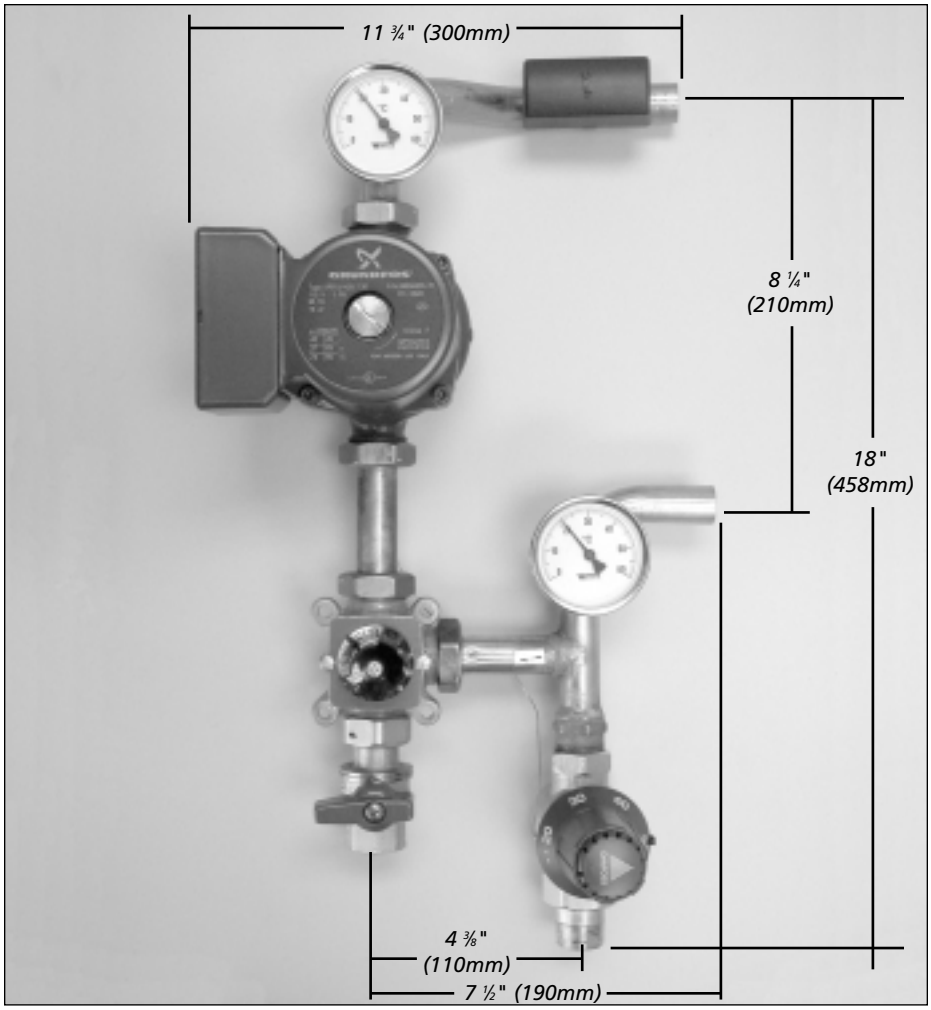
2.A MANIFOLD SHUNTS
MINI SHUNTS

ROTH HEATING SYSTEMS

Roth Manifold Shunts ¾"/5.8cv and 1"/7.0cv

Preassembled, manually adjusted, proportional temperature mixing station
with built-in, multi-speed system circulator and system high temperature protection

Roth manifold shunts were developed to make it easy to add hydronic radiant floor heat to existing, high temperature hydronic heating systems. They can be used singly or in multiples to supply separate temperatures to different types of heat emitters in new or existing systems. The built-in system circulator allows these shunts to be used with any boiler system and constant circulation at low temperature provides even heat to the space. When used with an outdoor reset control on the boiler, such as the Roth 1050, these shunts will provide weather-responsive system temperatures to the radiant heat manifolds. They can be used with optional devices, such as zone valves to supply multiple manifolds or manifold actuators to control each loop, to provide heat in zoned systems. The shunts are provided with system supply and return thermometers and adapters to connect directly to the Roth manifold assemblies.



Roth Manifold Shunts Capacities:
¾" (5.8cv) model: 3,000 sq ft (279 sq m)*
1" (7.0cv) model: 4,000 sq ft (372 sq m)*

*These ratings are based on a heat demand of 15 btu/hr per sq. ft. (47 watts per sq. m.)at a 15°F (8.5°C) temperature difference, when using 100% water. Capacities must be decreased when using glycol solutions or a lower temperature difference.

