

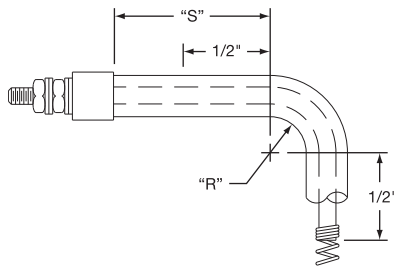
### Tubular Heater Standard Bend Formations

#### Forming Tubular Elements

The MgO insulation used in tubular heating elements is compacted by reducing the element diameter in a roll reducing mill. The elements are then annealed in a controlled atmosphere furnace to relieve the metal stressing (work hardening) that takes place during the rolling to size reduction of the sheath. Annealing brings the metal back to a soft state, allowing the element to be bent into virtually any configuration. However, since forming also work hardens the metal, some precautions must be observed in order to prevent the sheath from breaking during bending or developing stress cracking marks.



**Note:** Elements with tight bends and some applications require the bends to be recompacted in special dies to restore the integrity of the insulation density and maintain dielectric strength. Large bends do not need to be recompacted.



**Avoid bends** within a minimum of 1/2" of the terminal pin and resistance wire junctions unless the bending radius is a minimum 3" (75 mm).

Elements are being fed into a roll reducing mill to compact the MgO insulating powder. After rolling, the elements are annealed in the conveyor belt furnace seen in the background.

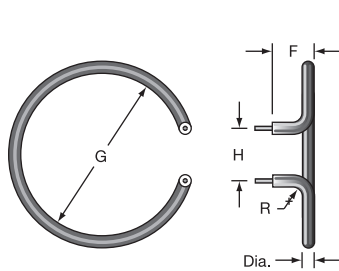


**Note:** Smaller inside bending radius than listed in the table can be factory accomplished. It requires special forming techniques to prevent damage to the tubular heater. Consult Tempco with your requirements.

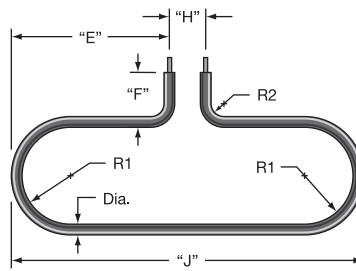
| Element Diameter |      | Factory Bend Minimum R |      | Field Bend Minimum R |      | Minimum S |      |
|------------------|------|------------------------|------|----------------------|------|-----------|------|
| in               | mm   | in                     | mm   | in                   | mm   | in        | mm   |
| .260             | 6.6  | 3/8                    | 9.5  | 3/4                  | 19.1 | 1/2       | 12.7 |
| .315             | 8.0  | 1/2                    | 12.7 | 1                    | 25.4 | 1/2       | 12.7 |
| .375             | 9.5  | 9/16                   | 14.3 | 2                    | 50.8 | 5/8       | 15.9 |
| .430             | 10.9 | 3/4                    | 19.1 | 2-1/2                | 63.5 | 3/4       | 19.1 |
| .475             | 12.0 | 7/8                    | 22.2 | 2-1/2                | 63.5 | 1         | 25.4 |

## TYPICAL Bend Formations

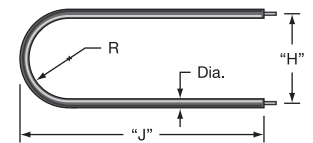
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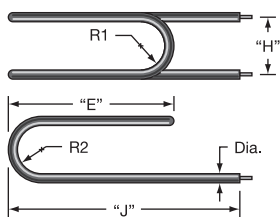
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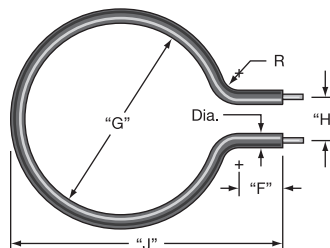
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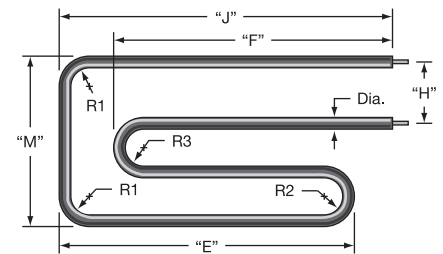
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FT4

