

Project Information

For: Johns Residence
284 Heathridge drive, Lake City, FL

Notes:

Design Information

Weather: Gainesville Regional AP, FL, US

Winter Design Conditions

Outside db 33 °F
Inside db 70 °F
Design TD 37 °F



Heating Summary

Structure 23563 Btuh
Ducts 6117 Btuh
Central vent (0 cfm) 0 Btuh
(none)
Humidification 0 Btuh
Piping 0 Btuh
Equipment load 29680 Btuh

Infiltration

Method Simplified
Construction quality Average
Fireplaces 0

	Heating	Cooling
Area (ft²)	1710	1710
Volume (ft³)	17588	17588
Air changes/hour	0.38	0.20
Equiv. AVF (cfm)	111	59

Heating Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Model GSZ140361K
AHRI ref 201645069

Efficiency 8.2 HSPF
Heating input
Heating output 32800 Btuh @ 47°F
Temperature rise 26 °F
Actual air flow 1147 cfm
Air flow factor 0.039 cfm/Btuh
Static pressure 0.53 in H2O
Space thermostat
Capacity balance point = 32 °F

Backup:
Input = 8 kW, Output = 28492 Btuh, 100 AFUE

Summer Design Conditions

Outside db 92 °F
Inside db 75 °F
Design TD 17 °F
Daily range M
Relative humidity 50 %
Moisture difference 47 gr/lb

Sensible Cooling Equipment Load Sizing

Structure 20788 Btuh
Ducts 5688 Btuh
Central vent (0 cfm) 0 Btuh
(none)
Blower 0 Btuh
Use manufacturer's data n
Rate/swing multiplier 0.97
Equipment sensible load 25682 Btuh

Latent Cooling Equipment Load Sizing

Structure 3079 Btuh
Ducts 1917 Btuh
Central vent (0 cfm) 0 Btuh
(none)
Equipment latent load 4996 Btuh

Equipment Total Load (Sen+Lat) 30678 Btuh
Req. total capacity at 0.70 SHR 3.1 ton

Cooling Equipment Summary

Make Goodman Mfg.
Trade GOODMAN
Cond GSZ140361K
Coil ARUF37D14A
AHRI ref 201645069

Efficiency 11.5 EER, 14 SEER
Sensible cooling 24080 Btuh
Latent cooling 10320 Btuh
Total cooling 34400 Btuh
Actual air flow 1147 cfm
Air flow factor 0.043 cfm/Btuh
Static pressure 0.53 in H2O
Load sensible heat ratio 0.84

Calculations approved by ACCA to meet all requirements of Manual J 8th Ed.

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	Heating	Cooling
External static pressure	0.53 in H2O	0.53 in H2O
Pressure losses	0.14 in H2O	0.14 in H2O
Available static pressure	0.39 in H2O	0.39 in H2O
Supply / return available pressure	0.234 / 0.156 in H2O	0.234 / 0.156 in H2O
Lowest friction rate	0.179 in/100ft	0.179 in/100ft
Actual air flow	1147 cfm	1147 cfm
Total effective length (TEL)	218 ft	

Supply Branch Detail Table

Name	Design (Btuh)	Htg (cfm)	Clg (cfm)	Design FR	Diam (in)	H x W (in)	Duct Matl	Actual Ln (ft)	Ftg.Eqv Ln (ft)	Trunk
Bath 2	h 714	28	11	0.188	4.0	0x0	VIFx	34.2	90.0	st1
Bed 2	c 4628	196	201	0.181	8.0	0x0	VIFx	38.9	90.0	st1
Bed 3	h 4287	166	124	0.179	8.0	0x0	VIFx	40.6	90.0	st1
Great	c 2701	90	117	0.201	7.0	0x0	VIFx	26.1	90.0	st2
Great-A	c 2701	90	117	0.215	7.0	0x0	VIFx	19.1	90.0	st2
Kit/Dining	c 2909	89	126	0.201	7.0	0x0	VIFx	26.2	90.0	st2
Kit/Dining-A	c 2909	89	126	0.212	7.0	0x0	VIFx	20.4	90.0	st2
M Bath	h 2399	93	44	0.221	6.0	0x0	VIFx	15.8	90.0	st3
M Bed	c 3535	92	153	0.213	7.0	0x0	VIFx	19.9	90.0	st3
M WIC	h 2125	82	26	0.204	6.0	0x0	VIFx	24.6	90.0	st3
Office	h 2414	93	47	0.223	6.0	0x0	VIFx	14.9	90.0	st3
Stor	c 96	3	4	0.227	4.0	0x0	VIFx	12.9	90.0	st3
Utility	c 1196	37	52	0.307	5.0	0x0	VIFx	6.1	70.0	

