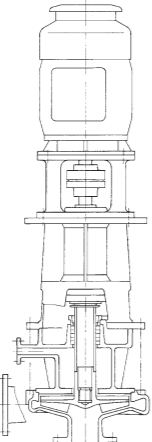
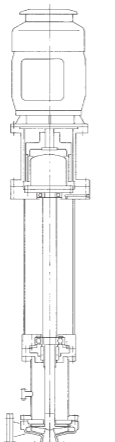
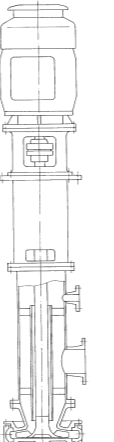
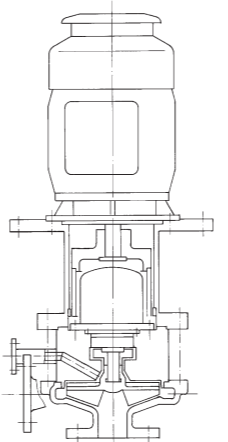
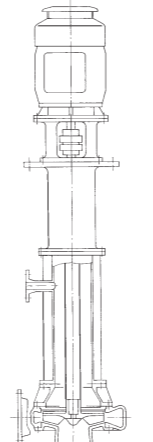
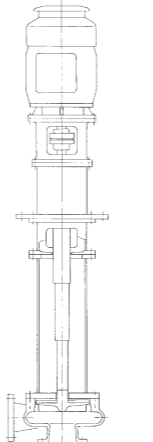
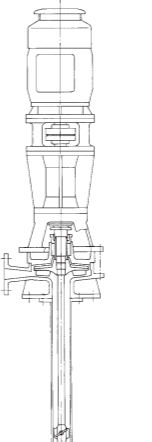
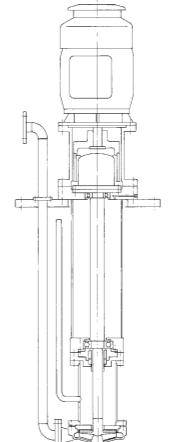
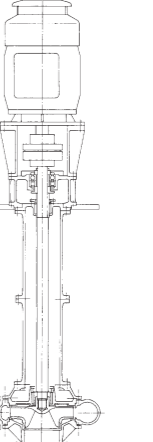
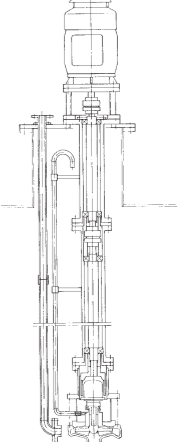


