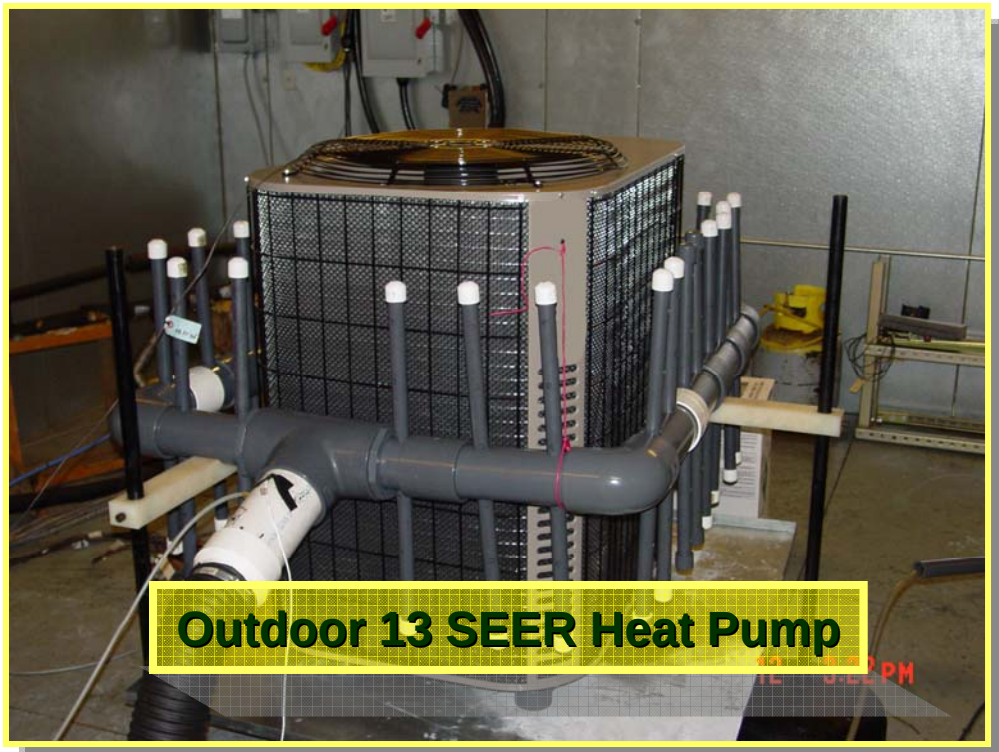
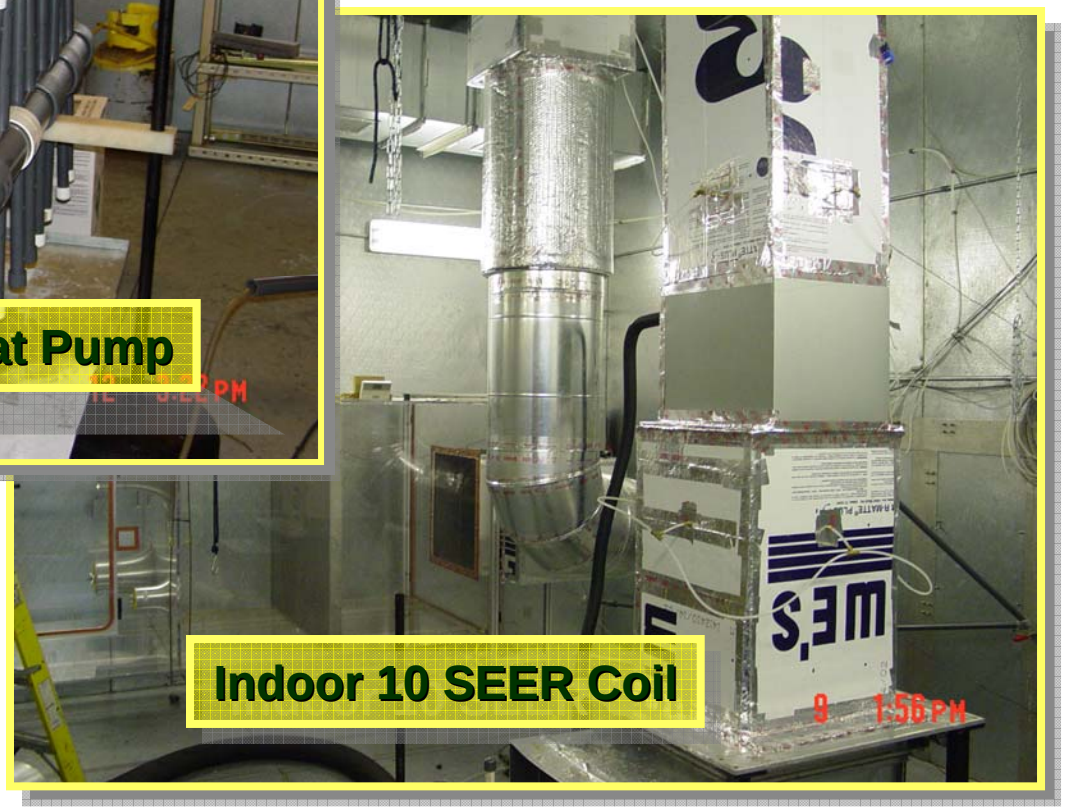
# Mismatched Coil Testing to Simulate Condenser Replacement



