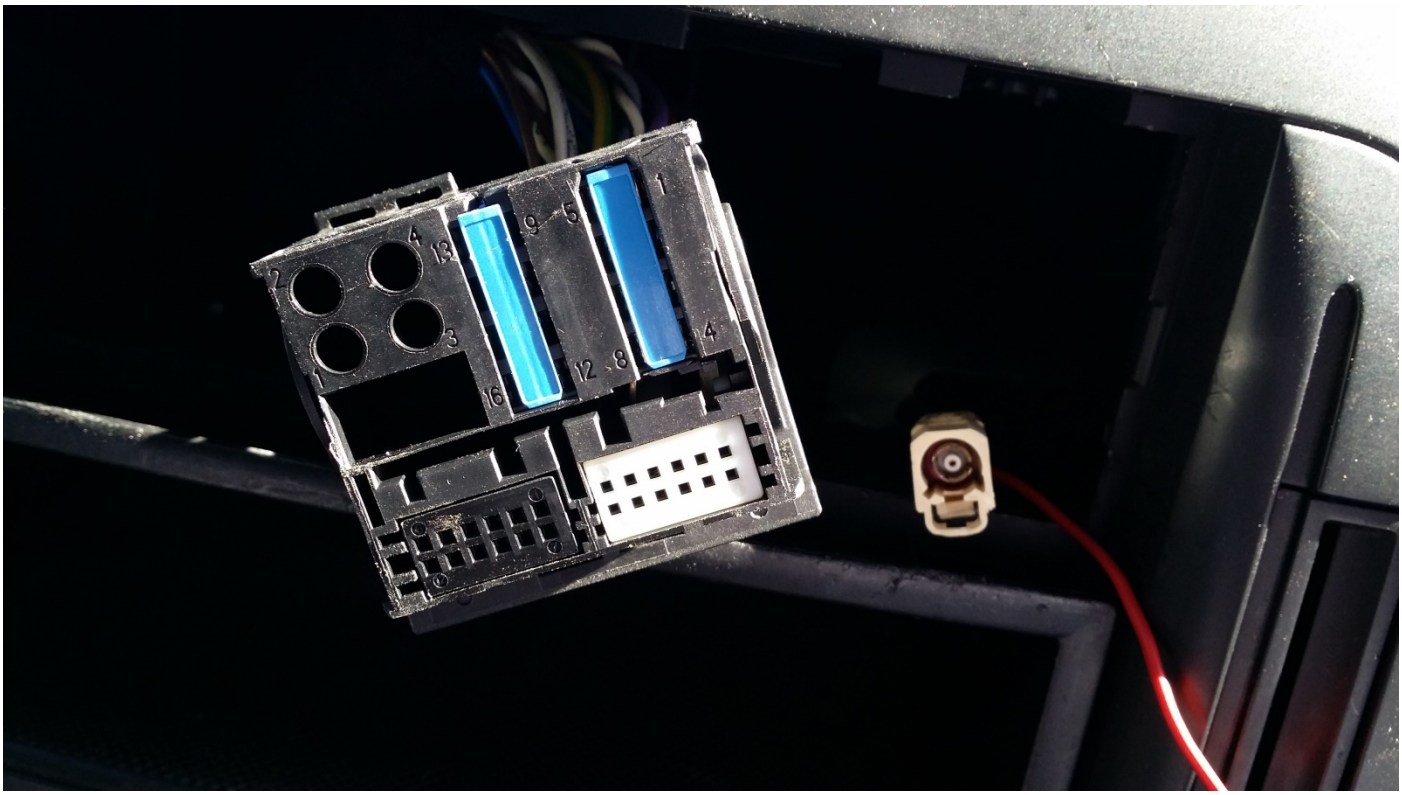


Time to move forward to the front, and the hard(er) bit. When you yark out the standard stereo you'll see a dirty great plug on the back with a lever underneath. It's hard to see properly until you release the poxy aerial cable plug (I found that hard never having seen one before, but you need to push in a little plunger underneath it to allow the ridiculously short aerial lead to be pulled out. A third hand would have been useful but a struggle and sporadic blasphemy eventually succeeded.



