DSH Model Air Cooled Self Contained Indoor Packaged Units
2-5 Tons
Preliminary Application Data

July 28, 2008
**HIGH EFFICIENCY**

**DSH024 HORIZONTAL UNIT**

**AIR-COOLED SELF-CONTAINED**

Johnson Controls maintains a continuous product improvement policy, therefore specifications are subject to change without notice.

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**DESCRIPTION:**

Form YK145.11-PA1 (308)

**DATE:**

March 2008
“DSH” HI-EFFICIENCY SERIES
HORIZONTAL INDOOR AIR-CONDITIONING SYSTEM

GENERAL
All models 2-5 tons ship as factory-charged unitized packages. These units include refrigerant line shut-off valves between the condenser and evaporator section, allowing the unit to be field split. All packages/modules are designed for suspended mounting via integral structural channels.

CABINET
All cabinets are completely constructed of heavy gauge corrosion-resistant steel. The entire unit interior (both evaporator and condensing section) is insulated with 1/2” thick, 2-lb. density insulation. Service panels are equipped with lifting handles for ease of removal and handling.

REFRIGERANT CIRCUIT
The 2-5 ton units have a single refrigeration circuit. All models utilize high-efficiency ‘Scroll’ compressors. Each refrigeration circuit is thoroughly evacuated, and fully charged with R-410A refrigerant before shipment. Internal motor overload protection is provided. Compressors are mounted on rubber isolators to minimize vibration transmission.

Each refrigeration circuit includes a thermal expansion valve (with external equalizer), liquid line filter drier, sight glass/moisture indicator, a high refrigerant pressure safety switch, a low refrigerant pressure switch (for compressor protection), and service gauge ports.

EVAPORATOR AND CONDENSER COILS
The evaporator and condenser coils are constructed of internally enhanced copper tubes mechanically bonded to enhanced-surface aluminum fins. Both coils are employed in a draw-thru configuration. The large evaporator coil face area minimizes potential for water blow-off.

INDOOR/OUTDOOR FANS
Forward curved, double inlet and double width centrifugal blowers are used for both evaporator and condenser air movement. Blower wheels are fabricated of galvanized steel. Blowers employ solid steel shafts, supported in permanently lubricated ball bearing. All blowers are belt-driven. Variable-pitch motor sheaves allow for field adjustment of blower rpm.

ELECTRICAL/CONTROLS
All units are completely factory wired with all necessary controls. Current overload protection is provided on both evaporator and condenser motors (Internal auto-reset overloads on single-phase units, external manual-reset overload on three-phase). A manual reset circuit is also provided on each compressor control circuit in the event of high/low pressure cutout. A 24-volt control circuit, with oversize transformer, is provided for field connection.

FILTERS
All models are shipped with 2 inch thick medium-efficiency throwaway filters factory installed.
DSH024 AND DSH036 DIMENSIONAL DATA

OVERALL & MOUNTING DIMENSIONS

36" MINIMUM SERVICE CLEARANCE

CONDENSER DISCHARGE

CONDENSER INTAKE

COND. ELECTRICAL BOX LOCATION

EVAP. ELECTRICAL BOX LOCATION

SUPPLY AIR

RETURN AIR

4" MINIMUM CLEARANCE (FOR DRAIN TRAP)

DSH024 & DSH036 HORIZONTAL UNIT
AIR-COOLED SELF-CONTAINED
HIGH EFFICIENCY

3/4 NPT DRAIN CONNECTION

CONDENSER OPENINGS

EVAPORATOR OPENINGS

Johnson Controls maintains a continuous product improvement policy, therefore specifications are subject to change without notice.

