

### Project Information

For:

### Design Information

	Htg	Clg	Infiltration	Simplified
Outside db (°F)	42	110	Method	Tight
Inside db (°F)	70	75	Construction quality	0
Design TD (°F)	28	35	Fireplaces	
Daily range	-	M		
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	1	-20		

#### HEATING EQUIPMENT

Make	Goodman Mfg.
Trade	GOODMAN
Model	GSZ140421K
AHRI ref	201817159
Efficiency	8.2 HSPF
Heating input	
Heating output	39000 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	1317 cfm
Air flow factor	0.072 cfm/Btuh
Static pressure	0.60 in H2O
Space thermostat	
Capacity balance point = 27 °F	

#### COOLING EQUIPMENT

Make	Goodman Mfg.
Trade	GOODMAN
Cond	GSZ140421K
Coil	ASPT47C14B
AHRI ref	201817159
Efficiency	12.0 EER, 14 SEER
Sensible cooling	30810 Btuh
Latent cooling	8690 Btuh
Total cooling	39500 Btuh
Actual air flow	1317 cfm
Air flow factor	0.052 cfm/Btuh
Static pressure	0.60 in H2O
Load sensible heat ratio	0.85

Backup: Goodman Heat Strip  
 Input = 8 kW, Output = 27297 Btuh, 100 AFUE

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Master Bed	298	3957	4243	284	220
mwc	24	342	354	25	18
Mbath	196	1205	1460	87	76
mclst	98	1530	860	110	45
mclst b	77	690	559	50	29
mclst c	41	53	281	4	15
L	11	0	0	0	0
m	32	0	0	0	0
Living Rm	150	2312	3668	166	190
Entry	106	895	770	64	40
GR DR Kit	1141	6290	12156	452	629
pwdr	30	36	368	3	19
pty	114	1026	725	74	38

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

AH 1 Master Bed	2316	18336	25444	1317	1317
Other equip loads		2684	4857		
Equip. @ 1.00 RSM			30301		
Latent cooling			5404		
<b>TOTALS</b>	<b>2316</b>	<b>21020</b>	<b>35705</b>	<b>1317</b>	<b>1317</b>

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Outside db (°F)	42	110	Method	Tight
Inside db (°F)	70	75	Construction quality	0
Design TD (°F)	28	35	Fireplaces	
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	24	-20		

**HEATING EQUIPMENT**

Make	Goodman Mfg.
Trade	GOODMAN
Model	GSZ140301K
AHRI ref	202326830
Efficiency	8.2 HSPF
Heating input	
Heating output	28000 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	933 cfm
Air flow factor	0.061 cfm/Btuh
Static pressure	0.60 in H2O
Space thermostat	
Capacity balance point = 34 °F	

**COOLING EQUIPMENT**

Make	Goodman Mfg.
Trade	GOODMAN
Cond	GSZ140301K
Coil	ASPT29B14A
AHRI ref	202326830
Efficiency	12.0 EER, 14.5 SEER
Sensible cooling	21840 Btuh
Latent cooling	6160 Btuh
Total cooling	28000 Btuh
Actual air flow	933 cfm
Air flow factor	0.054 cfm/Btuh
Static pressure	0.60 in H2O
Load sensible heat ratio	0.86

Backup: Goodman Heat Strip  
Input = 8 kW, Output = 27297 Btuh, 100 AFUE

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Bath 2	33	831	649	51	35
DR 2	45	541	323	33	17
wc 2	24	321	247	20	13
clst 2	38	51	282	3	15
L2	11	0	0	0	0
Bed 2	233	3294	3378	202	182
Game Rm	324	2707	4007	166	215
GR clst	56	65	247	4	13
Bath 4	36	339	171	21	9
DR 4	46	431	217	26	12
clst 4	29	51	220	3	12
Bed 4	182	1746	2023	107	109
Hall	109	0	0	0	0
Clst 3	38	74	298	5	16

