		GROUP	NUMBER					
		HYBRID CONTROL	23-HC-002H					
Таа	hnical Samiaa Bullatin	DATE	MODEL(S)					
Tec	nnical Service Bulletin	AUGUST 2023	SONATA HYBRID (DN8 HEV)					
	ECU UPDATE AND GDS-M 'INTEGRATED THERMAL MODULE							
SUBJECT.	COOLANT FILLING MODE'							

Description: This bulletin provides information related to the Engine Control Module (ECM) software update and coolant replacement for 2020-2023MY Sonata Hybrid (DN8 HEV) vehicles to improve the coolant filling mode by discharging air bubbles.

Applicable Vehicles : All 2020-2023MY Sonata Hybrid (DN8 HEV) with exhaust heat recovery system.

GDS Information:

Event #	Description
924	DN8 HEV COOLANT A/S FILLING MODE

(*or use a later available event as listed in the GDS ECM Update screen if one is available.)



GDS Vehicle Battery Voltage Warning:

If voltage is below 12 volts as per the GDS warning, then select **Back** and run the engine at least 15 minutes to reach an adequate battery state of charge to prevent ECU Update failure. Cycle the ignition **OFF/ON** before retrying ECU update again.

Warranty Information:

Model	Op. Code	Operation	Op. Time	Casual Part	Nature Code	Cause Code
Sonata	07100F12	ECU Update and GDS-M 'Integrated Thermal Module Coolant Filling Mode' Function	0.9 M/H	39116-2J002		
Hybrid (DN8 HEV)	07100F13	GDS-M 'Integrated Thermal Module Coolant Filling Mode' Function (for Vehicles With Updated ECU)	0.5 M/H	39116-2J002	I3A	ZZ3

NOTE 1: Normal warranty applies.

NOTE 2: Submit claim on Claim Entry Screen as "Warranty" type.

NOTE 3: This TSB includes Repair validation photos. Op times includes VIN, mileage, and validation photos as outlined in the Digital Documentation Policy.

NOTE 4: The incident parts are subject to callback through the normal Warranty Technical Center (WTC) parts return process. **Claim is subject to debit if the part is not returned.**

NOTE 5: If a part is found in need of replacement while performing this TSB and the affected part is still under warranty, submit a separate claim using the same repair order. If the affected part is out of warranty, submit a Prior Approval request for goodwill consideration prior to performing the work

ROM ID Information Table:

Madal	τM			ROM ID			
MOUEI			ECO P/N	Old	New		
	6AT	+IMMO	39116-2J002	HDN80NS0AQ30RC00			
				HDN80NS0AQ470C00	TIDNO0NS0AQ700C00		
			39116-2J012	HDN81NS0AQ10SC00			
DINGHEV				HDN81NS0AQ20TC00	HDN81NS0AQ680C00		
				HDN81NS0AQ370C00			
			39116-2J013	HDN82NS0AQ370C00	HDN82NS0AQ680C00		

If the automatic ECU update process fails, <u>cycle the ignition key to OFF for at least 30 seconds to</u> <u>reset the control unit</u>. Then resume programming using the Manual ECU Update process.

After the ECU update process shows 100% complete, <u>cycle the ignition key again to OFF for at</u> <u>least 30 seconds to reset the control unit</u>. This step is important for establishing normal powertrain communication and to prevent system errors.

Manual Update:

Model	Event	Menu	Password
DN8 HEV	924	DN8 HEV 6AT +IMMO 39116-2J002	2002
		DN8 HEV 6AT +IMMO 39116-2J012	2012
		DN8 HEV 6AT +IMMO 39116-2J013	2013

NOTE: After the ECU update has been completed:

- Clear any ECM DTC(s) after the ECU update.
- Start the engine to confirm proper operation of the vehicle.

Service Procedure:



This TSB includes Repair validation photos. Refer to the latest Digital Documentation Policy for requirements.

Perform the service procedure referring to the flow chart below.