Gotta wonder what's wrong with the old style plugs, which of course the Chinese unit has! Therefore friends, you also need one of the aerial adaptors (above right). Apart from completing the connection they allow a lot more movement of the fully connected gizmo away from the dash so you can see easily round the back.

As I was saying, there's a dirty great socket, a QUADLOCK, which fits to the standard Siemens/VDO CD-Radio unit:



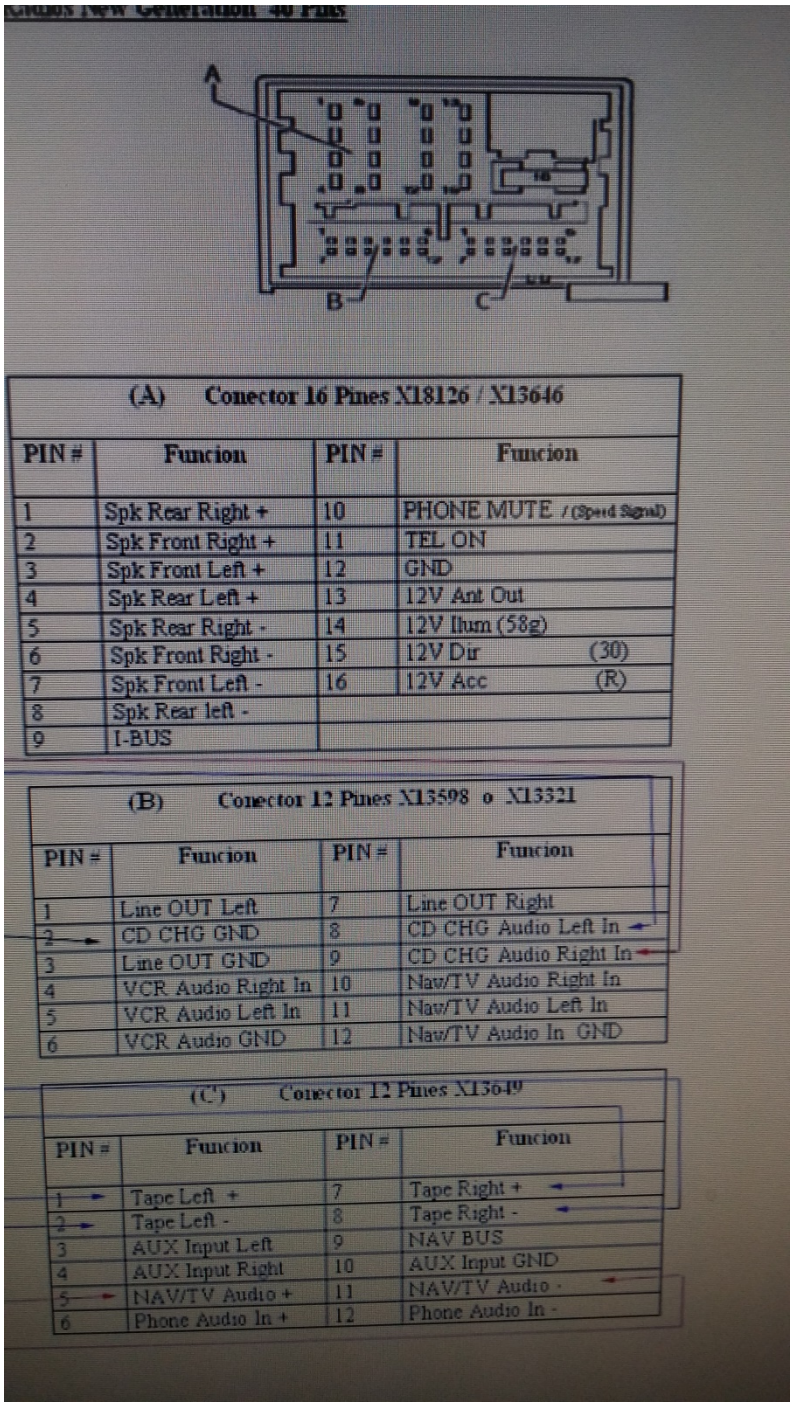
This is where a lot of pain was endured, trying to figure if I could make it work or end up with a pile of ashes and molten metal standing in my drive.