# 13 SEER HP Rating with Proper 13 SEER Indoor Coil

| | |
|---|---|
| Capacity (BTU/hr) | 36794 |
| SEER | 13.62 |
| Superheat (service valve) (F) | 17.93 |
| Subcool (service valve) (F) | 6.08 |
| Liquid press (psig) | 222.76 |
| Return gas press (psig) | 81.38 |

# Tested with 10 SEER ID Coil and 13 SEER HP

## Cooling 95 F Outside / 80 F Inside
## Factory Refrigerant Charge: 8 lb 7 oz

Capacity too low

SEER too low

Charge appears too low

| | Rated | Tested |
|---|---|---|
| Capacity (BTU/hr) | 36794 | 22208 |
| SEER | 13.62 | 8.46 |
| Superheat (service valve) (F) | 17.93 | 54.54 |
| Subcool (service valve) (F) | 6.08 | 0.98 |
| Liquid press (psig) | 222.76 | 209.94 |
| Return gas press (psig) | 81.38 | 58.42 |

# Tested with 10 SEER ID Coil and 13 SEER HP

**Heating** 47 F Outside / 70 F Inside
Factory Refrigerant Charge: 8 lb 7 oz

Capacity too low

EER too low

Charge appears OK

| | Rated | Tested |
|---|---|---|
| Capacity (BTU/hr) | 36484 | 29997 |
| EER | 15.71 | 10.60 |
| Superheat (service valve) (F) | 12.05 | 11.24 |
| Subcool (service valve) (F) | 21.07 | 26.73 |
| Liquid press (psig) | 203.88 | 233.03 |
| Return gas press (psig) | 58.09 | 60.86 |

# Tested with 10 SEER ID Coil and 13 SEER HP

## Cooling 95 F Outside / 80 F Inside

## Refrigerant Charge: 14 lb 14 oz

Capacity too low

SEER too low

Charge appears OK

| | Rated | Tested |
|---|---|---|
| Capacity (BTU/hr) | 36794 | 29823 |
| SEER | 13.62 | 8.92 |
| Superheat (service valve) (F) | 17.93 | 14.68 |
| Subcool (service valve) (F) | 6.08 | 17.58 |
| Liquid press (psig) | 222.76 | 262.49 |
| Return gas press (psig) | 81.38 | 79.96 |

# Tested with 10 SEER ID Coil and 13 SEER HP

**Heating** 47 F Outside / 70 F Inside

Refrigerant Charge: 14 lb 14 oz

| | Rated | Tested |
|---|---|---|
| Capacity (BTU/hr) | 36484 | 18706 |
| EER | 15.71 | 5.74 |
| Superheat (service valve) (F) | 12.05 | 6.6 |
| Subcool (service valve) (F) | 21.07 | 87.00 |
| Liquid press (psig) | 203.88 | 410.1 |
| Return gas press (psig) | 58.09 | 64.60 |

