

ABSTRACT:

A pipe diffuser (11) is used in a centrifugal compressor in such a way as to obtain high efficiency over a broad operating range. The number of channels in the pipe diffuser (11) is limited such that the wedge angle is relatively large and therefore not susceptible to flow separation at the leading edges thereof. The vaneless space between the impeller (12) and the leading edge circle of the diffuser (11) is limited in its radial depth such that the flow separations are further inhibited. Finally, the impeller (12) has a relatively high backsweep such that the absolute flow exit angle is relatively low, thereby reducing the sensitivity to lower flow conditions.

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