NOTE1 - I did NOT disconnect the battery during any of this procedure after reading evidence on both sides and simply wanting to test each step quickly (OK, I'm not the most patient, unlike you who are still reading this!).

NOTE2 – My Scudo has no "acc" (accessory) position (or skates past it without stopping) on the ignition key unlike every other car I've had. Instead you need to have the ignition fully on (first click on mine) before you trigger any switched accessories. However, no need to worry as nothing is going to burn out on your engine or ECU while you leave it switched on, even with the orange engine warning and red battery lights blinking away menacingly.

Now then, getting close to nitty-gritty. There are no DECENT wiring diagrams out there for the Mark Two Scudo, either full car or audio, much to my amazement (apart from those in the “Training Manual” someone posted elsewhere on this forum. There are also, as you probably know just by being here, no user workshop manuals in existence for this model. Come on Fiat, pretty pleez? This makes things a trifle awkward for normal day-to-day DIY maintenance and a potential minefield (or scorched tarmac) for the trickier jobs, so at this point you need to man up or forget it.

In the pic above, the larger top end with the two blue panels and four round holes houses your speaker cables. I did not know this before I started but discovered it here, from a Citroen C3 forum:



(A) Conector 16 Pines X18126 / X13646

PIN #	Funcion	PIN #	Funcion
1	Spk Rear Right +	10	PHONE MUTE / (Speed Signal)
2	Spk Front Right +	11	TEL ON
3	Spk Front Left +	12	GND
4	Spk Rear Left +	13	12V Ant Out
5	Spk Rear Right -	14	12V Ilum (58g)
6	Spk Front Right -	15	12V Dir (30)
7	Spk Front Left -	16	12V Acc (R)
8	Spk Rear left -		
9	I-BUS		

(B) Conector 12 Pines X13598 o X13321

PIN #	Funcion	PIN #	Funcion
1	Line OUT Left	7	Line OUT Right
2	CD CHG GND	8	CD CHG Audio Left In
3	Line OUT GND	9	CD CHG Audio Right In
4	VCR Audio Right In	10	Nav/TV Audio Right In
5	VCR Audio Left In	11	Nav/TV Audio Left In
6	VCR Audio GND	12	Nav/TV Audio In GND

