RELAX A MIST
QUALITY STEAM BATH EQUIPMENT

Leisure Baths Ltd.

ITEMS TO CONSIDER IN THE CONSTRUCTION OF LARGE RESIDENTIAL OR COMMERCIAL STEAM ROOMS

During the reading of the ideas contained in this brochure, it must be remembered that they are **SUGGESTIONS ONLY**. There are many alternative ways to plan your steam room, depending on individual needs. The ideas contained in this brochure are based on comments received from builders, operators, and users of steam baths, and we trust they can be modified to suit your own personal requirements.

Most people's satisfaction and enjoyment from their steam room depends upon several factors: temperature, relative humidity, and the psychological factor of steam condensate (fog) visible in the steam room. The relative humidity in a steam room is high as the room is heated with moist steam. The quantity of moist steam delivered to the room is determined by the size of the steam boiler, and the size of the boiler is determined by the cubic foot content of the steam room. Should the room be sealed tight, contain no vents, and be well insulated, it may heat up quickly to the desired temperature, have a high humidity factor, yet still be unsatisfactory because the high humidity is not evidenced by a visible steam condensate. In order to maintain a steam condensate (fog) inside the room, THE ROOM MUST BE ABLE TO BREATHE HEAT. In order to keep steam coming into a room in a visible condensed form, it must have a cooler substance in the room to condense onto. If the room can not lose some of its heat, it will not only fail to have an environment which will condense the moisture but it will keep increasing in temperature until it reaches that of the incoming steam. Two successful methods we have observed are:

1. To use either a minimum of insulation in the ceiling which could be constructed of material that will conduct heat relatively easily, or

2. To vent the room at the ceiling level using a non corrosive vent that would be equipped with a damper to control the volume of escaping heat. Please see the paragraphs pertaining to doors and to venting.

THERMOSTAT AND INSULATION

In a LARGE residential or a commercial steam room we recommend a thermostat be used to shut the steam off when the room reaches a maximum temperature, and thus avoid the possibility of anyone being burned or scalded in an extremely hot room. Once the thermostat has shut the steam off, the steam will not start again until the room cools down to the temperature pre-set on the thermostat. The thermostat used should have a LOW (1^oF to 2^oF) differential between the temperature at which the thermostat switch "opens" shutting off the steam generator and the temperature at which the thermostat "closes" turning the steam generator back on again. This cooling can be accomplished in a variety of ways.

WALL FRAMING

It is suggested that the framing of your steam room walls be of either well dried wood or steel studs on all 4 walls and the ceiling. A concrete wall absorbs a great amount of heat and detracts from the efficiency of a steam room. We suggest you consider your wall insulation have a maximum R12 rating and the ceiling insulation have a maximum of 1/2 of that used in the walls. Too little insulation is obviously not effective, while too much insulation may not allow your room to "breathe" properly. After insulating and

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before the finished walls and ceiling are applied, we suggest installing a vapour barrier of 6 mill poly.

INTERIOR FINISH

It is suggested that the interior walls could have one of three finishes: ceramic tile, a plastic laminate (e.g. Formica), or a product simulating tile (e.g. Ceramalite). A base for these wall finishes could be a cement board (Wonderboard or a similar product) or a waterproof plywood. Ceramic tile should be grouted with care and we suggest the grout be sealed after it has thoroughly dried. "Ceramalite" or a plastic laminate should have all joints sealed with a silicone containing an anti-fungus agent. If a contact cement is used, it should be able to withstand temperatures of up to 100^{o}C (212^{o}F) without releasing. Some rooms have had cedar installed as a wall and ceiling finish. To our knowledge, this has not been entirely satisfactory as the cedar is difficult to seal because of the number and type of joints, and the tendency of fungus to grow in hot moist cracks. It has a great tendency to swell, and some people find it's odour very "strong" when moist.

DOORS

In a residence the door could be a hinged "shower" type or a commercial "store front" style aluminium door and frame (in a commercial room a commercial door is definitely recommended and opens outward) with either a plastic or an armour plate glass inside the aluminium door frame. There should be no opening down either side or the top of the door which could allow steam to escape, but the bottom should have a minimum 3/4" to a maximum 1" clearance. This bottom clearance could be the lower vent if the room is to be vented near the ceiling as suggested above. A wooden door has not been found to be satisfactory as the high humidity of a steam room causes the wood to swell continuously.

