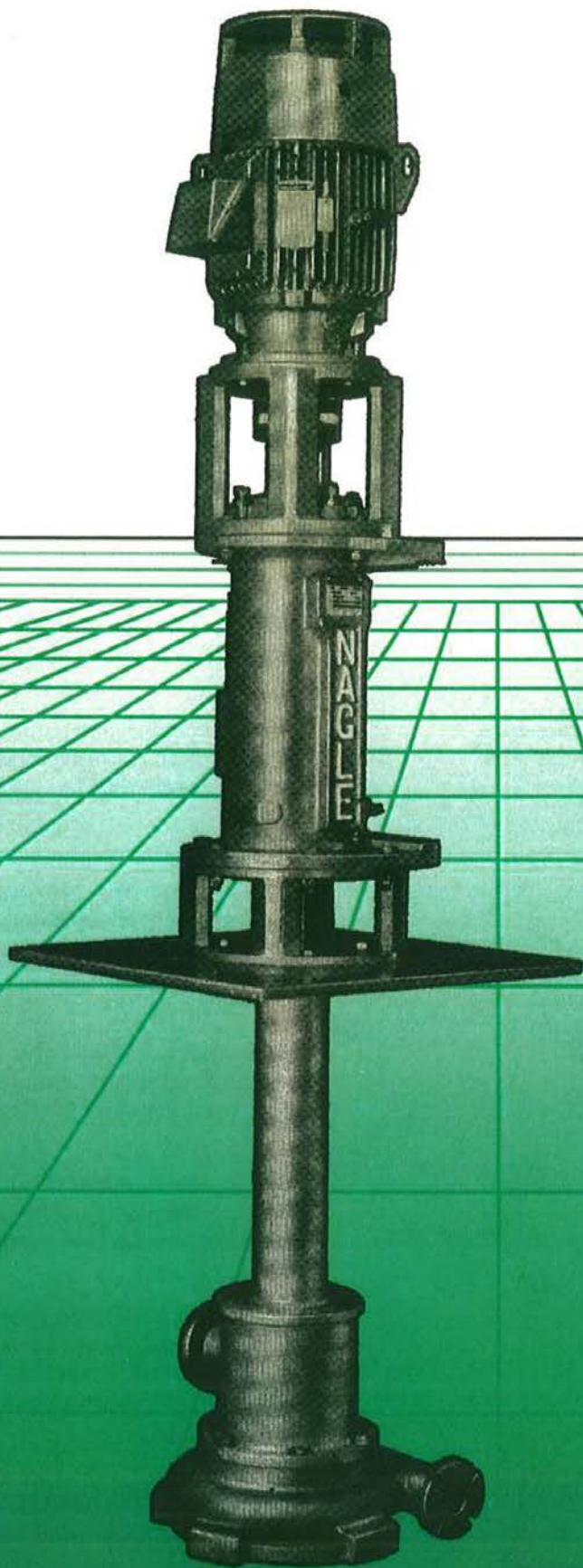




**NAGLE**  
**PUMPS**  
A RUTHMAN COMPANY

Made in U.S.A.

