

# START-UP & SERVICE DATA INSTRUCTION

## COMMERCIAL PACKAGE UNITS

3.0 To 40.0 TONS

RTU # 1

### START-UP CHECKLIST

Date: \_\_\_\_\_

Job Name: Wg 11134

Customer Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: Smyrna State: DE Zip: \_\_\_\_\_

Model Number: ZJ120N18R2B5GCC2R3 Serial Number: N2D3585523

Qualified Start-up Technician: Chase Shaw Signature: \_\_\_\_\_

HVAC Contractor: Arris Inc Phone: \_\_\_\_\_

Address: \_\_\_\_\_

Contractor's E-mail Address: Chase@arrisconstruction.com

Electrical Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_

Distributor Name: \_\_\_\_\_ Phone: \_\_\_\_\_

### WARRANTY STATEMENT

Johnson Controls/UPG is confident that this equipment will operate to the owner's satisfaction if the proper procedures are followed and checks are made at initial start-up. This confidence is supported by the 30 day dealer protection coverage portion of our standard warranty policy which states that Johnson Controls/UPG will cover parts and labor on new equipment start-up failures that are caused by a defect in factory workmanship or material, for a period of 30 days from installation. Refer to current standard warranty policy and warranty manual found on UPGnet for details.

In the event that communication with Johnson Controls/UPG is required regarding technical and/or warranty concerns, all parties to the discussion should have a copy of the equipment start-up sheet for reference. A copy of the original start-up sheet should be filed with the Technical Services Department.

The packaged unit is available in constant or variable air volume versions with a large variety of custom options and accessories available. Therefore, some variation in the startup procedure will exist depending upon the products capacity, control system, options and accessories installed.

This start-up sheet covers all startup check points common to all package equipment. In addition it covers essential startup check points for a number of common installation options. Depending upon the particular unit being started not all sections of this startup sheet will apply. Complete those sections applicable and use the notes section to record any additional information pertinent to your particular installation.

Warranty claims are to be made through the distributor from whom the equipment was purchased.

### EQUIPMENT STARTUP

Use the local LCD or Mobile Access Portal (MAP) Gateway to complete the start-up.

A copy of the completed start-up sheet should be kept on file by the distributor providing the equipment and a copy sent to:

Johnson Controls/UPG  
Technical Services Department  
5005 York Drive  
Norman, OK 73069

### REFERENCE

General Inspection	Completed		See Notes	
Unit inspected for shipping, storage, or rigging damage				
Unit installed with proper clearances				
Unit installed within slope limitations				
Refrigeration system checked for gross leaks (presence of oil)				
Terminal screws and wiring connections checked for tightness				
Filters installed correctly and clean				
Economizer hoods installed in operating position				
Condensate drain trapped properly, refer to Installation Manual				
Economizer damper linkage tight				
Gas Heat vent hood installed				
All field wiring (power and control) complete				

Air Moving Inspection	Completed		See Notes	
Alignment of drive components				
Belt tension adjusted properly				
Blower pulleys tight on shaft, bearing set screws tight, wheel tight to shaft				
Pressure switch or transducer tubing installed properly				

Exhaust Inspection	Powered <input type="checkbox"/>	Barometric Relief <input type="checkbox"/>	Completed		See Notes	
Check hub for tightness						
Check fan blade for clearance						
Check for proper rotation						
Check for proper mounting (screen faces towards unit)						
Prove operation by increasing minimum setting on economizer						

Economizer Inspection	Standard <input type="checkbox"/>	BAS <input type="checkbox"/>	Completed		See Notes	
CO <sub>2</sub> sensor installed Yes <input type="checkbox"/> No <input type="checkbox"/>						
Check economizer setting (Reference SSE Control Board LCD menu location)						
Prove economizer open/close through SSE Board Setting						

Reheat Mode	Normal <input type="checkbox"/>	or Alternate <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Humidity Sensor (2SH0401)			

### Operating Measurements - Air Flow

Fan operates with proper rotation	ID Fans <input type="checkbox"/>	Exh. Fans <input type="checkbox"/>	Cond. Fans <input type="checkbox"/>
Pressure drop across dry evaporator coil (At maximum design CFM) <sup>1</sup>	IWC		
External Static Pressure	IWC		
Return Static Pressure	IWC		
Supply Static Pressure	IWC		
Supply Air CFM Using Dry Coil Chart	CFM		
Final Adjusted Supply Air CFM <sup>2</sup>	CFM		

1. Consult the proper airflow to pressure drop table to obtain the actual airflow at the measured pressure differential.
2. Was a motor pulley adjustment or change required to obtain the correct airflow?  
 Was it necessary to increase or decrease the airflow to meet the design conditions?  
 If the motor pulley size was changed, measure the outside diameters of the motor and blower pulleys and record those diameters here;

Blower Motor HP \_\_\_\_\_ FLA \_\_\_\_\_ RPM \_\_\_\_\_

Pulley Pitch Diameter \_\_\_\_\_ Turns Out \_\_\_\_\_ Final Turns Out \_\_\_\_\_

Blower Pulley Pitch Diameter \_\_\_\_\_ Fixed Sheave \_\_\_\_\_

#### ELECTRICAL DATA

T1 - T2 120 Volts                      T2 - T3 120 Volts  
 Control Voltage \_\_\_\_\_ Volts                      T1 - T3 120 Volts

