



Scan from McAllen Texas:  
 2002 A4 ECM and Instrument cluster scan, the customer keys were lost.

**Address 01: Engine**

Part No SW: 8E0 909 559 D HW: 8E0 909 059  
 Component: 3.0L V6/5V G 0002  
 Coding: 0016751  
 Shop #: WSC 63351  
 1 Fault Found:

17978 - Engine Start Blocked by Immobilizer  
 P1570 - 008 - Implausible Signal

**Address 17: Instruments**

Part No: 8E0 920 950 H  
 Component: KOMBI+WEGFAHRS. **RB4** D21  
 Coding: 03200  
 Shop #: WSC 22129  
 WAULT68E82AXXXXXX AUZ6Z0A0164933  
 1 Fault Found:

01176 – Key 65-10 - Unauthorized – Intermittent

This is the Bosch cluster and it's indicated by the number RB4. This type of cluster has encryption built in and was difficult to acquire the PIN.  
 We tried various software/hardware combinations similar to the ones tried in College Station Texas with no luck.  
 Here's the solution for this software level on this cluster on figure 2 and 3.

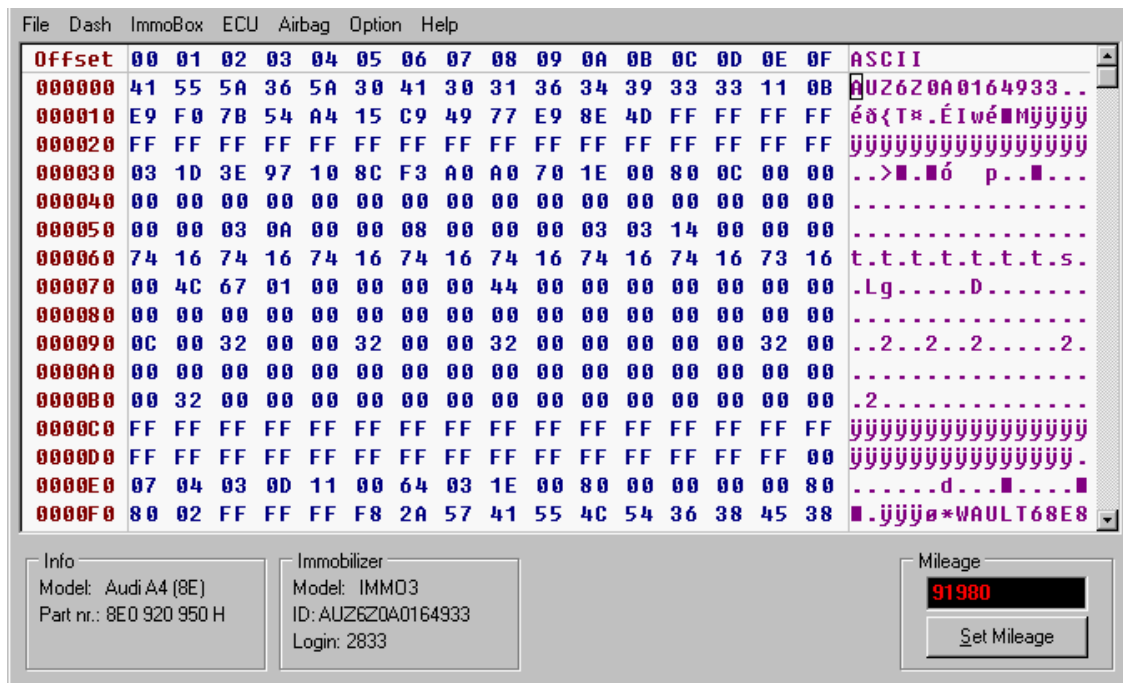


figure 2

Sometimes the technician would need to verify the acquired PIN before adapting any key, Instrument cluster or Engine controller. The next figure (3) indicates a match. This match is possible because a bin file was saved. The bin file is the data from this cluster. In figure 2, the hex values are run through a mathematical equation and the output is the data seen at the bottom of figure 2 and figure 3.