Mounting Instructions

The manifold shunts are designed to be mounted on the left side and connected directly to a single Roth manifold set. Optionally, they may be installed at a remote location and piped to one or more manifold sets. The shunts can also be mounted in a Roth Recessed Cabinet (see separate instructions with the cabinet) on the left side of the manifold. *In all cases the circulator must be mounted with the shaft in a horizontal position. The motor shaft must never be in a vertical position (either up or down).*

We recommend using a circuit setter or balancing valve at each manifold when a shunt serves more than manifold or there is more than one shunt used in a system. This will provide a means of balancing the flow to multiple manifolds. Always follow good piping practices and local codes.

Adjustments

Before start-up, be sure the system is flushed and purged. Set all thermostats to call for heat with all zone valves and actuators open, if

Roth Manifold Shunts ¾"/5.8cv and 1"/7.0cv (cont.)

used. Adjust the boiler operating temperature and reset curves (if applicable) per manufacturer's instructions, but the boiler supply temperature must be at least as high as the system design temperature for the shunt system. Set the 3-way valve to the "0" position.

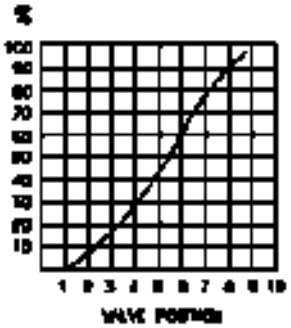
- Start the boiler and allow it to reach operating temperature.
- Set the shunt circulator speed you estimate the system will require based on the size of the area you are heating and the maximum capacity of the shunt. For example: for a relatively large area use speed 3 or for a small area use speed 1.
- Set the thermostatic valve for the maximum allowable system temperature, based on your floor construction, and lock the valve. See the instructions included with the valve for this procedure.
- Open the 3-way valve to the "1" position and check the system supply temperature. Allow a few minutes, as needed, for the system temperature to stabilize.
- Continue to open the 3-way valve in small increments, as above, until you reach the desired system temperature for the heat emitter.
- Adjust the circulator speed as needed to achieve the desired temperature difference between system supply and return. Remember that the shunt capacity is based on a 15 btu/hr per square foot load at a 15°F temperature difference. A smaller temperature difference will decrease the area coverage or btu/hr per square foot and a larger temperature difference will increase coverage or btu/hr per square foot.

Maintenance

Be sure to check boiler supply temperature and system supply and return temperatures at the beginning of every heating season. If the boiler does not have an outdoor reset control, adjustments can be made to the 3-way valve to increase or decrease system temperature as needed. Consult with your heating contractor prior to making any adjustments. *Do not override the system high temperature limit device unless your heat emitters are capable of using the same temperature fluid as your maximum boiler temperature!*

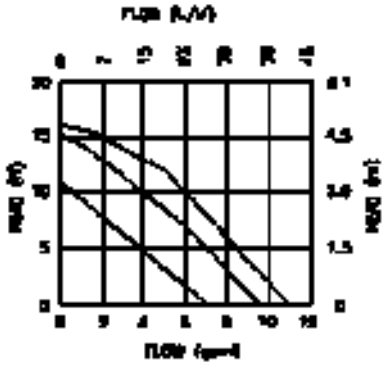
TECHNICAL DATA	**Manifold Shunt 5.8**	**Manifold Shunt 7.0**
Part Number	1171000.001	1171000.002
Max Operating Pressure	100 psi / 6.9 bar	100 psi / 6.9 bar
Max Boiler Supply Temperature	210°F / 99°C	210°F / 99°C
Boiler Side Connections	¾" NPT	1" NPT
System Side Connections	¾" swt / Manifold Adapter (incl.)	1" swt / Manifold Adapter (incl.)
Max System Temp w/Hi-Limit	122°F / 50°C (approx.)	122°F / 50°C (approx.)
ELECTRICAL DATA	110v/1ph, 1/25th hp, 0.74a, 85w	110v/1ph, 1/25th hp, 0.74a, 85w