NOTES:

- Refer to TSB 15-GI-001 for additional tablet-based Mobile GDS ECU update information.
- After the ECU Upgrade process shows 100% complete, <u>cycle the ignition key to OFF for at</u> <u>least 30 seconds to reset the control unit</u>. This step is important for establishing normal powertrain communication and to prevent system errors.
- Clear DTC(s) present after the ECU update.
- Start engine to confirm proper operation of the vehicle.

GDS-M Integrated Thermal Module Coolant Filling Mode Function

1.

Before starting the 'Coolant Filling Mode' procedure, **Make sure ROM ID is latest version**.

<u>Never</u> remove the radiator cap when the engine is hot. Serious scalding could occur by hot fluid escaping under high pressure from the radiator.

Make sure the engine and radiator are cool to the touch, then open the reservoir tank cap (A), supplement the coolant, and reinstall the reservoir cap.

Refer to Shop Manual: Engine Mechanical System > Cooling System > Coolant > Repair procedures

- 2. After turning ENG ON, connect the GDS diagnostic device.
- 3. Place the gear in P (Park) position and engage the emergency brake.
- 4. Turn off the A/C and set the air conditioning temperature and the number of blowers to maximum.
- 5. Select 'S/W Management' (B).





6. Select the '**Integrated Thermal Module Coolant Filling Mode**' (C).

After checking the 'Purpose' and 'Enable

Condition', press 'OK' to proceed.

- SONATA hybri../2022/G 2.0 GDI 🕈 HOME On 28 VCI \$ === S/W Management Systems Unfold All Engine Control System Identification Resetting Adaptive Values Auto Detected Configuration Reset Read VIN Write VIN Evap. Leakage Test ISG TEST(Option) ETC TEST(Option) Leakage test for the evaporative gas system Integrated Thermal Module Coolant Filling Mode CVVD learning ECU Mapping Verification (**I**) HEV Motor Control System HCU/Low DC-DC Converter HEV Battery System Automatic Transaxle E-Shifter (III) Do not touch any system buttons while performing this function.
- SONATA hybri../2022/G 2.0 GDI. HOME Online 28 VCI 💲 Engine S/W Management ₽ Integrated flow control valve (ITM) coolant filling mode This function opens the coolant flow path to assist Purpose coolant filling on ITM equipped engines. 1. IG ON, HEV Ready 2. Transmission P/parking brake ON Þ Enable Condition 3. Coolant temperature below 80'C 4. A/C OFF/Blower MAX/Max Heating Concerned ITM Component Concerned DTC Fail Safe -Etc ок Do not touch any system buttons while performing this function.

7.

- 8. Check the items listed under Condition and press **'OK'**.
- SONATA hybri../2022/G 2.0 GDI HOME On VCI 8 58 Engine S/W Management Integrated Thermal Module Coolant Filling Mode Integrated flow control valve (ITM) coolant filling mode] This function opens the coolant flow path to assist coolant filling on ITM equipped engines. Condition] h 1. IG ON, HEV Ready 2. Transmission P/parking brake ON 3. Coolant temperature below 80'C 4. A/C OFF/Blower MAX/Max Heating **OK** button : Check condition [Cencel] button : End additional functions OK Cancel Do not touch any system buttons while performing this function.
- 9. If the phrase "ECU please try again after updating the nECU latest Rom" appears, then the ECU version must be updated to V80 or higher (current version: V70).
 - Refer to TSB 15-GI-001 for additional tablet-based Mobile GDS ECU update information.

If ECU Update is not required, skip to step 11.

HOME Online SUNATA hybri 2022/G 2.0 GDL VCI \$) 58
S/W Management	
Integrated Thermal Module Coolant Filling Mode	
• [Integrated flow control valve (ITM) coolant filling mode]	
This function opens the coolant flow path to assist coolant filling on ITI equipped engines.	N
Information	
ECU Please try again after updating the nECU latest Rom.	
ок	
OK Cancel	
Do not touch any system buttons while performing this function	n.

