Instructions on How to Complete A Combustion Air Calculation Sheet

Combustion Air Form is Required Whenever you Alter a Space Containing a Fuel Burning Appliance.

What is a louver? A louver is a ventilation product that allows air to pass through it while keeping out unwanted elements such as water, dirt and debris.
What is a louver Free area? The area derived by taking the total open area of a louver (after subtracting all obstructions (blades and frame).

Step 1--Locate all GAS FIRED appliances in the basement and fill in the BTU ratings associated with each appliance in the blank area at the top of the Calculation Sheet. Do not include the dryer. A dryer requires make up air not combustion air. An additional water heater and/or furnace should be listed under Other. Add up all the BTUs to come up with the **TOTAL BTUs**. The BTU rating of most appliances can be located either on the front of the appliance or as for a furnace, inside the front panel.

Step 2--Take the total BTUs and follow the calculation to come up with the **Required Cubic Feet of Air** you will need to properly supply the appliances.

Step 3--Supply a "Floor Plan" of the basement to be finished. Include **ALL room dimensions** and **label each room** for the intended use. The rooms listed on the Combustion Air form and the Bird's Eye View Drawing should be **identical**.

Step 4--List all the rooms on the Calculation Sheet including width, length and ceiling height. Multiplying these dimensions will give you the CUBIC feet of air in each room. Once you reach the **Required CUBIC Feet of Air Needed**, you can stop adding rooms.

Step 5--The **Total Cubic Feet of Air Available** in Line 3 must meet or exceed the **Required Cubic Feet of Air Needed** in Line 2. If that is not the case, then these rooms will need to be connected via "combustion air grilles". The grilles/louvers will have to be located in the walls that connect the space and/or spaces.

Step 6--To find the required grille/louvers size, you will need the **Total BTUs of the appliances** (from Line 1). The total BTUs should be divided by 1000. This will give you the SQUARE INCHES required to connect the spaces. Each room that is required for combustion air will need these grilles/louvers installed. **The grilles/louvers need to be installed in a "high/Low" fashion.** This means in each connecting wall these grilles/louvers must be installed **with one starting within 12" of the ceiling and one starting within 12" of the floor. These grilles/louvers must be indicated on the floor plan when it is submitted.**

1. Total Appliance BTU input rating: Label on units will provide BTU input rating. Any additional furnace or water heater should be listed under Other. Don't include the dryer. Dryer requires make up air not combustion air.

_____ + _____ + _____ + _____ + _____ = _____**TOTAL BTU**
Furnace Water Heater Gas Fireplace Other Other

2. _____**Total BTU** ÷ 1000 x 50 = _____**Required Cubic Feet of <u>Air Needed</u>**

3. Area of Basement ***(All Calculations Need to be in Feet)**

<u>Room</u>	**<u>Length</u>**		**<u>Width</u>**		**<u>Height</u>**		
_____	_____	X	_____	X	_____	=	_____Cubic Feet of Air
_____	_____	X	_____	X	_____	=	_____Cubic Feet of Air
_____	_____	X	_____	X	_____	=	_____Cubic Feet of Air
_____	_____	X	_____	X	_____	=	_____Cubic Feet of Air

Total Cubic Feet of <u>Air Available</u> = _____

4. The **<u>Total Cubic Feet Available (from all rooms above)</u>** must **meet <u>or</u> exceed** the total from **line 2.**

5. Available air from adjacent rooms in the basement can be used to meet the requirement of the minimum cubic area required through use of air transfer grills/louvers. Combustion Air may be obtained from the exterior if the requirement from line 4 is not satisfied. **Combustion Air cannot be drawn from Bathrooms, Bedrooms & Garages.**

6. The first Grille/louver shall commence one foot from the ceiling.
   The second Grille/louver shall commence one foot from the floor.
   Louver doors may not meet this requirement. **(See Below for Referenced Code)**