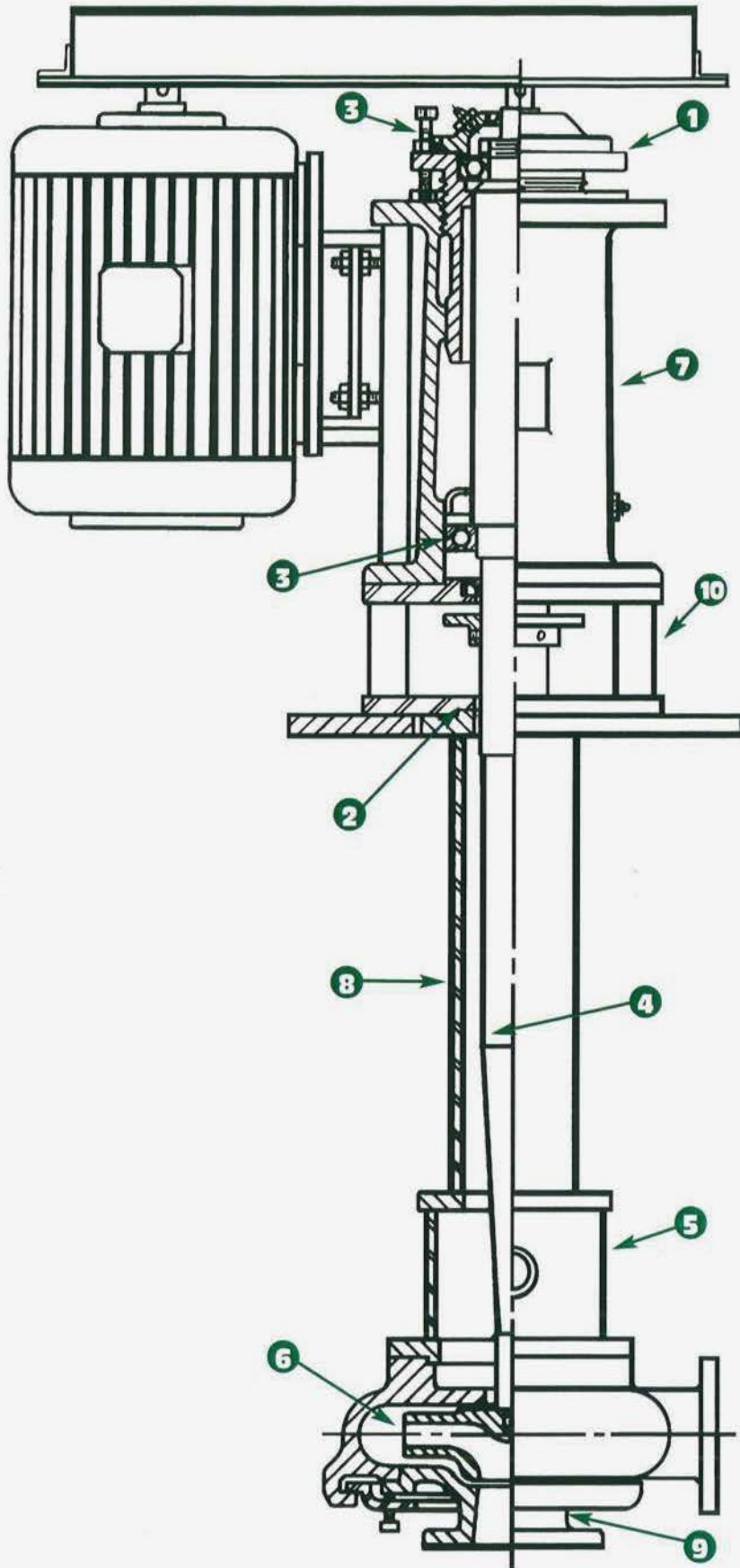


# CDO

## Dry Mounted Cantilever Pumps

**Endurance-engineered for maximum service life**

# Design Features



- 1** Threaded housing minimizes misalignment and provides precision axial impeller adjustment for maximum wet end wear life
- 2** All mated components piloted to ensure concentricity of assembly and aid in reassembly of the pump during maintenance
- 3** Heavy ball or roller bearings designed to accept maximum radial and thrust loads for extended service life
- 4** Computer designed cantilever shaft. No bearings, seals, bushings or any rubbing parts in contact with the pumpage below the mounting plate
- 5** Collector chamber for recirculation of by-pass fluid to source vessel (suction chamber on top entry version)
- 6** Enclosed impeller to help ensure optimum efficiency and long service life (open type designs also available)
- 7** Bearing pedestal designed to dampen vibrations for maximum support and life of rotating element
- 8** Endurance engineered column to minimize deflection and properly support wet-end for long-term use
- 9** Suction plate with sealing contour to match impeller nose eliminates need for wear rings, reduces maintenance (bottom suction slurry wet-end shown)
- 10** Spacer pedestal to raise bearing frame above the mounting plate for protection from fumes and heat

# Product Data

## BACKGROUND

The Nagle CDO was developed over 30 years ago for magnetite and ceramic slip applications. These heavy slurries could not be contained by packing or seals and could not be diluted or contaminated. Wet pit cantilever shaft units could not be adapted to these applications due to interference by tank agitators. Therefore, Nagle created this innovative design which over the years has been refined and successfully employed for the pumping of a wide array of corrosive, abrasive and high temperature fluids.

