



**FRIEDRICH**

1 8 8 3

## Endeavor® Line E-Series™ iC Air Conditioners



### **FWSA14AY**

Cooling Efficiencies up to: 15.2 SEER2 / 12 EER2

Nominal Sizes: 1.5 to 2.5 Tons [5.28 to 8.79 kW]

Cooling Capacities: 17.1 to 28.6 kBTU [5.0 to 8.38 kW]

Refrigerant Type: R-454B



## Table of Contents

|   |      |
|---|------|
| Features and Benefits .....             | 3    |
| Model Number Identification .....       | 4    |
| General Data/Electrical Data .....      | 5    |
| Accessories .....                       | 6    |
| Weighted Sound Power .....              | 6    |
| Unit Dimensions .....                   | 7    |
| Clearances .....                        | 8    |
| Refrigerant Line Size Information ..... | 9-10 |
| Performance Data .....                  | 11   |
| Limited Warranty .....                  | 12   |

## Features and Benefits

- **Fully Louvered Steel Cabinet:** Features durable construction to add protection from yard hazards, weather corrosion
- **Optimized 7mm Coil Design:** Allows for improved airflow, heat transfer and energy consumption
- **Easily Accessible Control Box:** Ease of installation and serviceability
- **PlusOne® Refrigerant Detection System<sup>TM1</sup>:** An integrated one-box, patented design featuring the A2L sensor and mitigation board, offering easier commissioning with a single component and simplified wiring configuration, compatibility with any 24V thermostat application and system protection by automatically pausing outdoor unit operation — if excess refrigerant is detected

<sup>1</sup>Factory or field-installed in the furnace coil or air handler and is applicable to the complete heating and cooling system featuring Low GWP Refrigerant (A2L).

# Air Conditioners

| <u>FW</u>       | <u>SA</u>        | <u>14</u>       | <u>A</u>        | <u>Y</u>    | <u>18</u>   | <u>A</u>       | <u>J</u>            | <u>1</u>    | <u>N</u>              | <u>A</u>       |
|-----------------|------------------|-----------------|-----------------|-------------|---|----------------|---------------------|-------------|-----------------------|----------------|
| Brand           | Product Category | SEER2           | Region          | Refrigerant | Capacity BTU/HR   | Major Series   | Voltage             | Type        | Controls              | Minor Series   |
| FW - Friedrich® | SA - Legacy AC   | 14 - 14.3 SEER2 | A - All Regions | Y - R-454B  | 18 - 18,000 [5.28 kW]<br>24 - 24,000 [7.03 kW]<br>30 - 30,000 [8.79 kW] | A - 1st Design | J - 1ph, 208/230/60 | 1 - 1-Stage | N - Non-Communicating | A - 1st Design |

[ ] Designates Metric Conversions

| AVAILABLE MODELS |
|------------------|
| FWSA14AY18AJ1NA  |
| FWSA14AY24AJ1NA  |
| FWSA14AY30AJ1NA  |

| STANDARD EQUIPMENT              |
|---------------------------------|
| R-454B Refrigerant              |
| Scroll Compressor               |
| Field Installed Filter Drier    |
| Front Seating Service Valves    |
| Internal Pressure Relief Valve  |
| Internal Thermal Overload       |
| Long Line capability            |
| Low Ambient capability with Kit |
| Optimized Venturi Airflow       |
| Rust resistant screws           |
| QR code                         |
| External gauge ports            |