Device	Nameplate	Measured List All Three Amperages
Supply Fan Motor <sup>1, 2</sup>	AMPS	AMPS
Exhaust Motor (Dampers 100%)	AMPS	AMPS
Condenser Fan #1	AMPS	AMPS
Condenser Fan #2 (if equipped)	AMPS	AMPS
Condenser Fan #3 (if equipped)	AMPS	AMPS
Condenser Fan #4 (if equipped)	AMPS	AMPS
Compressor #1	AMPS	10-11-10 AMPS
Compressor #2 (if equipped)	AMPS	12-10-10 AMPS
Compressor #3 (if equipped)	AMPS	AMPS
Compressor #4 (if equipped)	AMPS	AMPS

1. VAV units with heat section - simulate heat call to drive VAV boxes and VFD/IGV to maximum design airflow position.
2. VAV units without heat section - VAV boxes must be set to maximum design airflow position.



## OPERATIONAL MEASUREMENTS - STAGING CONTROLS

Verify Proper Operation of Heating/Cooling Staging Controls	
Create a cooling demand at the Thermostat, BAS System or Simplicity SE Verify that cooling/economizer stages are energized.	<input checked="" type="checkbox"/>
Create a heating demand at the Thermostat, BAS System or Simplicity SE Verify that heating stages are energized.	<input checked="" type="checkbox"/>
Verify Proper Operation of the Variable Frequency Drive (If Required)	
Verify that motor speed modulates with duct pressure change.	<input checked="" type="checkbox"/>

### FINAL - INSPECTION

Verify that all operational control set points have been set to desired value Scroll through all setpoints and change as may be necessary to suit the occupant requirements.	<input checked="" type="checkbox"/>
Verify that all option parameters are correct Scroll through all option parameters and ensure that all installed options are enabled in the software and all others are disabled in the software. (Factory software settings should match the installed options)	<input checked="" type="checkbox"/>
Verify that all access panels have been closed and secured	<input checked="" type="checkbox"/>

### OBSERVED PRODUCT DIFFICIENCIES & CONCERNS:

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# START-UP & SERVICE DATA INSTRUCTION

## COMMERCIAL PACKAGE UNITS

3.0 To 40.0 TONS

RTU # 2

### START-UP CHECKLIST

Date: \_\_\_\_\_  
Job Name: WGS 11134  
Customer Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: Smyrna State: DE Zip: \_\_\_\_\_  
Model Number: ZJ049N08D2B5G1CA2R3 Serial Number: NZE 3682109  
Qualified Start-up Technician: Chase Shaw Signature: \_\_\_\_\_  
HVAC Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contractor's E-mail Address: ~~Chase~~ Chase@arriscorstruction.com  
Electrical Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_  
Distributor Name: \_\_\_\_\_ Phone: \_\_\_\_\_

### WARRANTY STATEMENT

Johnson Controls/UPG is confident that this equipment will operate to the owner's satisfaction if the proper procedures are followed and checks are made at initial start-up. This confidence is supported by the 30 day dealer protection coverage portion of our standard warranty policy which states that Johnson Controls/UPG will cover parts and labor on new equipment start-up failures that are caused by a defect in factory workmanship or material, for a period of 30 days from installation. Refer to current standard warranty policy and warranty manual found on UPGnet for details.

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### EQUIPMENT STARTUP

Use the local LCD or Mobile Access Portal (MAP) Gateway to complete the start-up.

A copy of the completed start-up sheet should be kept on file by the distributor providing the equipment and a copy sent to:

Johnson Controls/UPG  
Technical Services Department  
5005 York Drive  
Norman, OK 73069

### REFERENCE

General Inspection	Completed	See Notes
Unit inspected for shipping, storage, or rigging damage		
Unit installed with proper clearances		
Unit installed within slope limitations		
Refrigeration system checked for gross leaks (presence of oil)		
Terminal screws and wiring connections checked for tightness		
Filters installed correctly and clean		
Economizer hoods installed in operating position		
Condensate drain trapped properly, refer to Installation Manual		
Economizer damper linkage tight		
Gas Heat vent hood installed		
All field wiring (power and control) complete		

Air Moving Inspection	Completed	See Notes
Alignment of drive components		
Belt tension adjusted properly		
Blower pulleys tight on shaft, bearing set screws tight, wheel tight to shaft		
Pressure switch or transducer tubing installed properly		

Exhaust Inspection	Powered <input type="checkbox"/>	Barometric Relief <input type="checkbox"/>	Completed	See Notes
Check hub for tightness				
Check fan blade for clearance				
Check for proper rotation				
Check for proper mounting (screen faces towards unit)				
Prove operation by increasing minimum setting on economizer				

Economizer Inspection	Standard <input type="checkbox"/>	BAS <input type="checkbox"/>	Completed	See Notes
CO <sub>2</sub> sensor installed Yes <input type="checkbox"/> No <input type="checkbox"/>				
Check economizer setting (Reference SSE Control Board LCD menu location)				
Prove economizer open/close through SSE Board Setting				

Reheat Mode	Normal <input type="checkbox"/>	or Alternate <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Humidity Sensor (2SH0401) _____			

### Operating Measurements - Air Flow

Fan operates with proper rotation	ID Fans <input type="checkbox"/>	Exh. Fans <input type="checkbox"/>	Cond. Fans <input type="checkbox"/>
Pressure drop across dry evaporator coil (At maximum design CFM) <sup>1</sup>			IWC
External Static Pressure			IWC
Return Static Pressure			IWC
Supply Static Pressure			IWC
Supply Air CFM Using Dry Coil Chart			CFM
Final Adjusted Supply Air CFM <sup>2</sup>			CFM