10. If ECU required updating in step 9, a STUI picture is required.



- 11. Check the items listed in Function Sequence, then verify the following:
 - Coolant temperature of 98°F (36.75°C)
 - A/C OFF state

upload to STUI.

• Transmission in "P" (Park)



f	HOME	Online		쏘나	타 hybrid	I(D/20 Engin	023/G e	2.0 GD	ı		vci 🖇		33
진단 종료					s/w N	/lana	gem	ent					
-	ntegrat	ed Therm	nal Mo	odule C	oolant F	Filling	Mode	•					
• [Integr	rated flow	w con	trol va	alve (IT	M) co	olant	filling	mod	le]			
3	•[Fur	nction Se	equer	ice]	•••	•••	••	••	••	•••			
- 1	1. Er 2. Co	nter cool oolant in	ant fil jectio	lling m n	iode in	HEV F	Ready	/ state					5
1	3. Pe 4. Ri	erform 1 uns AEW	0 time /P rac	es P-g ina 50	ear eng times	ine ra	cing						5
	5. Pe	erform 1	0 time	es P-g	ear eng	ine ra	ces						з.
	7. Pe	erform 1	0 time	es P-g	ear eng	ine ra	ces						
	<mark>OK</mark> bu	itton: Ent	terina	coola	nt filling	a mod	le le	••					•
	Cance	ll button	: End	additi	ional fu	nctior	าร						
				Coola	nt tem	pera	ture	: 36.7	′5 ℃				
			Ξ.		A/C	State	э:	OFF					
			Т	ransn	nissior	n P-g	ear s	status	: : ON	۷			
	1								Car	ıcel			
	r.								Gal	1001			
1		Do not t	ouch	any sy	ystem b	outtor	is wh	ile pe	rform	ning	this fu	nction.	

12. With transmission in P (Park), step on the accelerator pedal and raise it to 4,700 rpm or more, then lower it to 1,500 rpm or less.

Repeat 10 times and check the amount of coolant in the reservoir tank before replenishing. (Follow instructions on GDS as shown at right.)

А номе	Online	SONATA hybri Er	./2022/G 2.0 GDI ngine		vci 💲	•	5-3
		S/W Ma	nagement				
Integra	ited Thermal M	lodule Coolant Filli	ng Mode				
• [Integ	grated flow co	ontrol valve (ITM)	coolant filling n	node]			
acce	lerate over	4,700 RPM.					
A[Ca	aution]						
1. If π 2. In r∉	is less than 4, estarting after	,700 RPM, it does r canceling the fu	not count. nction, the coun	t starts	s from th	е	
beginr	ning.						
		Coolanttempe	erature:72.75 °	Ċ			
		EngineRP	M: 0RPM				
		Numberofruns	:0times/10tim	ies			
		Ca	incel				
1	Do not touch	h any system b	s while perfe	orming	this fun	ction.	
1		SONATA hys	4/G 2.0 GDI			13	5.7
HOME	Online	E.	ine		VCI 🕉	**	192
- Integra	nted Thermal M	S/W Ivian	nagement				
			ng wode				
• [Integ	rated flow co	ntrol valve (ITM)	coolant filling m	node]			
Keep	it below 1,	500 RPM after	you step off	the ac	ccelera	tor.	
▲[Ca 1. It de	aution] oes not count	if it is over 1,500	RPM.				
2. If th beginr	ie function is o ning.	canceled and the	n restarted, the o	count p	roceeds	from 1	the
~		,		_			
		Coolanttempe	erature:36.75	С			
		EngineReiv	1:5144KPM	200			
		Numberonuns		les			
• [Integ	rated flow co	ntrol valve (ITM)	olant filling n	node]			
accel	lerate over	4,700 RPM.					
nformati	on						
	01.						
The P-	stage engine	racing has been o	completed.				
Check	the coolant le	evel in the reserve	oir tank and refill	it if ins	sufficient	t.	
Press	the <mark>[OK]</mark> butto	on to automaticall	ly perform AEWF	^o racing	g.		
		– (ок 🗖				