Capacity too low

EER too low

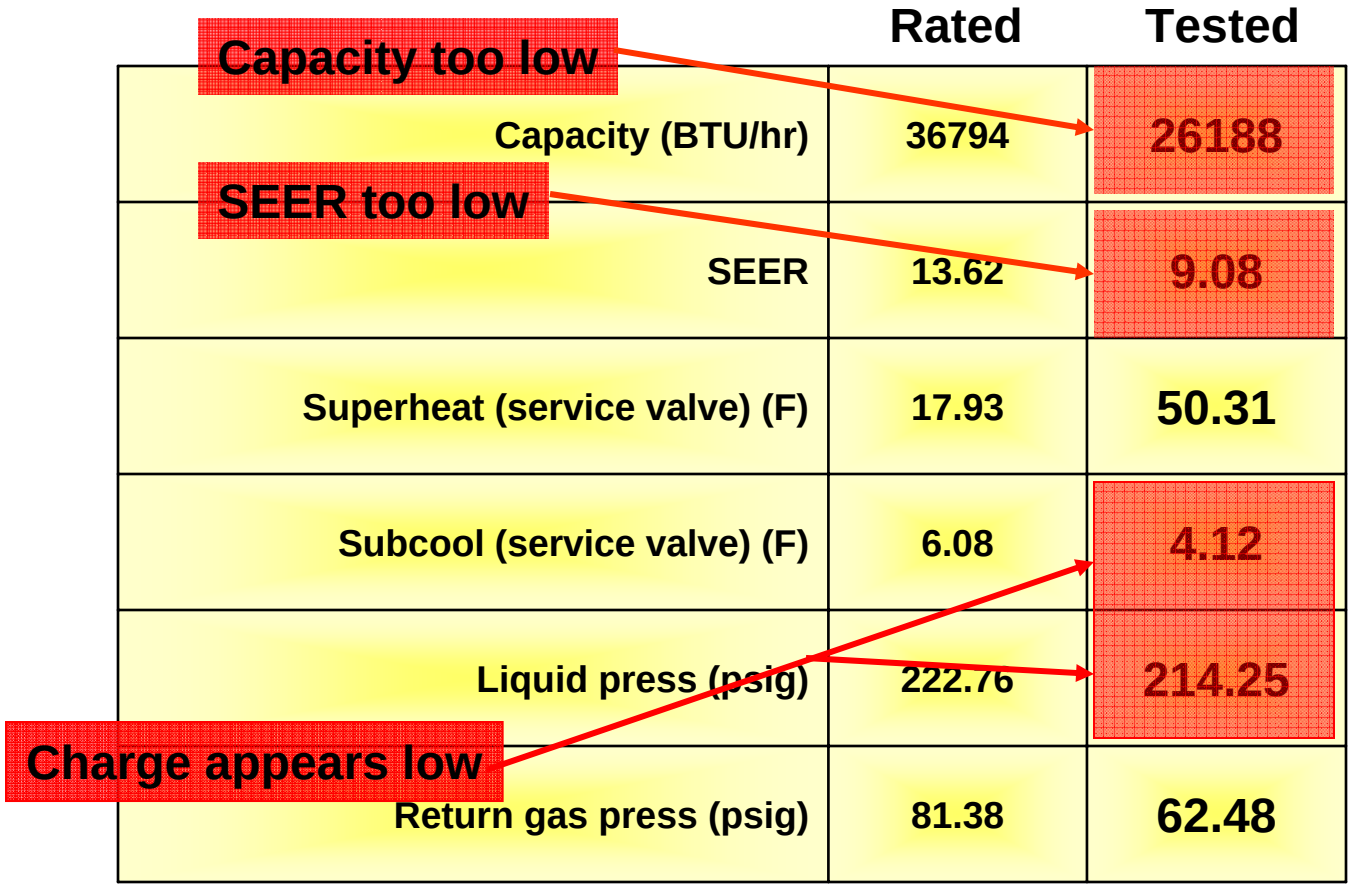
Subcool high

HPS opened at 410 psi

# Tested with 10 SEER ID Coil and 13 SEER HP

## Cooling 95 F Outside / 80 F Inside

## Refrigerant Charge: 10 lb 0.5 oz




| | Rated | Tested |
|---|---|---|
| Capacity (BTU/hr) | 36794 | 26188 |
| SEER | 13.62 | 9.08 |
| Superheat (service valve) (F) | 17.93 | 50.31 |
| Subcool (service valve) (F) | 6.08 | 4.12 |
| Liquid press (psig) | 222.76 | 214.25 |
| Return gas press (psig) | 81.38 | 62.48 |

# Tested with 10 SEER ID Coil and 13 SEER HP

## Heating 47 F Outside / 70 F Inside

## Refrigerant Charge: 10 lb 0.5 oz

Capacity too low

EER too low

Discharge press high

| | Rated | Tested |
|---|---|---|
| Capacity (BTU/hr) | 36484 | 30178 |
| EER | 15.71 | 9.47 |
| Superheat (service valve) (F) | 12.05 | 11.22 |
| Subcool (service valve) (F) | 21.07 | 62.23 |
| Liquid press (psig) | 203.88 | 310.50 |
| Return gas press (psig) | 58.09 | 61.83 |

77.06

# Tested with 10 SEER ID Coil and 13 SEER HP

## Cooling 95 F Outside / 80 F Inside
## Refrigerant Charge: 10 lb 6 oz with TXV

| | Rated | Tested |
|---|---|---|
| Capacity (BTU/hr) | 36794 | 31266 |
| SEER | 13.62 | 11.85 |
| Superheat (service valve) (F) | 17.93 | 26.22 |
| Subcool (service valve) (F) | 6.08 | 2.20 |
| Liquid press (psig) | 222.76 | 220.06 |
| Return gas press (psig) | 81.38 | 77.06 |

Capacity too low

SEER too low

Charge appears low

# Tested with 10 SEER ID Coil and 13 SEER HP

**Heating 47 F Outside / 70 F Inside**

**Refrigerant Charge: 10 lb 6 oz with TXV**

| | Rated | Tested |
|---|---|---|
| Capacity (BTU/hr) | 36484 | |
| Liquid press (psig) | 203.88 | |
| Return gas press (psig) | 58.09 | |

**High Pressure Switch opened because head pressure exceeded 410 psi. Charge needs to be reduced for heating but cooling is requiring more charge**

# Result of Only Replacing Condensing Unit

- **Up to 40% reduced capacity in cooling meaning system may not be able to keep up with thermostat setting.**
- **Up to 48% reduced capacity in heating resulting in strip heat coming on earlier.**
- **Up to 40% reduced efficiency in cooling resulting in higher power bills. Not only is it going to run longer but dollars per cooling will be more as well.**
- **Up to 60% reduced efficiency in heating resulting in higher power bills.**
- **System charging becomes critical since the charge might seem correct for one condition but flood on another.**
- **TXV will not solve the charge problem for all cases since the SH and SC can change dramatically with condition.**

- **All of these situations will result in numerous service calls and most likely the only way to resolve it is to replace the indoor coil with a larger coil anyway.**