7. Transfer grills/louvers shall have a clear open area of 1 inch per 1000 BTUs.

   _____ ÷ 1000 = _____ Square inches (Minimum of 100 sq.in.)
   TOTAL BTU

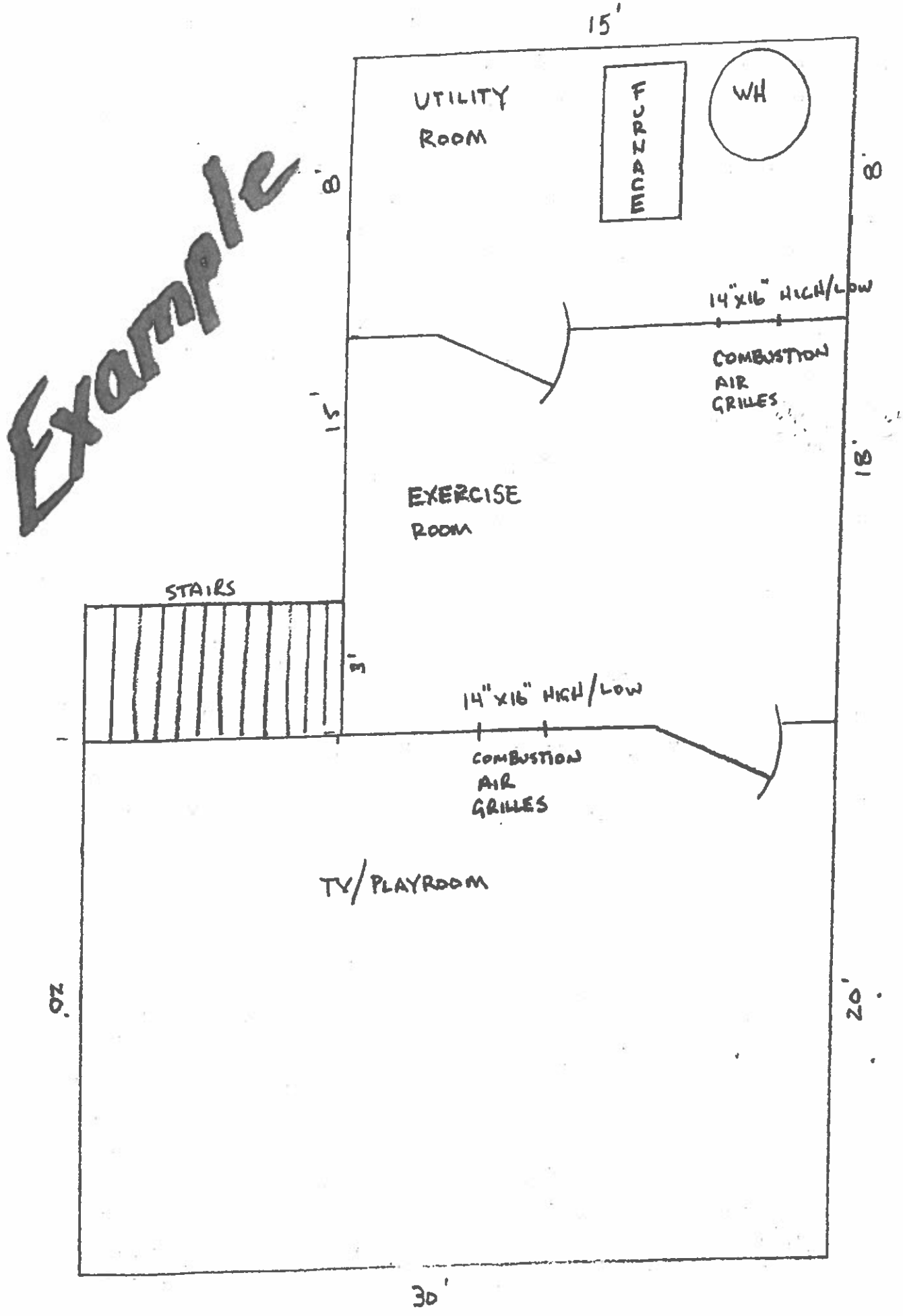
***(All Calculations Need to be in Inches)**

8.

