# ESI Unitary System Refrigerant Charge



# 1. How to enter AUTO charge mode?

Turn on the system, set 5˚F lower than indoor temperature in cooling mode at thermostat to complete this AUTO charge mode.

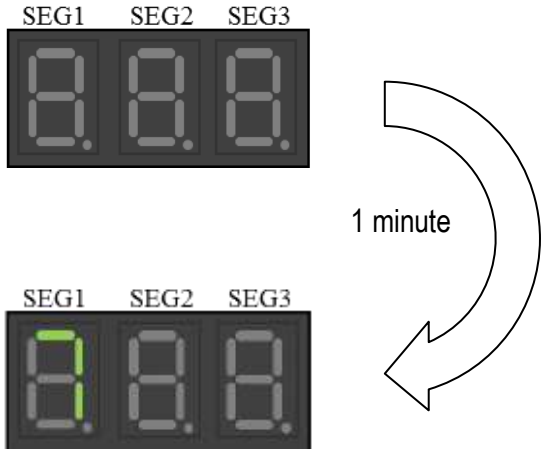
| Charging method | Outdoor Ambient Temperature | System operation mode when charging |
|---|---|---|
| Auto charge mode by refrigerant coefficient | 50˚F < T < 115˚F | Cooling only |
| Sub-cooling | | |
| Weigh-in | -3˚F < T < 122˚F | - |

**Press and hold BS4 for five (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 this AUTO charge mode. It may take 4 to 10 minutes to exit start-up control procedure and fix the compressor speed (RPS) as the following table.

**EODA18H-2436**

**EODA18H-4860**




| Capacity *1 | Compressor speed (RPS) | |
|---|---|---|
| | AUTO charge mode OR Pump Down*2 in cooling | Pump Down*2 in heating |
| 2Ton | 56 | 66 |
| 3Ton | 66 | 80 |
| 4Ton | 56 | 58 |
| 5Ton | 66 | 70 |

**Remarks:**

1. Select the required capacity by dip the 2nd switch of SW1 on main control board (MCB).
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** is used to evaluate the refrigerant level in the ecoer systems.


I. Run the system for 15 to 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 (SSH).

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 7˚F ≤ SSH ≤ 20˚F.)

**Note:** Maintain a minimum operation of 5 minutes after every refrigerant amount or TXV opening adjustment. Technically, gauges are not required in this charging method.

**Ecoer Smart Service Pro App shows live system pressure and temperature data.** (In order to make data available on your smart phone, register the system via Ecoer Smart Service Pro App before charging.)

**[How to end AUTO charge mode]**

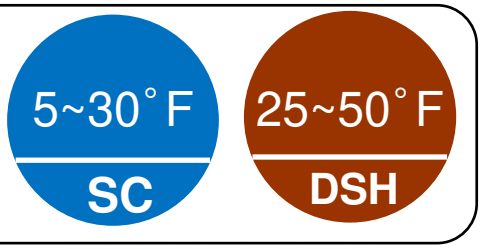
- Press BS4 once
- Automatically exit in 2 hours
- Turn off the system at thermostat

| Model | Designed sub-cooling degree (SC) |
|---|---|
| 2Ton | 8ºF (±2ºF) |
| 3Ton | 10ºF (±2ºF) |
| 4Ton-5Ton | 8ºF (±2ºF) |

# 3. Charging by weigh-in method

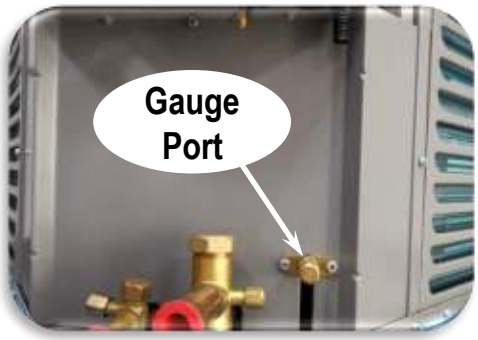
Weigh-in method can be used for the initial installation, or anytime a system charge needs to be replaced. Weigh-in method can also be used when power is not available on job site or ambient temperature is improper to use refrigerant coefficient and sub-cooling charge method.

When use weigh-in method in heating mode, make sure the liquid line sub-cooling degree (SC) and compressor discharge superheat (DSH) meet the target value.




Query live data by BS3 button to calculate DSH or check SC and DSH via ESS Pro App.

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




| Model | Factory charge | Air Handler | Charge amount for air handler | Charge multiplier for liquid line length *2 |
|---|---|---|---|---|
| 2436 | See nameplate | 24K | 0 | 0.6 oz/ft |
| | | 36K | 14oz *1 | |
| 4860 | | 36K | 0 | |
| | | 48K | **11**oz *3 | |
| | | 60K | **11**oz *3 +14oz *1 | |

1. **An additional amount of refrigerant adjustment is required for a large indoor coil.** Invalid for system with electric heater or other third-party heat source whose capacity is 1.2 times of heat pump nominal capacity. (e.g. No additional charge for a 3 Ton system equipping with a 15kW indoor electric heat kit.)

