CHEMPUMP
A DIVISION OF TEIKOKU USA INC.

# ENGINEERING DATA SHEET

| *Use of "G" Series Chempump Performance Curves* | | |
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| **Date** | **Supersedes** | **No.** |
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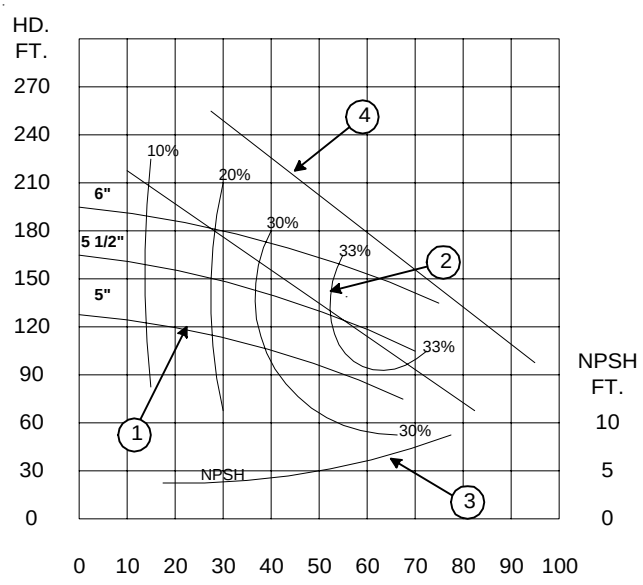
Due to the integrated pump-motor design of canned motor pumps, the method of selecting the proper Chempump "G" Series model for a specific fluid and set of performance conditions differs from the method widely used in selecting a conventional centrifugal pump and motor. This paper has been prepared to familiarize those concerned with the significance of the data provided on Chempump's "G" Series performance curves and with the use of those curves for Chempump's "G" Series model selection.

## A. TYPICAL PERFORMANCE CURVES

Shown below is a typical Chempump performance curve, which details the performance characteristics of a typical model.




1. **IMPELLER PERFORMANCE LINES** indicate head-capacity characteristics for each specific impeller diameter available. Impeller diameters, in inches, are shown on the curve.

2. **MODEL EFFICIENCIES** indicate overall wire-to-water efficiencies - not pump efficiencies alone. (Normally, conventional pump curves indicate pump efficiencies only and do not take into account motor efficiencies.)

   Note: Efficiencies on the curves for the "NC" Series differ from those shown on the "G" and "J" Series curves.

3. **NET POSITIVE SUCTION HEAD (NPSH) LINE** indicates NPSH required at varying capacities. Scale is read on right side of curve. If inducers are available, a reduced NPSHr curve will be on the performance curve.

4. **MOTOR LOAD LINES** indicate load limit for all motor sizes available with each model when pumping a liquid with a specific gravity of one. Specific motor size is suitable when the selected impeller diameter curve falls below the load line.

   All published Chempump curves, except where noted, are based on shop tests with the unit handling clear water at 20˚C and a sp.gr. of 1.0.

## B. MOTOR SELECTION

For the purpose of this data sheet, only model selections for handling fluids with specific gravities of 1.0, and viscosities of 30 cps and below will be discussed. For model selection when handling fluids with specific gravities other than 1.0 or with viscosities greater than 30 cps, see Engineering Data Sheets 4E and 5E.

### 1. IMPELLER SIZING

Impeller size can be determined by plotting on the curve the condition point required and then selecting the next higher diameter. As standard, impellers will be supplied in 1/8" steps between minimum and maximum diameters. When application dictates, impeller will be sized in 1/16" steps, but only under special circumstances.

### 2. NPSH REQUIRED

To insure proper operation of the unit, the Net Positive Suction Head required should be determined. This can be done by determining the maximum capacity point at which the unit will operate, and then reading the NPSH required from the scale on the right side of the curve. The NPSH required must be less than the NPSH available.

### 3. UNIT EFFICIENCY

The efficiency of the unit at the rated point can be determined from the performance curve by plotting the condition point required on the curve graph and interpolating, if necessary, between the efficiency lines.

### 4. MOTOR SIZING

It is recommended that the motor size selected be non-overloading over the entire range of operation of the impeller diameter selected. This means that after selection of the impeller the entire performance range should be traced and should not cross over the motor load line. If that should happen, then the next larger motor size should be chosen.

If the motor is to be sized based on the rated capacity of the pump, care should be taken to prevent the motor from operating in an overload condition if the capacity exceeds the rated point.