



ESI Unitary System Refrigerant Charge

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1. How to enter AUTO charge mode?

Turn on the system, **set 5 ° F lower than indoor temperature in cooling mode** from the thermostat to complete AUTO charge mode.

Charging method	Outdoor Ambient Temperature	System operation mode when charging
Auto charge mode by refrigerant coefficient	50 ° F < T < 120 ° F	Cooling only
Sub-cooling		
Weigh-in	-3 ° F < T < 122 ° F	-

Press and hold BS4 for 5 seconds until SEG1 displays blinking 7, then wait one minute to enter AUTO charge mode.

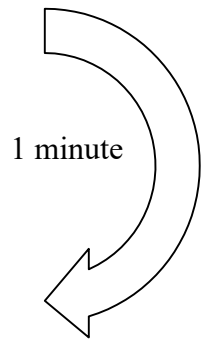
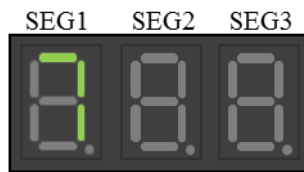
NOTE: Start-up control is enforced to complete prior to activate the AUTO charge mode. It may take 4 to 10 minutes to exit start-up control procedure and fix the compressor frequency (RPS) as the following table.



EODA18H-2436



EODA18H-4860



Model	Capacity *1	Compressor frequency (RPS)	
		AUTO charge mode OR Pump down in cooling	Pump down *2 in heating
EODA18H-2436	2Ton	56	66
EODA18H-2436	3Ton	66	80
EODA18H-4860	4Ton	56	58
EODA18H-4860	5Ton	66	70

Remarks:

1. Select the required capacity by dip the 2nd switch of SW1.
2. Show low pressure on 7 segment display (LED).

2. Charging by refrigerant coefficient

Apply charging and refrigerant adjustment in **cooling mode**.

If outdoor ambient temperature is below 50° F, use weigh-in charge method only.



[Refrigerant coefficient]

The refrigerant coefficient is used to evaluate the refrigerant level in the system.



- I. Run the system for 15~20 minutes and check the coefficient number (here short for “X”, $0 < X < 1$) from the LED display. A perfect charging should be displayed 0.5. **But if the LED displays “--” for more than 20 minutes, stop charging and adjust the TXV opening to ensure required compressor suction superheat (SH).**
- II. If $X > 0.6$, remove refrigerant; or $X < 0.4$, add more refrigerant. Then wait for 5 minutes to allow system pressure balanced. Check the new coefficient number to make sure you get 0.5. (0.4 to 0.6 is acceptable if SH is no greater than 20° F.)

Note: Maintain a minimum of 5 minutes’ operation after every refrigerant amount or TXV opening adjustment. Technically, gauges are not required in this charging method. **Ecoer Smart Service Pro App will provide live system pressure and temperature data.** (In order to make data available on your smart phone, register the system in Ecoer Smart Service Pro App before charging.)

[How to end AUTO charge mode]

- Press **BS4 once**
- Automatically exit charging mode in 2 hours running
- Turn off the system from thermostat

Model

EODA18H-2436

EODA18H-4860

Designed sub-cooling degree	10°F ($\pm 2^\circ\text{F}$)	8°F ($\pm 2^\circ\text{F}$)
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3. Charging by weigh-in method

Weigh-in method can be used for the initial installation, or anytime a system charge needs to be replaced.

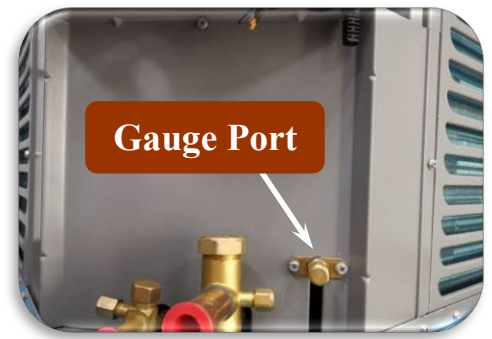
Weigh-in method can also be used when power is not available on job site or ambient temperature is improper to use refrigerant coefficient and sub-cooling charge method.

When use weigh-in method in heating mode, make sure the compressor discharge superheat (DSH=TD-SC-TL-1.8°F) meets the target value.

Basically, the liquid line sub-cooling (SC) shall not be over 30°F. Query live data by BS3 button to calculate DSH or check SC/DSH from ESS Pro App.



Use the **gauge port** connected to compressor suction side to charge the system in heating mode.