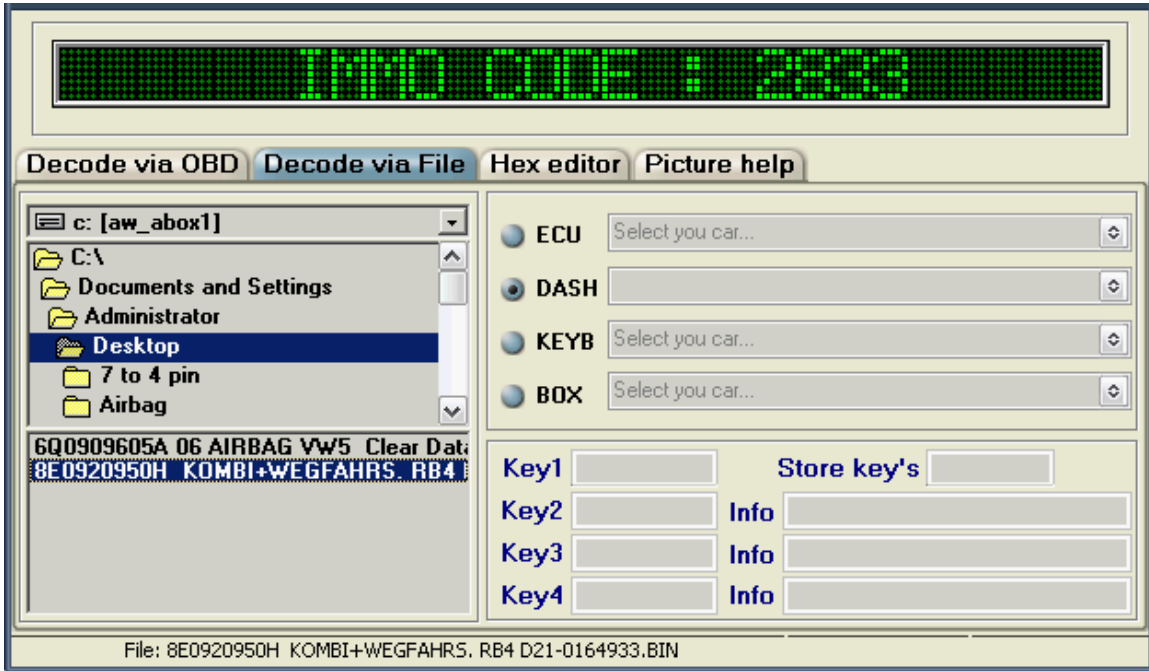
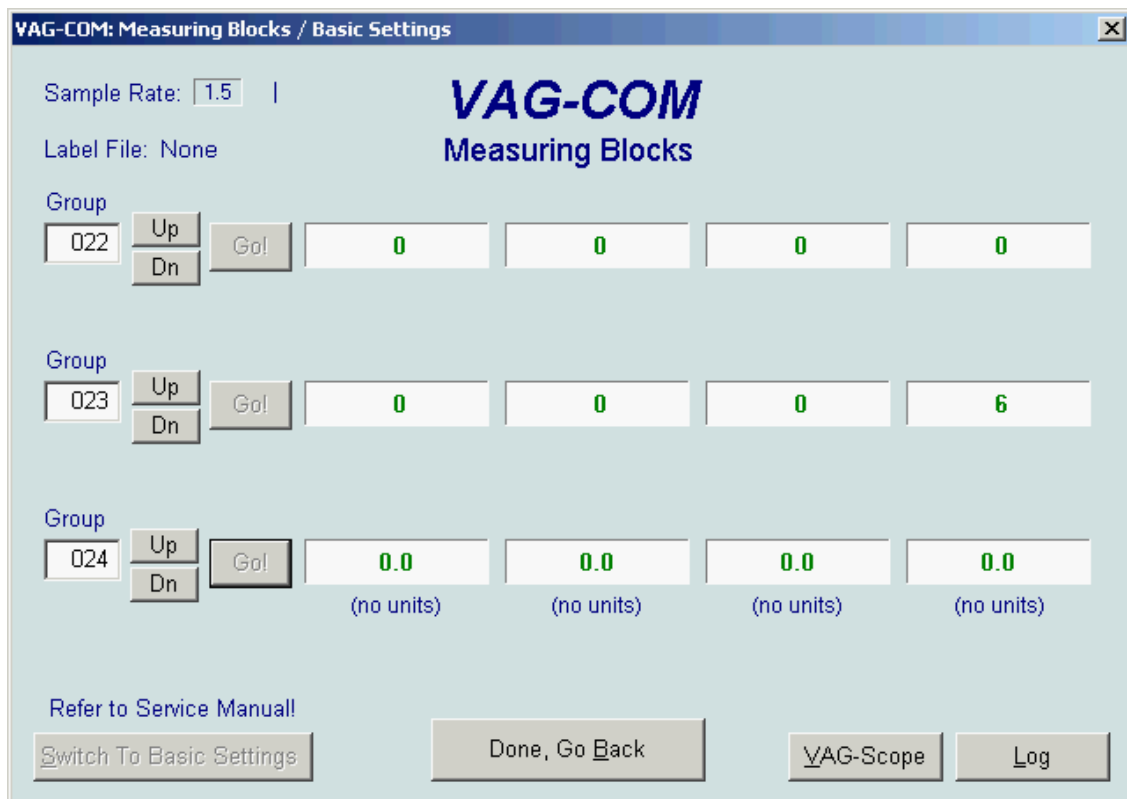