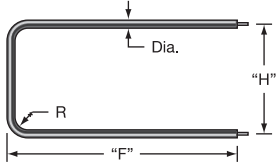


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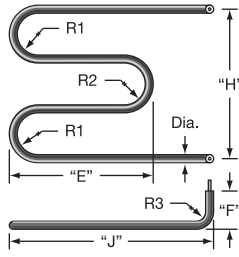


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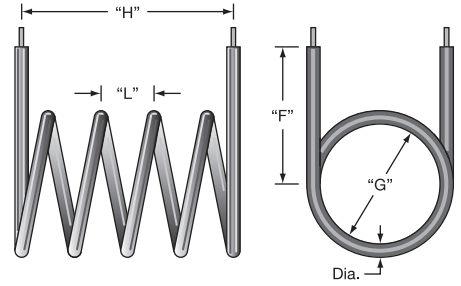
### Tubular Heater Standard Bend Formations



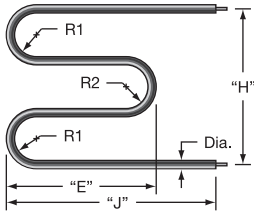
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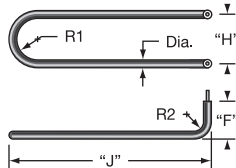
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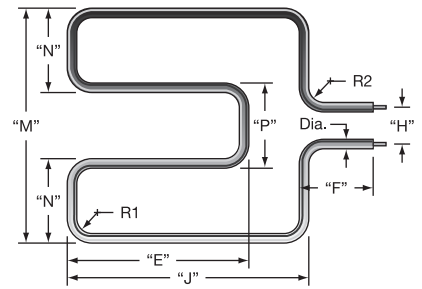
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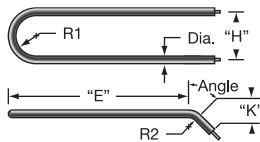
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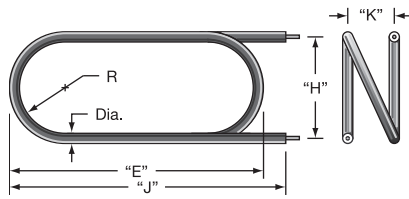
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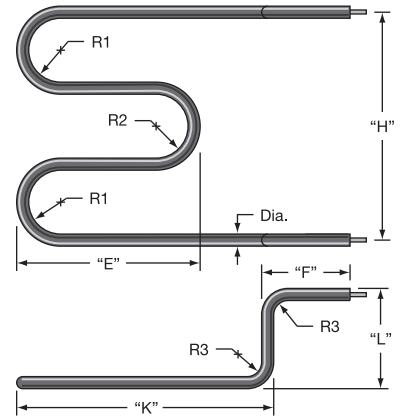
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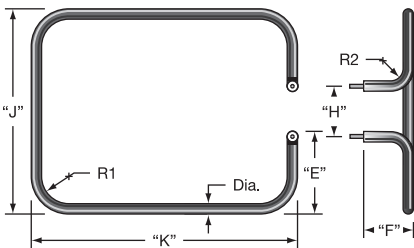
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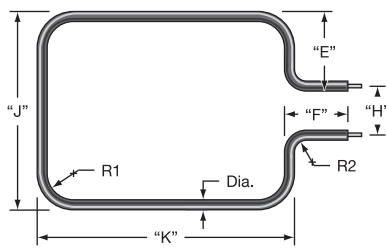
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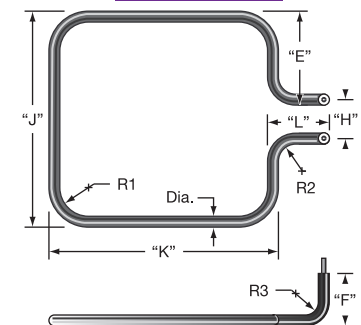
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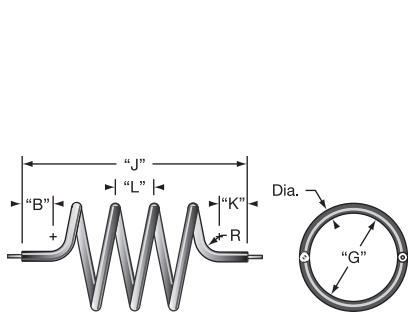