| <b>General Data</b>                                      |                     |                     |                     |
|--|---------------------|---------------------|---------------------|
| <b>MODEL NO.</b>   | <b>FWSA14AY18A</b>  | <b>FWSA14AY24A</b>  | <b>FWSA14AY30A</b>  |
| <b>Nominal Tonnage</b>                                   | 1.5                 | 2.0                 | 2.5                 |
| <b>Valve Connections</b>                                 |                     |                     |                     |
| Liquid Line O.D. – in.                                   | 3/8                 | 3/8                 | 3/8                 |
| Suction Line O.D. – in.                                  | 3/4                 | 3/4                 | 3/4                 |
| <b>Refrigerant (R-454B) furnished oz.<sup>1</sup></b>    | 103                 | 101                 | 124                 |
| <b>Compressor Type</b>                                   | Scroll              |                     |                     |
| <b>Outdoor Coil</b>                                      |                     |                     |                     |
| Net face area – Outer Coil                               | 14.5                | 14.5                | 18.1                |
| Net face area – Inner Coil                               | 13.9                | 13.9                | 17.5                |
| Tube diameter – in.                                      | 0.276               | 0.276               | 0.276               |
| Number of rows   | 2                   | 2                   | 2                   |
| Fins per inch  | 22                  | 22                  | 22                  |
| <b>Outdoor Fan</b>                                       |                     |                     |                     |
| Diameter – in.   | 18                  | 18                  | 22                  |
| Number of blades   | 3                   | 3                   | 2                   |
| Motor hp   | 1/7                 | 1/7                 | 1/6                 |
| CFM  | 2036                | 2036                | 2546                |
| RPM  | 1075                | 1075                | 825                 |
| Watts  | 154                 | 154                 | 165                 |
| <b>Shipping weight – lbs.</b>                            | 154                 | 153                 | 185                 |
| <b>Operating weight – lbs.</b>                           | 162                 | 161                 | 192                 |
| <b>Electrical Data</b>                                   |                     |                     |                     |
| <b>Line Voltage Data (Volts-Phase-Hz)</b>                | <b>208/230-1-60</b> | <b>208/230-1-60</b> | <b>208/230-1-60</b> |
| <b>Maximum overcurrent protection (amps)<sup>2</sup></b> | 15                  | 20                  | 25                  |
| <b>Minimum circuit ampacity<sup>3</sup></b>              | 12                  | 14                  | 16                  |
| <b>Compressor</b>  |                     |                     |                     |
| Rated load amps  | 8                   | 10                  | 12                  |
| Locked rotor amps  | 45                  | 60                  | 71                  |
| <b>Condenser Fan Motor</b>                               |                     |                     |                     |
| Full load amps   | 0.80                | 0.80                | 0.80                |
| Locked rotor amps  | 1.70                | 1.70                | 1.70                |

<sup>1</sup>Refrigerant charge sufficient for 15 ft. length of refrigerant lines. For longer line set requirements see the installation instructions for information about set length and additional refrigerant charge required.

<sup>2</sup>HACR type circuit breaker or fuse.

<sup>3</sup>Refer to National Electrical Code manual to determine wire, fuse and disconnect size requirements.

## Accessories

| MODEL NO.                                       |                | FWSA14AY18A    | FWSA14AY24A    | FWSA14AY30A    |
|---|----------------|----------------|----------------|----------------|
| Compressor crankcase heater <sup>1</sup>        |                | 44-17402-44    | 44-17402-44    | 44-17402-44    |
| Low ambient control                             |                | RXAD-A08       | RXAD-A08       | RXAD-A08       |
| Compressor sound cover                          |                | 68-23427-26    | 68-23427-26    | 68-23427-26    |
| Compressor hard start kit                       |                | SK-A1          | SK-A1          | SK-A1          |
| Compressor time delay                           |                | RXMD-B01       | RXMD-B01       | RXMD-B01       |
| Low pressure control                            |                | RXAC-A07       | RXAC-A07       | RXAC-A07       |
| High pressure control                           |                | RXAB-A07       | RXAB-A07       | RXAB-A07       |
| Liquid Line Solenoid<br>(24 VAC, 50/60 Hz)      | Solenoid Valve | 200RD2T3TVLC   | 200RD2T3TVLC   | 200RD2T3TVLC   |
|   | Solenoid Coil  | 61-AMG24V      | 61-AMG24V      | 61-AMG24V      |
| Liquid Line Solenoid<br>(120/240 VAC, 50/60 Hz) | Solenoid Valve | 200RD2T3TVLC   | 200RD2T3TVLC   | 200RD2T3TVLC   |
|   | Solenoid Coil  | 61-AMG120/240V | 61-AMG120/240V | 61-AMG120/240V |

<sup>1</sup>Crankcase Heater recommended with Low Ambient Kit.

