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Installations

S13 SR20DET Installation Into 1995 240sx

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version 1.2
March 15, 2002

Installing a **S13 SR20DET** (red or blacktop) into a 1995 240sx is a very simple task that is not much more difficult than putting the same motor into a **S13** chassis.

There are a few details that make this swap a bit different from swapping into the **S13** chassis. The Upper Engine Harness on the S14 (KA and SR) has the plugs for you:

- Windshield wiper motor
- Windshield wiper amplifier
- ABS sensor for right front wheel
- ASCD (cruise control).

You will need to rewire all of the accessories that you have on your car to make them work with your engine and **S13 SR20DET** harness. If you are unfamiliar with S14's, you will also find the following differences from the **S13**

- Power plugs on the S14 are under the dash (near the ECU)
- ECU relay is also found under the dash (near the ECU) instead of in the engine compartment as found on the **S13**.
- The water cock valve is located against the firewall (this lets hot coolant into the heater box for your heater)
- The VSS is a plastic unit (found on the S14 KA and the 97-98 **S13 SR20DET** Blacktop motors (in KPH))
- The S14 KA radiator is thicker than the MT **S13** KA/SR radiator with different mounting points
- Intercooler piping on the S14 is routed differently on the drivers side, although you can still use the **S13** style to route your intercooler piping

Everything bolts up to the S14 chassis. You will need to route one of your heater hoses to the bottom of the water cock valve so your heater will work properly.

Wiring Information:

*Note: I do not have ABS or CC on my car so I did not wire them up. It should not be difficult to do so however as you will just need to run a wire from the plug to **F3**. I will look this up and add it to this document later on.

Here is a list of things you will need to make your own harness:

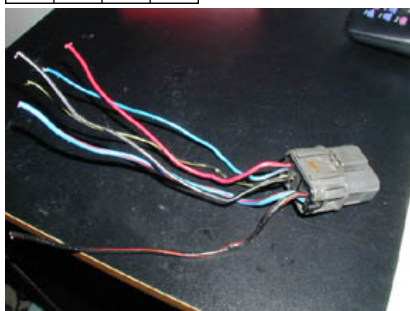
- Electrical Tape (Scotch/3M commercial grade kicks ass)
- Heat Shrink Tubing of various sizes (buy a couple assorted size packs)
- 1/4" and 1/2" Wire loom (get about 6' of the 1/4" and about 10' of the 1/2")
- 20' of 18 gauge stranded electrical wire
- 20' of 14 gauge stranded electrical wire
- Solder w/ flux core
- Soldering Iron
- Wire Cutters
- Wire Strippers
- FSM for your car
- 2 Grounding Ring Terminals
- Zip Ties

First you will need to locate the plugs needed to make this swap work. Try to get both ends of the power plugs and of the instrument cluster from the **S13** JDM shell to make your harness. If you do not have these ends, you can either hardwire your harness or you can make your own plugs but you will need to get male and female ends and rewire both sides (stay away from crimps!). I also highly recommend that you double check each pin location and confirm that you are wiring it to the correct pin against the FSM for your car.

Plugs from the S13 SR20DET Harness:

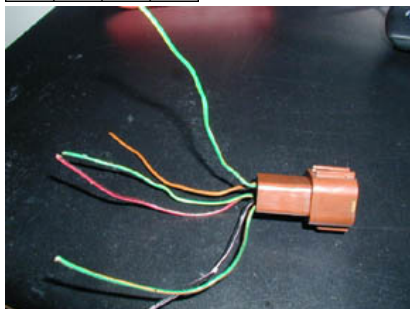
F8-**S13** SR Power Plug

1	2		4
5	6		8

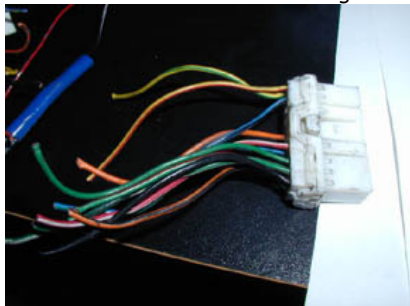


F10-S13 SR Power Plug

1	2		4
	6	7	



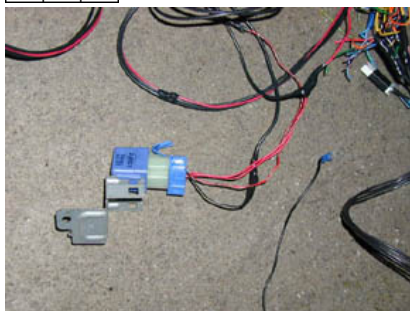
S13 SR Instrument Cluster Plug



Plugs off of the S14 KA24DE Harness:

