

Engine Specifications



| | | | |
|---|--------------|-----------------|-----------------|
| | Fuel Type : | Petrol | |
| | Cycle Type : | 4-Stroke | |
| | | Metric | Imperial |
| Engine Displacement : | 2.200 | L | 134 cu.inch |
| Maximum Engine Speed (revs @ max. hp) : | 8500 | rpm | |

| Engine Air Flow Data | | | |
|---|----------------|---------------------|----------------|
| Engine Free Airflow at Atmospheric Pressure : | 0.156 | m ³ /sec | 330 cfm |
| Peak Boost Pressure : | 124.106 | kPa | 18 psi |
| Engine Free Airflow at Peak Boost Pressure : | 0.347 | m ³ /sec | 735 cfm |

Minimum Turbo Lag at Selected Load Case



Time taken for a charge air molecule to travel Inlet tract:

| Intercooler Plumbing - Turbo to Intercooler Information | | |
|---|-------|--------|
| Diameter : | 53.9 | mm |
| Length : | 800.0 | mm |
| Calculated Volume : | 1.825 | litres |

| Intercooler Inlet Tank Information | | |
|------------------------------------|-------|--------|
| Measured Volume : | 0.001 | litres |

| Intercooler Core Information | | |
|------------------------------|-------|--------|
| Calculated Volume : | 0.007 | litres |

| Intercooler Outlet Tank Information | | |
|-------------------------------------|-------|--------|
| Measured Volume : | 0.001 | litres |

| Intercooler Plumbing - Intercooler to Plenum Information | | |
|--|-------|--------|
| Diameter : | 0.1 | mm |
| Length : | 0.0 | mm |
| Calculated Volume : | 0.000 | litres |

| Plenum Information | | |
|---------------------------------------|-------|--------|
| Plenum Shape (Round or Rectangular) : | Round | |
| Diameter : | 70.0 | mm |
| Length : | 280.0 | mm |
| Calculated Volume : | 1.078 | litres |

| Intake Runner Information | | |
|---------------------------------------|-------|--------|
| Number of Intake Runners : | 4 | |
| Runner Shape (Round or Rectangular) : | Round | |
| Diameter : | 40.0 | mm |
| Length : | 290.0 | mm |
| Calculated Volume : | 1.458 | litres |

| Load Case A | | |
|------------------------|---------|-----|
| Engine Speed : | 850 | rpm |
| Calculated Turbo Lag : | 0.28036 | sec |

| Load Case B | | |
|------------------------|---------|-----|
| Engine Speed : | 2500 | rpm |
| Calculated Turbo Lag : | 0.09532 | sec |

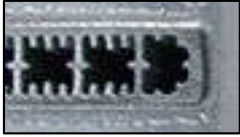
| Load Case C | | |
|------------------------|---------|-----|
| Engine Speed : | 4500 | rpm |
| Calculated Turbo Lag : | 0.05296 | sec |

| Load Case D | | |
|------------------------|---------|-----|
| Engine Speed : | 6500 | rpm |
| Calculated Turbo Lag : | 0.03666 | sec |

| Load Case E | | |
|------------------------|---------|-----|
| Engine Speed : | 8500 | rpm |
| Calculated Turbo Lag : | 0.02804 | sec |

| | | |
|----------------------|-------|--------|
| Est. System Volume : | 4.370 | litres |
|----------------------|-------|--------|

Intercooler Structure Design **ARE Cooling**

| Tube Data | | | |
|---|--------------------------------------|---------------|-----------------|
|  | Tube Width : | 146.0 | mm |
| | Tube Depth : | 8.0 | mm |
| | Tube Cross-sectional Area : | 727.02 | mm ² |
| | Tube Surface Area per Lineal Metre : | 987440 | mm ² |
| | Tube Spacing : | 8.0 | mm |

| Side Band Data | | | |
|------------------------|------------|----|--|
| Side Band Thickness : | 3.0 | mm | |
| Number of Side Bands : | 2 | | |

| Intercooler Structure Size | | | |
|----------------------------|------------|----|--|
| Intercooler Core Height : | 278 | mm | |
| Intercooler Core Length : | 305 | mm | |
| Number of Tubes per Core : | 17 | | |

| | | | |
|---|-----------------|----------------|--|
| Total Cross-sectional Area for Engine Airflow : | 0.012359 | m ² | |
| Equivalent Diameter : | 125.4 | mm | |

| | | | |
|--|-----------------|----------------|--|
| Total Tube Surface Area for Engine Airflow Contact : | 5.119876 | m ² | |
|--|-----------------|----------------|--|

Minimum Turbo Lag at Selected Load Case



Time taken for a charge air molecule to travel Inlet tract:

| Intercooler Plumbing - Turbo to Intercooler Information | | | |
|---|-------|--------|--|
| Diameter : | 53.9 | mm | |
| Length : | 210.0 | mm | |
| Calculated Volume : | 0.479 | litres | |

| Intercooler Inlet Tank Information | | |
|------------------------------------|-------|--------|
| Measured Volume : | 3.150 | litres |

| Intercooler Core Information | | |
|------------------------------|-------|--------|
| Calculated Volume : | 3.770 | litres |

| Intercooler Outlet Tank Information | | |
|-------------------------------------|-------|--------|
| Measured Volume : | 3.150 | litres |

| Intercooler Plumbing - Intercooler to Plenum Information | | | |
|--|-------|--------|--|
| Diameter : | 60.3 | mm | |
| Length : | 100.0 | mm | |
| Calculated Volume : | 0.286 | litres | |