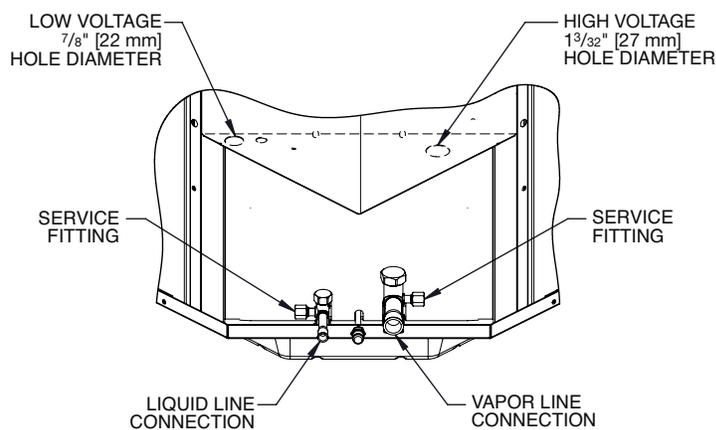
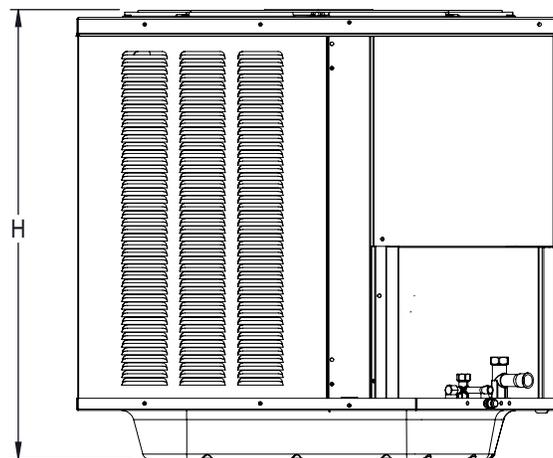
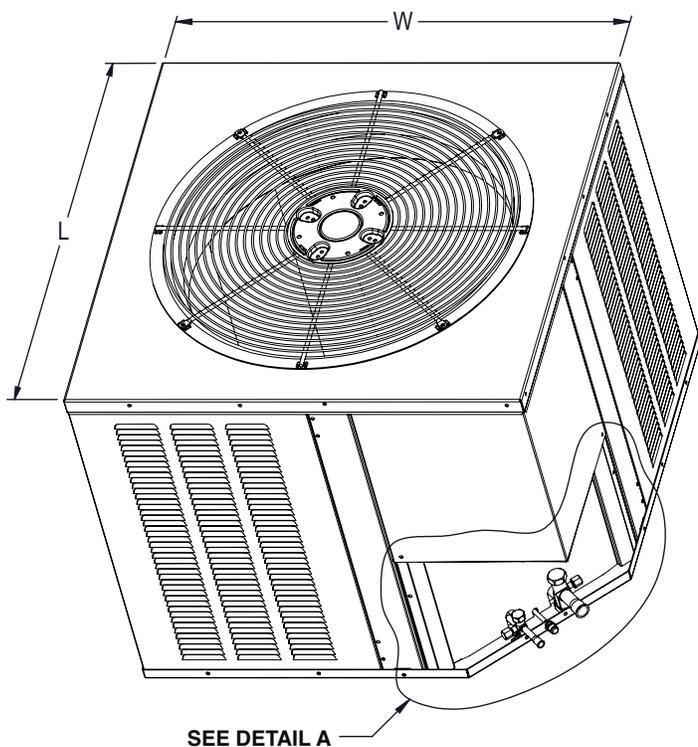
## Weighted Sound Power Level (dBA)

| UNIT SIZE -<br>VOLTAGE, SERIES | STANDARD<br>RATING (dBA) | TYPICAL OCTAVE BAND SPECTRUM (dBA WITHOUT TONE ADJUSTMENT) |      |      |      |      |      |      |
|--------------------------------|--------------------------|--|------|------|------|------|------|------|
|                                |                          | 125  | 250  | 500  | 1000 | 2000 | 4000 | 8000 |
| FWSA14AY18A                    | 76.0                     | 56.7   | 59.5 | 62.1 | 66.1 | 64.7 | 62.5 | 62.6 |
| FWSA14AY24A                    | 76.0                     | 56.6   | 57.9 | 62.6 | 67.2 | 65.5 | 61.1 | 58.0 |
| FWSA14AY30A                    | 74.0                     | 46.7   | 55.2 | 62.8 | 66.1 | 60.4 | 57.3 | 51.2 |