# Vertical Centrifugal pumps

| Bungartz<br>Selection Guide  | Vertical Centrifugal pumps  |  |   |   |   |   |   |   |   |   |
|--|---|--|---|---|---|---|---|---|---|---|
|  | Dry Installation  |  |   |   |   | Wet Installation  |   |   |   |   |
|  | No bearings in the pumped liquid  |  |   | Bearings in the pumped liquid   | No bearing in the pumped liquid   |   |   | Bearing in the pumped liquid  |   |   |
| TYPE   | VK  | MPAV   | VB  | MPV   | T   | F-T   | VKT   | MPAT  | TG  | MPT   |
|  |   |  |   |   |   | for Dry Installation Type V, F-V  |   |   |   |   |
| Single stage vertical pumps in various designs to meet specific operating conditions.<br><br>These pump can be supplied with additional equipments such as steam jackets, thermowell bosses etc. |  |  |  |  |  |  |  |  |  |  |
| <b>Selection Criteria</b>  |   |  |   |   |   |   |   |   |   |   |
| shaft seal for handling non dangerous liquids  | primary: hydrodynamic<br>secondary: according to demand                           | primary: hydrodynamic<br>secondary: gas sealing and magnetic drive                 | primary: hydrodynamic<br>secondary: according to demand                             | magnetic drive  | primary: hydrodynamic<br>secondary: not necessary for type „T“                      | primary: hydrodynamic<br>secondary: not necessary for type „F-T“                    | primary: hydrodynamic<br>secondary: according to demand                             | primary: hydrodynamic<br>secondary: gas sealing with magnetic drive                 | primary: hydrodynamic<br>secondary: according to demand                             | magnetic drive  |
| shaft seal for handling toxic liquids  | primary: hydrodynamic<br>secondary: double mechanical seal                        | primary: hydrodynamic<br>secondary: gas sealing with magnetic drive                | primary: hydrodynamic<br>secondary: double mechanical seal                          | magnetic drive  | primary: hydrodynamic<br>secondary: double mechanical seal                          | primary: hydrodynamic<br>secondary: double Mech. Seal                               | primary: hydrodynamic<br>secondary: double mechanical seal                          | primary: hydrodynamic<br>secondary: gas sealing with magnetic drive                 | primary: hydrodynamic<br>secondary: double mechanical seal                          | magnetic drive  |
| transferring highly gaseous liquids  | up to 35% in volume design: AN  | up to 35% in volume design: AN   | up to 35% in volume with extra ventilation nozzle                                   | up to 35% in volume design: AN with flushing  | up to 35% in volume design: AN  | up to 35% in volume design: AN  | /   | up to 35% in volume design: AN  | /   | /   |
| liquids with solid ingredients (no extra settings required)  | max. allowable solid particle size is relative to the size of the pump            | max. allowable solid particle size is relative to the size of the pump             | max. allowable solid particle size is relative to the size of the pump              | /   | max. allowable solid particle size is relative to the size of the pump              | Torque Flow Pump for large particle sizes   | max. allowable solid particle size is relative to the size of the pump              | max. allowable solid particle size is relative to the size of the pump              | /   | /   |
| (with extra settings for the bearings)   | /   | /  | /   | yes   | /   | /   | /   | /   | external flushed bearings   | bearing flushing  |
| able to run dry *1   | yes   | yes  | yes   | no  | yes   | yes   | yes   | yes   | no  | no  |
| safe run at zero influx *2   | design: AN  | design: AN   | yes   | design: AN  | design: AN  | design: AN  | no  | design: AN  | no  | design: AN  |
| selfregulation   | design: AN  | design: AN   | yes   | design: AN  | design: AN  | design: AN  | no  | design: AN  | no  | design: AN  |
| boiling liquids  | design: AN  | design: AN   | yes   | design: AN  | design: AN  | /   | no  | design: AN  | no  | design: AN  |
| maximum useful immersion depth   | /   | /  | /   | /   | T = 1,2 m   | T = 1,4 m   | T = 1,2 m   | T = 3,5 m   | T = 2,0 m   | T = 3,5 m   |
| flow rate  | up 1500 m <sup>3</sup> /h   | up 60 m <sup>3</sup> /h  | up 300 m <sup>3</sup> /h  | up 60 m <sup>3</sup> /h   | up to 1500 m <sup>3</sup> /h  | up to 300 m <sup>3</sup> /h   | up to 450 m <sup>3</sup> /h   | up to 60 m <sup>3</sup> /h  | up to 1500 m <sup>3</sup> /h  | up to 60 m <sup>3</sup> /h  |