| Plenum Information | | | |
|---------------------------------------|-------|--------|--|
| Plenum Shape (Round or Rectangular) : | Round | | |
| Diameter : | 125.0 | mm | |
| Length : | 380.0 | mm | |
| Calculated Volume : | 4.663 | litres | |

| Intake Runner Information | | | |
|---------------------------------------|-------|--------|--|
| Number of Intake Runners : | 4 | | |
| Runner Shape (Round or Rectangular) : | Round | | |
| Diameter : | 42.5 | mm | |
| Length : | 190.0 | mm | |
| Calculated Volume : | 1.078 | litres | |

| Load Case A | | |
|------------------------|---------|-----|
| Engine Speed : | 850 | rpm |
| Calculated Turbo Lag : | 0.86155 | sec |

| Load Case B | | |
|------------------------|---------|-----|
| Engine Speed : | 2500 | rpm |
| Calculated Turbo Lag : | 0.29293 | sec |

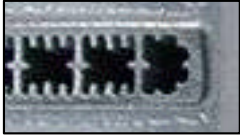
| Load Case C | | |
|------------------------|---------|-----|
| Engine Speed : | 4500 | rpm |
| Calculated Turbo Lag : | 0.16274 | sec |

| Load Case D | | |
|------------------------|---------|-----|
| Engine Speed : | 6500 | rpm |
| Calculated Turbo Lag : | 0.11266 | sec |

| Load Case E | | |
|------------------------|---------|-----|
| Engine Speed : | 8500 | rpm |
| Calculated Turbo Lag : | 0.08615 | sec |

| | | |
|----------------------|--------|--------|
| Est. System Volume : | 16.576 | litres |
|----------------------|--------|--------|

Intercooler Structure Design **ARE Cooling**

| Tube Data | | | |
|---|--------------------------------------|---------------|-----------------|
|  | Tube Width : | 146.0 | mm |
| | Tube Depth : | 8.0 | mm |
| | Tube Cross-sectional Area : | 727.02 | mm ² |
| | Tube Surface Area per Lineal Metre : | 987440 | mm ² |
| | Tube Spacing : | 8.0 | mm |

| Side Band Data | | | |
|------------------------|------------|----|--|
| Side Band Thickness : | 3.0 | mm | |
| Number of Side Bands : | 2 | | |

| Intercooler Structure Size | | | |
|----------------------------|------------|----|--|
| Intercooler Core Height : | 278 | mm | |
| Intercooler Core Length : | 610 | mm | |
| Number of Tubes per Core : | 17 | | |

| | | | |
|---|-----------------|----------------|--|
| Total Cross-sectional Area for Engine Airflow : | 0.012359 | m ² | |
| Equivalent Diameter : | 125.4 | mm | |

| | | | |
|--|------------------|----------------|--|
| Total Tube Surface Area for Engine Airflow Contact : | 10.239753 | m ² | |
|--|------------------|----------------|--|

Minimum Turbo Lag at Selected Load Case



Time taken for a charge air molecule to travel Inlet tract:

| Intercooler Plumbing - Turbo to Intercooler Information | | |
|---|--------|--------|
| Diameter : | 53.9 | mm |
| Length : | 1600.0 | mm |
| Calculated Volume : | 3.651 | litres |

| Intercooler Inlet Tank Information | | |
|------------------------------------|-------|--------|
| Measured Volume : | 3.150 | litres |

| Intercooler Core Information | | |
|------------------------------|-------|--------|
| Calculated Volume : | 7.539 | litres |

| Intercooler Outlet Tank Information | | |
|-------------------------------------|-------|--------|
| Measured Volume : | 3.150 | litres |

| Intercooler Plumbing - Intercooler to Plenum Information | | |
|--|--------|--------|
| Diameter : | 60.3 | mm |
| Length : | 1200.0 | mm |
| Calculated Volume : | 3.427 | litres |

| Plenum Information | | |
|---------------------------------------|-------|--------|
| Plenum Shape (Round or Rectangular) : | Round | |
| Diameter : | 125.0 | mm |
| Length : | 380.0 | mm |
| Calculated Volume : | 4.663 | litres |

| Intake Runner Information | | |
|---------------------------------------|-------|--------|
| Number of Intake Runners : | 4 | |
| Runner Shape (Round or Rectangular) : | Round | |
| Diameter : | 42.5 | mm |
| Length : | 190.0 | mm |
| Calculated Volume : | 1.078 | litres |

| Load Case A | | |
|------------------------|---------|-----|
| Engine Speed : | 850 | rpm |
| Calculated Turbo Lag : | 1.50856 | sec |

| Load Case B | | |
|------------------------|---------|-----|
| Engine Speed : | 2500 | rpm |
| Calculated Turbo Lag : | 0.51291 | sec |

| Load Case C | | |
|------------------------|---------|-----|
| Engine Speed : | 4500 | rpm |
| Calculated Turbo Lag : | 0.28495 | sec |

| Load Case D | | |
|------------------------|---------|-----|
| Engine Speed : | 6500 | rpm |
| Calculated Turbo Lag : | 0.19727 | sec |

| Load Case E | | |
|------------------------|---------|-----|
| Engine Speed : | 8500 | rpm |
| Calculated Turbo Lag : | 0.15086 | sec |

| | | |
|----------------------|--------|--------|
| Est. System Volume : | 26.658 | litres |
|----------------------|--------|--------|