**NOTE:** Tested in accordance with AHRI Standard 270-08 (not listed in AHRI)

## Unit Dimensions

| MODEL NO.   | OPERATING  |     |            |     |           |     | SHIPPING   |     |            |     |           |     |
|-------------|------------|-----|------------|-----|-----------|-----|------------|-----|------------|-----|-----------|-----|
|             | H (Height) |     | L (Length) |     | W (Width) |     | H (Height) |     | L (Length) |     | W (Width) |     |
|             | INCHES     | mm  | INCHES     | mm  | INCHES    | mm  | INCHES     | mm  | INCHES     | mm  | INCHES    | mm  |
| FWSA14AY18A | 32.25      | 819 | 23.63      | 600 | 23.63     | 600 | 32.50      | 826 | 24.75      | 629 | 24.75     | 629 |
| FWSA14AY24A | 32.25      | 819 | 23.63      | 600 | 23.63     | 600 | 32.50      | 826 | 24.75      | 629 | 24.75     | 629 |
| FWSA14AY30A | 32.25      | 819 | 27.63      | 702 | 27.63     | 702 | 32.50      | 826 | 28.75      | 730 | 28.75     | 730 |



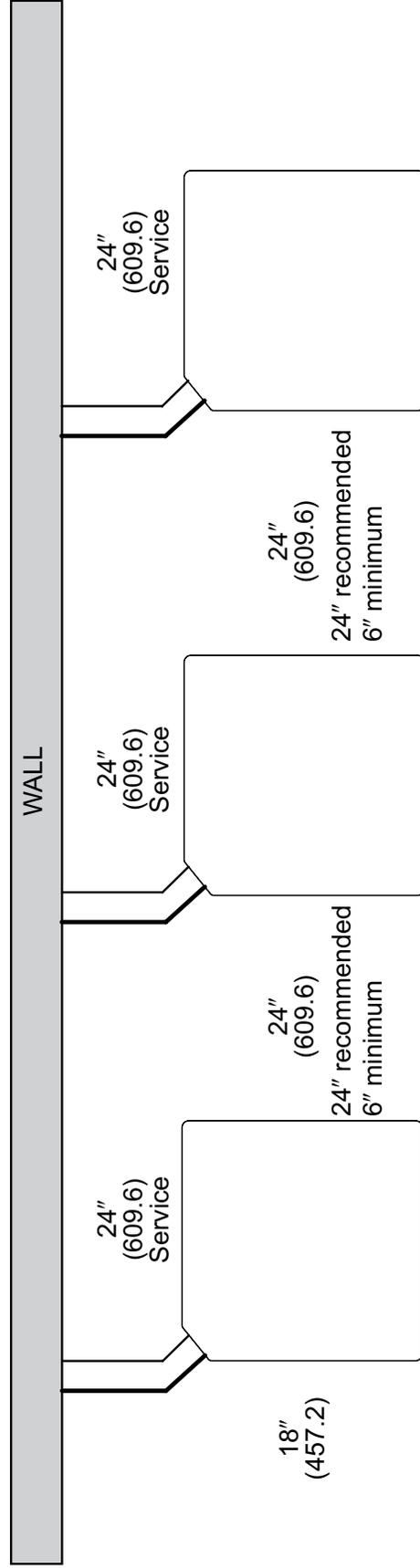
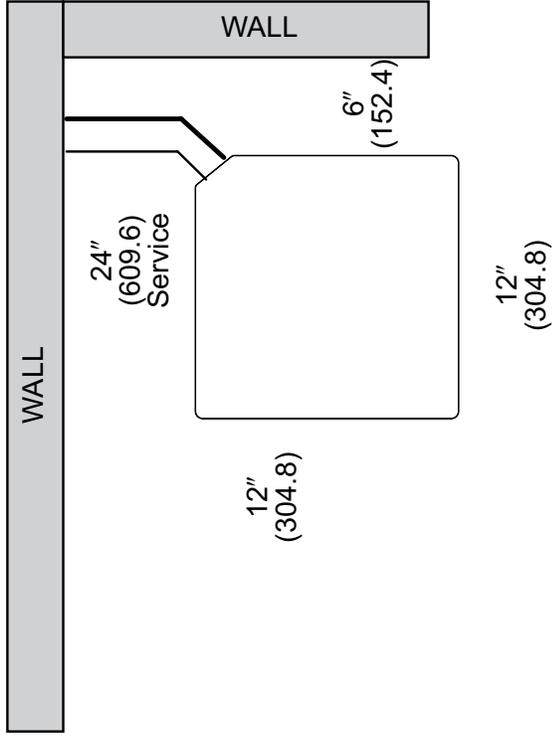
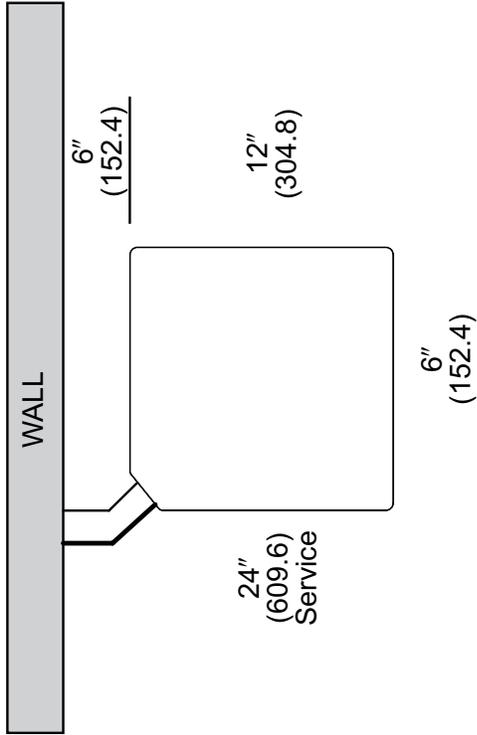
DETAIL A

