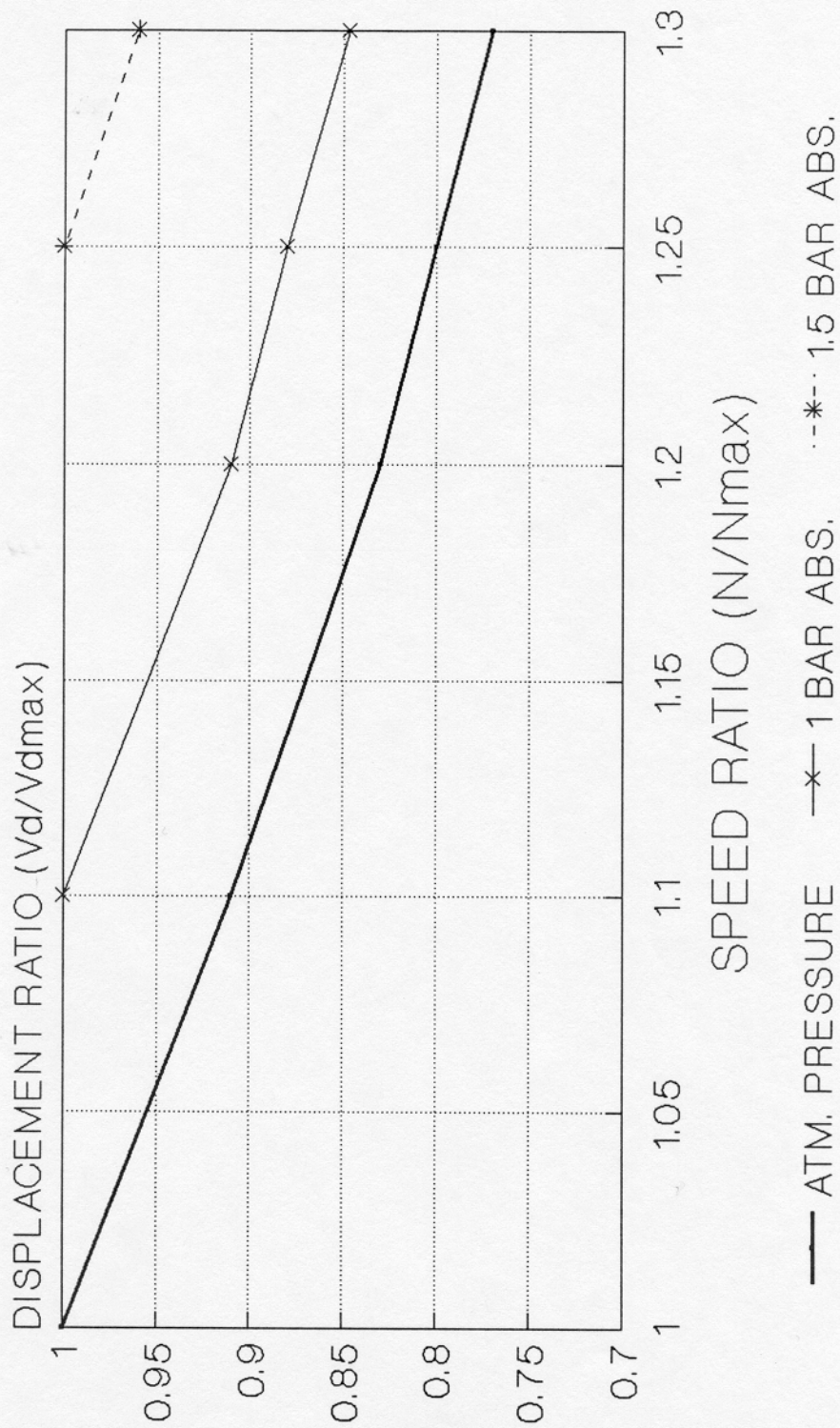




HPR INLET CONDITION CALCULATIONS

Bulletin No.
HPR 000
03.92/013/02





Examples for calculating the inlet pressure required to operate at full displacement with increased speeds and for determining the maximum allowable displacement to operate at a given inlet pressure.

Example 1: Find the inlet pressure required to operate a HPR 100 (6.10 cir) at 2530 rpm operating speed and full displacement.

Given – Full displacement (DISPLACEMENT RATIO $V_d/V_{dmax} = 1.0$)

- Speed ratio $N/N_{max} = 2530/2300 = 1.1$
- NOTE: 2300 rpm is N_{max} at ATMOSPHERIC PRESSURE.

From the graph on page 1, find the speed ratio of 1.10. Follow this line upward to the displacement ratio of 1.0 and read the corresponding inlet pressure curve of 1.0 bar (abs). Therefore, the pump inlet must be pressurized to 1.0 bar (abs) to operate at full displacement and 2530 rpm.

Example 2: Find the maximum allowable displacement to operate a HPR100 (6.10 cir) at 2530 rpm operating speed and atmospheric pressure inlet.

Given – speed ratio $N/N_{max} = 2530/2300 = 1.10$

NOTE: 2300 rpm is N_{max} at ATMOSPHERIC PRESSURE

From the graph on page 1, find the speed ratio of 1.10. Follow this upward to the inlet pressure curve of atmospheric pressure. Read the corresponding displacement ratio of 0.91 to the left. Therefore, the pump displacement must be reduced according to the following relationship: $0.91 * V_{dmax} = 0.91 * 6.10 = 5.55$ cir.

Pressure (gage) = Pressure (abs) – Pressure (atm)