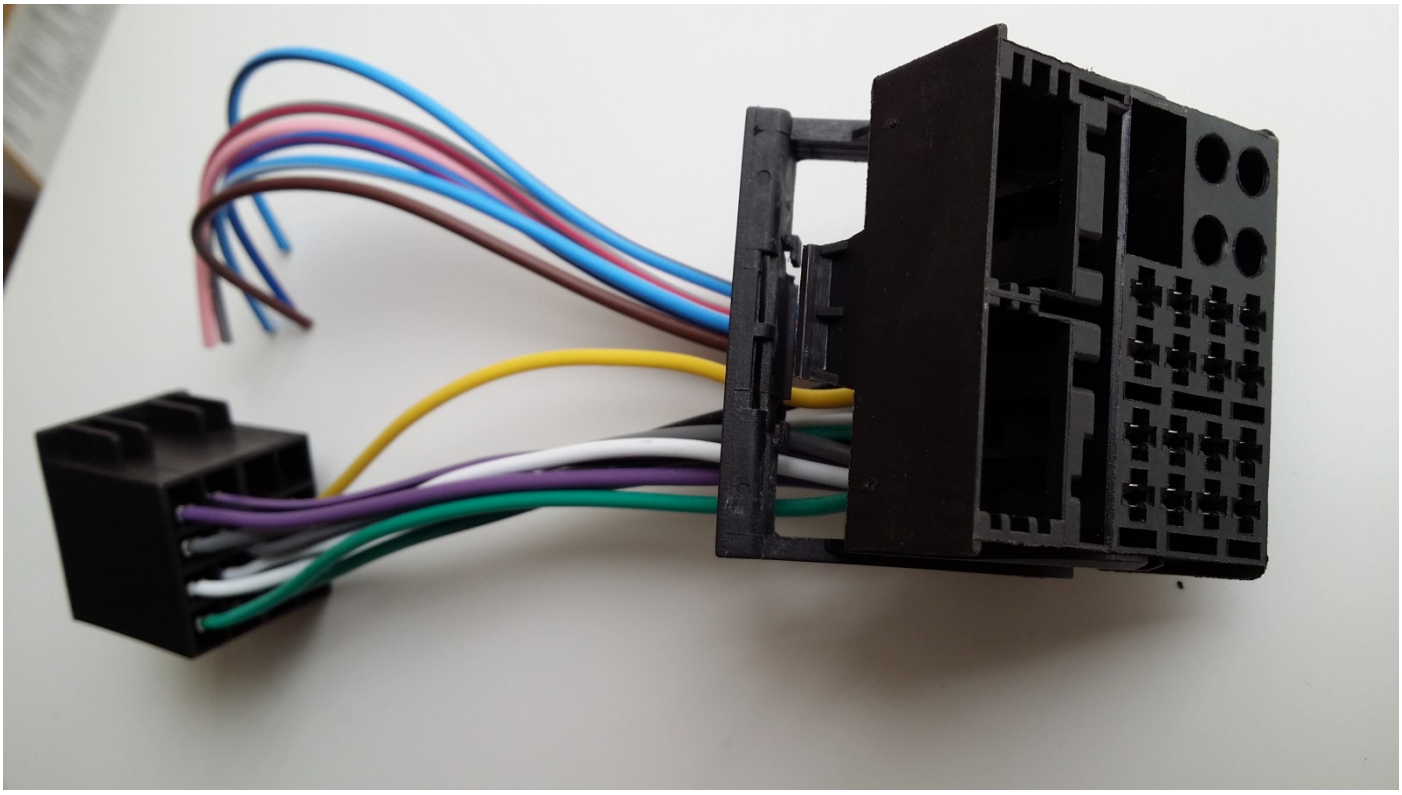
(C) Conector 12 Pines X13649

PIN #	Funcion	PIN #	Funcion
1	Tape Left +	7	Tape Right +
2	Tape Left -	8	Tape Right -
3	AUX Input Left	9	NAV BUS
4	AUX Input Right	10	AUX Input GND
5	NAV/TV Audio +	11	NAV/TV Audio -
6	Phone Audio In +	12	Phone Audio In -

At least Siemens/VDO had the courtesy to release a diagram of their own radio wiring. Anyway, IGNORE the two sideways sockets under that one (B and C in diagram above) because they won’t matter until Phase Five (that’ll be when I try to get the steering wheel controls to work – not bothered just now). My answer to the connection problem was to buy MANY harnesses, just in case:

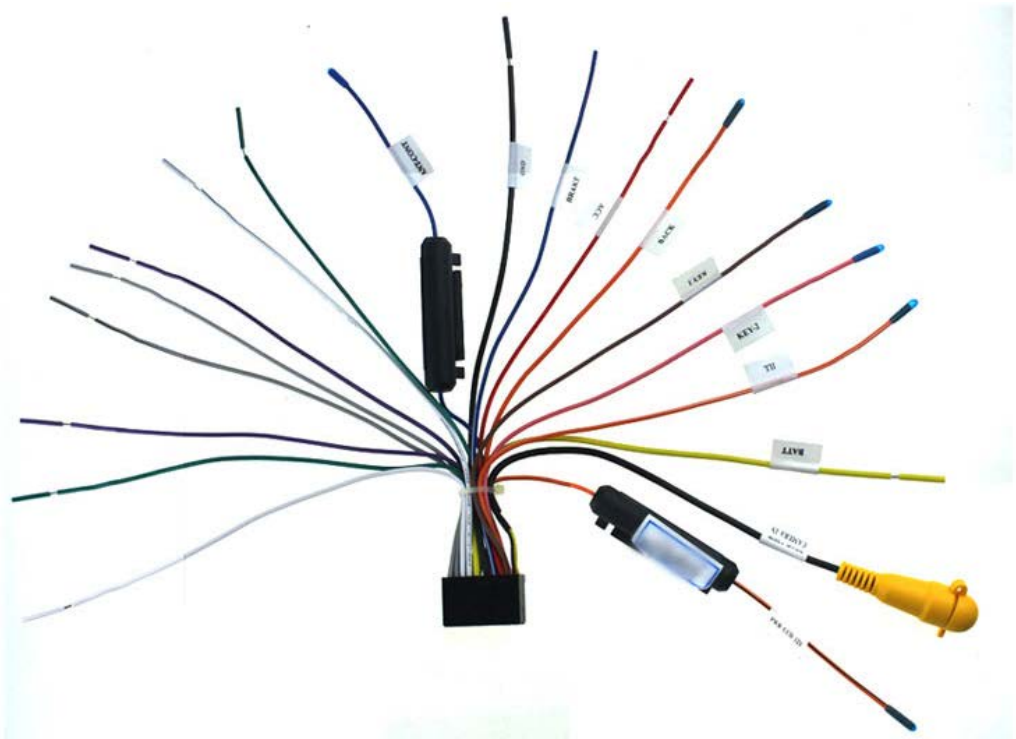
BUT the only one I used was the one in the big bag, second left above – part number SOT-040 and actually marked as for Scudo 07>! (amongst other intended vehicles). This lead has four heads.