Model	Factory charge	Indoor AHU	Charge amount for indoor coil	Charge multiplier for liquid line length *2
EODA18H-2436	The data on nameplate	24K	0	0.6 oz/ft
		36K	14oz *1	
36K		0		
48K		0		
EODA18H-4860		60K	14oz *1	

- Invalid for system with electric heat or other third-party heat source whose capacity is 1.2 times of heat pump nominal capacity.**

For example:

3 Ton system equips with a 15kW indoor electric heat kit.

$$15 / (3 * 3.52) = 1.42 > 1.2$$

Note: 1Ton=3.52kW

- Only take line length over 25ft into consideration.**

TIPS: How to adjust indoor TXV opening

To keep the best Ecoer Smart Inverter (ESI) systems' performance and reliability, be sure liquid line sub-cooling (SC) and compressor suction superheat (SH) meet our requirements.

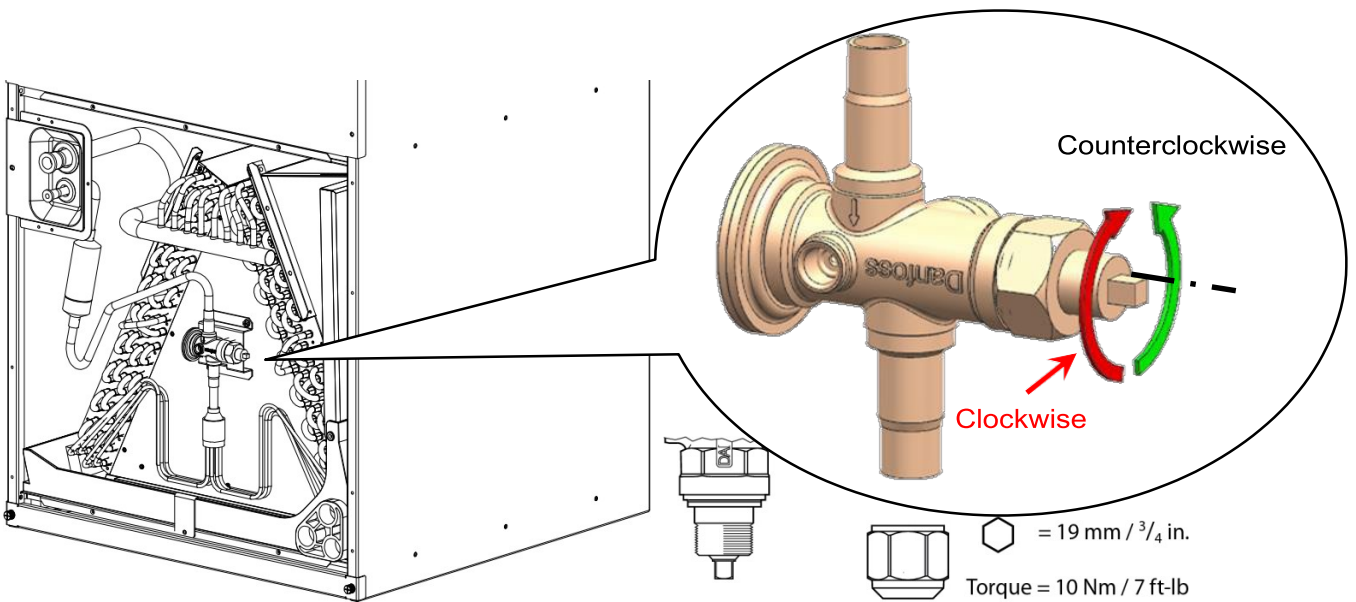


**Target SC and SH
in cooling**

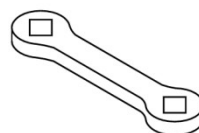


- If the LED displays "--" in AUTO charge mode for more than 20 minutes, stop charging and use a wrench to **clockwise** the TXV to ensure $SH \geq 7^\circ F$.
- In case that the cooling performance is abnormal due to improper superheat (i.e. $SH > 20^\circ F$). Adjust the system according to
 1. Activate AUTO charge mode from outdoor condensing unit to fix compressor frequency (RPS) by press BS4 for 5 seconds on PCB. Run the system for 15~20 minutes and check refrigerant coefficient number from LED display or ESS Pro App, **add refrigerant until you get 0.6**.
 2. Open the front panel of the indoor unit, then use a wrench to **counterclockwise the TXV until $SH \leq 20^\circ F$** . This will make more refrigerant flow into indoor coil for better cooling performance.

NOTE: Maintain a minimum of 5 minutes' operation after every refrigerant amount or TXV opening adjustment, then check live SC and SH from ESS Pro App.



Remember:
Put back the panel after TXV adjusted



⊕ ⊖
 $\Delta SH / 1 \text{ turn} / 360^\circ \approx$
 R410A: 0.6°C / 1.1°F

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