A Step Toward Proper Air Flow Is Determining System Static Pressure.
Static Pressure

• Static pressure is the resistance to airflow from objects in the air stream

• Filters, coils, heat exchangers, registers, grills, balancing dampers and, of course, the duct itself, are just a few

• After the resistance of these objects is subtracted, the balance is what is available for the duct system
Total System Static Pressure Is A Combination Of Two Readings

The First Taken Just Before The Blower And The Other Just After The Blower.

The Pressure Drop Between The Two Readings Is The Static Pressure Imposed On The Blower.
Total External Static Pressure = 0.5”WC
Measuring Devices

Static Pressure In A System Is Typically Determined With The Help Of A Magnehelic™, an inclined manometer or a digital manometer.
Conditions That Affect Duct Static

- Wrong Size Duct
- Dirty Coil
- Dirty Filter
- Blower on Wrong Speed
Air Handler Static Pressure
Furnace Static Pressure

SUPPLY AIR

CUTAWAY OF DUCTWORK TO EXPOSE COIL

INCLINED MANOMETER

RETURN AIR
Static Pressure

Most Systems Including Goodman/Amana Are designed To Operate At 0.5” Water Column Static Pressure
# Fan Performance

## Blower Performance Specifications (cont.)

### (CFM & Temperature Rise vs. External Static Pressure)

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor Speed</th>
<th>Tons AC</th>
<th>External Static Pressure, (Inches Water Column)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1 CFM</td>
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<tr>
<td>GDS80453AXB</td>
<td>High 3.0</td>
<td>1,435</td>
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<td>Med-Lo 2.0</td>
<td>899</td>
<td>37</td>
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<td>Low 1.5</td>
<td>691</td>
<td>48</td>
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<td></td>
<td>Med-Lo 3.5</td>
<td>969</td>
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</tr>
<tr>
<td></td>
<td>Low 3.0</td>
<td>1,100</td>
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</tr>
</tbody>
</table>
Static Pressure

Static Pressure In A System Is Determined With a Magnehelic, inclined manometer or digital manometer
Measuring Static Pressure

- On residential systems it’s recommended external system static pressure be kept below .5” WC
- Generally high static conditions will be seen in the return system
  - undersized duct / filter grille
Air Handler Static Pressure
Static Pressure

TOTAL STATIC

POSITIVE STATIC

NEGATIVE STATIC
Testing TESP on an Air Handler with Heat Strips

- Supply Ducts
- Supply Plenum
- Heat Strips
- Blower
- AC Coil
- Filter
- Return Ducts

Positive Pressure
Negative Pressure

Dwyer A-303 Static Probe

.52
Magnehelic or Inclined Manometer

Checking Static Pressure

SUPPLY AIR

CUTAWAY OF DUCTWORK TO EXPOSE COIL

RETURN AIR

INCLINED MANOMETER
Testing TESP on a Furnace with an AC Coil