Supply Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
st1	Peak AVF	389	335	0.179	496	12.0	0 x 0	VinIFlx	
st2	Peak AVF	357	486	0.201	455	14.0	0 x 0	VinIFlx	
st3	Peak AVF	363	274	0.204	463	12.0	0 x 0	VinIFlx	

Return Branch Detail Table

Name	Grille Size (in)	Htg (cfm)	Clg (cfm)	TEL (ft)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Stud/Joist Opening (in)	Duct Matl	Trunk
rb3	0x 0	196	201	79.6	0.196	574	8.0	0x 0		VIFx	rt1
rb2	0x 0	166	124	87.1	0.179	475	8.0	0x 0		VIFx	rt1
rb1	0x 0	422	549	38.5	0.405	513	14.0	0x 0		VIFx	
rb4	0x 0	267	223	44.6	0.350	490	10.0	0x 0		VIFx	
rb5	0x 0	96	51	33.0	0.473	490	6.0	0x 0		VIFx	

Return Trunk Detail Table

Name	Trunk Type	Htg (cfm)	Clg (cfm)	Design FR	Veloc (fpm)	Diam (in)	H x W (in)	Duct Material	Trunk
rt1	PeakAVF	362	324	0.179	460	12.0	0 x 0	VinIFlx	

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Cooling Equipment

Design Conditions

Outdoor design DB:	92.0°F	Sensible gain:	26476	Btuh	Entering coil DB:	76.7°F
Outdoor design WB:	76.3°F	Latent gain:	4996	Btuh	Entering coil WB:	63.5°F
Indoor design DB:	75.0°F	Total gain:	31473	Btuh		
Indoor RH:	50%	Estimated airflow:	1147	cfm		

Manufacturer's Performance Data at Actual Design Conditions

Equipment type:	Split ASHP		
Manufacturer:	Goodman Mfg.	Model:	GSZ140361K+ARUF37D14A
Actual airflow:	1147	cfm	
Sensible capacity:	28734	Btuh	109% of load
Latent capacity:	5362	Btuh	107% of load
Total capacity:	34096	Btuh	108% of load SHR: 84%

Heating Equipment

Design Conditions

Outdoor design DB:	33.4°F	Heat loss:	29680	Btuh	Entering coil DB:	68.7°F
Indoor design DB:	70.0°F					