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Bath 3	39	860	484	53	26
DR 3	33	397	237	24	13
Bed 3	211	1480	2776	91	149
Mud Rm	81	570	511	35	27
Ldry	129	1492	1296	91	70
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AH 2 Game Rm	1697	15251	17364	933	933
Other equip loads		4714	4445		
Equip. @ 1.00 RSM			21809		
Latent cooling			3522		
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TOTALS	1697	19966	25332	933	933

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	Htg	Clg	Infiltration	Simplified
Outside db (°F)	42	110	Method	
Inside db (°F)	70	75	Construction quality	Tight
Design TD (°F)	28	35	Fireplaces	0
Daily range	-	M		
Inside humidity (%)	50	50		
Moisture difference (gr/lb)	24	-20		

### HEATING EQUIPMENT

Make	Goodman Mfg.
Trade	GOODMAN
Model	GSZ140181L
AHRI ref	202630555
Efficiency	8.2 HSPF
Heating input	
Heating output	15600 Btuh @ 47°F
Temperature rise	25 °F
Actual air flow	600 cfm
Air flow factor	0.076 cfm/Btuh
Static pressure	0.60 in H2O
Space thermostat	
Capacity balance point = 29 °F	

### COOLING EQUIPMENT

Make	Goodman Mfg.
Trade	GOODMAN
Cond	GSZ140181L
Coil	ASPT25B14A
AHRI ref	202630555
Efficiency	12.0 EER, 15 SEER
Sensible cooling	14040 Btuh
Latent cooling	3960 Btuh
Total cooling	18000 Btuh
Actual air flow	600 cfm
Air flow factor	0.056 cfm/Btuh
Static pressure	0.60 in H2O
Load sensible heat ratio	0.85

Backup: Goodman Heat Strip  
Input = 5 kW, Output = 17061 Btuh, 100 AFUE

ROOM NAME	Area (ft²)	Htg load (Btuh)	Clg load (Btuh)	Htg AVF (cfm)	Clg AVF (cfm)
Casita GR	163	2010	2295	152	128
Casita Bath	60	1067	1085	81	61
Casita	309	3962	6580	299	368
Casita clst	46	901	764	68	43
AH 3 Casita	577	7940	10723	600	600
Other equip loads		1701	2632		
Equip. @ 1.00 RSM			13355		
Latent cooling			2413		
<b>TOTALS</b>	<b>577</b>	<b>9641</b>	<b>15768</b>	<b>600</b>	<b>600</b>

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## Project Information

For:

Notes: Phoenix, AZ

## Design Information

Weather: Phoenix Sky Harbor Intl, AZ, US

### Winter Design Conditions

Outside db	42 °F
Inside db	70 °F
Design TD	28 °F

### Summer Design Conditions

Outside db	110 °F
Inside db	75 °F
Design TD	35 °F
Daily range	M
Relative humidity	50 %
Moisture difference	-20 gr/lb

### Heating Summary

Structure	15393 Btuh
Ducts	2943 Btuh
Central vent (84 cfm)	2517 Btuh
Outside air	
Humidification	167 Btuh
Piping	0 Btuh
Equipment load	21020 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	23295 Btuh
Ducts	2149 Btuh
Central vent (84 cfm)	3151 Btuh
Outside air	
Blower	1707 Btuh
Use manufacturer's data	y
Rate/swing multiplier	1.00
Equipment sensible load	30301 Btuh

### Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

### Latent Cooling Equipment Load Sizing

Structure	6899 Btuh
Ducts	-396 Btuh
Central vent (84 cfm)	-1099 Btuh
Outside air	
Equipment latent load	5404 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	2316	2316
Volume (ft <sup>3</sup> )	23155	23155
Air changes/hour	0.11	0.06
Equiv. AVF (cfm)	42	23

<b>Equipment Total Load (Sen+Lat)</b>	35705 Btuh
Req. total capacity at 0.78 SHR	3.2 ton

### Heating Equipment Summary

Make	Goodman Mfg.
Trade	GOODMAN
Model	GSZ140421K
AHRI ref	201817159
Efficiency	8.2 HSPF
Heating input	
Heating output	39000 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	1317 cfm
Air flow factor	0.072 cfm/Btuh
Static pressure	0.60 in H2O
Space thermostat	
Capacity balance point = 27 °F	