F2-S14 KA ECU Relay

	3	
2		1
	5	



F7-S14 KA Wiper Motor

1	2	
4	5	6



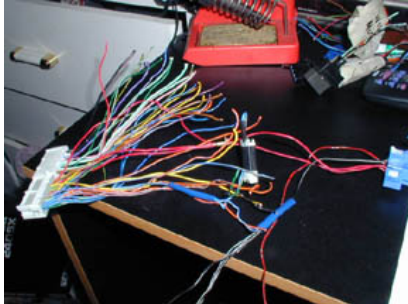
F9-S14 KA Wiper Amplifier

4		2	1
8	7	6	5



F3-S14 KA Power Plug

(The pin out for this plug is incorrect in my 1995 S14 FSM. I will add a pin out for this soon.)



The basic principle of creating a new intermediary harness is to reconnect your S14 accessories (wiper motor, wiper amplifier, CC, and ABS) to the main power plug, **F3-S14** KA (which plugs into M63-S14 KA on the interior side). You will also be wiring the **S13** SR power plugs to the **F3-S14** KA Power Plug and you will wire the instrument cluster plug from the **F3-S14** KA Power Plug. Once you have made all of the connections you will be able to plug the **F3-S14** KA Power Plug into the M63-S14 KA Power Plug and to the power plugs of the **S13** SR, and you will be able to plug in your accessories and your instrument cluster.

First, a few words about soldering. If you don't intend to solder all of your connections, stop reading this right now and figure out the wiring on your own. I do not endorse in any way the use of crimp connectors for your wiring harness. You will only cause yourself trouble down the road and end up having to redo things. Make sure you properly strip all wires and properly solder all connections (do not cold solder your joints or they will fail) and then heat shrink each connection. I then put electrical tape over each heat shrink connection (I am a bit paranoid) and then loomed the entire thing. The last thing you want to happen is a failure of a solder joint or something shorting w/ another wire.

Wiring Details:

Wire color Key:

- OR- Orange
- LG- Light Green
- B- Black
- PU- Purple
- P- Pink
- BR- Brown
- R- Red
- W- White
- G- Green
- L- Blue

- Y- Yellow
- GY- Gray
- SB- Sky Blue
- LG/R-Light Green w/ Red Stripe
- LG/B- Light Green w/ Black Stripe
- L/Y- Blue w/ Yellow Stripe
- B/P- Black w/ Pink Stripe
- B/W- Black w/ White Stripe
- R/B- Red w/ Black Stripe
- B/Y- Black w/ Yellow Stripe
- B/R- Black w/ Red Stripe
- L/R- Blue w/ Red Stripe
- Y/G- Yellow w/ Green Stripe
- Y/R- Yellow w/ Red Stripe
- L/B- Blue w/ Black Stripe

Wiper Motor and Wiper Amplifier

F7-S14 KA and F9-S14 KA are both located in the engine bay, against the firewall, on the passenger side. You will only need to make the F7 to F9 wires long enough to connect to each other (make your wires about 1.5'). When you make your connections to **F3**-S14 KA, make sure you have enough room to go through the firewall and down to the kick panel in the passenger compartment (about 3' should do it). You will need to ground one wire on F7-S14 KA and one wire on F9-S14 KA to the engine. I used a generic grounding wire (make sure the wire is the same gauge as the wire you're using) that I grounded to the intake manifold (where the other two grounding wires are located below the fuel rail).

Wiper Motor-F7 S14 KA to F9 S14 KA and **F3** S14 KA (See EL-102 S14 FSM)

F7-S14 KA	F9-S14 KA
1-OR	8-OR
2-LG	6-LG 5-LG(F3 -S14 KA)
6-B	7-B Ground to Engine

F7-S14 KA	F3-S14 KA
2-LG	6-LG (Wiper Amplifier) 5-LG
4-LG/R	7-LG/R
5-LG/B	6-LG/B

Wiper Amplifier-F9 S14 KA to F7 S14 KA and **F3** S14 KA (See EL-102 S14 FSM)

F9-S14 KA	F7-S14 KA	Identification
6-LG	5-LG (F3) 2-LG	(IGN)
7-B	6-B Ground to Engine	(GND)
8-OR	1-OR	

F9-S14 KA	F3-S14 KA	Identification
1-L/Y	19-L/Y	(INT/SW)
2-PU	42-PU	(INT/VR) (SE ONLY)
4-BR	8-BR	(OFF & INT SW)
5-P	4-P	(WASH SW)
6-LG	5-LG 2-LG (Wiper Motor)	(IGN)

Fuel Pump Relay

Connect one wire from F10-**S13** SR to the power plug **F3**- S14 KA (make this wire about 4-5' long depending on where you put your **S13** power plugs in relation to **F3**-S14 KA).

