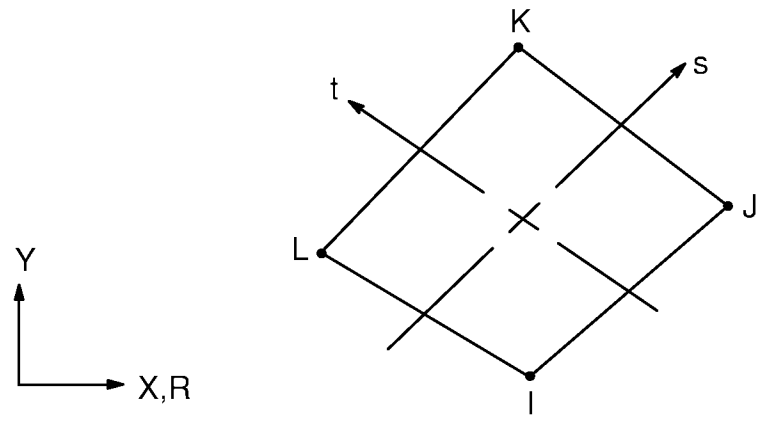
# 14.141 FLUID141 — 2–D Fluid




| Matrix or Vector | Geometry | Shape Functions | Integration Points |
|---|---|---|---|
| Advection–Diffusion Matrices for Momentum Equations (X, Y and Z) | Quad | Equations (12.6.5–10), (12.6.5–11), and (12.6.5–12) | if 2–D 1 (default) or 2 x 2; if axisymmetric 1 or 2 x 2 (default) (adjustable with the **FLDA**,QUAD,MOMD command) |
| | Triangle | Equations (12.6.5–10), (12.6.5–11), and (12.6.5–12) | 1 |
| Advection–Diffusion Matrix for Pressure | Quad | Equation (12.6.5–19) | Same as for momentum equation, but adjustable with the **FLDA**,QUAD,PRSD command |
| | Triangle | Equation (12.6.5–19) | |
| Advection–Diffusion Matrix for Energy (Temperature) | Quad | Equation (12.6.5–20) | Same as for momentum, equations but adjustable with the **FLDA**,QUAD,THRD command |
| | Triangle | Equation (12.6.5–20) | |

| Matrix or Vector | Geometry | Shape Functions | Integration Points |
|---|---|---|---|
| Advection–Diffusion Matrices for Turbulent Kinetic Energy and Dissipation Rate | Quad | Equations (12.6.5–23) and (12.6.5–24) | Same as for momentum, equations but adjustable with the **FLDA**,QUAD,TRBD command |
| | Triangle | Equations (12.6.5–23) and (12.6.5–24) | |
| Momentum Equation Source Vector | Same as momentum equation matrix | | Same as momentum equations, but adjustable with the **FLDA**,QUAD,MOMS command |
| Pressure Equation Source Vector | Same as pressure matrix | | Same as pressure equations, adjustable with the **FLDA**,QUAD,PRSS command |
| Heat Generation Vector | Same as temperature matrix | | Same as temperature equations, adjustable with the **FLDA**,QUAD,THRS command |
| Turbulent Kinetic Energy and Dissipation Rate Source Term Vectors | Same as kinetic energy and dissipation rate matrices | | Same as kinetic energy and dissipation rate equations, adjustable with the **FLDA**,QUAD,TRBS command |
| Distributed Resistance Source Term Vector | Same as momentum equation matrix | | 1 |
| Convection Surface Matrix and Load Vector and Heat Flux Load Vector | One–half of the element face length times the heat flow rate is applied at each edge node | | None |

### 14.141.1 Other Applicable Sections

Chapter 7 describes the derivation of the applicable matrices, vectors, and output quantities. Chapter 6 describes the derivation of the heat transfer logic, including the film coefficient treatment.