### Cooling Equipment Summary

Make	Goodman Mfg.
Trade	GOODMAN
Cond	GSZ140421K
Coil	ASPT47C14B
AHRI ref	201817159
Efficiency	12.0 EER, 14 SEER
Sensible cooling	30810 Btuh
Latent cooling	8690 Btuh
Total cooling	39500 Btuh
Actual air flow	1317 cfm
Air flow factor	0.052 cfm/Btuh
Static pressure	0.60 in H2O
Load sensible heat ratio	0.85

Backup: Goodman Heat Strip  
Input = 8 kW, Output = 27297 Btuh, 100 AFUE

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### Winter Design Conditions

Outside db	42 °F
Inside db	70 °F
Design TD	28 °F

### Summer Design Conditions

Outside db	110 °F
Inside db	75 °F
Design TD	35 °F
Daily range	M
Relative humidity	50 %
Moisture difference	-20 gr/lb

### Heating Summary

Structure	13272 Btuh
Ducts	1980 Btuh
Central vent (73 cfm)	2188 Btuh
Outside air	
Humidification	2527 Btuh
Piping	0 Btuh
Equipment load	19966 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	15920 Btuh
Ducts	1445 Btuh
Central vent (73 cfm)	2738 Btuh
Outside air	
Blower	1707 Btuh
Use manufacturer's data	y
Rate/swing multiplier	1.00
Equipment sensible load	21809 Btuh

### Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

### Latent Cooling Equipment Load Sizing

Structure	4742 Btuh
Ducts	-265 Btuh
Central vent (73 cfm)	-955 Btuh
Outside air	
Equipment latent load	3522 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	1697	1697
Volume (ft <sup>3</sup> )	16970	16970
Air changes/hour	0.14	0.07
Equiv. AVF (cfm)	40	20

<b>Equipment Total Load (Sen+Lat)</b>	25332 Btuh
Req. total capacity at 0.78 SHR	2.3 ton

### Heating Equipment Summary

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Trade	GOODMAN
Model	GSZ140301K
AHRI ref	202326830
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Heating input	
Heating output	28000 Btuh @ 47°F
Temperature rise	28 °F
Actual air flow	933 cfm
Air flow factor	0.061 cfm/Btuh
Static pressure	0.60 in H2O
Space thermostat	
Capacity balance point = 34 °F	

### Cooling Equipment Summary

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Input = 8 kW, Output = 27297 Btuh, 100 AFUE

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### Summer Design Conditions

Outside db	110 °F
Inside db	75 °F
Design TD	35 °F
Daily range	M
Relative humidity	50 %
Moisture difference	-20 gr/lb

### Heating Summary

Structure	7043 Btuh
Ducts	897 Btuh
Central vent (25 cfm)	739 Btuh
Outside air	
Humidification	962 Btuh
Piping	0 Btuh
Equipment load	9641 Btuh

### Sensible Cooling Equipment Load Sizing

Structure	10075 Btuh
Ducts	648 Btuh
Central vent (25 cfm)	925 Btuh
Outside air	
Blower	1707 Btuh
Use manufacturer's data	y
Rate/swing multiplier	1.00
Equipment sensible load	13355 Btuh

### Infiltration

Method	Simplified
Construction quality	Tight
Fireplaces	0

### Latent Cooling Equipment Load Sizing

Structure	2862 Btuh
Ducts	-127 Btuh
Central vent (25 cfm)	-323 Btuh
Outside air	
Equipment latent load	2413 Btuh

	Heating	Cooling
Area (ft <sup>2</sup> )	577	577
Volume (ft <sup>3</sup> )	5768	5768
Air changes/hour	0.21	0.11
Equiv. AVF (cfm)	20	11

<b>Equipment Total Load (Sen+Lat)</b>	15768 Btuh
Req. total capacity at 0.78 SHR	1.4 ton

### Heating Equipment Summary

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Model	GSZ140181L
AHRI ref	202630555
Efficiency	8.2 HSPF
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