DESCRIPTION:

DIMENSIONAL DATA

DSH024 & DSH036 HORIZONTAL UNIT
AIR-COOLED SELF-CONTAINED
HIGH EFFICIENCY

Form YK145.11-PA1 (308)

DATE:
March 2008

BY JOHNSON CONTROLS

Page 4
**DESCRIPTION:**

HIGH EFFICIENCY  
DSH036 HORIZONTAL UNIT  
AIR-COOLED SELF-CONTAINED

**DATE:**  
March 2008

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**Gross Cooling Capacity [Btuh]:** 36,656*  
**Design CFM:** 1,200  
**Seasonal Energy Efficiency Ratio:** 13.2 SEER**  
**Net Cooling Capacity [Btuh]:** 35,643**  
**Net Cooling CFM:** 1,200

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1. At high evaporator air flows, and wet bulb conditions, condensate carry-over may occur. Adjust airflow downward as necessary.

2. Values include pressure drop from wet coil and clean filters.

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* Units configured for 575 volt are supplied with 0.5 HP evaporator motor.

**EVAPORATOR FAN PERFORMANCE**

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>SUPPLY CFM</th>
<th>EXTERNAL STATIC PRESSURE - Inches W.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>RPM</td>
<td>BHP</td>
</tr>
<tr>
<td>DSH036</td>
<td>1000</td>
<td>598</td>
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<tr>
<td></td>
<td>1200</td>
<td>727</td>
</tr>
<tr>
<td></td>
<td>1400</td>
<td>747</td>
</tr>
</tbody>
</table>

**NOTE:**

1. At high evaporator air flows, and wet bulb conditions, condensate carry-over may occur. Adjust airflow downward as necessary.

2. Values include pressure drop from wet coil and clean filters.

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**CONDENSER FAN PERFORMANCE**

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>OUTDOOR CFM</th>
<th>EXTERNAL STATIC PRESSURE - Inches W.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.2</td>
<td>0.4</td>
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<tr>
<td></td>
<td>RPM</td>
<td>BHP</td>
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<tr>
<td>DSH036</td>
<td>1950</td>
<td>864</td>
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**ELECTRICAL DATA – STANDARD MOTOR**

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>VOLTAGE</th>
<th>COMPRESSOR</th>
<th>EVAPORATOR FAN</th>
<th>CONDENSER FAN</th>
<th>MIN. CCT.</th>
<th>&quot;MOP&quot; Max Overcurrent Prot.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>QTY</td>
<td>RLA</td>
<td>LRA</td>
<td>HP</td>
<td>FLA</td>
<td>HP</td>
</tr>
<tr>
<td>DSH036</td>
<td>208-230/1/60</td>
<td>1</td>
<td>@</td>
<td>14.1</td>
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<tr>
<td>DSH036</td>
<td>208-230/3/60</td>
<td>1</td>
<td>@</td>
<td>9.0</td>
<td>71.0</td>
<td>0.33</td>
</tr>
<tr>
<td>DSH036</td>
<td>480/3/60</td>
<td>1</td>
<td>@</td>
<td>5.6</td>
<td>38.0</td>
<td>0.33</td>
</tr>
<tr>
<td>DSH036</td>
<td>575/3/60</td>
<td>1</td>
<td>@</td>
<td>3.8</td>
<td>36.5</td>
<td>0.50</td>
</tr>
</tbody>
</table>

* Units configured for 575 volt are supplied with 0.5 HP evaporator motor.

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Form YK145.11-PA2 (308)
"DSH" HI-EFFICIENCY SERIES
HORIZONTAL INDOOR AIR-CONDITIONING SYSTEM

GENERAL
All models 2-5 tons ship as factory-charged unitized packages. These units include refrigerant line shut-off valves between the condenser and evaporator section, allowing the unit to be field split. All packages/modules are designed for suspended mounting via integral structural channels.

CABINET
All cabinets are completely constructed of heavy gauge corrosion-resistant steel. The entire unit interior (both evaporator and condensing section) is insulated with 1/2” thick, 2-lb. density insulation. Service panels are equipped with lifting handles for ease of removal and handling.