ST-A1331-01

**NOTE:** Illustrations show the deep drawn basepan.

[ ] Designates Metric Conversions

# CLEARANCES



**NOTE: NUMBERS IN ( ) = mm**

**IMPORTANT:** When installing multiple units in an alcove, roof well or partially enclosed area, ensure there is adequate ventilation to prevent re-circulation of discharge air.

## Refrigerant Line Size Information

| 13.4/14.3 SEER2 AC R-454B |                            |                             |  |         |         |          |          |          |          |          |          |          |
|---------------------------|----------------------------|-----------------------------|--|---------|---------|----------|----------|----------|----------|----------|----------|----------|
| UNIT SIZE                 | ALLOWABLE LIQUID LINE SIZE | ALLOWABLE SUCTION LINE SIZE | EQUIVALENT LENGTH (FEET)   |         |         |          |          |          |          |          |          |          |
|                           |                            |                             | < 25   | 26-50   | 51-75   | 76-100   | 101-125  | 126-150  | 151-175  | 176-200  | 201-225  | 226-250  |
|                           |                            |                             | MAXIMUM VERTICAL RISE (OUTDOOR UNIT BELOW INDOOR UNIT) * / CAPACITY MULTIPLIER |         |         |          |          |          |          |          |          |          |
| 1.5 Ton                   | 1/4"                       | 5/8"                        | 25/1   | 50/0.99 | 61/0.99 | 41/0.98  | 21/0.98  | 1/0.98   | 0/0.98   | 0/0.98   | 0/0.97   | 0/0.97   |
|                           | 5/16"                      | 5/8"                        | 25/1   | 50/0.99 | 75/0.99 | 100/0.98 | 98/0.98  | 93/0.98  | 87/0.98  | 82/0.98  | 78/0.97  | 75/0.97  |
|                           | 3/8"                       | 5/8"                        | 25/1   | 50/0.99 | 75/0.99 | 100/0.98 | 117/0.98 | 115/0.98 | 114/0.98 | 112/0.98 | 111/0.97 | 110/0.97 |
|                           | 1/4"                       | 3/4"                        | 25/1   | 50/1    | 61/1    | 41/0.99  | 21/0.99  | 1/0.99   | 0/0.99   | 0/0.99   | 0/0.99   | 0/0.98   |
|                           | 5/16"                      | 3/4"                        | 25/1   | 50/1    | 75/1    | 100/0.99 | 98/0.99  | 93/0.99  | 87/0.99  | 82/0.99  | 78/0.99  | 75/0.98  |
|                           | 3/8"                       | 3/4"                        | 25/1   | 50/1    | 75/1    | 100/0.99 | 117/0.99 | 115/0.99 | 114/0.99 | 112/0.99 | 111/0.99 | 110/0.98 |
| 2 Ton                     | 1/4"                       | 5/8"                        | 25/1   | 50/0.99 | 25/0.98 | 0/0.98   | 0/0.98   | 0/0.97   | 0/0.96   | 0/0.97   | 0/0.96   | 0/0.95   |
|                           | 5/16"                      | 5/8"                        | 25/1   | 50/0.99 | 75/0.98 | 88/0.98  | 79/0.98  | 70/0.97  | 62/0.96  | 53/0.97  | 46/0.96  | 40/0.95  |
|                           | 3/8"                       | 5/8"                        | 25/1   | 50/0.99 | 75/0.98 | 100/0.98 | 109/0.98 | 106/0.97 | 103/0.96 | 100/0.97 | 97/0.96  | 94/0.95  |
|                           | 1/4"                       | 3/4"                        | 25/1   | 50/1    | 25/0.99 | 0/0.99   | 0/0.99   | 0/0.98   | 0/0.98   | 0/0.99   | 0/0.99   | 0/0.98   |
|                           | 5/16"                      | 3/4"                        | 25/1   | 50/1    | 75/0.99 | 88/0.99  | 79/0.99  | 70/0.98  | 62/0.98  | 53/0.99  | 46/0.99  | 40/0.98  |
|                           | 3/8"                       | 3/4"                        | 25/1   | 50/1    | 75/0.99 | 100/0.99 | 109/0.99 | 106/0.98 | 103/0.98 | 100/0.99 | 97/0.99  | 94/0.98  |
| 2.5 Ton                   | 5/16"                      | 5/8"                        | 25/0.99  | 50/0.98 | 75/0.98 | 69/0.97  | 56/0.98  | 43/0.96  | 30/0.94  | 17/0.93  | 6/0.92   | 0/0.93   |
|                           | 3/8"                       | 5/8"                        | 25/0.99  | 50/0.98 | 75/0.98 | 100/0.97 | 101/0.98 | 96/0.96  | 92/0.94  | 87/0.93  | 83/0.92  | 78/0.93  |
|                           | 5/16"                      | 3/4"                        | 25/1   | 50/0.99 | 75/0.99 | 69/0.98  | 56/0.98  | 43/0.99  | 30/0.98  | 17/0.98  | 6/0.97   | 0/0.97   |
|                           | 3/8"                       | 3/4"                        | 25/1   | 50/0.99 | 75/0.99 | 100/0.98 | 101/0.98 | 96/0.99  | 92/0.98  | 87/0.98  | 83/0.97  | 78/0.97  |

**NOTES:**

- 1) Do not exceed 200 ft linear line length.
- 2) \*Do not exceed 100 ft vertical separation if outdoor unit is above indoor unit.
- 3) \*\*3/4" suction line should only be used for 1.5 ton systems if outdoor unit is below or at same level as indoor to assure proper oil return.
- 4) Always use the smallest liquid line allowable to minimize refrigerant charge.
- 5) Applications shaded in light gray indicate capacity multipliers between 0.90 and 0.96 which are not recommended, but are allowed.
- 6) Applications shaded in dark gray are not recommended due to excessive liquid or suction pressure drop.

