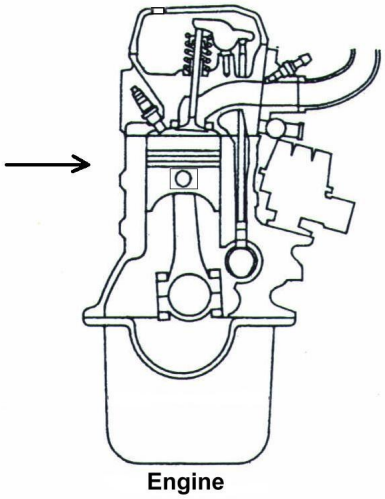
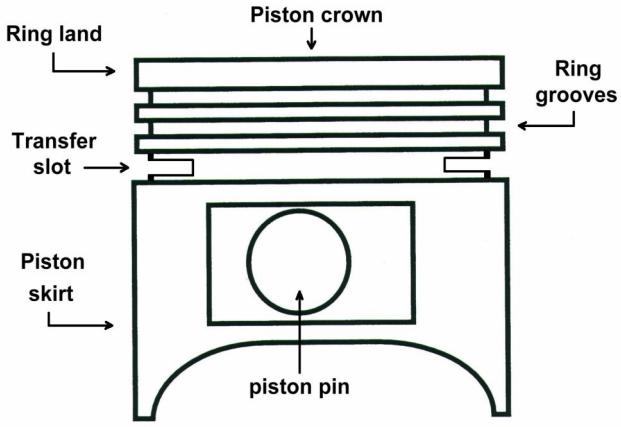
PRODUCT: PISTONS

WHERE ARE THEY IN THE ENGINE?





WHAT DO THEY DO?

The piston in an engine provides the movable wall of the combustion chamber by which the forces of combustion are transmitted via the connecting rod to the crankshaft of the engine. The characteristics required of the piston are that it be light, strong, wear resistant, a good conductor of heat and also it must carry the piston rings as nearly as possible at right angles to the cylinder bore so that they can seal effectively.

WHAT ARE THEY?

Pistons can be cast or forged and made from Aluminium, Copper and Silicon alloy. Most original equipment (O.E.) pistons are gravity die cast pistons with the exception of a select few. Forged pistons are usually reserved for high performance engines only and have superior strength over their cast counterpart. The cost to produce these is also considerably higher.

PISTONS: COMMON TERMINOLOGY

- **Hypo-eutectic Pistons:**
  The composition of Aluminium alloy material containing no more than 12.5% silicon. Most O.E. pistons are hypo-eutectic with silicone content of around 9%
- **Eutectic Pistons:**
  The composition of Aluminium alloy material containing maximum silicon (12.5%)
- **Hyper-eutectic Pistons:**
  The composition of Aluminium alloy material containing more than 12.5% silicon, sometimes in excess of 18%. Silicon can be present in the Aluminium alloy in free form, which will usually make the piston a lot harder, but also be less ductile.
- **Cast Pistons:**
  Gravity cast pistons made with collapsible dies
- **Forged Pistons:**
  Forged pistons made from a solid billet and forged into shape
- **Piston Crown Type:**
  Pistons can be finished on the crown as dished, domed or flat top depending on the combustion chamber, shape of valve pockets and engine design. Many are dished. Sometimes customers require flat tops in effect to raise the compression ratio

PISTONS: COMMON TERMINOLOGY continued

- **Valve Pockets:**
  Cut outs on top of the piston crown to allow for valve clearance
- **Compression Height:**
  The distance from the center of the piston pin hole to the top of the piston. This controls the height of the piston in the cylinder bore
- **Ring Grooves and Ring Lands:**
  Carry and support the piston rings at right angle to the cylinder bore
- **Transfer Slots:**
  Cut out in oil control ring groove that stops combustion heat traveling to the piston skirt to control expansion. Also used to allow oil scraped off the cylinder wall to return to the sump
- **Piston Skirt:**
  Skirts on side of piston that guide the piston down the cylinder bore
- **Solid Skirt:**
  Piston skirt design that has eliminated transfer slot in the oil groove to improve rigidity and strength
- **Piston Pins:**
  Cylindrical pins inside the piston boss that transfer the forces from the piston to the connecting rod. Also called wrist pins or gudgeon pins
- **Circlips:**
  Special clips that hold the piston pin in the piston boss

PART NUMBERS

Part numbers are formed around the base number of the piston and contain suffixes and prefixes denoting the properties of the kit.

8MKRY9302SH-040 can be broken down as follows;

8	Kit is for an 8 cylinder engine.
M	Kit contains premium piston rings.
K	Advises that this is assembled as a kit.
RY9302	Base number of the piston and pin
S	PTFE/molybdenum coated piston skirt
H	Kit contains file back compression rings.
040	Piston oversize. This one is 40/1000 of an inch oversize

SIZING

- Pistons are available in either standard size or over size.
- Over size measurements can be either metric or imperial.
- Standard is shortened to STD
- Imperial sizes are written as 020, 030, 040, 060
- Metric sizes are written as .50, .75, 1.00, 1.50
- Imperial sizes can be easily converted to metric and metric to imperial.

Imperial	Metric
020	0.50
030	0.75
040	1.00
060	1.50