figure 3

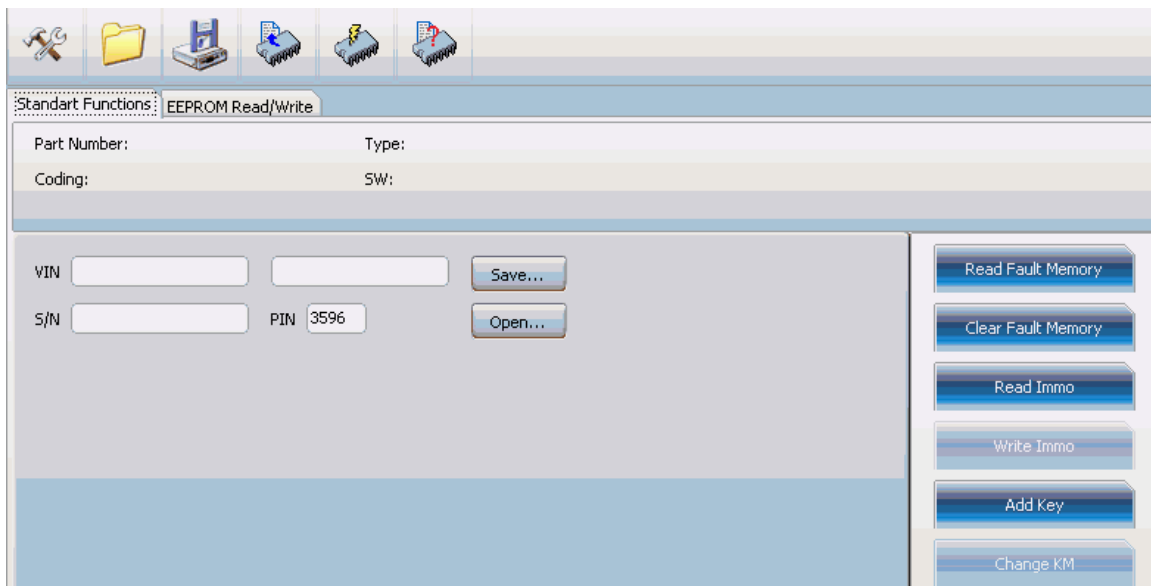
For the sake of speed and simplicity, Vag-Com is used to “adapt” the new components if the correct PIN is known and to display the data in this document. Figure 4 indicates that Immobilizer is ready and that the technician isn’t locked out. Any Vag style scan tool like a Vedis or iScan can complete the adaptation.



This instrument cluster in question could not be interrogated in the manner as described in the Jetta. This cluster required removal and attached directly to the scan tool with Immobilizer software. There are three tested and verified methods to acquire the PIN of this model.

1. Direct connection to RS232
2. Direct connection to the cluster main board
3. Direct connection to the IC

These next figures are on an identical cluster that is reconditioned from the Audi parts sources. Methods 1 and 3 were used.



method 1

This would involve the cluster to be removed and connected to the RS232 line for encrypted communications. This PIN is now acquired as 3596. This cluster is described as reconditioned. That is because the last digit in the part number indicates an "X".

The first cluster indicated 8E0 920 950 H

The second cluster indicates 8E0 920 950 HX

Remember, the PIN will be exposed as a 4 digit PIN but it is input as a 5 digit PIN

See the next Instrument cluster scan.