13. Wait until AEWP racing is automatically performed 50 times.

ном	E Online	SONATA hy	/bri/2022/G 2.0 GDI. Engine		VCI 🖇	•	20
		s/w	Management				
Integr	ated Thermal	Module Coolant	Filling Mode				
• [Inte	grated flow (control valve (I	ΓM) coolant filling	mode]			
50 A	EWP racin	ng runs, so pl	ease wait.				
lt ta	kes about	17 minutes i	n total.				
AEV	/P 3800RP	M running!!!					
		Number					
		Numberon	uns:otimes/sotir	nes			
ном	E Online	SONATA hy	/b. 22/G 2.0 GDI Engine		vci 🖇	•	28
		s/w	Management				
Integr	ated Thermal	Module Coolant	Filling Mode				
[Inte	grated flow (control valve (I	۲M) coolant filling ı	node]			
50 A	EWP racin	ng is running,	so please wait.				
lt ru	ns for abo	ut 17 minute	s in total.				
AEV	P ORPM r	unning!!!					
		Numberofro	uns:1times/50tin	nes			
ном	E Online	SONATA h			VCI \$	-	
		s/w	Management				
Integ	ated Thermal	Module Coolant	Filling Mode				
[Inte	grated flow	control valve (I	FM) coolant filling	mode]			
50 4	EWP racir	ng runs, so pl	ease wait.				
lt ta	kes about	17 minutes i	n total.				
AEV	/P 3800RP	PM running!!!					
forma	tion						
AEW	P racing is c	omplete.					
After	pushing the	[OK] button, ru	n the P-stage engin	e racing]		
			ок				

14. With transmission in P (Park), step on the accelerator pedal and raise it to 4,700 rpm or more, then lower it to 1,500 rpm or less.

Repeat 10 times and check the amount of coolant in the expansion bottle before replenishing. (Follow instructions on GDS as shown at right.)

HOME Online	SON	ATA hybri/2022/G 2.0 GI Engine	DI	VCI 🖇	•	5-3
	s	/W Management				
Integrated There	mal Module Co	olant Filling Mode				
Integrated flo	ow control val	ve (ITM) coolant fillin	g mode]			
accelerate o	over 4,700 F	PM.	-			
uccelerate	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
▲[Caution] 1. If it is less th 2. In restarting beginning.	han 4,700 RPN I after cancelii	A, it does not count. ng the function, the co	ount starts	s from th	e	
	Coolar	nttemperature:72.7	′5 ℃			
	Er	igineRPM: 0RPM				
	Numbe	rofruns:0times/10	times			
	SONA	TA hyb. 22/G 2.0 Gl	DI	VCI	B	5.3
TT HOME ON THE		Engine		VCI A	••	675
Integrated Them	ວ mal Module Co	olant Filling Mode				
Integrated flo	ow control val	ve (ITM) coolant fillin	g mode]			
Keep it belo	w 1,500 RP	M after you step o	off the a	ccelera	tor.	
▲ [Caution] 1. It does not o 2. If the functio beginning.	count if it is ov on is canceled	er 1,500 RPM. I and then restarted, ti	he count p	proceeds	; from	the
	Coolar	ttemperature:36.7	′5 ℃			
	Eng	JINERPM: 5144RPM	/I			
	Numbe	Torruns.zumes/10	umes			
	SONA	TA hyb. 22/G 2.0 GI	DI	NOL \$	B	
TT HOME ONIME		Engine		VCI p	U	
	د mal Module Co	olant Filling Mode				
• [Integrated flo	w control val	ve (ITM) coolant fillin	g mode]			
accelerate o	over 4,700 R	PM.				
Information			_	_		
The Distance or		a been completed				
The P-stage er	ngine racing na	as been completed.	.	<i></i>		
Check the coo	lant level in th	e reservoir tank and r	etill it if in	sufficien	t.	
Press the [OK]	button to auto	omatically perform AE	WP racin	g.		
	1	ок				