REFRIGERANT CIRCUIT
The 2-5 ton units have a single refrigeration circuit. All models utilize high-efficiency ‘Scroll’ compressors. Each refrigeration circuit is thoroughly evacuated, and fully charged with R-410A refrigerant before shipment. Internal motor overload protection is provided. Compressors are mounted on rubber isolators to minimize vibration transmission.

Each refrigeration circuit includes a thermal expansion valve (with external equalizer), liquid line filter drier, sight glass/moisture indicator, a high refrigerant pressure safety switch, a low refrigerant pressure switch (for compressor protection), and service gauge ports.

EVAPORATOR AND CONDENSER COILS
The evaporator and condenser coils are constructed of internally enhanced copper tubes mechanically bonded to enhanced-surface aluminum fins. Both coils are employed in a draw-thru configuration. The large evaporator coil face area minimizes potential for water blow-off.

INDOOR/OUTDOOR FANS
Forward curved, double inlet and double width centrifugal blowers are used for both evaporator and condenser air movement. Blower wheels are fabricated of galvanized steel. Blowers employ solid steel shafts, supported in permanently lubricated ball bearing. All blowers are belt-driven. Variable-pitch motor sheaves allow for field adjustment of blower rpm.

ELECTRICAL/CONTROLS
All units are completely factory wired with all necessary controls. Current overload protection is provided on both evaporator and condenser motors (Internal auto-reset overloads on single-phase units, external manual-reset overload on three-phase). A manual reset circuit is also provided on each compressor control circuit in the event of high/low pressure cutout. A 24-volt control circuit, with oversize transformer, is provided for field connection.

FILTERS
All models are shipped with 2 inch thick medium-efficiency throwaway filters factory installed.
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**DESCRIPTION:**

**DIMENSIONAL DATA**

**DSH024 & DSH036 HORIZONTAL UNIT**

**AIR-COOLED SELF-CONTAINED**

**HIGH EFFICIENCY**

**Form YK145.11-PA2 (308)**

 Date: March 2008
**Note:**
1. At high evaporator air flows, and wet bulb conditions, condensate carry-over may occur. Adjust airflow downward as necessary.
2. Values include pressure drop from wet coil and clean filters.

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**Gross Cooling Capacity [Btuh]:** 49,493*

**Design CFM:** 1,600

**Seasonal Energy Efficiency Ratio:** 13.8 SEER**

**Net Cooling Capacity [Btuh]:** 48,522**

**Net Cooling CFM:** 1,600

**Evaporator Fan No./Type:** 1/CENTRIFUGAL

**Diameter x Width [in]:** 12x9

**Drive:** Adjustable Belt

**Motor HP:** 0.75

**Condenser Fan No./Type:** 1/CENTRIFUGAL

**Diameter x Width [in]:** 12x11

**Drive:** Adjustable Belt

**Motor HP:** 1.0

**Refrigerant:** R-410A

**Compressor No./Type:** 1/Scroll

**Refrigerant Circuits:** 1/ Independent

**Evaporator Coil Face Area:** 6.07 [sq ft]

**Rows/FPI:** 4 / 12

**Refrigerant Control:** TX Valve

**Condenser Coil Face Area:** 7.19 [sq ft]

**Rows/FPI:** 4 / 16

**Compressor No./Type:** 1/Scroll

**Refrigerant Circuits:** 1/ Independent

**Refrigerant:** R-410A

**Condensate Connection:** 3 / 4 NPT

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*Cooling performance is rated at 95 °F ambient, 80 °F entering dry bulb, 67 °F wet bulb and CFM listed. Gross capacity does not include the effect of fan motor heat.