1. Consult the proper airflow to pressure drop table to obtain the actual airflow at the measured pressure differential.
2. Was a motor pulley adjustment or change required to obtain the correct airflow?  
 Was it necessary to increase or decrease the airflow to meet the design conditions?  
 If the motor pulley size was changed, measure the outside diameters of the motor and blower pulleys and record those diameters here;

Blower Motor HP \_\_\_\_\_ FLA \_\_\_\_\_ RPM \_\_\_\_\_

Pulley Pitch Diameter \_\_\_\_\_ Turns Out \_\_\_\_\_ Final Turns Out \_\_\_\_\_

Blower Pulley Pitch Diameter \_\_\_\_\_ Fixed Sheave \_\_\_\_\_

### ELECTRICAL DATA

T1 - T2 120 Volts                      T2 - T3 121 Volts

Control Voltage \_\_\_\_\_ Volts                      T1 - T3 120 Volts

Device	Nameplate	Measured List All Three Amperages
Supply Fan Motor <sup>1,2</sup>	AMPS	AMPS
Exhaust Motor (Dampers 100%)	AMPS	AMPS
Condenser Fan #1	AMPS	AMPS
Condenser Fan #2 (if equipped)	AMPS	AMPS
Condenser Fan #3 (if equipped)	AMPS	AMPS
Condenser Fan #4 (if equipped)	AMPS	AMPS
Compressor #1	AMPS	AMPS
Compressor #2 (if equipped)	AMPS	AMPS
Compressor #3 (if equipped)	AMPS	AMPS
Compressor #4 (if equipped)	AMPS	AMPS

1. VAV units with heat section - simulate heat call to drive VAV boxes and VFD/IGV to maximum design airflow position.
2. VAV units without heat section - VAV boxes must be set to maximum design airflow position.





# START-UP & SERVICE DATA INSTRUCTION

## COMMERCIAL PACKAGE UNITS

3.0 To 40.0 TONS

RTU # 3

### START-UP CHECKLIST

Date: \_\_\_\_\_  
Job Name: Walgreens 11134  
Customer Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: Smayna State: GA Zip: \_\_\_\_\_  
Model Number: RT102N12R2B5C1A2R2 Serial Number: N2C3559493  
Qualified Start-up Technician: Chase Shaw Signature: \_\_\_\_\_  
HVAC Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contractor's E-mail Address: Chase@arriseconstruction.com  
Electrical Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_  
Distributor Name: \_\_\_\_\_ Phone: \_\_\_\_\_

### WARRANTY STATEMENT

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### EQUIPMENT STARTUP

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Johnson Controls/UPG  
Technical Services Department  
5005 York Drive  
Norman, OK 73069

### REFERENCE

General Inspection	Completed	See Notes
Unit inspected for shipping, storage, or rigging damage		
Unit installed with proper clearances		
Unit installed within slope limitations		
Refrigeration system checked for gross leaks (presence of oil)		
Terminal screws and wiring connections checked for tightness		
Filters installed correctly and clean		
Economizer hoods installed in operating position		
Condensate drain trapped properly, refer to Installation Manual		
Economizer damper linkage tight		
Gas Heat vent hood installed		
All field wiring (power and control) complete		

Air Moving Inspection	Completed	See Notes
Alignment of drive components		
Belt tension adjusted properly		
Blower pulleys tight on shaft, bearing set screws tight, wheel tight to shaft		
Pressure switch or transducer tubing installed properly		

Exhaust Inspection	Powered <input type="checkbox"/>	Barometric Relief <input type="checkbox"/>	Completed	See Notes
Check hub for tightness				
Check fan blade for clearance				
Check for proper rotation				
Check for proper mounting (screen faces towards unit)				
Prove operation by increasing minimum setting on economizer				

Economizer Inspection	Standard <input type="checkbox"/>	BAS <input type="checkbox"/>	Completed	See Notes
CO <sub>2</sub> sensor installed Yes <input type="checkbox"/> No <input type="checkbox"/>				
Check economizer setting (Reference SSE Control Board LCD menu location)				
Prove economizer open/close through SSE Board Setting				

Reheat Mode	Normal <input type="checkbox"/>	or Alternate <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Humidity Sensor (2SH0401)			

### Operating Measurements - Air Flow

Fan operates with proper rotation	ID Fans <input type="checkbox"/>	Exh. Fans <input type="checkbox"/>	Cond. Fans <input type="checkbox"/>
Pressure drop across dry evaporator coil (At maximum design CFM) <sup>1</sup>			IWC
External Static Pressure			IWC
Return Static Pressure			IWC
Supply Static Pressure			IWC
Supply Air CFM Using Dry Coil Chart			CFM
Final Adjusted Supply Air CFM <sup>2</sup>			CFM

1. Consult the proper airflow to pressure drop table to obtain the actual airflow at the measured pressure differential.
2. Was a motor pulley adjustment or change required to obtain the correct airflow?  
 Was it necessary to increase or decrease the airflow to meet the design conditions?  
 If the motor pulley size was changed, measure the outside diameters of the motor and blower pulleys and record those diameters here;