   15/(3*3.52)=1.42 >1.2 Note: 1Ton=3.52kW

2. **Every condensing unit is factory charged for 25ft of standard size line set.** A refrigerant adjustment may be necessary if the line set length is over or under the pre-charged 25 ft (adding or removing 0.6 oz/ft on 3/8 liquid line respectively).

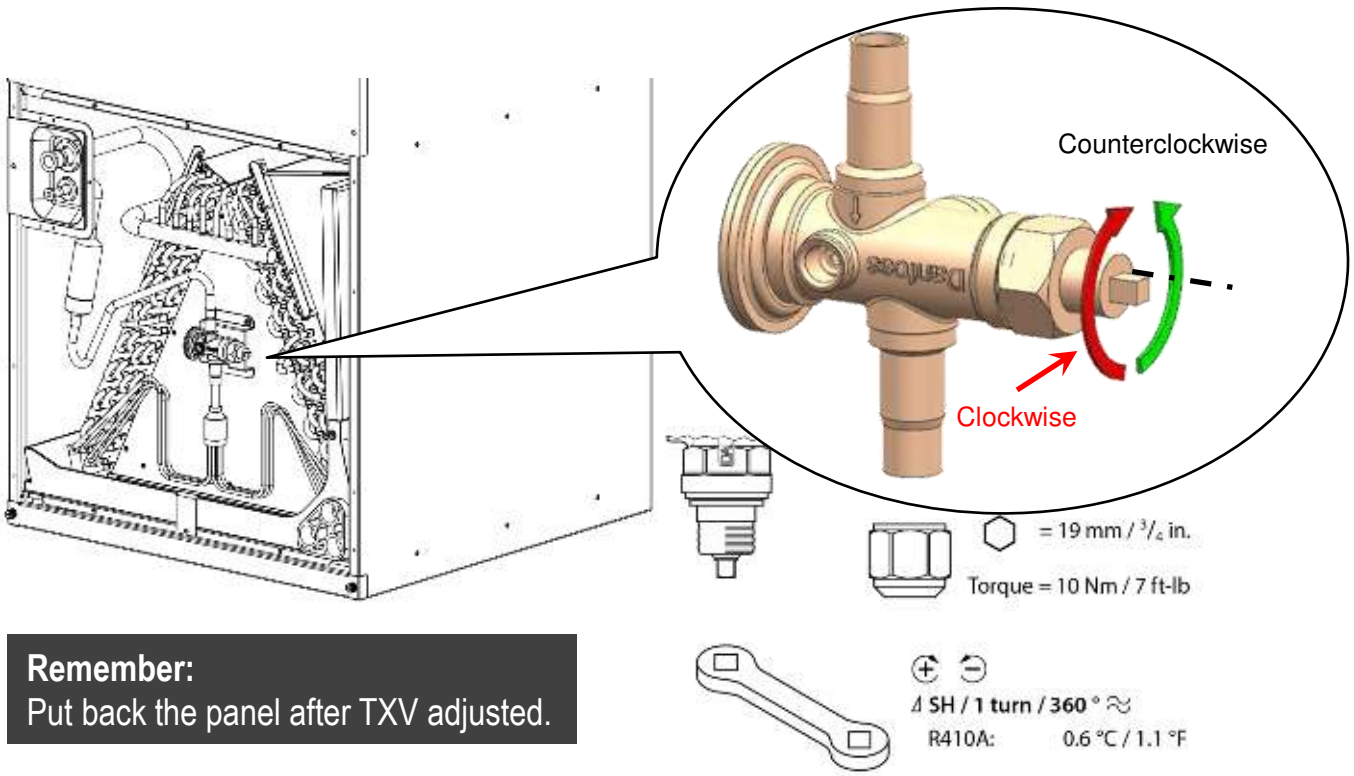
3. **Compensate 11oz charge for units built on and after Dec 1, 2019.**

# TIPS: How to adjust indoor TXV opening

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


- 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 SSH ≥ 7˚F.
- In case that the cooling performance is abnormal due to improper superheat (i.e. SSH >20˚F). Proceed as follows to complete the field adjustment.
  1. Activate AUTO charge mode from outdoor condensing unit to fix compressor speed (RPS) by press BS4 for 5 seconds on MCB. Run the system for 15 to 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 SSH ≤ 20˚F**. This will make more refrigerant flow into indoor coil for better cooling performance.

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




**Remember:**
Put back the panel after TXV adjusted.

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