15. Wait until AEWP racing is automatically performed 10 times.

HOME Online	SONATA hybri/20 Engin	22/G 2.0 GDI e	vci \$	•	3-3
	S/W Mana	gement			
Integrated Thermal N	Iodule Coolant Filling	Mode			
• [Integrated flow co	ntrol valve (ITM) co	olant filling mo	de]		
Now running 10	times AEWP Rad	cing, so plea	se wait.		
It runs in toal 4	minutes.				
AEWP 3800RPN	1 is running!!!				
	Numberofruns:0t	imes/10time	S		
HOME Online	SONATA hybi	22/G 2.0 GDI e	VCI \$	•	5-3
	S/W Mana	gement			
Integrated flow co	ntrol valve (ITM) co	olant filling mo	de J		
Now running 10	times AEWP Rad	cing, so plea	se wait.		
It runs in toal 4	minutes.				
AEWP 3800RPM	1 is running!!!				
Information					
AEWP racing is cor	nplete.				
After pushing the [0	K] button, run the P	stage engine ra	acing		
	ок				

16. With transmission in P (Park), step on the accelerator pedal and raise it to 4,700 rpm or more, then lower it to 1,500 rpm or less.

Repeat 10 times and check the amount of coolant in the expansion bottle before replenishing. (Follow instructions on GDS as shown at right.)



Ħ	HOME	Online		SONAT	A hybr	i/202 Engine	22/G 2	.0 GDI.		V	′CI ≵	•	50
				s/	wм	anag	geme	ent					
	Integrat	ed Thermal	l Modu	ile Cool	lant Fi	lling N	Node						
•	[Integr	ated flow	contro	ol valve	e (ITM	1) coo	olant f	illing	mode	I			
	Keep	it below '	1,500	0 RPM	1 afte	er yo	u ste	p off	the a	acc	elera	tor.	
	▲[Car 1. It do 2. If the beginni	u tion] es not cou e function i ing.	unt if it is can	t is ove celed a	r 1,50 and th	i0 RPI ien re	M. starte	d, the	count	рго	ceeds	s from	the
			Co	oolant	ttemp	oerat	ure:3	6.75	°C				
				Engi	neRP	PM: 5	5144F	RPM					
			Nu	mber	ofrun	ıs:2ti	mes/	10tir	nes				
					Ĺ		7						
4	HOME	Online		SONAT	'A hybri	i, 202 Engine	22/G 2.	.0 GDI.		V	′CI ≵	Ð	124
				s/	wм	anag	geme	nt					
•	[Integr	ated flow o	contro	ol valve	e (ITM	I) coo	lant f	illing	node	I			
	accele	erate ove	er 4,7	'00 RF	РΜ.								
nfo	ormatic	n											
	The P-s	stage engir	ne rac	ing has	s beer	n com	plete	d.					
	Check	the coolan	nt level	l in the	reser	voir ta	ank ar	nd refi	ll it if i	nsut	fficien	t.	
	Press t	he <mark>[OK]</mark> but	utton te	o autor	natica	ally pe	erforn	ח AEW	P raci	ng.			
					••			• •					

17. When the phrase "Ends the additional function" appears on the diagnostic device, check the amount of coolant and reinstall the reservoir tank cap.



Take a screenshot of the 'Integrated flow control valve (ITM) coolant filling mode has been completed' screen using your particular tablet's screenshot save method and upload to STUI.

HOME Online	SONATA hybri/2022/G 2.0 GDI Engine	vci 💲 💽 👯
S/W Management		
Integrated Thermal Module Coolant Filling Mode		
• [Integrated flow control valve (ITM) coolant filling mode]		
P-speed engine racing and AEWP racing completed.		
If you wait until the coolant temperature drops below 80°C, the coolant filling function ends.		
Information		
The integrated flow control valve (ITM) coolant filling mode has been completed.		
	ок	
		e
	Cancel	
Do not touch any system buttons while performing this function.		

18. Procedure is complete.