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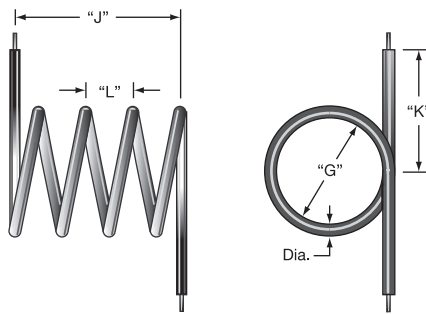


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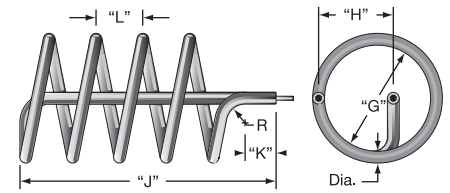
### Tubular Heater Standard Bend Formations



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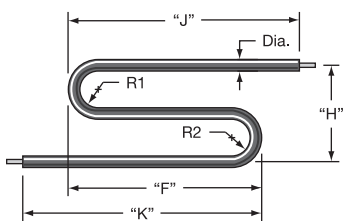
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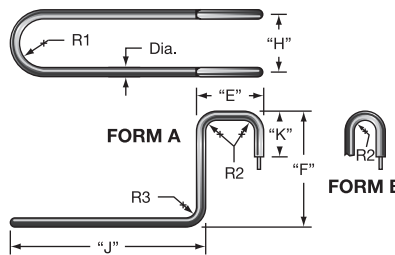
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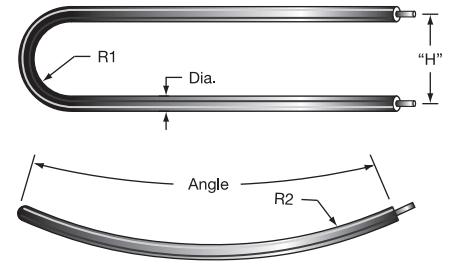
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your requirements.



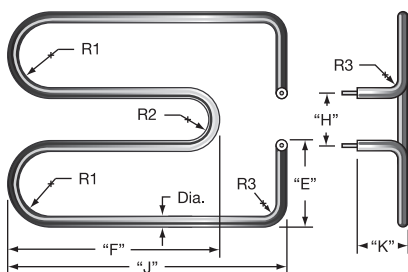
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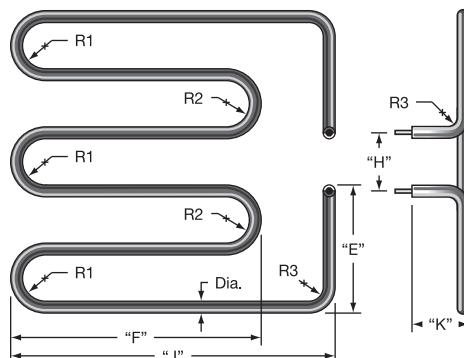
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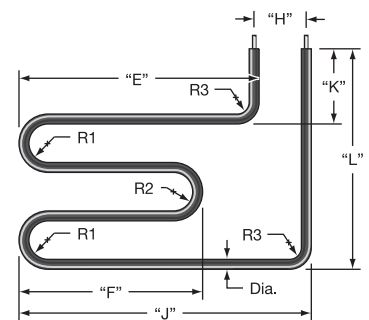
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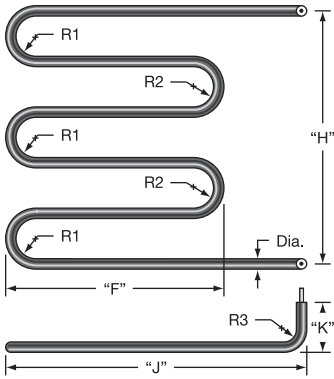
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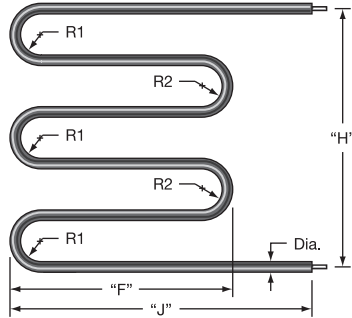
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## Bend Formations