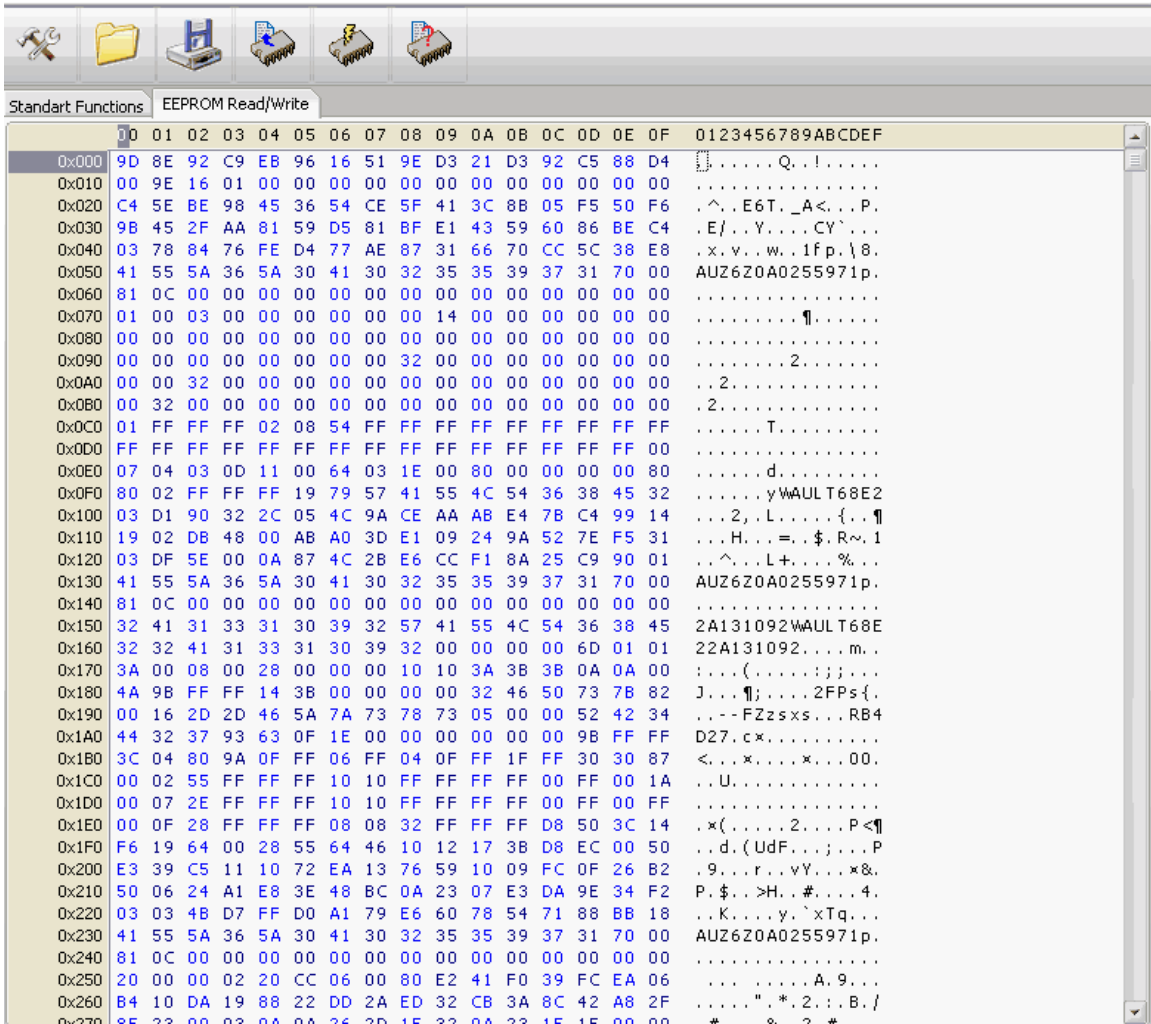


This is where the scans become important. It is the version and software level that will indicate if the cluster will produce the PIN at the repair facility as a field repair or if it needs to be sent to ESAT Inc to acquire the encrypted PIN for the facility.

Either way, the PIN can be found and have the keys or new ECM adapted to the this A4 with ease and does not require dealer intervention. The repair facility can do this in house, in most cases on any VW or Audi.

The rules change when a used ECM needs to be adapted to the original cluster. More on that later.

The next illustration is the encrypted data for the same cluster.



Now imagine taking the data out of one defective cluster and rewriting the data into the USED cluster for any VW or Audi. No adaptation required. That's where ESAT Inc and the supporting repair facilities are headed.

**Use the KISS factor (Keep It Simple Stupid)**  
**and “Think outside the box”**

Thank you to Bill Marden at Autoworks in College Station, Texas with Umberto Zingg at German Cars Auto Shop in McAllen, Texas for providing the donors and ongoing research.

Thank you to Steve Bartock in California for providing data proving “ just because it says so, doesn't make it so”.