Manufacturer's Performance Data at Actual Design Conditions

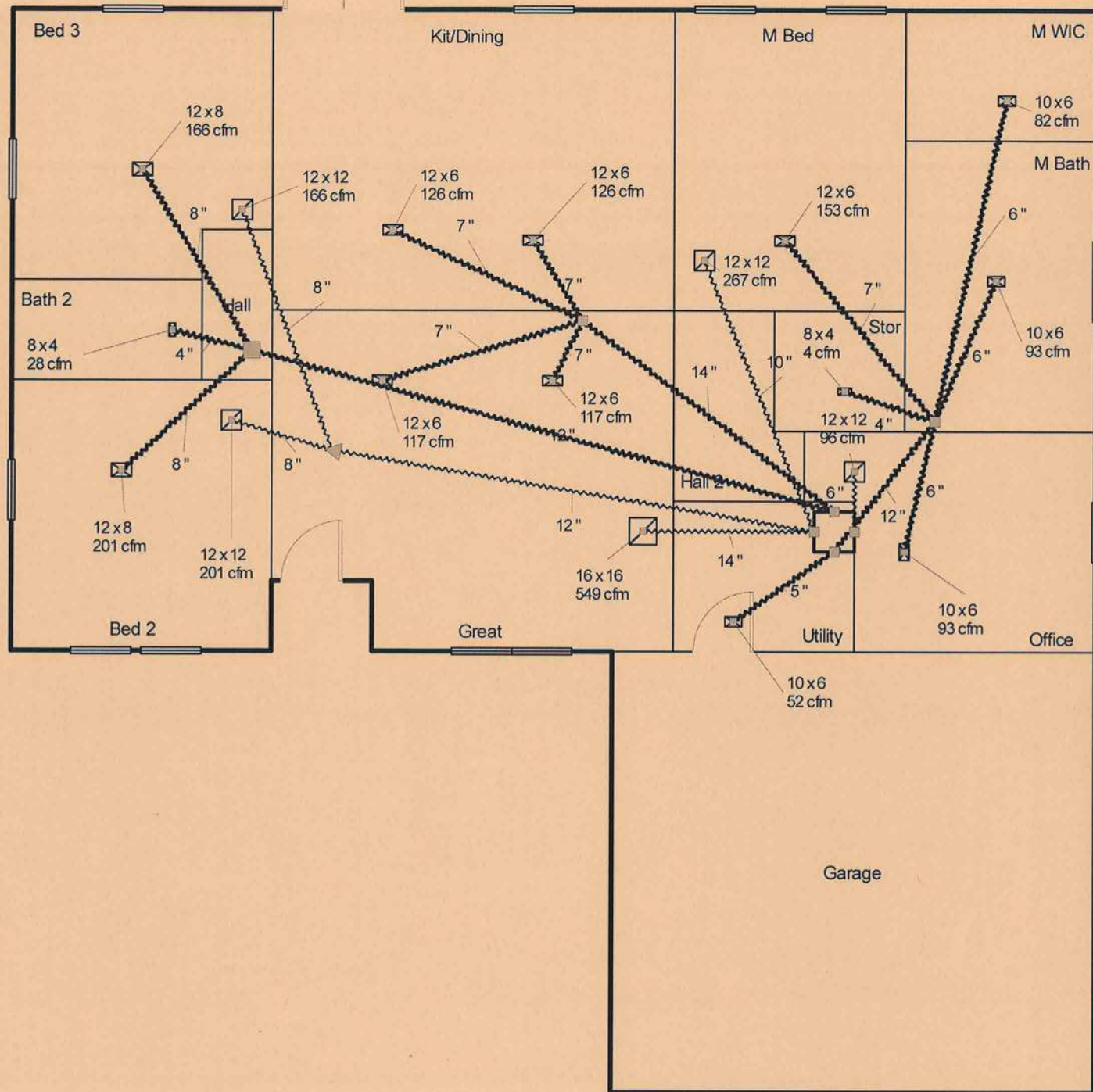
Equipment type:	Split ASHP		
Manufacturer:	Goodman Mfg.	Model:	GSZ140361K+ARUF37D14A
Actual airflow:	1147	cfm	
Output capacity:	32800	Btuh	111% of load
Supplemental heat required:	0	Btuh	
Capacity balance:	32	°F	
Economic balance:	-99	°F	

Backup equipment type:	Elec strip		
Manufacturer:		Model:	
Actual airflow:	1147	cfm	
Output capacity:	8.4	kW	96% of load Temp. rise: 50 °F

Meets all requirements of ACCA Manual S.



Duct Layout



Job #: Johns Residence
Performed by DJM for:
Johns Residence
284 Heathridge drive
Lake City, FL

Scale: 1 : 90
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