

Table 78  
Efficiency Comparison, Standard and Modified QJ Locomotives

Item	Standard QT <sup>1</sup>	Modified QJ <sup>2</sup>	Improvement factor
Boiler combustion efficiency	78%	87%	1.115 <sup>3</sup>
Boiler absorption efficiency	78.2%	80%	1.023
Auxiliary efficiency factor <sup>4</sup>	93.1%	94%	1.010
Cylinder efficiency	16.4%	19.05%	1.162
Transmission efficiency <sup>5</sup>	89%	93%	1.045
Drawbar efficiency <sup>6</sup>	94%	95%	1.011
Overall drawbar thermal efficiency = product of all the above	7.8%	11.0%	1.410

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1 From test results.

2 Estimated.

3 It is seen that the contribution of the GPCS to the increase in maximum drawbar thermal efficiency was relatively modest because under the conditions for maximum overall efficiency the standard combustion efficiency was quite high. This was pointed out to the Chinese both to show them that the GPCS by itself would not allow the efficiency target to be reached and to emphasize the importance of the other improvements.

4 Defined as {heat in steam to the cylinders + total heat in steam leaving the boiler}.

5 Defined as (wheel rim work , cylinder work) (often called 'mechanical efficiency').

6 Defined as {drawbar work wheel rim work}.