Blower Motor HP \_\_\_\_\_ FLA \_\_\_\_\_ RPM \_\_\_\_\_

Pulley Pitch Diameter \_\_\_\_\_ Turns Out \_\_\_\_\_ Final Turns Out \_\_\_\_\_

Blower Pulley Pitch Diameter \_\_\_\_\_ Fixed Sheave \_\_\_\_\_

#### ELECTRICAL DATA

T1 - T2 120 Volts                      T2 - T3 120 Volts  
 Control Voltage \_\_\_\_\_ Volts                      T1 - T3 120 Volts

Device	Nameplate	Measured List All Three Amperages
Supply Fan Motor <sup>1,2</sup>	AMPS	AMPS
Exhaust Motor (Dampers 100%)	AMPS	AMPS
Condenser Fan #1	AMPS	AMPS
Condenser Fan #2 (if equipped)	AMPS	AMPS
Condenser Fan #3 (if equipped)	AMPS	AMPS
Condenser Fan #4 (if equipped)	AMPS	AMPS
Compressor #1	AMPS	12   13   12
Compressor #2 (if equipped)	AMPS	10   10   11
Compressor #3 (if equipped)	AMPS	AMPS
Compressor #4 (if equipped)	AMPS	AMPS

1. VAV units with heat section - simulate heat call to drive VAV boxes and VFD/IGV to maximum design airflow position.
2. VAV units without heat section - VAV boxes must be set to maximum design airflow position.



## OPERATIONAL MEASUREMENTS - STAGING CONTROLS

Verify Proper Operation of Heating/Cooling Staging Controls	
Create a cooling demand at the Thermostat, BAS System or Simplicity SE Verify that cooling/economizer stages are energized.	<input type="checkbox"/>
Create a heating demand at the Thermostat, BAS System or Simplicity SE Verify that heating stages are energized.	<input type="checkbox"/>
Verify Proper Operation of the Variable Frequency Drive (If Required)	
Verify that motor speed modulates with duct pressure change.	<input type="checkbox"/>

### FINAL - INSPECTION

Verify that all operational control set points have been set to desired value Scroll through all setpoints and change as may be necessary to suit the occupant requirements.	<input type="checkbox"/>
Verify that all option parameters are correct Scroll through all option parameters and ensure that all installed options are enabled in the software and all others are disabled in the software. (Factory software settings should match the installed options)	<input type="checkbox"/>
Verify that all access panels have been closed and secured	<input type="checkbox"/>

### OBSERVED PRODUCT DIFFICIENCIES & CONCERNS:

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# START-UP & SERVICE DATA INSTRUCTION

## COMMERCIAL PACKAGE UNITS

3.0 To 40.0 TONS

RTU # 4

### START-UP CHECKLIST

Date: \_\_\_\_\_

Job Name: WGS 11134

Customer Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: Smyrna State: DE Zip: \_\_\_\_\_

Model Number: ZJ0L1N08DAB5G1A2R4 Serial Number: N2E3053909

Qualified Start-up Technician: \_\_\_\_\_ Signature: \_\_\_\_\_

HVAC Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_

Address: \_\_\_\_\_

Contractor's E-mail Address: \_\_\_\_\_

Electrical Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_

Distributor Name: \_\_\_\_\_ Phone: \_\_\_\_\_

### WARRANTY STATEMENT

Johnson Controls/UPG is confident that this equipment will operate to the owner's satisfaction if the proper procedures are followed and checks are made at initial start-up. This confidence is supported by the 30 day dealer protection coverage portion of our standard warranty policy which states that Johnson Controls/UPG will cover parts and labor on new equipment start-up failures that are caused by a defect in factory workmanship or material, for a period of 30 days from installation. Refer to current standard warranty policy and warranty manual found on UPGnet for details.

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### EQUIPMENT STARTUP

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Johnson Controls/UPG  
Technical Services Department  
5005 York Drive  
Norman, OK 73069

### REFERENCE

General Inspection	Completed	See Notes			
Unit inspected for shipping, storage, or rigging damage					
Unit installed with proper clearances					
Unit installed within slope limitations					
Refrigeration system checked for gross leaks (presence of oil)					
Terminal screws and wiring connections checked for tightness					
Filters installed correctly and clean					
Economizer hoods installed in operating position					
Condensate drain trapped properly, refer to Installation Manual					
Economizer damper linkage tight					
Gas Heat vent hood installed					
All field wiring (power and control) complete					
Air Moving Inspection	Completed	See Notes			
Alignment of drive components					
Belt tension adjusted properly					
Blower pulleys tight on shaft, bearing set screws tight, wheel tight to shaft					
Pressure switch or transducer tubing installed properly					
Exhaust Inspection	Powered <input type="checkbox"/>	Barometric Relief <input type="checkbox"/>	Completed	See Notes	
Check hub for tightness					
Check fan blade for clearance					
Check for proper rotation					
Check for proper mounting (screen faces towards unit)					
Prove operation by increasing minimum setting on economizer					
Economizer Inspection	Standard <input type="checkbox"/>	BAS <input type="checkbox"/>	Completed	See Notes	
CO <sub>2</sub> sensor installed Yes <input type="checkbox"/> No <input type="checkbox"/>					
Check economizer setting (Reference SSE Control Board LCD menu location)					
Prove economizer open/close through SSE Board Setting					
Reheat Mode	Normal <input type="checkbox"/>	or Alternate <input type="checkbox"/>	Not Applicable <input type="checkbox"/>		
Humidity Sensor (2SH0401) _____					