VENTING

Some large residential and/or commercial steam rooms require the safety factor of venting so that oxygen can be infused into the room to facilitate breathing. This is also important where a room does not "breathe heat" to allow the steam to condense into visible vapour. In these cases, it is suggested that a non corrosive vent (i.e. aluminium) be installed at the ceiling level. The opening at the bottom of the door, as previously mentioned, could provide the air inlet, while an adjustable damper installed in the vent could maintain the optimum passage of air. The vent damper should be able to be adjusted ONLY AFTER the removal of the grille covering the vent opening. In almost every installation there is no fan required if the vent pipe rises adequately. The vent damper will have to be adjusted to the needs of the individual room so that enough but not too much heat is allowed to leave.

BENCHES

It is recommended that the benches be closed in, as it is not normally necessary to heat and steam under them. Where the benches are not closed in, they may be made of cedar or other wood material and be free standing. If they are of a wood material, care must be taken with the cleaning. A hot moist area can easily encourage a fungus growth in the cracks as is the case where wood is used on walls and ceiling.

Where benches are closed in, cement block construction, or steel stud bench framing should be used, as wood can shrink when drying and sometimes cause problems like cracked tile etc. Closed in (solid) benches properly sealed may be covered with any of the suggested wall finishes, and may provide a dry environment for your steam generator. Should a closed-in bench

be used, it should be insulated so it will not

be too cold to sit on. In large steam rooms a few builders have installed electrically heated benches, so the benches will be warm to sit on. A suggestion would be to also heat the back wall to the shoulder height of where a patron would be sitting Where the under side of the bench is heated, the boiler should not be placed there.

STEAM GENERATOR

Please refer to the steam generator or manufacturer's specifications for steam unit size and power supply requirements.

Note: Steam unit must be wired according to local codes. Use **Only Copper Wire**. Use only licensed contractors to install your Relax-A-Mist steam generator.

As an example, a room 8' X 10' X 7' (560 cubic feet) would require an SG-14 RELAX-A-MIST steam boiler (13,500 Watts).

STEAM GENERATOR LOCATION

The steam generator must be in a dry environment that is adequately ventilated in order to maintain a maximum 122^{o}F or 50^{o}C temperature so the electronic controls will not become overheated, and be located within 25 feet of the steam room if possible.

On a commercial generator adequate working clearances of 30 inches on all sides and top, must be provided to allow for possible future de-scaling and other service. The steam generator MUST BE LEVEL, with the electrical box panel facing the access.

STEAM PIPES AND STEAM NOZZLES

All steam pipes must sized to the steam lines, stubbed out of the back of the steam generator (refer to the steam unit specifications for the number of heads) 1/2 nozzle = 1/2" pipe; 3/4" nozzle = 3/4" pipe; 1” nozzle = 1" pipe; etc.
It is suggested that the steam pipes be type L hard copper soldered with 50/50 solder or equivalent. The steam lines must be anchored where they go into the steam room so that there will be no movement of the steam nozzles when they are installed. The steam nozzles must be located 14" from the finished floor or side walls in a location away from the users pathways and where the steam will not burn anyone. It is not recommended to place the steam nozzles under a bench as someone sitting on the bench could put their feet under it close to a steam nozzle and be burned. Care MUST be taken to avoid a steam trap. A steam line can travel up and then down, but NEVER down and then up! CONDENSATE MUST BE ABLE TO DRAIN FROM ALL SECTIONS OF EVERY STEAM LINE AT ALL TIMES. To maximize a steam operation, the steam lines should be insulated.

PLUMBING

STEAM UNIT WATER SUPPLY

The water supply to steam generator should be a 1/2" pipe and be fresh water. Care should be taken to minimize any mineralized or other "hard" substances in the water as this may VOID the warranty.

STEAM ROOM SHOWER HEAD

Many steam rooms have a shower head or a flexible hose in the room to facilitate cleaning and for the enjoyment of the people using the steam room.

DRAIN

A drain, typically a floor drain, must be supplied at the steam generator location to facilitate the daily drain flush system and the boiler pressure relief.