## DESIGN AND INSTALLATION CONCEPTS

Unlike other packed or sealed conventional dry mounted pumps, the CDO employs a true cantilever shaft principal which has no submerged bearings, packing or seals in contact with the pumpage. Instead, the dynamic energy of the fluid itself is employed to confine the pumpage naturally within the static enclosing assembly.

Typically these pumps are located within close proximity to the source vessel and may be bracketed to the side of the vessel or independently mounted. The mounting plate must be located slightly above the elevation of the maximum liquid level and the casing must be located slightly below the elevation of the minimum liquid level at which it is necessary to start the pump. After pumping is initiated, the bottom suction version can continue to draw the level down to elevations considerably below the casing.

The bottom suction version requires a by-pass line back to the source vessel or, with some limitations, to the suction piping. System imposed suction pressures are not acceptable although in some cases this can be accommodated by introducing pressurized gas to the upper column.

## SIZES

- 1.5" x 1" - 5.0" through 10" x 8" - 23.0"
- Settings (mounting plate to bottom of casing) to over 10 feet

## PERFORMANCE

- Capacities from 10 USGPM to over 3500 USGPM
- Heads from 5 feet TDH to over 200 feet TDH

## BENEFITS

- No seals, packing, bushings or other rubbing parts are in contact with the pumpage
- No flushing or sealing fluids are required
- Dry operation is not harmful
- Bearing frame, mounting assembly and drive are not directly over source vessel, hence they are less susceptible to fumes and splash
- External surfaces and fasteners are not submerged nor exposed to pumpage corrosion and wear
- Source vessel size, shape, structure and agitators need not be designed to accommodate the pump(s).
- Wet-end inspection and trash removal can be accomplished without disturbing pump installation
- Entire rotating assembly and bearings can be withdrawn from top without complete pump removal (nor even suction/discharge piping on top suction version)
- Modular sub-assembly design enables many options, variations and materials to suit the application

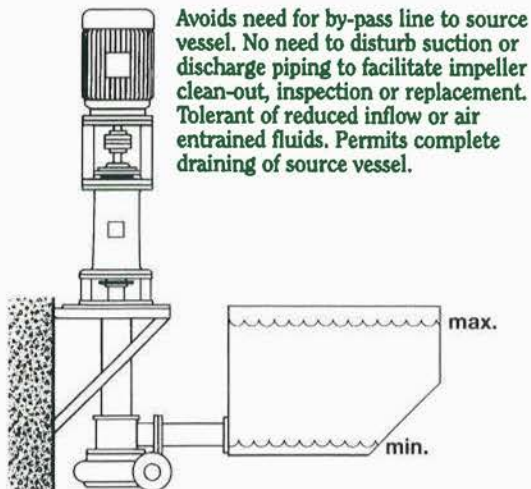
## OPTIONS

- Direct coupled or V-belt driven
- Top or bottom suction
- Clean-out opening (top suction only)
- Closed, open or trash-type impellers
- Chemical or slurry type wet-end designs
- Packing, seals or labyrinth at mounting plate (for fume confinement, inert gas blanket, etc.)
- Special reservoir or blending column designs

