

Ordering the Right Flex Heater for Your Application.

Because flexible heaters expands when installed in manifolds with bends, you will need to calculate the correct flex straight length. Proper length depends on how many bends in the heated path your manifold has, and their radius. Addressing expansion in your heater will prevent heated sections from sticking out past the manifold and shortening heater life. Below, in Figure 1, is an example manifold with the straight lengths marked in red. Bend groups are marked in green, blue and orange.

Step 1: Identify and measure the straight lengths.

Using the example manifold in Figure 1, you will see that there are seven straight lengths. Since these do not expand, your equation should look like this:
(60 mm x 4) + (25 mm x 2) + 20 mm = 310 mm (Total Straight Length)

Step 2: Identify the bends and measure their radiuses.

Group length of the bends with the same radius and add them together. For example, using the manifold in Figure 1, you have 10 radiuses. Two of these are R10 radiuses. Using the following formula, $Length = 2 \times \pi \times R \times C/360$, (where R = bend radius, and C = bend degrees), your equation will look like this:
I. $2 \times 3.14 \times 10 \text{ mm (R10 bend radius)} \times (180/360) = 31.4 \text{ mm (length of one bend)}$
II. $31.4 \text{ mm} + 31.4 \text{ mm} = 62.8 \text{ mm (total length of both R10 bends)}$

Step 3: Adjust bended sections for Nextflex expansion.

To adjust for expansion, you will need to identify the diameter of your manifold groove (see Figure 2). Find the column for the radius length you measured in Step 2, and then multiply by the corresponding decimal. If we continue with the example from Step 2 using the two R10 bends and assume your groove diameter is 8 mm, the Expansion Chart shows your expansion factor multiplier is 0.92. Given this information, this is what your equation will look like:
 $62.8 \text{ mm (total length of R10 radiuses)} \times 0.92 = 57.78 \text{ mm (adjusted total length of the R10 group of radiuses)}$

Repeat this process for each bend group identified in your manifold.

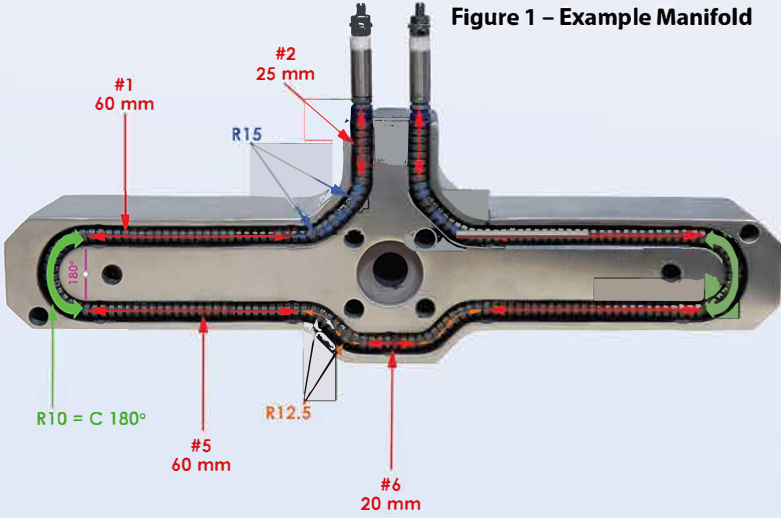
Step 4: Add straight lengths (from Step 1) with all adjusted bend lengths (from Step 3)

Once you have the adjusted lengths for all your bends, simply add them together. Using the identified bends in Figure 1 as an example, your equation will look like this:

$$310 \text{ mm (total straight lengths)} + 57.776 \text{ mm (R10)} + 97.39 \text{ mm (R12.5)} + 118.1 \text{ mm (R15)} = 583.266 \text{ (adjusted heater length)}$$

Step 5: Identify the correct flex part number.

In the example above, the total heater length is 583.266 mm. Rounding up to the next flex size, the correct flex length is a 600 mm heater, Part Number 80R-0600. Following these instructions, you can be assured you will not have heated sections sticking out of your manifold.
NOTE: If your total adjusted heater length is less than 10 mm from the next size up heater part number, you will need to move up two sizes in length from your calculated value. For example: Your adjusted calculated heater length is 648 mm. You should select the 675 mm heater instead of the 650 mm.



Best Practices

- Expansion factors in the chart below are subject to change. Please contact us for the most updated factors.
- Always use a hard Nylon® hammer when forming into the groove to avoid deforming the casing.
- Install the last 35 mm of unheated Nextflex sections straight. Do not bend unheated section sticking outside of the manifold.
- Cover plate or retaining clips are recommended to hold heater in place for best results and heat transfer.
- All installations must be electrically grounded.
- Heated lengths must be within the manifold groove.

Figure 2 - Expansion Factors Chart

Diameter	R 10	R 12.5	R 15	> R 15
6.5 mm	0.83	0.85	0.88	0.92
8 mm	0.92	0.93	0.94	0.96
8.5 mm	0.94	0.95	0.95	0.96