Louver------<u>Length</u>	**X**	**<u>Width</u>**	**X**	**<u>Coefficient</u>**		**<u>Unobstructed Opening</u>**
_____	X	_____	X	.75	=	_____sq in. Metal Grille
_____	X	_____	X	.25	=	_____sq in. Wood Louver/Louver Doors
_____	X	_____	X	.25	=	_____sq in. Wood Louver/Louver Doors

<u>Coefficient means</u> the free area within a louver.
If Louver door is used, provide measurements of upper and lower grills/louvers only.

If Total Required Cubic Feet in Line 2 is greater than Total Cubic Feet in Line 3, then additional combustion air is required. .
NOTE: When combining spaces, each opening requires 1 sq. in net clear area per 1,000 BTU's, but not less than 100 sq. in. One opening shall be within 12" of the floor and one within 12" of the ceiling. Wood louvers have a net clear area of 25% and metal grills 75% net clear area. **See Current IRC Chapter 24 Section 2407 for all available options.** Please indicate on the other side how additional air will be provided.


Example
15'
UTILITY ROOM
FURNACE
WH
8'
8'
14"x16" HIGH/LOW
COMBUSTION AIR GRILLES
15'
18'
EXERCISE ROOM
STAIRS
3'
14"x16" HIGH/LOW
COMBUSTION AIR GRILLES
TV/PLAYROOM
20'
20'
30'

1. Total Appliance BTU input rating: Label on units will provide BTU input rating. Any additional furnace or water heater should be listed under Other. Don't include the dryer. Dryer requires make up air not combustion air.

160,000 (Furnace) + 50,000 (Water Heater) + _____ (Gas Fireplace) + _____ (Other) + _____ (Other) = 150,000 **TOTAL BTU**

2. 150,000 **Total BTU** ÷ 1000 x 50 = 7,500 **Required Cubic Feet of Air Needed**

3. Area of Basement ***(All Calculations Need to be in Feet)**

Room	Length		Width		Height			
utility	8'	x	15'	x	8'	=	960	Cubic Feet of Air
Exercise	18'	x	15'	x	8'	=	2,160	Cubic Feet of Air
TV/Play room	20'	x	30'	x	8'	=	4,800	Cubic Feet of Air
_____	_____	x	_____	x	_____	=	_____	Cubic Feet of Air

Total Cubic Feet of Air Available = 7,920

4. The **Total Cubic Feet Available (from all rooms above)** must **meet or exceed** the total from **line 2.**

5. Available air from adjacent rooms in the basement can be used to meet the requirement of the minimum cubic area required through use of air transfer grills/louvers. Combustion Air may be obtained from the exterior if the requirement from line 4 is not satisfied. **Combustion Air cannot be drawn from Bathrooms, Bedrooms & Garages.**

6. The first Grille/louver shall commence one foot from the ceiling.
The second Grille/louver shall commence one foot from the floor.
Louver doors may not meet this requirement. **(See Below for Referenced Code)**

7. Transfer grills/louvers shall have a clear open area of 1 inch per 1000 BTUs.

150,000 (TOTAL BTU) ÷ 1000 = 150 Square inches (Minimum of 100 sq.in.)

***(All Calculations Need to be in Inches)**

8.

Louver------Length		Width		Coefficient		Unobstructed Opening
14"	X	16"	X	.75	=	168 sq in. Metal Grille
_____	X	_____	X	.25	=	_____ sq in. Wood Louver/Louver Doors
_____	X	_____	X	.25	=	_____ sq in. Wood Louver/Louver Doors

Coefficient means the free area within a louver.
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