### Operating Measurements - Air Flow

Fan operates with proper rotation	ID Fans <input type="checkbox"/>	Exh. Fans <input type="checkbox"/>	Cond. Fans <input type="checkbox"/>
Pressure drop across dry evaporator coil (At maximum design CFM) <sup>1</sup>			IWC
External Static Pressure			IWC
Return Static Pressure			IWC
Supply Static Pressure			IWC
Supply Air CFM Using Dry Coil Chart			CFM
Final Adjusted Supply Air CFM <sup>2</sup>			CFM

1. Consult the proper airflow to pressure drop table to obtain the actual airflow at the measured pressure differential.
2. Was a motor pulley adjustment or change required to obtain the correct airflow?  
 Was it necessary to increase or decrease the airflow to meet the design conditions?  
 If the motor pulley size was changed, measure the outside diameters of the motor and blower pulleys and record those diameters here;

Blower Motor HP \_\_\_\_\_ FLA \_\_\_\_\_ RPM \_\_\_\_\_

Pulley Pitch Diameter \_\_\_\_\_ Turns Out \_\_\_\_\_ Final Turns Out \_\_\_\_\_

Blower Pulley Pitch Diameter \_\_\_\_\_ Fixed Sheave \_\_\_\_\_

### ELECTRICAL DATA

T1 - T2 121 Volts                      T2 - T3 120 Volts

Control Voltage \_\_\_\_\_ Volts                      T1 - T3 120 Volts

Device	Nameplate	Measured List All Three Amperages
Supply Fan Motor <sup>1, 2</sup>	AMPS	AMPS
Exhaust Motor (Dampers 100%)	AMPS	AMPS
Condenser Fan #1	AMPS	AMPS
Condenser Fan #2 (if equipped)	AMPS	AMPS
Condenser Fan #3 (if equipped)	AMPS	AMPS
Condenser Fan #4 (if equipped)	AMPS	AMPS
Compressor #1	AMPS	12-11-12 AMPS
Compressor #2 (if equipped)	AMPS	AMPS
Compressor #3 (if equipped)	AMPS	AMPS
Compressor #4 (if equipped)	AMPS	AMPS

1. VAV units with heat section - simulate heat call to drive VAV boxes and VFD/IGV to maximum design airflow position.
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### OPERATING MEASUREMENTS - COOLING

Stage	Discharge Pressure	Discharge Temp.	Liquid Line Temp. <sup>1</sup>	Subcooling <sup>2</sup>	Suction Pressure	Suction Temp.	Superheat
First	278 #	111 °	°	31 °	281 #	91 °	53 °
Second (if equipped)	#	°	°	°	#	°	°
Third (if equipped)	#	°	°	°	#	°	°
Fourth (if equipped)	#	°	°	°	#	°	°
Reheat 1st Stage	#	°	°	°	#	°	°

1. Liquid temperature should be taken before filter/drier.
2. Subtract 10 psi from discharge pressure for estimated liquid line pressure

Outside air temperature \_\_\_\_\_ °F db      \_\_\_\_\_ °F wb      \_\_\_\_\_ %RH  
 Return Air Temperature \_\_\_\_\_ °F db      \_\_\_\_\_ °F wb      \_\_\_\_\_ %RH  
 Mixed Air Temperature \_\_\_\_\_ °F db      \_\_\_\_\_ °F wb      \_\_\_\_\_ %RH  
 Supply Air Temperature \_\_\_\_\_ °F db      \_\_\_\_\_ °F wb      \_\_\_\_\_ %RH

### REFRIGERANT SAFETIES

Action	Completed	See Notes
Prove Compressor Rotation (3 phase only) by gauge pressure	<input type="checkbox"/>	
Prove High Pressure Safety, All Systems	<input type="checkbox"/>	
Prove Low Pressure Safety, All Systems	<input type="checkbox"/>	

### OPERATING MEASUREMENTS - GAS HEATING

Fuel Type:       Natural Gas       LP Gas

Action	Completed	See Notes
Check for gas leaks	<input type="checkbox"/>	
Prove Ventor Motor Operation	<input type="checkbox"/>	
Prove Primary Safety Operation	<input type="checkbox"/>	
Prove Auxiliary Safety Operation	<input type="checkbox"/>	
Prove Rollout Switch Operation	<input type="checkbox"/>	
Prove Smoke Detector Operation	<input type="checkbox"/>	
Manifold Pressure	Stage 1	IWC
	Stage 2 (If Equipped)	IWC
	Stage 3 (If Equipped)	IWC
Supply gas pressure at full fire	IWC	
Check temperature rise <sup>1</sup>	<input type="checkbox"/> measured at full fire	°F

1. Input X Eff. (BTU output)  
 1.08 X Temp. Rise

## OPERATIONAL MEASUREMENTS - STAGING CONTROLS

Verify Proper Operation of Heating/Cooling Staging Controls	
Create a cooling demand at the Thermostat, BAS System or Simplicity SE Verify that cooling/economizer stages are energized.	<input type="checkbox"/>
Create a heating demand at the Thermostat, BAS System or Simplicity SE Verify that heating stages are energized.	<input type="checkbox"/>
Verify Proper Operation of the Variable Frequency Drive (If Required)	
Verify that motor speed modulates with duct pressure change.	<input type="checkbox"/>

## FINAL - INSPECTION

Verify that all operational control set points have been set to desired value Scroll through all setpoints and change as may be necessary to suit the occupant requirements.	<input type="checkbox"/>
Verify that all option parameters are correct Scroll through all option parameters and ensure that all installed options are enabled in the software and all others are disabled in the software. (Factory software settings should match the installed options)	<input type="checkbox"/>
Verify that all access panels have been closed and secured	<input type="checkbox"/>