Mixing Valve Flow Diagram
% Hot Side Mix at Valve Position

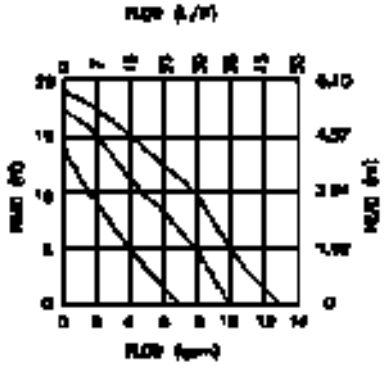


5.8 Shunt Pump Performance
Grundfos UPS15-42F

Available system head at a given flow rate (all losses beyond shunt)*



7.0 Shunt Pump Performance
Grundfos UPS15-58F

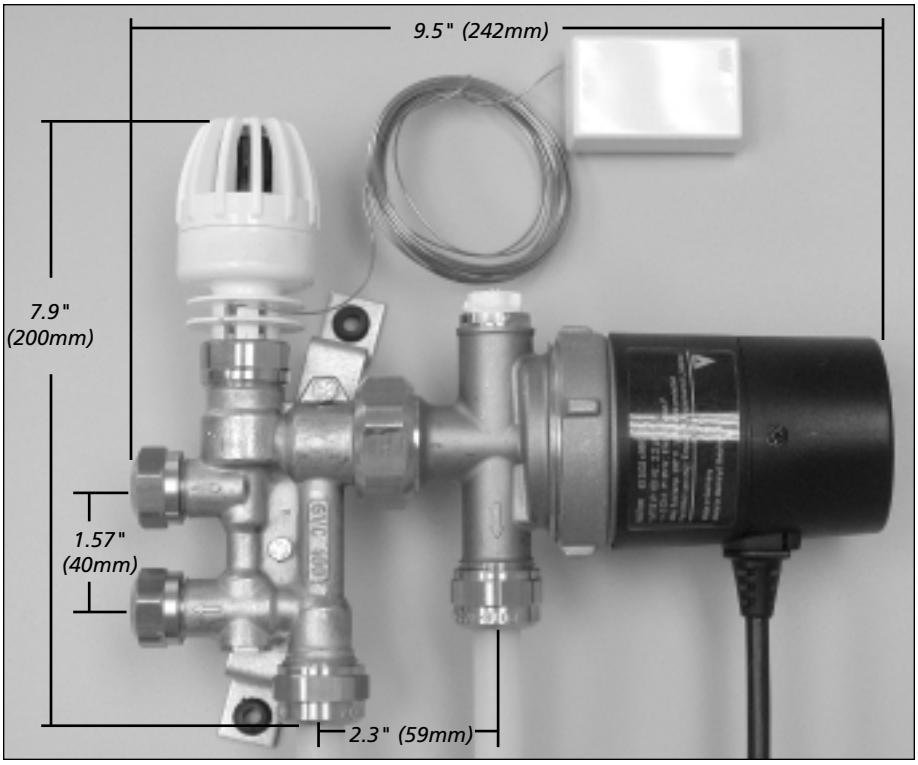


**Please note that if shunts are not connected directly to a Roth manifold all supply and return piping losses between the shunt and the manifold must be added to loop losses when calculating total system losses. This may require an increase in pipe size to remote manifold locations!*

Roth Mini-Shunt

Preassembled temperature mixing station with non-electric space temperature sensor and built-in system circulator with system high temperature protection

Roth Mini-Shunts were developed to make it easy to add hydronic radiant floor heat, or floor warming, to small areas such as bathrooms or kitchens, where there is an existing, high temperature, hydronic heating system. The shunt is mounted in or adjacent to the space that it is serving and can be used with ⅜", ½" or ⅝" Roth O_2 barrier pex tubing. They have a remote, capillary bulb space temperature sensor that operates the mixing valve. The built-in system circulator allows these shunts to be used with any hot water heating boiler system and constant circulation at low temperature provides even heat to the space. The Mini-Shunt is connected to a single heating loop. It can be connected to a two loop system if the optional two loop adapter kit (Roth Part #11721000.20) is used.



Roth Mini-Shunt Quick Sizing Chart*

PEX Size	Installation Method	Area Covered	Loops **	Spacing	PEX Length
⅜"	Concrete or Thin Slab	110 ft² (10.2 m²)	1	8" (20.4 cm)	180' (55 m)
⅜"	Concrete or Thin Slab	220 ft² (20.4 m²)	2	8" (20.4 cm)	360' (110 m)
⅜"	Roth Floor Panel System	110 ft² (10.2 m²)	1	6" (15.2 cm)	260' (79.2 m)
⅜"	Roth Floor Panel System	220 ft² (20.4 m²)	2	6" (15.2 cm)	520' (158.5 m)
½"	Concrete or Thin Slab	220 ft² (20.4 m²)	1	12" (30.5 cm)	260' (79.2 m)
½"	Concrete or Thin Slab	440 ft² (40.8 m²)	2	12" (30.5 cm)	520' (158.5 m)
⅝"	Concrete or Thin Slab	270 ft² (25.1 m²)	1	12" (30.5 cm)	295' (90 m)
⅝"	Concrete or Thin Slab	540 ft² (50.2 m²)	2	12" (30.5 cm)	590' (180 m)

*These ratings are based on a heat output of ~25 btu/hr per ft² (~79 watts per m²)at a 20°F (11 °C) temperature difference, when using 100% water.