## Refrigerant Line Size Information (Con't.)

| 13/14 SEER2 AC R-454B |                                     |                                      |  |         |         |         |         |         |         |         |         |         |
|-----------------------|-------------------------------------|--------------------------------------|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| UNIT SIZE             | ALLOWABLE LIQUID LINE SIZE MM [IN.] | ALLOWABLE SUCTION LINE SIZE MM [IN.] | EQUIVALENT LENGTH (METERS)   |         |         |         |         |         |         |         |         |         |
|                       |                                     |                                      | < 8  | 8-15    | 16-23   | 24-30   | 31-38   | 39-46   | 47-53   | 54-61   | 62-69   | 70-76   |
|                       |                                     |                                      | MAXIMUM VERTICAL RISE (OUTDOOR UNIT BELOW INDOOR UNIT) * / CAPACITY MULTIPLIER |         |         |         |         |         |         |         |         |         |
| 5.3 kW<br>[1.5 Ton]   | 6.35 [1/4]                          | 15.88 [5/8]                          | 8/1  | 15/0.99 | 19/0.99 | 12/0.98 | 6/0.98  | 0/0.98  | 0/0.98  | 0/0.98  | 0/0.97  | 0/0.97  |
|                       | 7.94 [5/16]                         | 15.88 [5/8]                          | 8/1  | 15/0.99 | 23/0.99 | 30/0.98 | 30/0.98 | 28/0.98 | 27/0.98 | 25/0.98 | 24/0.97 | 23/0.97 |
|                       | 9.53 [3/8]                          | 15.88 [5/8]                          | 8/1  | 15/0.99 | 23/0.99 | 30/0.98 | 36/0.98 | 35/0.98 | 35/0.98 | 34/0.98 | 34/0.97 | 34/0.97 |
|                       | 6.35 [1/4]                          | 19.05 [3/4]                          | 8/1  | 15/1    | 19/1    | 12/0.99 | 6/0.99  | 0/0.99  | 0/0.99  | 0/0.99  | 0/0.99  | 0/0.98  |
|                       | 7.94 [5/16]                         | 19.05 [3/4]                          | 8/1  | 15/1    | 23/1    | 30/0.99 | 30/0.99 | 28/0.99 | 27/0.99 | 25/0.99 | 24/0.99 | 23/0.98 |
|                       | 9.53 [3/8]                          | 19.05 [3/4]                          | 8/1  | 15/1    | 23/1    | 30/0.99 | 36/0.99 | 35/0.99 | 35/0.99 | 34/0.99 | 34/0.99 | 34/0.98 |
| 7.0 kW<br>[2 Ton]     | 6.35 [1/4]                          | 15.88 [5/8]                          | 8/1  | 15/0.99 | 8/0.98  | 0/0.98  | 0/0.98  | 0/0.97  | 0/0.96  | 0/0.97  | 0/0.96  | 0/0.95  |
|                       | 7.94 [5/16]                         | 15.88 [5/8]                          | 8/1  | 15/0.99 | 23/0.98 | 27/0.98 | 24/0.98 | 21/0.97 | 19/0.96 | 16/0.97 | 14/0.96 | 12/0.95 |
|                       | 9.53 [3/8]                          | 15.88 [5/8]                          | 8/1  | 15/0.99 | 23/0.98 | 30/0.98 | 33/0.98 | 32/0.97 | 31/0.96 | 30/0.97 | 30/0.96 | 29/0.95 |
|                       | 6.35 [1/4]                          | 19.05 [3/4]                          | 8/1  | 15/1    | 8/0.99  | 0/0.99  | 0/0.99  | 0/0.98  | 0/0.98  | 0/0.99  | 0/0.99  | 0/0.98  |
|                       | 7.94 [5/16]                         | 19.05 [3/4]                          | 8/1  | 15/1    | 23/0.99 | 27/0.99 | 24/0.99 | 21/0.98 | 19/0.98 | 16/0.99 | 14/0.99 | 12/0.98 |
|                       | 9.53 [3/8]                          | 19.05 [3/4]                          | 8/1  | 15/1    | 23/0.99 | 30/0.99 | 33/0.99 | 32/0.98 | 31/0.98 | 30/0.99 | 30/0.99 | 29/0.98 |
| 8.8 kW<br>[2.5 Ton]   | 7.94 [5/16]                         | 15.88 [5/8]                          | 8/0.99   | 15/0.98 | 23/0.98 | 21/0.97 | 17/0.98 | 13/0.96 | 9/0.94  | 5/0.93  | 2/0.92  | 0/0.93  |
|                       | 9.53 [3/8]                          | 15.88 [5/8]                          | 8/0.99   | 15/0.98 | 23/0.98 | 30/0.97 | 31/0.98 | 29/0.96 | 28/0.94 | 27/0.93 | 25/0.92 | 24/0.93 |
|                       | 7.94 [5/16]                         | 19.05 [3/4]                          | 8/1  | 15/0.99 | 23/0.99 | 21/0.98 | 17/0.98 | 13/0.99 | 9/0.98  | 5/0.98  | 2/0.97  | 0/0.97  |
|                       | 9.53 [3/8]                          | 19.05 [3/4]                          | 8/1  | 15/0.99 | 23/0.99 | 30/0.98 | 31/0.98 | 29/0.99 | 28/0.98 | 27/0.98 | 25/0.97 | 24/0.97 |