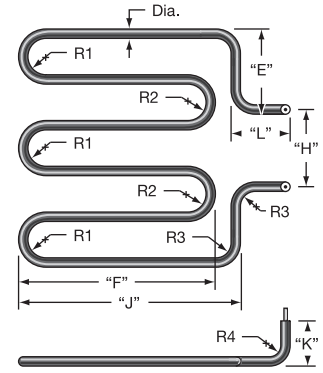
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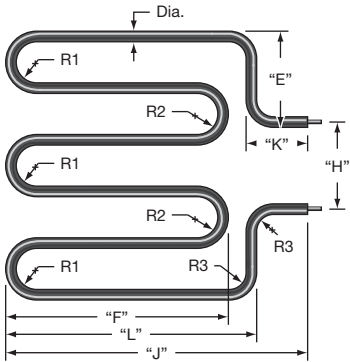
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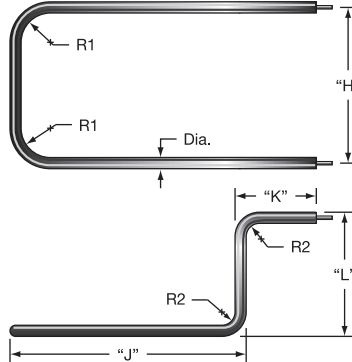
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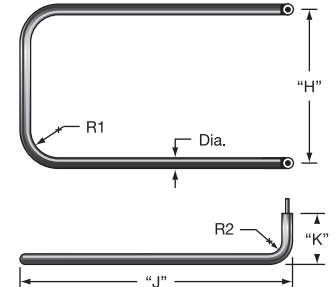
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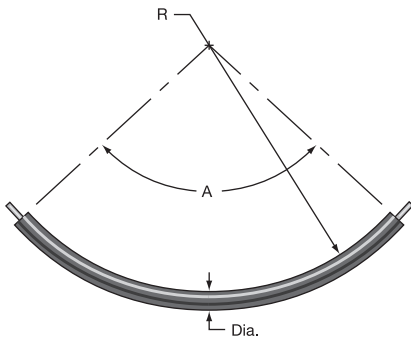
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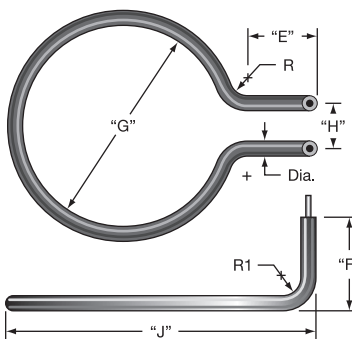
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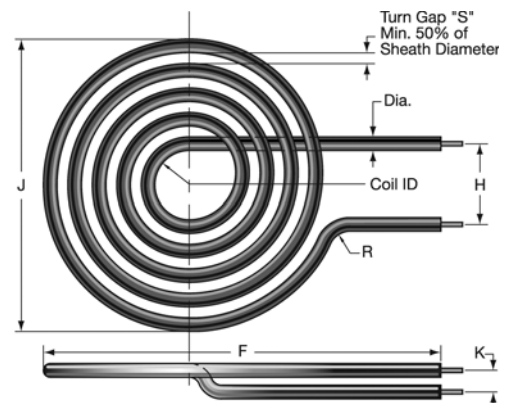
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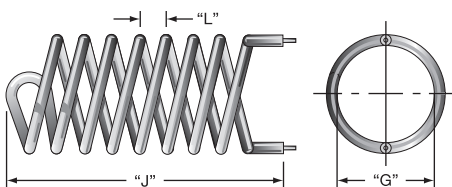
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**FT36**



**FT37**



**FT35**