Actual output varies with tubing size/length, flow rates, fluid temperatures, floor coverings, etc.

Capacities must be decreased when using glycol solutions or a lower temperature difference.

** Use of two loops requires an optional adapter kit (Roth Part #11721000.20)

Roth Mini-Shunt (cont.)

Mounting Instructions

The Mini-Shunt is supplied with a wall mounting bracket. It should be installed above the heated floor with the boiler side connections and pump motor in a horizontal position. *In all cases the circulator must be mounted with the shaft in a horizontal position (either left of right facing). The motor shaft must never be in a vertical position (either up or down).* As with all motors, be sure to consider noise or vibration when selecting the location. Additional vibration isolation may be desirable.

The Room Temperature Sensor is supplied with the Mini-Shunt has a 16' (4.9 m) capillary tube. Select a pump location that will allow the sensor to be mounted in a good spot in the heated space. Select a sensor location that will provide an accurate average temperature reading. As with any thermostat, avoid areas in direct sunlight or excessive moisture.

If you are using two heating loops, Roth Part #11721000.20 will be needed to connect the loops. This is an optional item and must be ordered separately.

Power Requirements

The Mini-Shunts can is provided with a 40" (1 m) power cord with grounded 3-prong plug. A standard, grounded 110v/1ph electrical outlet within cord reach provides the power (see chart below for actual power requirements).

Adjustments

Before start-up, be sure the system is flushed and purged of air. Adjust the boiler operating temperature and reset curves (if applicable) per manufacturer's instructions, but the boiler supply temperature must be at least as high as the system design temperature for the shunt system. Leave the cap on the thermostatic head on the pump fully open (screwed down fully clockwise). Do not install the thermostatic operator at this time.

- Start the boiler and allow it to reach operating temperature.
- Turn the Mini-Shunt on and allow the system to run for about 10–20 minutes and fluid temperatures to stabilize. The system supply temperature should now be 95 – 105˚F (35 – 40˚C). *Please note that the internal high temperature limit will prevent the system supply from exceeding approximately 115˚F (46˚C).* Allow the system to operate until the floor temperature is approximately 68˚F (20˚C) before making the next adjustment.
- When the floor is approximately 68˚F (20˚C) you can make the final supply temperature adjustments. Check the floor system supply temperature. If the temperature is too high, you can adjust the flow on the boiler side with the enclosed 2.5 mm hex wrench at the valve under the boiler return connection. This valve is normally in the fully open position when the Mini-Shunt is shipped.
- Remove the plastic cap and mount the thermostatic head on the valve body of the Mini-Shunt and turn the top of the head to set the desired space temperature. The room temperature range is approximately 50 – 78˚F (10 – 26˚C). The "5" is approximately 68˚F (20˚C).

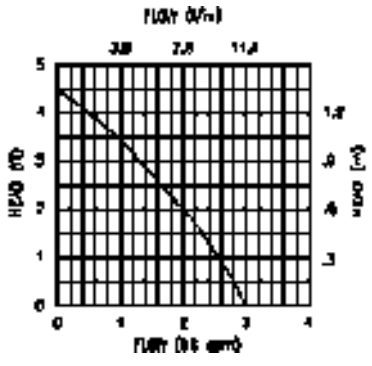
Maintenance

Be sure to check boiler supply temperature and system supply and return temperatures at the beginning of every heating season. Check the room temperature and adjust the thermostatic operator as needed. Consult with your heating contractor prior to making any adjustments to the boiler system.

TECHNICAL DATA	Mini-Shunt
Part Number	11750001.03
Max Operating Pressure	100 psi / 6.9 bar
Max Boiler Supply Temperature	200˚F / 93˚C
Boiler Side Connections	½" copper (female sweat)*
System Side Connections	⅜" to ⅝" Roth pex tubing*
Max System Temp w/Hi-Limit	115˚F / 46˚C (approx.)
2-Loop Adapter Part Number	11721000.20
ELECTRICAL DATA	110v/1ph, 1/30th hp, 0.23a, 25w

** ½" copper sweat adapters are supplied with the Mini-Shunt for the boiler side connections. Roth PEX connectors for the system side connections are supplied by the installer.*

Mini-Shunt Pump Performance



Roth's success is the result of flexibility in products, targeted investments and theme oriented solutions. Our growth stems from continuous research and development of new and innovative products. Manufacturing keys to success are combinations of know-how, modern production sites and equipment, latest production technologies, and motivated personnel.

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