### OBSERVED PRODUCT DEFICIENCIES & CONCERNS:

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# START-UP & SERVICE DATA INSTRUCTION

## COMMERCIAL PACKAGE UNITS

3.0 To 40.0 TONS

RTU # 5

### START-UP CHECKLIST

Date: \_\_\_\_\_  
Job Name: WGS 11134  
Customer Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: Smarna State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Model Number: 21031 Serial Number: N203531931  
Qualified Start-up Technician: Chase Shaw Signature: \_\_\_\_\_  
HVAC Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contractor's E-mail Address: \_\_\_\_\_  
Electrical Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_  
Distributor Name: \_\_\_\_\_ Phone: \_\_\_\_\_

### WARRANTY STATEMENT

Johnson Controls/UPG is confident that this equipment will operate to the owner's satisfaction if the proper procedures are followed and checks are made at initial start-up. This confidence is supported by the 30 day dealer protection coverage portion of our standard warranty policy which states that Johnson Controls/UPG will cover parts and labor on new equipment start-up failures that are caused by a defect in factory workmanship or material, for a period of 30 days from installation. Refer to current standard warranty policy and warranty manual found on UPGnet for details.

In the event that communication with Johnson Controls/UPG is required regarding technical and/or warranty concerns, all parties to the discussion should have a copy of the equipment start-up sheet for reference. A copy of the original start-up sheet should be filed with the Technical Services Department.

The packaged unit is available in constant or variable air volume versions with a large variety of custom options and accessories available. Therefore, some variation in the startup procedure will exist depending upon the products capacity, control system, options and accessories installed.

This start-up sheet covers all startup check points common to all package equipment. In addition it covers essential startup check points for a number of common installation options. Depending upon the particular unit being started not all sections of this startup sheet will apply. Complete those sections applicable and use the notes section to record any additional information pertinent to your particular installation.

Warranty claims are to be made through the distributor from whom the equipment was purchased.

### EQUIPMENT STARTUP

Use the local LCD or Mobile Access Portal (MAP) Gateway to complete the start-up.

A copy of the completed start-up sheet should be kept on file by the distributor providing the equipment and a copy sent to:

Johnson Controls/UPG  
Technical Services Department  
5005 York Drive  
Norman, OK 73069

### REFERENCE

General Inspection	Completed	See Notes
Unit inspected for shipping, storage, or rigging damage	<input checked="" type="checkbox"/>	
Unit installed with proper clearances	<input checked="" type="checkbox"/>	
Unit installed within slope limitations	<input checked="" type="checkbox"/>	
Refrigeration system checked for gross leaks (presence of oil)	<input checked="" type="checkbox"/>	
Terminal screws and wiring connections checked for tightness	<input checked="" type="checkbox"/>	
Filters installed correctly and clean	<input checked="" type="checkbox"/>	
Economizer hoods installed in operating position	<input checked="" type="checkbox"/>	
Condensate drain trapped properly, refer to Installation Manual	<input checked="" type="checkbox"/>	
Economizer damper linkage tight	<input checked="" type="checkbox"/>	
Gas Heat vent hood installed	<input checked="" type="checkbox"/>	
All field wiring (power and control) complete	<input checked="" type="checkbox"/>	

Air Moving Inspection	Completed	See Notes
Alignment of drive components	<input checked="" type="checkbox"/>	
Belt tension adjusted properly	<input checked="" type="checkbox"/>	
Blower pulleys tight on shaft, bearing set screws tight, wheel tight to shaft	<input checked="" type="checkbox"/>	
Pressure switch or transducer tubing installed properly	<input checked="" type="checkbox"/>	

Exhaust Inspection	Powered <input type="checkbox"/>	Barometric Relief <input type="checkbox"/>	Completed	See Notes
Check hub for tightness			<input checked="" type="checkbox"/>	
Check fan blade for clearance			<input checked="" type="checkbox"/>	
Check for proper rotation			<input checked="" type="checkbox"/>	
Check for proper mounting (screen faces towards unit)			<input checked="" type="checkbox"/>	
Prove operation by increasing minimum setting on economizer			<input checked="" type="checkbox"/>	

Economizer Inspection	Standard <input type="checkbox"/>	BAS <input type="checkbox"/>	Completed	See Notes
CO <sub>2</sub> sensor installed Yes <input type="checkbox"/> No <input type="checkbox"/>			<input checked="" type="checkbox"/>	
Check economizer setting (Reference SSE Control Board LCD menu location)			<input checked="" type="checkbox"/>	
Prove economizer open/close through SSE Board Setting			<input checked="" type="checkbox"/>	

Reheat Mode	Normal <input type="checkbox"/>	or Alternate <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Humidity Sensor (2SH0401)			<input checked="" type="checkbox"/>

### Operating Measurements - Air Flow

Fan operates with proper rotation	ID Fans <input type="checkbox"/>	Exh. Fans <input type="checkbox"/>	Cond. Fans <input type="checkbox"/>
Pressure drop across dry evaporator coil (At maximum design CFM) <sup>1</sup>	IWC		
External Static Pressure	IWC		
Return Static Pressure	IWC		
Supply Static Pressure	IWC		
Supply Air CFM Using Dry Coil Chart	CFM		
Final Adjusted Supply Air CFM <sup>2</sup>	CFM		