**Rated in accordance with ARI Standard 210/240-2006**
“DSH” HI-EFFICIENCY SERIES
HORIZONTAL INDOOR AIR-CONDITIONING SYSTEM

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FILTERS
All models are shipped with 2 inch thick medium-efficiency throwaway filters factory installed.
OVERALL & MOUNTING DIMENSIONS

CONDENSER DISCHARGE
CONDENSER INTAKE
COND. BOX ELECTRICAL LOCATION
EVAP. ELECTRICAL LOCATION

66.5" C.C. MOUNTING RODS

36" MINIMUM SERVICE CLEARANCE

36" MINIMUM SERVICE CLEARANCE

25.0"

3.5" 39.0" C.C.

46.0"

64.0"

86.0"

64.0"

RETURN AIR

4" MINIMUM CLEARANCE (FOR DRAIN TRAP)

2.13"

12.50"

10.38"

0.75"

9.94"

15.00"

26.63"

2.00"

64.00"

22.38"

1.31"

CONDENSER OPENINGS

CONDENSER DISCHARGE
CONDENSER INTAKE

RETURN AIR

64.00"

2.13"

23.12"

1.00"

3.12"

29.37"

3/4NPT DRAIN CONNECTION

12.56"

9.25"

27.25"

Supply Air

Evaporator Openings

Johnson Controls maintains a continuous product improvement policy, therefore specifications are subject to change without notice.

DESCRIPTION:
DIMENSIONAL DATA
DSH048 & DSH060 HORIZONTAL UNIT
AIR-COOLED SELF-CONTAINED
HIGH EFFICIENCY

Form YK145.11-PA3 (308)

DATE:
March 2008
**EVAPORATOR FAN PERFORMANCE**

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>SUPPLY CFM</th>
<th>0.2</th>
<th>0.4</th>
<th>0.6</th>
<th>0.8</th>
<th>1.0</th>
<th>1.2</th>
<th>1.4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RPM</td>
<td>BHP</td>
<td>RPM</td>
<td>BHP</td>
<td>RPM</td>
<td>BHP</td>
<td>RPM</td>
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**CONDENSER FAN PERFORMANCE**

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<tr>
<th>MODEL #</th>
<th>OUTDOOR CFM</th>
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<th>0.4</th>
<th>0.6</th>
<th>0.8</th>
<th>1.0</th>
<th>1.2</th>
<th>1.4</th>
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<tbody>
<tr>
<td></td>
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<td>RPM</td>
<td>BHP</td>
<td>RPM</td>
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<td>RPM</td>
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**ELECTRICAL DATA**

<table>
<thead>
<tr>
<th>MODEL #</th>
<th>VOLTAGE</th>
<th>COMPRESSOR</th>
<th>EVAPORATOR FAN</th>
<th>CONDENSER FAN</th>
<th>MIN. C.C.T.</th>
<th>&quot;MOP&quot; Max Overcurrent Prot.</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>QTY</td>
<td>RLA</td>
<td>LRA</td>
<td>HP</td>
<td>FLA</td>
<td>HP</td>
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<tr>
<td>DSH060</td>
<td>1 @</td>
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<td>110.0</td>
<td>1.00</td>
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<td>1.00</td>
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<td>1.50</td>
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</table>

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"DSH" HI-EFFICIENCY SERIES
HORIZONTAL INDOOR AIR-CONDITIONING SYSTEM

GENERAL
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CABINET
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REFRIGERANT CIRCUIT
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FILTERS
All models are shipped with 2 inch thick medium-efficiency throwaway filters factory installed.

DESCRIPTION:
MECHANICAL SPECIFICATIONS
DSH060 HORIZONTAL UNIT
AIR-COOLED SELF-CONTAINED
HIGH EFFICIENCY

Form YK145.11-PA4 (308)
DATE: March 2008
DSH048 AND DSH060 DIMENSIONAL DATA

OVERALL & MOUNTING DIMENSIONS

36" MINIMUM SERVICE CLEARANCE

4" MINIMUM CLEARANCE (FOR DRAIN TRAP)

CONDENSER OPENINGS

EVAPORATOR OPENINGS

SUPPLY AIR

RETURN AIR

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Form YK145.11-PA4 (308)

March 2008

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