I used only two of them, cutting off the other two. This is what I dumped, and I taped up the unused ends on what was left:



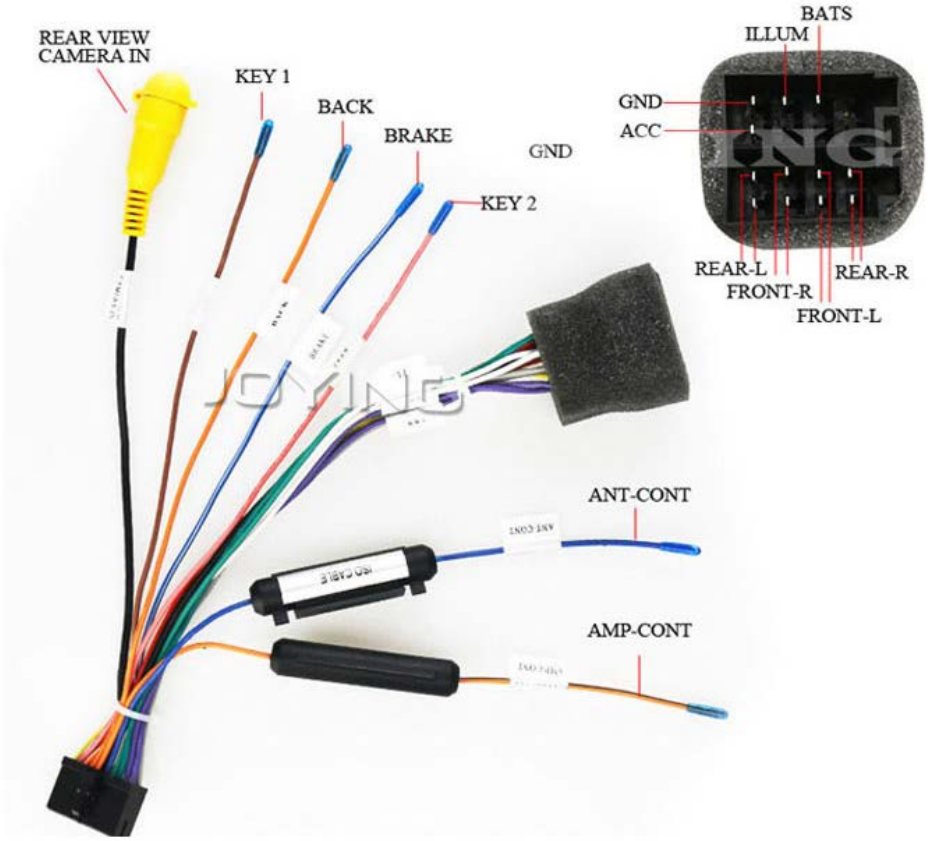
The big Quadlock socket (right, above) is the same as the one in the car dash that was pushed into the back of the standard radio, so that plugs into one end of my butchered harness (bottom right plug in previous picture) while the two smaller sockets from the dashboard go into the socket at top left in first picture.