**NOTES:**

- 1) Do not exceed 61m linear line length.
- 2) \*Do not exceed 30m vertical separation if outdoor unit is above indoor unit.
- 3) \*\*19.05mm suction line should only be used for 1.5 ton systems if outdoor unit is below or at same level as indoor to assure proper oil return.
- 4) Always use the smallest liquid line allowable to minimize refrigerant charge.
- 5) Applications shaded in light gray indicate capacity multipliers between 0.90 and 0.96 which are not recommended, but are allowed.
- 6) Applications shaded in dark gray are not recommended due to excessive liquid or suction pressure drop.

## Performance Data @ AHRI Standard Conditions – Cooling

| DESIGNATED TESTED COMBINATION (DTC) |              |                              |                            |                          |       |      |                     |
|-------------------------------------|--------------|------------------------------|----------------------------|--------------------------|-------|------|---------------------|
| OUTDOOR UNIT                        | INDOOR COIL  | TOTAL CAPACITY<br>BTU/H [KW] | NET SENSIBLE<br>BTU/H [KW] | NET LATENT<br>BTU/H [KW] | SEER2 | EER2 | INDOOR<br>CFM [L/S] |
| FWSA14AY18AJ1                       | TCFY2417STAN | 17,100 [5.0]                 | 13,100 [3.8]               | 4,000 [1.2]              | 14.3  | 11.7 | 600 [283.2]         |
| FWSA14AY24AJ1                       | TCFY2417MTAN | 22,800 [6.7]                 | 17,000 [5.0]               | 5,800 [1.7]              | 14.3  | 11.7 | 735 [346.9]         |
| FWSA14AY30AJ1                       | TCFY3617STAN | 27,500 [8.1]                 | 19,900 [5.8]               | 7,600 [2.2]              | 14.3  | 11.7 | 910 [429.5]         |

**NOTE:** This data includes DTC (Designated Test Combination) ratings and is for reference purposes only. A full listing of official ratings and system match-ups, along with downloadable certificates, can be accessed from the AHRI website: [www.ahridirectory.org](http://www.ahridirectory.org).

[ ] Designates Metric Conversions



**FRIEDRICH**

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**GENERAL TERMS OF LIMITED WARRANTY\***

Friedrich® will furnish a replacement for any part of this product which fails in normal use and service within the applicable period stated, in accordance with the terms of the limited warranty.

Conditional Parts  
(Registration Required)..... Ten (10) Years

**\*For complete details of the Limited and Conditional Warranties, including applicable terms and conditions, contact your local contractor or the Manufacturer for a copy of the product warranty certificate.**

**Before proceeding with installation, refer to installation instructions packaged with each model, as well as complying with all Federal, State, Provincial, and Local codes, regulations, and practices.**

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In keeping with its policy of continuous progress and product improvement, manufacturer reserves the right to make changes without notice.

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