# ECM Adaptation

New ECM's can be adapted with relative ease if the PIN is known. Depending on the systems used, most PINs can be acquired and the new ECM can be installed, adapted and the readiness set as the final check.

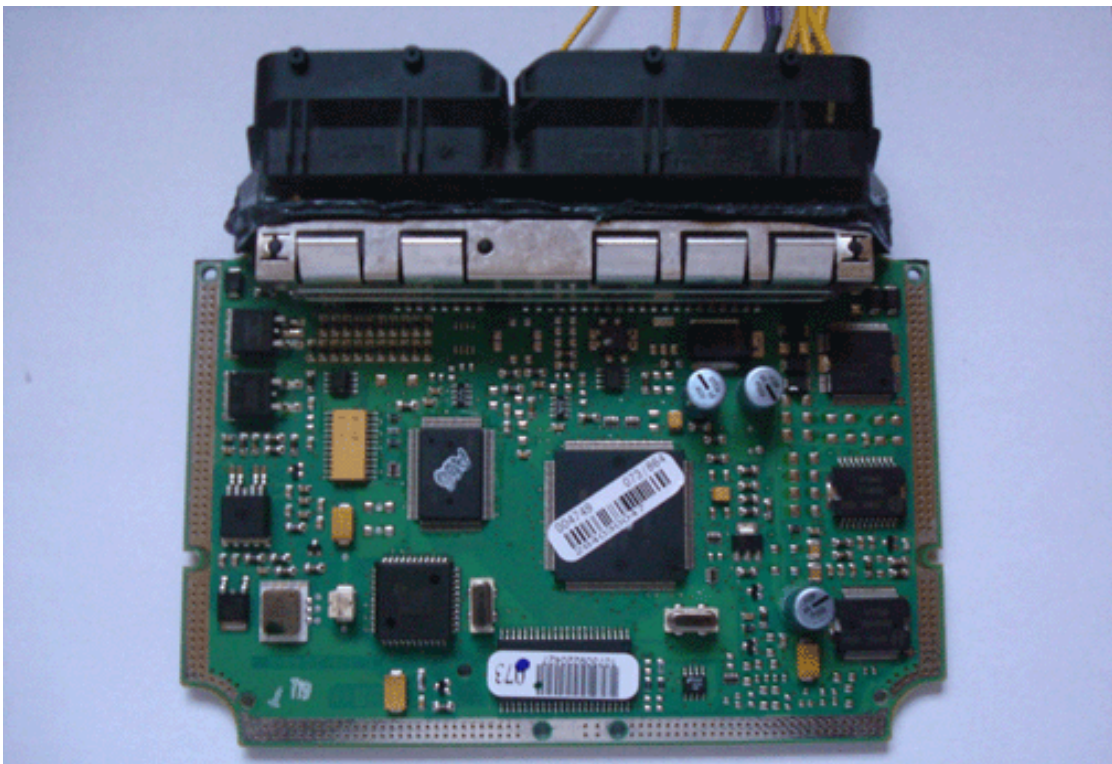
The problem is the used ECMs. In order to adapt the used ECM, the original pin from the Immobilizer must be known. We know that and it's been solved. The problem lies with the used ECM. Data from another vehicle has been written to the IC. One way or another, that data must be accessed and the PIN acquired.

The ESAT Inc solution is a direct connection to the ECM and viewing the HEX data. In most cases, the PIN is found. Once both PINs are known, adaptation can take place easily.

The next step is to rewrite the data into the replacement ECM directly from the original ECM. Once again.

## Use the KISS factor (Keep It Simple Stupid) and “Think outside the box”

I have a Jetta TDi ECM and it only took 4 screws to open it. See this next figure.



Notice the wires, that's because there is no RS232 communication. It is ALL ON CAN. The next illustration is of the data from this ECM.