\*1 i. e. the pump can run without fluid

\*2 i. e. the pump is gradually filled but not transporting

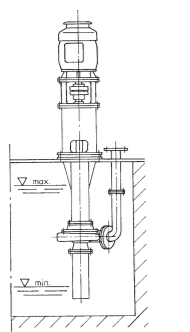
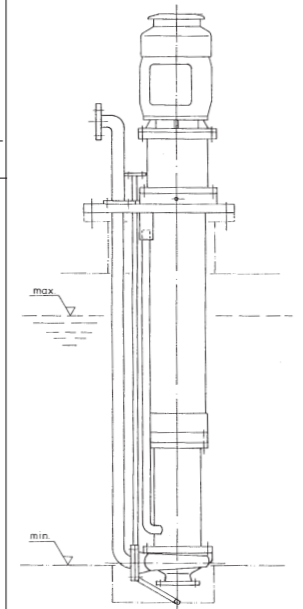
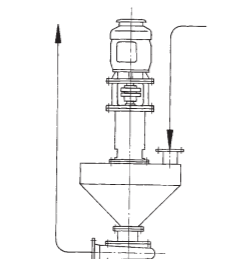
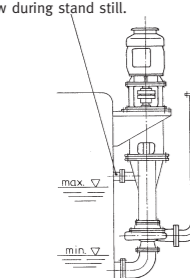
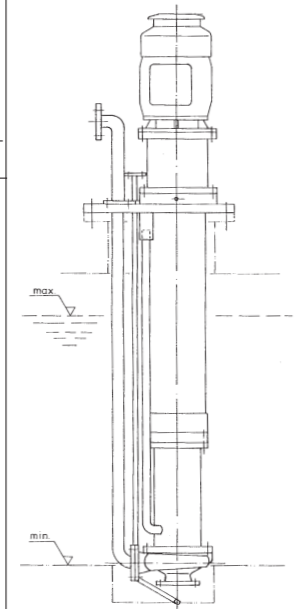
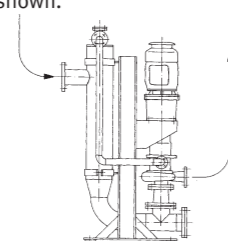
## Vertical Pumps

In order to achieve a higher durability and safety-working-conditions of a pump, the rubbing shaft seals are replaced by friction free methods, For example: cantilever shaft design without liquid lubricated bearings. Due to this advantage, the probability of pump trouble is reduced to the calculated life time of the bearings.

Bungartz vertical Pumps are suitable for almost all fluids such as: toxic, abrasive, corrosive, highly gas containing, boiling, muddy, crystallizing or explosive liquids.

In addition to the primary hydrodynamic shaft seal a secondary friction shaft seal is used for the case that the pump is stopped. The type and the material from which the secondary seal is made differ according to the type of the transported material. whenever the pump runs and the hydrodynamic seal is developed the secondary seal is completely from the pressure relieved and isolated from the flowing material . By applying special constructive configurations the secondary shaft seal can be protected from contact with the fluid even during standstill.

### Examples:

| T  | MPAT   | VB   |
|--|--|--|
| <p>Due to absence at any static shaft seal this cantilever shaft pump is able to run dry.</p>    | <p>Pumps with magnetic drive for removal of toxic, crystallizing and solid particles loaded liquids from containers. Shaft bearing and shaft sealing systems are not getting in contact with the pumped liquid. The pump is able to run dry.</p>  | <p>Vertical pump with top inlet for intermittent influx of slurries and foaming liquids. This pump is self-regulating and able to run dry.</p>   |
| <p>This pump without wearing secondary seal for dry installation with overflow port on the shaft column to prevent leakage when stopping the pump.</p> <p>overflow during stand still.</p>  |   | <p><b>VK-AN / V-AN</b></p> <p>These self-regulating pumps are particularly suitable for removal of condensate under high vacuum without the need of barometric tail pipe, suction container and controls. The pump system can be completely supplied as shown.</p>  |





# BUNGARTZ

## Special Centrifugal Pumps

### Vertical Pumps

designed on demand

#### for severe operating conditions

-  corrosive
-  abrasive
-  muddy
-  crystallizing
-  incipient boiling
-  heavy gas containing
-  explosive



# BUNGARTZ

### Paul Bungartz GmbH & Co. KG

Düsseldorfer Str. 79

D-40545 Düsseldorf

Germany

Telefon: 02 11/57 79 05-0

Telefax: 02 11/57 79 05-12

www.bungartz.de

#### Further Products from the Bungartz Range:

##### Horizontal Pumps

with non-contact hydrodynamic shaft sealing

##### Vertical Pumps

for quick and easy dry installation  
for wet installation without a bearing in the liquid  
for wet installation with friction bearing  
with front impeller for space-saving installation

##### Submersible Pumps

with delivery from above

##### Axial-Flow Pumps

for ground installation  
manifold design

**Horizontal or vertical pumps** with semi-open, closed or non-chokable impellers.

##### Pumps with hydrodynamic seal and ADDITIONAL sealing as follows:

- Stuffing box
- Floating ring seal
- Magnetic coupling
- Special solutions for your problems