1. Consult the proper airflow to pressure drop table to obtain the actual airflow at the measured pressure differential.
2. Was a motor pulley adjustment or change required to obtain the correct airflow?  
 Was it necessary to increase or decrease the airflow to meet the design conditions?  
 If the motor pulley size was changed, measure the outside diameters of the motor and blower pulleys and record those diameters here;

Blower Motor HP \_\_\_\_\_ FLA \_\_\_\_\_ RPM \_\_\_\_\_

Pulley Pitch Diameter \_\_\_\_\_ Turns Out \_\_\_\_\_ Final Turns Out \_\_\_\_\_

Blower Pulley Pitch Diameter \_\_\_\_\_ Fixed Sheave \_\_\_\_\_

### ELECTRICAL DATA

T1 - T2 120 Volts                      T2 - T3 120 Volts  
 Control Voltage \_\_\_\_\_ Volts                      T1 - T3 120 Volts

Device	Nameplate	Measured List All Three Amperages
Supply Fan Motor <sup>1, 2</sup>	AMPS	AMPS
Exhaust Motor (Dampers 100%)	AMPS	AMPS
Condenser Fan #1	AMPS	AMPS
Condenser Fan #2 (if equipped)	AMPS	AMPS
Condenser Fan #3 (if equipped)	AMPS	AMPS
Condenser Fan #4 (if equipped)	AMPS	AMPS
Compressor #1	AMPS	AMPS
Compressor #2 (if equipped)	AMPS	11-11-12 AMPS
Compressor #3 (if equipped)	AMPS	AMPS
Compressor #4 (if equipped)	AMPS	AMPS

1. VAV units with heat section - simulate heat call to drive VAV boxes and VFD/IGV to maximum design airflow position.
2. VAV units without heat section - VAV boxes must be set to maximum design airflow position.





# START-UP & SERVICE DATA INSTRUCTION

## COMMERCIAL PACKAGE UNITS

3.0 To 40.0 TONS

RTU # U

### START-UP CHECKLIST

Date: \_\_\_\_\_  
Job Name: WGS 11134  
Customer Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: Smyrna State: DE Zip: \_\_\_\_\_  
Model Number: FJ037N08DAB5G1CA2R4 Serial Number: N2C3531909  
Qualified Start-up Technician: Chase Shaw Signature: \_\_\_\_\_  
HVAC Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contractor's E-mail Address: \_\_\_\_\_  
Electrical Contractor: \_\_\_\_\_ Phone: \_\_\_\_\_  
Distributor Name: \_\_\_\_\_ Phone: \_\_\_\_\_

### WARRANTY STATEMENT

Johnson Controls/UPG is confident that this equipment will operate to the owner's satisfaction if the proper procedures are followed and checks are made at initial start-up. This confidence is supported by the 30 day dealer protection coverage portion of our standard warranty policy which states that Johnson Controls/UPG will cover parts and labor on new equipment start-up failures that are caused by a defect in factory workmanship or material, for a period of 30 days from installation. Refer to current standard warranty policy and warranty manual found on UPGnet for details.

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Johnson Controls/UPG  
Technical Services Department  
5005 York Drive  
Norman, OK 73069

### REFERENCE

General Inspection	Completed	See Notes
Unit inspected for shipping, storage, or rigging damage	<input type="checkbox"/>	<input type="checkbox"/>
Unit installed with proper clearances	<input type="checkbox"/>	<input type="checkbox"/>
Unit installed within slope limitations	<input type="checkbox"/>	<input type="checkbox"/>
Refrigeration system checked for gross leaks (presence of oil)	<input type="checkbox"/>	<input type="checkbox"/>
Terminal screws and wiring connections checked for tightness	<input type="checkbox"/>	<input type="checkbox"/>
Filters installed correctly and clean	<input type="checkbox"/>	<input type="checkbox"/>
Economizer hoods installed in operating position	<input type="checkbox"/>	<input type="checkbox"/>
Condensate drain trapped properly, refer to Installation Manual	<input type="checkbox"/>	<input type="checkbox"/>
Economizer damper linkage tight	<input type="checkbox"/>	<input type="checkbox"/>
Gas Heat vent hood installed	<input type="checkbox"/>	<input type="checkbox"/>
All field wiring (power and control) complete	<input type="checkbox"/>	<input type="checkbox"/>

Air Moving Inspection	Completed	See Notes
Alignment of drive components	<input type="checkbox"/>	<input type="checkbox"/>
Belt tension adjusted properly	<input type="checkbox"/>	<input type="checkbox"/>
Blower pulleys tight on shaft, bearing set screws tight, wheel tight to shaft	<input type="checkbox"/>	<input type="checkbox"/>
Pressure switch or transducer tubing installed properly	<input type="checkbox"/>	<input type="checkbox"/>

Exhaust Inspection    Powered <input type="checkbox"/> Barometric Relief <input type="checkbox"/>	Completed	See Notes
Check hub for tightness	<input type="checkbox"/>	<input type="checkbox"/>
Check fan blade for clearance	<input type="checkbox"/>	<input type="checkbox"/>
Check for proper rotation	<input type="checkbox"/>	<input type="checkbox"/>
Check for proper mounting (screen faces towards unit)	<input type="checkbox"/>	<input type="checkbox"/>
Prove operation by increasing minimum setting on economizer	<input type="checkbox"/>	<input type="checkbox"/>