Fuel Pump Relay- **F3** S14 KA to F10 **S13** SR Harness (See EC-201 S14 FSM)

F3-S14 KA	F10-S13 SR	Identification
27-B/P	2-B/P	(Fuel Pump Relay)

ECU Relay

This is pretty straight forward. You need to power the ecu relay from **F3-S14 KA** plug and then run wires to the power plugs on the **S13** SR harness (make the wires from the relay to the ecu about 1' long as the relay will be left by the ecu and power plug, and make the wires from the relay to the **S13** power plugs about 4-5' long depending on where you put your **S13** power plugs in relation to **F3-S14 KA**).

F3-S14 KA	F2- S14 KA	Identification
9-R	2-R	(Power to Relay)
9-R	5-R	(Power to Relay)

F8- S13 SR	F2-S14 KA	Identification
2-B/W	3-B/W	(Ecu Power)

F10-S13 SR	F2-S14 KA	Identification
4-R/B	1-R/B	(Ecu Relay)

ECU Backup

You need to run one wire from the **S13** SR power plug to the **F3-S14 KA** power plug. Make this about 4-5' long depending on where you put your **S13** power plugs in relation to **F3-S14 KA**.

ECU Backup- **F3** S14 KA to F8 **S13** SR Harness (See EC-85 S14 FSM)

F8-S13 SR	F3-S14 KA	Identification
1-R	9-R	(ECU Backup)

IACV

The 1995 KA24DE has two IACV's. I hooked the **SR20DET** IACV up to the IACV Air Regulator power on the S14. See the S14 FSM for more details. Make this about 4-5' long depending on where you put your **S13** power plugs in relation to **F3-S14 KA**.

IACV- **F3** S14 KA to F8 **S13** SR Harness (See EC-216, EC-112 S14 FSM)

F8-S13 SR	F3-S14 KA	Identification
6-B/Y	26-B/Y	(IACV Power)

Ignition Power and Coilpack Power

Make this about 4-5' long depending on where you put your **S13** power plugs in relation to **F3-S14 KA**.

Ignition Power & Coilpack Power- **F3** S14 KA to F8 **S13** SR Harness (See EC-106 S14 FSM)

F8-S13 SR	F3-S14 KA	Identification
4-B/R	1-B/R	(Ignition Power)
8-L/R	1-B/R	(Coilpack Power)

O2 Sensor

Since this is a heated O2 sensor, I wired this the same way the rear heated O2 sensor is wired on the KA24DE (the secondary O2 sensor in the downpipe of the KA). Make this about 4-5' long depending on where you put your **S13** power plugs in relation to **F3-S14 KA**.

O2 Sensor- **F3** S14 KA to F10 **S13** SR Harness (See EC-164)

F10-S13 SR	F3-S14 KA	Identification
7-BR	10-BR	(O2 Sensor Power)

Instrument Cluster

Ideally you will have the other end of the **S13 SR20DET** instrument cluster plug (this is why it pays to get front cuts) so you don't have to hardwire this. If you do not have the plug you will need cut the other end of the harness plug end off of your **S13 SR20DET** harness and hardwire this (or make your own plug if you are feeling innovative). The wires do not have to be long as they will go from **F3**-S14 KA to the instrument cluster plug near the ECU plug.

Instrument Cluster- **S13** SR Cluster Plug to **F3** S14 KA Harness

S13 SR Instrument Plug	F3-S14 KA	Identification
Y/G	16-Y/G	(VSS See EC-103)
Y/R	18-Y/R	(TACH See EL-76)
B	Ground to Chassis	(Ground See EC-85)
OR	34-OR	(Ignition Start See EC-198)
L/B	20-Y	(Water Temperature See EL-76)

Once all connections have been made, double check all of your connections and tape and loom everything up. You are now ready to plug this into your harness on your motor and into your chassis. Follow the standard fire up procedures of the engine and make sure that everything works properly. Happy Motoring.

Pictures:

Here are pictures of the harness with all connections made:

Entire unloomed harness



F3, ECU Relay (F2), and instrument plug



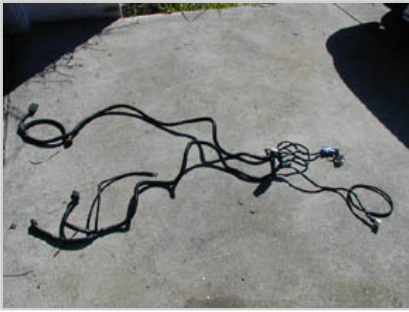
F7 and F9 Wiper plugs



F8 and F10 Power plugs



Here is a picture of the harness loomed



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