Balanced Opposed Design

Ariel compressors (except the JGI) are a horizontal balanced opposed design. This design utilizes throws with equal amounts of reciprocating weight on opposite sides of the frame to minimize horizontal forces. To achieve this balance, a combination of different weight crossheads and crosshead nut weights are used to achieve equal weights on opposing throws with different size / weight pistons. The maximum unbalance of reciprocating weight between opposite throws is:

Frame	Maximum Unbalance of Reciprocating Weight Between Opposite Throws, lbs
JGM, JGP, JGN, JG, JGQ, JGA, JGR, JGJ	1.0
JGH, JGE, JGK, JGT, KBK, KBT, JGC, JGD, JGF	2.5
KBZ, KBU, KBB, KBV	5.0

Some combinations of larger cylinders opposite much smaller cylinders may not balance on opposite throws. The Ariel performance software will provide these limitations.

For balancing opposing throws with the same cylinder size, use the lightest crosshead / nut combination. For balancing opposing throws with different piston sizes, pick the heaviest piston and rod assembly, and use the lightest crosshead / balance nut combination. For the lighter piston and rod assembly, choose the crosshead / balance nut combination that will match the first throws' reciprocating weight within the tolerances in the table above.

For balancing opposite a blank throw a balance crosshead may need to be used if a standard crosshead is not sufficient in weight. It must be noted that a balance crosshead requires a balance crosshead guide which is not suitable for mounting a cylinder.

Reciprocating weights are balanced on opposing throws. Reciprocating weights are not balanced end to end, across adjacent throws.

Contact Ariel Application Engineering for any questions or problems concerning reciprocating weight balance.