CENTRIFUGAL MULTI STAGE PUMPS

TECHNICAL DETAILS:

- Turbosan KAT series pumps are medium and high pressure, multi stage pumps with closed type impellers and diffusers suitable for pumping clean water and slight solids content water with low viscosity.
- Turbosan KAT series pumps have closed type impellers with curved vanes (FRANCIS type) which generates high manometric head.
- Pump impellers statically and dynamically balanced according to ISO 1940 class 6.3, allowing vibration free and long life operation.
- As standard suction flange located on right hand side on drive end discharge flange is located on top on non drive end upon request different flange locations available.
- Bearings housings of Turbosan KAT series pumps are designed support maximum number of stages reliability. Stages which are consisting of impellers and diffusers are designed for lowest loss and highest efficiency.
- **Direction of rotation**: Clockwise seen from drive end.
- In order to reduce leakage loss renewable wear ring fitted to the impellers.
- Axial trust which is an important concern for multi stage pumps, balanced by means of balance disc.
- Pump shafts supported by heavy duty type bearings on both sides. As standard bearings are grease lubricated. Oil lubrication is available on request, if needed oil lubricated bearing housings can be fitted with heat dissipation fins for additional cooling.
- KAT series pumps manufactured with soft packing as a standard. Soft packing is located on shaft sleeves which are made of hardened stainless steel.
- Mechanical seal is available optionally.

**BALANCE DISC**: Axial trust force is very important issue for multi stage pumps. Axial trust force compensated by balance disc. Balance disc is located inside a chamber which is between bearing housing and the last stage impeller. Surface of the balance disc is coated with special hardened steel, stationary piece is coated with hard Chromium. Both faces are machined.

FIELDS OF APPLICATIONS

Turbo - KAT series pumps are suitable for
- Public and industrial water supply
- Booster systems
- Boiler feeds
- Fire fighting units
- Marine industries
- Mining industries
- Sprinkler systems
- Chemical and Petrochemical plants
- Power plants
- Irrigation

![Diagram](image)
1) KAC SERIES MULTI STAGE SPLİTCASE PUMPS
This series has been developed for heavy industry applications.
Equal number of impellers with counter rotation directions used. By this design axial load generated within pump, get balanced without need for balance disc or impeller balance holes.
Split casing design allows pump to be splitted axially. This allows rotating elements of the pump to be dismantled or fixed without disturbing suction and discharge flange connections, by just opening the casing cover.

2) MULTI STAGE PUMP WITH OPPOSITE IMPELLERS:
These pumps are for high discharge pressures. Axial thrust force is compensated by back to back fitted impellers. In this design there is no need for balance disc. In special applications they used for fluids with small solid particles content.

** ( Depending on pump model)
Suction flanges : ISO 7005 – 2/PN 10
Discharge flanges : ISO 7005 – 2/PN 16 – 25 upto 40

** Upon operation conditions suitable flange norm can be used.

<table>
<thead>
<tr>
<th>PARTS</th>
<th>BRONZ VERSION</th>
<th>CAST IRON VERSION</th>
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</thead>
<tbody>
<tr>
<td>Casing</td>
<td>Cast iron ( GJL 250) (EN-JL 1040)</td>
<td>Cast iron ( GJL 250) (EN-JL 1040)</td>
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<td>Impeller</td>
<td>Bronze</td>
<td>Cast iron ( GJL 250) (EN-JL 1040)</td>
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<td>Diffusor</td>
<td>Cast iron ( GJL 250) (EN-JL 1040)</td>
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<td>Wear ring</td>
<td>Bronze</td>
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<td>Shaft</td>
<td>Stainless steel (AISI 420) (1.4021)</td>
<td>Carbon steel (1.0501)</td>
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<tr>
<td>Shaft sleeve</td>
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<td>Stainless steel (AISI 420) (1.4021)</td>
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<td>Balance disc</td>
<td>Hardened steel filling + Chromium plated</td>
<td>Hardened steel filling + Chromium plated</td>
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<tr>
<td>Shaft sealing</td>
<td>Soft packing / Mechanical Seal</td>
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<tr>
<td>Painting</td>
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</table>

* Upon request different materials suitable for pumped fluids properties available

ADDİTİON TO CLASSİC MULTI STAGE DESIGN TURBOSAN HAS TWO OTHER MULTI STAGE PUMP DESIGNS
**MULTISTAGE PUMPS CROSS SECTION DRAWING & PART LIST**

**SECTIONAL DRAWING**

1. Discharge casing
2. Suction casing
3. Stage casing
5. Wear ring
64-Balance disc
10-Diffuser
12-Reserve diffuser
20-Impeller
30-Bearing housing (suction side)
31-Bearing housing (discharge side)
54-Gland
60-Shaft
70-Shaft sleeve
240-Soft packing

**DIMENSIONS**

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<th>PUMP SIZE</th>
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<th>E</th>
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<th>L</th>
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*Turbosan reserves right to change dimension without prior notice.*