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	0123456789ABCDEF	
0x000	11	46	4C	48	AA	FF	FF	32	38	34	2E	30	33	FF	FF	FF	FLH...284.03...	
0x010	FF	FF	32	38	34	2E	30	33	A2	B7	FF	FF	FF	FF	FF	FF	...284.03.....	
0x020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	.....	
0x030	FF	FF	2F	2F	FF	3F	FC	57	FF	FF	FF	FF	D0	1F	A2	B7	...//.?.W.....	
0x040	02	00	A2	B7	00	00	00	00	00	00	00	00	00	00	00	8A	00	.....
0x050	02	00	A2	B7	00	04	00	42	00	00	42	00	84	87	84	85	.....B..B.....	
0x060	02	00	00	00	BE	BF	BC	B3	00	B3	00	00	00	00	B4	B5	.....	
0x070	00	00	B8	0B	96	07	E3	CE	01	00	FF	00	00	0E	92	1B	.....	
0x080	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....	
0x090	00	00	FF	FF	FF	FF	FF	FF	FF	FF	3F	FC	57	00	00	00	.....?.W.....	
0x0A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....	
0x0B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	.....	
0x0C0	00	00	00	00	00	00	00	1D	00	00	FF	CF	03	20	4D	08	.....M.....	
0x0D0	10	00	04	28	02	61	60	FC	A7	6B	23	45	88	04	00	04	...(.a...k#E....	
0x0E0	28	01	00	00	00	F3	90	49	45	20	20	00	04	28	01	00	(.....IE...(...	
0x0F0	FD	00	ED	71	45	45	02	02	00	04	28	01	00	9C	6D	FD	...qEE...(...m.	
0x100	ED	34	45	02	02	00	14	28	01	00	00	9C	6D	A4	49	20	.4E...¶(...m.I	
0x110	7F	FD	A4	00	00	80	FD	00	00	00	00	00	00	00	00	00	C.....	
0x120	00	00	00	00	FF	80	18	74	48	A8	C2	90	F6	82	63	0D	.....tH.....c.	
0x130	3B	56	57	5A	37	5A	30	42	34	39	35	33	37	35	31	C6	;VWZ7Z0B4953751.	
0x140	33	56	57	53	50	32	39	4D	31	32	4D	31	37	39	34	39	3VW5P29M12M17949	
0x150	31	94	00	00	10	B5	FF	80	18	74	48	A8	C2	90	F6	82	1.....tH.....	
0x160	63	0D	38	56	57	5A	37	5A	30	42	34	39	35	33	37	35	c.;VWZ7Z0B495375	
0x170	31	C6	33	56	57	53	50	32	39	4D	31	32	4D	31	37	39	1.3VW5P29M12M179	
0x180	34	39	31	94	00	00	10	B5	18	74	48	A8	C2	90	F6	82	491.....tH.....	
0x190	01	00	00	00	03	58	00	00	00	00	00	05	2D	92	1A	00	.....X.....-	
0x1A0	17	00	0A	00	00	00	00	00	00	00	00	6E	D3	04	00	2B	11	.....n.....+
0x1B0	73	00	71	00	92	1A	00	00	00	00	00	BB	04	00	00	7F	s.q.....C.....	
0x1C0	FC	85	00	00	00	FD	18	15	00	00	2D	92	1A	00	17	00	.....S.....-	
0x1D0	0A	00	00	00	00	00	00	00	3F	CF	04	00	2B	11	73	00	.....?....+..s.	
0x1E0	71	00	92	1A	00	00	00	00	00	BB	04	00	00	00	7F	FC	85	q.....C.....
0x1F0	00	00	00	FD	18	15	00	00	00	00	55	1A	18	1A	B4	00	.....S.....U.....	

In some very special circumstances the Immobilizer can be turned OFF for test purposes. We've tried it and it works for these EDC15 and EDC16 ECMs.

The next illustration indicates the PIN for this TDi ECM. Now that we know that, we were able to adapt a used 2002 A4 Bosch RB4 instrument cluster to a 2002 Jetta TDi used ECM. All that was required is recoding of the cluster to indicate the correct transmission. There's always someone saying it can't be done. I had to prove otherwise.





Euro Systems Automotive Training offers this service including advanced training to its partners in Canada and the US.

1. Direct hardware and software lending service for PIN acquisition
2. ESAT Inc will “walk” you through the process
3. On site PIN acquisition for the encrypted models
4. Immobilizer with VW and Audi technical support

We are very close to completing our own version of PIN acquisition tools far beyond the so called “pass through” technology. The plan is to marry more than one piece of software to one tool. We’re just about there. When completed, the field technician will be able to acquire the needed data on site and with our help, get the job done and didn’t need to visit the dealer.

This is not some HACK job. This requires detailed training, patience with record keeping. Partners must keep detailed records in order to rely on various Immobilizer system adaptations and PIN code reading because of their differences and behaviors.

**NOTE: The only facilities that can partner with ESAT Inc. will be the ones that sign a non disclosure form.**

**Spend your money on training and tools wisely.**

**VW and Audi training with technical support  
Call 1-866-245-7602 Email: [esatinc@esatinc.ca](mailto:esatinc@esatinc.ca)**