I didn't use this harness, also in the box from Joying, which requires a bit (although not too much) more manual connecting:



I think it would make the tidiest job as there isn't a lot of room behind the radio with so many large connectors fitted, but I'm still happy I saved a few manual crimped connections by using the SOT-040 harness.

The harness below, the other one of the pair provided by Joying with the gizmo, plugs into the back of the head unit via the little flat plug at the bottom of the pic: The bigger, foam-covered plug at the top then receives the two female connectors from the old radio.



The markings on the Joying cables are pretty easy to follow, although I had to Google for the odd one. Rear Camera is easy, yellow video plug from cable into that. Key 1, Brake, Key2, Ant-cont and Amp-cont I've ignored, until later or forever, whichever comes first as I (you?) can manage without them. The one marked Brake is supposed to be joined to a handbrake switch so that the video feed from whatever source you choose is only available when you aren't moving. A solid, perfectly reasonable idea and I think a legal requirement. However, if you are me and your front seat passenger (and others behind you) need entertaining on the move, you can connect this Brake wire to earth (ground, if you prefer) and it will permit video while driving. The driver simply won't look at it, will (s)he?

Now where are we? The head unit, like most car radios, has a permanent feed to keep its settings (tuned radio stations etc.) alive while you're sleeping and a switched live from your "Accessory" position on you ignition switch unless your Scud is like mine and needs the dash lit up with the ignition on. So far I hadn't had to mess with the van's own electrics, so I thought I'd switch the thing on and get the fire extinguisher ready. Much to my amazement the screen showed its start-up screen followed by a 20 or 30 seconds of the Joying logo and then the home screen appeared with its dozen or so pre-set apps showing. Wow, fluked it! I set about the Settings menu and got some stuff in, including a few AM and FM stations of the Radio app. Unfortunately when I turned the ignition off and back on again, my settings were all gone.

Thanks to the Nova site (!) and a few other places I discovered that for some reason this and many other far east gizmos, or a whole lot of different vehicles, come with their yellow (permanent live) and red (ignition fed) wires reversed in the radio connector. I therefore swapped them over so the Joying red wire now connected to the van's yellow, and vice-versa. I also crimped a pair of female bullet connectors onto the ends of the cut yellow loop so they could be easily re-connected if necessary. However, on testing the head unit again I found that the permanent live still wasn't being retained with the key out of the ignition! Pretty sure that's the Canbus stuff interfering. My solution was to run a new permanent feet directly from the battery under the driver's feet, via a blade fuse (from Maplin)

and then into the unit's yellow cable connector. It hasn't been necessary to join those spare bullet connectors, and the unit now holds its settings permanently.

The GPS antenna and voice input microphone (for hands-free mobing) both have lovely long leads, and I was able to run these out to the passenger side pillar and up into the edge of the headlining above the windscreen. Both are mounted on the interior mirror bracket and cannot be seen from outside the van. They also work perfectly from that position, and I was especially surprised at the quality of my Bluetooth connection from the van to my other half's phone.

The two USB female sockets also have nice length on them. I ran one into the passenger glove box and the other down into the tray under the steering column. Any USB device like a flash drive or 3G/4G dongle can be plugged into either one of these.

So I have a working unit lacking only DAB radio, which I quite fancy but haven't been impressed by various reports on availability and reliability, and steering wheel controls. In my case, having a fairly regular chauffeur means I can use my right hand to control the head unit very easily from the passenger seat, and my buddy can't keep changing radio stations and volume too easily like he did from the steering wheel with the old radio. I will, however, have a go at some point and just say nowt if it works. I even managed to get this loaded for my start-up screen:

I hope this may have helped you decide to take the plunge. I was definitely a bit unsure every step of the way but it turned out fine, and even if it had melted it doesn't take too many Friday night outs-worth to pay for another one. I probably haven't been too precise or clear enough in one or three places here but I wanted to get this live quickly in case more people are hesitating, so if you need to ask a question I will try and answer it. No guarantees of course, and you do this at your own risk, just as I did.