## MATERIALS

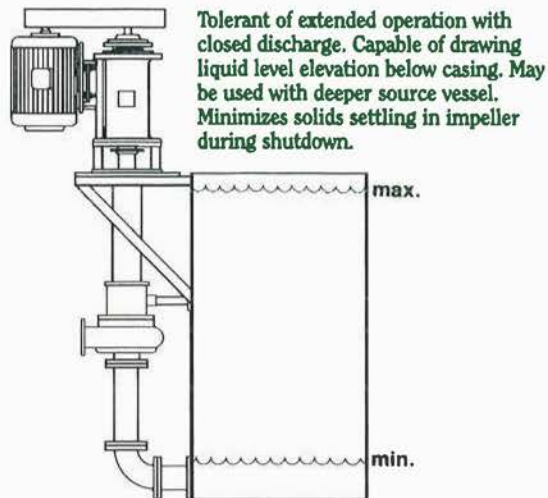
- General Purpose: Cast Iron, Carbon Steel
- Corrosion Resistant: 304 SS, 316 SS, Alloy 20, CD-4MCu, Hastelloy
- Erosion Resistant: 28% Chromium Iron
- Combined corrosion/erosion: CD-20MCu, CEA, CD-4MCu
- Other materials on request

## TOP SUCTION MODEL



Avoids need for by-pass line to source vessel. No need to disturb suction or discharge piping to facilitate impeller clean-out, inspection or replacement. Tolerant of reduced inflow or air entrained fluids. Permits complete draining of source vessel.

## BOTTOM SUCTION MODEL



Tolerant of extended operation with closed discharge. Capable of drawing liquid level elevation below casing. May be used with deeper source vessel. Minimizes solids settling in impeller during shutdown.

# Typical Applications

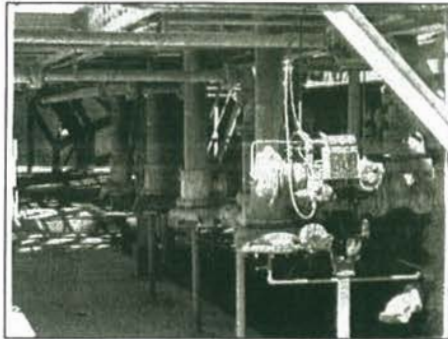


## POWER PLANTS

- Condenser intake sand removal
- Flue dust handling
- Screen wash pumps
- Water treatment sludge disposal
- Radioactive drainage

## STEEL MILLS, BLAST FURNACES, FOUNDRIES, METAL WORKING

- Scale pit drainage
- Slurries
- Tin plate chemicals
- Wet blast castings cleaning
- Pickle acid
- Lime slurry
- Air washer sludge
- Coolant handling
- Coolant recirculation
- Pickling chemicals handling
- Plating chemicals handling
- Quenching fluids
- Drainage



## PAPER MILLS

- Chemical pumping
- Coating mixtures handling
- Green and black liquor
- Slurries
- Waste disposal
- Lime slurry

## CHEMICAL, PETROLEUM AND PROCESS INDUSTRIES

- Handling toxic chemicals
- Milk of lime
- Slurry handling
- Transferring acids and chemicals
- Waste disposal
- Filter press feed
- Ammonium nitrate
- D.N.T.
- Chemical pumping
- Coke breeze handling
- Filter feeding
- Slurries
- Waste disposal
- Slush pit pumping
- API separator pumps

## CERAMIC INDUSTRY

- Pickling liquids
- Slip and glaze transfer
- Slips, slurries, glazes
- Spray booth air washer water

## SEWAGE TREATMENT PLANTS AND WATER WORKS

- Sewage grit pumping
- Water softener sludge disposal
- Lime slurry

## PHOSPHATE REFINING

- Filter feed
- Filtrate

For more than 40 years, Nagle Pumps have been the standard for excellence and reliability in heavy duty pumps for abrasive, corrosive and high temperature applications. Thousands of installations in power, chemical, petrochemical, steel, water treatment, foundry, ceramic, metal working, mining and other process industries attest to Nagle's philosophy of "endurance-engineering"—a commitment to designing and manufacturing pumps which provide longer service life with minimum maintenance.

A wide selection of designs, components and materials of construction allows Nagle to custom-engineer each pump to meet your specific requirements. Nagle manufactures vertical cantilever, wet and dry mounted, submerged bearing, horizontal and submersible pumps.

For additional information on our complete line of finest quality industrial pumps, contact the Nagle representative in your area, or call us direct.



## Nagle Pumps, Inc.

1249 Center Ave, Chicago Heights, IL 60411  
Phone 708-754-2940 Fax: 708-754-2944  
www.NaglePumps.com Sales@NaglePumps.com