Economizer Inspection    Standard <input type="checkbox"/> BAS <input type="checkbox"/>	Completed	See Notes
CO <sub>2</sub> sensor installed    Yes <input type="checkbox"/> No <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Check economizer setting (Reference SSE Control Board LCD menu location)	<input type="checkbox"/>	<input type="checkbox"/>
Prove economizer open/close through SSE Board Setting	<input type="checkbox"/>	<input type="checkbox"/>

Reheat Mode    Normal <input type="checkbox"/> or Alternate <input type="checkbox"/> Not Applicable <input type="checkbox"/>
Humidity Sensor (2SH0401) _____

### Operating Measurements - Air Flow

Fan operates with proper rotation	ID Fans <input type="checkbox"/>	Exh. Fans <input type="checkbox"/>	Cond. Fans <input type="checkbox"/>
Pressure drop across dry evaporator coil (At maximum design CFM) <sup>1</sup>	IWC		
External Static Pressure	IWC		
Return Static Pressure	IWC		
Supply Static Pressure	IWC		
Supply Air CFM Using Dry Coil Chart	CFM		
Final Adjusted Supply Air CFM <sup>2</sup>	CFM		

1. Consult the proper airflow to pressure drop table to obtain the actual airflow at the measured pressure differential.
2. Was a motor pulley adjustment or change required to obtain the correct airflow?  
 Was it necessary to increase or decrease the airflow to meet the design conditions?  
 If the motor pulley size was changed, measure the outside diameters of the motor and blower pulleys and record those diameters here;

Blower Motor HP \_\_\_\_\_ FLA \_\_\_\_\_ RPM \_\_\_\_\_

Pulley Pitch Diameter \_\_\_\_\_ Turns Out \_\_\_\_\_ Final Turns Out \_\_\_\_\_

Blower Pulley Pitch Diameter \_\_\_\_\_ Fixed Sheave \_\_\_\_\_

### ELECTRICAL DATA

T1 - T2 120 Volts                      T2 - T3 120 Volts  
 Control Voltage \_\_\_\_\_ Volts                      T1 - T3 120 Volts

Device	Nameplate	Measured List All Three Amperages
Supply Fan Motor <sup>1, 2</sup>	AMPS	AMPS
Exhaust Motor (Dampers 100%)	AMPS	AMPS
Condenser Fan #1	AMPS	AMPS
Condenser Fan #2 (if equipped)	AMPS	AMPS
Condenser Fan #3 (if equipped)	AMPS	AMPS
Condenser Fan #4 (if equipped)	AMPS	AMPS
Compressor #1	AMPS	<u>10 - 11 - 10</u> AMPS
Compressor #2 (if equipped)	AMPS	AMPS
Compressor #3 (if equipped)	AMPS	AMPS
Compressor #4 (if equipped)	AMPS	AMPS

1. VAV units with heat section - simulate heat call to drive VAV boxes and VFD/IGV to maximum design airflow position.
2. VAV units without heat section - VAV boxes must be set to maximum design airflow position.

### OPERATING MEASUREMENTS - COOLING

Stage	Discharge Pressure	Discharge Temp.	Liquid Line Temp. <sup>1</sup>	Subcooling <sup>2</sup>	Suction Pressure	Suction Temp.	Superheat
First	#	°	°	°	#	°	°
Second (if equipped)	#	°	°	°	#	°	°
Third (if equipped)	#	°	°	°	#	°	°
Fourth (if equipped)	#	°	°	°	#	°	°
Reheat 1st Stage	#	°	°	°	#	°	°

1. Liquid temperature should be taken before filter/drier.
2. Subtract 10 psi from discharge pressure for estimated liquid line pressure

Outside air temperature \_\_\_\_\_ °F db      \_\_\_\_\_ °F wb      \_\_\_\_\_ %RH  
 Return Air Temperature      \_\_\_\_\_ °F db      \_\_\_\_\_ °F wb      \_\_\_\_\_ %RH  
 Mixed Air Temperature      \_\_\_\_\_ °F db      \_\_\_\_\_ °F wb      \_\_\_\_\_ %RH  
 Supply Air Temperature      \_\_\_\_\_ °F db      \_\_\_\_\_ °F wb      \_\_\_\_\_ %RH

### REFRIGERANT SAFETIES

Action	Completed	See Notes
Prove Compressor Rotation (3 phase only) by gauge pressure	<input type="checkbox"/>	
Prove High Pressure Safety, All Systems	<input type="checkbox"/>	
Prove Low Pressure Safety, All Systems	<input type="checkbox"/>	

### OPERATING MEASUREMENTS - GAS HEATING

Fuel Type:       Natural Gas       LP Gas

Action	Completed	See Notes
Check for gas leaks	<input type="checkbox"/>	
Prove Ventor Motor Operation	<input type="checkbox"/>	
Prove Primary Safety Operation	<input type="checkbox"/>	
Prove Auxiliary Safety Operation	<input type="checkbox"/>	
Prove Rollout Switch Operation	<input type="checkbox"/>	
Prove Smoke Detector Operation	<input type="checkbox"/>	
Manifold Pressure	Stage 1	IWC
	Stage 2 (If Equipped)	IWC
	Stage 3 (If Equipped)	IWC
Supply gas pressure at full fire	IWC	
Check temperature rise <sup>1</sup>	<input type="checkbox"/> measured at full fire	°F

1. Input X Eff. (BTU output)  
1.08 X Temp. Rise

